CLASSIFICATION AND MAPPING OF QUATERNARY SEDIMENTARY DEPOSITS FOR PURPOSES OF SEISMIC ZONATION, SOUTH COASTAL LOS ANGELES BASIN, ORANGE COUNTY, CALIFORNIA

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Classification and Mapping of Quaternary Sedimentary Deposits for Purposes of Seismic Zonation South Coastal Los Angeles Basin, Orange County, California

14-08-0001-18241

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Interim Report-Second Year of Investigation

Valid and meaningful estimations of the severity and extent of ground shaking in an area resulting from earthquake energy release, and the secondary effects which may occur as a result of this ground response, must necessarily consider the thickness, configuration and material properties of the unconsolidated near surface sediments effected. Included in this report are map displays of the historically shallowest ground water occurrences, the distribution and character of discriminated surficial sediments and thicknesses of Holocene and Quaternary age sediments.

The response of near surface sediments to seismically induced shaking is a function of sediment characteristics, materials properties and the velocities of seismic waves through these sediments. Downhole velocity surveys have been conducted in existing boreholes. Additionally, the drilling, logging, sampling for bulk density and the downhole measurement of P-and S-wave traveltimes in a 200 foot hole has provided a means of estimating the clastic properties of the near surface sediments. Because many of the available boreholes in the area of investigation are surrounded by asphalt it was desirable to determine what effect an asphalt layer at the ground surface introduces to the traveltime curve. At the location of the 200 foot hole drilled during this year's effort, it was possible to measure downhole traveltimes from a source generated on soil and from a source generated on asphalt. Comparison and analysis of S-wave traveltimes data from these two sources is presented with the conclusion that when the source is on asphalt the measured traveltime is less than the measured traveltime on soil at shallow hole depths. Based on this simple test, S-wave traveltime disparity diminishes with increasing depth and traveltime curves for energy sources on soil and asphalt closely approach each other.

In order to expediently collect and expeditiously analyze the mass of subsurface data accumulated for this investigation an electronic data processing management program has been developed to store, selectively retrieve and graphically display accumulated stratigraphic sample data and geotechnical measurements taken from holes in the ground. The current system can only store point data, data representing a measured value at some point in space and time. The system does not preclude adding range data. The system consists of two major functions, an edit-audit-update function (input) and a data retrieval function (output). The input function assures that only data that is usuable and consistent with user specified requirements reaches the storage file. The output function provides a variety of services related to obtaining and displaying information from the storage file. The edit-audit-update function is driven by a user-coded input form, while the data retrieval function is driven by a user coded query. Description of the processing capability of this developed program is contained in the report.

ANNUAL TECHNICAL REPORT TEXT AND PLATES

COVERING THE PERIOD SEPTEMBER 19, 1979 to SEPTEMBER 18, 1980

CLASSIFICATION AND MAPPING OF QUATERNARY SEDIMENTARY DEPOSITS FOR PURPOSES OF SEISMIC ZONATION, SOUTH COASTAL LOS ANGELES BASIN, ORANGE COUNTY, CALIFORNIA

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Introduction

The objective of this investigative research is the development of a scientifically valid analytical procedure enabling plausible prediction of the areal extent and severity of the dynamic responses of young loosely consolidated near surface sediments to seismically induced ground shaking. Specifically, the area of investigation under this research project is that portion of the south coastal Los Angeles basin within Orange County, California. This area is covered by unconsolidated and loosely consolidated Quaternary age sediments of varying thickness. Except for the brief historical record, how these young near surface sediments will respond to ground shaking resulting from earthquakes is largely undertermined.

This technical report presents the results achieved during the second-year period of this continuing investigation. No conclusions and no estimates of seismic ground response are included in this interim report. The results of the second-year of investigation which are presented include map displays of ground water occurrence, the distribution and character of discriminated surficial sediments and thicknesses of Holocene and Quaternary age sediments. During this report period a 200 foot hole was drilled, logged and sampled through Holocene age sediments and into underlying Pleistocene age sediments. With the use of a side wall clamping three-directional geophone and a multichannel signal enhancement recording seismograph, downhole seismic wave traveltimes from a ground surface origin were measured. Analyses of these seismic wave traveltimes are presented.

Included as a supplement to this annual Technical Report is a Description of the Electronic Data Processing Capability Developed to Manage Stratigraphic Sample Data and Geotechnical Measurements. This data management program has been developed specifically to store, selectively retrieve and graphically display data collected for this investigation and other similar investigations which might be undertaken.

AREA OF INVESTIGATION

The area of this investigation is the southeastern portion of the Los Angeles basin within Orange County, California. This 900 km^2 area of coastal plain has undergone rapid urban growth during the last two decades and currently contains an estimated 1.5 million inhabitants. Urban growth and resident population are projected to increase.

Orange County will be subject to the impact of large and possibly damaging earthquakes which may occur along any of the several major active and potentially active faults both within or in the proximity of the county. Seismic wave impact of the study area can reasonably be expected

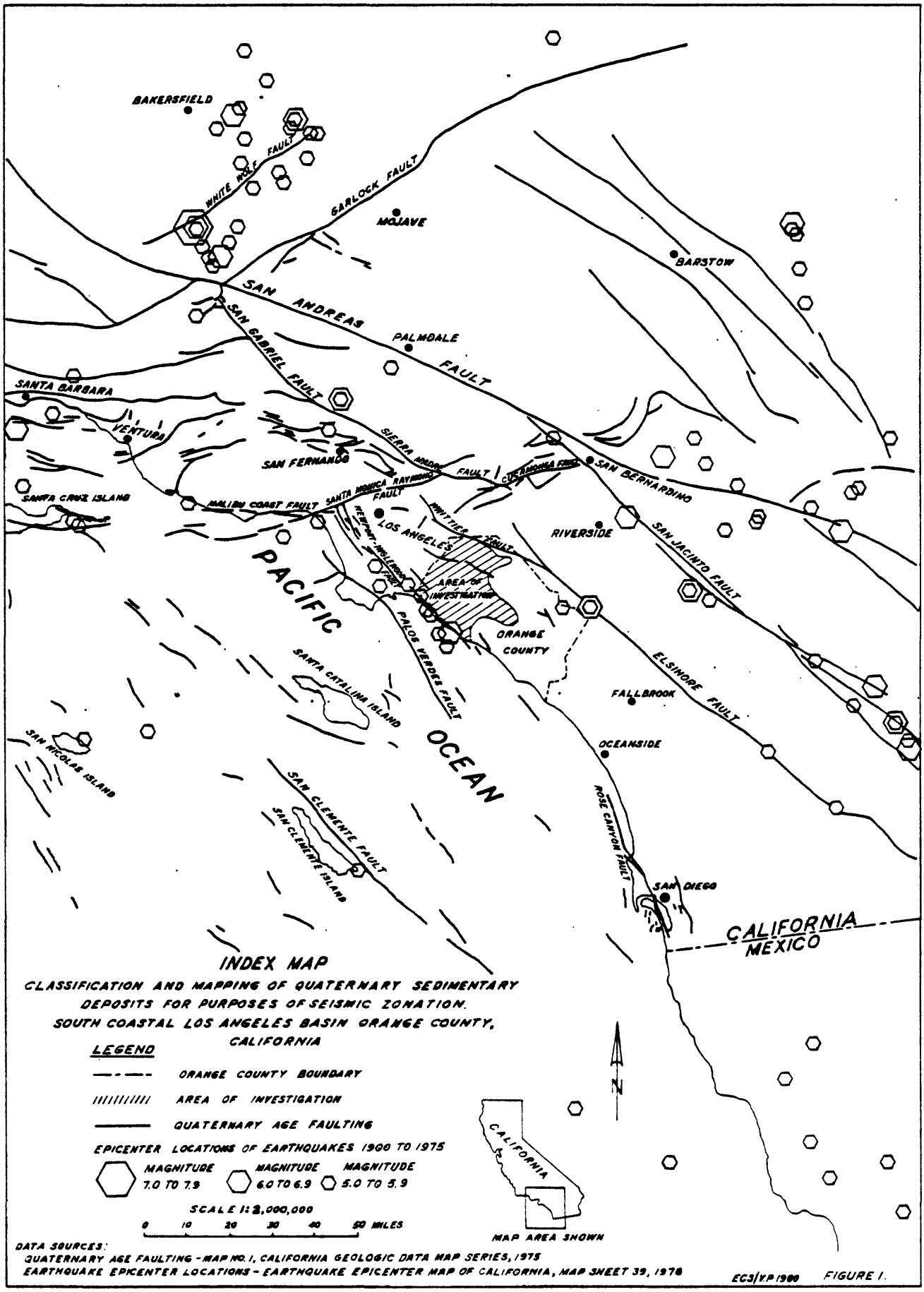
to occur from earthquakes originating from nearly every direction. Location of the area of this investigation in relation to Quaternary age faulting and epicenter locations of historic large earthquakes is shown on the the index map (figure 1) page.

The relatively flat-lying unconsolidated to loosely consolidated clastic sediments of Quaternary age which underlay the study area vary in thickness and have an indicated maximum thickness in excess of 4,000 feet near the center of the study area. How these sediments will respond to seismically induced ground shaking has not been previously analyzed on an areal basis. Estimation of the response of these sediments to seismic wave stimulation, and the areal distribution and severity of this response, is the purpose of this investigation.

RESEARCH PROJECT OBJECTIVES

The objective of this investigation is the development of a plausible and scientifically valid estimate of the type and relative severtiy of the dynamic response of young relatively unconsolidated near surface sediments to seismic wave impact. To achieve this objective a multi-year investigation has been undertaken in the Orange County study area.

In the first year of investigation available geotechnical data from engineering projects and other types of investigations which are applicable to a seismic ground response investigation were collected and spatially identified. Development of an electronic data processing program to manage data collected and to be collected for interpretation in this investigation was commenced.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VENTURA
SIERRA MADRE FAULT
SAN FERNANDO
SAN BERNARDINO
SANTA CRUZ ISLAND
MALIBU COAST FAULT
SANTA MONICA FAULT
RAYMOND FAULT
CUCAMONGA FAULT
LOS ANGELES
WHITTIER FAULT
RIVERSIDE
SAN JACINTO FAULT
NEWPORT-INGLEWOOD FAULT
AREA OF INVESTIGATION
PACIFIC
OCEAN
PALOS VERDES FAULT
ORANGE COUNTY
ELSINORE FAULT
SANTA CATALINA ISLAND
FALLBROOK
OCEANSIDE
SAN NICOLAS ISLAND
SAN CLEMENTE FAULT
SAN CLEMENTE ISLAND
ROSE CANYON FAULT
SAN DIEGO
CALIFORNIA
MEXICO
INDEX MAP
CLASSIFICATION AND MAPPING OF QUATERNARY SEDIMENTARY DEPOSITS FOR PURPOSES OF SEISMIC ZONATION. SOUTH COASTAL LOS ANGELES BASIN ORANGE COUNTY, CALIFORNIA
LEGEND
ORANGE COUNTY BOUNDARY
AREA OF INVESTIGATION
QUATERNARY AGE FAULTING
EPICENTER LOCATIONS OF EARTHQUAKES 1900 TO 1975
MAGNITUDE 7.0 TO 7.9
MAGNITUDE 6.0 TO 6.9
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DATA SOURCES:
QUATERNARY AGE FAULTING - MAP NO. 1, CALIFORNIA GEOLOGIC DATA MAP SERIES, 1975
EARTHQUAKE EPICENTER LOCATIONS - EARTHQUAKE EPICENTER MAP OF CALIFORNIA, MAP SHEET 39, 1978
ECJ/V.P. 1980

FIGURE 1.

During this second year of investigation, data collected were interpreted to define the geometry and character of discriminated near surface sediments and the proximity of ground water to the ground surface. Additional data, primarily seismic velocity data, were collected through project field work in order that these seismic P-wave and S-wave velocity data could be related to other measured physical parameters of near surface sediments. Development of an electronic data processing management program to store, selectively retrieve and graphically display stratigraphic sample data and geotechnical measurements was completed.

Program objectives to be achieved during the third year of this investigation, commencing September 19, 1980, without additional project drilling and down-hole seismic velocity measurements, include map displays of the susceptibility of near surface sediments to liquefaction and differential settlement, the locations of reported historic seismic intensities and graphical and/or tabular displays of preliminary correlations among selected measured seismic and geologic parameters.

RESULTS OF THE SECOND YEAR OF INVESTIGATION

Results and products of the second year of this continuing investigations are contained in this Annual Technical report and include:

A. Map displays of:

   1. The historically shallowest ground water occurrence below the ground surface, Map No. 1,

2. The character and distribution of Quaternary age surficial sediments, Map No. 2,
3. The thickness of Holocene age sediments, Map No. 3,
4. The thickness of Quaternary age sediments, Map No. 4,
5. The distribution and thickness of the Talbert and Bolsa aquifers of Holocene age, Map No. 5

B. Downhole measurement and analysis of P- and S-wave seismic traveltimes recorded in a well drilled in Mile Square Park, Orange County, California.

C. A description of the electronic data processing capability developed to manage stratigraphic sample data and geotechnical measurements.

ISOBATH MAP OF NEAR SURFACE WATER - MAP NO. 1

The isobath map of near surface water provides a conservative interpretation of the historically shallowest depth to free water or high interstitial water saturation within the study area. The data base used in the preparation of this map is provided by observations recorded in the logs of investigative borings undertaken for construction projects subsequent to the year 1955 and drillers logs of wells drilled for water development subsequent to the year 1920. The occurrence and location of historic surface water was determined from an examination of U.S. Geological Survey topographic maps dated 1901 and later, prior to the extensive incursions of cultural development. Locations of investigative borings and wells are indicated on the map to provide a perspective of the distribution of subsurface data which are the basis for the interpretation presented; however to facilitate map clarity data values and observation dates are not shown on the map. The interpretation presented is biased toward the shallowest reported observations of ground water, a conservative interpretation. This map is intended to be a regional and general evaluation of "worst possible" ground water conditions for seismic ground response considerations and is not intended for and should not be used for site evaluation or for other purposes.

Within the area of investigation displayed on this map, geologic factors which effect the depth to ground water include the spatial distribution and juxtaposition of near surface sediments having contrasting textures, the regional hydraulic gradient, and local topography. Shallow

ground water contours at the mouths of Santa Ana Canyon and Santiago Creek are the result of inflow and percolation of water into recent coarse clastic sediments in these areas (Plate 2). Similarly, the shallow ground water located along the western boundary of the County is related in part to water from the San Gabriel River distributary system (Plate 1). In the area west of the mouth of Santa Ana Canyon and beneath the City of Anaheim sparse historic ground water observations indicate a depth to ground water of 50 feet or more below the ground surface (Plate 1). Surface and near surface recent sediments in this area are generally unconsolidated permeable sandy coarse clastics as shown on Map No. 2. Holocene sediments are thick beneath this area as shown on Map No. 3 and the Holocene age Talbert aquifer is thickest beneath this area as shown on Map No. 5. Surface elevations in the area of the City of Anaheim are 100 to 150 feet above mean sea level and surface sediments are probably in hydraulic continuity with the Talbert aquifer system. These conditions result in a deep ground water level. To the west of the City of Anaheim beneath the cities of Buena Park and Los Alamitos (Plate 1), different conditions exist and shallow ground water is indicated. Surface and near surface sediments are finer grained and probably less permeable than the sediments beneath Anaheim. Surface elevations are less than 75 feet above sea level so that the hydraulic gradient is less than in the Anaheim area. The mesas immediately inland from the seacoast are composed of consolidated Pleistocene sediments and stand 50 to 100 feet above sea level. Ground water is 30 feet or more below the surface of these mesas (Plate 3). In the near sea level gaps between these mesas, ground water is 3 feet or less below the ground surface in fine grained Holocene sediments.

Inland from the coastline mesas and beneath the cities of Westminster, Fountain Valley, and Irvine, ground water is 5 feet or less below the ground surface in unconsolidated Holocene sediments (Plates 1, 3, 4). Early topographic maps indicate marshy areas inland from these mesas. The consolidated Pleistocene age sediments on and beneath the mesas apparently have lower water transmissibility than the Holocene sediments and water is impounded against the uplifted Pleistocene sediments of the mesas.

The subsurface depth of interstitial water saturation in near-surface sediments is a critical factor in the estimation of the effects, particularly the secondary effects of liquefaction and differential settlement, that may result from earthquake impact to these sediments. A determination of the historically shallowest occurrence of free ground water establishes the minimum depth limit for this factor. This is the purpose of this map interpretation.

SURFICIAL GEOLOGIC MAP OF QUATERNARY AGE SEDIMENTS - MAP NO. 2

This map characterizes in a general manner, surface materials according to predominate grain size, consolidation and, in part, depositional environment. Data base for the preparation of this map is largely taken from the U.S. Department of Agriculture, Soil Conservation Service, 1976 Interim Report, "Soil Conservation Service, 1976 Interim Report, "Soil Survey of Orange and Western Part of Riverside Counties." The 226 soil units contained in this soil survey were reduced to the eight general descriptive units displayed on this map. NOTE: A map unit 1 designation has not been used in order to enhance map display clarity.

Map units 2, 3 and 4 are predominately unconsolidated sand, silt and clay units, respectively, of Holocene age. These units occur in the central portion of the study area and in the topographic gaps between the coastal mesas, within the limits displayed on the Holocene thickness map, Map No. 3.

Map units 5, 6 and 7 are predominately consolidated sand, silt and clay units, respectively, of Pleistocene age. These units occur on the mesas near the coastline and generally at the northern, eastern and southeastern edges of the study area.

Units 8 and 9 are unconsolidated lagoonal-intertidal muds and beach deposits of sand and gravel, respectively, of Holocene age. These units occur along in proximity to the coastline.

This map will provide information contributary to the estimation of the susceptibility of near surface sediments to liquefaction and differential settlement during seismically induced ground shaking. The map may also provide some correlations between soil character and documented seismic intensities at sites within the study area.

THICKNESS MAP OF HOLOCENE AGE SEDIMENTS - MAP NO. 3

This map displays the interpreted total thickness of Holocene sediments within the area of this investigation. Thickness values used in preparing this map have largely been derived from lithologic descriptions contained in water well drillers logs and the descriptions of sediments penetrated in other types of investigative borings.

Basal Holocene sediments, in the area generally west of the present restricted course of the Santa Ana River and particularly from the mouth of Santa Ana Canyon southerly to the seacoast, are commonly characterized by conglomeratic gravelly coarse sands. This persistent occurrence of coarse clastic materials is largely the basis for the Holocene thickness interpretation shown on the map in this area. Holocene sediments easterly from the present coarse of the Santa Ana River are generally 20 feet, or less, in thickness and are mostly soils and sediments derived from underlying or nearby outcropping older sedimentary and volcanic rocks. Recognition of these older sediments in the lighologic descriptions of water wells and investigative borings is the basis for the Holocene thickness interpretation shown on the map in this area.

Holocene sediments are thickest on a trend, two to six miles wide, from the mouth of Santa Ana Canyon southerly to the seacoast between Newport and Huntington Mesas and, to a lesser degree of thickness, between Huntington and Bolsa Chica Mesas. This area of thick Holocene sediments is beneath the cities of Anaheim, Gardon Grove, Fountain Valley and, to a lesser degree of thickness, Westminster (plates 1, 2

and 3). This maximum thickness trend is generally coincident with the areal distribution of the Talbert and Bolsa aquifer systems displayed on Map No. 5. In the western portion of the study area (Plates 1 and 3) a thick lobe of Holocene sediment extends southerly to the seacoast between Bolsa Chica Mesa and Landing Hill; this area of thick Holocene sediment is beneath the city of Los Alamitos and the U.S. Naval Weapons Station.

The distribution, thickness and character of unconsolidated to loosely consolidated Holocene sediments will be a determining factor in estimating the primary and secondary effects of ground shaking resulting from earthquakes. This map will provide a basis for defining the character of Holocene sediments and ultimately in estimating ground surface response to seismic loading.

THICKNESS MAP OF QUATERNARY AGE SEDIMENTS - MAP NO. 4

This map displays the interpreted areal distribution and thickness of Quaternary Age sediments within the area of this investigation, that portion of the south coastal Los Angeles basin which is in Orange County. Areal extent of exposed Quaternary Age sediments has been taken from published information and is generalized. Subsurface interpretation of the thickness of Quaternary Age sediments is based largely on available information from deep wells drilled for oil and gas exploration and development. Geophysical logs from these wells were correlated to determine the base of Pleistocene sediments and the indicated thickness value from the ground surface to the correlated well depth was used to prepare this map display. Locations of these control wells are shown on the map. Well identities and data values used have been omitted in order to enhance map clarity. For purposes of this seismic ground response investigation thickness values used for this interpretation are gross vertical thickness values and should not be regarded as true stratigraphic thickness values.

Significant variation in the thickness of Quaternary age sediments occur within the study area and these thickness variations are displayed on the map. Quaternary Age sediments have a local maximum thickness of about 1,600 feet beneath the cities of La Habra and Brea (Plate 1). Sediments thin in a southerly direction to 600 feet beneath West Coyote and East Coyote Hills, Plate 1, and progressively thin in an easterly direction to onlap termination against older sediments on the flank of the Puente Hills east of the city of Yorba Linda and the western flank

of the Santa Ana Mountains east of the city of Orange (Plate 2). South of the Coyote Hills these sediments increase in thickness to about 4,000 feet beneath the city of Anaheim (Plates 1 and 2) and reach an interpreted maximum thickness of 4,200 feet beneath the cities of Stanton and Garden Grove (Plate 1). From this maximum thickness, sediments uniformly thin in a southeasterly direction, beneath the cities of Santa Ana, Tustin and Irvine and extend thinly beneath the Tustin Plain to onlap contact with older sediments and volcanic rocks (Plates 1, 2, 3, and 4). Southwesterly from this maximum thickness of 4,200 feet, Quaternary sediments thin uniformly toward the seacoast (Plate 3). Near the coastline, along the Newport Inglewood structural trend, Quaternary sediments thin to 500 feet beneath the city of Seal Beach, 800 feet beneath Sunset Beach, 600 feet beneath the city of Huntington Beach and terminate across Newport Mesa by onlap contact with older sediments. Extension of Quaternary age sediments beyond the limits of this investigation, offshore and within Los Angeles County is apparent but has not been defined by this study.

This map provides definition of the lateral distribution and thickness variation of young relatively unconsolidated sediments which will be subjected to earthquakes. Any estimation of the response of near-surface sediments to earthquake energy release, and the primary and secondary effects which may occur, must consider the thickness and configuration of the effected sediments.

TALBERT AND BOLSA AQUIFERS MAP - MAP NO. 5

This interpretive map displays the onshore limits of effective sand development of this aquifer system, structural contours on the top of these sand and gravel units and gross thickness values of these aquifers. The Talbert aquifer is the larger of these two units in length, thickness and areal extent. It extends from the mouth of Santa Ana Canyon to the seacoast between Huntington and Newport Mesas. In Santa Ana Canyon this sand and gravel unit is not readily distinguishable from overlying and underlying coarse clastic sediments of similar character. This aquifer has a width of about two miles and a thickness of about 20 feet at the mouth of Santa Ana Canyon. The aquifer expands rapidly to a width of about six miles and has a maximum gross thickness of about 90 feet beneath portions of the cities of Garden Grove, Westminster and Fountain Valley. The Talbert aquifer narrows south of the city of Fountain Valley to a width of about two miles and extends to the coastline through Santa Ana Gap, between Huntington and Newport Mesas. Maximum thickness of the Talbert aquifer at the coastline is 90 feet and seaward extension of the aquifer is indicated but has not been delineated for purposes of this investigation.

South of the city of Westminster and north of Huntington Mesa the aquifer system bifurcates and the smaller shorter Bolsa aquifer extends to the seacoast between Huntington Mesa and Bolsa Chica Mesa. The Bolsa aquifer is in hydraulic continuity with the upper youngest portion of the Talbert aquifer. Both aquifers appear to be similar in lithologic character and are of Holocene age. For the purposes of this

investigation these contiguous sand units have been mapped as a single discriminated lithologic unit of Holocene age.

This combined sand unit constitutes a significantly large segment of the total Holocene sediment thickness within the area of this investigation. Adequate considerations of the extent, thickness and depth below the surface of this discriminated sand unit will be essential in estimating the primary and secondary ground surface effects resulting from seismic impact of this area.

DOWNHOLE MEASUREMENT AND ANALYSIS OF P- AND S-WAVE TRAVELTIMES RECORDED IN A WELL DRILLED IN MILE SQUARE PARK, ORANGE COUNTY, CALIFORNIA

By

Charles R. Real and Roger W. Sherburne

CONTENTS

DOWNHOLE MEASUREMENT AND ANALYSIS OF P- AND S-WAVE TRAVELTIMES RECORDED IN A WELL DRILLED IN MILE SQUARE PARK, ORANGE COUNTY, CALIFORNIA

INTRODUCTION

The response of near surface geologic deposits to seismically induced shaking is a function of material properties including density, stiffness, fluid content, porosity. shear modulus, bulk modulus and layer geometry. Particular combinations of these properties can selectively amplify a narrow frequency band of ground motion while reducing motion at other frequencies. Measurement of P- and S-wave seismic velocities and laboratory determinations of bulk density provide a means of estimating the elastic properties of the near surface materials. Unfortunately, among the available geotechnical data collected thus far for the Orange County study area, the distribution of seismic velocities is least known. Consequently, a program task was developed to conduct downhole velocity surveys in existing boreholes, as well as to conduct shallow drilling and velocity measurements in selected areas to improve subsurface control of important physical parameters.

This section describes the method employed in the measurement of seismic velocity, the resolution attained, and the results from a survey of Mile Square Park borehole (MSP-1) drilled as part of this years investigations (Map 5, Plate 3). Velocity data obtained from five water investigation wells and two engineering borings surveyed this year are pending reduction and are not included in this report.

Because many of the available boreholes are surrounded by asphalt, it was desirable to determine what effect an asphalt layer introduces to a traveltime curve. The MSP-1 borehole afforded a unique opportunity to evaluate this affect because the hole was drilled adjacent to a parking lot so that at a 10 foot offset distance, the source could be generated on asphalt on one side of the borehole, or on soil on the other side. Results of this test are included in this section.

SEISMIC METHODS

Technique and Equipment

Downhole techniques were used for the determination of both P- and S-wave velocity, whereby a surface source generates a wave that travels downward through the substratum and is recorded by a sensor in a bore-

hole. The P-wave source consists simply of a vertical impact on the ground surface produced by a sledgehammer blow. The S-wave source energy is generated by the "plate and hammer" or "horizontal traction" method introduced by Japanese researchers (Kobayashi, 1959; Kudo and Shima, 1970) and successfully used to measure shear-wave traveltimes in California (Warrick et al., 1974; Power and Real, 1976). The technique consists of impacting the end of a traction plank held firmly to the ground by the weight of a vehicle, thereby generating a tangential stress wave that travels vertically into the ground. The method has been described in detail by Beeston and McEvilly (1977).

The borehole sensor used in this study was a Mark Products L-10-3D SWC sidewall clamping geophone (figure 2) incorporating three orthogonally mounted transducers, each having a natural frequency of 4.5 Hz. The geophone is held firmly in place by a bowspring clamp which triggers on bottom impact and will operate in boreholes ranging from 3.0 to 6.0 inches in diameter, when used with appropriate spacers. The tool is suspended in the borehole by a 5/16 inch steel stress cable having molded depth markers at 5 foot intervals to facilitate proper positioning. The transducer signals are carried to the recorder via a separate shielded multi-conductor cable.

The geophone signals are conditioned and recorded by a Geometrics ES-1210 12 channel digital signal enhancement seismograph (figure 3). Signal ennancement is achieved by the method of vertical stacking, whereby

the signals from several successive source impacts are summed and stored in memory. Coherent energy (the wave arrival) adds constructively and random energy (ground noise) tends to cancel. The method improves the signal to noise ratio by a factor of $\sqrt{n}$ for n impacts, thereby permitting wave interpretations to greater depths. Each geophone component is displayed on four channels which permits up to four independent gain settings and stacking combinations for each component. While conducting a measurement, all channels are displayed on a CRT screen for visual monitoring. When a satisfactory signal is attained, a permanent record is obtained from a non-photographic thermal printer.

Field Procedure

The routine field procedure begins with the lowering of a "fish-tool" to detect possible down hole obstructions and verify the depth of the borehole. This precautionary measure was taken primarily because many of the boreholes to be surveyed are pre-existing water investigation wells with perforated casing that can deform under stresses induced by soil creep over long periods. The "fish-tool" also served to test the firmness of the hole bottom; a firm hole bottom is required to activate the trigger foot at the base of the geophone to release the bowspring sidewall clamp. When the bottom material appears too soft, several small cobbles are dropped down the hole and compacted with the "fish-tool" to provide a firm surface for the trigger foot.

The routine source configuration for a downhole velocity survey is a five foot offset from the borehole for P-wave impacts, and a ten foot offset for the S-wave traction plank impact. When the geophone has reached bottom and the sidewall clamp has properly activated, P- and S-wave traveltime is measured and the tool is pulled to the nearest five foot marker. From this point to the surface, the borehole is logged at five foot intervals.

At each sample point, horizontal components H1 and H2 are recorded on channels one and five for a left side impact, and on channels two and six for a right side impact (as determined facing toward the front of the vehicle in the drivers seat), during measurement of S-wave traveltime. This arrangement conveniently places the right and left side impact traces for each horizontal component adjacent to one another for comparison. The P-wave source signal is recorded by horizontal component H2 on channel eight, and the vertical component on channel twelve. In most instances, the H2 component on channel eight records a distinct S-wave phase (probably SV) generated by the P-wave source impact. With the described recording channel configuration, a complete set of P- and S-wave traveltime measurements for a single sample point is contained on a single record. Figure 4 shows a typical permanent record obtained at a single sample point in the Mile Square Park borehole.

Data Reduction

When a suite of records has been obtained from a borehole survey, the usual procedure is to first prepare a tracing of the time histories such that at each sample point, the right and left side impacts are superposed. Because of the reversal of S-wave source polarity, the superposed traces should be 180 degrees out-of-phase. The S-wave onset is then identified at the first point of trace divergence. Using this technique, the arrival times are read independently from both horizontal components. The P-wave onset is read from the vertical component trace.

As shown in figure 4, the high resolution timing lines on a 500 ms record are 5 ms apart, consequently the arrival time is read to the nearest millisecond. A routine analysis of reading errors has shown that at this playback setting, the standard deviation of arrival time for replicate readings by different observers is about 0.8 ms for S-wave and 0.7 ms for P-waves. The F-test shows these values are not significantly different at the 95 percent confidence level. Thus, the reading uncertainty for P- and S-wave arrival time is slightly less than 1 ms. It will be shown that this is not sufficiently precise to determine the value of high velocities for thin beds.

Traveltime curves are constructed for each component and are used to identify bad picks on the seismic records. Finally, a traveltime curve is constructed from the average arrival time of the horizontal components at

each sample point corrected for vertical travel. Changes in slope are identified on this curve, and straight line segments are fit to the data by the method of least squares. The slopes of these lines are the average velocities of the corresponding depth intervals.

RESULTS FROM MILE SQUARE PARK BOREHOLE SURVEY

Source on Soil

Figure 5 shows the composite time histories for the S-waves, and the P-wave onset pulse for the source on soil at the MSP 1 borehole. The S-wave arrivals are less than 180 degrees out-of-phase from the surface to a depth of about 35 feet for the H1 component and about 15 feet for the H2 component. Beyond these depths, the S-wave arrivals appear to indeed be phase shifted about 180 degrees. Near the point of arrival, the travel-time for the P- and S-waves is noted on figure 5. Slight rotation of the borehole tool as it travels up the hole is evident by a decrease in amplitude on one component and a corresponding increase in amplitude on the other. The higher amplitude is recorded on the component more parallel to the source traction plank. For this reason, traveltime is computed from the average of the horizontal components.

During an initial test, an intermediate arrival between the P- and the S-wave was clearly recorded that seriously obscurred the onset of the

S-wave. This intermediate phase looked similar to the "tube waves" observed by Beeston and McEvilly (1977). We found this phase to be a wave traveling down the borehole geophone cables when under tension. When the tension was relieved, and the cables allowed to fall back into the borehole, this phase completely disappeared.

Traveltime-depth curves for P- and S-wave arrivals are shown in figure 6. For comparison, the lithologic log for MSP-1 is included with all traveltime curves and velocity profiles. Particularly noticeable on the P-wave curve is the constant traveltime over several depth intervals, which would correspond to infinite velocity. There is even a traveltime reversal at 60 feet. These features probably result from the limited resolution of the recordings at the 500 ms record length setting. The traveltime of a wave passing through a 5 foot layer having a velocity of 5000 ft/sec is only 1 ms. The reading error is estimated to be slightly less than 1 ms; however, considering propagation of errors for a traveltime difference increases this uncertainty by a factor of $\sqrt{2}$. Thus, the error in ΔT is over 1 ms. Higher velocities will produce indistinguishable traveltime differences over even greater depth intervals. Consequently, a higher resolution recording is necessary to resolve 5 foot beds having velocities greater than about 5000 ft/sec., and the P-wave traveltime curve in figure 6 has been interpreted at a lower resolution than desired.

The traveltime-depth curve for the S-waves appears much smoother because S-wave velocity is much lower corresponding to greater traveltime and a smaller percentage error. The velocity-depth profiles corresponding to both the P- and S-wave traveltime curves is shown in figure 7.

Traveltime breaks, for S-waves, appear to generally correspond to changes in lithology. The most pronounced break occurs at about 60 feet and corresponds to the transition between a predominantly sand-clay section above and a sand-gravel section below (the Talbert alquifer). S-wave traveltime seems to be sensitive to lithologic changes over intervals as small as 10 feet as shown by the increase in velocity between 35 and 40 feet corresponding to the absence of peat.

Source on Asphalt

Figure 8 shows composite time histories for S-waves with annotated arrival times for the source plank on asphalt. The S-wave arrivals appear to be inverted 180 degrees below about 30 feet on the H1 component and 10 feet on the H2 component. The traveltime curve of the average arrival times with interpreted breaks is shown in figure 9, and the corresponding velocity depth profile is shown in figure 10.

Comparison of Source on Soil with Source on Asphalt Results

There are considerable differences between the results from the soil and asphalt source. Comparison of figures 6 and 9 show that the difference in traveltime to common depth points is not constant between the two surveys. The average difference is about 3 ms sooner for the asphalt survey, with a standard deviation of about 2 ms. Correspondingly, slopes over common depth intervals differ by as much as 50%. The most dramatic difference occurs at a depth of about 100 feet. The resulting velocities are correspondingly different (figures 7 and 10). Traveltime breaks occur at different depths as well, so it can be concluded that for a high resolution interpretation, the soil and asphalt S-wave traveltimes widely differ.

For a more direct comparison, interval velocities were computed from the asphalt traveltime data over the same depth intervals as defined on the soil source survey (model 1). The results are shown in figures 11 and 12 and are summarized in table 1. In general, the greatest differences occur over small intervals and may result in part from a combination of instrumental and reading errors.

Figures 13-16 and table 2 summarize the results of a coarse interpretation (model 2) of the soil and asphalt source traveltime curves. It is

clear that the resulting interval velocities are in much closer agreement; within 5% over most of the intervals. The large excursion (31%) over the interval between 95 and 115 feet has not yet been explained.

DISCUSSION

There are three possible sources contributing to the discrepency between the traveltimes observed in a borehole from a source on soil and a source on asphalt: 1) reading errors, 2) instrumental errors, and 3) differences introduced by the asphalt layer. Reading errors have already been discussed, and are slightly greater than 1 ms for ΔT. Because of their random nature, reading errors would not be expected to cause a constant difference in slope over several sample points.

Instrumental errors can be either random or systematic; however, the most probable instrumental error is in defining the origin time, caused by a random variation in response of the impact trigger. A solid state hammer switch is used, and was observed to even pre-trigger by a sudden jerk. The trigger response is not instantaneous, and undoubtably has some statistical variation in response time that depends on the character of the impact between the hammer and the plank. The magnitude of this variation is not yet known, but is probably less than 1 ms. This variation is reduced, however, by signal enhancement whereby a mean origin time of several successive impacts is effectively determined. The errors introduced by the trigger response can be eliminated by placement of a geophone

on the surface, differencing its arrival time from the borehole arrival time (thereby eliminating the variation in trigger time common to both), and then correcting to true origin time by applying a static correction determined by the average of the ground geophone arrival times for the entire survey as discussed by Gibbs and others (1980). Like reading errors, the random nature of trigger response would probably not cause a constant difference in slope over several sample points.

The presence of an asphalt layer can introduce systematic changes in traveltime. Asphalt has a higher P- and S-wave velocities than the loose near surface soil. Usually, in the preparation for paving, the ground is compacted, and a layer of gravel placed between the ground and the asphalt. This, in effect, can produce a higher velocity surface layer a few feet in thickness. Seismic waves produced on the surface of the asphalt will travel predominatly horizontally along this layer and be refracted into the ground at the critical angle defined by the inverse sine of the ratio of the higher velocity surface layer to the velocity of the substratum (figure 17). As can be seen by the three raypaths shown in figure 17, the distance traveled through the higher velocity surface layer is progressively snorter for measurements at greater depths in the borehole. This effect systematically increases traveltime with depth beyond the rate determined by the ambient velocity. The resulting effect is to decrease the slope of the traveltime curve, thereby underestimating seismic velocity when the source is on asphalt. The effect diminshes with depth, so

that the traveltime curves for soil and asphalt approach one another. Figure 18 confirms this is indeed the case.

RECOMMENDATIONS

From this study, a number of conclusions can be drawn. It appears that the resolution of the downhole technique using the equipment and procedures as described herein is limited to estimating the P- and S-wave velocities to within 5% of beds no thinner than about 15-20 feet. The resolution and reliability of velocity measurements can be improved by 1) reducing reading errors, 2) using a higher resolution recording (possible with the existing equipment), and 3) improve the accuracy of borehole measurements through asphalt by developing a correction procedure for its effect. Also noteworthy is that the entire data reduction procedure is slow and tedious and, if a production mode of operation were to be implemented, steps would have to be taken to expedite the process. The following are some specific recommendations directed toward meeting these needs.

1. Future downhole surveys should attempt a higher recording resolution. A 100 ms record has a 1 ms interval between the high resolution timing lines permitting reading to the nearest 0.1 ms. The signal would be stretched, however, and the degree of resolution will be limited by how impulsive the arrival is. This should be tested during the next scheduled survey.

2 A surface geophone arrival time should be used to difference from the borehole arrival times to eliminate origin time scatter caused by any random variations in response of the trigger.

3. The P- and S-wave velocity of the asphalt (and compacted) layer should be determined at each site, and a procedure developed to correct traveltimes for its effect.

4. A digital field tape recorder should be acquired, and a procedure developed for interactive picking and analysis of borehole velocity records. This process would permit more accurate reading of arrival time, and greatly speed up the entire data reduction process for a borehole velocity survey.

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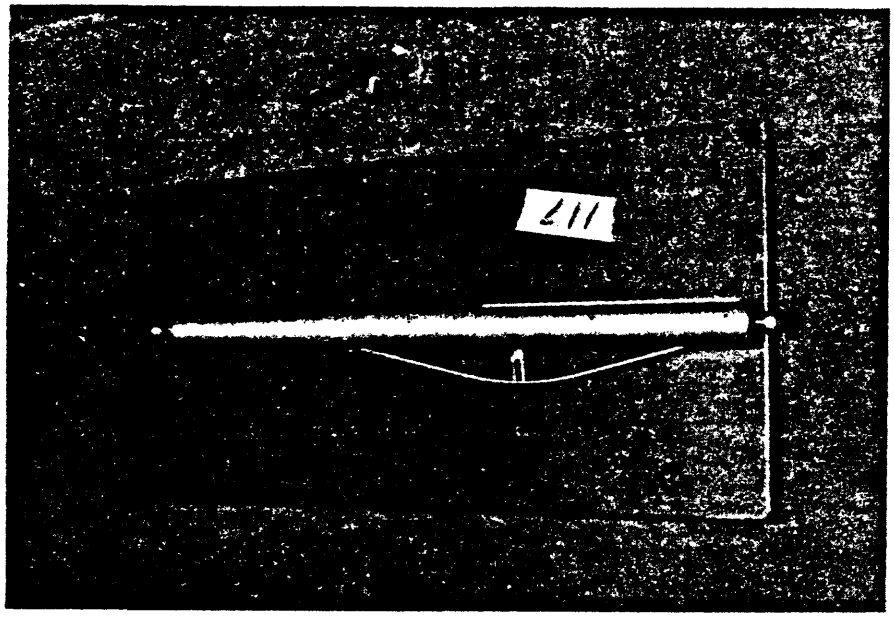
TABLES

Table 1. Comparison of S-wave velocities measured from a source on soil and on asphalt; fine interpretation (Model 1).

DEPTH TOP (FEET)	DEPTH BOTTOM (FEET)	SOIL VS (FT/SEC)	ASPHALT VS (FT/SEC)	Δ VS (FT/SEC)	% DIFF	LAYER THICKNESS (FEET)
0	5	621	621	0	0	5
5	20	379	432	53	14	15
20	35	589	598	9	2	15
35	45	751	704	-47	-6	10
45	60	645	601	-44	-7	15
60	85	959	970	11	1	25
85	100	876	1108	232	26	15
100	105	2426	991	-1435	-59	5
105	125	1179	1223	44	4	20
125	135	2190	1242	-948	-43	10
135	150	1243	1362	119	10	15
150	165	1402	1327	-75	5	15
165	170	998	1658	660	66	5
170	180	1808	1108	-700	-39	10
180	190	1246	1246	0	0	10

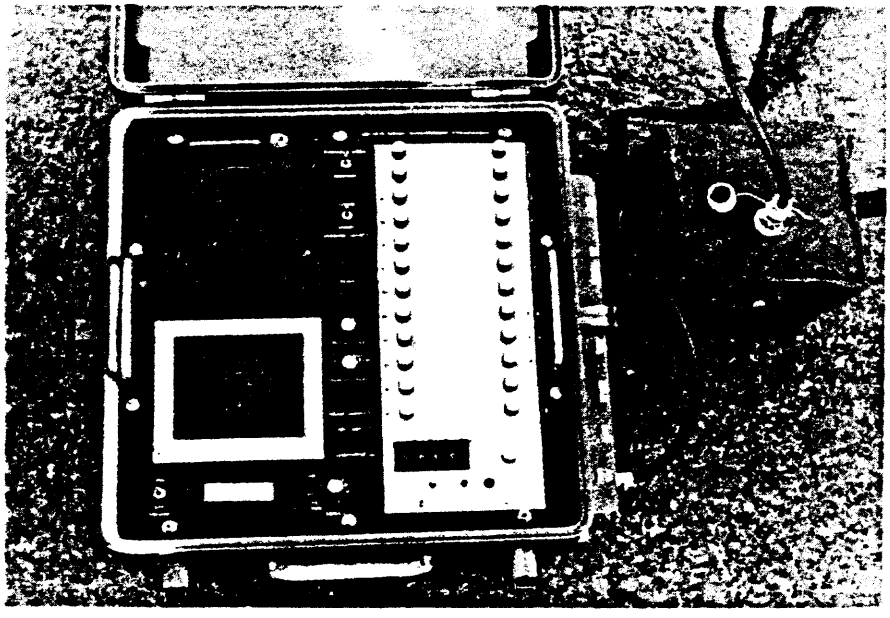
TABLE 2. Comparison of S-wave velocities measured from a source on soil and on asphalt; coarse interpretation (Model 2).

DEPTH TOP (FEET)	DEPTH BOTTOM (FEET)	SOIL VS (FT/SEC)	ASPHALT VS (FT/SEC)	VS (FT/SEC)	% DIFF	LAYER THICKNESS (FEET)
0	5	621	621	0	0	5
5	20	379	432	53	14.0	15
20	60	654	625	-29	-5.0	40
60	95	971	973	2	0.2	35
95	115	1351	1032	-319	-31.0	20
115	190	893	892	-1	-0.1	75



Sidewall clamping triaxial borehole geophone.

FIG. 2



Twelve channel signal enhancement seismograph.

FIG. 3

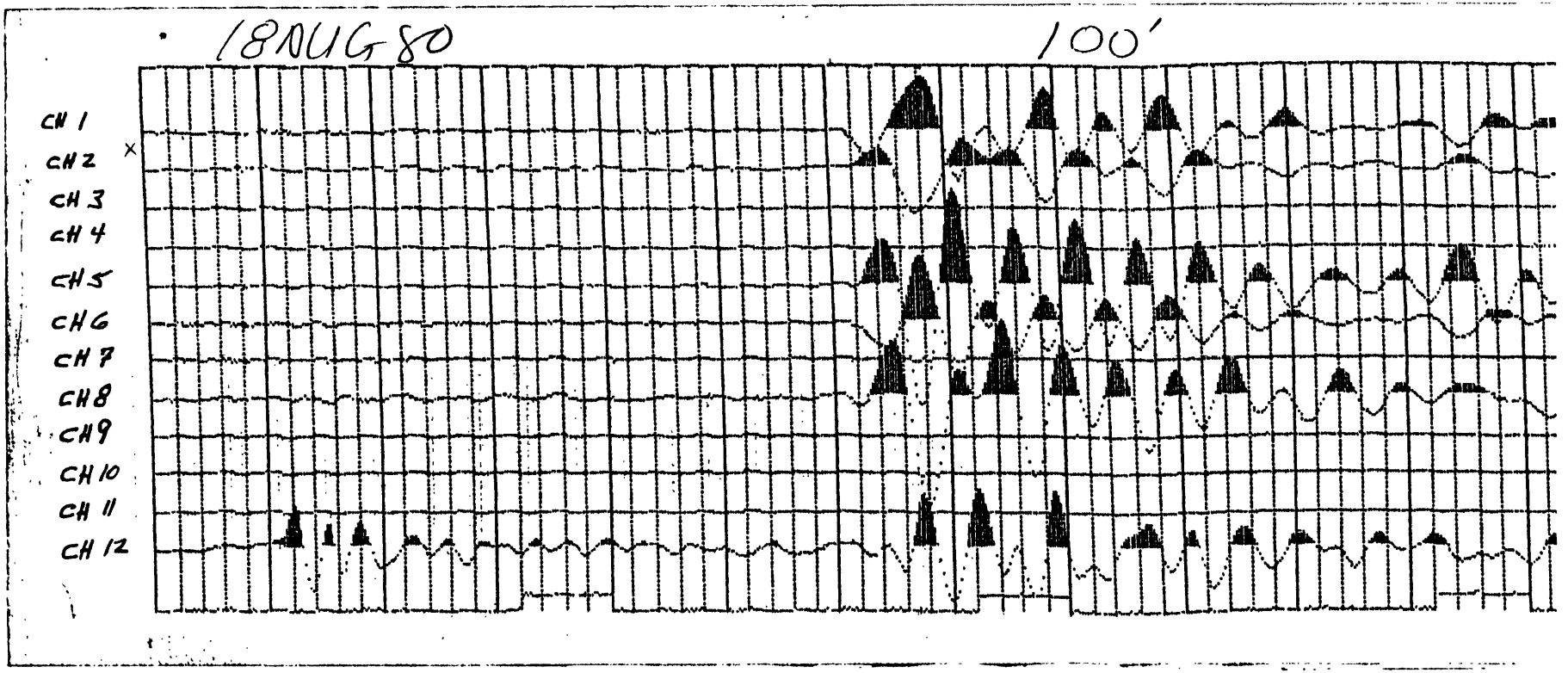


Figure 4. Typical composite record showing recorded source signals from normal and reversed horizontal S-wave impacts, and a vertical P-wave impact.

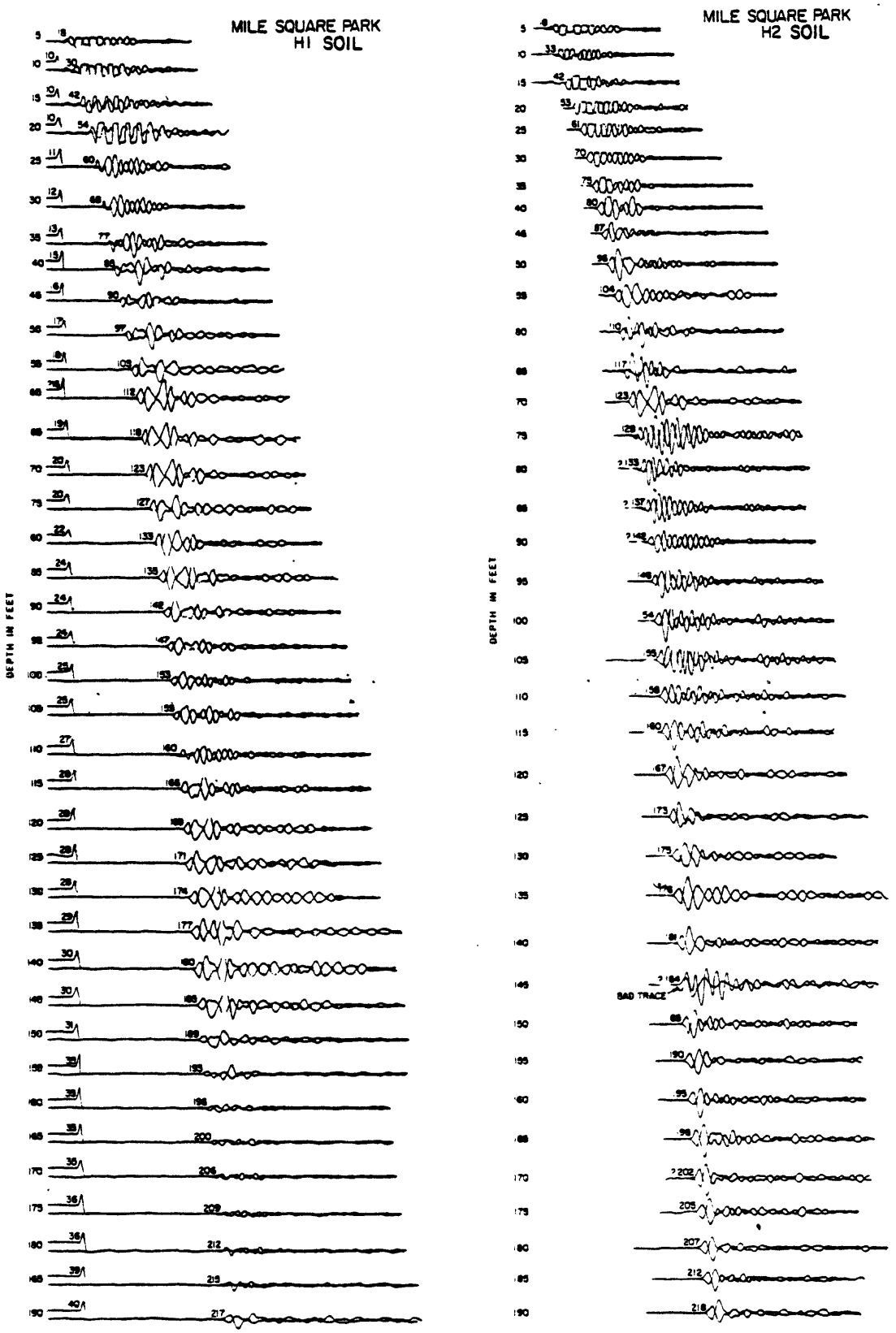


FIG. 5

Composite time histories of normal and reversed S-wave source polarity on soil at sample depths in the borehole as registered by both horizontal components. P-wave onset pulse as recorded by the vertical component is also shown.

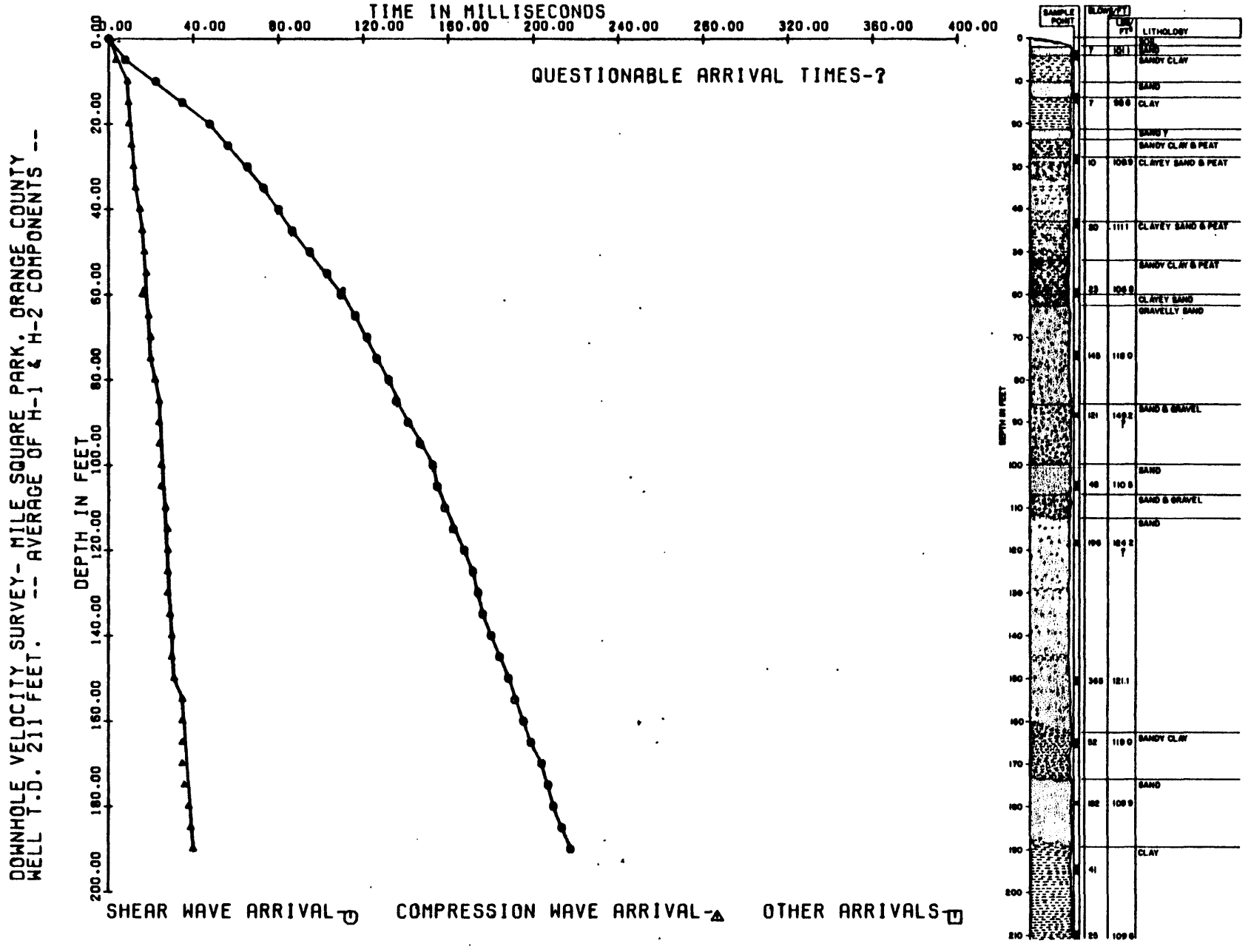
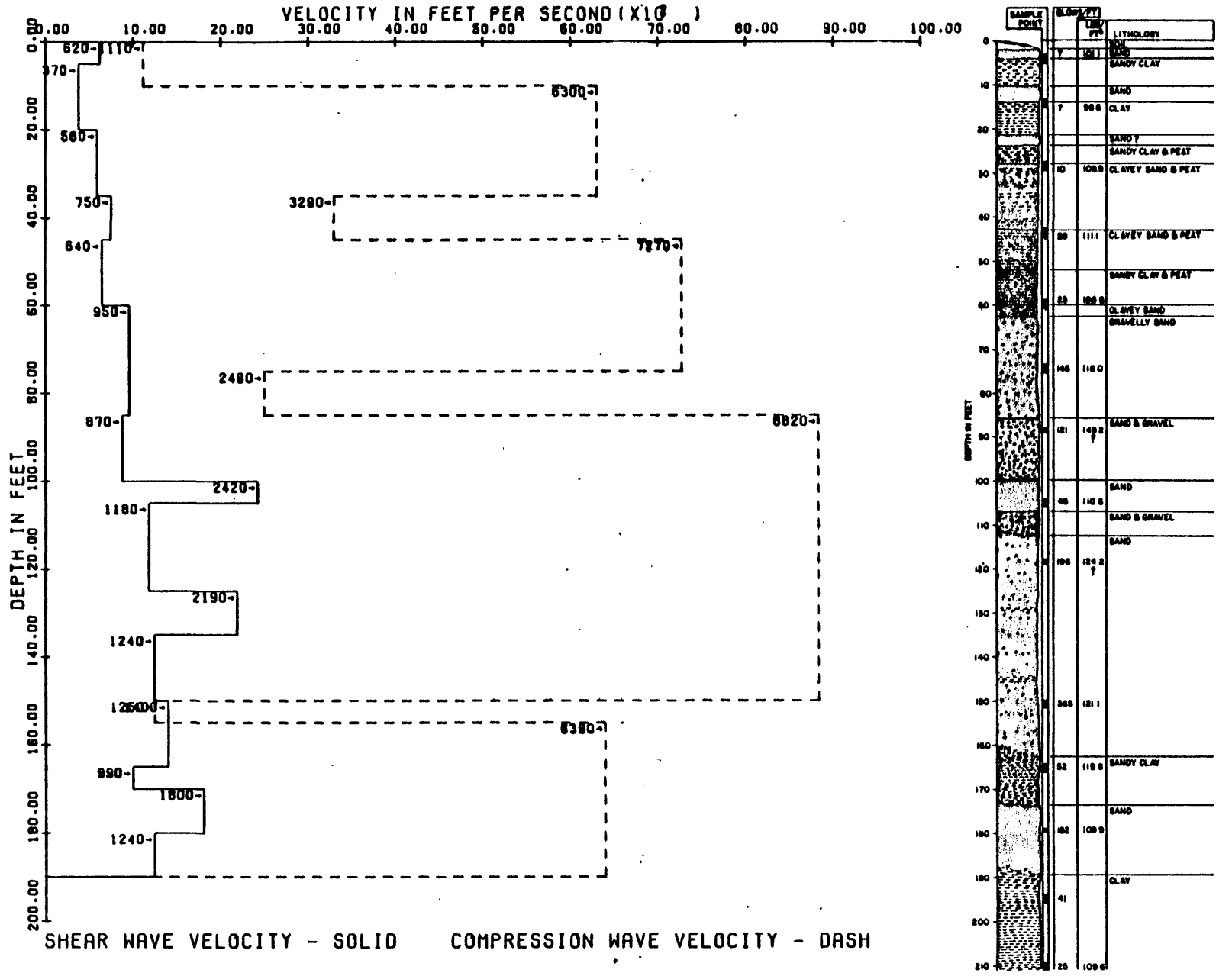


FIG. 6

Traveltime-depth curve for S-waves generated on asphalt interpreted over the same intervals as identified on the soil source traveltime curve on Fig. 6 (Model 1).



P- and S-wave interval velocity-depth profiles computed from the finely interpreted traveltime breaks shown on Fig. 6.

FIG. 7

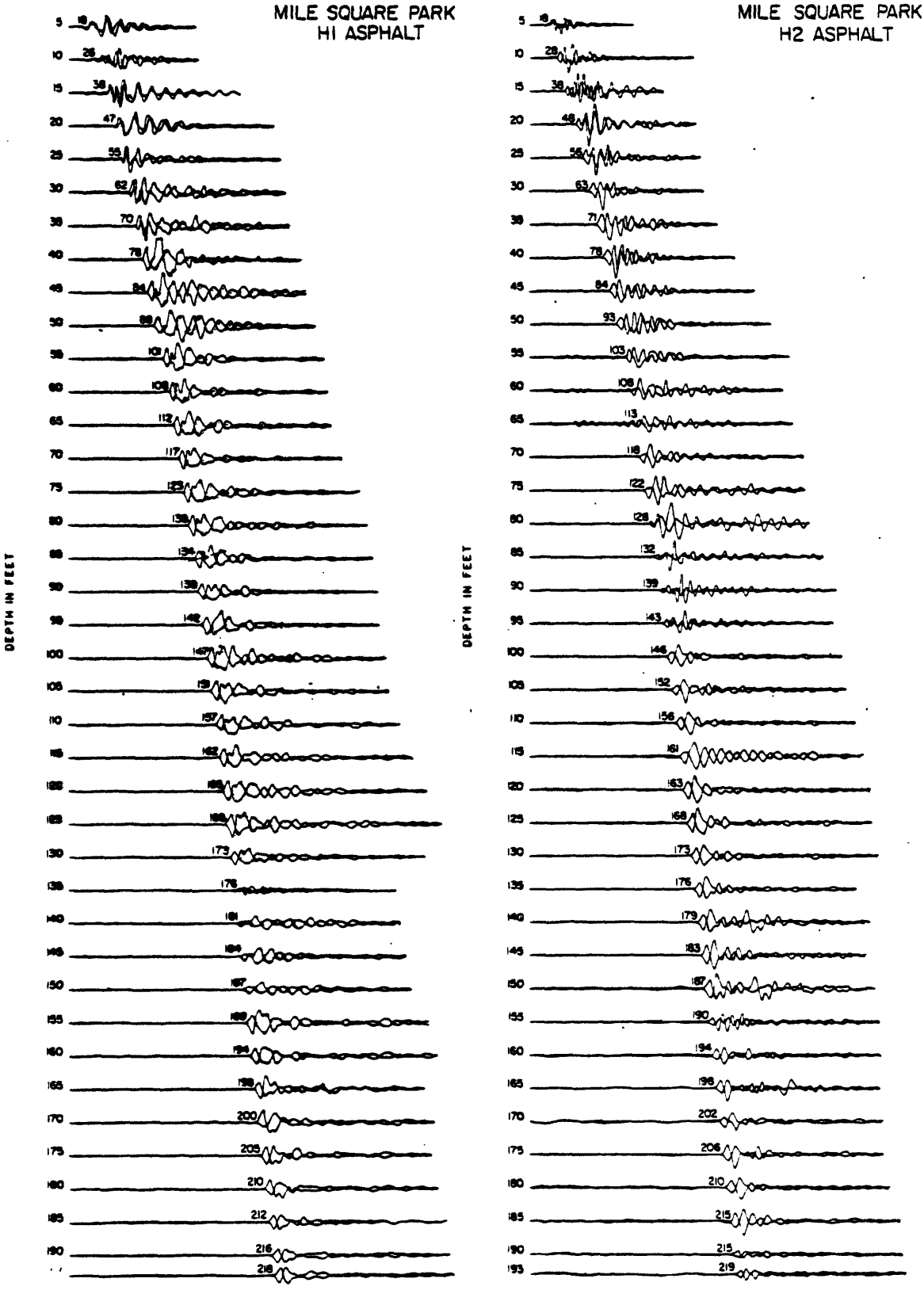


FIG. 8

Composite time histories of normal and reversed S-wave source polarity on asphalt at sample depths in the borehole as registered by both horizontal components.

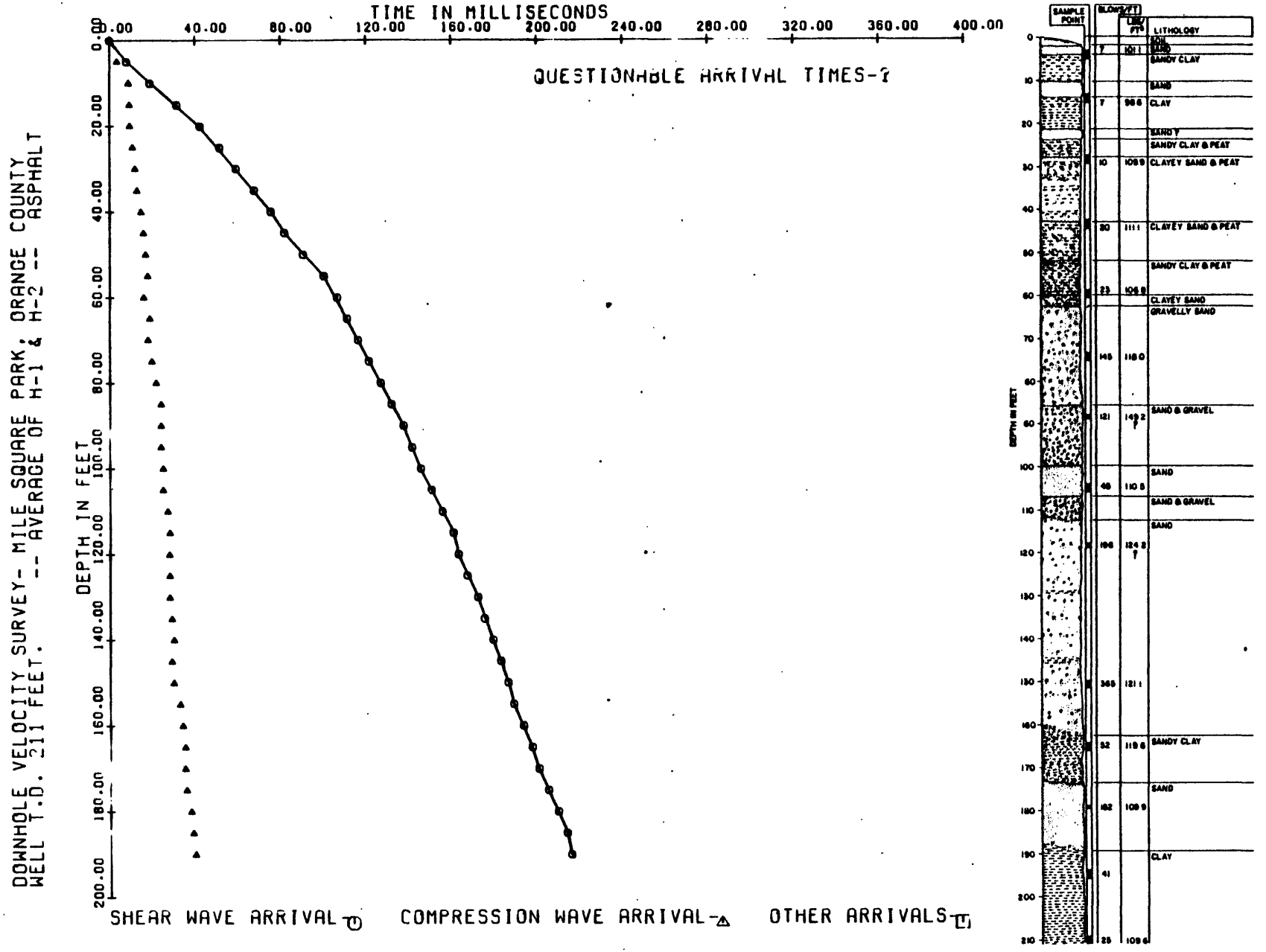
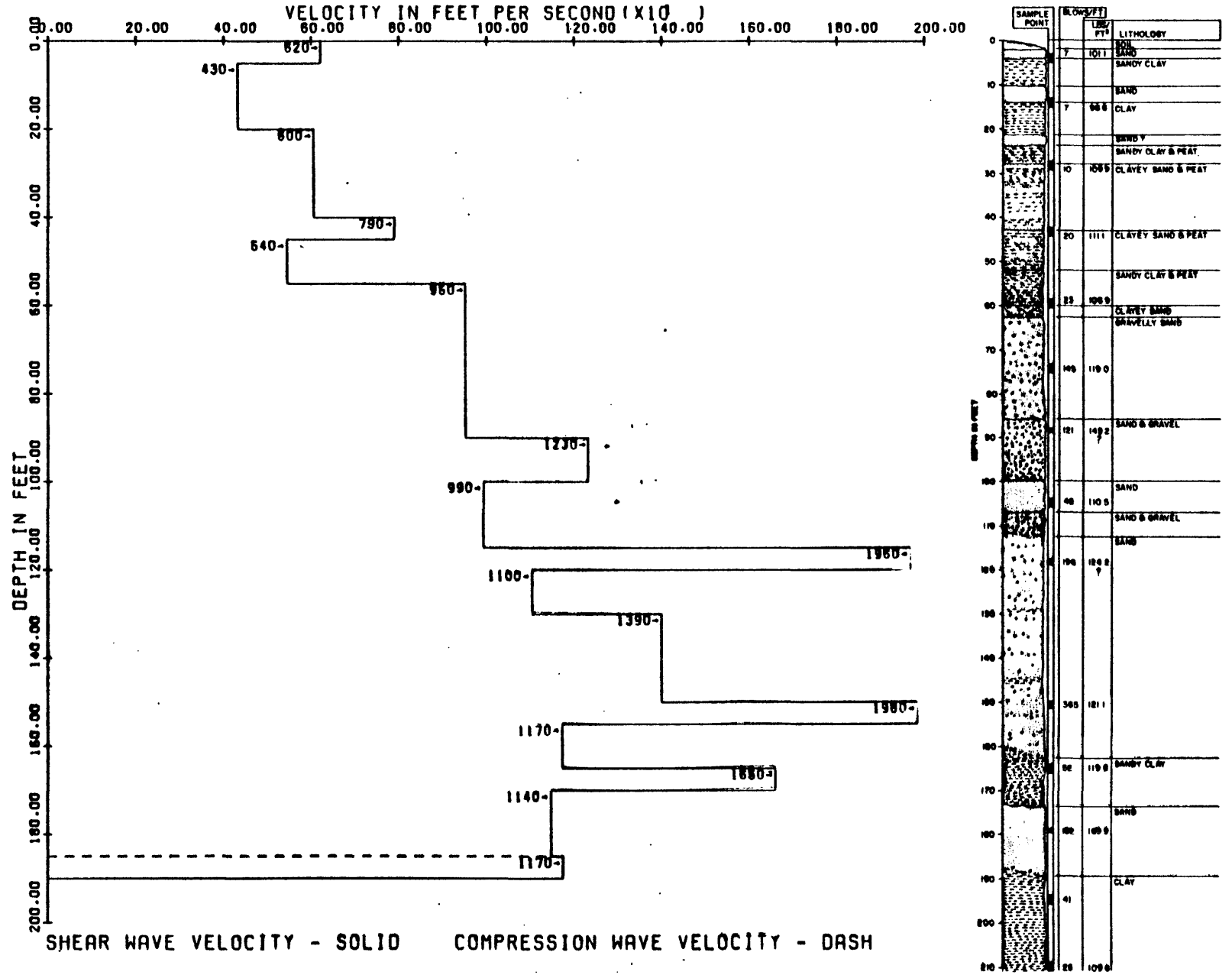
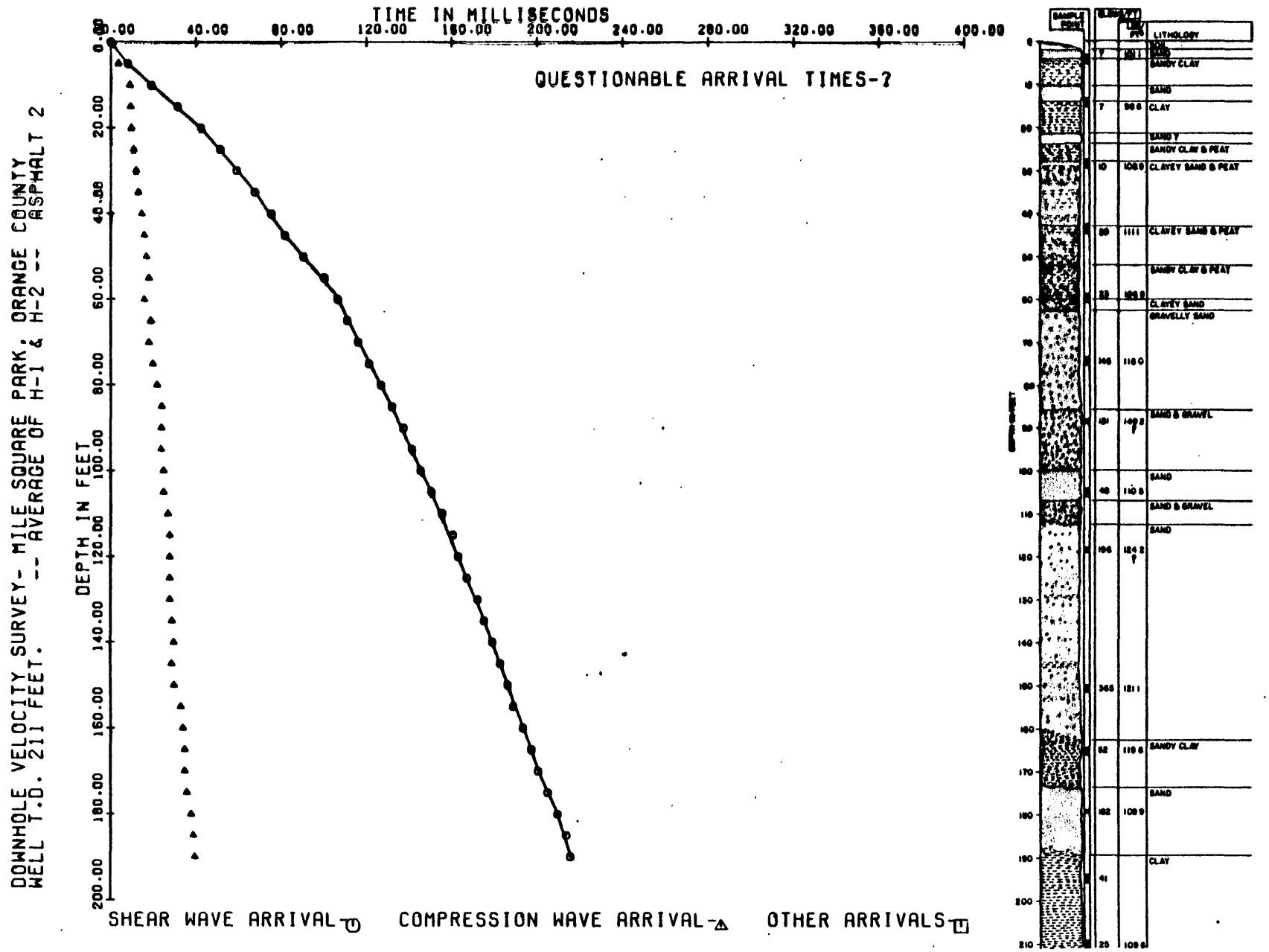


FIG. 9

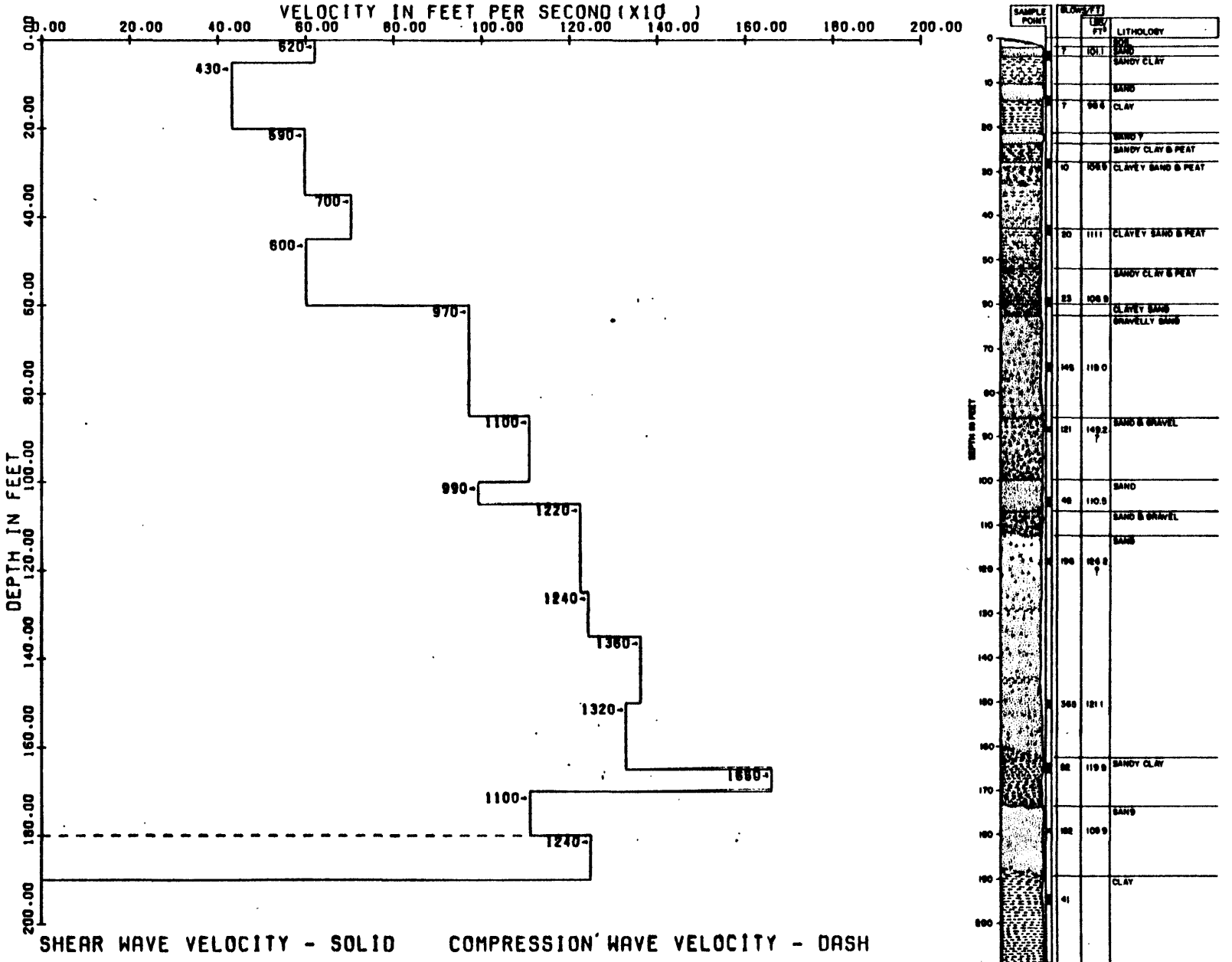
Traveltime-depth curve for S-waves generated on asphalt showing detailed interpretation. P-wave traveltime curve is for soil source.



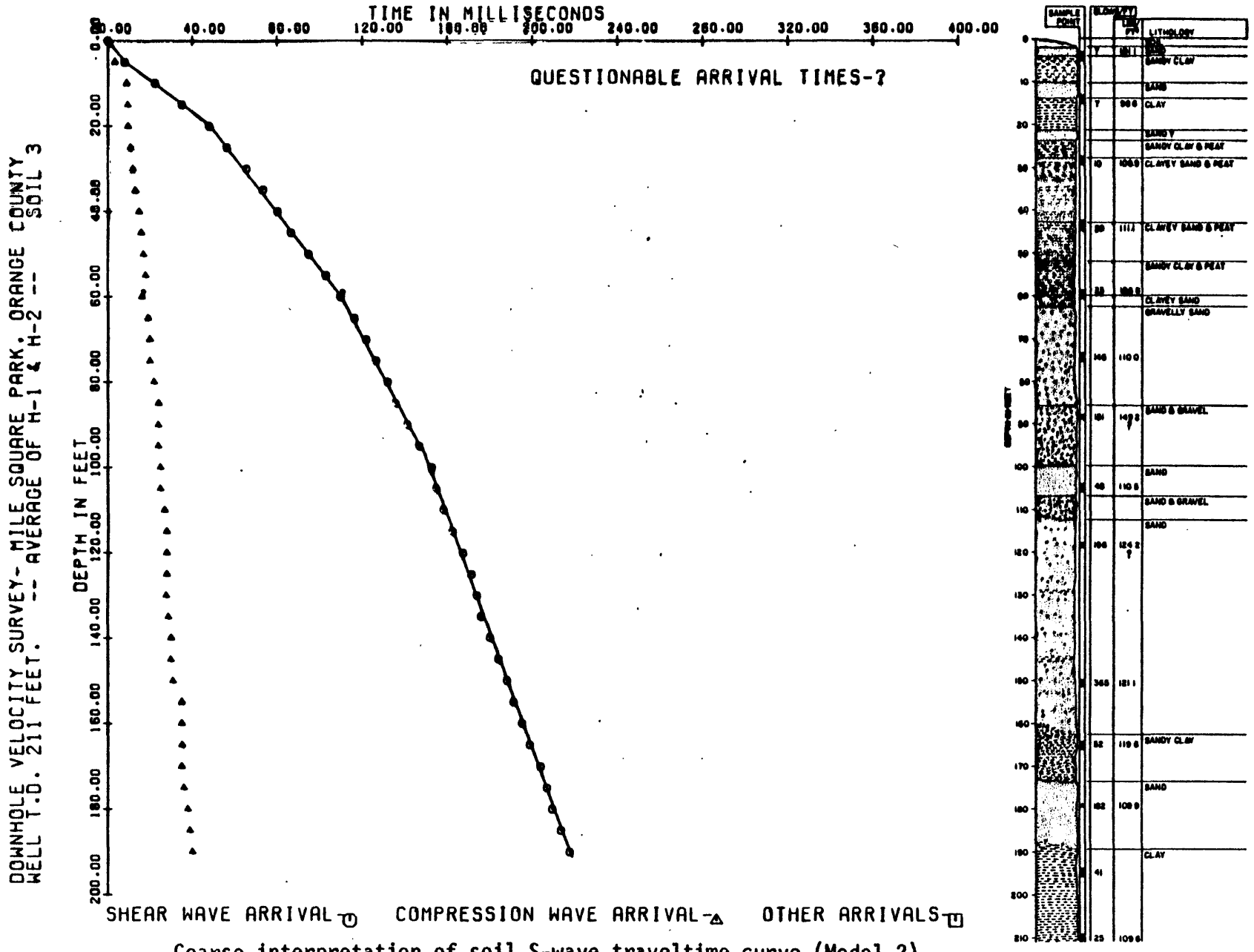
S-wave interval velocity-depth profile computed from the interpreted traveltime breaks shown on Fig. 9. Source on



Traveltime-depth curve for S-waves generated on asphalt interpreted over the same intervals as identified on the soil source traveltime curve on Fig. 6 (Model 1). FIG.11

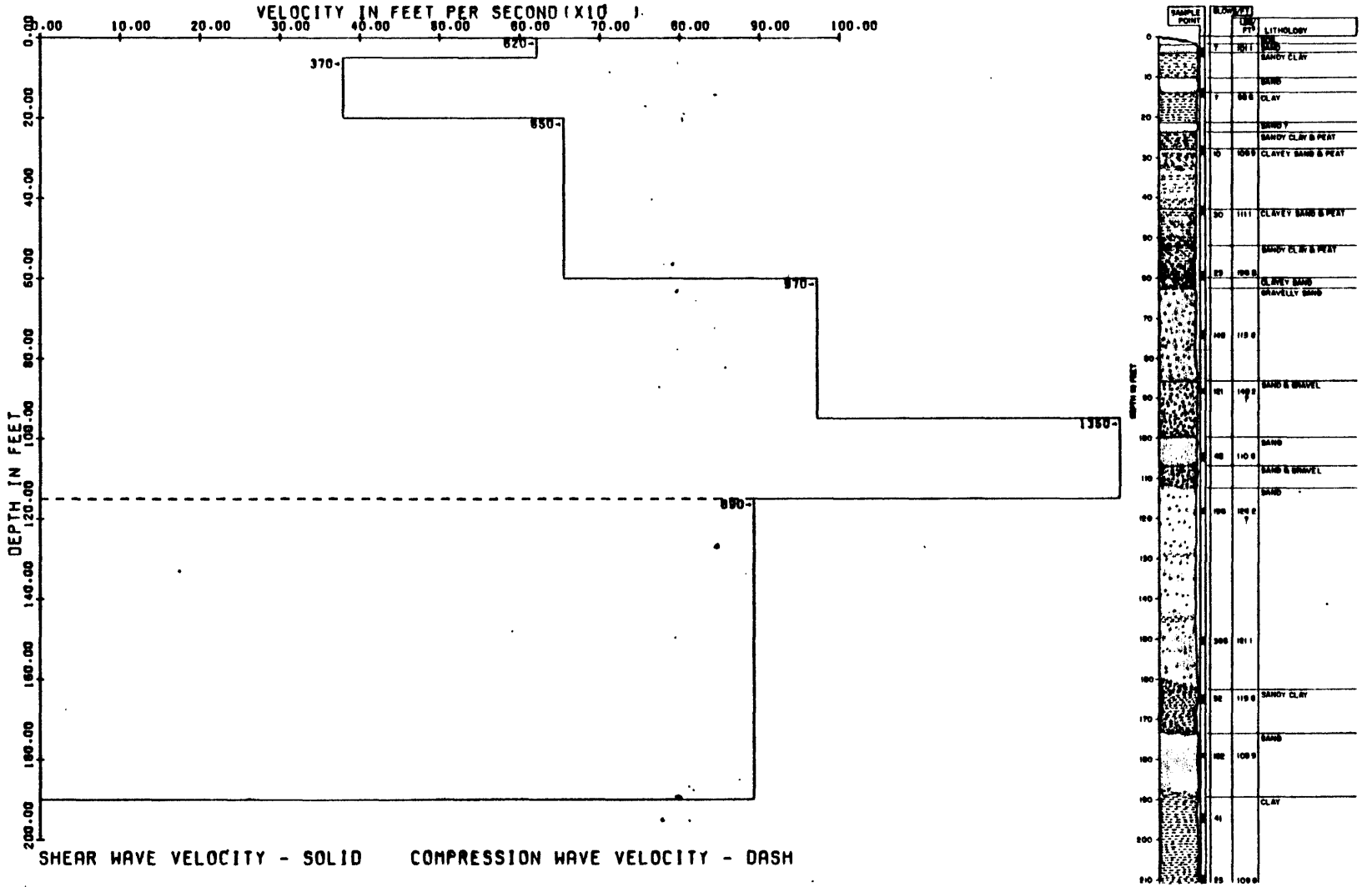


S-wave interval velocity-depth profile computed from the interpreted traveltime breaks shown on Fig. 11 (Model 1).



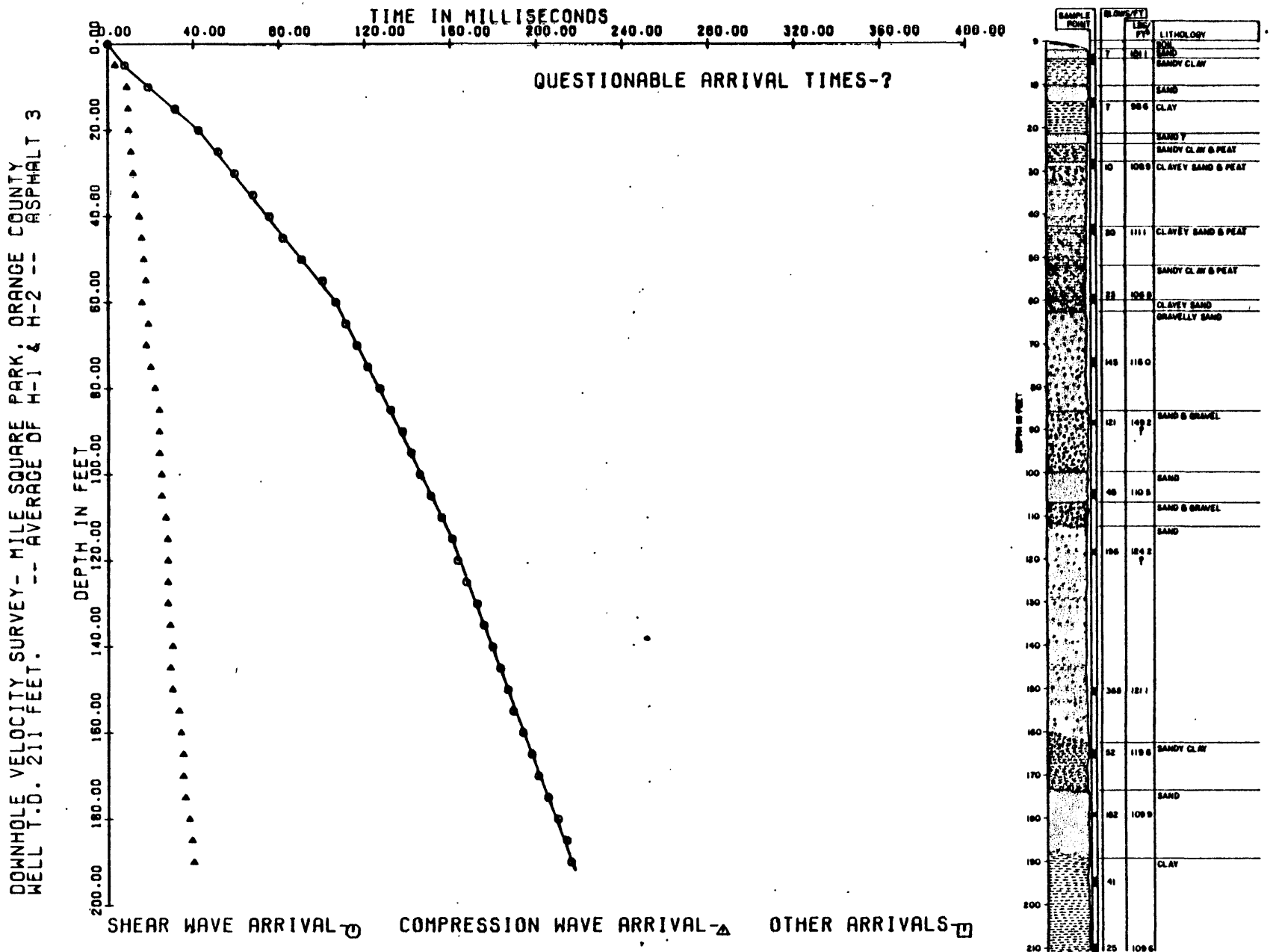
Coarse interpretation of soil S-wave traveltime curve (Model 2).

FIG.13



S-wave interval velocities from coarse interpretation of soil traveltime curve (Model 2).

FIG. 14



Coarse interpretation of asphalt S-wave traveltime curve (Model 2).

FIG.15

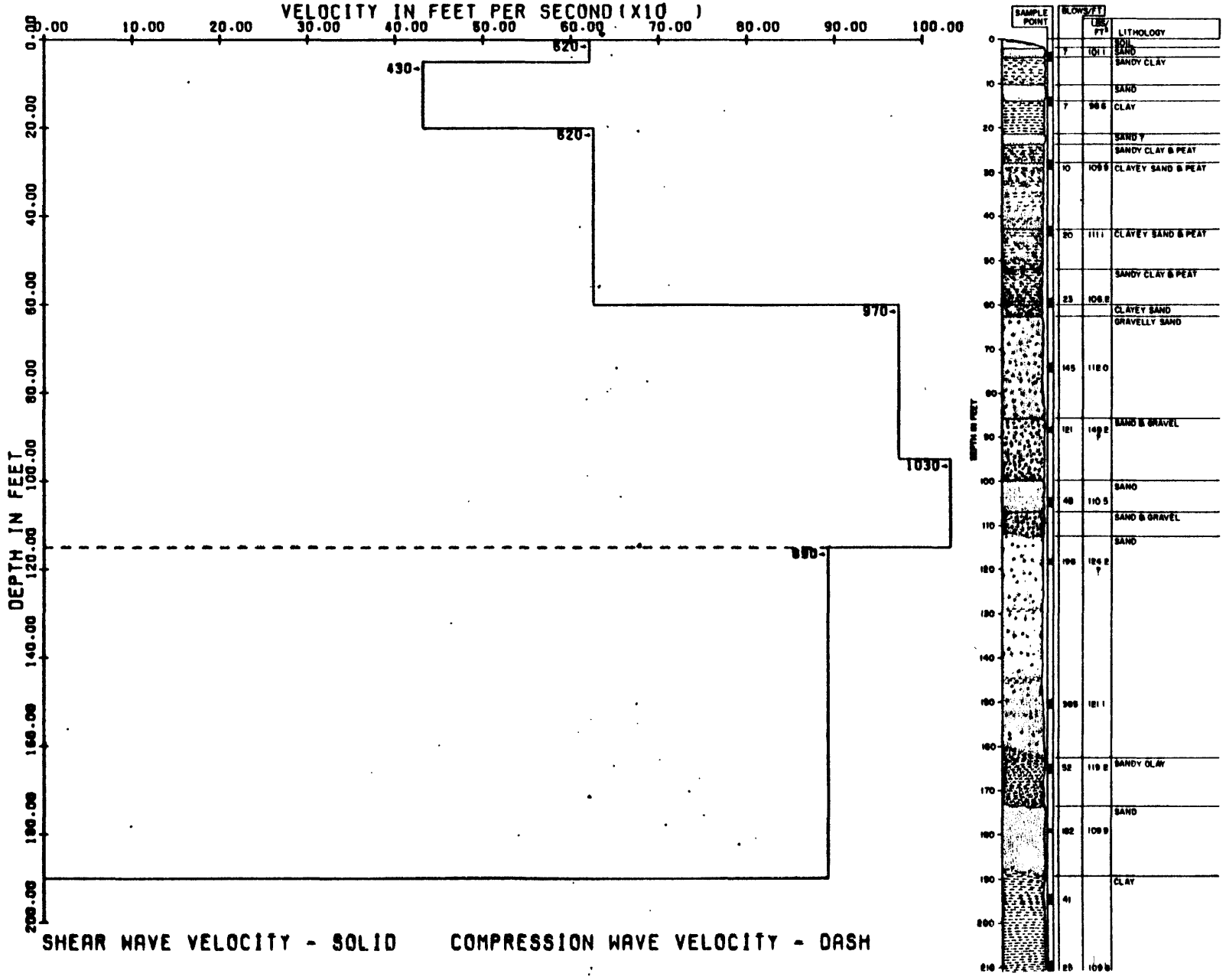
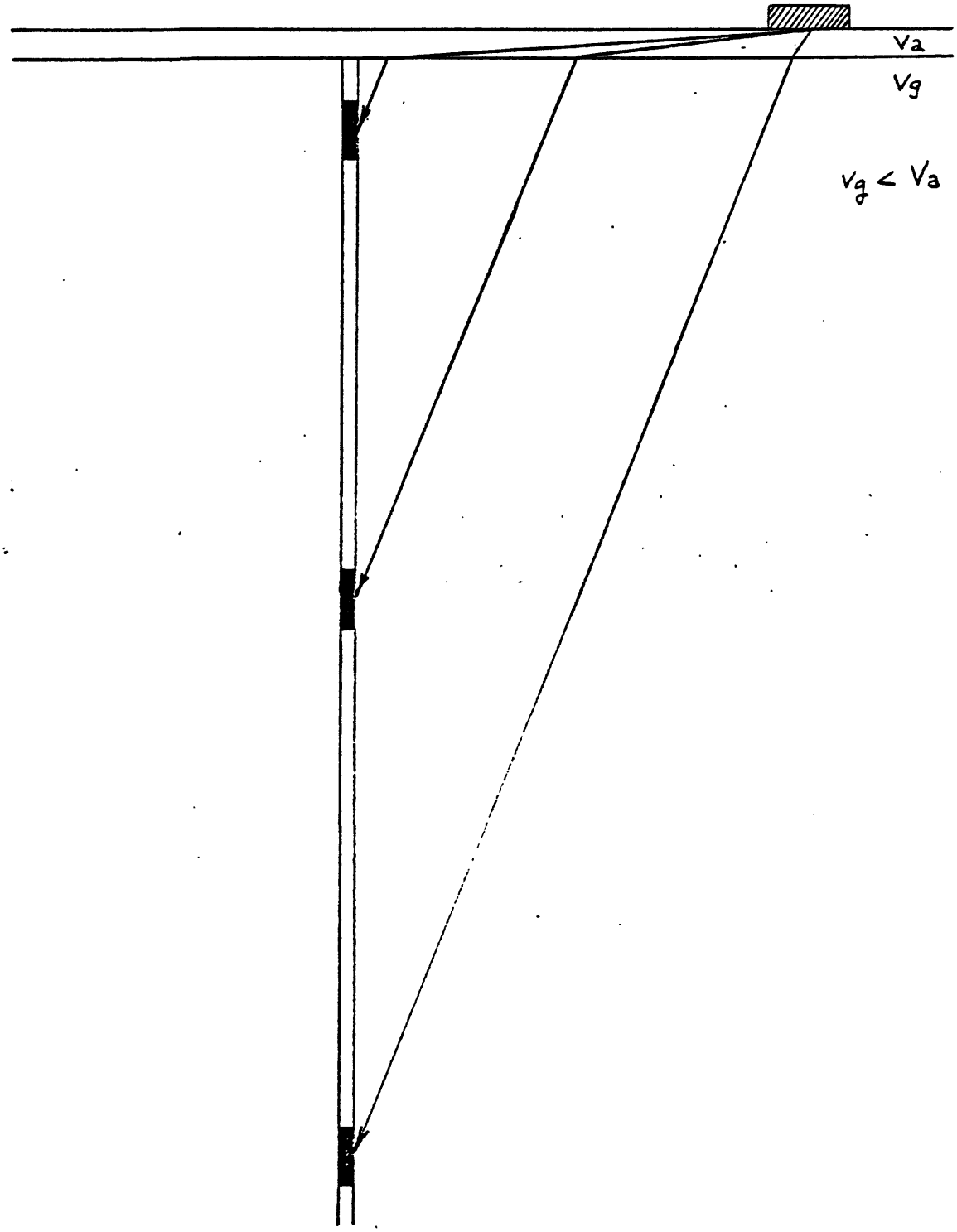
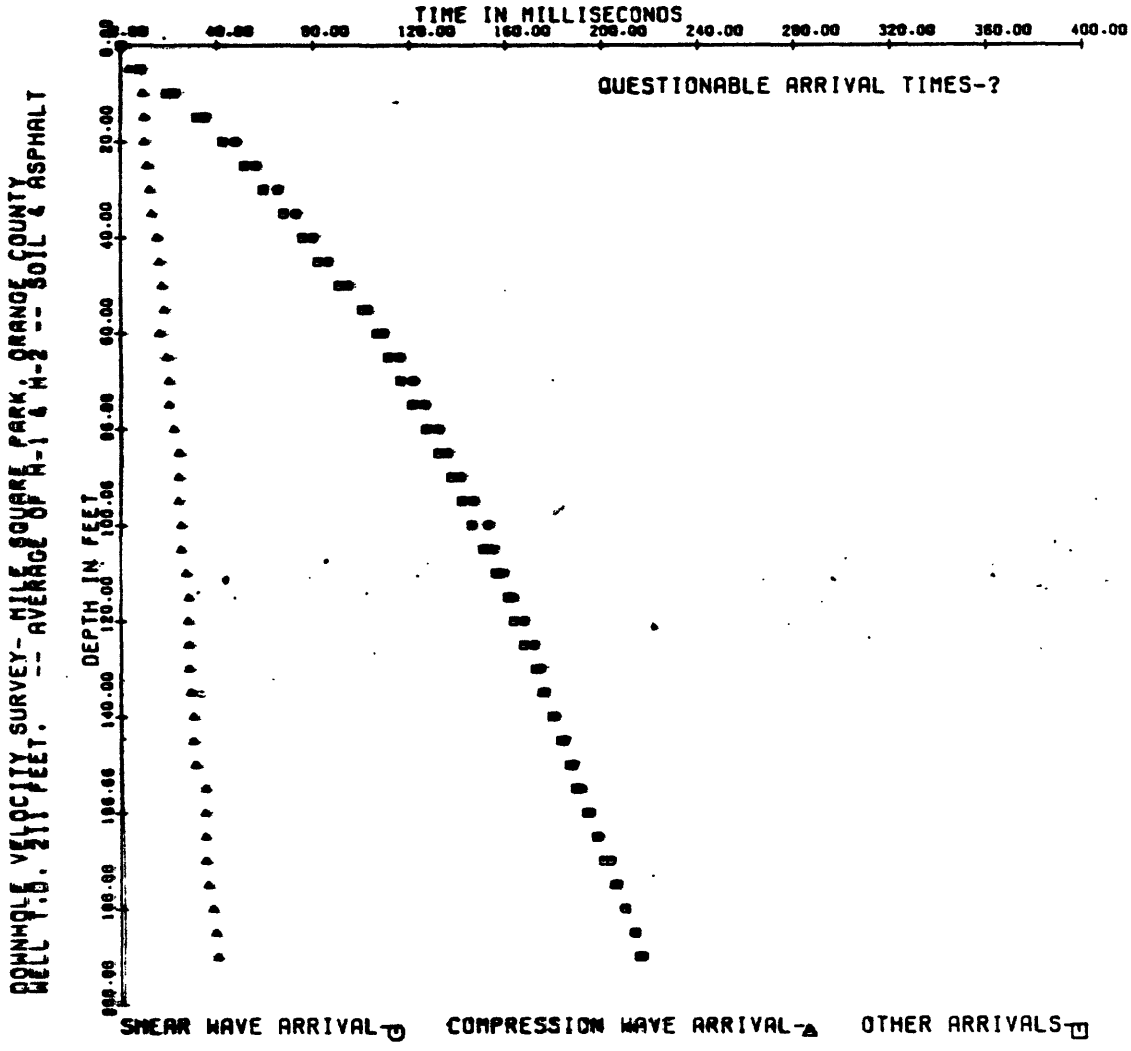


FIG. 16

S-wave interval velocities from coarse interpretation of asphalt traveltime curve (Model 2).

Figure 17. Raypath for downhole velocity survey with source plank on asphalt.





Comparison of traveltime curves for S-waves generated on soil and asphalt.

FIG.18

APPENDIX A

INPUT ARRIVAL TIMES, CORRECTED TRAVELTIMES, AND COMPUTED INTERVAL VELOCITIES

SOIL - FINE INTERPRETATION MODEL I

FIGURES 6 AND 7

* * INPUT DATA * *

S - W A V E					P - W A V E	
DEPTH (FT)	HORIZONTAL OFFSET (FT)	ONSET ARRIVAL TIME (MS)	LATER ARRIVAL TIME (MS)		HORIZONTAL OFFSET (FT)	ONSET ARRIVAL TIME (MS)
5.000	10.000	18.000	0.0	0	5.000	5.000
10.000	10.000	31.500	0.0	0	5.000	10.000
15.000	10.000	42.000	0.0	0	5.000	10.000
20.000	10.000	53.500	0.0	0	5.000	10.000
25.000	10.000	60.500	0.0	0	5.000	11.000
30.000	10.000	69.000	0.0	0	5.000	12.000
35.000	10.000	76.000	0.0	0	5.000	13.000
40.000	10.000	82.500	0.0	0	5.000	15.000
45.000	10.000	88.500	0.0	0	5.000	16.000
50.000	10.000	96.500	0.0	0	5.000	17.000
55.000	10.000	104.500	0.0	0	5.000	18.000
60.000	10.000	111.000 ?	0.0	0	5.000	16.000 ?
65.000	10.000	117.500	0.0	0	5.000	19.000
70.000	10.000	123.000	0.0	0	5.000	20.000
75.000	10.000	127.500	0.0	0	5.000	20.000
80.000	10.000	133.000	0.0	0	5.000	22.000
85.000	10.000	136.500	0.0	0	5.000	24.000
90.000	10.000	142.000	0.0	0	5.000	24.000
95.000	10.000	147.500	0.0	0	5.000	24.000
100.000	10.000	153.500	0.0	0	5.000	25.000
105.000	10.000	155.500	0.0	0	5.000	25.000
110.000	10.000	159.000	0.0	0	5.000	27.000
115.000	10.000	163.000	0.0	0	5.000	28.000
120.000	10.000	168.000	0.0	0	5.000	28.000
125.000	10.000	172.000	0.0	0	5.000	28.000
130.000	10.000	174.500	0.0	0	5.000	28.000
135.000	10.000	176.500	0.0	0	5.000	29.000
140.000	10.000	180.500	0.0	0	5.000	30.000
145.000	10.000	184.500	0.0	0	5.000	30.000
150.000	10.000	188.500	0.0	0	5.000	31.000
155.000	10.000	191.500	0.0	0	5.000	35.000
160.000	10.000	195.500	0.0	0	5.000	35.000
165.000	10.000	199.000	0.0	0	5.000	35.000
170.000	10.000	204.000	0.0	0	5.000	35.000
175.000	10.000	207.000	0.0	0	5.000	36.000
180.000	10.000	209.500	0.0	0	5.000	38.000
185.000	10.000	213.500	0.0	0	5.000	39.000
190.000	10.000	217.500	0.0	0	5.000	40.000

OPTION TWO

WAVE TYPE	TOP DEPTH	BOTTOM DEPTH
S	0.0	5.000
S	5.000	20.000
S	20.000	35.000
S	35.000	45.000
S	45.000	60.000
S	60.000	85.000
S	85.000	100.000
S	100.000	105.000
S	105.000	125.000
S	125.000	135.000
S	135.000	150.000
S	150.000	165.000
S	165.000	170.000
S	170.000	180.000
S	180.000	190.000
P	0.0	10.000
P	10.000	35.000
P	35.000	45.000
P	45.000	75.000
P	75.000	85.000
P	85.000	150.000
P	150.000	155.000
P	155.000	190.000

* CORRECTED ARRIVAL TIMES *

DEPTH	S-WAVE	P-WAVE	OTHER-WAVES
5.000	8.050	3.536	0.0
10.000	22.274	8.944	0.0
15.000	34.946	9.487	0.0
20.000	47.852	9.701	0.0
25.000	56.173	10.786	0.0
30.000	65.459	11.837	0.0
35.000	73.076	12.869	0.0
40.000	80.037	14.884	0.0
45.000	86.393	15.902	0.0
50.000	94.626	16.916	0.0
55.000	102.814	17.926	0.0
60.000	109.490?	15.945?	0.0
65.000	116.134	18.944	0.0
70.000	121.764	19.949	0.0
75.000	126.362	19.956	0.0
80.000	131.973	21.957	0.0
85.000	135.565	23.959	0.0
90.000	141.131	23.963	0.0
95.000	146.690	23.967	0.0
100.000	152.738	24.969	0.0
105.000	154.800	24.972	0.0
110.000	158.347	26.972	0.0
115.000	162.387	27.974	0.0
120.000	167.420	27.976	0.0
125.000	171.452	27.978	0.0
130.000	173.986	27.979	0.0
135.000	176.018	28.980	0.0
140.000	180.041	29.961	0.0
145.000	184.063	29.982	0.0
150.000	188.082	30.983	0.0
155.000	191.103	34.982	0.0
160.000	195.119	34.983	0.0
165.000	198.636	34.984	0.0
170.000	203.648	34.985	0.0
175.000	206.663	35.985	0.0
180.000	209.177	37.985	0.0
185.000	213.189	38.986	0.0
190.000	217.199	39.986	0.0

'?' SIGNIFIES UNCERTAINTY IN TIME

THE SECONDARY WAVE VELOCITY AND SUM OF ERROR SQUARED

TOP FEET	BOTTOM FEET	SPEED FT/SEC	SUM E**2
0.0	5.000	621.130	0.0
5.000	20.000	378.564	0.594
20.000	35.000	586.525	0.471
35.000	45.000	750.934	0.061
45.000	60.000	645.329	0.715
60.000	85.000	958.841	3.343
85.000	100.000	876.002	0.071
100.000	105.000	2425.606	0.0
105.000	125.000	1179.856	0.587
125.000	135.000	2190.331	0.042
135.000	150.000	1243.294	0.000
150.000	165.000	1401.516	0.174
165.000	170.000	997.516	0.000
170.000	180.000	1808.493	0.042
180.000	190.000	1246.466	-0.000

THE PRIMARY WAVE VELOCITY AND SUM OF ERROR SQUARED

TOP FEET	BOTTOM FEET	SPEED FT/SEC	SUM E**2
0.0	10.000	1118.035	0.585
10.000	35.000	6304.035	0.493
35.000	45.000	3297.288	0.166
45.000	75.000	7274.355	5.063
75.000	85.000	2498.199	0.000
85.000	150.000	8625.113	3.769
150.000	155.000	1250.310	0.000
155.000	190.000	6392.309	4.352

ASPHALT - FINE INTERPRETATION

FIGURES 9 AND 10.

DOWNHOLE VELOCITY SURVEY- MILE SQUARE PARK, ORANGE COUNTY

Velocity

WELL T.D. 211 FEET. -- AVERAGE OF H-1 & H-2 -- ASPHALT

PLOT CONTROL CARD: USER'S NAME C.R. REAL
LABOR COST CM15
PHONE 2-9311
RETURN PLOT CM 2815 O STREET
PROGRAM OPTION 2
NUMBER DATA PTS 38

Figure 9 & 10
Fair - Asphalt

** INPUT DATA **

S - WAVE					P - WAVE	
DEPTH (FT)	HORIZONTAL OFFSET (FT)	ONSET ARRIVAL TIME (MS)	LATER ARRIVAL TIME (MS)		HORIZONTAL OFFSET (FT)	ONSET ARRIVAL TIME (MS)
5.000	10.000	18.000	0.0	0	5.000	5.000
10.000	10.000	27.000	0.0	0	5.000	10.000
15.000	10.000	38.000	0.0	0	5.000	10.000
20.000	10.000	47.500	0.0	0	5.000	10.000
25.000	10.000	55.500	0.0	0	5.000	11.000
30.000	10.000	62.500	0.0	0	5.000	12.000
35.000	10.000	70.500	0.0	0	5.000	13.000
40.000	10.000	78.000	0.0	0	5.000	15.000
45.000	10.000	84.000	0.0	0	5.000	16.000
50.000	10.000	92.500	0.0	0	5.000	17.000
55.000	10.000	102.000	0.0	0	5.000	18.000
60.000	10.000	108.000	0.0	0	5.000	16.000
65.000	10.000	112.500	0.0	0	5.000	19.000
70.000	10.000	117.500	0.0	0	5.000	18.000
75.000	10.000	122.500	0.0	0	5.000	20.000
80.000	10.000	128.000	0.0	0	5.000	22.000
85.000	10.000	133.000	0.0	0	5.000	24.000
90.000	10.000	138.500	0.0	0	5.000	24.000
95.000	10.000	142.500	0.0	0	5.000	24.000
100.000	10.000	146.500	0.0	0	5.000	25.000
105.000	10.000	151.500	0.0	0	5.000	25.000
110.000	10.000	156.500	0.0	0	5.000	27.000
115.000	10.000	161.500	0.0	0	5.000	28.000
120.000	10.000	164.000	0.0	0	5.000	26.000
125.000	10.000	168.000	0.0	0	5.000	28.000
130.000	10.000	173.000	0.0	0	5.000	28.000
135.000	10.000	176.000	0.0	0	5.000	29.000
140.000	10.000	180.000	0.0	0	5.000	30.000
145.000	10.000	183.500	0.0	0	5.000	29.000
150.000	10.000	187.000	0.0	0	5.000	30.000
155.000	10.000	189.500	0.0	0	5.000	33.000
160.000	10.000	194.000	0.0	0	5.000	34.000
165.000	10.000	198.000	0.0	0	5.000	35.000
170.000	10.000	201.000	0.0	0	5.000	35.000
175.000	10.000	205.500	0.0	0	5.000	36.000
180.000	10.000	210.000	0.0	0	5.000	38.000
185.000	10.000	214.000	0.0	0	5.000	39.000
190.000	10.000	216.000	0.0	0	5.000	40.000

WAVE TYPE	OPTION TWO TOP DEPTH	BOTTOM DEPTH
S	0.0	5.000
S	5.000	20.000
S	20.000	40.000
S	40.000	45.000
S	45.000	55.000
S	55.000	90.000
S	90.000	100.000
S	100.000	115.000
S	115.000	120.000
S	120.000	130.000
S	130.000	150.000
S	150.000	155.000
S	155.000	165.000
S	165.000	170.000
S	170.000	185.000
S	185.000	190.000

* CORRECTED ARRIVAL TIMES *

DEPTH	S-WAVE	P-WAVE	OTHER-WAVES
5.000	8.050	3.536	0.0
10.000	19.092	8.944	0.0
15.000	31.618	9.487	0.0
20.000	42.485	9.701	0.0
25.000	51.530	10.786	0.0
30.000	59.293	11.837	0.0
35.000	67.787	12.869	0.0
40.000	75.671	14.884	0.0
45.000	82.000	15.902	0.0
50.000	90.704	16.916	0.0
55.000	100.355	17.926	0.0
60.000	106.531	15.945	0.0
65.000	111.192	18.944	0.0
70.000	116.319	17.954	0.0
75.000	121.425	19.956	0.0
80.000	127.012	21.957	0.0
85.000	132.089	23.959	0.0
90.000	137.653	23.963	0.0
95.000	141.717	23.967	0.0
100.000	145.773	24.969	0.0
105.000	150.818	24.972	0.0
110.000	155.857	26.972	0.0
115.000	160.893	27.974	0.0
120.000	163.433	27.976	0.0
125.000	167.465	27.978	0.0
130.000	172.490	27.979	0.0
135.000	175.519	28.980	0.0
140.000	179.543	29.981	0.0
145.000	183.065	28.983	0.0
150.000	186.586	29.983	0.0
155.000	189.107	32.983	0.0
160.000	193.622	33.983	0.0
165.000	197.637	34.984	0.0
170.000	200.653	34.985	0.0
175.000	205.165	35.985	0.0
180.000	209.677	37.985	0.0
185.000	213.688	38.986	0.0
190.000	215.701	39.986	0.0

'?' SIGNIFIES UNCERTAINTY IN TIME

THE SECONDARY WAVE VELOCITY AND SUM OF ERROR SQUARED

TOP FEET	BOTTOM FEET	SPEED FT/SEC	SUM E**2
0.0	5.000	621.130	0.0
5.000	20.000	431.659	0.502
20.000	40.000	605.117	0.387
40.000	45.000	790.063	0.000
45.000	55.000	544.810	0.150
55.000	90.000	951.421	0.607
90.000	100.000	1231.519	0.000
100.000	115.000	992.075	0.000
115.000	120.000	1968.001	0.0
120.000	130.000	1104.127	0.165
130.000	150.000	1399.117	0.173
150.000	155.000	1983.331	0.0
155.000	165.000	1172.262	0.042
165.000	170.000	1657.939	0.000
170.000	185.000	1146.367	0.075
185.000	190.000	1173.332	0.0

THE PRIMARY WAVE VELOCITY AND SUM OF ERROR SQUARED

TOP FEET	BOTTOM FEET	SPEED FT/SEC	SUM E**2
185.000	190.000	1173.332	0.0

ASPHALT - FINE INTERPRETATION MODEL I

FIGURES 11 AND 12

DOWNHOLE VELOCITY SURVEY- MILE SQUARE PARK, ORANGE COUNTY

WELL T.D. 211 FEET. -- AVERAGE OF H-1 & H-2 -- ASPHALT 2

Velocity

Figure 11 & 12

fine asphalt Sandy Soil

PLOT CONTROL CARD: USER'S NAME C.R. REAL
LABOR COST CM15
PHONE 2-9311
RETURN PLOT CM 2815 0 STREET
PROGRAM OPTION 2
NUMBER DATA PTS 38

70

* * INPUT DATA * *

DEPTH (FT)	S - WAVE HORIZONTAL OFFSET (FT)	S - WAVE ONSET ARRIVAL TIME (MS)	S - WAVE LATER ARRIVAL TIME (MS)		P - WAVE HORIZONTAL OFFSET (FT)	P - WAVE ONSET ARRIVAL TIME (MS)
5.000	10.000	18.000	0.0	0	5.000	5.000
10.000	10.000	27.000	0.0	0	5.000	10.000
15.000	10.000	38.000	0.0	0	5.000	10.000
20.000	10.000	47.500	0.0	0	5.000	10.000
25.000	10.000	55.500	0.0	0	5.000	11.000
30.000	10.000	62.500	0.0	0	5.000	12.000
35.000	10.000	70.500	0.0	0	5.000	13.000
40.000	10.000	78.000	0.0	0	5.000	15.000
45.000	10.000	84.000	0.0	0	5.000	16.000
50.000	10.000	92.500	0.0	0	5.000	17.000
55.000	10.000	102.000	0.0	0	5.000	18.000
60.000	10.000	108.000	0.0	0	5.000	16.000
65.000	10.000	112.500	0.0	0	5.000	19.000
70.000	10.000	117.500	0.0	0	5.000	18.000
75.000	10.000	122.500	0.0	0	5.000	20.000
80.000	10.000	128.000	0.0	0	5.000	22.000
85.000	10.000	133.000	0.0	0	5.000	24.000
90.000	10.000	138.500	0.0	0	5.000	24.000
95.000	10.000	142.500	0.0	0	5.000	24.000
100.000	10.000	146.500	0.0	0	5.000	25.000
105.000	10.000	151.500	0.0	0	5.000	25.000
110.000	10.000	156.500	0.0	0	5.000	27.000
115.000	10.000	161.500	0.0	0	5.000	28.000
120.000	10.000	164.000	0.0	0	5.000	28.000
125.000	10.000	168.000	0.0	0	5.000	28.000
130.000	10.000	173.000	0.0	0	5.000	28.000
135.000	10.000	176.000	0.0	0	5.000	29.000
140.000	10.000	180.000	0.0	0	5.000	30.000
145.000	10.000	183.500	0.0	0	5.000	29.000
150.000	10.000	187.000	0.0	0	5.000	30.000
155.000	10.000	189.500	0.0	0	5.000	33.000
160.000	10.000	194.000	0.0	0	5.000	34.000
165.000	10.000	198.000	0.0	0	5.000	35.000
170.000	10.000	201.000	0.0	0	5.000	35.000
175.000	10.000	205.500	0.0	0	5.000	36.000
180.000	10.000	210.000	0.0	0	5.000	38.000
185.000	10.000	214.000	0.0	0	5.000	39.000
190.000	10.000	216.000	0.0	0	5.000	40.000

WAVE TYPE	OPTION TWO TOP DEPTH	BOTTOM DEPTH
S	0.0	5.000
S	5.000	20.000
S	20.000	35.000
S	35.000	45.000
S	45.000	60.000
S	60.000	85.000
S	85.000	100.000
S	100.000	105.000
S	105.000	125.000
S	125.000	135.000
S	135.000	150.000
S	150.000	165.000
S	165.000	170.000
S	170.000	180.000
S	180.000	190.000

* CORRECTED ARRIVAL TIMES *

DEPTH	S-WAVE	P-WAVE	OTHER-WAVES
5.000	8.050	3.536	0.0
10.000	19.092	8.944	0.0
15.000	31.618	9.487	0.0
20.000	42.485	9.701	0.0
25.000	51.530	10.786	0.0
30.000	59.293	11.837	0.0
35.000	67.787	12.869	0.0
40.000	75.671	14.884	0.0
45.000	82.000	15.902	0.0
50.000	90.704	16.916	0.0
55.000	100.355	17.926	0.0
60.000	106.531	15.945	0.0
65.000	111.192	18.944	0.0
70.000	116.319	17.954	0.0
75.000	121.425	19.956	0.0
80.000	127.012	21.957	0.0
85.000	132.089	23.959	0.0
90.000	137.653	23.963	0.0
95.000	141.717	23.967	0.0
100.000	145.773	24.969	0.0
105.000	150.818	24.972	0.0
110.000	155.857	26.972	0.0
115.000	160.893	27.974	0.0
120.000	163.433	27.976	0.0
125.000	167.465	27.978	0.0
130.000	172.490	27.979	0.0
135.000	175.519	28.980	0.0
140.000	179.543	29.981	0.0
145.000	183.065	28.983	0.0
150.000	186.586	29.983	0.0
155.000	189.107	32.983	0.0
160.000	193.622	33.983	0.0
165.000	197.637	34.984	0.0
170.000	200.653	34.985	0.0
175.000	205.165	35.985	0.0
180.000	209.677	37.985	0.0
185.000	213.688	38.986	0.0
190.000	215.701	39.986	0.0

'?' SIGNIFIES UNCERTAINTY IN TIME

THE SECONDARY WAVE VELOCITY AND SUM OF ERROR SQUARED

TOP FEET	BOTTOM FEET	SPEED FT/SEC	SUM E**2
0.0	5.000	621.130	0.0
5.000	20.000	431.659	0.502
20.000	35.000	597.595	0.279
35.000	45.000	703.616	0.403
45.000	60.000	600.648	2.576
60.000	85.000	970.293	0.280
85.000	100.000	1108.257	0.680
100.000	105.000	991.159	0.000
105.000	125.000	1223.360	2.276
125.000	135.000	1241.593	0.665
135.000	150.000	1361.556	0.076
150.000	165.000	1327.318	0.869
165.000	170.000	1657.939	0.000
170.000	180.000	1108.214	0.000
180.000	190.000	1246.457	-0.000

THE PRIMARY WAVE VELOCITY AND SUM OF ERROR SQUARED

TOP FEET	BOTTOM FEET	SPEED FT/SEC	SUM E**2
180.000	190.000	1246.457	-0.000

SOIL- COARSE INTERPRETATION MODEL II

FIGURES 13 AND 14

DOWNHOLE VELOCITY SURVEY- MILE SQUARE PARK, ORANGE COUNTY

WELL T.D. 211 FEET. -- AVERAGE OF H-1 & H-2 -- SOIL 3

Fig 13 & 14
Mod II Coarse Soil

PLOT CONTROL CARD: USER'S NAME C.R. REAL
LABOR COST CM15
PHONE 2-9311
RETURN PLOT CM 2815 O STREET
PROGRAM OPTION 2
NUMBER DATA PTS 38

76

* * INPUT DATA * *

DEPTH (FT)	HORIZONTAL OFFSET (FT)	S-WAVE ONSET ARRIVAL TIME (MS)		S-WAVE LATER ARRIVAL TIME (MS)		P-WAVE HORIZONTAL OFFSET (FT)	P-WAVE ONSET ARRIVAL TIME (MS)	
5.000	10.000	18.000		0.0	0	5.000	5.000	
10.000	10.000	31.500		0.0	0	5.000	10.000	
15.000	10.000	42.000		0.0	0	5.000	10.000	
20.000	10.000	53.500		0.0	0	5.000	10.000	
25.000	10.000	60.500		0.0	0	5.000	11.000	
30.000	10.000	69.000		0.0	0	5.000	12.000	
35.000	10.000	76.000		0.0	0	5.000	13.000	
40.000	10.000	82.500		0.0	0	5.000	15.000	
45.000	10.000	88.500		0.0	0	5.000	16.000	
50.000	10.000	96.500		0.0	0	5.000	17.000	
55.000	10.000	104.500		0.0	0	5.000	18.000	
60.000	10.000	111.000	?	0.0	0	5.000	16.000	?
65.000	10.000	117.500		0.0	0	5.000	19.000	
70.000	10.000	123.000		0.0	0	5.000	20.000	
75.000	10.000	127.500		0.0	0	5.000	20.000	
80.000	10.000	133.000		0.0	0	5.000	22.000	
85.000	10.000	136.500		0.0	0	5.000	24.000	
90.000	10.000	142.000		0.0	0	5.000	24.000	
95.000	10.000	147.500		0.0	0	5.000	24.000	
100.000	10.000	153.500		0.0	0	5.000	25.000	
105.000	10.000	155.500		0.0	0	5.000	25.000	
110.000	10.000	159.000		0.0	0	5.000	27.000	
115.000	10.000	163.000		0.0	0	5.000	28.000	
120.000	10.000	168.000		0.0	0	5.000	28.000	
125.000	10.000	172.000		0.0	0	5.000	28.000	
130.000	10.000	174.500		0.0	0	5.000	28.000	
135.000	10.000	176.500		0.0	0	5.000	29.000	
140.000	10.000	180.500		0.0	0	5.000	30.000	
145.000	10.000	184.500		0.0	0	5.000	30.000	
150.000	10.000	188.500		0.0	0	5.000	31.000	
155.000	10.000	191.500		0.0	0	5.000	35.000	
160.000	10.000	195.500		0.0	0	5.000	35.000	
165.000	10.000	199.000		0.0	0	5.000	35.000	
170.000	10.000	204.000		0.0	0	5.000	35.000	
175.000	10.000	207.000		0.0	0	5.000	36.000	
180.000	10.000	209.500		0.0	0	5.000	38.000	
185.000	10.000	213.500		0.0	0	5.000	39.000	
190.000	10.000	217.500		0.0	0	5.000	40.000	

WAVE TYPE	OPTION TWO TOP DEPTH	BOTTOM DEPTH
S	0.0	5.000
S	5.000	20.000
S	20.000	60.000
S	60.000	95.000
S	95.000	115.000
S	115.000	190.000

* CORRECTED ARRIVAL TIMES *

DEPTH	S-WAVE	P-WAVE	OTHER-WAVES
5.000	8.050	3.536	0.0
10.000	22.274	8.944	0.0
15.000	34.946	9.487	0.0
20.000	47.852	9.701	0.0
25.000	56.173	10.786	0.0
30.000	65.459	11.837	0.0
35.000	73.076	12.869	0.0
40.000	80.037	14.884	0.0
45.000	86.393	15.902	0.0
50.000	94.626	16.916	0.0
55.000	102.614	17.926	0.0
60.000	109.490?	15.945?	0.0
65.000	116.134	18.944	0.0
70.000	121.764	19.949	0.0
75.000	126.382	19.956	0.0
80.000	131.973	21.957	0.0
85.000	135.565	23.959	0.0
90.000	141.131	23.963	0.0
95.000	146.690	23.967	0.0
100.000	152.738	24.969	0.0
105.000	154.800	24.972	0.0
110.000	158.347	26.972	0.0
115.000	162.387	27.974	0.0
120.000	167.420	27.976	0.0
125.000	171.452	27.978	0.0
130.000	173.986	27.979	0.0
135.000	176.018	28.980	0.0
140.000	180.041	29.981	0.0
145.000	184.063	29.982	0.0
150.000	188.082	30.983	0.0
155.000	191.103	34.982	0.0
160.000	195.119	34.983	0.0
165.000	198.636	34.984	0.0
170.000	203.648	34.985	0.0
175.000	206.663	35.985	0.0
180.000	209.177	37.985	0.0
185.000	213.189	38.986	0.0
190.000	217.199	39.986	0.0

'?' SIGNIFIES UNCERTAINTY IN TIME

THE SECONDARY WAVE VELOCITY AND SUM OF ERROR SQUARED

TOP FEET	BOTTOM FEET	SPEED FT/SEC	SUM E**2
0.0	5.000	621.130	0.0
5.000	20.000	378.564	0.594
20.000	60.000	654.841	5.698
60.000	95.000	971.362	3.586
95.000	115.000	1351.200	3.062
115.000	190.000	892.538	1513.820

THE PRIMARY WAVE VELOCITY AND SUM OF ERROR SQUARED

TOP FEET	BOTTOM FEET	SPEED FT/SEC	SUM E**2
115.000	190.000	892.538	1513.820

ASPHALT - COARSE INTERPRETATION MODEL II

FIGURES 15 AND 16

DOWNHOLE VELOCITY SURVEY- MILE SQUARE PARK, ORANGE COUNTY

WELL T.D. 211 FEET. -- AVERAGE OF H-1 & H-2 -- ASPHALT 3

fig 15 -16

Mod II Coarse Asphalt

PLOT CONTROL CARD: USER'S NAME C.R. REAL
LABOR CUST CM15
PHONE 2-9311
RETURN PLOT CM 2815 O STREET
PROGRAM OPTION 2
NUMBER DATA PTS 38

82

* * INPUT DATA * *

DEPTH (FT)	S-WAVE HORIZONTAL OFFSET (FT)	S-WAVE ONSET ARRIVAL TIME (MS)	S-WAVE LATER ARRIVAL TIME (MS)		P-WAVE HORIZONTAL OFFSET (FT)	P-WAVE ONSET ARRIVAL TIME (MS)
5.000	10.000	16.000	0.0	0	5.000	5.000
10.000	10.000	27.000	0.0	0	5.000	10.000
15.000	10.000	38.000	0.0	0	5.000	10.000
20.000	10.000	47.500	0.0	0	5.000	10.000
25.000	10.000	55.500	0.0	0	5.000	11.000
30.000	10.000	62.500	0.0	0	5.000	12.000
35.000	10.000	70.500	0.0	0	5.000	13.000
40.000	10.000	78.000	0.0	0	5.000	15.000
45.000	10.000	84.000	0.0	0	5.000	16.000
50.000	10.000	92.500	0.0	0	5.000	17.000
55.000	10.000	102.000	0.0	0	5.000	18.000
60.000	10.000	108.000	0.0	0	5.000	16.000
65.000	10.000	112.500	0.0	0	5.000	19.000
70.000	10.000	117.500	0.0	0	5.000	18.000
75.000	10.000	122.500	0.0	0	5.000	20.000
80.000	10.000	128.000	0.0	0	5.000	22.000
85.000	10.000	133.000	0.0	0	5.000	24.000
90.000	10.000	138.500	0.0	0	5.000	24.000
95.000	10.000	142.500	0.0	0	5.000	24.000
100.000	10.000	146.500	0.0	0	5.000	25.000
105.000	10.000	151.500	0.0	0	5.000	25.000
110.000	10.000	156.500	0.0	0	5.000	27.000
115.000	10.000	161.500	0.0	0	5.000	28.000
120.000	10.000	164.000	0.0	0	5.000	28.000
125.000	10.000	166.000	0.0	0	5.000	28.000
130.000	10.000	173.000	0.0	0	5.000	28.000
135.000	10.000	176.000	0.0	0	5.000	29.000
140.000	10.000	180.000	0.0	0	5.000	30.000
145.000	10.000	183.500	0.0	0	5.000	29.000
150.000	10.000	187.000	0.0	0	5.000	30.000
155.000	10.000	189.500	0.0	0	5.000	33.000
160.000	10.000	194.000	0.0	0	5.000	34.000
165.000	10.000	198.000	0.0	0	5.000	35.000
170.000	10.000	201.000	0.0	0	5.000	35.000
175.000	10.000	205.500	0.0	0	5.000	36.000
180.000	10.000	210.000	0.0	0	5.000	38.000
185.000	10.000	214.000	0.0	0	5.000	39.000
190.000	10.000	216.000	0.0	0	5.000	40.000

WAVE TYPE	OPTION TWO TOP DEPTH	BOTTOM DEPTH
S	0.0	5.000
S	5.000	20.000
S	20.000	60.000
S	60.000	95.000
S	95.000	115.000
S	115.000	190.000

* CORRECTED ARRIVAL TIMES *

DEPTH	S-WAVE	P-WAVE	OTHER-WAVES
5.000	8.050	3.536	0.0
10.000	19.092	8.944	0.0
15.000	31.618	9.487	0.0
20.000	42.485	9.701	0.0
25.000	51.530	10.786	0.0
30.000	59.293	11.837	0.0
35.000	67.787	12.869	0.0
40.000	75.671	14.884	0.0
45.000	82.000	15.902	0.0
50.000	90.704	16.916	0.0
55.000	100.355	17.926	0.0
60.000	106.531	15.945	0.0
65.000	111.192	18.944	0.0
70.000	116.319	17.954	0.0
75.000	121.425	19.956	0.0
80.000	127.012	21.957	0.0
85.000	132.089	23.959	0.0
90.000	137.653	23.963	0.0
95.000	141.717	23.967	0.0
100.000	145.773	24.969	0.0
105.000	150.818	24.972	0.0
110.000	155.857	26.972	0.0
115.000	160.893	27.974	0.0
120.000	163.433	27.976	0.0
125.000	167.465	27.978	0.0
130.000	172.490	27.979	0.0
135.000	175.519	28.980	0.0
140.000	179.543	29.981	0.0
145.000	183.065	28.983	0.0
150.000	186.566	29.983	0.0
155.000	189.107	32.983	0.0
160.000	193.622	33.983	0.0
165.000	197.637	34.984	0.0
170.000	200.653	34.985	0.0
175.000	205.165	35.985	0.0
180.000	209.677	37.985	0.0
185.000	213.688	38.986	0.0
190.000	215.701	39.986	0.0

'?' SIGNIFIES UNCERTAINTY IN TIME

THE SECONDARY WAVE VELOCITY AND SUM OF ERROR SQUARED

TOP FEET	BOTTOM FEET	SPEED FT/SEC	SUM E**2
0.0	5.000	621.130	0.0
5.000	20.000	431.659	0.502
20.000	60.000	625.407	4.648
60.000	95.000	973.335	0.866
95.000	115.000	1032.290	0.386
115.000	190.000	892.432	1292.012

THE PRIMARY WAVE VELOCITY AND SUM OF ERROR SQUARED

TOP FEET	BOTTOM FEET	SPEED FT/SEC	SUM E**2
115.000	190.000	892.432	1292.012

SUPPLEMENT TO THE ANNUAL TECHNICAL REPORT FOR CLASSIFICATION AND MAPPING OF QUATERNARY SEDIMENTARY DEPOSITS FOR PURPOSES OF SEISMIC ZONATION, SOUTH COASTAL LOS ANGELES BASIN, ORANGE COUNTY, CALIFORNIA

DESCRIPTION OF THE ELECTRONIC DATA PROCESSING CAPABILITY DEVELOPED TO MANAGE STRATIGRAPHIC SAMPLE DATA AND GEOTECHNICAL MEASUREMENTS

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GENERAL SYSTEM DESCRIPTION

THE DATA PROCESSING SYSTEM DESCRIBED IN THE FOLLOWING PAGES WAS DESIGNED TO ENABLE THE STORAGE AND SELECTIVE RETRIEVAL OF DATA ABOUT GEOLOGIC SAMPLES AND MEASUREMENTS TAKEN FROM HOLES IN THE GROUND. THE DATA INCLUDE SUCH INFORMATION AS THE LOCATION OF THE SAMPLE HOLE, CHARACTERISTICS OF THE LITHOLOGIC LAYER FROM WHICH THE SAMPLE WAS TAKEN, AND THE SPECIFIC PROPERTIES OF THE SAMPLE.

THE CURRENT SYSTEM CAN ONLY STORE POINT DATA--THAT IS, DATA REPRESENTING A MEASURED VALUE AT SOME POINT IN SPACE AND TIME AS OPPOSED TO DATA REPRESENTING A MEASUREMENT BETWEEN TWO POINTS SUCH AS THE TOP AND BOTTOM OF A LAYER. THE SYSTEM AS DESIGNED DOES NOT, HOWEVER, PRECLUDE ADDING RANGE DATA AT SOME FUTURE TIME.

THE SYSTEM CONSISTS OF TWO MAJOR FUNCTIONS, AN EDIT/AUDIT/CHANGE FUNCTION (INPUT) AND DATA RETRIEVAL FUNCTION (OUTPUT).

THE EDIT/AUDIT/CHANGE FUNCTION ASSURES THAT THE ONLY DATA THAT IS USABLE AND CONSISTENT WITH USER SPECIFIED REQUIREMENTS REACHES THE STORAGE FILE. THE DATA RETRIEVAL FUNCTION PROVIDES A VARIETY OF SERVICES RELATED TO OBTAINING AND DISPLAYING INFORMATION FROM THE STORAGE FILE. THE EDIT/AUDIT/CHANGE FUNCTION IS DRIVEN BY A USER-CODED INPUT FORM, WHILE THE DATA RETRIEVAL FUNCTION IS DRIVEN BY A USER-CODED QUERY.

THE DATA ABOUT THE GEOLOGIC SAMPLES IS ORGANIZED INTO THREE GROUPS

1) DATA ABOUT THE SURFACE LOCATION OF THE HOLE.
2) DATA ABOUT THE LITHOLOGIC LAYER FROM WHICH THE SAMPLE WAS TAKEN.
3) DATA ABOUT THE SPECIFIC PROPERTIES OF THE SAMPLE TAKEN.

INDIVIDUAL PIECES OF DATA ARE REFERRED TO AS DATA ITEMS.
A DATA ITEM IS THE SMALLEST UNIT OF DATA TO WHICH A NAME IS GIVEN AND TO WHICH MEANING IS ASCRIBED. DATA ITEMS ARE SUCH THINGS AS DAY OF MONTH, YEAR, STATE, DEPTH, METHOD, GENERAL LITHOLOGY, ETC.

DATA ITEMS ARE STORED BASED ON A FIVE DIMENSIONAL MODEL. THE FIVE DIMENSIONS USED ARE

1) THE ZONE AND EAST VALUE OF THE CALIFORNIA COORDINATE SYSTEM.
2) THE ZONE AND NORTH VALUE OF THE CALIFORNIA COORDINATE SYSTEM.
3) THE DEPTH BELOW THE SURFACE. (ZERO IS A VALID VALUE.)
4) THE TIME IN THE FORM OF A DATE APPROPRIATE TO THE GROUP TO WHICH A DATA ITEM IS ASSIGNED.
5) THE GROUP TO WHICH THE DATA ITEM BELONGS.

TAKE FOR EXAMPLE THE STORING OF THE MEASURED DEPTH OF THE WATER TABLE. SPACIALLY THE LOCATION (X, Y, Z) IS THE FIRST THREE DIMENSIONS. THE SAMPLE TO DETERMINE THE DEPTH OF THE WATER TABLE IN SOME HOLE WAS TAKEN ON SOME DATE, THE FOURTH DIMENSION. THE FIFTH DIMENSION IS THAT THIS MEASURMENT IS THE WATER TABLE.

EDIT/AUDIT/CHANGE FUNCTIONAL DESCRIPTION

GENERAL DESCRIPTION

THE EDIT/AUDIT/CHANGE FUNCTION IS DESIGNED TO PROVIDE THE USER WITH MESSAGES ABOUT SPECIFIC CONDITIONS DETECTED WHEN A USER-CODED INPUT FORM IS PROCESSED. A SAMPLE OF THE INPUT FORM IS SHOWN AS ATTACHMEMT A. SAMPLES OF THE EDIT/AUDIT/CHANGE REPORT ARE SHOWN AS ATTACHMENT B. THE MAJORITY OF THE VALUES USED FOR PURPOSES OF EDITING AND AUDITING ARE SHOWN AS ATTACHMENT C.

A DISTINCTION IS MADE BETWEEN TWO GENERIC TYPES OF DATA ITEMS. KEY DATA ITEMS ARE THOSE NECESSARY TO UNIQUELY IDENTIFY THE DATA TO BE OPERATED ON. DETAIL DATA ITEMS ARE THOSE WHICH PROVIDE INFORMATION ABOUT THE SPECIFIC KEY WITH WHICH THESE DATA ITEMS ARE ASSOCIATED. THE KEY GIVES SPECIFIC IDENTITY AND MEANING TO THE DETAIL DATA ITEMS. THE KEY DATA ITEMS ARE HIGH-LIGHTED ON THE INPUT FORM.

WITH THE EXCEPTION OF KEY DATA ITEMS AND THE DATA SOURCE INFORMATION, THE ENTRY OF A VALUE FOR ANY DATA ITEM IS OPTIONAL. THE DESIGN PERMITS NEW DATA ITEMS OR VALUES FOR EXISTING DATA ITEMS TO BE ADDED TO THE STRATIGRAPHIC STORAGE FILE AS THEY ARE IDENTIFIED.

USER VIEW

WHEN PREPARING AN INPUT FORM, THE USER MUST SPECIFY ONE OF FOUR ACTIONS FOR ALL DETAIL DATA ITEM VALUES. THE FOUR ACTIONS ARE ADD, DELETE, UPDATE AND REPLACE. THE DESIRED ACTION MAY BE ENTERED IN TWO WAYS. FIRST AS A GENERAL ACTION. THE GENERAL ACTION IS REQUIRED AND APPLIES TO ALL DATA ITEMS ON AN INPUT FORM FOR WHICH A VALUE IS ENTERED. THE GENERAL ACTION FOR ANY SPECIFIC DATA ITEM MAY BE OVERRIDDEN BY ENTERING A SPECIFIC ACTION FOR THAT DATA ITEM. THE SPECIFIC ACTION FIELD APPEARS FOLLOWING EACH DATA ITEM AND IS IDENTIFIED BY ENCLOSING IT IN PARENTHESIS, I.E "(_)". ALL DETAIL DATA ITEMS ARE OPTIONAL AFTER THE INITIAL ENTRY OF THE PRIMARY DATA SOURCE. ALL FOUR ACTIONS MAY BE ENTERED ON ANY INPUT FORM. KEY DATA ITEMS

- FOR SURFACE DATA ARE:
  + CALIFORNIA COORDINATES
  + DATE OF SEGMENT (DEFAULT IS THE DATE OF THE RUN)

- FOR LITHOLOGIC LAYER DATA ARE:
  + CALIFORNIA COORDINATES
  + DEPTH TO TOP (ZERO IS A VALID VALUE)
  + DATE OF SEGMENT (DEFAULT IS THE DATE OF THE RUN)

- FOR LITHOLOGIC SAMPLE DATA ARE:
  + CALIFORNIA COORDINATES
  + DEPTH TO SAMPLE (ZERO IS A VALID VALUE)
  + DATE OF SAMPLE
  + PARAMETER CODE

THE STRATIGRAPHIC DATA EDIT/AUDIT AND CHANGE REPORT REPRODUCES THE USER-CODED INPUT FORM ON THE LEFT-HAND SIDE OF THE PAGE AND LISTS ANY MESSAGES ON THE RIGHT. ASSOCIATED WITH EACH MESSAGE IS A REFERENCE CODE. THIS REFERENCE CODE IDENTIFIES THE DATA ITEM VALUE TO WHICH THE MESSAGE APPLIES BY APPEARING UNDER THE DATA ITEM VALUE. AN ARROW IS PLACED TO THE IMMEDIATE LEFT OF THE COLUMN FOR THE REFERENCE CODES TO INDICATE WHICH LINES WITHIN THE REPORT CONTAIN THE REFERENCE CODES.

EACH MESSAGE SPECIFIES THE CONDITION DETECTED. CONDITIONS WHICH GENERATE MESSAGES INCLUDE A NONNUMERIC, INVALID OR OUT-OF-RANGE VALUE, A VALUE THAT WAS COMPUTER GENERATED, TWO OR MORE VALUES ARE INCONSISTENT, AND A VALUE WAS FOUND ON FILE DURING AN ADD OPERATION. FOR THOSE CONDITIONS WHICH PREVENT THE SPECIFIED ACTION FROM BEING COMPLETED, A MESSAGE IS PRINTED GIVING THE DISPOSITION OF THE DATA ITEM VALUE INVOLVED.

EDIT/AUDIT/CHANGE FUNCTIONAL DESCRIPTION

INTERNAL/TECHNICAL VIEW

PROGRAM DESIGN CONCEPT:

THE EDIT/AUDIT/CHANGE FUNCTION IS DESIGNED TO COLLECT ALL THE SEGMENTS FOR AN "INPUT FORM", PASS EACH SEGMENT THROUGH APPROPRIATE EDITS AND AUDITS, CHANGE THE STORAGE FILE AS INDICTED BY THE ACTION CODES IF NO MAJOR ERRORS WERE DETECTED, AND WRITE THE EDIT/AUDIT/CHANGE REPORT.

ANY OF THREE DIFFERENT SEGMENT TYPES--SURFACE, LAYER OR PARAMETER--MAY BE GENERATED BY AN INPUT FORM. AN INPUT FORM MAY GENERATE ONE SURFACE, ONE LAYER OR SEVERAL PARAMETER SEGMENTS. EACH PARTICULAR SEGMENT TYPE, HOWEVER, IS OPTIONAL.

AN "INPUT FORM" IS "ALL THE PARAMETER SEGMENTS FOR A DEPTH TO SAMPLE". AN "INPUT FORM" MAY ALSO CONTAIN NO MORE THAN ONE CALIFORNIA COORDINATE VALUE, GENERAL ACTION VALUE, SURFACE OR LAYER SEGMENT. THE DEPTH TO TOP OF A LAYER SEGMENT MAY BE LESS THAN, EQUAL TO OR GREATER THAN THE DEPTH OF SAMPLE ON THE SAME INPUT FORM. ALL SEGMENTS FOR AN INPUT FORM MUST HAVE THE SAME CALIFORNIA COORDINATES AND GENERAL ACTION CODE. IF A DUPLICATE SEGMENT IS FOUND, BOTH ARE REPORTED AND DISCARDED.

FIRST,

FOR EACH SEGMENT TYPE THE FOLLOWING PROCESSING STEPS ARE DONE:

1) INITIALIZE ANY CONTROL INDICATORS OR OTHER DATA ITEMS NEEDED FOR PROCESSING THIS SEGMENT TYPE.
2) TAKE THE STATISTICAL COUNTS FOR THIS SEGMENT TYPE.
3) PREPARE THE DATA ITEMS UNIQUE TO THIS SEGMENT TYPE FOR EDITING AND AUDITING. THIS INVOLVES TRANSFERING EACH DATA ITEM'S VALUE FROM THE PHYSICAL INPUT DEFINITION TO THE INTERNAL EDIT DEFINITION. LEADING ZEROES MAY BE ADDED TO A RECEIVED VALUE TO PREPARE IT FOR EDITING.
4) EDIT THE SEGMENT DATA ITEM VALUES RECEIVED. AN "EDIT" IS DEFINED AS AN INTRAFIELD CHECK.
5) AUDIT THE SEGMENT DATA ITEM VALUES WHICH PASSED THE EDITS. AN "AUDIT" IS DEFINED AS AN INTERFIELD CHECK.
6) STORE THE IMAGE OF THE PHYSICAL SEGMENT TO BE USED AS THE SOURCE FOR THE DATA VALUES TO BE SHOWN ON THE EDIT/AUDIT/CHANGE REPORT.
7) IF NO MAJOR ERRORS WERE DETECTED TRANSFER ALL VALID DATA ITEM VALUES FROM THE EDIT DEFINITION TO THE LOGICAL DEFINITION FOR LATER PROCESSING AGAINST THE STORAGE FILE.

SECOND,
FOR EACH SEGMENT TYPE TO COMPLETE THE CHANGES SPECIFIED TO THE STORAGE FILE THE FOLLOWING PROCESSING STEPS ARE DONE:

1) IF THE INPUT FORM HAS A SURFACE SEGMENT AND THE SURFACE DATA CAN BE CHANGED, MAKE THE CHANGES SPECIFIED.
2) IF THE INPUT FORM HAS A LAYER SEGMENT AND THE LAYER DATA CAN BE CHANGED, MAKE THE CHANGES SPECIFIED.
3) IF THE INPUT FORM HAS A PARAMETER SEGMENT AND THE PARAMETER DATA CAN BE CHANGED, MAKE THE CHANGES SPECIFIED.

FOR EACH SEGMENT, REGARDLESS OF THE TYPE, THAT SPECIFIES CHANGES TO THE STORAGE FILE THE FOLLOWING PROCESSING STEPS ARE DONE:

1) OBTAIN THE DESIRED SEGMENT FROM THE STORAGE FILE BY POSITIONING THE FILE AT THE KEY OF THE SEGMENT TO BE CHANGED. IF NO KEY IS FOUND A NEW SEGMENT IS CREATED.
2) THE ACTIONS ARE APPLIED TO THE SEGMENT OBTAINED ABOVE IN THE ORDER OF DELETIONS, ADDITIONS, REPLACEMENTS AND UPDATES.

FOLLOWING THIS THE EDIT/AUDIT/CHANGE REPORT IS WRITTEN. THE FORMAT FOR THE REPORT IS DIVIDED INTO "REPORT BLOCKS" WHICH ARE PERFORMED ON AN AS NEEDED BASIS. THESE REPORT BLOCKS ARE ALSO USED TO FORMAT SUCH CONDITIONS AS DUPLICATE SEGMENTS AND PAGE OVERFLOW FOR AN INPUT FORM. THE MAIN REPORT BLOCKS LOGICALLY ASSOCIATE WITH THE SEGMENT TYPES. OTHER REPORT BLOCKS BUILD AND WRITE AREAS LIKE THE REPORT TITLES.

PROGRAM DESIGN METHODOLOGY:

STRUCTURED PROGRAM DESIGN AS OFFERED BY KEN ORR AND ASSOCIATES, INC. OF TOPEKA, KANSAS WAS THE METHODOLOGY USED FOR THE DESIGN OF THE EDIT/AUDIT/CHANGE PROGRAM.

PROGRAMMING LANGUAGE:

THE EDIT/AUDIT/CHANGE PROGRAM IS WRITTEN USING IBM COBOL. KNOWN NON-STANDARD COBOL IS USED TO OBTAIN THE COMPILE DATE AND TIME FROM THE "WHEN-COMPILED" DATA NAME. THE DATE AND TIME OF THE START AND END OF THE RUN IS OBTAINED USING THE "DATE" AND "TIME-OF-DAY" DATA NAMES. ALSO USED IS A SUBROUTINE CALLED "DHSORT" WHICH IS AN INTERNAL TABLE SORT. FOR ANY ONE WHO WISHES TO INSTALL AND USE THIS PROGRAM IT IS SUGGESTED THAT AN ATTEMPT BE MADE TO COMPILE THE PROGRAM AND SEE WHAT ERRORS RESULT.

DEVELOPMENT ENVIRONMENT:

THE DEVELOPMENT ENVIRONMENT USED TO CREATE AND MAINTAIN THE EDIT/AUDIT/CHANGE PROGRAM INCLUDE IBM TSO, FULL-SCREEN EDIT, PANVALET AND THE IBM OS COBOL INTERACTIVE DEBUG, ALSO REFERRED TO AS "TESTCOB" (NOTE 1).

PROGRAM CHARACTERISTICS:

WITHOUT THE CODE SEGMENTS OBTAINED USING PANVALET INCLUDE STATEMENTS, THE SOURCE PROGRAM CONTAINS ABOUT 16,000 CARD IMAGES. THE SOURCE PROGRAM AS EXPANDED BY PANVALET CONTAINS ABOUT 20,200 CARD IMAGES.

WORKING STORAGE IS ORGANIZED FUNCTIONALLY ALONG THE LINES OF THE PROCESSING FLOW. THE FIRST ENTRY OF MOST TABLES IS A WORK ENTRY WITH THE REMAINING ENTRIES BEING STORAGE ENTRIES. MOST LITERALS WHICH MIGHT APPEAR IN THE PROCEDURE DIVISION ARE DEFINED IN WORKING STORAGE FOR CROSS REFERENCE PURPOSES.

EACH PARAGRAPH NAME IS SUFFIXED WITH A HYPHEN AND A THREE CHARACTER NUMBER. THIS NUMBER SERVES AS A "VICINITY LOCATOR". IN THOSE STATEMENTS WHICH REFERENCE THE PARAGRAPH NAME (E.G. PERFORM) THIS NUMBER POINTS TO THE VICINITY IN THE COBOL SEQENCING (COLUMNS 1 THRU 6) WHERE THE PARAGRAPH NAME IS DEFINED. THIS NUMBER IS THE FIRST THREE NUMERIC CHARACTERS OF THE COBOL SEQUENCE NUMBER OF THE LINE ON WHICH THE PARAGRAPH NAME IS DEFINED.

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DATA FILE CHARACTERISTICS:

CHANGE .... THE INPUT CHANGE FILE CONTAINS DATA SEGMENTS TO BE PROCESSED AGAINST THE STORAGE FILE. THE CHANGE SEGMENTS ARE 84 CHARACTERS IN LENGTH AND ARE CREATED FROM THE INPUT FORM BY KEY ENTRY. ANY OF THREE DIFFERENT SEGMENT TYPES--SURFACE, LAYER OR PARAMETER--MAY BE GENERATED BY AN INPUT FORM. AND INPUT FORM MAY GENERATE ONE SURFACE, ONE LAYER OR SEVERAL PARAMETER SEGMENTS. EACH PARTICULAR SEGMENT TYPE, HOWEVER, IS OPTIONAL. THE CURRENT PROGRAM LIMIT FOR PARAMETER SEGMENTS IS 44 PER "INPUT FORM" REPORTED ON THE EDIT/AUDIT/CHANGE REPORT.

FOR THE PURPOSES OF THE PROGRAM, A SAMPLE IS ALL THE PARAMETER SEGMENTS FOR A DEPTH TO SAMPLE. THESE PARAMETER SEGMENTS MAY ORIGINATE FROM DIFFERENT USER-CODED INPUT FORMS.

STORAGE ... THE STORAGE FILE IS A SEQUENTIAL FILE AND CONTAINS DATA SEGMENTS WHICH MIRROR THOSE OF THE INPUT CHANGE FILE STRUCTURE DESCRIBED ABOVE. THE STORAGE SEGMENTS ARE 96 CHARACTERS IN LENGTH AND ARE CREATED OR CHANGED UPON THE VERIFICATION OF AN CHANGE SEGMENT. ANY SEGMENT WHICH CONTAINS ONLY KEY DATA ITEMS IS AUTOMATICALLY DELETED. THUS, THE STORAGE FILE IS "SELF COMPRESSING".

REPORT .... THERE ARE THREE REPORT FILES GENERATED.

1) THE STRATIGRAHIC EDIT/AUDIT AND CHANGE REPORT.

2) THE USER RUN PROFILE WHICH PROVIDES STATISTICAL INFORMATION TO THE USER.

3) THE RUN CONTROLS REPORT WHICH PROVIDES STATISTICAL INFORMATION TO THE SYSTEM PERSONNEL WHICH MAKE THE PROCESSING RUNS.

ALL REPORT FILE PRINT LINES ARE 133 CHARACTERS IN LENGTH WITH THE FIRST CHARACTER BEING A CARRIAGE CONTROL CHARACTER.

SUPPORT ... THE PROGRAM REQUIRES THREE SUPPORT FILES.

1) THE APPLICATION SUPPORT INDEX.
THIS FILE SERVES AS AN INDEX FOR SUPPORT FILES TWO AND THREE.

2) THE APPLICATION MESSAGE FILE.
THIS FILE SERVES AS THE SOURCE FOR MESSAGE TEXT FOR DEPARTMENT APPLICATIONS. TO OBTAIN THE CORRECT MESSAGE NUMBERS FOR THIS APPLICATION THE APPLICATION SUPPORT INDEX MUST BE USED.

3) THE DATA SOURCE SUPPORT FILE.
THIS FILE SERVES AS THE SOURCE FOR VERIFING THE PRIMARY AND SECONDARY DATA SOURCES ENTERED ON THE INPUT FORM. THIS FILE ALSO PROVIDES THE MINIMUM RELEASE AUTHORITY FOR EACH DATA SOURCE AND ACTIVITY. TO OBTAIN THE CORRECT DATA SOURCE CODES FOR THIS APPLICATION THE APPLICATION SUPPORT INDEX MUST BE USED. THIS FILE IS UNIQUE TO EACH INSTALLATION. IT IS REQUIRED TO PROCESS ANY CHANGE SEGMENTS CORRECTLY AND MUST BE CREATED PRIOR TO ANY CHANGE RUNS.

A METHOD TO CREATE THE APPLICATION SUPPORT INDEX AND DATA SOURCE SUPPORT FILES IS PROVIDED WITH A REQUEST FOR THE PROGRAM SOURCE CODE. THE APPLICATION MESSAGE FILE FOR THIS PROGRAM IS ALSO PROVIDED.

TESTING:

THE TEST SYSTEM DEVELOPED FOR THE EDIT/AUDIT/CHANGE FUNCTION FULFILLS FOUR DESIRABLE CHARACTERISTICS:

1) THE TEST CASE MODEL REFLECTS THE CONTENT AND STRUCTURE OF AN INPUT FORM.
2) THE TEST CASE MODEL IS EASILY USED BY HUMAN BEING. TWO KINDS OF TEST CASE MODELS WERE DEVELOPED. FIRST, A MODEL FOR USE WITH A CRT TYPE FULL-SCREEN TEXT PROCESSING CAPABILITY. AND SECOND, A MODEL FOR USE WITH A LINE-AT-A-TIME TEXT PROCESSING CAPABILITY.
3) THE COMPLETED TEST CASE IS MACHINE PROCESSABLE IN THAT IT CAN BE CONVERTED DIRECTLY TO THE PHYSICAL CHANGE FILE.
4) EACH TEST CASE CAN BE PRINTED ON STANDARD 8 1/2 X 11 INCH PAPER FOR DOCUMENTATION.

TEST CASES MAY BE GROUPED INTO SETS SO THAT DIFFERENT KINDS OF TESTS MAY BE RUN. ANY TEST CASE MAY BE INCLUDED AS PART OF ONE OR MORE SETS OF TEST CASES WITHOUT THE NECESSITY OF DUPLICATING THE TEST CASE. ALSO ANY SET OF TEST CASES MAY BE INCLUDED AS PART OF ONE OR MORE SETS OF TEST CASES. PANVALET IS USED TO ACHIEVE THIS FLEXIBILITY. A SOME WHAT LESS FLEXIBLE ORGANIZING SYSTEM FOR TEST CASES CAN BE ACHIEVED USING THE COBOL COPY FACILITY. THIS TEST SYSTEM CAPABILITY WILL BE PROVIDED AS PART OF THE SYSTEM IF REQUESTED.

DATA RETRIEVAL FUNCTIONAL DESCRIPTION

GENERAL DESCRIPTION

THE DATA RETRIEVAL FUNCTION IS DESIGNED TO PROVIDE LIMITED AD HOC QUERY PROCESSING CAPABILITY USING MENUS AS THE BASE FOR CODING THE QUERY. THREE MENUS ARE PROVIDED:

1) QUERY CONTROL SERVICES MENU. (ATTACHMENT D)
2) STRATIGRAPHIC DATA NAME MENU. (ATTACHMENT E)
3) STRATIGRAPHIC OUTPUT SERVICES MENU. (ATTACHMENT F)

THE CODING OF A QUERY IS DONE BY FIRST SPECIFYING WHICH QUERY CONTROL SERVICES ARE DESIRED FOR PROCESSING THIS QUERY. THE "IF" OR CONDITION PORTION OF THE QUERY IS THEN CODED UTILIZING DATA NAMES SELECTED FROM THE STRATIGRAPHIC DATA NAME MENU. (THE CONDITION PORTION OF THE QUERY IS OPTIONAL.) FOLLOWING THE CONDITION PORTION OF THE QUERY, THE OUTPUT SERVICES DESIRED ARE CODED. AS OF THIS WRITING OUTPUT IS LIMITED TO THE "PRINT" SERVICES. THE "PLOT" SERVICES ARE EXPECTED TO BE IMPLEMENTED SHORTLY. ONLY ONE QUERY CAN BE PROCESSED DURING ANY RUN OF THE RETRIEVAL PROCESS. ONE RUN MUST BE DONE FOR EACH QUERY DESIRED.

SAMPLE QUERIES AND THE RESULTING STRATIGRAPHIC PROPERTIES AND DATA REPORTS ARE PROVIDED AS ATTACHMENT G. ADDITIONAL QUERY EXAMPLES ARE PROVIDED AS ATTACHMENT H.

AS IMPLEMENTED AT THE CALIFORNIA DEPARTMENT OF CONSERVATION, A VALUE IS REQUIRED FOR THE "RELEASE-AUTHORITY-AUTHORIZED" OPTION OF THE CONTROL SERVICES MENU FOR ALL QUERIES PROCESSED. THE CONTROL WAS IMPLEMENTED AS PART OF THE DATA SECURITY. PLEASE SEE THE SECTION ON DATA SECURITY CONSIDERATIONS FOR A FURTHER DISCUSSION.

USER VIEW

THE USER'S VIEW OF THE DATA RETRIEVAL CAPABILITY CONSISTS ENTIRELY OF THE CODED QUERY AND THE DATA RETRIEVAL PROCESS'S RESPONSE TO THE CODED QUERY. DESCRIPTION OF THE CODING OF A QUERY IS BEST DONE BY EXAMPLE.

IN ONE OF ITS SIMPLEST FORMS, THE CONDITION PORTION OF A CODED QUERY WOULD CONSIST OF ONE OR MORE DATA NAMES SELECTED FROM THE DATA NAME MENU, THE COMPARISON OF THEM WITH SOME VALUE AND LOGICALLY ASSOCIATING THEM TOGETHER WITH AN "AND".

```
EXAMPLE 1-
   QUERY DESIRED ........ PRINT OUT THE LOCATIONS OF ALL DATA
                          WHERE THE GENERAL LITHOLOGY IS SAND.

   CODED CONDITION ...... IF GENERAL-LITHOLOGY = 'SD'
                 OR ALSO
                          IF GL-IS-SAND

   CODED OUTPUT
   SERVICE REQUEST ...... MOVE YES TO PRINT-CALIF-COORDINATES

   ENTIRE CODED QUERY ... IF GL-IS-SAND
                             MOVE YES TO PRINT-CALIF-COORDINATES
```

A MORE COMPLEX QUERY MIGHT BE

```
EXAMPLE 2-
   QUERY DESIRED ........ PRINT OUT THE LOCATIONS OF ALL DATA
                          WHERE THE GENERAL LITHOLOGY IS SAND,
                          THE BULK DENSITY IS BETWEEN 90.0 AND
                          110.0 LB/CU FT AND THE GROUNDWATER IS
                          LESS THAN 30 FEET.

   CODED CONDITION ...... IF GL-IS-SAND
                             AND BD-VALUE-AVAIL
                                 AND BD-VALUE NOT < 90 AND NOT > 110
                             AND WT-VALUE-AVAIL
                                 AND WT-VALUE < 30

   CODED OUTPUT
   SERVICE REQUEST ...... MOVE YES TO PRINT-CALIF-COORDINATES

   ENTIRE CODED QUERY ... IF GL-IS-SAND
                             AND BD-VALUE-AVAIL
                                 AND BD-VALUE NOT < 90 AND NOT > 110
                             AND WT-VALUE-AVAIL
                                 AND WT-VALUE < 30
                              MOVE YES TO PRINT-CALIF-COORDINATES
```

OR

EXAMPLE 3-

```
   QUERY DESIRED ........ PRINT OUT THE LOCATIONS AND DEPTH OF
                          ALL GROUNDWATER MEASUREMENTS AND THE
                          DATE OF MEASUREMENT.

   CODED CONDITION ...... IF WT-VALUE-AVAIL

   CODED OUTPUT
   SERVICE REQUEST ......     MOVE YES TO
                                     PRINT-DEPTH-TO-SAMPLE
                                     PRINT-DATE-OF-MEASUREMENT
                                     PRINT-PARAMETER-VALUE
                                     PRINT-WATER-TABLE

   ENTIRE CODED QUERY ... IF WT-VALUE-AVAIL
                               MOVE YES TO
                                     PRINT-DEPTH-TO-SAMPLE
                                     PRINT-DATE-OF-MEASUREMENT
                                     PRINT-PARAMETER-VALUE
                                     PRINT-WATER-TABLE
```

IF ANY DATA ITEM BESIDES THE CALIFORNIA COORDINATES IS REQUESTED TO BE PRINTED THE CALIFORNIA COORDINATES ARE AUTOMATICALLY PRINTED AS PART OF THE RESPONSE.

AS SHOWN ABOVE, THE "MOVE YES TO" NEED ONLY BE CODED ONCE FOR EACH QUERY FOLLOWED BY A LIST OF THE PRINT SERVICE NAMES DESIRED. THE OUTPUT SERVICE REQUEST DATA NAMES MAY BE CODED IN ANY ORDER.

:::::::::::::::::::::::::::: N O T E ::::::::::::::::::::::::::::

BECAUSE OF THE EXPEDIENCE REQUIRED OF THE DESIGN, A SPECIAL CODING SEQUENCE IS REQUIRED OF ALL QUERIES INVOLVING NUMERIC COMPARISONS. THIS SEQUENCE REQUIRES THAT YOU MUST TEST THE AVAILABILITY OF A VALUE BEFORE YOU TEST THE THE ACTUAL VALUE ITSELF. THIS MUST BE CODED AS SHOWN ABOVE.

FROM THE ABOVE EXAMPLES

```
   FOR BULK-DENSITY CODE --> AND BD-VALUE-AVAIL
                                 AND BD-VALUE NOT < 90 AND NOT > 110

   FOR WATER-TABLE CODE  --> AND WT-VALUE-AVAIL
                                 AND WT-VALUE < 30
```

FAILURE TO CODE THIS SEQUENCE WILL RESULT IN THE ABNORMAL TERMINATION OF THE QUERY PROCESSING.

::

THE FORMAT OF THE CODED QUERY IS FREE FORM WITHIN CHARACTERS 2 THROUGH 62 OF A QUERY LINE. CHARACTER 1 IS RESERVED AS A COMMENT INDICATOR. A COMMENT MAY BE INSERTED IN YOUR QUERY BY ENTERING AN ASTERISK IN CHARACTER 1. FOR NON-COMMENT LINES CHARACTER 1 MUST BE BLANK. BLANK LINES MAY BE USED TO IMPROVE THE READABILITY OF THE CODED QUERY.

YOUR QUERY CONDITION MAY BE MADE AS COMPLEX AS NEEDED BY USING "AND'S" AND "OR'S". THE GROUPING FOR COMPARISON PURPOSES MUST BE CONTROLLED THROUGH THE USE OF PARENTHESES. THE RULES FOR GROUPING FOLLOW CONVENTIONAL SET LOGIC RULES FOR EVALUATION OF THE "AND'S" AND "OR'S".

POLYGON SEARCHING MAY BE SPECIFIED BY AS FOLLOWS:

```
       MOVE 'A BBBBBBBE CCCCCCCN' TO CALIF-COORDINATE-POINT (01)
                                                             |
                                                             V
       MOVE 'A BBBBBBBE CCCCCCCN' TO CALIF-COORDINATE-POINT (24)
```

WHERE "A" IS THE ZONE VALUE OF THE CALIFORNIA COORDINATES.
"B" IS THE EAST VALUE OF THE CALIFORNIA COORDINATES.
"C" IS THE NORTH VALUE OF THE CALIFORNIA COORDINATES.

THE "E", "N" AND BLANKS ARE REQUIRED AS PART OF VALUE.

THE MAXIMUM NUMBER OF POINTS CURRENTLY ACCEPTED BY THE PROGRAM IS 24.

WHEN A POLYGON SEARCH IS SPECIFIED THE FOLLOWING MUST BE CODED AS PART OF THE CONDITION PORTION OF THE QUERY:

"A-SAMPLE-IS-IN-THE-POLYGON"

EXAMPLE 4-

```
           MOVE '6 1480000E 0539000N' TO CALIF-COORDINATE-POINT (1)
           MOVE '6 1480000E 0541000N' TO CALIF-COORDINATE-POINT (2)
           MOVE '6 1515000E 0623000N' TO CALIF-COORDINATE-POINT (3)
           MOVE '6 1515000E 0625000N' TO CALIF-COORDINATE-POINT (4)

           MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED

           IF A-SAMPLE-IS-IN-THE-POLYGON
               MOVE YES TO PRINT-GENERAL-LITHOLOGY
                           PRINT-WATER-TABLE
                           PRINT-BULK-DENSITY
                           PRINT-S-WAVE-VELOCITY
                           PRINT-STND-PENETRATION-TEST
                           PRINT-SEISMIC-IMPEDANCE
                           PRINT-ALL-SAMPLE-DATA-ITEMS
```

A MORE DETAILED EXPLANATION OF THE CODING OF A QUERY IS PROVIDED WITHIN THE MENUS THEMSELVES. THE READER IS REFERRED TO THE ATTACHMENTS.

DATA RETRIEVAL FUNCTIONAL DESCRIPTION

INTERNAL/TECHNICAL VIEW

PROGRAM DESIGN CONCEPT:

THE PROBLEM WHICH THE DESIGN OF THE DATA RETRIEVAL SOLVES IS HOW TO PROVIDE AD HOC DATA RETRIEVAL CAPABILITY WITH THE RESTRICTION OF SIX TO EIGHT MONTHS DEVELOPMENT TIME FOR THE ENTIRE APPLICATION USING ONLY ONE PERSON DURING THE DEVELOPMENT. THE SIX TO EIGHT MONTHS WAS NOT SUFFICENT TIME TO DO AN ADEQUATE EVALUATION, SELECTION AND INSTALLATION OF A DATA BASE MANAGEMENT SYSTEM, AND THUS WAS DISCARDED AS A VIABLE ALTERNATIVE. THIS TIME FRAME WAS ALSO NOT SUFFICIENT TO DEVELOP AND IMPLEMENT A NEW QUERY GRAMMER AND REPORTING CAPABILITY TO PROCESS THE DATA STRUCTURE DESIGNED. A MARKET SURVEY ALSO PROVED FRUITLESS.

THE QUESTION WAS THEN ASKED, "WHAT DO I HAVE THAT IS AVAILABLE, WELL TESTED, INSTALLED AND OPERATIONAL WHICH PROVIDES SYNTATIC AND SEMANTIC ANALYSIS OF 'IF' TYPE STATEMENTS?" THE ANSWER WAS: "ANY OF SEVERAL COMPILERS." THE DECISION WAS MADE TO USE COBOL BECAUSE OF ITS "IF" CAPABILITIES, THE USE OF CONDITION NAMES ("88-LEVELS"), THE ABILITY TO CREATE PSEUDO ENGLISH STATEMENTS USING ITS SYNTAX AND THE PORTABILITY OF THE RESULTING SOURCE CODE.

THE RESULTING QUERY LANGUAGE CONSISTS OF COBOL "IF" STATEMENTS AND "MOVE" STATEMENTS. THE USER IS TAUGHT ONLY TO CODE THE COBOL "IF" STATEMENT AND SIMPLE "MOVE" STATEMENTS. THE USER NEVER SEES THE CONTEXT IN WHICH THE CODED QUERY IS PLACED AND IS NOT TROUBLED, OVERWHELMED OR CONFUSED WITH THE DETAILS OF THE CONTEXT. IN CONCEPT THE USER SAYS "IF A SAMPLE MEETS THE CONDITION CODED, SHOW ME THE VALUES OF SOME SET OF DATA ITEMS."

AS IMPLEMENTED IN THE DESIGN THE USER-CODED QUERY IS REFORMATTED, USING A UTILITY PROGRAM, TO CONFORM TO THE REQUIREMENTS OF COLUMN 7 AND MARGIN "B" OF COBOL. THIS IS COMBINED WITH A FEW OTHER PROCEDURE STATEMENTS AND COMPILED. THE RESULTING LOAD MODULE IS DYNAMICALLY CALLED, AND ALL THE DATA VALUES FOR EACH SAMPLE FROM THE STORAGE FILE ARE PASSED TO IT FOR TESTING. THE OUTPUT OF THE QUERY LOAD MODULE IS SIMPLY THE ANSWER TO THE QUESTION "DOES THIS SAMPLE SATISFY THE CONDITIONS OF YOUR QUERY? YES OR NO?" IF YES, THE PROGRAM PROCESSED THE OUTPUT SERVICES CODED. IF NO, THE PROGRAM OBTAINS THE NEXT SAMPLE.

THE DATA RETRIEVAL FUNCTION IS DESIGNED AS FOLLOWS:

- DURING START UP PROCESSING
  A) CALL THE USER QUERY TO CHECK THE QUERY CONTROL SERVICES REQUESTED AND SET UP ANY POLYGON SEARCH REQUESTED.
  B) WRITE THE RELEASE AUTHORITY COVER PAGES.
  C) WRITE THE USER-CODED QUERY REPORT.
  D) REFORMAT AND WRITE ANY ERRORS RESULTING FROM THE COMPILE OF THE USER QUERY.

IF NO ERRORS WERE DETECTED DURING START UP PROCESSING THE FOLLOWING IS DONE FOR EACH SAMPLE FROM THE STORAGE FILE.

- OBTAIN ALL STORAGE SEGMENTS WHICH APPLY TO A SAMPLE. THIS INCLUDES THE SURFACE AND LAYER SEGMENTS.

- IF A SAMPLE WAS OBTAINED, CYCLE ALL COMBINATIONS OF THE SAMPLE DATA AGAINST THE USER QUERY.

- IF THE SAMPLE SATISFIED THE USER QUERY, PROCESS THE OUTPUT SERVICES REQUESTED.

- UPON FINDING THE FIRST SAMPLE WHICH SATISFIES THE QUERY, THE USER'S OUTPUT SERVICE REQUEST IS ANALYZED TO DETERMINE THE INTERNAL PROCESSING REQUIREMENTS. CERTAIN ERRORS MAY BE DETECTED DURING THIS ANALYSIS WHICH WILL PREVENT FURTHER PROCESSING.

THE FORMAT FOR THE RETRIEVAL REPORT IS DIVIDED INTO "REPORT BLOCKS" WHICH ARE PERFORMED ON AN AS NEEDED BASIS. THE MAIN REPORT BLOCKS LOGICALLY ASSOCIATE WITH THE SEGMENT TYPES. OTHER REPORT BLOCKS BUILD AND WRITE AREAS LIKE THE REPORT TITLES AND HEADINGS.

PROGRAM DESIGN METHODOLOGY:

STRUCTURED PROGRAM DESIGN AS OFFERED BY KEN ORR AND ASSOCIATES, INC. OF TOPEKA, KANSAS WAS THE METHODOLOGY USED FOR THE DESIGN OF THE DATA RETRIEVAL PROGRAM.

PROGRAMMING LANGUAGE:

THE DATA RETRIEVAL PROGRAM IS WRITTEN USING IBM COBOL. KNOWN NON-STANDARD COBOL IS USED TO OBTAIN THE COMPILE DATE AND TIME FROM THE "WHEN-COMPILED" DATA NAME. THE DATE AND TIME OF THE START AND END OF THE RUN IS OBTAINED USING THE "DATE" AND "TIME-OF-DAY" DATA NAMES. THE DATA NAME OPTION OF THE "CALL" STATEMENT IS USED TO CHANGE THE SUBROUTINE WHICH IS THE USER QUERY. ALSO USED IS A SUBROUTINE CALLED "DHSORT" WHICH IS AN INTERNAL TABLE SORT. FOR ANY ONE WHO WISHES TO INSTALL AND USE THIS PROGRAM IT IS SUGGESTED THAT AN ATTEMPT BE MADE TO COMPILE THE PROGRAM AND SEE WHAT ERRORS RESULT.

DEVELOPMENT ENVIRONMENT:

THE DEVELOPMENT ENVIRONMENT USED TO CREATE AND MAINTAIN THE DATA RETRIEVAL PROGRAM INCLUDE IBM TSO, FULL-SCREEN EDIT AND PANVALET AND THE IBM OS COBOL INTERACTIVE DEBUG, ALSO REFERRED TO AS "TESTCOB".

PROGRAM CHARACTERISTICS:

WITHOUT THE CODE SEGMENTS OBTAINED USING PANVALET INCLUDE STATEMENTS, THE SOURCE PROGRAM CONTAINS ABOUT 10,000 CARD IMAGES. THE SOURCE PROGRAM AS EXPANDED BY PANVALET CONTAINS ABOUT 16,200 CARD IMAGES.

WORKING STORAGE IS ORGANIZED FUNCTIONALLY ALONG THE LINES OF THE PROCESSING FLOW. THE FIRST ENTRY OF MOST TABLES IS A WORK ENTRY WITH THE REMAINING ENTRIES BEING STORAGE ENTRIES. MOST LITERALS WHICH MIGHT APPEAR IN THE PROCEDURE DIVISION ARE DEFINED IN WORKING STORAGE FOR CROSS REFERENCE PURPOSES.

EACH PARAGRAPH NAME IS SUFFIXED WITH A HYPHEN AND A THREE CHARACTER NUMBER. THIS NUMBER SERVES AS A "VICINITY LOCATOR". IN THOSE STATEMENTS WHICH REFERENCE THE PARAGRAPH NAME (E.G. PERFORM), THIS NUMBER POINTS TO THE VICINITY IN THE COBOL SEQENCING (COLUMNS 1 THRU 6) WHERE THE PARAGRAPH NAME IS DEFINED. THIS NUMBER IS THE FIRST THREE NUMERIC CHARACTERS OF THE COBOL SEQUENCE NUMBER OF THE LINE ON WHICH THE PARAGRAPH NAME IS DEFINED.

DATA FILE CHARACTERISTICS:

QUERY ..... THE INPUT QUERY TEXT FILE CONTAINS THE TEXT OF THE USER-CODED QUERY. THE QUERY TEXT FILE RECORDS ARE 80 CHARACTERS IN LENGTH. THE SECOND QUERY INPUT FILE CONTAINS THE MESSAGES FROM THE COBOL COMPILER. FOR THOSE NON-IBM INSTALLATIONS THE PROGRAM WILL REQUIRE MODIFICATION TO ADAPT THIS PORTION OF THE TO THE REQUIREMENTS OF THE NON-IBM COBOL COMPILER.

STORAGE ... THE STORAGE FILE IS A SEQUENTIAL FILE AND CONTAINS THE DATA SEARCHED BY THE QUERY PROCESS. THE STORAGE SEGMENTS ARE 96 CHARACTERS IN LENGTH.

REPORT .... THERE ARE THREE REPORT FILES GENERATED.

1) THE STRATIGRAPHIC PROPERTIES AND DATA REPORT.

2) THE USER RUN PROFILE WHICH PROVIDES STATISTICAL INFORMATION TO THE USER.

3) THE RUN CONTROLS REPORT WHICH PROVIDES STATISTICAL INFORMATION TO THE SYSTEM PERSONNEL WHICH MAKE THE PROCESSING RUNS.

ALL REPORT FILE PRINT LINES ARE 133 CHARACTERS IN LENGTH WITH THE FIRST CHARACTER BEING A CARRIAGE CONTROL CHARACTER.

SUPPORT ... THE PROGRAM REQUIRES TWO SUPPORT FILES.

1) THE APPLICATION SUPPORT INDEX.
   THIS FILE SERVES AS AN INDEX FOR THE SECOND SUPPORT FILE.

2) THE DATA SOURCE SUPPORT FILE.
   THIS FILE SERVES AS THE SOURCE FOR THE LITERAL DISPLAYED IF THE PRIMARY DATA SOURCE IS REQUESTED. TO OBTAIN THE CORRECT DATA SOURCE LITERALS FOR THIS APPLICATION THE APPLICATION SUPPORT INDEX MUST BE USED. THIS FILE IS UNIQUE TO EACH INSTALLATION. IT IS REQUIRED TO PROCESS ANY QUERIES AND MUST BE CREATED PRIOR TO ANY QUERY RUNS.

A METHOD TO CREATE THE APPLICATION SUPPORT INDEX AND DATA SOURCE SUPPORT FILES IS PROVIDED WITH A REQUEST FOR THE PROGRAM SOURCE CODE. THE APPLICATION MESSAGE FILE FOR THIS PROGRAM IS ALSO PROVIDED.

TESTING:

TESTING THE DATA RETRIEVAL CAPABILITY CONSISTS OF CODING A SET OF QUERIES WHICH EXERCISE VARIOUS OPTIONS AGAINST A STORAGE FILE CONTAINING VARIOUS COMBINATIONS OF SEGMENTS AND VALUES. BECAUSE OF THE AD HOC NATURE OF THE RETRIEVAL CAPABILITY, TESTING CONSISTS OF TRYING AS MANY QUERIES AS IS REASONABLE, BASED ON SOME SCHEME WHICH SAMPLES A REPRESENTATIVE CROSS-SECTION OF ALL POSSIBLE QUERIES. THESE TEST QUERIES ARE RUN AGAINST A TEST STORAGE FILE, WHICH MAY CONTAIN VERY ARIFICIAL DATA COMBINATIONS, BUT WHICH MUST CONTAIN A REPRESENTATIVE CROSS-SECTION OF ALL POSSIBLE SEGMENT AND DATA VALUE COMBINATIONS.

DATA SECURITY CONSIDERATIONS

IN THE SYSTEM AS IMPLEMENTED, THE USER HAS ACCESS TO DATA FROM A VARIETY OF SOURCES, SOME OF WHICH ARE CONFIDENTIAL. IN ORDER TO SAFEGUARD ANY STORED DATA FROM UNAUTHORIZED ACCESS A TWO-LEVEL SECURITY SYSTEM HAS BEEN PROVIDED. THE FIRST LEVEL IS A RELEASE AUTHORITY MECHANISM. THE SECOND LEVEL IS ENCRYPTION OF THE PHYSICAL DATA.

RELEASE AUTHORITY

AS DATA IS ENTERED INTO THE SYSTEM IT MUST INCLUDE, EXPLICITLY OR IMPLICITLY, A RELEASE AUTHORITY. THIS RELEASE AUTHORITY IS STRUCTURED AS FOLLOWS:

RELEASE AUTHORITY 1 - PUBLIC DATA, NO RELEASE RESTRICTIONS

RELEASE AUTHORITY 2 - THIS DATA MAY BE MADE AVAILABLE TO OTHER GOVERNMENTAL ENTITIES.

RELEASE AUTHORITY 3 - THIS DATA MAY BE MADE AVAILABLE ONLY BY WRITTEN PERMISSION OF THE DATA SOURCE.

RELEASE AUTHORITY 4 - THIS DATA IS FOR INTERNAL USE OF THE DEPARTMENT STAFF ONLY, NO OUTSIDE RELEASE IS PERMITTED.

THE RELEASE AUTHORITY IS IMPLICIT IN THE DATA SOURCE CODE UNLESS EXPLICITLY CODED AS PART OF THE PARAMETER DATA ITEM VALUES ENTERED ON THE USER-CODED INPUT FORM.

A QUERY PROCESSED AGAINST THE STORAGE FILE MUST SPECIFY A REQUESTED RELEASE AUTHORITY. ANY DATA ITEMS ON THE FILE WHOSE RELEASE AUTHORITY EXCEEDS THE REQUESTED AUTHORITY ARE WITHHELD FROM USER VIEW. ADDITIONALLY, OUTPUT REPORTS CONTAIN COVER SHEETS WHICH INDICATE THE RELEASE AUTHORITY OF THE REPORTED DATA AND CLERICAL INSTRUCTIONS APPROPRIATE TO THE REQUESTED RELEASE AUTHORITY.

DATA ENCRYPTION

THE PHYSICAL DATA IS ENCRYPTED TO AVOID THE POSSIBILITY THAT PRINTING OR DUMPING OF THE PHYSICAL DATA COULD DIVULGE ANY INFORMATION OF USE TO AN UNAUTHORIZED RECIPIENT. COPIES OF THE ENCRYPTION ROUTINES OR ALGORITHMS ARE NOT AVAILABLE. DISCUSSIONS RELATING TO THE ENCRYPTION METHODOLOGY WILL NOT BE ENTERTAINED. THE SYSTEM WILL FUNCTION WITHOUT THE ENCRYPTION FEATURE. WE RECOMMEND ANYONE INTERESTED IN, OR REQUIRING THIS FUNCTION, TO EITHER USE ONE OF THE COMMERCIALLY AVAILABLE PACKAGES OR WRITE THEIR OWN, AS THEY PREFER.

ATTACHMENT A

SAMPLE OF THE INPUT FORM FOR GEOTECHNICAL DATA

A

STATE OF CALIFORNIA - DEPARTMENT OF CONSERVATION - DIVISION OF MINES AND GEOLOGY

INPUT FORM FOR GEOTECHNICAL DATA

KEY 1 thru 15

PRIMARY SURFACE IDENTIFICATION

CALIFORNIA COORDINATE SYSTEM

ZN _ EAST _ _ _ _ _ _ _ NORTH _ _ _ _ _ _ _ _

SURFACE ELEVATION _ _,_ _ _._ ± (_)

KEY 24 thru 32 SEGMENT TYPE A

DATE OF SEGMENT _ _ _ _ _ _ _ _ _

SGMT TYPE A 41 thru 83

SECONDARY SURFACE IDENTIFICATION

LONGITUDE 1 _ _._ _ _ _ _ _ _(_)

LATITUDE _ _._ _ _ _ _ _ _(_)

STATE CODE _ _ (_)

COUNTY CODE _ _ (_)

CALIF. GEOLOGIC ATLAS SHEET _ _ (_)

AUXILIARY INFORMATION

PRIMARY DATA SOURCE AND ACTIVITY TYPE _ _ _ _ _ _ _(_)

GENERAL ACTION: (_)

KEY 39 ALL SEGMENTS

ADD ______ A

DELETE ______ D

UPDATE ______ U

REPLACE ______ R

LITHOLOGIC LAYER INFORMATION

KEY SGMT TYPE B 16 thru 32

DEPTH TO LAYER TOP _ _,_ _ _ (_) 22

DATE OF SEGMENT _ _ _ _ _ _ _ _ _ 24

SGMT TYPE B 41 thru 69

THICKNESS OF LAYER _ _,_ _ _ (_)

GENERAL LITHOLOGY _ _ (_)

STRATIGRAPHIC IDENTIFICATION

GROUP _ _ FORMATION _ _ _ MEMBER _ _ _ (_)

METHOD OF DETERMINATION _(_)

RELATIVE GEOLOGIC AGE

ERA _ PERIOD _ _ SERIES/EPOCH _ _ STAGE _ _ _ (_)

KEY 16 thru 33

LITHOLOGIC SAMPLE INFORMATION

DEPTH TO SAMPLE _ _,_ _ _._(_) 16

DATE SAMPLE TAKEN _ _ _ _ _ _ _ _ _ (_) 24

GEOTECHNICAL PARAMETERS

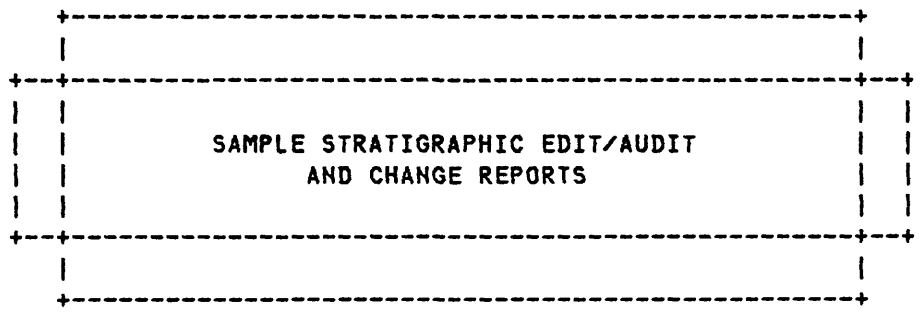
SGMT TYPE C 34 thru 74 one segment each line

PARAMETER CODE	PARAMETER VALUE	SECONDARY DATA SOURCE AND ACTIVITY TYPE	DATE OF MEASUREMENT	METHOD	DMG INTER-PRETED	RELEASE AUTH-ORITY
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _	_ _ _ _ _ _ _ _ _(_)	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)
_ _ _ _ 34	_ _ _ _ _ _ _ _ _(_) 41	_ _ _ _ _ _ _(_)	_ _ _ _ _ _ _ _ _(_)	_ _(_)	_(_)	_(_)

SEPT. 1980

EDP-4

ATTACHMENT B



THE SAMPLE STRATIGRAPHIC EDIT/AUDIT AND CHANGE REPORTS PROVIDED AS THIS ATTACHMENT GENERATE A SMALL STORAGE FILE. THIS FILE IS USED AS THE STORAGE FILE FOR THE SAMPLE QUERIES AND THE RESULTING STRATIGRAPHIC PROPERTIES AND DATA REPORTS PROVIDED AS ATTACHMENT G.

STRATIGRAPHIC DATA EDIT/AUDIT AND UPDATE REPORT

--- INPUT FORM FOR GEOTECHNICAL DATA ---

PRIMARY SURFACE IDENTIFICATION
CALIFORNIA COORDINATE SYSTEM: 6 1447509 _562751
SURFACE ELEVATION: __,__2.5. (_) (SIGN:-)

DATE OF SEGMENT: __ ___ ____ <-02I:

SECONDARY SURFACE IDENTIFICATION
LONGITUDE: 1__._____ (_)
LATITUDE: __._____ (_)
STATE CODE: 00 (_)
COUNTY CODE: 30 (_)
CALIF. GEOLOGIC ATLAS SHEET: 07 (_)
01E

AUXILIARY INFORMATION
PRIMARY DATA SOURCE: BEC ___ F (_)

GENERAL ACTION (A):
ADD _____ A
DELETE ___ D
UPDATE ___ U
REPLACE __ R <-

LITHOLOGIC LAYER INFORMATION
DEPTH TO TOP: __,__0 (_)
THICKNESS: __,___ (_)
GENERAL LITHOLOGY: SD (_)
STRATIGRAPHIC ID: GROUP __ FORMATION ___ MEMBER ___ (_)
DATE OF SEGMENT: 12 MAY 1980
METHOD OF DETERMINATION: 4 (_)
RELATIVE GEOLOGIC AGE: ERA 1 03I, PERIOD 01 03I, SERIES/EPOCH 01 03I, STAGE 001 (_) <-

LITHOLOGIC SAMPLE INFORMATION
DEPTH TO SAMPLE __,__0.9 (_)

GEOTECHNICAL PARAMETERS

PARM CODE	PARAMETER VALUE	SECONDARY DATA SOURCE	S:DATE OF SAMPLE M: DATE OF MEASUREMENT	METHOD	D M G INTER- PRETED	RELEASE AUTH- ORITY
__BD	___102.1 (_)	___ ___ _ (_) 04I	S:12 FEB 1967 (_) M:__ ___ ____ (_) 05I	ST (_)	_ (_)	_ (_)
G004	_____100 (_)	___ ___ _ (_) 04I	S:12 FEB 1967 (_) M:__ ___ ____ (_) 05I	ST (_)	_ (_)	_ (_)
G200	_____59 (_)	___ ___ _ (_)	S:12 FEB 1967 (_) M:__ ___ ____ (_) 05I	ST (_) 06A	_ (_)	_ (_)

<-

MESSAGES

REF CODE	DESCRIPTION	MSG NMBR
01E:	THE VALUE ENTERED IS INVALID.	00002
	DISPOSITION: THE ACTION SPECIFIED FOR THIS DATA ITEM WAS CANCELLED.	90008
<-02I:	THE CURRENT DATE WAS USED FOR THE SEGMENT DATE.	00045
<-03I:	THE VALUE SHOWN WAS COMPUTER GENERATED.	00025
04I:	THE PRIMARY DATA SOURCE WAS USED FOR THE SECONDARY DATA SOURCE.	00031
05I:	THE DATE OF SAMPLE WAS USED FOR THE DATE OF MEASUREMENT.	00017
06A:	A VALUE IS CURRENTLY ON FILE.	00008
	DISPOSITION: THE VALUE ENTERED WAS NOT ADDED.	90002

---------- CONTINUED ---------- CONTINUED ---------- CONTINUED ----------

STRATIGRAPHIC DATA EDIT/AUDIT AND UPDATE REPORT

--- INPUT FORM FOR GEOTECHNICAL DATA ----

PRIMARY SURFACE IDENTIFICATION

CALIFORNIA COORDINATE SYSTEM
6 1447509 _562751

GENERAL ACTION (A)
ADD _____ A
DELETE ___ D
UPDATE ___ U
REPLACE __ R

LITHOLOGIC SAMPLE INFORMATION

DEPTH TO SAMPLE __,__0.9 (_)

GEOTECHNICAL PARAMETERS

PARM CODE	PARAMETER VALUE	SECONDARY DATA SOURCE	S:DATE OF SAMPLE M: DATE OF MEASUREMENT	METHOD	D M G INTER-PRETED	RELEASE AUTH-ORITY
_SSL	_____SM (_)	___ ___ _ (_) 04I	S:12 FEB 1967 (_) M:__ ___ ____ (_) 05I	DO (_)	_ (_)	_ (_) <-
_TAN	____.810 (_)	___ ___ _ (_) 04I	S:12 FEB 1967 (_) M:__ ___ ____ (_) 05I	CA (_)	_ (_)	_ (_) <-

MESSAGES

REF CODE	DESCRIPTION	MSG NMBR

STRATIGRAPHIC DATA EDIT/AUDIT AND UPDATE REPORT

--- INPUT FORM FOR GEOTECHNICAL DATA ---

PRIMARY SURFACE IDENTIFICATION
CALIFORNIA COORDINATE SYSTEM: 6 1447509 _562751
SURFACE ELEVATION: __,___._ (_)
DATE OF SEGMENT: __ ___ ____

SECONDARY SURFACE IDENTIFICATION
LONGITUDE: 1__._____ (_)
LATITUDE: __._____ (_)
STATE CODE: __ (_)
COUNTY CODE: __ (_)
CALIF. GEOLOGIC ATLAS SHEET: __ (_)

AUXILIARY INFORMATION
PRIMARY DATA SOURCE: BEC ___ F (_)
05I

GENERAL ACTION (A)
ADD _____ A
DELETE ___ D
UPDATE ___ U
REPLACE __ R

LITHOLOGIC LAYER INFORMATION
DEPTH TO TOP: __,__4 (_)
03W
THICKNESS: __,__6 (_)
GENERAL LITHOLOGY: SD (_)
STRATIGRAPHIC ID: GROUP ___ FORMATION ___ MEMBER ___ (_)
DATE OF SEGMENT: __ ___ ____
02I
METHOD OF DETERMINATION: 4 (_)
RELATIVE GEOLOGIC AGE: ERA 1 PERIOD 01 SERIES/EPOCH __ STAGE ___ (_)
01I

LITHOLOGIC SAMPLE INFORMATION
DEPTH TO SAMPLE __,__5.8 (_)

GEOTECHNICAL PARAMETERS

PARM CODE	PARAMETER VALUE	SECONDARY DATA SOURCE	S:DATE OF SAMPLE M:DATE OF MEASUREMENT	METHOD	D M G INTERPRETED	RELEASE AUTHORITY
__BD	___104.0 (_)	___ ___ _ (_) 04I	S:12 FEB 1967 (_) M:__ ___ ____ (_) 06I	ST (_)	_ (_)	_ (_)
_SSL	_______S (_)	___ ___ _ (_) 04I	S:12 FEB 1967 (_) M:__ ___ ____ (_) 06I	DO (_)	_ (_)	_ (_)

--- MESSAGES ---

REF CODE	DESCRIPTION	MSG NMBR
01I:	THE VALUE SHOWN WAS COMPUTER GENERATED.	00025
02I:	THE CURRENT DATE WAS USED FOR THE SEGMENT DATE.	00045
03W:	WARNING: THE SUM OF THE DEPTH-TO-TOP AND THE THICKNESS OF THE PREVIOUS LAYER WAS NOT COMPARED WITH THE DEPTH-TO-TOP OF THE CURRENT LAYER. THE PREVIOUS LAYER DOES NOT HAVE A THICKNESS VALUE ON FILE.	00041
04I:	THE PRIMARY DATA SOURCE FOUND ON FILE FOR THE CALIFORNIA COORDINATES SPECIFIED WAS USED FOR THE SECONDARY DATA SOURCE. THE DATA SOURCE USED IS SHOWN IN THE PRIMARY DATA SOURCE FIELD.	00036
05I:	THIS IS THE CURRENT PRIMARY DATA SOURCE FOUND ON FILE FOR THE CALIFORNIA COORDINATES SPECIFIED.	00037
<-06I:	THE DATE OF SAMPLE WAS USED FOR THE DATE OF MEASUREMENT.	00017

STRATIGRAPHIC DATA EDIT/AUDIT AND UPDATE REPORT

--- INPUT FORM FOR GEOTECHNICAL DATA ---

PRIMARY SURFACE IDENTIFICATION
CALIFORNIA COORDINATE SYSTEM: 6 1447509 _562751
SURFACE ELEVATION: __,___._ (_)

DATE OF SEGMENT: __ ___ ____

SECONDARY SURFACE IDENTIFICATION
LONGITUDE: 1__._____ (_)
LATITUDE: __._____ (_)
STATE CODE: __ (_)
COUNTY CODE: __ (_)
CALIF. GEOLOGIC ATLAS SHEET: __ (_)

AUXILIARY INFORMATION
PRIMARY DATA SOURCE: BEC ___ F (_)
05I

GENERAL ACTION (A)
ADD _____ A
DELETE ___ D
UPDATE ___ U
REPLACE __ R <-

LITHOLOGIC LAYER INFORMATION
DEPTH TO TOP: __,_66 (_)
03W
THICKNESS: __,___ (_)
GENERAL LITHOLOGY: SL (_)
STRATIGRAPHIC ID: GROUP 001 FORMATION ___ MEMBER (_)
01I <-
DATE OF SEGMENT: __ ___ ____
02I
METHOD OF DETERMINATION: 4 (_)
RELATIVE GEOLOGIC AGE: ERA 1 01I, PERIOD 01 01I, SERIES/EPOCH 02 01I, STAGE 002 (_) <-

LITHOLOGIC SAMPLE INFORMATION
DEPTH TO SAMPLE __,_67.0 (_)

GEOTECHNICAL PARAMETERS

PARM CODE	PARAMETER VALUE	SECONDARY DATA SOURCE	S:DATE OF SAMPLE M: DATE OF MEASUREMENT	METHOD	D. M G INTER- PRETED	RELEASE AUTH- ORITY
_SSL			S:12 FEB 1967 (_)			
	_____MS (_)	___ ___ _ (_) 04I	M:__ ___ ____ (_) 06I	DO (_)	_ (_)	_ (_) <-

--- MESSAGES ---

REF CODE	DESCRIPTION	MSG NMBR
01I:	THE VALUE SHOWN WAS COMPUTER GENERATED.	00025
02I:	THE CURRENT DATE WAS USED FOR THE SEGMENT DATE.	00045
03W:	WARNING: THE DEPTH-TO-TOP PLUS THE THICKNESS OF THE PREVIOUS LAYER IS LESS THAN TO THE DEPTH-TO-TOP OF THIS LAYER. POSSIBLE CAUSES ARE 1) A MISSING LAYER, 2) THE DEPTH OF EITHER LAYER MAY BE INCORRECT OR 3) THE THICKNESS OF THE PREVIOUS LAYER MAY BE INCORRECT.	00042
04I:	THE PRIMARY DATA SOURCE FOUND ON FILE FOR THE CALIFORNIA COORDINATES SPECIFIED WAS USED FOR THE SECONDARY DATA SOURCE. THE DATA SOURCE USED IS SHOWN IN THE PRIMARY DATA SOURCE FIELD.	00036
05I:	THIS IS THE CURRENT PRIMARY DATA SOURCE FOUND ON FILE FOR THE CALIFORNIA COORDINATES SPECIFIED.	00037
06I:	THE DATE OF SAMPLE WAS USED FOR THE DATE OF MEASUREMENT.	00017

STRATIGRAPHIC DATA EDIT/AUDIT AND UPDATE REPORT

--- INPUT FORM FOR GEOTECHNICAL DATA ---

PRIMARY SURFACE IDENTIFICATION
CALIFORNIA COORDINATE SYSTEM: 6 1447509 _562751
SURFACE ELEVATION: __,___._ (_)
DATE OF SEGMENT: __ ___ ____

SECONDARY SURFACE IDENTIFICATION
LONGITUDE: 1__._____ (_)
LATITUDE: __._____ (_)
STATE CODE: __ (_)
COUNTY CODE: __ (_)
CALIF. GEOLOGIC ATLAS SHEET: __ (_)

AUXILIARY INFORMATION
PRIMARY DATA SOURCE: BEC ___ F (_)
05I

GENERAL ACTION (A)
ADD _____ A
DELETE ___ D
UPDATE ___ U
REPLACE __ R

LITHOLOGIC LAYER INFORMATION

DEPTH TO TOP	THICKNESS	GENERAL LITHOLOGY	STRATIGRAPHIC ID GROUP	FORMATION	MEMBER
__,_68 (_)	__,__1 (_)	SR (_)	__	001	___ (_)
03W			01I		<-

DATE OF SEGMENT: __ ___ ____ (02I)
METHOD OF DETERMINATION: 4 (_)

RELATIVE GEOLOGIC AGE ERA	PERIOD	SERIES/EPOCH	STAGE
1	01	02	002 (_)
01I	01I	01I	<-

LITHOLOGIC SAMPLE INFORMATION
DEPTH TO SAMPLE __,_75.0 (_)

GEOTECHNICAL PARAMETERS

PARM CODE	PARAMETER VALUE	SECONDARY DATA SOURCE	S:DATE OF SAMPLE M: DATE OF MEASUREMENT	METHOD	D M G INTER- PRETED	RELEASE AUTH- ORITY
_SSL			S:12 FEB 1967 (_)			
	_____SM (_)	___ ___ _ (_) 04I	M:__ ___ ____ (_) 06I	DO (_)	_ (_)	_ (_) <-

MESSAGES

REF CODE	DESCRIPTION	MSG NMBR
01I:	THE VALUE SHOWN WAS COMPUTER GENERATED.	00025
02I:	THE CURRENT DATE WAS USED FOR THE SEGMENT DATE.	00045
03W:	WARNING: THE SUM OF THE DEPTH-TO-TOP AND THE THICKNESS OF THE PREVIOUS LAYER WAS NOT COMPARED WITH THE DEPTH-TO-TOP OF THE CURRENT LAYER. THE PREVIOUS LAYER DOES NOT HAVE A THICKNESS VALUE ON FILE.	00041
04I:	THE PRIMARY DATA SOURCE FOUND ON FILE FOR THE CALIFORNIA COORDINATES SPECIFIED WAS USED FOR THE SECONDARY DATA SOURCE. THE DATA SOURCE USED IS SHOWN IN THE PRIMARY DATA SOURCE FIELD.	00036
05I:	THIS IS THE CURRENT PRIMARY DATA SOURCE FOUND ON FILE FOR THE CALIFORNIA COORDINATES SPECIFIED.	00037
<-06I:	THE DATE OF SAMPLE WAS USED FOR THE DATE OF MEASUREMENT.	00017

STRATIGRAPHIC DATA EDIT/AUDIT AND UPDATE REPORT

--- INPUT FORM FOR GEOTECHNICAL DATA ---

PRIMARY SURFACE IDENTIFICATION
CALIFORNIA COORDINATE SYSTEM
6 1487650 _592650

SURFACE ELEVATION
97,.0_.__ (_)

DATE OF SEGMENT
__ ___ ____

SECONDARY SURFACE IDENTIFICATION
LONGITUDE LATITUDE
1__._____ (_) __._____ (_)
STATE CODE __ (_)
COUNTY CODE __ (_)
CALIF. GEOLOGIC ATLAS SHEET __ (_)

AUXILIARY INFORMATION

PRIMARY DATA SOURCE
___ ___ _ (_)

GENERAL ACTION (A)
ADD _____ A
DELETE ___ D
UPDATE ___ U
REPLACE __ R

---------- MESSAGES ----------

REF CODE	DESCRIPTION	MSG NMBR
01A:	A DUPLICATE UPDATE SEGMENT WAS FOUND. ALL DATA ITEMS OF BOTH SEGMENTS WERE FOUND TO BE IDENTICAL. THE DATA ITEMS FOR BOTH SEGMENTS ARE DISPLAYED TO THE LEFT.	00021
	DISPOSITION: BOTH UPDATE SEGMENTS WERE DISCARDED. PLEASE RESUBMIT WITH THE CORRECT DATA.	90015

****
* *
****

PRIMARY SURFACE IDENTIFICATION
CALIFORNIA COORDINATE SYSTEM
6 1487650 _592650

SURFACE ELEVATION
97,.0_.__ (_)

DATE OF SEGMENT
__ ___ ____

SECONDARY SURFACE IDENTIFICATION
LONGITUDE LATITUDE
1__._____ (_) __._____ (_)
STATE CODE __ (_)
COUNTY CODE __ (_)
CALIF. GEOLOGIC ATLAS SHEET __ (_)

AUXILIARY INFORMATION

PRIMARY DATA SOURCE
___ ___ _ (_)

GENERAL ACTION (A)
ADD _____ A
DELETE ___ D
UPDATE ___ U
REPLACE __ R

STRATIGRAPHIC DATA EDIT/AUDIT AND UPDATE REPORT

--- INPUT FORM FOR GEOTECHNICAL DATA ---

PRIMARY SURFACE IDENTIFICATION

CALIFORNIA COORDINATE SYSTEM
6 1487650 _592650

SURFACE ELEVATION
__,___._ (_)

DATE OF SEGMENT
__ ___ ___

SECONDARY SURFACE IDENTIFICATION

LONGITUDE
1__._____ (_)

LATITUDE
__._____ (_)

STATE CODE
__ (_)

COUNTY CODE
__ (_)

CALIF. GEOLOGIC ATLAS SHEET
__ (_)

AUXILIARY INFORMATION

PRIMARY DATA SOURCE
___ ___ _ (_)

GENERAL ACTION (A).

ADD _____ A
DELETE ___ D
UPDATE ___ U
REPLACE __ R

LITHOLOGIC LAYER INFORMATION

DEPTH TO TOP
10,.0_ (_)
04E
DATE OF SEGMENT
__ ___ ___

THICKNESS
25,___ (_)
05E

GENERAL LITHOLOGY
SD (_)

METHOD OF DETERMINATION
_ (_)

STRATIGRAPHIC ID
GROUP FORMATION MEMBER
__ ___ ___ (_) <-

RELATIVE GEOLOGIC AGE.
ERA PERIOD SERIES/EPOCH STAGE
_ __ __ ___ (_)

LITHOLOGIC SAMPLE INFORMATION

DEPTH TO SAMPLE 10,___._ (_)
01E <-

GEOTECHNICAL PARAMETERS

PARM CODE	PARAMETER VALUE	SECONDARY DATA SOURCE	S:DATE OF SAMPLE M: DATE OF MEASUREMENT	METHOD	D M G INTER-PRETED	RELEASE AUTH-ORITY
BD__			S:12 DEC 1960 (_)			
	210.09__ (_) 02E	___ ___ _ (_)	M:11 DEC 1960 (_) 03A	__ (_)	_ (_)	_ (_) <-

MESSAGES

REF CODE	DESCRIPTION	MSG NMBR
01E:	THE VALUE ENTERED MUST BE NUMERIC.	00001
	DISPOSITION: THE ACTION SPECIFIED FOR ALL SAMPLE DATA ITEMS WAS CANCELLED.	90011
02E:	THE VALUE ENTERED IS OUTSIDE THE PERMITTED RANGE.	00003
	DISPOSITION: THE ACTION SPECIFIED FOR THIS DATA ITEM WAS CANCELLED.	90008
03A:	THE DATE OF MEASUREMENT CANNOT BE BEFORE THE DATE OF SAMPLE.	00019
	DISPOSITION: THE ACTION SPECIFIED FOR THIS DATA ITEM WAS CANCELLED.	90008
04E:	THE VALUE ENTERED MUST BE NUMERIC.	00001
	DISPOSITION: THE ACTION SPECIFIED FOR ALL LAYER DATA ITEMS WAS CANCELLED.	90010
05E:	THE VALUE ENTERED MUST BE NUMERIC.	00001
	DISPOSITION: THE ACTION SPECIFIED FOR THIS DATA ITEM WAS CANCELLED.	90008

```
 REPORT ID: GDQ02                        STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION                     PAGE    8
PROGRAM ID: P1A2E20                                 DIVISION  OF  MINES  AND  GEOLOGY
TIME OF RUN: 17 SEP 1980 17:18:36
                                          STRATIGRAPHIC  DATA  EDIT/AUDIT  AND  UPDATE  REPORT

--- I N P U T   F O R M   F O R   G E O T E C H N I C A L   D A T A ----|--------------------- M E S S A G E S --------------------
                                                                       |REF                                                    MSG
PRIMARY SURFACE IDENTIFICATION                    |                    |CODE ------------------- DESCRIPTION ------------------ NMBR
------------------------------                    |                    |01E: THE VALUE ENTERED MUST BE NUMERIC.                 00001
CALIFORNIA COORDINATE SYSTEM     SURFACE ELEVATION |  DATE OF SEGMENT   |     DISPOSITION: THE ACTION SPECIFIED FOR ALL SAMPLE 90011
     6  1487650  _592650           __,___._ (_)   |                    |     DATA ITEMS WAS CANCELLED.
                                                  |    __ ___ ____     |02E: THE VALUE ENTERED CONTAINS EMBEDDED BLANKS.       00015
==================================================|                    |     DISPOSITION: THE ACTION SPECIFIED FOR THIS DATA   90008
                                            |      |===================|     ITEM WAS CANCELLED.
SECONDARY SURFACE IDENTIFICATION |   AUXILIARY     |                   |03E: THE VALUE ENTERED MUST BE NUMERIC.                 00001
-------------------------------- |  INFORMATION    |GENERAL ACTION (A) |     DISPOSITION: THE ACTION SPECIFIED FOR ALL LAYER  90010
 LONGITUDE          LATITUDE     |  -----------    |                   |     DATA ITEMS WAS CANCELLED.
1__.______ (_)    __.______ (_)  |                 |    ADD ______ A   |04E: THE VALUE ENTERED MUST BE NUMERIC.                 00001
STATE   COUNTY   CALIF. GEOLOGIC |    PRIMARY      |    DELETE ___ D   |     DISPOSITION: THE ACTION SPECIFIED FOR THIS DATA   90008
CODE     CODE     ATLAS SHEET    |  DATA SOURCE    |    UPDATE ___ U   |     ITEM WAS CANCELLED.
__ (_)  __ (_)     __ (_)        | ___ ___ _ (_)   |    REPLACE __ R   |
                                 |                 |                   |
=======================================================================|
                                                                       |
LITHOLOGIC LAYER INFORMATION                                           |
----------------------------                                           |
             |           GENERAL          ____STRATIGRAPHIC ID_____    |
DEPTH TO TOP |  THICKNESS  LITHOLOGY        GROUP FORMATION MEMBER     |
 8_,___ (_)  | 25,___ (_)   SG (_)           __     ___     ___  (_)   |
   03E       |   04E                                                 <-
  DATE OF    |  METHOD OF ==========> ____RELATIVE GEOLOGIC AGE______  |
  SEGMENT    | DETERMINATION          ERA PERIOD SERIES/EPOCH STAGE    |
 __ ___ ____ |    _ (_)                _    __       __      ___ (_)   |
             |                                                         |
=======================================================================|
                                                                       |
LITHOLOGIC SAMPLE INFORMATION                                          |
----------------------------      DEPTH TO SAMPLE 15,___._ (_)         |
                                                 01E                 <-
=======================================================================|
                                                                       |
GEOTECHNICAL PARAMETERS                                                |
-----------------------            S:DATE OF SAMPLE         D M G  RELEASE |
PARM PARAMETER     SECONDARY         DATE OF                INTER- AUTH-   |
CODE   VALUE      DATA SOURCE   M:  MEASUREMENT    METHOD  PRETED   ORITY  |
                                                                       |
BD__                            S:12 DEC 1960 (_)                      |
    1_10____ (_) ___ ___ _ (_)  M:13 DEC 1960 (_)  __ (_)  _ (_)  _ (_)  |
        02E                                                          <-
```

STRATIGRAPHIC DATA EDIT/AUDIT AND UPDATE REPORT

--- INPUT FORM FOR GEOTECHNICAL DATA ---

PRIMARY SURFACE IDENTIFICATION

CALIFORNIA COORDINATE SYSTEM: 6 1623E64 _987754 (01E)

SURFACE ELEVATION: -1,65_.__ (_) (02E)

DATE OF SEGMENT: __ ___ ____ <-02E

SECONDARY SURFACE IDENTIFICATION

LONGITUDE: 1__._____ (_)

LATITUDE: __._____ (_)

STATE CODE: AZ (_)

COUNTY CODE: 30 (_)

CALIF. GEOLOGIC ATLAS SHEET: 07 (_)

AUXILIARY INFORMATION

PRIMARY DATA SOURCE: DWR ___ W (_)

GENERAL ACTION (A)

ADD _____ A
DELETE ___ D
UPDATE ___ U
REPLACE __ R

LITHOLOGIC LAYER INFORMATION

DEPTH TO TOP: 45,0__ (_) (03E)

THICKNESS: 25,___ (_) (02E)

GENERAL LITHOLOGY: SD (_)

STRATIGRAPHIC ID: GROUP __ FORMATION 014 (04I) MEMBER 025 (04I) (_) <-

DATE OF SEGMENT: __ ___ ____

METHOD OF DETERMINATION: _ (_) ==========>

RELATIVE GEOLOGIC AGE: ERA _ PERIOD __ SERIES/EPOCH __ STAGE ___ (_)

LITHOLOGIC SAMPLE INFORMATION

DEPTH TO SAMPLE 47,5.1._ (_) (05E) <-

GEOTECHNICAL PARAMETERS

PARM CODE	PARAMETER VALUE	SECONDARY DATA SOURCE	S:DATE OF SAMPLE M: DATE OF MEASUREMENT	METHOD	D M G INTER- PRETED	RELEASE AUTH- ORITY
SSL_			S:12 DEC 1965 (_)			
022____ (_) (06E)		___ ___ _ (_)	M:__ ___ ____ (_)	__ (_)	_ (_)	_ (_) <-

--- MESSAGES ---

REF CODE	DESCRIPTION	MSG NMBR
01E:	THE VALUE ENTERED MUST BE NUMERIC.	00001
	DISPOSITION: ANY ACTION SPECIFIED FOR THIS INPUT FORM WAS CANCELLED.	90013
<-02E:	THE VALUE ENTERED MUST BE NUMERIC.	00001
	DISPOSITION: THE ACTION SPECIFIED FOR THIS DATA ITEM WAS CANCELLED.	90008
03E:	THE VALUE ENTERED MUST BE NUMERIC.	00001
	DISPOSITION: THE ACTION SPECIFIED FOR ALL LAYER DATA ITEMS WAS CANCELLED.	90010
04I:	THE VALUE SHOWN WAS COMPUTER GENERATED.	00025
05E:	THE VALUE ENTERED MUST BE NUMERIC.	00001
	DISPOSITION: THE ACTION SPECIFIED FOR ALL SAMPLE DATA ITEMS WAS CANCELLED.	90011
06E:	THE VALUE ENTERED IS INVALID.	00002
	DISPOSITION: THE ACTION SPECIFIED FOR THIS DATA ITEM WAS CANCELLED.	90008

REPORT ID: GDQ02 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — PAGE 1
PROGRAM ID: P1A2E20 — DIVISION OF MINES AND GEOLOGY
COMPILED ON: 16 SEP 1980 06:31:41
TIME OF RUN: 17 SEP 1980 17:18:36 — STRATIGRAPHIC DATA EDIT/AUDIT AND UPDATE REPORT

U S E R R U N P R O F I L E

C O N T R O L I T E M S	INPUT FORMS		INPUT STORAGE		OUTPUT STORAGE		ACTION FREQUENCY COUNTS	
TOTAL INPUT FORMS	.(REPORTED)..	7						
TOTAL SEGMENTS	.(RECEIVED)..	23	.(RECEIVED)..		.(WRITTEN)...	13	GENERAL ACTION	
							ADDITIONS	7
TOTAL SURFACE SEGMENTS		4				1	DELETIONS	
							UPDATES	
TOTAL LITHOLOGIC LAYER SEGMENTS		7				4	REPLACEMENTS .	
							UNKNOWNS	
TOTAL SAMPLES		7				4		
TOTAL PARAMETER SEGMENTS		12				8	SPECIFIC ACTION	
							ADDITIONS	
SPECIFIC PARAMETER COUNTS --------							DELETIONS	
ABSOLUTE GEOLOGIC AGE	.(AGA).						UPDATES	
APPARENT SPECIFIC GRAVITY	.(ASG).						REPLACEMENTS .	
BULK DENSITY	.(BD).	4				2	UNKNOWNS	
BULK MODULUS	.(BM).							
GRAIN SIZE	.(GS).	2				1		
P-WAVE VELOCITY	.(VP).							
PERMEABILITY	.(PERM).							
POISSON'S RATIO	.(PR).							
POROSITY	.(POR).							
RELATIVE DENSITY	.(RD).							
S-WAVE VELOCITY	.(VS).							
SHEAR MODULUS	.(SM).							
SHEAR STRENGTH	.(SHST).							
SPECIFIC SAMPLE LITHOLOGY	.(SSL).	5				4		
STANDARD PENETRATION TEST	.(SPT).							
TAN PHI	.(TAN).	1				1		
TRUE SPECIFIC GRAVITY	.(TSG).							
UNIT COHESION	.(UC).							
VOID RATIO	.(VR).							
WATER TABLE	.(WT).							
YOUNG'S MODULUS	.(YM).							
UNKNOWN PARAMETER CODES								
UNKNOWN SEGMENT TYPES								

THE RUN STARTED AT 17:18:36 ON 17 SEP 1980
AND COMPLETED AT 17:18:40 ON 17 SEP 1980

TOTAL PAGES PRINTED ... 9
TOTAL LINES PRINTED ... 475

REPORT ID: GDQ02 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — PAGE 1
PROGRAM ID: P1A2E20 — DIVISION OF MINES AND GEOLOGY
COMPILED ON: 16 SEP 1980 06:31:41
TIME OF RUN: 17 SEP 1980 17:18:36 — STRATIGRAPHIC DATA EDIT/AUDIT AND UPDATE REPORT

RUN CONTROLS REPORT

CONTROL ITEMS	INPUT FORMS (DDNAME=GDQABIN)		INPUT STORAGE (DDNAME=GDQAAIN)		OUTPUT STORAGE (DDNAME=GDQAAOUT)		ACTION FREQUENCY COUNTS	
TOTAL INPUT FORMS	.(REPORTED)..	7						
TOTAL SEGMENTS	.(RECEIVED)..	23	.(RECEIVED)..		.(WRITTEN)...	13	GENERAL ACTION	
							ADDITIONS	7
TOTAL SURFACE SEGMENTS	.(TYPE "A")..	4	.(TYPE "A")..		.....	1	DELETIONS	
							UPDATES	
TOTAL LITHOLOGIC LAYER SEGMENTS	.(TYPE "B")..	7	.(TYPE "C")..		.....	4	REPLACEMENTS .	
							UNKNOWNS	
TOTAL SAMPLES	.....	7	.....		.....	4		
TOTAL PARAMETER SEGMENTS	.(TYPE "C")..	12	.(TYPE "E")..		.....	8	SPECIFIC ACTION	
							ADDITIONS	
SPECIFIC PARAMETER COUNTS --------							DELETIONS	
ABSOLUTE GEOLOGIC AGE	.(AGA).		.....		.....		UPDATES	
APPARENT SPECIFIC GRAVITY	.(ASG).		.....		.....		REPLACEMENTS .	
BULK DENSITY	.(BD).	4	.....		.....	2	UNKNOWNS	
BULK MODULUS	.(BM).		.....		.....			
GRAIN SIZE	.(GS).	2	.....		.....	1		
P-WAVE VELOCITY	.(VP).		.....		.....			
PERMEABILITY	.(PERM).		.....		.....			
POISSON'S RATIO	.(PR).		.....		.....			
POROSITY	.(POR).		.....		.....			
RELATIVE DENSITY	.(RD).		.....		.....			
S-WAVE VELOCITY	.(VS).		.....		.....			
SHEAR MODULUS	.(SM).		.....		.....			
SHEAR STRENGTH	.(SHST).		.....		.....			
SPECIFIC SAMPLE LITHOLOGY	.(SSL).	5	.....		.....	4		
STANDARD PENETRATION TEST	.(SPT).		.....		.....			
TAN PHI	.(TAN).	1	.....		.....	1		
TRUE SPECIFIC GRAVITY	.(TSG).		.....		.....			
UNIT COHESION	.(UC).		.....		.....			
VOID RATIO	.(VR).		.....		.....			
WATER TABLE	.(WT).		.....		.....			
YOUNG'S MODULUS	.(YM).		.....		.....			
UNKNOWN PARAMETER CODES	.....							
UNKNOWN SEGMENT TYPES	.....							

STORAGE TABLE CONTROLS	USED	PCNT	MAX		USED	PCNT	MAX
PARAMETERS FROM INPUT FORMS ....(QABP)..	6	13.3%	45	CONDITION/DISPOSITION CONTROL	7	13.7%	51
PARAMETERS FOR STORAGE CHANGES .(QABL)..	6	13.3%	45	UPDATE REPORT MESSAGES	18	17.1%	105
DATA SOURCE CODES	42	82.4%	51	MESSAGE TEXT STORAGE	167	83.1%	201

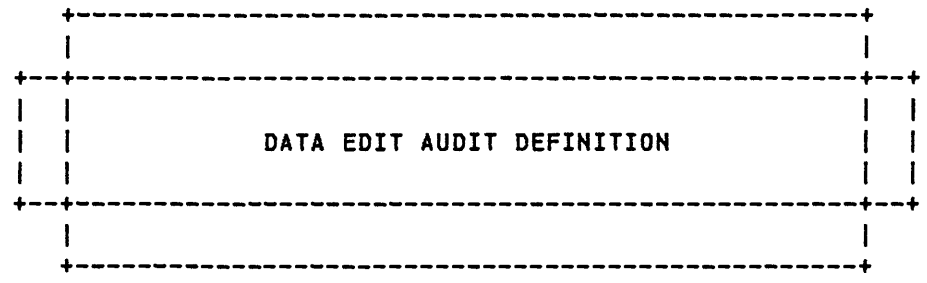
THE RUN STARTED AT 17:18:36 ON 17 SEP 1980
AND COMPLETED AT 17:18:40 ON 17 SEP 1980

TOTAL PAGES PRINTED ... 9
TOTAL LINES PRINTED ... 475

122

B 11

ATTACHMENT C



```
  01 STRAT-EDIT-AUDIT-DEF.                                              ***
*--- STRAT-EDIT-AUDIT-DEF ------------- CURRENT AS OF 29 JUL 1980      ***
                                                                        ...
*   ---------------------------------------------------------------   *09/16/80
*    NAMES: BASE ............................. GDQ.AB                 *DICTGDQ
*    -----  PANVALET ......................... "DICTGDQ.ABE"          *   LV000
*           COPY STATEMENT ................... "GDQABE"               *00006
*                                                                     *00007
*           DEFINITIONS ... LOGICAL ........... "GDQ.ABL"             *00008
*                       ... PHYSICAL .......... "GDQ.ABP"             *00009
*                           ... INPUT SELECT .. "GDQ.ABPIS"           *00010
*                           ... INPUT FD ...... "GDQ.ABPIF"           *00011
*                           .. OUTPUT SELECT .. "GDQ.ABPOS"           *00012
*                           .. OUTPUT FD ...... "GDQ.ABPOF"           *00013
*                       ... EDIT/AUDIT ........ "GDQ.ABE"             *00014
*                       ... REPORT ............ "GDQ.ABR"             *00015
*                           .. OUTPUT SELECT .. "GDQ.ABROS"           *00016
*                           .. OUTPUT FD ...... "GDQ.ABROF"           *00017
*   ---------------------------------------------------------------   *00018
```

```
     03 QABE-PRIM-SURFACE-DATA-ITEMS.                                  00020
*             ----------------------                                   00021
                                                                       00022
         05 QABE-CALIF-COORDINATES.                                     00023
                                                                       00024
* EDIT  CALIF COORDINATE ZONE ==================================== 00025
                                                                       00026
            07 QABE-CALIF-COORDNT-ZONE          PIC X.                00027
               88 QABE-CALIF-COORDNT-ZONE-VLD                          00028
                  VALUE '1' THRU '7'.                                  00029
                                                                       00030
* CALIF COORDINATE EAST ========================================== 00031
                                                                       00032
            07 QABE-CALIF-COORDNT-EAST          PIC X(7).             00033
                                                                       00034
* EDIT  CALIF COORDINATE EAST ---------------------------------- 00035
               88 QABE-CALIF-COORDNT-EAST-VLD                         00036
                  VALUE '0000000' THRU '4400000'.                      00037
* AUDIT CALIF COORDINATE EAST ---------------------------------- 00038
               88 QABE-CALIF-COORDNT-Z1-E-VLD                         00039
                  VALUE '0000000' THRU '2567000'.                      00040
               88 QABE-CALIF-COORDNT-Z2-E-VLD                         00041
                  VALUE '0000000' THRU '2705000'.                      00042
               88 QABE-CALIF-COORDNT-Z3-E-VLD                         00043
                  VALUE '0000000' THRU '2780000'.                      00044
               88 QABE-CALIF-COORDNT-Z4-E-VLD                         00045
                  VALUE '0000000' THRU '3015000'.                      00046
               88 QABE-CALIF-COORDNT-Z5-E-VLD                         00047
                  VALUE '0000000' THRU '3170000'.                      00048
               88 QABE-CALIF-COORDNT-Z6-E-VLD                         00049
                  VALUE '0000000' THRU '2570000'.                      00050
               88 QABE-CALIF-COORDNT-Z7-E-VLD                         00051
                  VALUE '3980000' THRU '4400000'.                      00052
                                                                       00053
* CALIF COORDINATE NORTH ========================================= 00054
                                                                       00055
            07 QABE-CALIF-COORDNT-NORTH         PIC X(7).             00056
                                                                       00057
* EDIT  CALIF COORDINATE NORTH --------------------------------- 00058
               88 QABE-CALIF-COORDNT-NORTH-VLD                        00059
                  VALUE '0000000' THRU '4435000'.                      00060
* AUDIT CALIF COORDINATE NORTH --------------------------------- 00061
               88 QABE-CALIF-COORDNT-Z1-N-VLD                         00062
                  VALUE '0000000' THRU '1094000'.                      00063
               88 QABE-CALIF-COORDNT-Z2-N-VLD                         00064
                  VALUE '0000000' THRU '1033000'.                      00065
               88 QABE-CALIF-COORDNT-Z3-N-VLD                         00066
                  VALUE '0000000' THRU '0911000'.                      00067
               88 QABE-CALIF-COORDNT-Z4-N-VLD                         00068
                  VALUE '0000000' THRU '0972000'.                      00069
               88 QABE-CALIF-COORDNT-Z5-N-VLD                         00070
                  VALUE '0000000' THRU '1033000'.                      00071
               88 QABE-CALIF-COORDNT-Z6-N-VLD                         00072
                  VALUE '0000000' THRU '0851000'.                      00073
               88 QABE-CALIF-COORDNT-Z7-N-VLD                         00074
                  VALUE '3975000' THRU '4435000'.                      00075
```

```
           03 QABE-GENERAL-ACTION-CODE              PIC X.
*                -------------------
              88 QABE-GENERAL-ACTION-NOT-ENTRD          VALUE ' '.
              88 QABE-GENERAL-ACTION-CODE-VLD
                 VALUE 'A' 'D' 'U' 'R' 'T'.
              88 QABE-GENERAL-ACTION-ADD                VALUE 'A'.
              88 QABE-GENERAL-ACTION-DELETE             VALUE 'D'.
              88 QABE-GENERAL-ACTION-UPDATE             VALUE 'U'.
              88 QABE-GENERAL-ACTION-REPLACE            VALUE 'R'.
              88 QABE-GENERAL-ACTION-TEST               VALUE 'T'.


           03 QABE-OTHER-SURFACE-DATA-ITEMS.
*                ------------------------

              05 QABE-SURFACE-KEY-DATA-ITEMS.

                 07 QABE-SURFACE-SEGMENT-DATE-IN.
                    88 QABE-SURF-SGMT-DATE-NOT-ENTRD
                       VALUE '        '.
                    09 QABE-SURFACE-SEGMENT-DAY     PIC XX.
                    09 QABE-SURFACE-SEGMENT-MO-ABBR PIC XXX.
                    09 QABE-SURFACE-SEGMENT-CEN-YR.
                       11 QABE-SURFACE-SEGMENT-CEN  PIC XX.
                       11 QABE-SURFACE-SEGMENT-YR   PIC XX.

                 07 QABE-SURFACE-SEGMENT-DATE       PIC X(8).

              05 QABE-SURFACE-DETAIL-DATA-ITEMS.

                 07 QABE-SURFACE-ELEVATION-DATA.
                    09 QABE-SURFACE-ELEVATION-FLD.
                       88 QABE-SURFACE-ELEV-NOT-ENTRD
                          VALUE '      '.
                       88 QABE-SURF-POINT-TO-BE-DELETED
                          VALUE 'DELETE'.
11 LVL                 11 QABE-SURFACE-ELEVATION    PIC S9(5)V9.
                          88 QABE-SURFACE-ELEVATION-VLD
                             VALUE -282 THRU +14495.
11 RDF                 11 FILLER REDEFINES QABE-SURFACE-ELEVATION.
                          13 QABE-SURFACE-ELEVATION-12345X
                                                    PIC X(5).
                          13 QABE-SURFACE-ELEVATION-XXXXX6
                                                    PIC X.
                    09 QABE-SURFACE-ELEVATION-SIGN  PIC X.
                       88 QABE-SURFACE-ELEV-IS-UNSIGNED
                          VALUE ' ' '+'.
                 07 QABE-SURFACE-ELEVATION-S-A      PIC X.
                    88 QABE-SURFACE-ELEV-S-A-BLANK
                       VALUE ' '.
                    88 QABE-SURFACE-ELEV-S-A-VLD
                       VALUE 'A' 'D' 'U' 'R'.
```

```
           07 QABE-2NDRY-SURFACE-DATA-ITEMS.                          00129
      *          ------------------------                             00130
              88 QABE-2NDRY-SURF-ID-NOT-ENTRD                         00131
                 VALUE '                              '.              00132
                                                                      00133
NOTE **       THE LONGITUDE IS EDITED IN ITS INPUT FORMAT.            00134
NOTE **       THE "1" IN THE HUNDREDS POSITION IS ADDED               00135
NOTE **       IF NO EDIT ERRORS ARE FOUND IN THE INPUT VALUE.         00136
                                                                      00137
              09 QABE-LONGITUDE-X23456789-FLD.                        00138
                 88 QABE-LONGITUDE-NOT-ENTRD                         00139
                    VALUE '        '.                                00140
                 11 QABE-LONGITUDE-X23456789  PIC 99V9(6).           00141
                    88 QABE-LONGITUDE-X23456789-VLD                  00142
                       VALUE 12 THRU 28.                            00143
              09 QABE-LONGITUDE-S-A           PIC X.                 00144
                 88 QABE-LONGITUDE-S-A-BLANK                         00145
                    VALUE ' '.                                      00146
                 88 QABE-LONGITUDE-S-A-VLD                           00147
                    VALUE 'A' 'D' 'U' 'R'.                          00148
                                                                      00149
              09 QABE-LATITUDE-FLD.                                   00150
                    88 QABE-LATITUDE-NOT-ENTRD                       00151
                       VALUE '        '.                            00152
                 11 QABE-LATITUDE             PIC 99V9(6).          00153
                    88 QABE-LATITUDE-VLD                             00154
                       VALUE 31 THRU 43.                            00155
              09 QABE-LATITUDE-S-A            PIC X.                 00156
                 88 QABE-LATITUDE-S-A-BLANK                          00157
                    VALUE ' '.                                      00158
                 88 QABE-LATITUDE-S-A-VLD                            00159
                    VALUE 'A' 'D' 'U' 'R'.                          00160
                                                                      00161
              09 QABE-STATE-CODE              PIC XX.                00162
                 88 QABE-STATE-CODE-NOT-ENTRD                        00163
                    VALUE '  '.                                     00164
                 88 QABE-STATE-CODE-VLD                              00165
                    VALUE 'AZ' 'CA' 'MX' 'NV' 'OR' '00'.            00166
              09 QABE-STATE-CODE-S-A          PIC X.                 00167
                 88 QABE-STATE-CODE-S-A-BLANK                        00168
                    VALUE ' '.                                      00169
                 88 QABE-STATE-CODE-S-A-VLD                          00170
                    VALUE 'A' 'D' 'U' 'R'.                          00171
                                                                      00172
              09 QABE-COUNTY-CODE             PIC XX.                00173
                 88 QABE-COUNTY-CODE-NOT-ENTRD                       00174
                    VALUE '  '.                                     00175
                 88 QABE-COUNTY-CODE-VLD                             00176
                    VALUE '19' '30' '33' '36' '37' '59'.            00177
              09 QABE-COUNTY-CODE-S-A         PIC X.                 00178
                 88 QABE-COUNTY-CODE-S-A-BLANK                       00179
                    VALUE ' '.                                      00180
                 88 QABE-COUNTY-CODE-S-A-VLD                         00181
                    VALUE 'A' 'D' 'U' 'R'.                          00182

      *--- 2NDRY-SURFACE-DATA-ITEMS ------- I S   C O N T I N U E D ----00184
```

```
           09 QABE-ATLAS-SHEET-CODE          PIC XX.              00186
              88 QABE-ATLAS-SHEET-CODE-NOT-ENTR                   00187
                 VALUE '  '.                                      00188
              88 QABE-ATLAS-SHEET-CODE-VLD                        00189
                 VALUE '07' '08' '19'.                           00190
           09 QABE-ATLAS-SHEET-CODE-S-A      PIC X.               00191
              88 QABE-ATLAS-SHEET-CODE-S-A-BLNK                   00192
                 VALUE ' '.                                      00193
              88 QABE-ATLAS-SHEET-CODE-S-A-VLD                    00194
                 VALUE 'A' 'D' 'U' 'R'.                          00195

*--- E N D   O F --- 2NDRY-SURFACE-DATA-ITEMS --------------------00197


        07 QABE-AUXILIARY-INFO-DATA-ITEMS.                        00199
*             -------------------------                           00200
           88 QABE-AUXILIARY-INFO-NOT-ENTRD                       00201
              VALUE '          '.                                00202
                                                                 00203
           09 QABE-PRIM-DATA-SOURCE.                              00204
              88 QABE-PRIM-DATA-SORC-NOT-ENTRD                    00205
                 VALUE '         '.                              00206
              11 QABE-PRIM-DATA-SOURCE-ID.                        00207
                 13 QABE-PRIM-SOURCE-CODE  PIC XXX.               00208
                 13 QABE-PRIM-SOURCE-QUALFR                       00209
                                          PIC XXX.               00210
              11 QABE-PRIM-ACTIVITY-CODE   PIC X.                 00211
           09 QABE-PRIM-DATA-SOURCE-S-A    PIC X.                00212
              88 QABE-PRIM-DATA-SORC-S-A-BLANK                    00213
                 VALUE ' '.                                      00214
              88 QABE-PRIM-DATA-SOURCE-S-A-VLD                    00215
                 VALUE 'A' 'D' 'U' 'R'.                          00216
                                                                 00217
        07 QABE-PRIM-RELEASE-AUTHORITY     PIC X.                00218
```

```
     03 QABE-LAYER-DATA-ITEMS.                                          00220
*             ----------------                                         00221
                                                                       00222
        05 QABE-LAYER-KEY-DATA-ITEMS.                                   00223
                                                                       00224
           07 QABE-DEPTH-TO-TOP-FLD.                                    00225
              88 QABE-DEPTH-TO-TOP-NOT-ENTRD                            00226
                 VALUE '     '.                                        00227
              09 QABE-DEPTH-TO-TOP            PIC 9(5).                00228
                 88 QABE-DEPTH-TO-TOP-VLD                               00229
                    VALUE 0 THRU 25000.                                00230
           07 QABE-DEPTH-TO-TOP-S-A           PIC X.                   00231
              88 QABE-DEPTH-TO-TOP-S-A-BLANK                            00232
                 VALUE ' '.                                            00233
              88 QABE-DEPTH-TO-TOP-S-A-VLD                              00234
                 VALUE 'A' 'D' 'U' 'R'.                                00235
                                                                       00236
           07 QABE-LAYER-SEGMENT-DATE-IN.                               00237
              88 QABE-LAYER-SGMT-DATE-NOT-ENTRD                         00238
                 VALUE '         '.                                    00239
              09 QABE-LAYER-SEGMENT-DAY       PIC XX.                  00240
              09 QABE-LAYER-SEGMENT-MO-ABBR   PIC XXX.                 00241
              09 QABE-LAYER-SEGMENT-CEN-YR.                             00242
                 11 QABE-LAYER-SEGMENT-CEN    PIC XX.                   00243
                 11 QABE-LAYER-SEGMENT-YR     PIC XX.                   00244
                                                                       00245
           07 QABE-LAYER-SEGMENT-DATE         PIC X(8).                00246


*--- LAYER-DATA-ITEMS ---------- I S   C O N T I N U E D ----00248
```

```
05 QABE-LAYER-DETAIL-DATA-ITEMS.                                    00250
                                                                    00251
   07 QABE-THICKNESS-FLD-AND-S-A.                                   00252
      88 QABE-A-LAYER-IS-TO-BE-DELETED                              00253
         VALUE 'DELETE'.                                            00254
      09 QABE-THICKNESS-FLD.                                        00255
         88 QABE-THICKNESS-NOT-ENTRD                                00256
            VALUE '     '.                                         00257
         11 QABE-THICKNESS            PIC 9(5).                    00258
            88 QABE-THICKNESS-VLD                                   00259
               VALUE 1 THRU 10000.                                  00260
      09 QABE-THICKNESS-S-A           PIC X.                       00261
         88 QABE-THICKNESS-S-A-BLANK                                00262
            VALUE ' '.                                              00263
         88 QABE-THICKNESS-S-A-VLD                                  00264
            VALUE 'A' 'D' 'U' 'R' 'E'.                              00265
                                                                    00266
   07 QABE-GENERAL-LITHOLOGY          PIC XX.                      00267
      88 QABE-GENERAL-LITH-NOT-ENTRD                                00268
         VALUE '  '.                                                00269
      88 QABE-GENERAL-LITHOLOGY-VLD                                 00270
         VALUE 'AF' 'BD' 'CG' 'CL' 'GR' 'IG' 'LS' 'MT'              00271
               'PT' 'SD' 'SG' 'SH' 'SL' 'SO' 'SR' 'SS'              00272
               'VO'.                                                00273
   07 QABE-GENERAL-LITHOLOGY-S-A      PIC X.                       00274
      88 QABE-GENERAL-LITH-S-A-BLANK                                00275
         VALUE ' '.                                                 00276
      88 QABE-GENERAL-LITHOLOGY-S-A-VLD                             00277
         VALUE 'A' 'D' 'U' 'R'.                                     00278
                                                                    00279
   07 QABE-STRAT-ID.                                                00280
      88 QABE-STRAT-ID-NOT-ENTRD                                    00281
         VALUE '        '.                                         00282
      09 QABE-STRAT-GROUP             PIC XX.                      00283
         88 QABE-STRAT-GROUP-NOT-ENTRD                              00284
            VALUE '  '.                                            00285
         88 QABE-STRAT-GROUP-VLD                                    00286
            VALUE '  '.                                            00287
      09 QABE-STRAT-FORMATION         PIC XXX.                     00288
         88 QABE-STRAT-FORMATION-NOT-ENTRD                          00289
            VALUE '   '.                                          00290
         88 QABE-STRAT-FORMATION-VLD                                00291
            VALUE '001' THRU '021'.                                 00292
      09 QABE-STRAT-MEMBER            PIC XXX.                     00293
         88 QABE-STRAT-MEMBER-NOT-ENTRD                             00294
            VALUE '   '.                                          00295
         88 QABE-STRAT-MEMBER-VLD                                   00296
            VALUE '001' THRU '028'.                                 00297
   07 QABE-STRAT-ID-S-A               PIC X.                       00298
      88 QABE-STRAT-ID-S-A-BLANK                                    00299
         VALUE ' '.                                                 00300
      88 QABE-STRAT-ID-S-A-VLD                                      00301
         VALUE 'A' 'D' 'U' 'R'.                                     00302

*--- LAYER-DATA-ITEMS ---------- I S   C O N T I N U E D ----00304
```

```
           07 QABE-DETERMINATION-METHOD       PIC X.                 00306
              88 QABE-DETRMTN-METHOD-NOT-ENTRD                       00307
                 VALUE ' '.                                          00308
              88 QABE-DETERMINATION-METHOD-VLD                       00309
                 VALUE '1' THRU '5'.                                 00310
           07 QABE-DETERMINATION-METHOD-S-A   PIC X.                 00311
              88 QABE-DETRMTN-METHOD-S-A-BLANK                       00312
                 VALUE ' '.                                          00313
              88 QABE-DETRMTN-METHOD-S-A-VLD                         00314
                 VALUE 'A' 'D' 'U' 'R'.                              00315
                                                                     00316
           07 QABE-REL-GEOL-AGE.                                     00317
              88 QABE-REL-GEOL-AGE-NOT-ENTRD                         00318
                 VALUE '       '.                                    00319
              09 QABE-REL-GEOL-ERA            PIC X.                00320
                 88 QABE-REL-GEOL-ERA-NOT-ENTRD                      00321
                    VALUE ' '.                                      00322
                 88 QABE-REL-GEOL-ERA-VLD                            00323
                    VALUE '1' THRU '4'.                             00324
              09 QABE-REL-GEOL-PERIOD         PIC XX.               00325
                 88 QABE-REL-GEOL-PERIOD-NOT-ENTRD                   00326
                    VALUE ' '.                                      00327
                 88 QABE-REL-GEOL-PERIOD-VLD                         00328
                    VALUE '01' THRU '12'.                           00329
              09 QABE-REL-GEOL-SER-EPH        PIC XX.               00330
                 88 QABE-REL-GEOL-SER-EPH-NOT-ENTR                   00331
                    VALUE '  '.                                     00332
                 88 QABE-REL-GEOL-SER-EPH-VLD                        00333
                    VALUE '01' THRU '07'.                           00334
              09 QABE-REL-GEOL-STAGE          PIC XXX.              00335
                 88 QABE-REL-GEOL-STAGE-NOT-ENTRD                    00336
                    VALUE '   '.                                    00337
                 88 QABE-REL-GEOL-STAGE-VLD                          00338
                    VALUE '001' THRU '008'.                         00339
           07 QABE-REL-GEOL-AGE-S-A           PIC X.                00340
              88 QABE-REL-GEOL-AGE-S-A-BLANK                         00341
                 VALUE ' '.                                          00342
              88 QABE-REL-GEOL-AGE-S-A-VLD                           00343
                 VALUE 'A' 'D' 'U' 'R'.                              00344

*--- E N D   O F --- LAYER-DATA-ITEMS ----------------------------00346
```

```
     03 QABE-SAMPLE-DATA-ITEMS.                                          00348
*           -----------------                                           00349
                                                                        00350
        05 QABE-SAMPLE-KEY-DATA-ITEMS.                                   00351
                                                                        00352
           07 QABE-SAMPLE-DEPTH-FLD.                                     00353
              88 QABE-SAMPLE-DEPTH-NOT-ENTRD                             00354
                 VALUE '      '.                                        00355
              09 QABE-SAMPLE-DEPTH            PIC 9(5)V9.               00356
                 88 QABE-SAMPLE-DEPTH-VLD                                00357
                    VALUE 0 THRU 25000.                                 00358
           07 FILLER REDEFINES QABE-SAMPLE-DEPTH-FLD.                    00359
              09 QABE-SAMPLE-DEPTH-12345X     PIC X(5).                 00360
              09 QABE-SAMPLE-DEPTH-XXXXX6     PIC X.                    00361
           07 QABE-SAMPLE-DEPTH-S-A           PIC X.                    00362
              88 QABE-SAMPLE-DEPTH-S-A-BLANK                             00363
                 VALUE ' '.                                             00364
              88 QABE-SAMPLE-DEPTH-S-A-VLD                               00365
                 VALUE 'A' 'D' 'U' 'R'.                                 00366

*--- SAMPLE-DATA-ITEMS ------------- I S   C O N T I N U E D ----00368
```

```
      *              ----------------------                              00370
             05 QABE-PARAMETER-DATA-ITEMS.                              00371
      *              ----------------------                              00372
                                                                         00373
                07 QABE-PARAMETER-ENTRY.                                 00374
                                                                         00375
                   09 QABE-PARM-KEY-DATA-ITEMS.                          00376
                                                                         00377
11 LVL                11 QABE-PARAMETER-CODE       PIC XXXX.            00378
                         88 QABE-PARAMETER-CODE-NOT-ENTRD                00379
                            VALUE '    '.                                00380
                                                                         00381
                         88 QABE-PARAMETER-CODE-VLD                      00382
                            VALUE 'AGA ' 'ASG ' 'BD  ' 'BM  '            00383
                                  'GS  ' 'G004' 'G010' 'G040' 'G200'     00384
                                  'PERM' 'PR  ' 'POR ' 'RD  ' 'SHST'     00385
                                  'SM  ' 'SPT ' 'SSL ' 'TAN ' 'TSG '     00386
                                  'UC  ' 'VP  ' 'VR  ' 'VS  ' 'WT  '     00387
                                  'YM  '.                                00388
                                                                         00389
                         88 QABE-PARM-VAL-EDIT-IS-NUMERIC                00390
                            VALUE       'ASG ' 'BD  ' 'BM  '            00391
                                        'G004' 'G010' 'G040' 'G200'     00392
                                  'PERM' 'PR  ' 'POR ' 'RD  ' 'SHST'     00393
                                  'SM  ' 'SPT '       'TAN ' 'TSG '     00394
                                  'UC  ' 'VP  ' 'VR  ' 'VS  '            00395
                                  'YM  '.                                00396
                                                                         00397
11 RDF                   11 FILLER                                       00398
                         REDEFINES QABE-PARAMETER-CODE.                  00399
                            13 QABE-PARAMETER-CODE-1XXX                  00400
                                                 PIC X.                  00401
                            13 QABE-PARAMETER-CODE-X234                   00402
                                                 PIC XXX.                00403
11 RDF                   11 FILLER                                       00404
                         REDEFINES QABE-PARAMETER-CODE.                  00405
                            13 QABE-PARAMETER-CODE-123X                   00406
                                                 PIC XXX.                00407
                                                                         00408
                         11 QABE-SAMPLE-DATE-IN.                          00409
                            88 QABE-SAMPLE-DATE-NOT-ENTRD                 00410
                               VALUE '        '.                         00411
                            13 QABE-SAMPLE-DAY        PIC XX.            00412
                            13 QABE-SAMPLE-MO-ABBR    PIC XXX.           00413
                            13 QABE-SAMPLE-CEN-YR.                       00414
                               15 QABE-SAMPLE-CEN     PIC XX.            00415
                               15 QABE-SAMPLE-YR      PIC XX.            00416
                         11 QABE-SAMPLE-DATE-S-A      PIC X.             00417
                            88 QABE-SAMPLE-DATE-S-A-BLANK                 00418
                               VALUE ' '.                                00419
                            88 QABE-SAMPLE-DATE-S-A-VLD                   00420
                               VALUE 'A' 'D' 'U' 'R'.                    00421
                                                                         00422
                         11 QABE-SAMPLE-DATE          PIC X(8).          00423

      *--- SAMPLE-DATA-ITEMS ------------- I S   C O N T I N U E D ----00425
```

```
           09 QABE-PARM-DETAIL-DATA-ITEMS.                        00427
*                ======================                           00428
                                                                  00429
* A L L  SECONDARY DATA SOURCE EDITS ----------------------------00430
                                                                  00431
              11 QABE-2NDRY-DATA-SOURCE.                          00432
                 88 QABE-2NDRY-DATA-SORC-NOT-ENTRD                00433
                    VALUE '       '.                            00434
                 13 QABE-2NDRY-DATA-SOURCE-ID.                    00435
                    15 QABE-2NDRY-SOURCE-CODE                     00436
                                          PIC XXX.                00437
                    15 QABE-2NDRY-SOURCE-QUALFR                   00438
                                          PIC XXX.                00439
                 13 QABE-2NDRY-ACTIVITY-CODE                      00440
                                          PIC X.                  00441
              11 QABE-2NDRY-DATA-SOURCE-S-A                       00442
                                          PIC X.                  00443
                 88 QABE-2NDRY-DATA-SORC-S-A-BLANK                00444
                    VALUE ' '.                                    00445
                 88 QABE-2NDRY-DATA-SOURCE-S-A-VLD                00446
                    VALUE 'A' 'D' 'U' 'R'.                        00447
                                                                  00448
* A L L  MEASUREMENT DATE IN EDITS -----------------------------00449
                                                                  00450
              11 QABE-MEASUREMENT-DATE-IN.                        00451
                 88 QABE-MEASURMT-DATE-NOT-ENTRD                  00452
                    VALUE '          '.                           00453
                 13 QABE-MEASUREMENT-DAY   PIC XX.                00454
                 13 QABE-MEASUREMENT-MO-ABBR                      00455
                                          PIC XXX.                00456
                 13 QABE-MEASUREMENT-CEN-YR.                      00457
                    15 QABE-MEASUREMENT-CEN                       00458
                                          PIC XX.                 00459
                    15 QABE-MEASUREMENT-YR PIC XX.                00460
              11 QABE-MEASUREMENT-DATE-S-A PIC X.                  00461
                 88 QABE-MEASURMT-DATE-S-A-BLANK                  00462
                    VALUE ' '.                                    00463
                 88 QABE-MEASUREMENT-DATE-S-A-VLD                 00464
                    VALUE 'A' 'D' 'U' 'R'.                        00465
                                                                  00466
              11 QABE-MEASUREMENT-DATE     PIC X(8).              00467
                                                                  00468
* A L L  DMG INTERPRETED CODE EDITS ----------------------------- 00469
                                                                  00470
              11 QABE-DMG-INTRPTD-CODE     PIC X.                 00471
                 88 QABE-DMG-INTRPTD-CODE-NOT-ENTR                00472
                    VALUE ' '.                                    00473
                 88 QABE-DMG-INTRPTD-CODE-VLD                     00474
                    VALUE 'Y' 'N'.                                00475
              11 QABE-DMG-INTRPTD-CODE-S-A PIC X.                  00476
                 88 QABE-DMG-INTRPTD-CODE-S-A-BLNK                00477
                    VALUE ' '.                                    00478
                 88 QABE-DMG-INTRPTD-CODE-S-A-VLD                 00479
                    VALUE 'A' 'D' 'U' 'R'.                        00480


*--- SAMPLE-DATA-ITEMS ------------- I S   C O N T I N U E D ----00482
```

```
* A L L  RELEASE AUTHORITY EDITS ----------------------------------00484
                                                                   00485
                11 QABE-RELEASE-AUTHORITY    PIC X.                00486
                   88 QABE-RELEASE-AUTH-NOT-ENTRD                  00487
                      VALUE ' '.                                   00488
                   88 QABE-RELEASE-AUTHORITY-VLD                   00489
                      VALUE '1' THRU '4'.                          00490
                11 QABE-RELEASE-AUTHORITY-S-A                      00491
                                          PIC X.                   00492
                   88 QABE-RELEASE-AUTH-S-A-BLANK                  00493
                      VALUE ' '.                                   00494
                   88 QABE-RELEASE-AUTHORITY-S-A-VLD               00495
                      VALUE 'A' 'D' 'U' 'R'.                       00496

*--- SAMPLE-DATA-ITEMS ------------- I S   C O N T I N U E D ----00498
```

```
11 LVL                  11 QABE-PARM-VALUE-EDIT-DEF  PIC X(15).          00500
                           88 QABE-PARM-VALUE-NOT-ENTRD                  00501
                              VALUE '               '.                   00502
                                                                         00503
      *                       ----------------                           00504
11 RDF                  11 QABE-SINGLE-NUMERIC-EDIT-DEF                  00505
      *                       ----------------                           00506
                        REDEFINES QABE-PARM-VALUE-EDIT-DEF               00507
                                              PIC 9(8)V9(7).             00508
                                                                         00509
      * AGA    VALUE EDIT -- SEE "MULTIPLE-NUMERIC-EDIT-DEF" BELOW -----00510
                                                                         00511
      * ASG    VALUE EDIT ----------------------------------------------00512
                           88 QABE-ASG--VALUE-VLD                        00513
                              VALUE 1 THRU 3.                            00514
      * BD     VALUE EDIT ----------------------------------------------00515
                           88 QABE-BD---VALUE-VLD                        00516
                              VALUE 25 THRU 190.                         00517
      * BM     VALUE EDIT ----------------------------------------------00518
                           88 QABE-BM---VALUE-VLD                        00519
                              VALUE 0 THRU 2000.                         00520
      * GS     VALUE EDIT ----------------------------------------------00521
                           88 QABE-GS---VALUE-VLD                        00522
                              VALUE 1 THRU 100.                          00523
      * PERM   VALUE EDIT ----------------------------------------------00524
                           88 QABE-PERM-VALUE-VLD                        00525
                              VALUE 0 THRU 25000.                        00526
      * POR    VALUE EDIT ----------------------------------------------00527
                           88 QABE-POR--VALUE-VLD                        00528
                              VALUE 0 THRU 99.                           00529
      * PR     VALUE EDIT ----------------------------------------------00530
                           88 QABE-PR---VALUE-VLD                        00531
                              VALUE .2 THRU .5.                          00532
      * RD     VALUE EDIT ----------------------------------------------00533
                           88 QABE-RD---VALUE-VLD                        00534
                              VALUE 1 THRU 99.                           00535
      * SHST   VALUE EDIT ----------------------------------------------00536
                           88 QABE-SHST-VALUE-VLD                        00537
                              VALUE 0 THRU 12000.                        00538
      * SM     VALUE EDIT ----------------------------------------------00539
                           88 QABE-SM---VALUE-VLD                        00540
                              VALUE 0 THRU 1000.                         00541
      * SPT    VALUE EDIT ----------------------------------------------00542
                           88 QABE-SPT--VALUE-VLD                        00543
                              VALUE 1 THRU 70.                           00544
                                                                         00545
      * SSL    VALUE EDIT -- SEE "NON-NUMERIC-EDIT-DEF" BELOW ----------00546
                                                                         00547
      * TAN    VALUE EDIT ----------------------------------------------00548
                           88 QABE-TAN--VALUE-VLD                        00549
                              VALUE 0 THRU 1.3.                          00550
      * TSG    VALUE EDIT ----------------------------------------------00551
                           88 QABE-TSG--VALUE-VLD                        00552
                              VALUE 0 THRU 10.                           00553


      *--- SAMPLE-DATA-ITEMS ------------- I S   C O N T I N U E D ----00555
```

```
      * UC     VALUE EDIT ----------------------------------------------00557
                        88 QABE-UC---VALUE-VLD                          00558
                           VALUE 0 THRU 1000.                           00559
      * VP     VALUE EDIT ----------------------------------------------00560
                        88 QABE-VP---VALUE-VLD                          00561
                           VALUE 0 THRU 25000.                          00562
      * VR     VALUE EDIT ----------------------------------------------00563
                        88 QABE-VR---VALUE-VLD                          00564
                           VALUE 0 THRU 6.                              00565
      * VS     VALUE EDIT ----------------------------------------------00566
                        88 QABE-VS---VALUE-VLD                          00567
                           VALUE 0 THRU 15000.                          00568
      * WT     VALUE EDIT ----------------------------------------------00569
                        88 QABE-WT---VALUE-VLD                          00570
                           VALUE 0 THRU 25000.                          00571
      * YM     VALUE EDIT ----------------------------------------------00572
                        88 QABE-YM---VALUE-VLD                          00573
                           VALUE 0 THRU 2000.                           00574


11 RDF                  11 FILLER                                       00576
                        REDEFINES QABE-PARM-VALUE-EDIT-DEF.             00577
                                                                        00578
      *                       -----------------                         00579
13 LVL                     13 QABE-MULTPLE-NUMERIC-EDIT-DEF             00580
      *                          ----------------------                 00581
                                                 PIC X(15).             00582
                                                                        00583
      * AGA    VALUE EDIT ----------------------------------------------00584
13 RDF                     13 QABE-AGA--VALUE-EDIT-DEF                  00585
                           REDEFINES QABE-MULTPLE-NUMERIC-EDIT-DEF.     00586
                              15 QABE-AGA--BASE-EDIT-DEF                00587
                                                 PIC 9V99.              00588
                                 88 QABE-AGA--BASE-VALUE-VLD            00589
                                    VALUE 0 THRU 9.99.                  00590
                              15 QABE-AGA--UNCERT-EDIT-DEF               00591
                                                   PIC 9V99.            00592
                                 88 QABE-AGA--UNCERT-VALUE-VLD          00593
                                    VALUE 0 THRU 9.99.                  00594
                              15 QABE-AGA--EXPONENT-PREFIX               00595
                                                   PIC X.               00596
                                 88 QABE-AGA--EXPONENT-PREFIX-VLD       00597
                                    VALUE 'E'.                          00598
                              15 QABE-AGA--EXPONENT-EDIT-DEF             00599
                                                   PIC 9.               00600
                                 88 QABE-AGA--EXPONENT-VALUE-VLD         00601
                                    VALUE 2 THRU 9.                     00602


      *--- SAMPLE-DATA-ITEMS ------------- I S   C O N T I N U E D ----00604
```

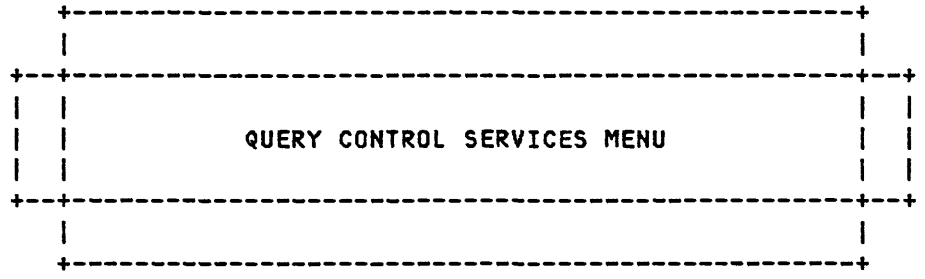
```
11 RDF                  11 FILLER                                          00606
                        REDEFINES QABE-PARM-VALUE-EDIT-DEF.                00607
                                                                           00608
      *                       -------------                                00609
13 LVL                     13 QABE-NON-NUMERIC-EDIT-DEF                    00610
      *                          -------------                             00611
                                                 PIC X(8).                 00612
                                                                           00613
      * SSL    VALUE EDIT ----------------------------------------------00614
13 RDF                     13 QABE-SSL--VALUE-EDIT-DEF                     00615
                           REDEFINES QABE-NON-NUMERIC-EDIT-DEF             00616
                                                 PIC X(8).                 00617
                              88 QABE-SSL--VALUE-VLD     VALUE            00618
                                                                           00619
      *                    --- C L A Y S ---------------------------------00620
                              'C       ' 'CG      ' 'CS      ' 'CM      '00621
                              'CMS     ' 'CSM     '                        00622
                              'CD      ' 'CF      ' 'CK      ' 'CL      '00623
                              'CO      ' 'CP      ' 'CR      ' 'CW      '00624
                              'CY      ' 'CMSG    '                        00625
                                                                           00626
      *                    --- G R A V E L S -----------------------------00627
                              'G       ' 'GS      ' 'GM      ' 'GC      '00628
                              'GSM     '                                   00629
                              'GB      ' 'GF      ' 'GL      ' 'GR      '00630
                              'GW      ' 'GX      ' 'GY      ' 'GSMC    '00631
                              'G       ' 'GS      ' 'GM      ' 'GC      '00632
                                                                           00633
      *                    --- S A N D S ---------------------------------00634
                              'S       ' 'SG      ' 'SM      ' 'SC      '00635
                              'SMC     ' 'SCM     ' 'SMG     ' 'SCG     '00636
                              'SB      ' 'SF      ' 'SK      ' 'SL      '00637
                              'SO      ' 'SP      ' 'SR      ' 'SW      '00638
                              'SX      ' 'SY      ' 'SCMG    '           00639
                                                                           00640
      *                    --- S I L T S ---------------------------------00641
                              'M       ' 'MG      ' 'MS      ' 'MC      '00642
                              'MCS     ' 'MSC     '                        00643
                              'MF      ' 'MK      ' 'ML      ' 'MO      '00644
                              'MP      ' 'MR      ' 'MW      ' 'MX      '00645
                              'MY      ' 'MCSG    '                        00646
                                                                           00647
      *                    --- M I S C E L L A N E O U S -----------------00648
                              'A       ' 'B       ' 'D       ' 'F       '00649
                              'K       ' 'L       ' 'O       ' 'P       '00650
                              'R       ' 'U       ' 'W       ' 'X       '00651
                              'Y       '                                   00652
                              'BX      ' 'BL      ' 'OP      ' 'OC      '00653
                              'OM      ' 'OS      ' 'OW      ' 'PC      '00654
                              'PM      ' 'PS      ' 'PW      '.          00655


      *--- SAMPLE-DATA-ITEMS ------------- I S   C O N T I N U E D ----00657
```

```
11 RDF                 11 FILLER                                          00659
                       REDEFINES QABE-PARM-VALUE-EDIT-DEF.                00660
                                                                          00661
      *                        -------------                              00662
13 LVL                    13 QABE-PARM-DELETE-EDIT-DEF                    00663
      *                        -------------                              00664
                                                 PIC X(8).                00665
                                                                          00666
      * DELETE VALUE EDIT ------------------------------------------------00667
                             88 QABE-A-PARM-IS-TO-BE-DELETED              00668
                                VALUE 'DELETE  '.                         00669



      * "S A"  VALUE EDIT ------------------------------------------------00671
                       11 QABE-PARM-VALUE-S-A       PIC X.                00672
                          88 QABE-PARM-VALUE-S-A-BLANK                    00673
                             VALUE ' '.                                   00674
                          88 QABE-PARM-VALUE-S-A-VLD                      00675
                             VALUE 'A' 'D' 'U' 'R'.                       00676


      *--- SAMPLE-DATA-ITEMS -------------- I S   C O N T I N U E D ----00678
```

```
                11 QABE-METHOD              PIC XX.                  00680
                   88 QABE-METHOD-NOT-ENTRD                          00681
                      VALUE '  '.                                    00682
                                                                      00683
* AGA   METHOD EDIT ----------------------------------------------00684
                   88 QABE-AGA--METHOD-VLD                           00685
                      VALUE 'AA' 'AB' 'AC' 'AD' 'AE' 'AF' 'AG'      00686
                            'AH' 'AJ' 'AK'.                         00687
* ASG   METHOD EDIT ----------------------------------------------00688
                   88 QABE-ASG--METHOD-VLD                           00689
                      VALUE 'RO'.                                   00690
* BD    METHOD EDIT ----------------------------------------------00691
                   88 QABE-BD---METHOD-VLD                           00692
                      VALUE 'ST'.                                   00693
* BM    METHOD EDIT ----------------------------------------------00694
                   88 QABE-BM---METHOD-VLD                           00695
                      VALUE 'LD' 'IS' 'CA'.                         00696
* GS    METHOD EDIT ----------------------------------------------00697
                   88 QABE-GS---METHOD-VLD                           00698
                      VALUE 'ST'.                                   00699
* PERM  METHOD EDIT ----------------------------------------------00700
                   88 QABE-PERM-METHOD-VLD                           00701
                      VALUE 'LD' 'OE' 'PT' 'WP'.                    00702
* POR   METHOD EDIT ----------------------------------------------00703
                   88 QABE-POR--METHOD-VLD                           00704
                      VALUE 'RO'.                                   00705
* PR    METHOD EDIT ----------------------------------------------00706
                   88 QABE-PR---METHOD-VLD                           00707
                      VALUE 'LD' 'IS' 'CA'.                         00708
* RD    METHOD EDIT ----------------------------------------------00709
                   88 QABE-RD---METHOD-VLD                           00710
                      VALUE 'RO'.                                   00711
* SHST  METHOD EDIT ----------------------------------------------00712
                   88 QABE-SHST-METHOD-VLD                           00713
                      VALUE 'CA' 'IM'.                              00714
* SM    METHOD EDIT ----------------------------------------------00715
                   88 QABE-SM---METHOD-VLD                           00716
                      VALUE 'LD' 'IS' 'CA'.                         00717
* SPT   METHOD EDIT ----------------------------------------------00718
                   88 QABE-SPT--METHOD-VLD                           00719
                      VALUE 'ST'.                                   00720
* SSL   METHOD EDIT ----------------------------------------------00721
                   88 QABE-SSL--METHOD-VLD                           00722
                      VALUE 'DO'.                                   00723
* TAN   METHOD EDIT ----------------------------------------------00724
                   88 QABE-TAN--METHOD-VLD                           00725
                      VALUE 'CA'.                                   00726
* TGS   METHOD EDIT ----------------------------------------------00727
                   88 QABE-TSG--METHOD-VLD                           00728
                      VALUE 'RO'.                                   00729
* UC    METHOD EDIT ----------------------------------------------00730
                   88 QABE-UC---METHOD-VLD                           00731
                      VALUE 'IM'.                                   00732

*--- SAMPLE-DATA-ITEMS ------------- I S   C O N T I N U E D ----00734
```

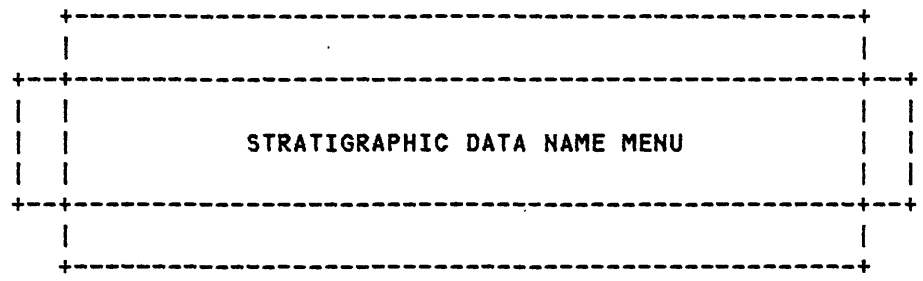
```
* VP    METHOD EDIT ----------------------------------------------00736
                  88 QABE-VP---METHOD-VLD                          00737
                     VALUE 'LD' 'VA' 'VB' 'VC' 'VD' 'VE' 'VF'      00738
                           'VG' 'VH'.                              00739
                  88 QABE-VP---SPECIAL-METHODS                     00740
                     VALUE 'VA' 'VF' 'VG' 'VH'.                   00741
* VR    METHOD EDIT ----------------------------------------------00742
                  88 QABE-VR---METHOD-VLD                          00743
                     VALUE 'RO'.                                  00744
* VS    METHOD EDIT ----------------------------------------------00745
                  88 QABE-VS---METHOD-VLD                          00746
                     VALUE 'LD' 'VA' 'VB' 'VC' 'VD' 'VE' 'VF'      00747
                           'VG' 'VH'.                              00748
                  88 QABE-VS---SPECIAL-METHODS                     00749
                     VALUE 'VA' 'VF' 'VG' 'VH'.                   00750
* WT    METHOD EDIT ----------------------------------------------00751
                  88 QABE-WT---METHOD-VLD                          00752
                     VALUE 'DO' 'RE' 'SR'.                        00753
                  88 QABE-WT---SPECIAL-METHOD                      00754
                     VALUE 'SR'.                                  00755
* YM    METHOD EDIT ----------------------------------------------00756
                  88 QABE-YM---METHOD-VLD                          00757
                     VALUE 'LD' 'IS' 'CA'.                        00758


               11 QABE-METHOD-S-A          PIC X.                 00760
                  88 QABE-METHOD-S-A-BLANK                         00761
                     VALUE ' '.                                   00762
                  88 QABE-METHOD-S-A-VLD                           00763
                     VALUE 'A' 'D' 'U' 'R'.                       00764


*___ E N D ___ STRAT-EDIT-AUDIT-DEF _____________________________00766
```

ATTACHMENT D



```
  01 QUERY-CONTROL-SERVICES-MENU.                                    ***
*    QUERY-CONTROL-SERVICES-MENU - - - - CURRENT AS OF 04 APR 1980    ...
*                                        (DEF REF: S10.A01)      09/10/80
                                                                 DICTS10
*    +-----------------------------------------------------------+    LV000
*    |  Q U E R Y   C O N T R O L   S E R V I C E S   M E N U  |  00006
*    +-----------------------------------------------------------+  00007
*    |                                                           |  00008
*    |  THE "DATA NAMES" THAT FOLLOW ARE THOSE WHICH MAY BE      |  00009
*    |                                                           |  00010
*    |  USED TO CONTROL THE RETRIEVAL OF DATA.                   |  00011
*    |                                                           |  00012
*    +-----------------------------------------------------------+  00013
*    |                                                           |  00014
*    |  CODING INSTRUCTIONS                                      |  00015
*    |  -------------------                                      |  00016
*    |                                                           |  00017
*    |  FOR THE "RELEASE-AUTHORITY-AUTHORIZED" CODE              |  00018
*    |                                                           |  00019
*    |      MOVE 'V' TO RELEASE-AUTHORITY-AUTHORIZED             |  00020
*    |                                                           |  00021
*    |      WHERE "V" IS THE HIGHEST VALUE OF RELEASE            |  00022
*    |                AUTHORITY YOU WISH PROCESSED.              |  00023
*    |                                                           |  00024
*    |  THE VALUE FOR "V" MUST BE ENCLOSED IN SINGLE QUOTES.     |  00025
*    |                                                           |  00026
*    |                                                           |  00027
*    |  FOR ALL OTHER QUERY CONTROL SERVICES MOVE "YES"          |  00028
*    |  TO THE DATA NAME SHOWN.                                  |  00029
*    |                                                           |  00030
*    |  EXAMPLE -  MOVE YES TO PRINT-RUN-PROFILE-ONLY            |  00031
*    |                                                           |  00032
*    +-----------------------------------------------------------+  00033


     03 RELEASE-AUTHORITY-AUTHORIZED          PIC X.              00035
                                                                  00036
     03 INDICATE-DATA-AT-ANY-RLSE-AUTH        PIC XXX.            00037
                                                                  00038
     03 QUERY-ALL-HISTORY                     PIC XXX.            00039
                                                                  00040
     03 PRINT-RUN-PROFILE-ONLY                PIC XXX.            00041
                                                                  00042
     03 SAVE-DATA-SELECTED                    PIC XXX.            00043
```

ATTACHMENT E



```
  01 STRATIGRAPHIC-DATA-NAME-MENU.                                    ***
*    STRATIGRAPHIC-DATA-NAME-MENU  - - - CURRENT AS OF 12 AUG 1980     ...
*                                       (DEF REF: GDQ.AAMQ)      09/16/80
                                                                    DICTGDQ
*    +-------------------------------------------------------+        LV000
*    | S T R A T I G R A P H I C   D A T A   N A M E   M E N U |  00006
*    +-------------------------------------------------------+  00007
*    |                                                       |  00008
*    |  THE "DATA NAMES" THAT FOLLOW ARE THOSE WHICH MAY BE  |  00009
*    |                                                       |  00010
*    |  USED TO SPECIFY THE SELECTION CRITERIA FOR THE       |  00011
*    |                                                       |  00012
*    |  RETRIEVAL OF STRATIGRAPHIC DATA.                     |  00013
*    |                                                       |  00014
*    +-------------------------------------------------------+  00015
*    |                                                       |  00016
*    |  EACH DATA NAME CAN HAVE A SYMBOLIC DESCRIPTION OR    |  00017
*    |  DEFINITION OF ITS SIZE, STRUCTURE AND CONTENTS.      |  00018
*    |  THIS SYMBOLIC DESCRIPTION IS IDENTIFIED BY THE       |  00019
*    |  CHARACTERS "PIC" MEANING "PICTURE".                  |  00020
*    |                                                       |  00021
*    |  THE SYMBOLS USED IN THE SYMBOLIC DESCRIPTIONS ARE    |  00022
*    |                                                       |  00023
*    |      "X" WHICH MEANS THAT THE VALUE OF THE DATA ITEM  |  00024
*    |          MAY CONTAIN ANY CHARACTER RECOGNIZED BY THE  |  00025
*    |          MACHINE.                                     |  00026
*    |                                                       |  00027
*    |      "9" WHICH MEANS THAT THE VALUE OF THE DATA ITEM  |  00028
*    |          SHOULD CONTAIN THE NUMERIC CHARACTERS        |  00029
*    |          ZERO ("0") THRU NINE ("9").  IF THE DATA     |  00030
*    |          ITEM DOES NOT CONTAIN NUMERIC DATA AND A     |  00031
*    |          NUMERIC OPERATION (E.G. PLUS OR MINUS)       |  00032
*    |          INVOLVING THE DATA ITEM IS ATTEMPTED THE     |  00033
*    |          PROGRAM WILL ABNORMALLY TERMINATE.           |  00034
*    |                                                       |  00035
*    |      NOTE: MULTIPLE OCCURRENCES OF AN "X" OR "9"      |  00036
*    |            APPEAR EITHER AS "X(13)" FOR EXAMPLE OR    |  00037
*    |            "XXXXXXXXXXXXX".  THESE TWO REPRESENTAIONS |  00038
*    |            ARE EQUIVALENT.  ALSO "9(5)" IS EQUIVALENT |  00039
*    |            TO "99999".                                |  00040
*    |                                                       |  00041
*    +------------------ C O N T I N U E D -----------------+  00042
```

```
*    +-------------------------------------------------------+  00044
*    |                                                       |  00045
*    |      "V" IS USED TO SHOW THE LOCATION ASSUMED FOR     |  00046
*    |          THE DECIMAL POINT IN A NUMERICAL DATA ITEM   |  00047
*    |          WHEN THE COMPUTER PERFORMS NUMERICAL         |  00048
*    |          OPERATION ON THE DATA VALUE.  THIS IS THE    |  00049
*    |          "VIRTUAL" DECIMAL POINT.  IF NO "V" IS       |  00050
*    |          SHOWN A NUMERICAL DATA ITEM IS TREATED AS    |  00051
*    |          AN INTEGER.                                  |  00052
*    |                                                       |  00053
*    |      "S" IS USED WITH A NUMERICAL DATA ITEM TO SHOW   |  00054
*    |          THAT AN ALGEBRAIC SIGN IS STORED WITH THE    |  00055
*    |          DATA VALUE.  IF NO "S" IS SHOWN THE SIGN     |  00056
*    |          IS ASSUMED POSITIVE AND NOT STORED.          |  00057
*    |                                                       |  00058
*    |  EACH DATA NAME SHOWN WITH A "PIC" FOLLOWING IT       |  00059
*    |  IDENTIFIES AN "ELEMENTARY" DATA NAME.  EACH DATA     |  00060
*    |  NAME SHOWN WITHOUT A "PIC" IDENTIFIES A "GROUP"      |  00061
*    |  DATA NAME.  WHEN REFERENCED, A GROUP DATA NAME IS    |  00062
*    |  TREATED AS IF IT HAD AN IMPLIED "PIC" OF "X'S".      |  00063
*    |                                                       |  00064
*    +------------------ C O N T I N U E D -----------------+  00065
```

```
*    +-------------------------------------------------------+  00067
*    |                                                       |  00068
*    |  CONDITION NAMES                                      |  00069
*    |  ---------------                                      |  00070
*    |                                                       |  00071
*    |  THERE IS A SPECIAL NAME WHICH HAS A UNIQUE AND       |  00072
*    |  POWERFUL USE.  THIS SPECIAL NAME IS REFERRED TO AS   |  00073
*    |  A "CONDITION NAME".  A "CONDITION NAME" IS A MEANS   |  00074
*    |  OF ASSOCIATING A DATA NAME WITH                      |  00075
*    |    1. ONE OR MORE VALUES.                             |  00076
*    |    2. A RANGE OF VALUES.                              |  00077
*    |    3. ANY COMBINATION OF VALUES AND RANGES OF VALUES. |  00078
*    |                                                       |  00079
*    |  CODING A CONDITION NAME IN YOUR QUERY IS EQUIVALENT  |  00080
*    |  TO CODING                                            |  00081
*    |     1. THE DATA NAME ASSOCIATED WITH THE CONDITION    |  00082
*    |        NAME, AN EQUAL SIGN (=) AND THE VALUE TO BE    |  00083
*    |        COMPARED.                                      |  00084
*    |     2. THE DATA NAME AND A COMBINATION OF LESS-       |  00085
*    |        THAN (<) AND GREATER-THAN (>) TO TEST A        |  00086
*    |        RANGE OF VALUES.                               |  00087
*    |                                                       |  00088
*    |     EXAMPLE: CODING                                   |  00089
*    |                                                       |  00090
*    |                "IF MONTEREY"                          |  00091
*    |                                                       |  00092
*    |              IS EQUIVALENT TO CODING                  |  00093
*    |                                                       |  00094
*    |                "IF STRATIGRAPHIC-FORMATION = '013'"   |  00095
*    |                                                       |  00096
*    |              AND WILL USUALLY MEAN MORE TO THE HUMAN  |  00097
*    |              READER.                                 |  00098
*    |                                                       |  00099
*    |       WHERE: STRATIGRAPHIC-FORMATION IS FROM THE      |  00100
*    |                 LITHOLOGIC-LAYER-DATA-MENU            |  00101
*    |                                                       |  00102
*    |              SEVERAL EXAMPLES OF THE DETAILED USE  OF |  00103
*    |              CONDITION NAMES CAN BE SEEN BY LOOKING AT|  00104
*    |              THE "SPEC-SMPL-LITHOLOGY-MENU".          |  00105
*    |                                                       |  00106
*    |  CONDITION NAMES ARE IDENTIFIED IN THE MENU BY AN     |  00107
*    |  "88" PREFIX NUMBER.  THE CONDITION NAMES FOR EACH    |  00108
*    |  DATA NAME ARE LISTED FOLLOWING THE DATA NAME TO      |  00109
*    |  WHICH THEY APPLY.                                    |  00110
*    |                                                       |  00111
*    |  NEW CONDITION NAMES MAY BE ADDED AT ANY TIME ON AN   |  00112
*    |  AS-NEEDED OR AS-DESIRED BASIS.                       |  00113
*    |                                                       |  00114
*    +------------------ C O N T I N U E D -----------------+  00115
```

```
*    +-----------------------------------------------------+  00117
*    |                                                     |  00118
*    |  CODING INSTRUCTIONS                                |  00119
*    |  -------------------                                |  00120
*    |                                                     |  00121
*    |  1. FOR DATA NAMES WITH A "X" SHOWN AS THE PRIMARY  |  00122
*    |     SYMBOL FOR THE "PIC" CODE THE SPECIFIED VALUE   |  00123
*    |     ENCLOSED IN SINGLE QUOTES (').                  |  00124
*    |                                                     |  00125
*    |        EXAMPLES: ATLAS-SHEET-CODE = '19'            |  00126
*    |                  PRIMARY-SOURCE-CODE = 'DWR'        |  00127
*    |                                                     |  00128
*    |           WHERE: ATLAS-SHEET-CODE IS FROM THE       |  00129
*    |                     SECONDARY-SURFACE-DATA-MENU     |  00130
*    |                  PRIMARY-SOURCE-CODE IS FROM THE    |  00131
*    |                     AUXILIARY-INFORMATION-MENU      |  00132
*    |                                                     |  00133
*    |  2. FOR DATA NAMES WITH A "9" SHOWN AS THE PRIMARY  |  00134
*    |     SYMBOL FOR THE "PIC" CODE THE SPECIFIED VALUE   |  00135
*    |     IN NORMAL NUMERIC FORM (BUT WITHOUT COMMAS)     |  00136
*    |                                                     |  00137
*    |        EXAMPLES: SURFACE-ELEVATION < 1500           |  00138
*    |                  BD-VALUE > 123.4                   |  00139
*    |                                                     |  00140
*    |           WHERE: SURFACE-ELEVATION IS FROM THE      |  00141
*    |                     PRIMARY-SURFACE-DATA-MENU       |  00142
*    |                  BD-VALUE IS FROM THE               |  00143
*    |                     BULK-DENSITY-MENU               |  00144
*    |                                                     |  00145
*    |        NOTE: A DECIMAL POINT NEED ONLY BE CODED IF  |  00146
*    |              A DECIMAL VALUE IS BEING QUERIED.  A   |  00147
*    |              DECIMAL POINT NEED NOT BE CODED WHEN   |  00148
*    |              QUERYING AN INTEGER VALUE EVEN IF THE  |  00149
*    |              DATA ITEM CONTAINS A DECIMAL.          |  00150
*    |                                                     |  00151
*    |  3. FOR DATA NAMES WITHOUT A "PIC" CODE THE         |  00152
*    |     SPECIFIED VALUE ENCLOSED IN SINGLE QUOTES (').  |  00153
*    |     (THIS IS IDENTICAL TO INSTRUCTION 1 ABOVE.)     |  00154
*    |                                                     |  00155
*    |        EXAMPLES: DATE-OF-SAMPLE < '19640601'        |  00156
*    |                  DATE-OF-SAMPLE > '19500000'        |  00157
*    |                  DATE-OF-SAMPLE < '19499999'        |  00158
*    |                  DOS-CENTURY-AND-YEAR > '1970'      |  00159
*    |                                                     |  00160
*    |           WHERE: DATE-OF-SAMPLE IS FROM THE         |  00161
*    |                     LITHOLOGIC-SAMPLE-DATA-MENU     |  00162
*    |                  DOS-CENTURY-AND-YEAR IS FROM THE   |  00163
*    |                     LITHOLOGIC-SAMPLE-DATA-MENU     |  00164
*    |                                                     |  00165
*    +------------------ C O N T I N U E D ---------------+  00166
```

```
*    +-------------------------------------------------------+  00168
*    |                                                       |  00169
*    |  4. PRIOR TO CODING A QUESTION ABOUT A PARTICULAR     |  00170
*    |     NUMERIC DATA ITEM ("PIC" OF "9'S") SUCH AS A      |  00171
*    |     GEOTECHNICAL PARAMETER VALUE YOU MUST MAKE        |  00172
*    |     SURE THAT THE DATA ITEM VALUE IS IN FACT          |  00173
*    |     AVAILABLE.                                        |  00174
*    |                                                       |  00175
*    |     ASSOCIATED WITH EACH NUMERIC DATA ITEM AND        |  00176
*    |     GEOTECHNICAL DATA NAME GROUP IS A CONDITION       |  00177
*    |     NAME WHICH SPECIFIES WHETHER OR NOT THE DATA      |  00178
*    |     ITEM IS AVAILABLE.                                |  00179
*    |                                                       |  00180
*    |     THE CONDITION NAME FOR ANY NUMERIC DATA ITEMS     |  00181
*    |     MUST BE CODED PRIOR TO CODING THE NUMERIC DATA    |  00182
*    |     NAME IT REFERENCES.                               |  00183
*    |                                                       |  00184
*    |     THE CONDITION NAME FOR ANY GEOTECHNICAL           |  00185
*    |     PARAMETER MAY ALSO BE CODED WHEN CODING QUERIES   |  00186
*    |     FOR A PARTICULAR GEOTECHNICAL PARAMETER DATA      |  00187
*    |     NAME GROUP.                                       |  00188
*    |                                                       |  00189
*    |        EXAMPLE: IF DEPTH-TO-TOP-AVAIL                 |  00190
*    |                    AND DEPTH-TO-TOP < 200             |  00191
*    |                                                       |  00192
*    |          WHERE: DEPTH-TO-TOP-AVAIL AND DEPTH-TO-TOP   |  00193
*    |                    ARE FROM THE                       |  00194
*    |                    LITHOLOGIC-SAMPLE-DATA-MENU        |  00195
*    |                                                       |  00196
*    |        EXAMPLE: IF BM-VALUE-AVAIL                     |  00197
*    |                    AND BM-VALUE > 125                 |  00198
*    |                                                       |  00199
*    |          WHERE: BM-VALUE-AVAIL AND BM-VALUE           |  00200
*    |                    ARE FROM THE BULK-MODULUS-MENU     |  00201
*    |                                                       |  00202
*    |                                                       |  00203
*    |  5. THE NEGATION OF A CONDITION, I.E. REQUESTING      |  00204
*    |     THAT AN OUTPUT SERVICE BE PROCESSED IF THE        |  00205
*    |     CONDITION IS NOT FOUND, MAY ALSO BE CODED.  THE   |  00206
*    |     RULES FOR CODING FOLLOW CONVENTIONAL SET LOGIC    |  00207
*    |     RULES FOR NEGATION.                               |  00208
*    |                                                       |  00209
*    |        EXAMPLE: IF NOT CALIFORNIA                     |  00210
*    |                                                       |  00211
*    |                 IF NOT (CALIFORNIA OR OFFSHORE)       |  00212
*    |                                                       |  00213
*    |                 IF NOT (CALIFORNIA OR OFFSHORE)       |  00214
*    |                    AND (GL-IS-LIMESTONE OR            |  00215
*    |                         ANY-REFLECTION-MEASUREMENT)   |  00216
*    |                                                       |  00217
*    +------------------ C O N T I N U E D -----------------+  00218
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*    +-------------------------------------------------------+  00220
*    |                                                       |  00221
*    |     IF THE NEGATION BECOMES AT ALL INVOLVED IT CAN    |  00222
*    |     BE MUCH EASIER TO CODE THE POSITIVE STATEMENT     |  00223
*    |     AND USE THE "NEXT SENTENCE OTHERWISE" OPTION      |  00224
*    |     TO ACHIEVE THE IDENTICAL RESULT.  THE "NEXT       |  00225
*    |     SENTENCE" OPTION SAYS IF THE CONDITION IS TRUE    |  00226
*    |     DO NOT PROCESS THE OUTPUT SERVICES REQUESTED.     |  00227
*    |                                                       |  00228
*    |                                                       |  00229
*    |        EXAMPLE: IF CALIFORNIA                         |  00230
*    |                     NEXT SENTENCE                     |  00231
*    |                 OTHERWISE                             |  00232
*    |                                                       |  00233
*    |                                                       |  00234
*    |                 IF CALIFORNIA OR OFFSHORE             |  00235
*    |                     NEXT SENTENCE                     |  00236
*    |                 OTHERWISE                             |  00237
*    |                                                       |  00238
*    |                                                       |  00239
*    |                 IF CALIFORNIA OR OFFSHORE             |  00240
*    |                    OR (NOT GL-IS-LIMESTONE AND        |  00241
*    |                        NOT ANY-REFLECTION-MEASUREMENT)|  00242
*    |                     NEXT SENTENCE                     |  00243
*    |                 OTHERWISE                             |  00244
*    |                                                       |  00245
*    |                                                       |  00246
*    |          WHERE: CALIFORNIA AND OFFSHORE               |  00247
*    |                    ARE STATE-CODE'S FROM THE          |  00248
*    |                    SECONDARY-SURFACE-DATA-MENU        |  00249
*    |                 GL-IS-LIMESTONE                       |  00250
*    |                    IS A GENERAL-LITHOLOGY FROM        |  00251
*    |                    THE LITHOLOGIC-LAYER-DATA-MENU     |  00252
*    |                 ANY-REFLECTION-MEASUREMENT            |  00253
*    |                    IS A METHOD FROM THE               |  00254
*    |                    GENERAL-GEOTECH-PARM-MENU          |  00255
*    |                                                       |  00256
*    |                                                       |  00257
*    |     THIS PARTICULAR FORM OF NEGATION CAN BE VERY      |  00258
*    |     USEFUL AS AN AID IN IDENTIFYING ANOMALIES WITHIN  |  00259
*    |     A PARTICULAR AREA OR GROUP OR CLASS OF DATA.      |  00260
*    |                                                       |  00261
*    |     FOR EXAMPLE, ASSUME THAT IN A CERTAIN AREA ONLY   |  00262
*    |     A SPECIFIC GROUP OF SAMPLE LITHOLOGY SHOULD BE    |  00263
*    |     FOUND IN A PARTICUALAR DEPTH RANGE AND IN         |  00264
*    |     ASSOCIATION WITH CERTAIN GRAIN SIZES, SHEAR       |  00265
*    |     STRENGTHS AND STANDARD PENETRATION TEST VALUES.   |  00266
*    |     THEN TO FIND ANY ANOMALIES CODE A QUERY WHICH     |  00267
*    |     SPECIFIES ALL THE CONDITIONS THAT SHOULD BE       |  00268
*    |     FOUND, FOLLOWING THE CONDITION PORTION OF THE     |  00269
*    |     QUERY WITH "NEXT SENTENCE OTHERWISE" AND THE      |  00270
*    |     OUTPUT SERVICES YOU DESIRE.  THE RESULTING OUTPUT |  00271
*    |     IS THE SAMPLES WHICH DID NOT SATISFY THE          |  00272
*    |     SPECIFIED CONDITION.                              |  00273
*    |                                                       |  00274
*    +------------------ C O N T I N U E D -----------------+  00275
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*    +-------------------------------------------------------+  00277
*    |                                                       |  00278
*    |  CODE FORMATTING CONVENTIONS                          |  00279
*    |  --------------------------                           |  00280
*    |                                                       |  00281
*    |  THE FORMAT YOU USE TO CODE YOUR QUERY IS GENERALLY   |  00282
*    |  FREE FORMAT.  THE RESTRICTIONS ARE MINIMAL.          |  00283
*    |                                                       |  00284
*    |     1. THE FIRST CHARACTER MUST BE BLANK OR AN        |  00285
*    |        ASTERISK ("*").  THE USE OF AN ASTERISK        |  00286
*    |        AS THE FIRST CHARACTER DENOTES A COMMENT       |  00287
*    |        LINE.                                          |  00288
*    |     2. CODE YOUR QUERY IN POSITIONS 2 THRU 61 OF      |  00289
*    |        EACH LINE ONLY.  ALL CHARACTERS FROM POSITION  |  00290
*    |        62 TO THE END (END = 80) ARE IGNORED.          |  00291
*    |     3. DO NOT SPLIT A DATA NAME BETWEEN LINES.        |  00292
*    |        IF, DURING THE CODING OF YOUR QUERY, YOU       |  00293
*    |        FIND THAT A DATA NAME EXTENDS BEYOND POSITION  |  00294
*    |        61 START THAT DATA NAME ON THE NEXT LINE.      |  00295
*    |     4. IF YOUR QUERY INVOLVES THE MIXING OF "AND'S"   |  00296
*    |        AND "OR'S" USE PARENTHESES TO INSURE THAT      |  00297
*    |        YOUR QUERY IS PROPERLY INTERPRETED.  THE       |  00298
*    |        PARENTHESES ARE USED TO GROUP CONDITIONS       |  00299
*    |        AND FOLLOW CONVENTIONAL SET LOGIC RULES FOR    |  00300
*    |        EVALUATION.                                    |  00301
*    |                                                       |  00302
*    |                                                       |  00303
*    |  THE USE OF COMMENT AND BLANK LINES                   |  00304
*    |  ----------------------------------                   |  00305
*    |                                                       |  00306
*    |  BY USING COMMENT LINES YOUR CAN CREATE YOUR OWN      |  00307
*    |  MENUS.  BY PLANNING THE STRUCTURE AND CONTENT OF     |  00308
*    |  YOUR QUERY YOU CAN UTILIZE THE ASTERISK IN THE FIRST |  00309
*    |  POSITION OF EACH LINE TO "TURN OFF AND ON" ANY LINE. |  00310
*    |  THIS CAN BE USED TO "FINE TUNE" YOUR QUERY BY EITHER |  00311
*    |  INCREASING OR DECREASING THE DATA ITEMS PRINTED.     |  00312
*    |  THIS CAN ALSO BE USED TO CONTROL THE DETAIL AND      |  00313
*    |  CONTENT OF THE QUERY CONDITIONS SPECIFIED.           |  00314
*    |                                                       |  00315
*    |  COMMENTS MAY BE USED TO START EACH QUERY WITH A      |  00316
*    |  MORE ENGLISH DESCRIPTION OF YOUR QUERY THEN PERMITTED|  00317
*    |  BY THE QUERY LANGUAGE CODING REQUIREMENTS AND        |  00318
*    |  LIMITATIONS.  YOU MAY, FOR EXAMPLE, WANT TO SPECIFY  |  00319
*    |  WHY AND FOR WHOM THE QUERY IS BEING REQUESTED,       |  00320
*    |  WHERE THE RESULTS SHOULD BE SENT, OR EVEN WHAT       |  00321
*    |  YOUR NEXT QUERY MIGHT BE AS A REMINDER DEPENDING ON  |  00322
*    |  THE RESULTS OF YOUR CURRENT QUERY.                   |  00323
*    |                                                       |  00324
*    |                                                       |  00325
*    |                                                       |  00326
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*    |                                                       |  00328
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*    +------------------ C O N T I N U E D ------------------+  00332
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*    +---------------- C O N T I N U E D ----------------------+  00390
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*    +-------------------------------------------------------+  00392
*    |                                                       |  00393
*    |        GENERAL  DATA  NAME  GROUP  OUTLINE  FOR       |  00394
*    |                                                       |  00395
*    |          THE  STRATIGRAPHIC  DATA  NAME  MENU         |  00396
*    |                                                       |  00397
*    +-------------------------------------------------------+  00398
*    |                                                       |  00399
*    |           1. PRIMARY-SURFACE-DATA-MENU                |  00400
*    |                                                       |  00401
*    |           2. SECONDARY-SURFACE-DATA-MENU              |  00402
*    |                                                       |  00403
*    |           3. AUXILIARY-INFORMATION-MENU               |  00404
*    |                                                       |  00405
*    |           4. LITHOLOGIC-LAYER-DATA-MENU               |  00406
*    |                                                       |  00407
*    |           5. LITHOLOGIC-SAMPLE-DATA-MENU              |  00408
*    |                                                       |  00409
*    |              1. GENERAL-GEOTECH-PARM-MENU             |  00410
*    |                                                       |  00411
*    |              2. SPECIFIC-GEOTECH-PARM-MENUS           |  00412
*    |                  1. ABSOLUTE-GEOL-AGE-MENU            |  00413
*    |                  2. APRNT-SPEC-GRAVITY-MENU           |  00414
*    |                  3. BULK-DENSITY-MENU                 |  00415
*    |                  4. BULK-MODULUS-MENU                 |  00416
*    |                * 5. CONE-PENETRATION-TEST-MENU        |  00417
*    |                  6. GRAIN-SIZE-MENU                   |  00418
*    |                * 7. MOISTURE-CONTENT-MENU             |  00419
*    |                  8. P-WAVE-VELOCITY-MENU              |  00420
*    |                  9. PERMEABILITY-MENU                 |  00421
*    |                 10. POISSONS-RATIO-MENU               |  00422
*    |                 11. POROSITY-MENU                     |  00423
*    |                 12. RELATIVE-DENSITY-MENU             |  00424
*    |                 13. S-WAVE-VELOCITY-MENU              |  00425
*    |                 14. SEISMIC-IMPEDANCE-MENU            |  00426
*    |                 15. SHEAR-MODULUS-MENU                |  00427
*    |                 16. SHEAR-STRENGTH-MENU               |  00428
*    |                 17. SPEC-SMPL-LITHOLOGY-MENU          |  00429
*    |                 18. STND-PENETRATION-TEST-MENU        |  00430
*    |                 19. TAN-PHI-MENU                      |  00431
*    |               * 20. TRAVEL-TIME-1ST-P-WAVE-MENU       |  00432
*    |               * 21. TRAVEL-TIME-LATER-P-WAVE-MENU     |  00433
*    |               * 22. TRAVEL-TIME-1ST-S-WAVE-MENU       |  00434
*    |               * 23. TRAVEL-TIME-LATER-S-WAVE-MENU     |  00435
*    |                 24. TRUE-SPEC-GRAVITY-MENU            |  00436
*    |                 25. UNIT-COHESION-MENU                |  00437
*    |                 26. VOID-RATIO-MENU                   |  00438
*    |                 27. WATER-TABLE-MENU                  |  00439
*    |                 28. YOUNGS-MODULUS-MENU               |  00440
*    |                                                       |  00441
*    |               * INDICATES FUTURE PARAMETERS           |  00442
*    |                                                       |  00443
*    +-------------------------------------------------------+  00444
```

```
     03 PRIMARY-SURFACE-DATA-MENU.                                    00446
*       ==========================                                   00447
                                                                      00448
        05 CALIF-COORDINATES.                                         00449
           07 CALIF-COORDINATE-ZONE          PIC X.                   00450
           07 CALIF-COORDINATE-EAST          PIC X(7).                00451
           07 CALIF-COORDINATE-NORTH         PIC X(6).                00452
                                                                      00453
                                                                      00454
        05 IND-SAMPLE-IS-IN-THE-POLYGON      PIC X.                   00455
                                                                      00456
*          ------------------------------------------------------     00457
* NOTE ->*  IF A POLYGON SEARCH HAS BEEN REQUESTED PREVIOUS      * 00458
* NOTE ->*  TO YOUR QUERY THE FOLLOWING CONDITION NAME MAY BE    * 00459
* NOTE ->*  CODED AS PART OF THE QUERY TO CHECK IF A SAMPLE      * 00460
* NOTE ->*  IS WITHIN THE POLYGON SPECIFIED.                     * 00461
*          ------------------------------------------------------     00462
                                                                      00463
           88 A-SAMPLE-IS-IN-THE-POLYGON         VALUE 'Y'.           00464
                                                                      00465
                                                                      00466
        05 IND-SURFACE-ELEVATION-AVAIL       PIC X.                   00467
           88 SURFACE-ELEVATION-AVAIL            VALUE 'Y'.           00468
        05 SURFACE-ELEVATION                 PIC S9(5)V9.             00469


     03 SECONDARY-SURFACE-DATA-MENU.                                   00471
*       ============================                                 00472
                                                                      00473
        05 IND-LONGITUDE-AVAIL               PIC X.                   00474
           88 LONGITUDE-AVAIL                    VALUE 'Y'.           00475
        05 LONGITUDE                         PIC 999V9(6).            00476
                                                                      00477
        05 IND-LATITUDE-AVAIL                PIC X.                   00478
           88 LATITUDE-AVAIL                     VALUE 'Y'.           00479
        05 LATITUDE                          PIC 99V9(6).             00480
                                                                      00481
        05 STATE-CODE                        PIC XX.                  00482
           88 ARIZONA                            VALUE 'AZ'.          00483
           88 CALIFORNIA                         VALUE 'CA'.          00484
           88 MEXICO                             VALUE 'MX'.          00485
           88 NEVADA                             VALUE 'NV'.          00486
           88 OREGON                             VALUE 'OR'.          00487
           88 OFFSHORE                           VALUE 'OO'.          00488
                                                                      00489
        05 COUNTY-CODE                       PIC XX.                  00490
           88 LOS-ANGELES                        VALUE '19'.          00491
           88 ORANGE                             VALUE '30'.          00492
           88 RIVERSIDE                          VALUE '33'.          00493
           88 SAN-BERNARDINO                     VALUE '36'.          00494
           88 SAN-DIEGO                          VALUE '37'.          00495
           88 NOT-DETERMINED                     VALUE '59'.          00496
                                                                      00497
        05 ATLAS-SHEET-CODE                  PIC XX.                  00498
           88 LONG-BEACH-SHEET                   VALUE '07'.          00499
           88 LOS-ANGELES-SHEET                  VALUE '08'.          00500
           88 SANTA-ANA-SHEET                    VALUE '19'.          00501
```

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03 AUXILIARY-INFORMATION-MENU.                                    00503
*    ==========================                                   00504
                                                                  00505
   05 PRIMARY-DATA-SOURCE.                                        00506
                                                                  00507
      07 PRIMARY-DATA-SOURCE-ID.                                  00508
         09 PRIMARY-SOURCE-CODE          PIC XXX.                00509
            88 BEACH-LEIGHTON-AND-ASSOC      VALUE 'BLA'.        00510
            88 BECHTEL-INC                   VALUE 'BEC'.        00511
            88 CALIF-DEPT-OF-TRANSPORTAION   VALUE 'CDT'.        00512
            88 CALIF-DEPT-OF-WATER-RESOURCES VALUE 'DWR'.        00513
            88 CALIF-DVSN-OF-MINES-AND-GEOL  VALUE 'DMG'.        00514
            88 CALIF-DVSN-OF-OIL-AND-GAS     VALUE 'DOG'.        00515
            88 CALIF-OFFICE-OF-ARCH-AND-CNST VALUE 'OAC'.        00516
            88 CALIF-STATE-LANDS-COMMISSION  VALUE 'SLC'.        00517
            88 CHEVRON-USA-INC               VALUE 'CHV'.        00518
            88 CONVERSE-DAVIS-DIXON          VALUE 'CDD'.        00519
            88 ENGINEERING-GEOLOGY-CONSULT   VALUE 'JES'.        00520
            88 FUGRO-INC                     VALUE 'FUG'.        00521
            88 GETTY-OIL-COMPANY             VALUE 'GOC'.        00522
            88 H-V-LAWMASTER-AND-CO-INC      VALUE 'HVL'.        00523
            88 L-A-CNTY-FLOOD-CNTL-DIST      VALUE 'LAF'.        00524
            88 LEROY-CRANDALL-AND-ASSOC      VALUE 'LCA'.        00525
            88 MOORE-AND-TABER               VALUE 'MAT'.        00526
            88 ORANGE-CNTY-ENVIRON-MGMT-AGCY VALUE 'OCG'.        00527
            88 ORANGE-CNTY-FLOOD-CNTL-DIST   VALUE 'OFC'.        00528
            88 ORANGE-CNTY-REGULATION-DVSN   VALUE 'OFR'.        00529
            88 ORANGE-CNTY-WATER-DIST        VALUE 'OCW'.        00530
            88 SHELL-OIL-COMPANY             VALUE 'SHO'.        00531
            88 SOUTHERN-CALIF-EDISON-COMPANY VALUE 'SCE'.        00532
            88 SOUTHERN-CALIF-GAS-COMPANY    VALUE 'SCG'.        00533
            88 TEXACO-INC                    VALUE 'TEX'.        00534
            88 UNION-OIL-COMPANY-OF-CALIF    VALUE 'UNO'.        00535
            88 USGS-CONSERVATION-DVSN        VALUE 'GSC'.        00536
            88 USGS-GEOLOGICAL-DVSN          VALUE 'GSG'.        00537
            88 USGS-WATER-RESOURCES-DVSN     VALUE 'GSW'.        00538
            88 WOODWARD-CLYDE-CONSULT        VALUE 'WCC'.        00539
         09 PRIMARY-SOURCE-QUALFR        PIC XXX.                00540
                                                                  00541
      07 PRIMARY-ACTIVITY-CODE           PIC X.                  00542
         88 BRIDGE-BORING                    VALUE 'B'.          00543
         88 CORE-HOLE                        VALUE 'C'.          00544
         88 ELECTRICAL-RESISTIVITY-SURVEY    VALUE 'R'.          00545
         88 FOUNDATION-INVESTIGATION         VALUE 'F'.          00546
         88 GRAVITY-SURVEY                   VALUE 'G'.          00547
         88 MAGNETIC-SURVEY                  VALUE 'M'.          00548
         88 OIL-AND-GAS-WELL                 VALUE 'O'.          00549
         88 SEISMIC-SHOT-HOLE                VALUE 'H'.          00550
         88 SEISMIC-SURVEY                   VALUE 'V'.          00551
         88 SOIL-SURVEY                      VALUE 'S'.          00552
         88 SURFICIAL-GEOLOGY                VALUE 'A'.          00553
         88 TRENCH-INVESTIGATION             VALUE 'T'.          00554
         88 WATER-WELL                       VALUE 'W'.          00555
```

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*          -------------------------------                      00557
* NOTE ->* THE VALUE USED TO QUERY THE     *                    00558
* NOTE ->* SURFACE-SEGMENT-DATE MUST       *                    00559
* NOTE ->* BE CODED IN THE FORM 'CCYYMMDD' *                    00560
*          -------------------------------                      00561
                                                                00562
     03 SURFACE-SEGMENT-DATE.                                   00563
*       --------------------                                    00564
        05 SURFACE-SGMT-CENTURY-AND-YEAR.                        00565
           07 SURFACE-SGMT-CENTURY          PIC XX.              00566
           07 SURFACE-SGMT-YEAR             PIC XX.              00567
        05 SURFACE-SGMT-MONTH               PIC XX.              00568
        05 SURFACE-SGMT-DAY                 PIC XX.              00569


*--- E N D   O F --- SURFACE-DATA-MENUS -------------------------00571


*****************************************************************00573


     03 LITHOLOGIC-LAYER-DATA-MENU.                              00575
*       ==========================                              00576
                                                                00577
        05 IND-DEPTH-TO-TOP-AVAIL           PIC X.               00578
           88 DEPTH-TO-TOP-AVAIL                VALUE 'Y'.       00579
        05 DEPTH-TO-TOP                     PIC 9(5)V9.          00580
                                                                00581
        05 IND-THICKNESS-AVAIL              PIC X.               00582
           88 THICKNESS-AVAIL                   VALUE 'Y'.       00583
        05 THICKNESS                        PIC 9(5).            00584
                                                                00585
        05 GENERAL-LITHOLOGY                PIC XX.              00586
           88 GL-IS-ARTIFICIAL-FILL             VALUE 'AF'.      00587
           88 GL-IS-BOULDERS                    VALUE 'BD'.      00588
           88 GL-IS-CLAY                        VALUE 'CL'.      00589
           88 GL-IS-CONGLOMERATE                VALUE 'CG'.      00590
           88 GL-IS-GRAVEL                      VALUE 'GR'.      00591
           88 GL-IS-IGNEOUS-ROCK                VALUE 'IG'.      00592
           88 GL-IS-LIMESTONE                   VALUE 'LS'.      00593
           88 GL-IS-METAMORPHIC-ROCK            VALUE 'MT'.      00594
           88 GL-IS-PEAT                        VALUE 'PT'.      00595
           88 GL-IS-SAND                        VALUE 'SD'.      00596
           88 GL-IS-SAND-AND-GRAVEL             VALUE 'SG'.      00597
           88 GL-IS-SANDSTONE                   VALUE 'SS'.      00598
           88 GL-IS-SEDIMENTARY-ROCK            VALUE 'SR'.      00599
           88 GL-IS-SHALE                       VALUE 'SH'.      00600
           88 GL-IS-SILT                        VALUE 'SL'.      00601
           88 GL-IS-SOIL                        VALUE 'SO'.      00602
           88 GL-IS-VOLCANIC-ROCK               VALUE 'VO'.      00603


*--- LITHOLOGIC-LAYER-DATA-MENU ----- I S   C O N T I N U E D ----00605
```

```
05 STRATIGRAPHIC-ID.                                          00607
   07 STRATIGRAPHIC-GROUP          PIC XX.                    00608
   07 STRATIGRAPHIC-FORMATION      PIC XXX.                   00609
      88 CAPISTRANO                    VALUE '012'.          00610
      88 COYOTE-HILLS-LOWER            VALUE '006'.          00611
      88 COYOTE-HILLS-UPPER            VALUE '004'.          00612
      88 EL-MODENO-VOLCANICS           VALUE '015'.          00613
      88 FERNANDO-LOWER                VALUE '010'.          00614
      88 FERNANDO-UPPER                VALUE '007'.          00615
      88 LA-HABRA                      VALUE '002'.          00616
      88 LAKEWOOD                      VALUE '001'.          00617
      88 MONTEREY                      VALUE '013'.          00618
      88 NIGUEL                        VALUE '009'.          00619
      88 PICO                          VALUE '008'.          00620
      88 PUENTE                        VALUE '014'.          00621
      88 REPETTO                       VALUE '011'.          00622
      88 SAN-ONOFRE-BRECCIA            VALUE '016'.          00623
      88 SAN-PEDRO                     VALUE '005'.          00624
      88 SANTIAGO                      VALUE '020'.          00625
      88 SESPE                         VALUE '019'.          00626
      88 SILVERADO                     VALUE '021'.          00627
      88 SUNNY-HILLS                   VALUE '003'.          00628
      88 TOPANGA                       VALUE '017'.          00629
      88 VAQUEROS                      VALUE '018'.          00630
   07 STRATIGRAPHIC-MEMBER         PIC XXX.                   00631
      88 ALLUVIUM                      VALUE '001'.          00632
      88 ALPHA-AQUIFER                 VALUE '009'.          00633
      88 ARTESIA-AQUIFER               VALUE '012'.          00634
      88 BEACH-DEPOSITS                VALUE '003'.          00635
      88 BETA-AQUIFER                  VALUE '010'.          00636
      88 BOLSA-AQUIFER                 VALUE '006'.          00637
      88 COLLUVIUM                     VALUE '002'.          00638
      88 GAGE-AQUIFER                  VALUE '014'.          00639
      88 GARDENA-AQUIFER               VALUE '013'.          00640
      88 GASPUR-AQUIFER                VALUE '007'.          00641
      88 HOLLYDALE-AQUIFER             VALUE '020'.          00642
      88 JEFFERSON-AQUIFER             VALUE '021'.          00643
      88 LA-VIDA                       VALUE '028'.          00644
      88 LAMBDA-AQUIFER                VALUE '011'.          00645
      88 LYNWOOD-AQUIFER               VALUE '022'.          00646
      88 MAIN-AQUIFER                  VALUE '016'.          00647
      88 MEADOWLARK-AQUIFER            VALUE '015'.          00648
      88 OMICRON-AQUIFER               VALUE '017'.          00649
      88 RHO-AQUIFER-LOWER             VALUE '019'.          00650
      88 RHO-AQUIFER-UPPER             VALUE '018'.          00651
      88 SILVERADO-AQUIFER             VALUE '023'.          00652
      88 SOQUEL                        VALUE '027'.          00653
      88 STREAM-DEPOSITS               VALUE '004'.          00654
      88 SUNNYSIDE-AQUIFER             VALUE '024'.          00655
      88 SYCAMORE-CANYON               VALUE '025'.          00656
      88 TALBERT-AQUIFER               VALUE '005'.          00657
      88 TERRACE-DEPOSITS              VALUE '008'.          00658
      88 YORBA                         VALUE '026'.          00659

*--- LITHOLOGIC-LAYER-DATA-MENU ----- I S   C O N T I N U E D ----00661
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```
05 RELATIVE-GEOLOGIC-AGE.                                    00663
   07 RELATIVE-GEOLOGIC-ERA          PIC X.                  00664
      88 CENOZOIC                        VALUE '1'.         00665
      88 MESOZOIC                        VALUE '2'.         00666
      88 PALEOZOIC                       VALUE '3'.         00667
      88 PRECAMBRIAN                     VALUE '4'.         00668
   07 RELATIVE-GEOLOGIC-PERIOD       PIC XX.                 00669
      88 CAMBRIAN                        VALUE '12'.        00670
      88 CRETACEOUS                      VALUE '03'.        00671
      88 DEVONIAN                        VALUE '09'.        00672
      88 JURASSIC                        VALUE '04'.        00673
      88 MISSISSIPPIAN                   VALUE '08'.        00674
      88 ORDOVICIAN                      VALUE '11'.        00675
      88 PENNSYLVANIAN                   VALUE '07'.        00676
      88 PERMIAN                         VALUE '06'.        00677
      88 QUATERNARY                      VALUE '01'.        00678
      88 SILURIAN                        VALUE '10'.        00679
      88 TERTIARY                        VALUE '02'.        00680
      88 TRIASSIC                        VALUE '05'.        00681
   07 RELATIVE-GEOLOGIC-SER-EPH      PIC XX.                 00682
      88 EOCENE                          VALUE '06'.        00683
      88 HOLOCENE                        VALUE '01'.        00684
      88 MIOCENE                         VALUE '04'.        00685
      88 OLIGOCENE                       VALUE '05'.        00686
      88 PALEOCENE                       VALUE '07'.        00687
      88 PLEISTOCENE                     VALUE '02'.        00688
      88 PLIOCENE                        VALUE '03'.        00689
   07 RELATIVE-GEOLOGIC-STAGE        PIC XXX.                00690
      88 MIOCENE-LOWER                   VALUE '008'.       00691
      88 MIOCENE-MIDDLE                  VALUE '007'.       00692
      88 MIOCENE-UPPER                   VALUE '006'.       00693
      88 PLEISTOCENE-LOWER               VALUE '003'.       00694
      88 PLEISTOCENE-UPPER               VALUE '002'.       00695
      88 PLIOCENE-UPPER                  VALUE '004'.       00696
      88 PLIOCENE-LOWER                  VALUE '005'.       00697
      88 RECENT                          VALUE '001'.       00698
                                                           00699
05 METHOD-OF-DETERMINATION           PIC X.                00700
   88 LITHOLOGY                         VALUE '5'.         00701
   88 MICROPALEONTOLOGY                 VALUE '1'.         00702
   88 PALEONTOLOGY                      VALUE '2'.         00703
   88 PALYNOLOGY                        VALUE '3'.         00704
   88 SUPERPOSITION                     VALUE '4'.         00705

*--- LITHOLOGIC-LAYER-DATA-MENU ----- I S   C O N T I N U E D ----00707
```

```
*          --------------------------------                    00709
* NOTE ->* THE VALUE USED TO QUERY THE     *                    00710
* NOTE ->* LAYER-SEGMENT-DATE MUST         *                    00711
* NOTE ->* BE CODED IN THE FORM 'CCYYMMDD' *                    00712
*          --------------------------------                    00713
                                                               00714
     03 LAYER-SEGMENT-DATE.                                     00715
*       ------------------                                     00716
        05 LAYER-SGMT-CENTURY-AND-YEAR.                         00717
           07 LAYER-SGMT-CENTURY              PIC XX.           00718
           07 LAYER-SGMT-YEAR                 PIC XX.           00719
        05 LAYER-SGMT-MONTH                   PIC XX.           00720
        05 LAYER-SGMT-DAY                     PIC XX.           00721


*--- E N D   O F --- LITHOLOGIC-LAYER-DATA-MENU ------------------00723
```

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     03 LITHOLOGIC-SAMPLE-DATA-MENU.                                  00725
*       ============================                                 00726
                                                                      00727
        05 IND-DEPTH-TO-SAMPLE-AVAIL          PIC X.                 00728
           88 DEPTH-TO-SAMPLE-AVAIL               VALUE 'Y'.         00729
        05 DEPTH-TO-SAMPLE                    PIC 9(5)V9.            00730


*-------------------------------------------------------------------*00732
*-------------------------------------------------------------------*00733


*         ============================                                00735
        05 GENERAL-GEOTECH-PARM-MENU.                                  00736
*         ============================                                00737

*             -------------------------------                         00739
* NOTE ->    * THE VALUE USED TO QUERY THE     *                     00740
* NOTE ->    * ANY-DATE-OF-SAMPLE AND          *                     00741
* NOTE ->    * ANY-DATE-OF-MEASUREMENT MUST    *                     00742
* NOTE ->    * BE CODED IN THE FORM 'CCYYMMDD' *                     00743
*             -------------------------------                         00744
                                                                      00745
           07 ANY-DATE-OF-SAMPLE.                                     00746
              09 ANY-DOS-CENTURY-AND-YEAR.                            00747
                 11 ANY-DOS-CENTURY            PIC XX.                00748
                 11 ANY-DOS-YEAR               PIC XX.                00749
              09 ANY-DOS-MONTH                 PIC XX.                00750
              09 ANY-DOS-DAY                   PIC XX.                00751
                                                                      00752
           07 ANY-DATE-OF-MEASUREMENT.                                00753
              09 ANY-DOM-CENTURY-AND-YEAR.                            00754
                 11 ANY-DOM-CENTURY            PIC XX.                00755
                 11 ANY-DOM-YEAR               PIC XX.                00756
              09 ANY-DOM-MONTH                 PIC XX.                00757
              09 ANY-DOM-DAY                   PIC XX.                00758


*--- GENERAL-GEOTECH-PARAMETER-MENU -- I S   C O N T I N U E D ---00760
```

```
*--- GENERAL-GEOTECH-PARAMETER-MENU -- C O N T I N U A T I O N ---00762

          07 ANY-METHOD                          PIC XX.              00764
                                                                      00765
             88 ANY-ACOUSTICAL-MEASUREMENT          VALUE 'VD'.      00766
             88 ANY-AMINO-ACID                      VALUE 'AG'.      00767
             88 ANY-CALCULATED                      VALUE 'CA'.      00768
             88 ANY-CARBON-14                       VALUE 'AA'.      00769
             88 ANY-CROSSHOLE-MEASUREMENT           VALUE 'VE'.      00770
             88 ANY-DENDROCHRONOLOGY                VALUE 'AJ'.      00771
             88 ANY-DIRECT-OBSERVATION              VALUE 'DO'.      00772
             88 ANY-DOWN-HOLE-MEASUREMENT           VALUE 'VB'.      00773
             88 ANY-FISSION-TRACK                   VALUE 'AE'.      00774
             88 ANY-IN-SITU-DETERMINATION           VALUE 'IS'.      00775
             88 ANY-INSTRUMENT-MEASUREMENT          VALUE 'IM'.      00776
             88 ANY-LABORATORY-DETERMINATION        VALUE 'LD'.      00777
             88 ANY-OBSIDIAN-HYDRATION              VALUE 'AH'.      00778
             88 ANY-OIL-GAS-WELL-VELOCITY-SRVY      VALUE 'VF'.      00779
             88 ANY-OPEN-END-TEST                   VALUE 'OE'.      00780
             88 ANY-PACKER-TEST                     VALUE 'PT'.      00781
             88 ANY-PALEOMAGNETISM                  VALUE 'AK'.      00782
             88 ANY-POTASSIUM-ARGON                 VALUE 'AB'.      00783
             88 ANY-RATIO                           VALUE 'RO'.      00784
             88 ANY-REFLECTION-MEASUREMENT          VALUE 'VH'.      00785
             88 ANY-REFRACTION-MEASUREMENT          VALUE 'VG'.      00786
             88 ANY-RESISTIVITY                     VALUE 'RE'.      00787
             88 ANY-SEISMIC-REFLECTION              VALUE 'SR'.      00788
             88 ANY-SONIC-MEASUREMENT               VALUE 'VC'.      00789
             88 ANY-STANDARD-MEASUREMENT            VALUE 'ST'.      00790
             88 ANY-STRONTIUM-RUBIDIUM              VALUE 'AC'.      00791
             88 ANY-TEPHRACHRONOLOGY                VALUE 'AF'.      00792
             88 ANY-UP-HOLE-MEASUREMENT             VALUE 'VA'.      00793
             88 ANY-URANIUM-LEAD                    VALUE 'AD'.      00794
             88 ANY-WELL-PERMEAMETER                VALUE 'WP'.      00795

*--- GENERAL-GEOTECH-PARAMETER-MENU -- I S   C O N T I N U E D ---00797
```

```
*--- GENERAL-GEOTECH-PARAMETER-MENU -- C O N T I N U A T I O N ---00799

          07 ANY-SECONDARY-DATA-SOURCE.                              00801
                                                                     00802
             09 ANY-SECONDARY-DATA-SOURCE-ID.                        00803
                11 ANY-SECONDARY-SOURCE-CODE PIC XXX.                00804
                                                                     00805
                88 ANY-BEACH-LEIGHTON-AND-ASSOC   VALUE 'BLA'.      00806
                88 ANY-BECHTEL-INC                VALUE 'BEC'.      00807
                88 ANY-CALIF-DEPT-OF-TRANSPRTN    VALUE 'CDT'.      00808
                88 ANY-CALIF-DEPT-OF-WTR-RESORCS  VALUE 'DWR'.      00809
                88 ANY-CALIF-DVSN-OF-MINES--GEOL  VALUE 'DMG'.      00810
                88 ANY-CALIF-DVSN-OF-OIL--GAS     VALUE 'DOG'.      00811
                88 ANY-CALIF-OFFICE-OF-ARCH--CNST VALUE 'OAC'.      00812
                88 ANY-CALIF-STATE-LANDS-CMSN     VALUE 'SLC'.      00813
                88 ANY-CHEVRON-USA-INC            VALUE 'CHV'.      00814
                88 ANY-CONVERSE-DAVIS-DIXON       VALUE 'CDD'.      00815
                88 ANY-ENGINEERING-GEOL-CONSULT   VALUE 'JES'.      00816
                88 ANY-FUGRO-INC                  VALUE 'FUG'.      00817
                88 ANY-GETTY-OIL-COMPANY          VALUE 'GOC'.      00818
                88 ANY-H-V-LAWMASTER-AND-CO-INC   VALUE 'HVL'.      00819
                88 ANY-L-A-CNTY-FLOOD-CNTL-DIST   VALUE 'LAF'.      00820
                88 ANY-LEROY-CRANDALL-AND-ASSOC   VALUE 'LCA'.      00821
                88 ANY-MOORE-AND-TABER            VALUE 'MAT'.      00822
                88 ANY-ORANGE-CNTY-ENVRN-MGT-AGY  VALUE 'OCG'.      00823
                88 ANY-ORANGE-CNTY-FLOOD-CTL-DST  VALUE 'OFC'.      00824
                88 ANY-ORANGE-CNTY-REG-DVSN       VALUE 'OFR'.      00825
                88 ANY-ORANGE-CNTY-WATER-DIST     VALUE 'OCW'.      00826
                88 ANY-SHELL-OIL-COMPANY          VALUE 'SHO'.      00827
                88 ANY-SOUTHERN-CALIF-EDISON-CO   VALUE 'SCE'.      00828
                88 ANY-SOUTHERN-CALIF-GAS-COMP    VALUE 'SCG'.      00829
                88 ANY-TEXACO-INC                 VALUE 'TEX'.      00830
                88 ANY-UNION-OIL-COMPANY-OF-CA    VALUE 'UNO'.      00831
                88 ANY-USGS-CONSERVATION-DVSN     VALUE 'GSC'.      00832
                88 ANY-USGS-GEOLOGICAL-DVSN       VALUE 'GSG'.      00833
                88 ANY-USGS-WATER-RESOURCES-DVSN  VALUE 'GSW'.      00834
                88 ANY-WOODWARD-CLYDE-CONSULT     VALUE 'WCC'.      00835
                                                                     00836
                11 ANY-SECONDARY-SOURCE-QUALFR                      00837
                                          PIC XXX.                   00838

*--- GENERAL-GEOTECH-PARAMETER-MENU -- I S   C O N T I N U E D ---00840
```

```
*--- GENERAL-GEOTECH-PARAMETER-MENU -- C O N T I N U A T I O N ---00842

           09 ANY-SECONDARY-ACTIVITY-CODE  PIC X.                  00844
                                                                   00845
              88 ANY-BRIDGE-BORING              VALUE 'B'.        00846
              88 ANY-CORE-HOLE                  VALUE 'C'.        00847
              88 ANY-ELEC-RESISTIVITY-SURVEY    VALUE 'R'.        00848
              88 ANY-FOUNDATION-INVESTIGATION   VALUE 'F'.        00849
              88 ANY-GRAVITY-SURVEY             VALUE 'G'.        00850
              88 ANY-MAGNETIC-SURVEY            VALUE 'M'.        00851
              88 ANY-OIL-AND-GAS-WELL           VALUE 'O'.        00852
              88 ANY-SEISMIC-SHOT-HOLE          VALUE 'H'.        00853
              88 ANY-SEISMIC-SURVEY             VALUE 'V'.        00854
              88 ANY-SOIL-SURVEY                VALUE 'S'.        00855
              88 ANY-SURFICIAL-GEOLOGY          VALUE 'A'.        00856
              88 ANY-TRENCH-INVESTIGATION       VALUE 'T'.        00857
              88 ANY-WATER-WELL                 VALUE 'W'.        00858
                                                                   00859
        07 ANY-DMG-INTERPRETED-CODE        PIC X.                 00860
           88 ANY-DMG-INTERPRETED-VALUE         VALUE 'Y'.        00861

*--- E N D   O F --- GENERAL-GEOTECH-PARAMETER-MENU --------------00863
```

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*         ==============================                          00865
        05 SPECIFIC-GEOTECH-PARM-MENUS.                           00866
*         ==============================                          00867

           07 ABSOLUTE-GEOL-AGE-MENU.                              00869
*             ----------------------                              00870
                                                                  00871
              09 IND-ABSOLUTE-GEOL-AGE-AVAIL  PIC X.              00872
                 88 ABSOLUTE-GEOL-AGE-AVAIL       VALUE 'Y'.     00873
                                                                  00874
              09 ABSOLUTE-GEOL-AGE-DATA-MENU.                      00875
                                                                  00876
*                ------------------------------                   00877
* NOTE ->         * THE EXPONENT HAS BEEN APPLIED *               00878
* NOTE ->         * TO THE AGE AND UNCERTAINTY    *               00879
*                ------------------------------                   00880
                                                                  00881
                 11 IND-AGA-VALUE-AVAIL       PIC X.              00882
                    88 AGA-VALUE-AVAIL            VALUE 'Y'.     00883
                 11 AGA-VALUE.                                    00884
                    13 AGA-AGE                PIC 9(10).         00885
                    13 AGA-UNCERTAINTY        PIC 9(10).         00886
                                                                  00887
                    13 AGA-MINIMUM-VALUE      PIC 9(10).         00888
                    13 AGA-MAXIMUM-VALUE      PIC 9(10).         00889
                                                                  00890
*                   --------------------------------              00891
* NOTE ->          * THE VALUE USED TO QUERY THE     *            00892
* NOTE ->          * AGA-DATE-OF-SAMPLE AND          *            00893
* NOTE ->          * AGA-DATE-OF-MEASUREMENT MUST    *            00894
* NOTE ->          * BE CODED IN THE FORM 'CCYYMMDD' *            00895
*                   --------------------------------              00896
                                                                  00897
                 11 AGA-DATE-OF-SAMPLE.                           00898
                    13 AGA-DOS-CENTURY-AND-YEAR.                  00899
                       15 AGA-DOS-CENTURY     PIC XX.            00900
                       15 AGA-DOS-YEAR        PIC XX.            00901
                    13 AGA-DOS-MONTH          PIC XX.            00902
                    13 AGA-DOS-DAY            PIC XX.            00903
                                                                  00904
                 11 AGA-DATE-OF-MEASUREMENT.                      00905
                    13 AGA-DOM-CENTURY-AND-YEAR.                  00906
                       15 AGA-DOM-CENTURY     PIC XX.            00907
                       15 AGA-DOM-YEAR        PIC XX.            00908
                    13 AGA-DOM-MONTH          PIC XX.            00909
                    13 AGA-DOM-DAY            PIC XX.            00910
                                                                  00911


*--- ABSOLUTE-GEOL-AGE-DATA-MENU ----- I S   C O N T I N U E D ---00913
```

```
*--- ABSOLUTE-GEOL-AGE-DATA-MENU ----- C O N T I N U A T I O N ---00915

           11 AGA-METHOD                  PIC XX.              00917
              88 AGA-AMINO-ACID                VALUE 'AG'.     00918
              88 AGA-CARBON-14                 VALUE 'AA'.     00919
              88 AGA-DENDROCHRONOLOGY          VALUE 'AJ'.     00920
              88 AGA-FISSION-TRACK             VALUE 'AE'.     00921
              88 AGA-OBSIDIAN-HYDRATION        VALUE 'AH'.     00922
              88 AGA-PALEOMAGNETISM            VALUE 'AK'.     00923
              88 AGA-POTASSIUM-ARGON           VALUE 'AB'.     00924
              88 AGA-STRONTIUM-RUBIDIUM        VALUE 'AC'.     00925
              88 AGA-TEPHRACHRONOLOGY          VALUE 'AF'.     00926
              88 AGA-URANIUM-LEAD              VALUE 'AD'.     00927
                                                              00928
           11 AGA-SECONDARY-DATA-SOURCE.                       00929
              13 AGA-SECONDARY-DATA-SOURCE-ID.                 00930
                 15 AGA-SECONDARY-SOURCE-CODE                  00931
                                    PIC XXX.                  00932
                 15 AGA-SECONDARY-SOURCE-QUALFR                00933
                                    PIC XXX.                  00934
              13 AGA-SECONDARY-ACTIVITY-CODE                   00935
                                    PIC X.                    00936
                                                              00937
           11 AGA-DMG-INTERPRETED-CODE  PIC X.                 00938
```

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           07 APRNT-SPEC-GRAVITY-MENU.                                  00940
*             ------------------------                                  00941
                                                                        00942
              09 IND-APRNT-SPEC-GRAVITY-AVAIL PIC X.                    00943
                 88 APRNT-SPEC-GRAVITY-AVAIL      VALUE 'Y'.           00944
                                                                        00945
              09 APRNT-SPEC-GRAVITY-DATA-MENU.                           00946
                 11 IND-ASG-VALUE-AVAIL       PIC X.                   00947
                    88 ASG-VALUE-AVAIL            VALUE 'Y'.           00948
                 11 ASG-VALUE                 PIC 99V99.               00949
                                                                        00950
*                   -------------------------------                     00951
* NOTE ->            * THE VALUE USED TO QUERY THE     *               00952
* NOTE ->            * ASG-DATE-OF-SAMPLE AND          *               00953
* NOTE ->            * ASG-DATE-OF-MEASUREMENT MUST    *               00954
* NOTE ->            * BE CODED IN THE FORM 'CCYYMMDD' *               00955
*                     -------------------------------                   00956
                                                                        00957
                 11 ASG-DATE-OF-SAMPLE.                                 00958
                    13 ASG-DOS-CENTURY-AND-YEAR.                        00959
                       15 ASG-DOS-CENTURY     PIC XX.                  00960
                       15 ASG-DOS-YEAR        PIC XX.                  00961
                    13 ASG-DOS-MONTH          PIC XX.                  00962
                    13 ASG-DOS-DAY            PIC XX.                  00963
                                                                        00964
                 11 ASG-DATE-OF-MEASUREMENT.                            00965
                    13 ASG-DOM-CENTURY-AND-YEAR.                        00966
                       15 ASG-DOM-CENTURY     PIC XX.                  00967
                       15 ASG-DOM-YEAR        PIC XX.                  00968
                    13 ASG-DOM-MONTH          PIC XX.                  00969
                    13 ASG-DOM-DAY            PIC XX.                  00970
                                                                        00971
                 11 ASG-METHOD                PIC XX.                  00972
                    88 ASG-RATIO                  VALUE 'RO'.          00973
                                                                        00974
                 11 ASG-SECONDARY-DATA-SOURCE.                          00975
                    13 ASG-SECONDARY-DATA-SOURCE-ID.                    00976
                       15 ASG-SECONDARY-SOURCE-CODE                     00977
                                                PIC XXX.                00978
                       15 ASG-SECONDARY-SOURCE-QUALFR                   00979
                                                PIC XXX.                00980
                    13 ASG-SECONDARY-ACTIVITY-CODE                      00981
                                                PIC X.                  00982
                                                                        00983
                 11 ASG-DMG-INTERPRETED-CODE  PIC X.                    00984
```

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* NOTE ->     BLOW-COUNT  SEE ->  STANDARD-PENETRATION-TEST-MENU  00986
*              ----------                                         00987



           07 BULK-DENSITY-MENU.                                  00989
*             -----------------                                  00990
                                                                  00991
              09 IND-BULK-DENSITY-AVAIL       PIC X.              00992
                 88 BULK-DENSITY-AVAIL            VALUE 'Y'.     00993
                                                                  00994
              09 BULK-DENSITY-DATA-MENU.                          00995
                 11 IND-BD-VALUE-AVAIL        PIC X.              00996
                    88 BD-VALUE-AVAIL             VALUE 'Y'.     00997
                 11 BD-VALUE                  PIC 999V9.          00998
                                                                  00999
*                   --------------------------------             01000
* NOTE ->            * THE VALUE USED TO QUERY THE     *         01001
* NOTE ->            * BD-DATE-OF-SAMPLE AND           *         01002
* NOTE ->            * BD-DATE-OF-MEASUREMENT MUST     *         01003
* NOTE ->            * BE CODED IN THE FORM 'CCYYMMDD' *         01004
*                     --------------------------------           01005
                                                                  01006
                 11 BD-DATE-OF-SAMPLE.                            01007
                    13 BD-DOM-CENTURY-AND-YEAR.                   01008
                       15 BD-DOM-CENTURY      PIC XX.             01009
                       15 BD-DOM-YEAR         PIC XX.             01010
                    13 BD-DOM-MONTH           PIC XX.             01011
                    13 BD-DOM-DAY             PIC XX.             01012
                                                                  01013
                 11 BD-DATE-OF-MEASUREMENT.                       01014
                    13 BD-DOM-CENTURY-AND-YEAR.                   01015
                       15 BD-DOM-CENTURY      PIC XX.             01016
                       15 BD-DOM-YEAR         PIC XX.             01017
                    13 BD-DOM-MONTH           PIC XX.             01018
                    13 BD-DOM-DAY             PIC XX.             01019
                                                                  01020
                 11 BD-METHOD                 PIC XX.             01021
                    88 BD-STANDARD-MEASUREMENT    VALUE 'ST'.     01022
                                                                  01023
                 11 BD-SECONDARY-DATA-SOURCE.                     01024
                    13 BD-SECONDARY-DATA-SOURCE-ID.               01025
                       15 BD-SECONDARY-SOURCE-CODE                 01026
                                             PIC XXX.             01027
                       15 BD-SECONDARY-SOURCE-QUALFR               01028
                                             PIC XXX.             01029
                    13 BD-SECONDARY-ACTIVITY-CODE                 01030
                                             PIC X.               01031
                                                                  01032
                 11 BD-DMG-INTERPRETED-CODE   PIC X.              01033
```

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           07 BULK-MODULUS-MENU.                                        01035
*             -----------------                                        01036
                                                                       01037
              09 IND-BULK-MODULUS-AVAIL       PIC X.                   01038
                 88 BULK-MODULUS-AVAIL            VALUE 'Y'.          01039
                                                                       01040
              09 BULK-MODULUS-DATA-MENU.                                01041
                 11 IND-BM-VALUE-AVAIL        PIC X.                   01042
                    88 BM-VALUE-AVAIL             VALUE 'Y'.          01043
                 11 BM-VALUE                  PIC 9999.                01044
                                                                       01045
*                   -------------------------------                    01046
* NOTE ->            * THE VALUE USED TO QUERY THE     *              01047
* NOTE ->            * BM-DATE-OF-SAMPLE AND           *              01048
* NOTE ->            * BM-DATE-OF-MEASUREMENT MUST     *              01049
* NOTE ->            * BE CODED IN THE FORM 'CCYYMMDD' *              01050
*                     -------------------------------                  01051
                                                                       01052
                 11 BM-DATE-OF-SAMPLE.                                 01053
                    13 BM-DOS-CENTURY-AND-YEAR.                        01054
                       15 BM-DOS-CENTURY      PIC XX.                  01055
                       15 BM-DOS-YEAR         PIC XX.                  01056
                    13 BM-DOS-MONTH           PIC XX.                  01057
                    13 BM-DOS-DAY             PIC XX.                  01058
                                                                       01059
                 11 BM-DATE-OF-MEASUREMENT.                             01060
                    13 BM-DOM-CENTURY-AND-YEAR.                        01061
                       15 BM-DOM-CENTURY      PIC XX.                  01062
                       15 BM-DOM-YEAR         PIC XX.                  01063
                    13 BM-DOM-MONTH           PIC XX.                  01064
                    13 BM-DOM-DAY             PIC XX.                  01065
                                                                       01066
                 11 BM-METHOD                 PIC XX.                  01067
                    88 BM-CALCULATED              VALUE 'CA'.         01068
                    88 BM-IN-SITU-DETERMINATION   VALUE 'IS'.         01069
                    88 BM-LABORATORY-DETERMINATION                      01070
                                                 VALUE 'LD'.           01071
                                                                       01072
                 11 BM-SECONDARY-DATA-SOURCE.                           01073
                    13 BM-SECONDARY-DATA-SOURCE-ID.                     01074
                       15 BM-SECONDARY-SOURCE-CODE                      01075
                                             PIC XXX.                  01076
                       15 BM-SECONDARY-SOURCE-QUALFR                    01077
                                             PIC XXX.                  01078
                    13 BM-SECONDARY-ACTIVITY-CODE                       01079
                                             PIC X.                    01080
                                                                       01081
                 11 BM-DMG-INTERPRETED-CODE   PIC X.                    01082
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           07 GRAIN-SIZE-MENU.                                          01084
*             ---------------                                          01085
                                                                       01086
              09 IND-GRAIN-SIZE-AVAIL          PIC X.                  01087
                 88 GRAIN-SIZE-AVAIL               VALUE 'Y'.         01088
                                                                       01089
              09 GRAIN-SIZE-DATA-MENU.                                  01090
                 11 GS-VALUE.                                          01091
                    13 IND-GS-004-VALUE-AVAIL PIC X.                   01092
                       88 GS-004-VALUE-AVAIL      VALUE 'Y'.         01093
                    13 GS-004-VALUE           PIC 999.                01094
                    13 IND-GS-010-VALUE-AVAIL PIC X.                   01095
                       88 GS-010-VALUE-AVAIL      VALUE 'Y'.         01096
                    13 GS-010-VALUE           PIC 999.                01097
                    13 IND-GS-040-VALUE-AVAIL PIC X.                   01098
                       88 GS-040-VALUE-AVAIL      VALUE 'Y'.         01099
                    13 GS-040-VALUE           PIC 999.                01100
                    13 IND-GS-200-VALUE-AVAIL PIC X.                   01101
                       88 GS-200-VALUE-AVAIL      VALUE 'Y'.         01102
                    13 GS-200-VALUE           PIC 999.                01103
                                                                       01104
*                      --------------------------------               01105
* NOTE ->               * THE VALUE USED TO QUERY THE     *           01106
* NOTE ->               * GS-DATE-OF-SAMPLE AND           *           01107
* NOTE ->               * GS-DATE-OF-MEASUREMENT MUST     *           01108
* NOTE ->               * BE CODED IN THE FORM 'CCYYMMDD' *           01109
*                       --------------------------------               01110
                                                                       01111
                 11 GS-DATE-OF-SAMPLE.                                 01112
                    13 GS-DOS-CENTURY-AND-YEAR.                        01113
                       15 GS-DOS-CENTURY      PIC XX.                 01114
                       15 GS-DOS-YEAR         PIC XX.                 01115
                    13 GS-DOS-MONTH           PIC XX.                 01116
                    13 GS-DOS-DAY             PIC XX.                 01117
                                                                       01118
                 11 GS-DATE-OF-MEASUREMENT.                             01119
                    13 GS-DOM-CENTURY-AND-YEAR.                        01120
                       15 GS-DOM-CENTURY      PIC XX.                 01121
                       15 GS-DOM-YEAR         PIC XX.                 01122
                    13 GS-DOM-MONTH           PIC XX.                 01123
                    13 GS-DOM-DAY             PIC XX.                 01124
                                                                       01125
                 11 GS-METHOD                 PIC XX.                 01126
                    88 GS-LABORATORY-DETERMINATION                      01127
                                                  VALUE 'LD'.          01128
                                                                       01129
                 11 GS-SECONDARY-DATA-SOURCE.                           01130
                    13 GS-SECONDARY-DATA-SOURCE-ID.                     01131
                       15 GS-SECONDARY-SOURCE-CODE                      01132
                                                  PIC XXX.             01133
                       15 GS-SECONDARY-SOURCE-QUALFR                    01134
                                                  PIC XXX.             01135
                    13 GS-SECONDARY-ACTIVITY-CODE                       01136
                                                  PIC X.               01137
                                                                       01138
                 11 GS-DMG-INTERPRETED-CODE   PIC X.                    01139
```

```
           07 P-WAVE-VELOCITY-MENU.                                  01141
*             ---------------------                                  01142
                                                                     01143
              09 IND-P-WAVE-VELOCITY-AVAIL    PIC X.                 01144
                 88 P-WAVE-VELOCITY-AVAIL         VALUE 'Y'.         01145
                                                                     01146
              09 P-WAVE-VELOCITY-DATA-MENU.                           01147
                 11 IND-VP-VALUE-AVAIL        PIC X.                 01148
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                                                  VALUE 'GW      '.01642
                    88 SSL-IS-GYPSIFEROUS-GRAVEL VALUE 'GY       '.01643
                    88 SSL-IS-FOSSILIFEROUS-GRAVEL                  01644
                                                  VALUE 'GF      '.01645
                    88 SSL-IS-LIMEY-GRAVEL        VALUE 'GL      '.01646
                    88 SSL-IS-SANDY-GRAVEL        VALUE 'GS      '.01647
                    88 SSL-IS-SANDY-SILTY-GRAVEL  VALUE 'GSM     '.01648
                    88 SSL-IS-SILICEOUS-GRAVEL    VALUE 'GX      '.01649
                    88 SSL-IS-SILTY-GRAVEL        VALUE 'GM      '.01650

*--------------- S S L - V A L U E --- I S   C O N T I N U E D ---01652

*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- I S   C O N T I N U E D ---01654
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*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- C O N T I N U A T I O N ---01656

*--------------- S S L - V A L U E --- C O N T I N U A T I O N ---01658

*                   --- S A N D S ---------------------------------01660
                                                                     01661
                    88 SSL-IS-CLAYEY-SAND          VALUE 'SC      '.01662
                    88 SSL-IS-CLAYEY-SILTY-SAND    VALUE 'SMC     '.01663
                    88 SSL-IS-FOSSILIFEROUS-SAND   VALUE 'SF      '.01664
                    88 SSL-IS-GRAVELLY-SAND        VALUE 'SG      '.01665
                    88 SSL-IS-GRVLY-SILTY-CLAYEY-SAND                01666
                                                   VALUE 'SCMG    '.01667
                    88 SSL-IS-GYPSIFEROUS-SAND     VALUE 'SY      '.01668
                    88 SSL-IS-LIMEY-SAND           VALUE 'SL      '.01669
                    88 SSL-IS-SAND                 VALUE 'S       '.01670
                    88 SSL-IS-SAND-WITH-CBLS-BLDRS                   01671
                                                   VALUE 'SB      '.01672
                    88 SSL-IS-SAND-WITH-NODULES    VALUE 'SK      '.01673
                    88 SSL-IS-SAND-WITH-ORGANICS   VALUE 'SO      '.01674
                    88 SSL-IS-SAND-WITH-PEAT       VALUE 'SP      '.01675
                    88 SSL-IS-SAND-WITH-ROCK-FRGMTS                  01676
                                                   VALUE 'SR      '.01677
                    88 SSL-IS-SAND-WITH-WOOD-FRGMTS                  01678
                                                   VALUE 'SW      '.01679
                    88 SSL-IS-SANDEY-GRAVELLY-SAND                   01680
                                                   VALUE 'SCG     '.01681
                    88 SSL-IS-SILICEOUS-SAND       VALUE 'SX      '.01682
                    88 SSL-IS-SILTY-SAND           VALUE 'SM      '.01683
                    88 SSL-IS-SILTY-CLAYEY-SAND    VALUE 'SCM     '.01684
                    88 SSL-IS-SILTY-GRAVELLY-SAND                    01685
                                                   VALUE 'SMG     '.01686

*--------------- S S L - V A L U E --- I S   C O N T I N U E D ---01688

*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- I S   C O N T I N U E D ---01690
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*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- C O N T I N U A T I O N ---01692

*--------------- S S L - V A L U E --- C O N T I N U A T I O N ---01694

*                   --- S I L T S ---------------------------------01696
                                                                    01697
                    88 SSL-IS-CLAYEY-SANDY-SILT  VALUE 'MSC     '.01698
                    88 SSL-IS-CLAYEY-SILT        VALUE 'MC      '.01699
                    88 SSL-IS-FOSSILIFEROUS-SILT VALUE 'MF      '.01700
                    88 SSL-IS-GRAVELLY-SILT      VALUE 'MG      '.01701
                    88 SSL-IS-GRVLY-SANDY-CLAYEY-SILT              01702
                                                 VALUE 'MCSG    '.01703
                    88 SSL-IS-GYPSIFEROUS-SILT   VALUE 'MY      '.01704
                    88 SSL-IS-LIMEY-SILT         VALUE 'ML      '.01705
                    88 SSL-IS-SANDY-SILT         VALUE 'MS      '.01706
                    88 SSL-IS-SANDY-CLAYEY-SILT  VALUE 'MCS     '.01707
                    88 SSL-IS-SILICEOUS-SILT     VALUE 'MX      '.01708
                    88 SSL-IS-SILT               VALUE 'M       '.01709
                    88 SSL-IS-SILT-WITH-NODULES  VALUE 'MK      '.01710
                    88 SSL-IS-SILT-WITH-ORGANICS VALUE 'MO      '.01711
                    88 SSL-IS-SILT-WITH-PEAT     VALUE 'MP      '.01712
                    88 SSL-IS-SILT-WITH-ROCK-FRGMTS                01713
                                                 VALUE 'MR      '.01714
                    88 SSL-IS-SILT-WITH-WOOD-FRGMTS                01715
                                                 VALUE 'MW      '.01716

*--------------- S S L - V A L U E --- I S   C O N T I N U E D ---01718

*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- I S   C O N T I N U E D ---01720
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*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- C O N T I N U A T I O N ---01722

*--------------- S S L - V A L U E --- C O N T I N U A T I O N ---01724

*                  --- M I S C E L L A N E O U S ----------------01726
                                                                  01727
                   88 SSL-IS-CALCAREOUS          VALUE 'L       '.01728
                   88 SSL-IS-COBBLES-BOULDERS    VALUE 'B       '.01729
                   88 SSL-IS-CONCRETIONS         VALUE 'K       '.01730
                   88 SSL-IS-COQUINA             VALUE 'A       '.01731
                   88 SSL-IS-DIATOMITE           VALUE 'D       '.01732
                   88 SSL-IS-FOSSILS             VALUE 'F       '.01733
*                           (SHELLS, ETC.)                        01734
                   88 SSL-IS-GYPSIFEROUS         VALUE 'Y       '.01735
                   88 SSL-IS-LIMEY-CBLS-BLDRS    VALUE 'BL      '.01736
                   88 SSL-IS-ORGANIC-SOIL        VALUE 'O       '.01737
                   88 SSL-IS-ORGANIC-SOIL-WITH-CLAY                01738
                                                VALUE 'OC      '.01739
                   88 SSL-IS-ORGANIC-SOIL-WITH-PEAT                01740
                                                VALUE 'OP      '.01741
                   88 SSL-IS-ORGANIC-SOIL-WITH-SAND                01742
                                                VALUE 'OS      '.01743
                   88 SSL-IS-ORGANIC-SOIL-WITH-SILT                01744
                                                VALUE 'OM      '.01745
*                           ORGANIC SOIL WITH WOOD FRAGMENTS      01746
                   88 SSL-IS-ORGANIC-SOIL-WITH-WOOD                01747
                                                VALUE 'OW      '.01748
                   88 SSL-IS-PEAT                VALUE 'P       '.01749
                   88 SSL-IS-PEAT-WITH-CLAY      VALUE 'PC      '.01750
                   88 SSL-IS-PEAT-WITH-SILT      VALUE 'PM      '.01751
                   88 SSL-IS-PEAT-WITH-SAND      VALUE 'PS      '.01752
                   88 SSL-IS-PEAT-WITH-WOOD-FRGMTS                 01753
                                                VALUE 'PW      '.01754
*                           SEDIMENTARY CLASTS AND/OR FRAGMENTS   01755
                   88 SSL-IS-SDMTRY-CLASTS-FRAGMENTS               01756
                                                VALUE 'R       '.01757
                   88 SSL-IS-SILICEOUS           VALUE 'X       '.01758
                   88 SSL-IS-SILICEOUS-CBLS-BLDRS                  01759
                                                VALUE 'BX      '.01760
                   88 SSL-IS-WOOD-FRAGMENTS      VALUE 'W       '.01761

*--------------- S S L - V A L U E --- I S   C O N T I N U E D ---01763

*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- I S   C O N T I N U E D ---01765
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*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- C O N T I N U A T I O N ---01767

*--------------- S S L - V A L U E --- C O N T I N U A T I O N ---01769

*                   - M A J O R   C O M P O N E N T   G R O U P S -01771
                                                                    01772
                    88 A-SAMPLE-CONTAINS-CLAY                       01773
                          VALUE 'C       ' 'CG      ' 'CS      '  01774
                                'CM      ' 'CMS     ' 'CSM     '  01775
                                'GC      ' 'SC      ' 'SMC     '  01776
                                'SCG     ' 'MC      ' 'MCS     '  01777
                                                                    01778
                                'CD      ' 'CF      ' 'CK      '  01779
                                'CL      ' 'CO      ' 'CP      '  01780
                                'CR      ' 'CW      ' 'CY      '  01781
                                                                    01782
                                'CMSG    ' 'GSMC    ' 'SCMG    '  01783
                                'MCSG    '                          01784
                                                                    01785
                                'OC      ' 'PC      '.              01786
                                                                    01787
                    88 A-SAMPLE-CONTAINS-GRAVEL                     01788
                          VALUE 'G       ' 'GS      ' 'GM      '  01789
                                'GC      ' 'GSM     '              01790
                                'CG      ' 'SG      ' 'SMG     '  01791
                                'SCG     ' 'MG      '              01792
                                                                    01793
                                'GB      ' 'GF      ' 'GL      '  01794
                                'GR      ' 'GW      ' 'GX      '  01795
                                'GY      '                          01796
                                                                    01797
                                'GSMC    ' 'CMSG    ' 'SCMG    '  01798
                                'MCSG    '.                         01799

*                   - M A J O R   C O M P O N E N T   G R O U P S -01801
                                                                    01802
*                   ------------------ I S   C O N T I N U E D ---01803

*--------------- S S L - V A L U E --- I S   C O N T I N U E D ---01805

*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- I S   C O N T I N U E D ---01807
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*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- C O N T I N U A T I O N ---01809

*-------------- S S L - V A L U E --- C O N T I N U A T I O N ---01811

*                  - M A J O R  C O M P O N E N T  G R O U P S -01813
                                                                 01814
*                  ------------------ C O N T I N U A T I O N ---01815
                                                                 01816
                   88 A-SAMPLE-CONTAINS-SAND                     01817
                         VALUE 'S       ' 'SG      ' 'SM      ' 01818
                               'SC      ' 'SMC     ' 'SCM     ' 01819
                               'SMG     ' 'SCG     '           01820
                               'CS      ' 'CMS     ' 'GS      ' 01821
                               'GSM     ' 'MS      ' 'MCS     ' 01822
                                                               01823
                               'SB      ' 'SF      ' 'SK      ' 01824
                               'SL      ' 'SO      ' 'SP      ' 01825
                               'SR      ' 'SW      ' 'SX      ' 01826
                               'SY      '                       01827
                                                               01828
                               'SCMG    ' 'CMSG    ' 'GSMC    ' 01829
                               'MCSG    '                       01830
                                                               01831
                               'OS      ' 'PS      '.          01832
                                                               01833
                   88 A-SAMPLE-CONTAINS-SILT                     01834
                         VALUE 'M       ' 'MG      ' 'MS      ' 01835
                               'MC      ' 'MCS     ' 'MSC     ' 01836
                               'CM      ' 'CMS     ' 'GM      ' 01837
                               'GSM     ' 'SM      ' 'SMC     ' 01838
                               'SMG     '                       01839
                                                               01840
                               'MF      ' 'MK      ' 'ML      ' 01841
                               'MO      ' 'MP      ' 'MR      ' 01842
                               'MW      ' 'MX      ' 'MY      ' 01843
                                                               01844
                               'MCSG    ' 'CMSG    ' 'GSMC    ' 01845
                               'SCMG    '                       01846
                                                               01847
                               'OM      ' 'PM      '.          01848
                                                               01849
*                --- G E N E R I C  G R O U P S ----------------01850
                                                               01851
                  11 FILLER REDEFINES SSL-VALUE.               01852
                     13 SSL-VALUE-1XXXXXXX     PIC X.          01853
                        88 A-SAMPLE-IS-A-CLAY      VALUE 'C'. 01854
                        88 A-SAMPLE-IS-A-GRAVEL    VALUE 'G'. 01855
                        88 A-SAMPLE-IS-A-SAND      VALUE 'S'. 01856
                        88 A-SAMPLE-IS-A-SILT      VALUE 'M'. 01857

*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- I S  C O N T I N U E D ---01859
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*--- SPEC-SMPL-LITHOLOGY-DATA-MENU --- C O N T I N U A T I O N ---01861


                                                                  01863
*                  --------------------------------               01864
* NOTE ->          * THE VALUE USED TO QUERY THE     *            01865
* NOTE ->          * SSL-DATE-OF-SAMPLE AND          *            01866
* NOTE ->          * SSL-DATE-OF-MEASUREMENT MUST    *            01867
* NOTE ->          * BE CODED IN THE FORM 'CCYYMMDD' *            01868
*                  --------------------------------               01869
                                                                  01870
                11 SSL-DATE-OF-SAMPLE.                            01871
                   13 SSL-DOS-CENTURY-AND-YEAR.                   01872
                      15 SSL-DOS-CENTURY     PIC XX.              01873
                      15 SSL-DOS-YEAR        PIC XX.              01874
                   13 SSL-DOS-MONTH          PIC XX.              01875
                   13 SSL-DOS-DAY            PIC XX.              01876
                                                                  01877
                11 SSL-DATE-OF-MEASUREMENT.                       01878
                   13 SSL-DOM-CENTURY-AND-YEAR.                   01879
                      15 SSL-DOM-CENTURY     PIC XX.              01880
                      15 SSL-DOM-YEAR        PIC XX.              01881
                   13 SSL-DOM-MONTH          PIC XX.              01882
                   13 SSL-DOM-DAY            PIC XX.              01883
                                                                  01884
                11 SSL-METHOD                PIC XX.              01885
                   88 SSL-DIRECT-OBSERVATION     VALUE 'DO'.      01886
                                                                  01887
                11 SSL-SECONDARY-DATA-SOURCE.                     01888
                   13 SSL-SECONDARY-DATA-SOURCE-ID.                01889
                      15 SSL-SECONDARY-SOURCE-CODE                 01890
                                             PIC XXX.             01891
                      15 SSL-SECONDARY-SOURCE-QUALFR               01892
                                             PIC XXX.             01893
                   13 SSL-SECONDARY-ACTIVITY-CODE                  01894
                                             PIC X.               01895
                                                                  01896
                11 SSL-DMG-INTERPRETED-CODE  PIC X.               01897


*--- E N D   O F --- SPEC-SMPL-LITHOLOGY-DATA-MENU ---------------01899
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```
           07 STND-PENETRATION-TEST-MENU.                          01901
*             ---------------------------                         01902
                                                                   01903
              09 IND-STND-PENETRATION-TST-AVAIL                    01904
                                          PIC X.                   01905
                 88 STND-PENETRATION-TEST-AVAIL   VALUE 'Y'.       01906
                                                                   01907
              09 STND-PENETRATION-TST-DATA-MENU.                    01908
                 11 IND-SPT-VALUE-AVAIL       PIC X.               01909
                    88 SPT-VALUE-AVAIL            VALUE 'Y'.      01910
                 11 SPT-VALUE                 PIC 99.              01911
                                                                   01912
*                   -------------------------------               01913
* NOTE ->            * THE VALUE USED TO QUERY THE     *          01914
* NOTE ->            * SPT-DATE-OF-SAMPLE AND          *          01915
* NOTE ->            * SPT-DATE-OF-MEASUREMENT MUST    *          01916
* NOTE ->            * BE CODED IN THE FORM 'CCYYMMDD' *          01917
*                   -------------------------------               01918
                                                                   01919
                 11 SPT-DATE-OF-SAMPLE.                            01920
                    13 SPT-DOS-CENTURY-AND-YEAR.                   01921
                       15 SPT-DOS-CENTURY     PIC XX.              01922
                       15 SPT-DOS-YEAR        PIC XX.              01923
                    13 SPT-DOS-MONTH          PIC XX.              01924
                    13 SPT-DOS-DAY            PIC XX.              01925
                                                                   01926
                 11 SPT-DATE-OF-MEASUREMENT.                       01927
                    13 SPT-DOM-CENTURY-AND-YEAR.                    01928
                       15 SPT-DOM-CENTURY     PIC XX.              01929
                       15 SPT-DOM-YEAR        PIC XX.              01930
                    13 SPT-DOM-MONTH          PIC XX.              01931
                    13 SPT-DOM-DAY            PIC XX.              01932
                                                                   01933
                 11 SPT-METHOD                PIC XX.              01934
                    88 SPT-STANDARD-MEASUREMENT   VALUE 'ST'.     01935
                                                                   01936
                 11 SPT-SECONDARY-DATA-SOURCE.                      01937
                    13 SPT-SECONDARY-DATA-SOURCE-ID.                01938
                       15 SPT-SECONDARY-SOURCE-CODE                 01939
                                          PIC XXX.                 01940
                       15 SPT-SECONDARY-SOURCE-QUALFR               01941
                                          PIC XXX.                 01942
                    13 SPT-SECONDARY-ACTIVITY-CODE                  01943
                                          PIC X.                   01944
                                                                   01945
                 11 SPT-DMG-INTERPRETED-CODE  PIC X.               01946
```

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           07 TAN-PHI-MENU.                                          01948
*             ------------                                           01949
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              09 IND-TAN-PHI-AVAIL            PIC X.                 01951
                 88 TAN-PHI-AVAIL                 VALUE 'Y'.         01952
                                                                     01953
              09 TAN-PHI-DATA-MENU.                                   01954
                 11 IND-TAN-VALUE-AVAIL       PIC X.                 01955
                    88 TAN-VALUE-AVAIL            VALUE 'Y'.         01956
                 11 TAN-VALUE                 PIC 9V999.             01957
                                                                     01958
*                   -------------------------------                  01959
* NOTE ->            * THE VALUE USED TO QUERY THE     *            01960
* NOTE ->            * TAN-DATE-OF-SAMPLE AND          *            01961
* NOTE ->            * TAN-DATE-OF-MEASUREMENT MUST    *            01962
* NOTE ->            * BE CODED IN THE FORM 'CCYYMMDD' *            01963
*                     -------------------------------                01964
                                                                     01965
                 11 TAN-DATE-OF-SAMPLE.                              01966
                    13 TAN-DOS-CENTURY-AND-YEAR.                     01967
                       15 TAN-DOS-CENTURY     PIC XX.                01968
                       15 TAN-DOS-YEAR        PIC XX.                01969
                    13 TAN-DOS-MONTH          PIC XX.                01970
                    13 TAN-DOS-DAY            PIC XX.                01971
                                                                     01972
                 11 TAN-DATE-OF-MEASUREMENT.                         01973
                    13 TAN-DOM-CENTURY-AND-YEAR.                     01974
                       15 TAN-DOM-CENTURY     PIC XX.                01975
                       15 TAN-DOM-YEAR        PIC XX.                01976
                    13 TAN-DOM-MONTH          PIC XX.                01977
                    13 TAN-DOM-DAY            PIC XX.                01978
                                                                     01979
                 11 TAN-METHOD                PIC XX.                01980
                    88 TAN-CALCULATED             VALUE 'CA'.        01981
                                                                     01982
                 11 TAN-SECONDARY-DATA-SOURCE.                       01983
                    13 TAN-SECONDARY-DATA-SOURCE-ID.                 01984
                       15 TAN-SECONDARY-SOURCE-CODE                  01985
                                                PIC XXX.             01986
                       15 TAN-SECONDARY-SOURCE-QUALFR                01987
                                                PIC XXX.             01988
                    13 TAN-SECONDARY-ACTIVITY-CODE                   01989
                                                PIC X.               01990
                                                                     01991
                 11 TAN-DMG-INTERPRETED-CODE  PIC X.                 01992
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           07 TRUE-SPEC-GRAVITY-MENU.                                    01994
*             ----------------------                                    01995
                                                                        01996
              09 IND-TRUE-SPEC-GRAVITY-AVAIL  PIC X.                    01997
                 88 TRUE-SPEC-GRAVITY-AVAIL       VALUE 'Y'.           01998
                                                                        01999
              09 TRUE-SPEC-GRAVITY-DATA-MENU.                           02000
                 11 IND-TSG-VALUE-AVAIL       PIC X.                    02001
                    88 TSG-VALUE-AVAIL            VALUE 'Y'.           02002
                 11 TSG-VALUE                 PIC 99V99.                02003
                                                                        02004
*                   -------------------------------                     02005
* NOTE ->            * THE VALUE USED TO QUERY THE     *               02006
* NOTE ->            * TSG-DATE-OF-SAMPLE AND          *               02007
* NOTE ->            * TSG-DATE-OF-MEASUREMENT MUST    *               02008
* NOTE ->            * BE CODED IN THE FORM 'CCYYMMDD' *               02009
*                     -------------------------------                   02010
                                                                        02011
                 11 TSG-DATE-OF-SAMPLE.                                 02012
                    13 TSG-DOS-CENTURY-AND-YEAR.                        02013
                       15 TSG-DOS-CENTURY     PIC XX.                   02014
                       15 TSG-DOS-YEAR        PIC XX.                   02015
                    13 TSG-DOS-MONTH          PIC XX.                   02016
                    13 TSG-DOS-DAY            PIC XX.                   02017
                                                                        02018
                 11 TSG-DATE-OF-MEASUREMENT.                            02019
                    13 TSG-DOM-CENTURY-AND-YEAR.                        02020
                       15 TSG-DOM-CENTURY     PIC XX.                   02021
                       15 TSG-DOM-YEAR        PIC XX.                   02022
                    13 TSG-DOM-MONTH          PIC XX.                   02023
                    13 TSG-DOM-DAY            PIC XX.                   02024
                                                                        02025
                 11 TSG-METHOD                PIC XX.                   02026
                    88 TSG-RATIO                  VALUE 'RO'.          02027
                                                                        02028
                 11 TSG-SECONDARY-DATA-SOURCE.                          02029
                    13 TSG-SECONDARY-DATA-SOURCE-ID.                    02030
                       15 TSG-SECONDARY-SOURCE-CODE                     02031
                                             PIC XXX.                   02032
                       15 TSG-SECONDARY-SOURCE-QUALFR                   02033
                                             PIC XXX.                   02034
                    13 TSG-SECONDARY-ACTIVITY-CODE                      02035
                                             PIC X.                     02036
                                                                        02037
                 11 TSG-DMG-INTERPRETED-CODE  PIC X.                    02038
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           07 UNIT-COHESION-MENU.                                    02040
*             ------------------                                     02041
                                                                     02042
              09 IND-UNIT-COHESION-AVAIL      PIC X.                 02043
                 88 UNIT-COHESION-AVAIL           VALUE 'Y'.        02044
                                                                     02045
              09 UNIT-COHESION-DATA-MENU.                             02046
                 11 IND-UC-VALUE-AVAIL        PIC X.                 02047
                    88 UC-VALUE-AVAIL             VALUE 'Y'.        02048
                 11 UC-VALUE                  PIC 9(5).              02049
                                                                     02050
*                   -------------------------------                  02051
* NOTE ->            * THE VALUE USED TO QUERY THE     *            02052
* NOTE ->            * UC-DATE-OF-SAMPLE AND           *            02053
* NOTE ->            * UC-DATE-OF-MEASUREMENT MUST     *            02054
* NOTE ->            * BE CODED IN THE FORM 'CCYYMMDD' *            02055
*                     -------------------------------                02056
                                                                     02057
                 11 UC-DATE-OF-SAMPLE.                               02058
                    13 UC-DOS-CENTURY-AND-YEAR.                      02059
                       15 UC-DOS-CENTURY      PIC XX.                02060
                       15 UC-DOS-YEAR         PIC XX.                02061
                    13 UC-DOS-MONTH           PIC XX.                02062
                    13 UC-DOS-DAY             PIC XX.                02063
                                                                     02064
                 11 UC-DATE-OF-MEASUREMENT.                          02065
                    13 UC-DOM-CENTURY-AND-YEAR.                       02066
                       15 UC-DOM-CENTURY      PIC XX.                02067
                       15 UC-DOM-YEAR         PIC XX.                02068
                    13 UC-DOM-MONTH           PIC XX.                02069
                    13 UC-DOM-DAY             PIC XX.                02070
                                                                     02071
                 11 UC-METHOD                 PIC XX.                02072
                    88 UC-INSTRUMENT-MEASUREMENT  VALUE 'IM'.        02073
                                                                     02074
                 11 UC-SECONDARY-DATA-SOURCE.                        02075
                    13 UC-SECONDARY-DATA-SOURCE-ID.                   02076
                       15 UC-SECONDARY-SOURCE-CODE                    02077
                                             PIC XXX.                02078
                       15 UC-SECONDARY-SOURCE-QUALFR                  02079
                                             PIC XXX.                02080
                    13 UC-SECONDARY-ACTIVITY-CODE                     02081
                                             PIC X.                  02082
                                                                     02083
                 11 UC-DMG-INTERPRETED-CODE   PIC X.                 02084
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           07 VOID-RATIO-MENU.                                          02086
*             ---------------                                          02087
                                                                       02088
              09 IND-VOID-RATIO-AVAIL          PIC X.                  02089
                 88 VOID-RATIO-AVAIL               VALUE 'Y'.         02090
                                                                       02091
              09 VOID-RATIO-DATA-MENU.                                  02092
                 11 IND-VR-VALUE-AVAIL         PIC X.                  02093
                    88 VR-VALUE-AVAIL              VALUE 'Y'.         02094
                 11 VR-VALUE                   PIC 9V99.               02095
                                                                       02096
*                   --------------------------------                   02097
* NOTE ->            * THE VALUE USED TO QUERY THE     *              02098
* NOTE ->            * VR-DATE-OF-SAMPLE AND           *              02099
* NOTE ->            * VR-DATE-OF-MEASUREMENT MUST     *              02100
* NOTE ->            * BE CODED IN THE FORM 'CCYYMMDD' *              02101
*                     --------------------------------                 02102
                                                                       02103
                 11 VR-DATE-OF-SAMPLE.                                 02104
                    13 VR-DOS-CENTURY-AND-YEAR.                        02105
                       15 VR-DOS-CENTURY       PIC XX.                 02106
                       15 VR-DOS-YEAR          PIC XX.                 02107
                    13 VR-DOS-MONTH            PIC XX.                 02108
                    13 VR-DOS-DAY              PIC XX.                 02109
                                                                       02110
                 11 VR-DATE-OF-MEASUREMENT.                             02111
                    13 VR-DOM-CENTURY-AND-YEAR.                         02112
                       15 VR-DOM-CENTURY       PIC XX.                 02113
                       15 VR-DOM-YEAR          PIC XX.                 02114
                    13 VR-DOM-MONTH            PIC XX.                 02115
                    13 VR-DOM-DAY              PIC XX.                 02116
                                                                       02117
                 11 VR-METHOD                  PIC XX.                 02118
                    88 VR-RATIO                    VALUE 'RO'.        02119
                                                                       02120
                 11 VR-SECONDARY-DATA-SOURCE.                           02121
                    13 VR-SECONDARY-DATA-SOURCE-ID.                     02122
                       15 VR-SECONDARY-SOURCE-CODE                      02123
                                                 PIC XXX.              02124
                       15 VR-SECONDARY-SOURCE-QUALFR                    02125
                                                 PIC XXX.              02126
                    13 VR-SECONDARY-ACTIVITY-CODE                       02127
                                                 PIC X.                02128
                                                                       02129
                 11 VR-DMG-INTERPRETED-CODE     PIC X.                  02130
```
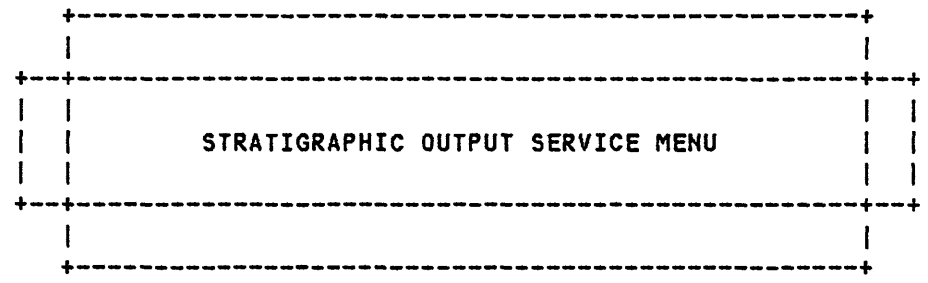

```
           07 WATER-TABLE-MENU.                                          02132
*             ----------------                                          02133
                                                                        02134
              09 IND-WATER-TABLE-AVAIL        PIC X.                    02135
                 88 WATER-TABLE-AVAIL             VALUE 'Y'.           02136
                                                                        02137
              09 WATER-TABLE-DATA-MENU.                                  02138
                                                                        02139
*                ---------------------------------                      02140
* NOTE ->         * THE VALUE FOR WATER TABLE IS    *                  02141
* NOTE ->         * THE "DEPTH-TO-SAMPLE" ABOVE.    *                  02142
*                ---------------------------------                      02143
                                                                        02144
                 11 IND-WT-VALUE-AVAIL        PIC X.                    02145
                    88 WT-VALUE-AVAIL             VALUE 'Y'.           02146
                 11 WT-VALUE                  PIC 9(5)V9.               02147
                                                                        02148
*                ---------------------------------                      02149
* NOTE ->         * THE VALUE USED TO QUERY THE     *                  02150
* NOTE ->         * WT-DATE-OF-SAMPLE AND           *                  02151
* NOTE ->         * WT-DATE-OF-MEASUREMENT MUST     *                  02152
* NOTE ->         * BE CODED IN THE FORM 'CCYYMMDD' *                  02153
*                ---------------------------------                      02154
                                                                        02155
                 11 WT-DATE-OF-SAMPLE.                                  02156
                    13 WT-DOS-CENTURY-AND-YEAR.                         02157
                       15 WT-DOS-CENTURY      PIC XX.                   02158
                       15 WT-DOS-YEAR         PIC XX.                   02159
                    13 WT-DOS-MONTH           PIC XX.                   02160
                    13 WT-DOS-DAY             PIC XX.                   02161
                                                                        02162
                 11 WT-DATE-OF-MEASUREMENT.                              02163
                    13 WT-DOM-CENTURY-AND-YEAR.                          02164
                       15 WT-DOM-CENTURY      PIC XX.                   02165
                       15 WT-DOM-YEAR         PIC XX.                   02166
                    13 WT-DOM-MONTH           PIC XX.                   02167
                    13 WT-DOM-DAY             PIC XX.                   02168
                                                                        02169
                 11 WT-METHOD                 PIC XX.                   02170
                    88 WT-DIRECT-OBSERVATION       VALUE 'DO'.          02171
                    88 WT-RESISTIVITY              VALUE 'RE'.          02172
                    88 WT-SEISMIC-REFLECTION       VALUE 'SR'.          02173
                                                                        02174
                 11 WT-SECONDARY-DATA-SOURCE.                            02175
                    13 WT-SECONDARY-DATA-SOURCE-ID.                      02176
                       15 WT-SECONDARY-SOURCE-CODE                       02177
                                             PIC XXX.                   02178
                       15 WT-SECONDARY-SOURCE-QUALFR                     02179
                                             PIC XXX.                   02180
                    13 WT-SECONDARY-ACTIVITY-CODE                        02181
                                             PIC X.                     02182
                                                                        02183
                 11 WT-DMG-INTERPRETED-CODE   PIC X.                     02184
```

```
           07 YOUNGS-MODULUS-MENU.                                    02186
*             ------------------                                      02187
                                                                      02188
              09 IND-YOUNGS-MODULUS-AVAIL     PIC X.                  02189
                 88 YOUNGS-MODULUS-AVAIL          VALUE 'Y'.         02190
                                                                      02191
              09 YOUNGS-MODULUS-DATA-MENU.                             02192
                 11 IND-YM-VALUE-AVAIL        PIC X.                  02193
                    88 YM-VALUE-AVAIL             VALUE 'Y'.         02194
                 11 YM-VALUE                  PIC 9999.               02195
                                                                      02196
*                  -------------------------------                    02197
* NOTE ->           * THE VALUE USED TO QUERY THE     *              02198
* NOTE ->           * YM-DATE-OF-SAMPLE AND           *              02199
* NOTE ->           * YM-DATE-OF-MEASUREMENT MUST     *              02200
* NOTE ->           * BE CODED IN THE FORM 'CCYYMMDD' *              02201
*                    -------------------------------                  02202
                                                                      02203
                 11 YM-DATE-OF-SAMPLE.                                02204
                    13 YM-DOS-CENTURY-AND-YEAR.                       02205
                       15 YM-DOS-CENTURY      PIC XX.                 02206
                       15 YM-DOS-YEAR         PIC XX.                 02207
                    13 YM-DOS-MONTH           PIC XX.                 02208
                    13 YM-DOS-DAY             PIC XX.                 02209
                                                                      02210
                 11 YM-DATE-OF-MEASUREMENT.                            02211
                    13 YM-DOM-CENTURY-AND-YEAR.                        02212
                       15 YM-DOM-CENTURY      PIC XX.                 02213
                       15 YM-DOM-YEAR         PIC XX.                 02214
                    13 YM-DOM-MONTH           PIC XX.                 02215
                    13 YM-DOM-DAY             PIC XX.                 02216
                                                                      02217
                 11 YM-METHOD                 PIC XX.                 02218
                    88 YM-CALCULATED              VALUE 'CA'.        02219
                    88 YM-IN-SITU-DETERMINATION   VALUE 'IS'.        02220
                    88 YM-LABORATORY-DETERMINATION                     02221
                                                 VALUE 'LD'.          02222
                                                                      02223
                 11 YM-SECONDARY-DATA-SOURCE.                          02224
                    13 YM-SECONDARY-DATA-SOURCE-ID.                    02225
                       15 YM-SECONDARY-SOURCE-CODE                     02226
                                                 PIC XXX.             02227
                       15 YM-SECONDARY-SOURCE-QUALFR                   02228
                                                 PIC XXX.             02229
                    13 YM-SECONDARY-ACTIVITY-CODE                      02230
                                                 PIC X.               02231
                                                                      02232
                 11 YM-DMG-INTERPRETED-CODE   PIC X.                   02233


*    +-------------------------------------------------------+        02235
*    |                    E N D   O F                        |        02236
*    +-------------------------------------------------------+        02237
*    | S T R A T I G R A P H I C   D A T A   N A M E   M E N U |      02238
*    +-------------------------------------------------------+        02239
```

ATTACHMENT F



```
  01 STRAT-OUTPUT-SERVICE-MENUS.                                    ***
*    STRAT-OUTPUT-SERVICE-MENUS -------- CURRENT AS OF 25 JUN 1980    ...
*                                        (DEF REF: GDQ.AAMP)      09/16/80
                                                                  DICTGDQ
*    +-------------------------------------------------+            LV000
*    |       P R I N T   S E R V I C E   M E N U       |        00006
*    +-------------------------------------------------+        00007
*    |    F O R   S T R A T I G R A P H I C   D A T A   |        00008
*    +-------------------------------------------------+        00009
*    |                                                 |        00010
*    |  THE FOLLOWING "DATA NAMES" ARE THOSE WHICH MAY |        00011
*    |                                                 |        00012
*    |  BE USED TO SPECIFY WHICH DATA ITEMS AND WHICH  |        00013
*    |                                                 |        00014
*    |  STRATIGRAPHIC PARAMETERS ARE TO BE PRINTED.    |        00015
*    |                                                 |        00016
*    +-------------------------------------------------+        00017
*    |                                                 |        00018
*    |  CODING INSTRUCTIONS                            |        00019
*    |  -------------------                            |        00020
*    |                                                 |        00021
*    |  TO SPECIFY THAT A PARTICULAR DATA ITEM IS TO   |        00022
*    |  BE PRINTED CODE "MOVE YES TO DATA-NAME".       |        00023
*    |                                                 |        00024
*    |  EXAMPLE: MOVE YES TO PRINT-RELATIVE-DENSITY    |        00025
*    |                       PRINT-PARAMETER-VALUE     |        00026
*    |                                                 |        00027
*    |  EXAMPLE: MOVE YES TO PRINT-DEPTH-TO-TOP        |        00028
*    |                       PRINT-THICKNESS           |        00029
*    |                       PRINT-RELATIVE-GEOLOGIC-AGE |      00030
*    |                       PRINT-DEPTH-TO-SAMPLE     |        00031
*    |                       PRINT-APRNT-SPEC-GRAVITY  |        00032
*    |                       PRINT-UNIT-COHESION       |        00033
*    |                                                 |        00034
*    |     NOTE: THE CALIFORNIA COORDINATE VALUE IS    |        00035
*    |           ALWAYS PRINTED IF ANY OTHER DATA      |        00036
*    |           NAME IS REQUESTED.                    |        00037
*    |                                                 |        00038
*    |           IF ONLY A LIST OF CALIFORNIA          |        00039
*    |           COORDINATE VALUES WHICH SATISFY       |        00040
*    |           THE QUERY IS DESIRED THEN CODE        |        00041
*    |                                                 |        00042
*    |           "MOVE YES TO PRINT-CALIF-COORDINATES" |        00043
*    |                                                 |        00044
*    |           AS THE ONLY PRINT REQUEST.            |        00045
*    |                                                 |        00046
*    |                                                 |        00047
*    +-------------------------------------------------+        00048
```

```
*  +-------------------------------------+                          00050
*--| P R I N T   S E R V I C E   M E N U |-------------------------00051
*  +-------------------------------------+                          00052
                                                                    00053
     03 PRINT-SERVICE-MENU.                                         00054
                                                                    00055
        05 PRINT-ALL-DATA-ITEMS                PIC XXX.            00056


*     +-----------------------------+                               00058
*-----| PRIMARY SURFACE PRINT MENU |------------------------------00059
*     +-----------------------------+                               00060
                                                                    00061
        05 PRINT-PRIMARY-SURFACE-INFO          PIC XXX.            00062
                                                                    00063
        05 PRINT-CALIF-COORDINATES             PIC XXX.            00064
        05 PRINT-SURFACE-ELEVATION             PIC XXX.            00065


*     +-------------------------------+                             00067
*-----| SECONDARY SURFACE PRINT MENU |----------------------------00068
*     +-------------------------------+                             00069
                                                                    00070
        05 PRINT-SECONDARY-SURFACE-INFO        PIC XXX.            00071
                                                                    00072
        05 PRINT-LONGITUDE                     PIC XXX.            00073
        05 PRINT-LATITUDE                      PIC XXX.            00074
        05 PRINT-STATE                         PIC XXX.            00075
        05 PRINT-COUNTY                        PIC XXX.            00076
        05 PRINT-ATLAS-SHEET                   PIC XXX.            00077


*     +-----------------------------------+                         00079
*-----| AUXILIARY INFORMATION PRINT MENU |-------------------------00080
*     +-----------------------------------+                         00081
                                                                    00082
        05 PRINT-AUXILIARY-INFORMATION         PIC XXX.            00083
                                                                    00084
        05 PRINT-PRIMARY-DATA-SOURCE           PIC XXX.            00085
        05 PRINT-PRIMARY-ACTIVITY-TYPE         PIC XXX.            00086
                                                                    00087
        05 PRINT-SURFACE-SEGMENT-DATE          PIC XXX.            00088
                                                                    00089
*     ---------------------------------------------------------------00090
                                                                    00091
        05 PRINT-SURFACE-HISTORY               PIC XXX.            00092
```

```
*     +------------------------------+                          00094
*-----| LITHOLOGIC LAYER PRINT MENU |-----------------------------00095
*     +------------------------------+                          00096
                                                                00097
       05 PRINT-LITHOLOGIC-LAYER-INFO        PIC XXX.          00098
                                                                00099
       05 PRINT-DEPTH-TO-LAYER-TOP           PIC XXX.          00100
       05 PRINT-THICKNESS-OF-LAYER           PIC XXX.          00101
                                                                00102
       05 PRINT-GENERAL-LITHOLOGY            PIC XXX.          00103
                                                                00104
       05 PRINT-STRATIGRAPHIC-ID             PIC XXX.          00105
       05 PRINT-STRATIGRAPHIC-GROUP          PIC XXX.          00106
       05 PRINT-STRATIGRAPHIC-FORMATION      PIC XXX.          00107
       05 PRINT-STRATIGRAPHIC-MEMBER         PIC XXX.          00108
                                                                00109
       05 PRINT-RELATIVE-GEOL-AGE            PIC XXX.          00110
       05 PRINT-RELATIVE-GEOL-ERA            PIC XXX.          00111
       05 PRINT-RELATIVE-GEOL-PERIOD         PIC XXX.          00112
       05 PRINT-RELATIVE-GEOL-SER-EPH        PIC XXX.          00113
       05 PRINT-RELATIVE-GEOL-STAGE          PIC XXX.          00114
                                                                00115
       05 PRINT-DETERMINATION-METHOD         PIC XXX.          00116
                                                                00117
       05 PRINT-LAYER-SEGMENT-DATE           PIC XXX.          00118
                                                                00119
*     ------------------------------------------------------------00120
                                                                00121
       05 PRINT-LITHOLOGIC-LAYER-HISTORY     PIC XXX.          00122
```

```
*     +------------------------------+                                  00124
*-----| SAMPLE DATA ITEM PRINT MENU |-------------------------------00125
*     +------------------------------+                                  00126
                                                                        00127
*      +-------------------------------------------------+              00128
*      | NOTE: IF A SAMPLE DATA ITEM IS SPECIFIED        |              00129
*      |       AT LEAST ONE GEOTECHNICAL PARAMETER       |              00130
*      |       FROM THE MENU BELOW MUST ALSO BE          |              00131
*      |       SPECIFIED.                                |              00132
*      +-------------------------------------------------+              00133
                                                                        00134
        05 PRINT-ALL-SAMPLE-DATA-ITEMS          PIC XXX.                00135
                                                                        00136
        05 PRINT-DEPTH-TO-SAMPLE                PIC XXX.                00137
        05 PRINT-PARAMETER-MEASURED             PIC XXX.                00138
        05 PRINT-PARAMETER-VALUE                PIC XXX.                00139
        05 PRINT-DATE-SAMPLE-TAKEN              PIC XXX.                00140
        05 PRINT-DATE-OF-MEASUREMENT            PIC XXX.                00141
        05 PRINT-METHOD                         PIC XXX.                00142
        05 PRINT-SECONDARY-ACTIVITY-TYPE        PIC XXX.                00143
        05 PRINT-SECONDARY-DATA-SOURCE          PIC XXX.                00144
        05 PRINT-DMG-INTERPRETED-CODE           PIC XXX.                00145
                                                                        00146
*     ------------------------------------------------------------------00147
                                                                        00148
        05 PRINT-RELEASE-AUTHORITY              PIC XXX.                00149
                                                                        00150
*     ------------------------------------------------------------------00151
                                                                        00152
        05 PRINT-SAMPLE-HISTORY                 PIC XXX.                00153
```

```
*    +-----------------------------------+                        00155
*----| GEOTECHNICAL PARAMETER PRINT MENU |-----------------------00156
*    +-----------------------------------+                        00157
                                                                  00158
*     +-----------------------------------------------+           00159
*     | NOTE: IF A GEOTECHNICAL PARAMETER IS          |           00160
*     |       SPECIFIED AT LEAST ONE SAMPLE DATA      |           00161
*     |       ITEM FROM THE MENU ABOVE MUST ALSO      |           00162
*     |       BE SPECIFIED.                           |           00163
*     +-----------------------------------------------+           00164
                                                                  00165
       05 PRINT-ALL-GEOTECH-PARAMETERS       PIC XXX.             00166
                                                                  00167
       05 PRINT-ALL-LABELS-FOR-EACH-SMPL     PIC XXX.             00168
                                                                  00169
       05 PRINT-ABSOLUTE-GEOL-AGE            PIC XXX.             00170
       05 PRINT-APRNT-SPEC-GRAVITY           PIC XXX.             00171
       05 PRINT-BULK-DENSITY                 PIC XXX.             00172
       05 PRINT-BULK-MODULUS                 PIC XXX.             00173
       05 PRINT-GRAIN-SIZE                   PIC XXX.             00174
       05 PRINT-P-WAVE-VELOCITY              PIC XXX.             00175
       05 PRINT-PERMEABILITY                 PIC XXX.             00176
       05 PRINT-POISSONS-RATIO               PIC XXX.             00177
       05 PRINT-POROSITY                     PIC XXX.             00178
       05 PRINT-RELATIVE-DENSITY             PIC XXX.             00179
       05 PRINT-S-WAVE-VELOCITY              PIC XXX.             00180
       05 PRINT-SEISMIC-IMPEDANCE            PIC XXX.             00181
       05 PRINT-SHEAR-MODULUS                PIC XXX.             00182
       05 PRINT-SHEAR-STRENGTH               PIC XXX.             00183
       05 PRINT-SPEC-SMPL-LITHOLOGY          PIC XXX.             00184
       05 PRINT-STND-PENETRATION-TEST        PIC XXX.             00185
       05 PRINT-TAN-PHI                      PIC XXX.             00186
       05 PRINT-TRUE-SPEC-GRAVITY            PIC XXX.             00187
       05 PRINT-UNIT-COHESION                PIC XXX.             00188
       05 PRINT-VOID-RATIO                   PIC XXX.             00189
       05 PRINT-WATER-TABLE                  PIC XXX.             00190
       05 PRINT-YOUNGS-MODULUS               PIC XXX.             00191


*    +-----------------------------------------------+            00193
*    |                 E N D   O F                   |            00194
*    +-----------------------------------------------+            00195
*    |       P R I N T   S E R V I C E   M E N U     |            00196
*    +-----------------------------------------------+            00197
*    |   F O R   S T R A T I G R A P H I C   D A T A |            00198
*    +-----------------------------------------------+            00199
```

```
*    +-------------------------------------------------+      00201
*    |        P L O T   S E R V I C E   M E N U        |      00202
*    +-------------------------------------------------+      00203
*    |    F O R   S T R A T I G R A P H I C   D A T A  |      00204
*    +-------------------------------------------------+      00205
*    |                                                 |      00206
*    |  THE FOLLOWING "DATA NAMES" ARE THOSE WHICH MAY |      00207
*    |                                                 |      00208
*    |  BE USED TO SPECIFY WHICH DATA ITEMS AND WHICH  |      00209
*    |                                                 |      00210
*    |  STRATIGRAPHIC PARAMETERS ARE TO BE PLOTTED.    |      00211
*    |                                                 |      00212
*    +-------------------------------------------------+      00213
*    |                                                 |      00214
*    |  CODING INSTRUCTIONS                            |      00215
*    |  -------------------                            |      00216
*    |                                                 |      00217
*    |  TO SPECIFY THAT A PARTICULAR DATA ITEM IS TO   |      00218
*    |  BE PLOTTED CODE EITHER                         |      00219
*    |        "MOVE 7-AND-A-HALF-MINUTE-QUAD           |      00220
*    |              TO 'PLOT-DATA-NAME'"               |      00221
*    |     OR                                          |      00222
*    |        "MOVE 15-MINUTE-QUAD                     |      00223
*    |              TO 'PLOT-DATA-NAME'"               |      00224
*    |                                                 |      00225
*    |  EXAMPLE: MOVE 7-AND-A-HALF-MINUTE-QUAD         |      00226
*    |                TO PLOT-RELATIVE-DENSITY         |      00227
*    |                                                 |      00228
*    |  EXAMPLE: MOVE 15-MINUTE-QUAD                   |      00229
*    |                   TO PLOT-DEPTH-TO-TOP          |      00230
*    |                      PLOT-THICKNESS             |      00231
*    |                      PLOT-RELATIVE-GEOLOGIC-AGE |      00232
*    |                      PLOT-DEPTH-TO-SAMPLE       |      00233
*    |                      PLOT-APRNT-SPEC-GRAVITY    |      00234
*    |                      PLOT-UNIT-COHESION         |      00235
*    |                                                 |      00236
*    |                                                 |      00237
*    |     NOTE: THE CALIFORNIA COORDINATE SYSTEM      |      00238
*    |           VALUE IS THE VALUE PLOTTED. FOR EACH  |      00239
*    |           PLOT ITEM SPECIFIED.  IF MORE THEN    |      00240
*    |           ONE "PLOT" DATA-NAME IS SPECIFIED     |      00241
*    |           A PLOT WILL BE PRODUCE FOR EACH       |      00242
*    |           DATA NAME.  ONE PLOT WILL BE PRODUCED |      00243
*    |           FOR EACH DATA-NAME SPECIFIED.         |      00244
*    |                                                 |      00245
*    +-------------------------------------------------+      00246
```

```
*  +-----------------------------------+                          00248
*--| P L O T   S E R V I C E   M E N U |--------------------------00249
*  +-----------------------------------+                          00250
                                                                  00251
     03 PLOT-SERVICE-MENU.                                        00252
                                                                  00253
*     +---------------------------+                               00254
*-----| PRIMARY SURFACE PLOT MENU |-------------------------------00255
*     +---------------------------+                               00256
                                                                  00257
        05 PLOT-CALIF-COORDINATES              PIC XXX.          00258
        05 PLOT-SURFACE-ELEVATION              PIC XXX.          00259


*     +-----------------------------+                             00261
*-----| SECONDARY SURFACE PLOT MENU |-----------------------------00262
*     +-----------------------------+                             00263
                                                                  00264
        05 PLOT-LONGITUDE                      PIC XXX.          00265
        05 PLOT-LATITUDE                       PIC XXX.          00266
        05 PLOT-STATE-CODE                     PIC XXX.          00267
        05 PLOT-COUNTY-CODE                    PIC XXX.          00268
        05 PLOT-ATLAS-SHEET-CODE               PIC XXX.          00269


*     +---------------------------------+                         00271
*-----| AUXILIARY INFORMATION PLOT MENU |-------------------------00272
*     +---------------------------------+                         00273
                                                                  00274
        05 PLOT-PRIMARY-DATA-SOURCE-ID         PIC XXX.          00275
        05 PLOT-PRIMARY-ACTIVITY-CODE          PIC XXX.          00276
                                                                  00277
        05 PLOT-SURFACE-SEGMENT-DATE           PIC XXX.          00278
```

```
*     +-----------------------------+                                  00280
*-----| LITHOLOGIC LAYER PLOT MENU |-------------------------------00281
*     +-----------------------------+                                  00282
                                                                       00283
        05 PLOT-DEPTH-TO-TOP                    PIC XXX.               00284
        05 PLOT-THICKNESS                       PIC XXX.               00285
                                                                       00286
        05 PLOT-GENERAL-LITHOLOGY               PIC XXX.               00287
                                                                       00288
        05 PLOT-STRATIGRAPHIC-GROUP             PIC XXX.               00289
        05 PLOT-STRATIGRAPHIC-FORMATION         PIC XXX.               00290
        05 PLOT-STRATIGRAPHIC-MEMBER            PIC XXX.               00291
                                                                       00292
        05 PLOT-RELATIVE-GEOL-ERA               PIC XXX.               00293
        05 PLOT-RELATIVE-GEOL-PERIOD            PIC XXX.               00294
        05 PLOT-RELATIVE-GEOL-SER-EPH           PIC XXX.               00295
        05 PLOT-RELATIVE-GEOL-STAGE             PIC XXX.               00296
                                                                       00297
        05 PLOT-METHOD-OF-DETERMINATION         PIC XXX.               00298
                                                                       00299
        05 PLOT-LAYER-SEGMENT-DATE              PIC XXX.               00300


*     +-----------------------------+                                  00302
*-----| SAMPLE DATA ITEM PLOT MENU |-------------------------------00303
*     +-----------------------------+                                  00304
                                                                       00305
*      +-----------------------------------------------+               00306
*      | NOTE: IF A SAMPLE DATA ITEM IS SPECIFIED      |               00307
*      |       AT LEAST ONE GEOTECHNICAL PARAMETER     |               00308
*      |       FROM THE MENU BELOW MUST ALSO BE        |               00309
*      |       SPECIFIED.                              |               00310
*      +-----------------------------------------------+               00311
                                                                       00312
        05 PLOT-DEPTH-TO-SAMPLE                 PIC XXX.               00313
        05 PLOT-PARAMETER-MEASURED              PIC XXX.               00314
        05 PLOT-PARAMETER-VALUE                 PIC XXX.               00315
        05 PLOT-DATE-OF-SAMPLE                  PIC XXX.               00316
        05 PLOT-DATE-OF-MEASUREMENT             PIC XXX.               00317
        05 PLOT-METHOD                          PIC XXX.               00318
        05 PLOT-SECONDARY-ACTIVITY-CODE         PIC XXX.               00319
        05 PLOT-SECONDARY-DATA-SOURCE-ID        PIC XXX.               00320
        05 PLOT-DMG-INTERPRETED-CODE            PIC XXX.               00321
                                                                       00322
        05 PLOT-RELEASE-AUTHORITY               PIC XXX.               00323
```

```
*     +-----------------------------------+                          00325
*-----| GEOTECHNICAL PARAMETER PLOT MENU |-------------------------00326
*     +-----------------------------------+                          00327
                                                                     00328
*      +-------------------------------------------------+           00329
*      | NOTE: IF A GEOTECHNICAL PARAMETER IS            |           00330
*      |       SPECIFIED AT LEAST ONE SAMPLE DATA        |           00331
*      |       ITEM FROM THE MENU ABOVE MUST ALSO        |           00332
*      |       BE SPECIFIED.                             |           00333
*      +-------------------------------------------------+           00334
                                                                     00335
        05 PLOT-ABSOLUTE-GEOL-AGE              PIC XXX.              00336
        05 PLOT-APRNT-SPEC-GRAVITY             PIC XXX.              00337
        05 PLOT-BULK-DENSITY                   PIC XXX.              00338
        05 PLOT-BULK-MODULUS                   PIC XXX.              00339
        05 PLOT-GRAIN-SIZE                     PIC XXX.              00340
        05 PLOT-P-WAVE-VELOCITY                PIC XXX.              00341
        05 PLOT-PERMEABILITY                   PIC XXX.              00342
        05 PLOT-POISSONS-RATIO                 PIC XXX.              00343
        05 PLOT-POROSITY                       PIC XXX.              00344
        05 PLOT-RELATIVE-DENSITY               PIC XXX.              00345
        05 PLOT-S-WAVE-VELOCITY                PIC XXX.              00346
        05 PLOT-SEISMIC-IMPEDANCE              PIC XXX.              00347
        05 PLOT-SHEAR-MODULUS                  PIC XXX.              00348
        05 PLOT-SHEAR-STRENGTH                 PIC XXX.              00349
        05 PLOT-SPEC-SMPL-LITHOLOGY            PIC XXX.              00350
        05 PLOT-STND-PENETRATION-TEST          PIC XXX.              00351
        05 PLOT-TAN-PHI                        PIC XXX.              00352
        05 PLOT-TRUE-SPEC-GRAVITY              PIC XXX.              00353
        05 PLOT-UNIT-COHESION                  PIC XXX.              00354
        05 PLOT-VOID-RATIO                     PIC XXX.              00355
        05 PLOT-WATER-TABLE                    PIC XXX.              00356
        05 PLOT-YOUNGS-MODULUS                 PIC XXX.              00357


*     +-------------------------------------------------+            00359
*     |                  E N D   O F                    |            00360
*     +-------------------------------------------------+            00361
*     |        P L O T   S E R V I C E   M E N U        |            00362
*     +-------------------------------------------------+            00363
*     |   F O R   S T R A T I G R A P H I C   D A T A   |            00364
*     +-------------------------------------------------+            00365
```

ATTACHMENT G

SAMPLE QUERIES AND THE RESULTING STRATIGRAPHIC PROPERITES AND DATA REPORTS

THE SAMPLE QUERIES AND RESULTING STRATIGRAPHIC PROPERTIES AND DATA REPORTS PROVIDED AS THIS ATTACHMENT WERE PROCESSED AGAINST A STORAGE FILE GENERATED BY THE SAMPLE STRATIGRAPHIC EDIT/AUDIT AND CHANGE REPORTS PROVIDED PROVIDED AS ATTACHMENT B.

SAMPLE QUERIES PROVIDED

QUERY NAME	DESCRIPTION	PAGE
PRTAVAIL	THIS REPORT SHOWS ALL DATA AVAILABLE ON THE STORAGE FILE.	G1-2
PRINTALL	THIS REPORT SHOWS ALL DATA AVAILABLE ON THE STORAGE FILE AND INCLUDES ALL THE PARAMETER LABELS WHETHER DATA FOR A PARTICULAR PARAMETER WAS STORED FOR THE SAMPLE OR NOT.	G3-7
PRTSURF	THIS REPORT SHOWS A REQUEST FOR ALL SURFACE DATA FROM THE STORAGE FILE.	G8
PRTLAYER	THIS REPORT SHOWS A REQUEST FOR ALL LAYER DATA FROM THE STORAGE FILE.	G9
PRTPARM	THIS REPORT SHOWS A REQUEST FOR ALL PARAMETER DATA FROM THE STORAGE FILE.	G10
PRTCCL	THIS REPORT SHOWS A REQUEST FOR A LIST OF ALL CALIFORNIA COORDINATE VALUES ON THE STORAGE FILE.	G11-12
QUERY001	THIS REPORT SHOWS A REQUEST FOR ANY PARAMETER WHICH WAS MEASURED USING A STANDARD METHOD OR THE GENERAL LITHOLOGY IS SAND.	G13-14
QUERY002	THIS REPORT SHOWS A REQUEST IDENTICAL TO QUERY001 WHICH INCLUDES TWO ADDITIONAL DATA ITEMS.	G15-16
(CONTROLS)	THIS IS THE USER RUN PROFILE FOR QUERY002.	G17
(CONTROLS)	THIS IS THE RUN CONROLS REPORT FOR QUERY002.	G18
NODATA	THIS REPORT SHOWS A REQUEST FOR WHICH NO DATA WAS FOUND ON THE STORAGE FILE	G19

QUERY NAME	DESCRIPTION	PAGE
ERROR001	THIS REPORT SHOWS AN ERROR IN WHICH ONE OF THE REQUIRED HYPHENS WERE LEFT OUT OF THE PRINT DATA NAMES.	G20
ERROR002	THIS REPORT SHOWS AN ERROR IN WHICH THE CORRECT PRINT DATA NAMES FROM THE MENUS WERE NOT USED.	G21
ERROR003	THIS REPORT SHOWS AN ERROR WHICH IS THE RESULT OF SPECIFYING A COMBINATION OF PRINT DATA NAMES WHICH WAS NOT SUFFICENT TO COMPLETELY IDENTIFY THE DESIRED REPORT CONFIGURATION.	G22

REPORT ID: GDQ01
PROGRAM ID: P1A2E10
TIME OF RUN: 17 SEP 1980 18:02:15

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY PRTAVAIL
PAGE 1

STRATIGRAPHIC PROPERTIES AND DATA REQUEST

USER CODED QUERY

```
      |COMMENT                                                        |
      ||------------------- Q U E R Y   T E X T --------------------|
 LINE ||       1         2         3         4         5         6   |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
       *                                                             |
  1... *------------- TEST QUERY ----- PRTAVAIL ---------------------|
  2...                                                              |
  3...  MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED                |
  4...                                                              |
  5...  MOVE YES TO PRINT-ALL-DATA-ITEMS                            |
  6...              PRINT-ALL-GEOTECH-PARAMETERS                    |
  7...              PRINT-RELEASE-AUTHORITY                         |
                                                                    |
      |       1         2         3         4         5         6   |
      |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

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 REPORT ID: GDQ01                    STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION                        QUERY PRTAVAIL
 PROGRAM ID: P1A2E10                            DIVISION  OF  MINES  AND  GEOLOGY                                       PAGE    2
TIME OF RUN: 17 SEP 1980 18:02:15
                                                     STRATIGRAPHIC  PROPERTIES  AND  DATA  REPORT

CALIF. COORDINATES: 6 1447509 0562751 LATITUDE:  __.______  STATE: __________         ATLAS SHEET: (07).... LONG BEACH
 SURFACE ELEVATION:      2.5- FEET   LONGITUDE: ___.______ COUNTY: ORANGE            ACTIVITY TYPE: (F)..... FOUNDATION INVESTIGATION
                                     (SEGMENT DATE: 11 SEP 1980)           PRIMARY DATA SOURCE: (BEC    ) BECHTEL INC.

--- LITHOLOGIC LAYER INFORMATION ----|--------------------------- S A M P L E   I N F O R M A T I O N ---------------------------
                                     |                                                                         RELEASE AUTHORITY
                                     |                                                                        DMG INTERPRETED |
DEPTH           GL: GENERAL LITHOLOGY|                                                            SECONDARY DATA SOURCE    | |
 TO             SI: STRATIGRAPHIC ID |                                                                ACTIVITY TYPE   |    | |
LAYER THICKNESS RA: RELATIVE AGE AND |DEPTH TO                                                            METHOD |    |    | |
 TOP  OF LAYER      DETRMINTN METHOD | SAMPLE                                          DATE SAMPLE  DATE OF    | |    |    | |
(FEET) (FEET)   SD: SEGMENT DATE     | (FEET)    PARAMETER   MEASURED       PARAMETER VALUE    TAKEN    MEASUREMENT V V    V    V V
                                     |
                                     |    0.9 BULK DENSITY ............      102.1 PCF      12 FEB 67  12 FEB 67  ST F BEC___ _ 2
                                     |        GRAIN SIZE NO.4   SIEVE ..      100 %          12 FEB 67  12 FEB 67  ST F BEC___ _ 2
                                     |        GRAIN SIZE NO.10  SIEVE ..      ___ %
                                     |        GRAIN SIZE NO.40  SIEVE ..      ___ %
                                     |        GRAIN SIZE NO.200 SIEVE ..       59 %
                                     |        SPECIFIC LITHOLOGY ....... SILTY SAND         12 FEB 67  12 FEB 67  DO F BEC___ _ 2
                                     |        TAN PHI ..................        0.810       12 FEB 67  12 FEB 67  CA F BEC___ _ 2
                                     |
     4      6   GL: SAND             |    5.8 BULK DENSITY ............      104.0 PCF      12 FEB 67  12 FEB 67  ST F BEC___ _ 2
                SI: _______________  |        SPECIFIC LITHOLOGY ....... SAND               12 FEB 67  12 FEB 67  DO F BEC___ _ 2
                RA: QUATERNARY      4|
                SD: 11 SEP 1980      |
                                     |
    66 __,___   GL: SILT             |   67.0 SPECIFIC LITHOLOGY ....... SANDY SILT         12 FEB 67  12 FEB 67  DO F BEC___ _ 2
                SI: _______________  |
                RA: PLEISTOCENE UPR 4|
                SD: 11 SEP 1980      |
                                     |
    68      1   GL: SEDIMENTARY RK   |
                SI: _______________  |
                RA: PLEISTOCENE UPR 4|
                SD: 11 SEP 1980      |
                                     |
                                     |   75.0 SPECIFIC LITHOLOGY ....... SILTY SAND         12 FEB 67  12 FEB 67  DO F BEC___ _ 2

.................. E N D  (CALIF. COORDINATES: 6 1447509 0562751) ..........................................................
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REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY PRINTALL
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 1
TIME OF RUN: 17 SEP 1980 18:01:58

STRATIGRAPHIC PROPERTIES AND DATA REQUEST

USER CODED QUERY

```
     |COMMENT                                                          |
     ||------------------- Q U E R Y   T E X T --------------------|
LINE ||       1         2         3         4         5         6    |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
     *
  1... *------------- TEST QUERY ----- PRINTALL --------------------|
  2...                                                              |
  3...  MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED                |
  4...                                                              |
  5...  MOVE YES TO PRINT-ALL-DATA-ITEMS                            |
  6...              PRINT-ALL-GEOTECH-PARAMETERS                    |
  7...              PRINT-RELEASE-AUTHORITY                         |
  8...                                                              |
  9...              PRINT-ALL-LABELS-FOR-EACH-SMPL                  |
                                                                    |
     |       1         2         3         4         5         6    |
     |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

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G 3

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY PRINTALL
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 2
TIME OF RUN: 17 SEP 1980 18:01:58

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1447509 0562751 LATITUDE: __._____ STATE: _____ ATLAS SHEET: (07).... LONG BEACH
SURFACE ELEVATION: 2.5- FEET LONGITUDE: ___._____ COUNTY: ORANGE ACTIVITY TYPE: (F)..... FOUNDATION INVESTIGATION
(SEGMENT DATE: 11 SEP 1980) PRIMARY DATA SOURCE: (BEC) BECHTEL INC.

--- LITHOLOGIC LAYER INFORMATION ---- | ---------- S A M P L E I N F O R M A T I O N ----------

DEPTH TO LAYER TOP (FEET) | THICKNESS OF LAYER (FEET) | GL: GENERAL LITHOLOGY; SI: STRATIGRAPHIC ID; RA: RELATIVE AGE AND DETRMINTN METHOD; SD: SEGMENT DATE

DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN	DATE OF MEASUREMENT	RELEASE AUTHORITY DMG INTERPRETED: SECONDARY DATA SOURCE: ACTIVITY TYPE	METHOD	V	V	V	V	V
0.9	ABSOLUTE GEOLOGIC AGE	_.__+/-_.__ E_									
	APRNT SPECIFIC GRAVITY ...	__.__									
	BULK DENSITY	102.1 PCF	12 FEB 67	12 FEB 67	ST	F	BEC				2
	BULK MODULUS	_,___ KBARS									
	GRAIN SIZE NO.4 SIEVE ..	100 %	12 FEB 67	12 FEB 67	ST	F	BEC				2
	GRAIN SIZE NO.10 SIEVE ..	___ %									
	GRAIN SIZE NO.40 SIEVE ..	___ %									
	GRAIN SIZE NO.200 SIEVE ..	59 %									
	P-WAVE VELOCITY	__,___ FT/SEC									
	PERMEABILITY	__,___ MDARCIES									
	POISSON'S RATIO	.__									
	POROSITY	__ %									
	RELATIVE DENSITY	__ %									
	S-WAVE VELOCITY	__,___ FT/SEC									
	SEISMIC IMPEDANCE	_,___,___ PCF/SEC									
	SHEAR MODULUS	_,___ KBARS									
	SHEAR STRENGTH	__,___.__ PSF									
	SPECIFIC LITHOLOGY	SILTY SAND	12 FEB 67	12 FEB 67	DO	F	BEC				2
	STND PENETRATION TEST	__ BLOWS/FT									
	TAN PHI	0.810	12 FEB 67	12 FEB 67	CA	F	BEC				2
	TRUE SPECIFIC GRAVITY	__,___									
	UNIT COHESION	__,___ PSF									
	VOID RATIO	_.__									
	- W A T E R -- T A B L E -										
	YOUNG'S MODULUS	_,___ KBARS									

---------- C O N T I N U E D ---------- C O N T I N U E D ---------- C O N T I N U E D ----------

REPORT ID: GDQ01
PROGRAM ID: P1A2E10
TIME OF RUN: 17 SEP 1980 18:01:58

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY PRINTALL
PAGE 3

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1447509 0562751 CONTINUATION - PAGE 2

--- LITHOLOGIC LAYER INFORMATION ---	SAMPLE INFORMATION

DEPTH TO TOP OF LAYER (FEET) | THICKNESS OF LAYER (FEET) | GL: GENERAL LITHOLOGY; SI: STRATIGRAPHIC ID; RA: RELATIVE AGE AND DETRMINTN METHOD; SD: SEGMENT DATE | DEPTH TO SAMPLE (FEET) | PARAMETER MEASURED | PARAMETER VALUE | DATE SAMPLE TAKEN | DATE OF MEASUREMENT | RELEASE AUTHORITY DMG INTERPRETED | SECONDARY DATA SOURCE | ACTIVITY TYPE | METHOD

DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY; SI: STRATIGRAPHIC ID; RA: RELATIVE AGE AND DETRMINTN METHOD; SD: SEGMENT DATE	DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN	DATE OF MEASUREMENT	RELEASE AUTHORITY DMG INTERPRETED	SECONDARY DATA SOURCE	ACTIVITY TYPE	METHOD
4	6	GL: SAND SI: _____ RA: QUATERNARY 4 SD: 11 SEP 1980	5.8	ABSOLUTE GEOLOGIC AGE	_.__+/-_.__ E_	__ ___ __	__ ___ __	__	__	_____	__
				APRNT SPECIFIC GRAVITY ...	__.__	__ ___ __	__ ___ __	__	__	_____	__
				BULK DENSITY	104.0 PCF	12 FEB 67	12 FEB 67	ST	F	BEC___	2
				BULK MODULUS	_,___ KBARS	__ ___ __	__ ___ __	__	__	_____	__
				GRAIN SIZE NO.4 SIEVE ..	___ %	__ ___ __	__ ___ __	__	__	_____	__
				GRAIN SIZE NO.10 SIEVE ..	___ %						
				GRAIN SIZE NO.40 SIEVE ..	___ %						
				GRAIN SIZE NO.200 SIEVE ..	___ %						
				P-WAVE VELOCITY	__,___ FT/SEC	__ ___ __	__ ___ __	__	__	_____	__
				PERMEABILITY	__,___ MDARCIES	__ ___ __	__ ___ __	__	__	_____	__
				POISSON'S RATIO	.__	__ ___ __	__ ___ __	__	__	_____	__
				POROSITY	__ %	__ ___ __	__ ___ __	__	__	_____	__
				RELATIVE DENSITY	__ %	__ ___ __	__ ___ __	__	__	_____	__
				S-WAVE VELOCITY	__,___ FT/SEC	__ ___ __	__ ___ __	__	__	_____	__
				SEISMIC IMPEDANCE	_,___,___ PCF/SEC	__ ___ __	__ ___ __	__	__	_____	__
				SHEAR MODULUS	_,___ KBARS	__ ___ __	__ ___ __	__	__	_____	__
				SHEAR STRENGTH	__,___._ PSF	__ ___ __	__ ___ __	__	__	_____	__
				SPECIFIC LITHOLOGY	SAND	12 FEB 67	12 FEB 67	DO	F	BEC___	2
				STND PENETRATION TEST	__ BLOWS/FT	__ ___ __	__ ___ __	__	__	_____	__
				TAN PHI	_.___	__ ___ __	__ ___ __	__	__	_____	__
				TRUE SPECIFIC GRAVITY	__,___	__ ___ __	__ ___ __	__	__	_____	__
				UNIT COHESION	__,___ PSF	__ ___ __	__ ___ __	__	__	_____	__
				VOID RATIO	_.__	__ ___ __	__ ___ __	__	__	_____	__
				- W A T E R -- T A B L E -		__ ___ __	__ ___ __	__	__	_____	__
				YOUNG'S MODULUS	_,___ KBARS	__ ___ __	__ ___ __	__	__	_____	__

CONTINUED CONTINUED CONTINUED

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 REPORT ID: GDQ01                STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION                  QUERY PRINTALL
PROGRAM ID: P1A2E10                         DIVISION  OF  MINES  AND  GEOLOGY                                  PAGE    4
TIME OF RUN: 17 SEP 1980 18:01:58
                                                STRATIGRAPHIC  PROPERTIES  AND  DATA  REPORT

CALIF. COORDINATES: 6 1447509 0562751  CONTINUATION  -  PAGE  3

--- LITHOLOGIC LAYER INFORMATION ----|--------------------------- S A M P L E   I N F O R M A T I O N ----------------------------
                                     |                                                                         RELEASE AUTHORITY
                                     |                                                                       DMG INTERPRETED |
DEPTH          GL: GENERAL LITHOLOGY|                                                               SECONDARY DATA SOURCE  | |
 TO            SI: STRATIGRAPHIC ID |                                                                   ACTIVITY TYPE  |   | |
LAYER THICKNESS RA: RELATIVE AGE AND |DEPTH TO                                                              METHOD |   |   | |
 TOP  OF LAYER     DETRMINTN METHOD | SAMPLE                                                 DATE SAMPLE  DATE OF    | |   |   | |
(FEET) (FEET)  SD: SEGMENT DATE     | (FEET)   PARAMETER   MEASURED       PARAMETER VALUE      TAKEN   MEASUREMENT V V   V   V V
                                     |
    66 __,___  GL: SILT             |   67.0 ABSOLUTE GEOLOGIC AGE .... _.__+/-_.__ E_       __ ___ __  __ ___ __  __ _ ______ _ _
               SI: ______________   |        APRNT SPECIFIC GRAVITY ...        __.__          __ ___ __  __ ___ __  __ _ ______ _ _
               RA: PLEISTOCENE UPR 4|        BULK DENSITY ............        ___._ PCF       __ ___ __  __ ___ __  __ _ ______ _ _
               SD: 11 SEP 1980      |        BULK MODULUS ............      _,___   KBARS     __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        GRAIN SIZE NO.4    SIEVE ..        ___ %         __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        GRAIN SIZE NO.10   SIEVE ..        ___ %
                                     |        GRAIN SIZE NO.40   SIEVE ..        ___ %
                                     |        GRAIN SIZE NO.200 SIEVE ..        ___ %
                                     |        P-WAVE VELOCITY ..........     __,___   FT/SEC    __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        PERMEABILITY .............     __,___ MDARCIES    __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        POISSON'S RATIO ..........          .__           __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        POROSITY .................         __ %           __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        RELATIVE DENSITY .........         __ %           __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        S-WAVE VELOCITY ..........     __,___   FT/SEC    __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        SEISMIC IMPEDANCE ........ _,___,___   PCF/SEC   __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        SHEAR MODULUS ............      _,___   KBARS     __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        SHEAR STRENGTH ...........     __,___._ PSF       __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        SPECIFIC LITHOLOGY ....... SANDY SILT             12 FEB 67  12 FEB 67  DO F BEC____ _ 2
                                     |        STND PENETRATION TEST ....         __  BLOWS/FT   __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        TAN PHI ..................         _.___          __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        TRUE SPECIFIC GRAVITY ....     __,___             __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        UNIT COHESION ............     __,___   PSF       __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        VOID RATIO ...............         _.__           __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        - W A T E R -- T A B L E -                        __ ___ __  __ ___ __  __ _ ______ _ _
                                     |        YOUNG'S MODULUS ..........      _,___   KBARS     __ ___ __  __ ___ __  __ _ ______ _ _

------------------ C O N T I N U E D ------------------ C O N T I N U E D ------------------ C O N T I N U E D -----------------
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REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY PRINTALL
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 5
TIME OF RUN: 17 SEP 1980 18:01:58

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1447509 0562751 CONTINUATION - PAGE 4

--- LITHOLOGIC LAYER INFORMATION ----

DEPTH TO LAYER TOP (FEET) | THICKNESS OF LAYER (FEET)

GL: GENERAL LITHOLOGY
SI: STRATIGRAPHIC ID
RA: RELATIVE AGE AND DETRMINTN METHOD
SD: SEGMENT DATE

68 | 1

GL: SEDIMENTARY RK
SI: _____
RA: PLEISTOCENE UPR 4
SD: 11 SEP 1980

---------- S A M P L E I N F O R M A T I O N ----------

DEPTH TO SAMPLE (FEET)	PARAMETER	MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN	DATE OF MEASUREMENT	RELEASE AUTHORITY	DMG INTERPRETED	SECONDARY DATA SOURCE	ACTIVITY TYPE	METHOD	V	V	V	V	V
75.0	ABSOLUTE GEOLOGIC AGE		_._+/-_._ E_												
	APRNT SPECIFIC GRAVITY ...		_._												
	BULK DENSITY		___._ PCF												
	BULK MODULUS		_,___ KBARS												
	GRAIN SIZE NO.4 SIEVE ..		___ %												
	GRAIN SIZE NO.10 SIEVE ..		___ %												
	GRAIN SIZE NO.40 SIEVE ..		___ %												
	GRAIN SIZE NO.200 SIEVE ..		___ %												
	P-WAVE VELOCITY		__,___ FT/SEC												
	PERMEABILITY		__,___ MDARCIES												
	POISSON'S RATIO		._												
	POROSITY		__ %												
	RELATIVE DENSITY		__ %												
	S-WAVE VELOCITY		__,___ FT/SEC												
	SEISMIC IMPEDANCE		_,___,___ PCF/SEC												
	SHEAR MODULUS		_,___ KBARS												
	SHEAR STRENGTH		__,___._ PSF												
	SPECIFIC LITHOLOGY	SILTY SAND		12 FEB 67	12 FEB 67	DO	F	BEC							2
	STND PENETRATION TEST		__ BLOWS/FT												
	TAN PHI		_._												
	TRUE SPECIFIC GRAVITY		__,___												
	UNIT COHESION		__,___ PSF												
	VOID RATIO		_._												
	- W A T E R -- T A B L E -														
	YOUNG'S MODULUS		_,___ KBARS												

..... E N D (CALIF. COORDINATES: 6 1447509 0562751) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY PRTSURF
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 1
TIME OF RUN: 17 SEP 1980 18:02:34

STRATIGRAPHIC PROPERTIES AND DATA REQUEST

USER CODED QUERY

```
      |COMMENT                                                        |
      ||------------------- Q U E R Y   T E X T --------------------|
 LINE ||        1         2         3         4         5         6 |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
      *                                                              |
  1... *------------- TEST QUERY ----- PRTSURF  --------------------|
  2...                                                             |
  3...  MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED               |
  4...                                                             |
  5...  MOVE YES TO PRINT-PRIMARY-SURFACE-INFO                     |
  6...              PRINT-SECONDARY-SURFACE-INFO                   |
  7...              PRINT-AUXILIARY-INFORMATION                    |
                                                                   |
      |        1         2         3         4         5         6 |
      |*...5....0....5....0....5....0....5....0....5....0....5....0.|
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REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY PRTSURF
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 2
TIME OF RUN: 17 SEP 1980 18:02:34

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1447509 0562751 LATITUDE: __._____ STATE: _____ ATLAS SHEET: (07).... LONG BEACH
SURFACE ELEVATION: 2.5- FEET LONGITUDE: ___._____ COUNTY: ORANGE ACTIVITY TYPE: (F)..... FOUNDATION INVESTIGATION
(SEGMENT DATE: 11 SEP 1980) PRIMARY DATA SOURCE: (BEC) BECHTEL INC.

REPORT ID: GDQ01
PROGRAM ID: P1A2E10
TIME OF RUN: 17 SEP 1980 18:02:52

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY PRTLAYER
PAGE 1

STRATIGRAPHIC PROPERTIES AND DATA REQUEST

USER CODED QUERY

```
      |COMMENT                                                        |
      ||------------------ Q U E R Y   T E X T --------------------|
 LINE ||       1         2         3         4         5         6  |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
      *                                                             |
  1... *------------ TEST QUERY ----- PRTLAYER --------------------|
  2...                                                            |
  3...  MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED               |
  4...                                                            |
  5...  MOVE YES TO PRINT-LITHOLOGIC-LAYER-INFO                   |
                                                                  |
      |       1         2         3         4         5         6.|
      |*...5....0....5....0....5....0....5....0....5....0....5....0.|
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REPORT ID: GDQ01
PROGRAM ID: P1A2E10
TIME OF RUN: 17 SEP 1980 18:02:52

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY PRTLAYER
PAGE 2

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1447509 0562751

```
--- LITHOLOGIC LAYER INFORMATION ----|
DEPTH           GL: GENERAL LITHOLOGY|
 TO             SI: STRATIGRAPHIC ID |
LAYER THICKNESS RA: RELATIVE AGE AND |
 TOP  OF LAYER      DETRMINTN METHOD |
(FEET) (FEET)   SD: SEGMENT DATE     |
                                     |
     4      6   GL: SAND             |
               SI: _____________     |
               RA: QUATERNARY      4|
               SD: 11 SEP 1980       |
                                     |
    66 __,___   GL: SILT             |
               SI: _____________     |
               RA: PLEISTOCENE UPR 4|
               SD: 11 SEP 1980       |
                                     |
    68      1   GL: SEDIMENTARY RK   |
               SI: _____________     |
               RA: PLEISTOCENE UPR 4|
               SD: 11 SEP 1980       |
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..... E N D (CALIF. COORDINATES: 6 1447509 0562751) .....

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REPORT ID: GDQ01                STATE  OF  CALIFORNIA -- DEPARTMENT  OF  CONSERVATION          QUERY PRTPARMS
PROGRAM ID: P1A2E10                        DIVISION  OF  MINES  AND  GEOLOGY                      PAGE    1
TIME OF RUN: 17 SEP 1980 18:03:05
                                       STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                                              U S E R   C O D E D   Q U E R Y

       |COMMENT                                                      |
       ||------------------ Q U E R Y   T E X T --------------------|
  LINE ||         1         2         3         4         5         6 |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
       *                                                             |
  1... *------------ TEST QUERY ----- PRTPARMS -------------------|
  2...                                                               |
  3...  MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED                 |
  4...                                                               |
  5...  MOVE YES TO PRINT-ALL-SAMPLE-DATA-ITEMS                      |
  6...              PRINT-ALL-GEOTECH-PARAMETERS                     |
                                                                     |
       |         1         2         3         4         5         6 |
       |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

```
REPORT ID: GDQ01                STATE  OF  CALIFORNIA -- DEPARTMENT  OF  CONSERVATION          QUERY PRTPARMS
PROGRAM ID: P1A2E10                        DIVISION  OF  MINES  AND  GEOLOGY                      PAGE    2
TIME OF RUN: 17 SEP 1980 18:03:05
                                       STRATIGRAPHIC  PROPERTIES  AND  DATA  REPORT

CALIF. COORDINATES: 6 1447509 0562751

                  |------------------------- S A M P L E   I N F O R M A T I O N ----------------------------
                  |                                                                              DMG INTERPRETED
                  |                                                                  SECONDARY DATA SOURCE    |
                  |                                                                      ACTIVITY TYPE   |    |
                  |DEPTH TO                                                                     METHOD |  |    |
                  | SAMPLE                                                   DATE SAMPLE  DATE OF     | |  |    |
                  | (FEET)   PARAMETER   MEASURED       PARAMETER VALUE        TAKEN    MEASUREMENT  V V  V    V
                  |
                  |    0.9 BULK DENSITY ............         102.1 PCF      12 FEB 67  12 FEB 67  ST F BEC___ _
                  |        GRAIN SIZE NO.4   SIEVE ..        100 %          12 FEB 67  12 FEB 67  ST F BEC___ _
                  |        GRAIN SIZE NO.10  SIEVE ..        ___ %
                  |        GRAIN SIZE NO.40  SIEVE ..        ___ %
                  |        GRAIN SIZE NO.200 SIEVE ..         59 %
                  |        SPECIFIC LITHOLOGY ....... SILTY SAND            12 FEB 67  12 FEB 67  DO F BEC___ _
                  |        TAN PHI .................           0.810        12 FEB 67  12 FEB 67  CA F BEC___ _
                  |
                  |    5.8 BULK DENSITY ............         104.0 PCF      12 FEB 67  12 FEB 67  ST F BEC___ _
                  |        SPECIFIC LITHOLOGY ....... SAND                  12 FEB 67  12 FEB 67  DO F BEC___ _
                  |
                  |   67.0 SPECIFIC LITHOLOGY ....... SANDY SILT            12 FEB 67  12 FEB 67  DO F BEC___ _
                  |
                  |   75.0 SPECIFIC LITHOLOGY ....... SILTY SAND            12 FEB 67  12 FEB 67  DO F BEC___ _

.................. E N D  (CALIF. COORDINATES: 6 1447509 0562751) ..........................................
```

REPORT ID: GDQ01
PROGRAM ID: P1A2E10
TIME OF RUN: 17 SEP 1980 18:03:18

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY PRTCCL
PAGE 1

STRATIGRAPHIC PROPERTIES AND DATA REQUEST

USER CODED QUERY

```
     |COMMENT                                                        |
     ||------------------- Q U E R Y   T E X T --------------------|
 LINE||       1        2        3        4        5        6       |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
     *                                                              |
  1... *------------- TEST QUERY ----- PRTCCL  --------------------|
  2...                                                            |
  3...  MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED              |
  4...                                                            |
  5...  MOVE YES TO PRINT-CALIF-COORDINATES                       |
                                                                  |
     |       1        2        3        4        5        6       |
     |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

REPORT ID: GDQ01
PROGRAM ID: P1A2E10
TIME OF RUN: 17 SEP 1980 18:03:18

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY PRTCCL

STRATIGRAPHIC PROPERTIES AND DATA REPORT
- CALIFORNIA - COORDINATE - LIST -

POINT	CALIF COORDINATES	POINT	CALIF COORDINATES	POINT	CALIF COORDINATES	POINT	CALIF COORDINATES	POINT	CALIF COORDINATES
001-	6 1447509 0562751								

REPORT ID: GDQ01
PROGRAM ID: P1A2E10
TIME OF RUN: 17 SEP 1980 18:05:01

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY QUERY001
PAGE 1

STRATIGRAPHIC PROPERTIES AND DATA REQUEST

USER CODED QUERY

```
     |COMMENT                                                          |
     ||------------------- Q U E R Y   T E X T --------------------|
 LINE||       1         2         3         4         5         6    |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
      *                                                               |
  1... *-------------- TEST QUERY ----- QUERY001 --------------------|
  2...                                                               |
  3...  MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED                 |
  4...                                                               |
  5...  IF ANY-STANDARD-MEASUREMENT                                  |
  6...    OR GL-IS-SAND                                              |
  7...                                                               |
  8...      MOVE YES TO PRINT-COUNTY                                 |
  9...                  PRINT-PRIMARY-DATA-SOURCE                    |
 10...                  PRINT-PRIMARY-ACTIVITY-TYPE                  |
 11...                                                               |
 12...                  PRINT-RELATIVE-GEOL-AGE                      |
 13...                  PRINT-GENERAL-LITHOLOGY                      |
 14...                                                               |
 15...                  PRINT-PARAMETER-VALUE                        |
 16...                  PRINT-SECONDARY-DATA-SOURCE                  |
 17...                                                               |
 18...                  PRINT-SPEC-SMPL-LITHOLOGY                    |
 19...                  PRINT-BULK-DENSITY                           |
                                                                     |
     |       1         2         3         4         5         6    |
     |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

REPORT ID: GDQ01 STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION QUERY QUERY001
PROGRAM ID: P1A2E10 DIVISION OF MINES AND GEOLOGY PAGE 2
TIME OF RUN: 17 SEP 1980 18:05:01

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1447509 0562751

COUNTY: ORANGE ACTIVITY TYPE: (F)..... FOUNDATION INVESTIGATION
PRIMARY DATA SOURCE: (BEC) BECHTEL INC.

--- LITHOLOGIC LAYER INFORMATION ----	---------- S A M P L E I N F O R M A T I O N ----------	
		SECONDARY DATA SOURCE
GL: GENERAL LITHOLOGY RA: RELATIVE AGE AND DETRMINTN METHOD	PARAMETER MEASURED / PARAMETER VALUE	V
	BULK DENSITY ..... 102.1 PCF	BEC___
	SPECIFIC LITHOLOGY ..... SILTY SAND	BEC___
GL: SAND RA: QUATERNARY	BULK DENSITY ..... 104.0 PCF	BEC___
	SPECIFIC LITHOLOGY ..... SAND	BEC___

..... E N D (CALIF. COORDINATES: 6 1447509 0562751) .....

```
REPORT ID: GDQ01              STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION                    QUERY QUERY002
PROGRAM ID: P1A2E10                  DIVISION OF MINES AND GEOLOGY                                   PAGE     1
TIME OF RUN: 17 SEP 1980 18:05:19
                                  STRATIGRAPHIC PROPERTIES AND DATA REQUEST

                                          U S E R   C O D E D   Q U E R Y

      |COMMENT                                                       |
      ||------------------- Q U E R Y   T E X T --------------------|
 LINE ||       1         2         3         4         5         6 |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
       *                                                             |
 1...  *------------ TEST QUERY ----- QUERY002 --------------------|
 2...                                                                |
 3...   MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED                 |
 4...                                                                |
 5...   IF ANY-STANDARD-MEASUREMENT                                  |
 6...     OR GL-IS-SAND                                              |
 7...                                                                |
 8...       MOVE YES TO PRINT-COUNTY                                 |
 9...                   PRINT-PRIMARY-DATA-SOURCE                    |
10...                   PRINT-PRIMARY-ACTIVITY-TYPE                  |
11...                                                                |
12...                   PRINT-DEPTH-TO-LAYER-TOP                     |
13...                   PRINT-RELATIVE-GEOL-AGE                      |
14...                   PRINT-GENERAL-LITHOLOGY                      |
15...                                                                |
16...                   PRINT-DEPTH-TO-SAMPLE                        |
17...                   PRINT-PARAMETER-VALUE                        |
18...                   PRINT-SECONDARY-DATA-SOURCE                  |
19...                                                                |
20...                   PRINT-SPEC-SMPL-LITHOLOGY                    |
21...                   PRINT-BULK-DENSITY                           |
                                                                     |
      |        1         2         3         4         5         6 |
      |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY QUERY002
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 2
TIME OF RUN: 17 SEP 1980 18:05:19

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1447509 0562751

COUNTY: ORANGE — ACTIVITY TYPE: (F)..... FOUNDATION INVESTIGATION
PRIMARY DATA SOURCE: (BEC) BECHTEL INC.

--- LITHOLOGIC LAYER INFORMATION ---		S A M P L E I N F O R M A T I O N				
DEPTH TO LAYER TOP (FEET)	GL: GENERAL LITHOLOGY RA: RELATIVE AGE AND DETRMINTN METHOD	DEPTH TO SAMPLE (FEET)	PARAMETER	MEASURED PARAMETER VALUE	SECONDARY DATA SOURCE V	
		0.9	BULK DENSITY	102.1 PCF	BEC___	
			SPECIFIC LITHOLOGY	SILTY SAND	BEC___	
4	GL: SAND RA: QUATERNARY	5.8	BULK DENSITY	104.0 PCF	BEC___	
			SPECIFIC LITHOLOGY	SAND	BEC___	

..... E N D (CALIF. COORDINATES: 6 1447509 0562751) .....

STRATIGRAPHIC PROPERTIES AND DATA REPORT

U S E R R U N P R O F I L E

WHAT WAS RUN

USER NAME SPECIFIED WAS: TESTQURY
QUERY NAME SPECIFIED WAS: QUERY002

WHAT WERE THE RESULTS

TOTAL SEGMENTS PROCESSED	8
SURFACE POINTS	1
LITHOLOGIC LAYERS	1
LITHOLOGIC SAMPLES	2
GEOTECHNICAL PARAMETERS	6

SPECIFIC PARAMETER COUNTS

ABSOLUTE GEOLOGIC AGE	(AGA)	
APPARENT SPECIFIC GRAVITY	(ASG)	
BULK DENSITY	(BD)	2
BULK MODULUS	(BM)	
GRAIN SIZE	(GS)	1
P-WAVE VELOCITY	(VP)	
PERMEABILITY	(PERM)	
POISSON'S RATIO	(PR)	
POROSITY	(POR)	
RELATIVE DENSITY	(RD)	
S-WAVE VELOCITY	(VS)	
SEISMIC IMPEDANCE		
SHEAR MODULUS	(SM)	
SHEAR STRENGTH	(SHST)	
SPECIFIC SAMPLE LITHOLOGY	(SSL)	2
STANDARD PENETRATION TEST	(SPT)	
TAN PHI	(TAN)	1
TRUE SPECIFIC GRAVITY	(TSG)	
UNIT COHESION	(UC)	
VOID RATIO	(VR)	
WATER TABLE	(WT)	
YOUNG'S MODULUS	(YM)	

MINIMUM SAMPLE DEPTH FOUND	0.9
MAXIMUM SAMPLE DEPTH FOUND	5.8

QUERY CONTROL SERVICES IN EFFECT

RELEASE AUTHORITY AUTHORIZED	4
INDICATE DATA AT ANY RELEASE AUTHORITY	NO
QUERY ALL HISTORY	NO
PRINT RUN PROFILE ONLY	NO
SAVE DATA SELECTED	NO

TOTAL PAGES PRINTED	2
TOTAL LINES PRINTED	54

WHEN WAS IT RUN

THE RUN STARTED AT 18:05:19 ON 17 SEP 1980
AND COMPLETED AT 18:05:21 ON 17 SEP 1980

STRATIGRAPHIC PROPERTIES AND DATA REPORT

RUN CONTROLS REPORT

WHAT WAS RUN

USER NAME SPECIFIED WAS: TESTQURY
QUERY NAME SPECIFIED WAS: QUERY002

WHAT WERE THE RESULTS

	FILE TOTALS	QUERY TOTALS	PERCENT
TOTAL SEGMENTS PROCESSED	12	8	66.67
SURFACE POINTS (SEGMENT TYPE "A")	1	1	100.00
LITHOLOGIC LAYERS (SEGMENT TYPE "C")	3	1	33.33
LITHOLOGIC SAMPLES	4	2	50.00
GEOTECHNICAL PARAMETERS (SEGMENT TYPE "E")	8	6	75.00
SPECIFIC PARAMETER COUNTS			
ABSOLUTE GEOLOGIC AGE (AGA)			
APPARENT SPECIFIC GRAVITY (ASG)			
BULK DENSITY (BD)	2	2	100.00
BULK MODULUS (BM)			
GRAIN SIZE (GS)	1	1	100.00
P-WAVE VELOCITY (VP)			
PERMEABILITY (PERM)			
POISSON'S RATIO (PR)			
POROSITY (POR)			
RELATIVE DENSITY (RD)			
S-WAVE VELOCITY (VS)			
SEISMIC IMPEDANCE			
SHEAR MODULUS (SM)			
SHEAR STRENGTH (SHST)			
SPECIFIC SAMPLE LITHOLOGY (SSL)	4	2	50.00
STANDARD PENETRATION TEST (SPT)			
TAN PHI (TAN)	1	1	100.00
TRUE SPECIFIC GRAVITY (TSG)			
UNIT COHESION (UC)			
VOID RATIO (VR)			
WATER TABLE (WT)			
YOUNG'S MODULUS (YM)			
MINIMUM SAMPLE DEPTH FOUND	0.9		
MAXIMUM SAMPLE DEPTH FOUND	5.8		

WHEN WAS IT RUN

THE RUN STARTED AT 18:05:19 ON 17 SEP 1980
AND COMPLETED AT 18:05:21 ON 17 SEP 1980

QUERY CONTROL SERVICES IN EFFECT

RELEASE AUTHORITY AUTHORIZED	4
INDICATE DATA AT ANY RELEASE AUTHORITY	NO
QUERY ALL HISTORY	NO
PRINT RUN PROFILE ONLY	NO
SAVE DATA SELECTED	NO

STORAGE TABLE CONTROLS	USED	PCNT	MAX
SURFACE SEGMENTS (QAAL)	2	50.0%	4
LAYER SEGMENTS (QAAL)	2	50.0%	4
SAMPLE DATES (QAAL)	2	28.6%	7
PARAMETER SEGMENTS (QAAL)	5	9.8%	51
POLYGON POINTS	0	0.0%	24
DATA SOURCE CODES	42	82.4%	51

NUMBER OF SAMPLES TESTED	5
MAXIMUM TEST CYCLES FOR ANY SAMPLE	64
NUMBER OF SAMPLES SATISFYING QUERY	2
MAXIMUM CYCLES TO SATISFY THE QUERY	1

TOTAL PAGES PRINTED ... 2
TOTAL LINES PRINTED ... 54

```
REPORT ID: GDQ01                STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION            QUERY NODATA
PROGRAM ID: P1A2E10                        DIVISION  OF  MINES  AND  GEOLOGY                            PAGE    1
TIME OF RUN: 17 SEP 1980 18:03:33
                                       STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                                               U S E R   C O D E D   Q U E R Y

       |COMMENT                                                      |
       ||------------------- Q U E R Y   T E X T --------------------|
  LINE ||        1         2         3         4         5         6 |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
       *                                                             |
  1... *------------- TEST QUERY ----- NODATA   ---------------------|
  2...                                                              .|
  3...  MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED                 |
  4...                                                               |
  5...  MOVE YES TO PRINT-ALL-DATA-ITEMS                             |
  6...              PRINT-ALL-GEOTECH-PARAMETERS                     |
  7...              PRINT-RELEASE-AUTHORITY                          |
                                                                     |
       |         1         2         3         4         5         6 |
       |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

```
REPORT ID: GDQ01                STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION            QUERY NODATA
PROGRAM ID: P1A2E10                        DIVISION  OF  MINES  AND  GEOLOGY                            PAGE    2
TIME OF RUN: 17 SEP 1980 18:03:33
                                       STRATIGRAPHIC  PROPERTIES  AND  DATA  REPORT

                      ---------------------------------------------------------------------------
                      N O   D A T A   F O U N D   F O R   T H E   Q U E R Y   S P E C I F I E D
                      ---------------------------------------------------------------------------
```

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY ERROR001
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 1
TIME OF RUN: 17 SEP 1980 18:04:14

STRATIGRAPHIC PROPERTIES AND DATA REQUEST

USER CODED QUERY

```
     |COMMENT                                                        |
     ||------------------- Q U E R Y   T E X T --------------------|
LINE ||       1        2        3        4        5        6       |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
      *                                                             |
  1... *------------- TEST QUERY ----- ERROR001 --------------------|
  2...                                                              |
  3...  MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED                |
  4...                                                              |
  5...  MOVE YES TO PRINT ALL-DATA-ITEMS                            |
  6...               PRINT ALL-GEOTECH-PARAMETERS                   |
  7...               PRINT RELEASE-AUTHORITY                        |
                                                                    |
     |       1        2        3        4        5        6       |
     |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

227

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY ERROR001
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 2
TIME OF RUN: 17 SEP 1980 18:04:14

STRATIGRAPHIC PROPERTIES AND DATA REQUEST

USER CODED QUERY MESSAGES

LINE NUMBER	CATEGORY OF ERROR	MESSAGE TEXT
5...	ERROR	PRINT NOT DEFINED. DISCARDED.
5...	ERROR	ALL-DATA-ITEMS NOT DEFINED. DISCARDED.
5...	ERROR	PRINT NOT DEFINED. DISCARDED.
5...	ERROR	ALL-GEOTECH-PARAMETERS NOT DEFINED. DISCARDED.
5...	ERROR	PRINT NOT DEFINED. DISCARDED.
5...	ERROR	RELEASE-AUTHORITY NOT DEFINED. DISCARDED.

G 20

```
REPORT ID: GDQ01              STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION          QUERY ERROR002
PROGRAM ID: P1A2E10                  DIVISION  OF  MINES  AND  GEOLOGY                              PAGE    1
TIME OF RUN: 17 SEP 1980 18:04:29
                                   STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                                          U S E R   C O D E D   Q U E R Y

      |COMMENT                                                         |
      ||------------------- Q U E R Y   T E X T --------------------|
 LINE ||         1         2         3         4         5         6 |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
       *                                                              |
  1... *------------- TEST QUERY ----- ERROR002 --------------------|
  2...                                                                |
  3...  MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED                  |
  4...                                                                |
  5...  IF ANY-STANDARD-MEASUREMENT                                   |
  6...    OR GL-IS-SAND                                               |
  7...                                                                |
  8...      MOVE YES TO PRINT-COUNTY                                  |
  9...                  PRINT-PRIMARY-DATA-SOURCE                     |
 10...                  PRINT-ACTIVITY-TYPE                           |
 11...                                                                |
 12...                  PRINT-GENERAL-LITHOLOGY                       |
 13...                  PRINT-RELATIVE-GEOLOGIC-AGE                   |
 14...                                                                |
 15...                  PRINT-PARAMETER-VALUE                         |
 16...                  PRINT-SECONDARY-DATA-SOURCE                   |
                                                                      |
      |         1         2         3         4         5         6 |
      |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

```
REPORT ID: GDQ01              STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION          QUERY ERROR002
PROGRAM ID: P1A2E10                  DIVISION  OF  MINES  AND  GEOLOGY                              PAGE    2
TIME OF RUN: 17 SEP 1980 18:04:29
                                   STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                              U S E R   C O D E D   Q U E R Y   M E S S A G E S

 LINE     CATEGORY
NUMBER    OF ERROR     ------------------------------------ M E S S A G E   T E X T ------------------------------------
  8...   ERROR .......  PRINT-ACTIVITY-TYPE NOT DEFINED. DISCARDED.
  8...   ERROR .......  PRINT-RELATIVE-GEOLOGIC-AGE NOT DEFINED. DISCARDED.
```

```
REPORT ID: GDQ01                STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION              QUERY ERROR003
PROGRAM ID: P1A2E10                        DIVISION  OF  MINES  AND  GEOLOGY                              PAGE    1
TIME OF RUN: 17 SEP 1980 18:04:41
                                         STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                                                U S E R   C O D E D   Q U E R Y

       |COMMENT                                                      |
       ||------------------- Q U E R Y   T E X T --------------------|
  LINE ||        1         2         3         4         5         6 |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
       *                                                             |
  1... *------------- TEST QUERY ----- ERROR003 --------------------|
  2...                                                               |
  3...  MOVE '4'     TO RELEASE-AUTHORITY-AUTHORIZED                 |
  4...                                                               |
  5...  IF ANY-STANDARD-MEASUREMENT                                  |
  6...    OR GL-IS-SAND                                              |
  7...                                                               |
  8...      MOVE YES TO PRINT-COUNTY                                 |
  9...                  PRINT-PRIMARY-DATA-SOURCE                    |
 10...                  PRINT-PRIMARY-ACTIVITY-TYPE                  |
 11...                                                               |
 12...                  PRINT-GENERAL-LITHOLOGY                      |
 13...                  PRINT-RELATIVE-GEOL-AGE                      |
 14...                                                               |
 15...                  PRINT-PARAMETER-VALUE                        |
 16...                  PRINT-SECONDARY-DATA-SOURCE                  |
                                                                     |
       |        1         2         3         4         5         6 |
       |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

```
REPORT ID: GDQ01                STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION              QUERY ERROR003
PROGRAM ID: P1A2E10                        DIVISION  OF  MINES  AND  GEOLOGY                              PAGE    2
TIME OF RUN: 17 SEP 1980 18:04:41
                                         STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                                      U S E R   C O D E D   Q U E R Y   M E S S A G E S

  LINE     CATEGORY
 NUMBER    OF ERROR     ------------------------------------ M E S S A G E   T E X T ------------------------------------

                        ............ P R I N T   A N D   P L O T   O U T P U T   S E R V I C E   E R R O R S ...........

                        YOU REQUESTED THAT A SAMPLE DATA ITEM BE PRINTED BUT DID NOT SPECIFY WHICH GEOTECHNICAL
                        PARAMETER WAS TO BE PRINTED.

                        PLEASE CORRECT AND RESUBMIT YOUR QUERY.  THANK YOU.
```

ADDITIONAL QUERY EXAMPLES

QUERY NAME	Query examples from a demonstration storage file--
PRTAVAIL	1) Two pages from a report of all data available showing all data item values on file for one well hole.
PRINTCCL	2) A request for a list of all California Coordinate values on file.
	3) A request in which the condition parameters are varied.
DEM001	a) depth to sample greater than 100 feet
DEM001A	b) depth to sample greater than 35 feet plus USER RUN PROFILE report
	4) A request in which the presentation or printing parameters are varied.
DEM003	a) print <u>without</u> DEPTH TO LAYER TOP
DEM003A	b) print <u>with</u> DEPTH TO LAYER TOP
DEM003B	c) print California Coordinates only
DEM003C	d) request for parameters for which no data is on file plus the USER RUN PROFILE report

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1207070 0223300 LATITUDE: __.____ STATE: CALIFORNIA ATLAS SHEET: (08).... LOS ANGELES
SURFACE ELEVATION: 45.5 FEET LONGITUDE: ___.____ COUNTY: SAN BERNADINO ACTIVITY TYPE: (T)..... TRENCH INVESTIGATION
(SEGMENT DATE: 04 SEP 1980) PRIMARY DATA SOURCE: (DMGHQ) CA DIV. MINES AND GEOLOG

--- LITHOLOGIC LAYER INFORMATION ---				SAMPLE INFORMATION												
DEPTH TO LAYER TOP (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID RA: RELATIVE AGE AND DETRMINTN METHOD SD: SEGMENT DATE	DEPTH TO SAMPLE (FEET)	PARAMETER	MEASURED PARAMETER VALUE		DATE SAMPLE TAKEN	DATE OF MEASUREMENT	RELEASE AUTHORITY DMG INTERPRETED	SECONDARY DATA SOURCE	ACTIVITY TYPE	METHOD	V	V	V	V	V
0	2	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980	1.0	SPECIFIC LITHOLOGY	CLAYEY SAND		10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
2	5	GL: CLAY SI: _____ RA: _____ SD: 04 SEP 1980	3.0	BULK DENSITY	120.0	PCF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				SHEAR STRENGTH	4,700.0	PSF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				SPECIFIC LITHOLOGY	SANDY CLAY		10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				STND PENETRATION TEST	14	BLOWS/FT	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
			6.0	BULK DENSITY	110.0	PCF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				SHEAR STRENGTH	4,700.0	PSF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				SPECIFIC LITHOLOGY	SANDY CLAY		10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				STND PENETRATION TEST	14	BLOWS/FT	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
7	1	GL: CLAY SI: _____ RA: _____ SD: 04 SEP 1980	7.5	SPECIFIC LITHOLOGY	SILTY CLAY		10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
8	6	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980	11.0	BULK DENSITY	106.0	PCF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				SHEAR STRENGTH	1,800.0	PSF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				SPECIFIC LITHOLOGY	SAND		10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				STND PENETRATION TEST	22	BLOWS/FT	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
14	1	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980	14.5	SPECIFIC LITHOLOGY	CLAYEY SAND		10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
15	3	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980	16.0	BULK DENSITY	104.0	PCF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				SHEAR STRENGTH	2,700.0	PSF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				SPECIFIC LITHOLOGY	SAND		10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				STND PENETRATION TEST	27	BLOWS/FT	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
18	9	GL: CLAY SI: _____ RA: _____ SD: 04 SEP 1980	21.0	BULK DENSITY	100.0	PCF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				SHEAR STRENGTH	2,700.0	PSF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				SPECIFIC LITHOLOGY	SILTY CLAY		10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			
				STND PENETRATION TEST	11	BLOWS/FT	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2			

CONTINUED CONTINUED CONTINUED

REPORT ID: GDQ01
PROGRAM ID: PIA2E10
TIME OF RUN: 20 OCT 1980 17:03:44

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY PRTAVAIL
PAGE 16

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1207070 0223300 CONTINUATION - PAGE 2

--- LITHOLOGIC LAYER INFORMATION ---- | ---------- S A M P L E   I N F O R M A T I O N ----------

DEPTH TO LAYER TOP (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY / SI: STRATIGRAPHIC ID / RA: RELATIVE AGE AND DETRMINTN METHOD / SD: SEGMENT DATE	DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN	DATE OF MEASUREMENT	METHOD	ACTIVITY TYPE	SECONDARY DATA SOURCE	DMG INTERPRETED	RELEASE AUTHORITY
			26.0	BULK DENSITY	106.0 PCF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
				SHEAR STRENGTH	4,400.0 PSF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
				SPECIFIC LITHOLOGY	SILTY CLAY	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
				STND PENETRATION TEST	30 BLOWS/FT	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
27	2	GL: CLAY	28.0	SPECIFIC LITHOLOGY	SANDY CLAY	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
		SI: ____________										
		RA: ____________										
		SD: 04 SEP 1980										
29	2	GL: SAND	30.0	SPECIFIC LITHOLOGY	SILTY SAND	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
		SI: ____________		- W A T E R -- T A B L E -		10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
		RA: ____________										
		SD: 04 SEP 1980										
31	13	GL: CLAY	32.0	BULK DENSITY	101.1 PCF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
		SI: ____________		SHEAR STRENGTH	3,900.0 PSF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
		RA: ____________		SPECIFIC LITHOLOGY	SILTY CLAY	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
		SD: 04 SEP 1980		STND PENETRATION TEST	27 BLOWS/FT	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
			36.0	BULK DENSITY	97.0 PCF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
				SHEAR STRENGTH	3,600.0 PSF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
				SPECIFIC LITHOLOGY	SILTY CLAY	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
				STND PENETRATION TEST	22 BLOWS/FT	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
			41.0	BULK DENSITY	92.0 PCF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
				SHEAR STRENGTH	4,300.0 PSF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
				SPECIFIC LITHOLOGY	SILTY CLAY	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
				STND PENETRATION TEST	14 BLOWS/FT	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
44	2	GL: SAND	45.0	BULK DENSITY	99.0 PCF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
		SI: ____________		SHEAR STRENGTH	4,800.0 PSF	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
		RA: ____________		SPECIFIC LITHOLOGY	SILTY SAND	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2
		SD: 04 SEP 1980		STND PENETRATION TEST	14 BLOWS/FT	10 JUL 69	10 JUL 69	__	T	DMGHQ_	_	2

.... E N D (CALIF. COORDINATES: 6 1207070 0223300) ....

```
                                   STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                                           U S E R   C O D E D   Q U E R Y

      |COMMENT                                                        |
      ||------------------ Q U E R Y   T E X T -------------------|
 LINE ||        1         2         3         4         5         6|
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
       *                                                            |
  1... *-----------------------------------------------------------|
  2... *    SAMPLE QUERY  -  P R I N T C C L                        |
  3... *-----------------------------------------------------------|
  4... *                                                            |
  5... *    PRINT A LIST OF ALL THE CALIFORNIA COORDINATE VALUES    |
  6... *    ON FILE                                                 |
  7... *                                                            |
  8... *-----------------------------------------------------------|
  9...                                                              |
 10...      MOVE '2' TO RELEASE-AUTHORITY-AUTHORIZED                |
 11...                                                              |
 12...      MOVE YES TO PRINT-CALIF-COORDINATES                     |
                                                                    |
      |         1         2         3         4         5         6|
      |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

STRATIGRAPHIC PROPERTIES AND DATA REPORT
- CALIFORNIA - COORDINATE - LIST -

POINT	CALIF	COORDINATES	POINT	CALIF	COORDINATES	POINT	CALIF	COORDINATES	POINT	CALIF	COORDINATES	POINT	CALIF	COORDINATES
001-	5	3047600 0973500	051-	6	1835060 0440740									
002-	6	1051900 0359700	052-	6	1837550 0617850									
003-	6	1094700 0590000	053-	6	1901630 0115290									
004-	6	1103910 0228900	054-	6	1904610 0286320									
005-	6	1183400 0618100	055-	6	1904800 0486000									
006-	6	1201900 0662800	056-	6	1922610 0028350									
007-	6	1207070 0223300	057-	6	1977800 0289090									
008-	6	1207110 0225300	058-	6	2442730 0267210									
009-	6	1208500 0118800	059-	6	2444650 0254390									
010-	6	1227280 0078300	060-	6	2445100 0260310									
011-	6	1240910 0450750	061-	6	2446450 0257910									
012-	6	1269780 0842730	062-	6	2446500 0257940									
013-	6	1303930 0380190	063-	6	2448500 0273500									
014-	6	1313500 0651500												
015-	6	1332900 0679050												
016-	6	1349782 0850332												
017-	6	1365900 0532500												
018-	6	1392610 0748900												
019-	6	1406900 0530960												
020-	6	1407370 0225830												
021-	6	1412190 0337750												
022-	6	1412380 0298030												
023-	6	1421950 0415980												
024-	6	1432109 0689710												
025-	6	1433850 0456000												
026-	6	1435400 0529650												
027-	6	1455120 0514980												
028-	6	1456560 0542900												
029-	6	1461150 0456700												
030-	6	1488390 0300150												
031-	6	1497140 0297040												
032-	6	1507060 0790540												
033-	6	1509020 0118800												
034-	6	1525150 0637250												
035-	6	1528000 0143600												
036-	6	1531850 0629950												
037-	6	1571450 0611750												
038-	6	1586020 0138600												
039-	6	1601040 0105800												
040-	6	1602600 0115290												
041-	6	1602600 0151290												
042-	6	1606600 0226600												
043-	6	1609000 0309000												
044-	6	1610380 0593130												
045-	6	1689549 0009800												
046-	6	1704400 0365020												
047-	6	1705070 0228640												
048-	6	1720000 0126700												
049-	6	1764000 0535550												
050-	6	1814320 0354030												

```
 REPORT ID: GDQ01               STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION                      QUERY DEMO01
 PROGRAM ID: P1A2E10                        DIVISION  OF  MINES  AND  GEOLOGY                                     PAGE    1
TIME OF RUN: 21 OCT 1980 17:08:53
                                       STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                                                  U S E R   C O D E D   Q U E R Y

      |COMMENT                                                     |
      ||------------------- Q U E R Y   T E X T -------------------|
 LINE ||        1         2         3         4         5         6 |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
      *                                                             |
  1... *------------------------------------------------------------|
  2... *    SAMPLE QUERY  -  D E M O 0 1                            |
  3... *------------------------------------------------------------|
  4... *                                                            |
  5... *    IS THERE SAND AT A DEPTH OF GREATER THAN 100 FEET IN    |
  6... *    ANY OF THE SAMPLES                                      |
  7... *                                                            |
  8... *------------------------------------------------------------|
  9...                                                              |
 10...      MOVE '2' TO RELEASE-AUTHORITY-AUTHORIZED                |
 11...                                                              |
 12...      IF  (GL-IS-SAND OR A-SAMPLE-CONTAINS-SAND)              |
 13...          AND  DEPTH-TO-SAMPLE-AVAIL                          |
 14...               AND  DEPTH-TO-SAMPLE > 100                     |
 15...                                                              |
 16...          MOVE YES TO PRINT-CALIF-COORDINATES                 |
 17...                      PRINT-COUNTY                            |
 18...                      PRINT-LITHOLOGIC-LAYER-INFO             |
                                                                    |
      |         1         2         3         4         5         6 |
      |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

REPORT ID: GDQ01
PROGRAM ID: P1A2E10
TIME OF RUN: 21 OCT 1980 17:08:53

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY DEM001
PAGE 2

STRATIGRAPHIC PROPERTIES AND DATA REPORT

NO DATA FOUND FOR THE QUERY SPECIFIED

```
 REPORT ID: GDQ01                STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION                        QUERY DEMO01A
 PROGRAM ID: P1A2E10                        DIVISION  OF  MINES  AND  GEOLOGY                                          PAGE    1
TIME OF RUN: 21 OCT 1980 17:11:05
                                             STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                                                     U S E R   C O D E D   Q U E R Y

      |COMMENT                                                       |
      ||------------------- Q U E R Y   T E X T --------------------|
 LINE ||        1         2         3         4         5         6 |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
       *                                                            |
   1... *-----------------------------------------------------------|
   2... *    SAMPLE QUERY  -  D E M O 0 1 A                          |
   3... *-----------------------------------------------------------|
   4... *                                                            |
   5... *    IS THERE SAND AT A DEPTH OF GREATER THAN 35 FEET IN     |
   6... *    ANY OF THE SAMPLES                                      |
   7... *                                                            |
   8... *-----------------------------------------------------------|
   9...                                                              |
  10...      MOVE '2' TO RELEASE-AUTHORITY-AUTHORIZED                |
  11...                                                              |
  12...      IF  (GL-IS-SAND OR A-SAMPLE-CONTAINS-SAND)              |
  13...          AND  DEPTH-TO-SAMPLE-AVAIL                          |
  14...               AND  DEPTH-TO-SAMPLE > 35                      |
  15...                                                              |
  16...          MOVE YES TO PRINT-CALIF-COORDINATES                 |
  17...                      PRINT-COUNTY                            |
  18...                      PRINT-LITHOLOGIC-LAYER-INFO             |
                                                                     |
      |         1         2         3         4         5         6 |
      |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO01A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 2
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1094700 0590000

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----		
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	
		GL: GENERAL LITHOLOGY
		SI: STRATIGRAPHIC ID
		RA: RELATIVE AGE AND DETRMINTN METHOD
		SD: SEGMENT DATE
35	6	GL: SAND
		SI: _____
		RA: _____
		SD: 04 SEP 1980

..... E N D (CALIF. COORDINATES: 6 1094700 0590000) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO01A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 3
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1207070 0223300

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----		
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	
		GL: GENERAL LITHOLOGY
		SI: STRATIGRAPHIC ID
		RA: RELATIVE AGE AND DETRMINTN METHOD
		SD: SEGMENT DATE
44	2	GL: SAND
		SI: _____
		RA: _____
		SD: 04 SEP 1980

..... E N D (CALIF. COORDINATES: 6 1207070 0223300) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEM001A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 4
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1208500 0118800

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----		
DEPTH TO LAYER TOP (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID RA: RELATIVE AGE AND DETRMINTN METHOD SD: SEGMENT DATE
37	3	GL: CLAY SI: _____ RA: _____ SD: 04 SEP 1980
40	1	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980
41	2	GL: CLAY SI: _____ RA: _____ SD: 04 SEP 1980

..... E N D (CALIF. COORDINATES: 6 1208500 0118800) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEM001A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 5
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1240910 0450750

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----		
DEPTH TO LAYER TOP (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID RA: RELATIVE AGE AND DETRMINTN METHOD SD: SEGMENT DATE
34	7	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980

..... E N D (CALIF. COORDINATES: 6 1240910 0450750) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO01A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 6
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1349782 0850332

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----		
DEPTH TO TOP OF LAYER (FEET)	LAYER THICKNESS (FEET)	
35	2	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980
42	4	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980

GL: GENERAL LITHOLOGY
SI: STRATIGRAPHIC ID
RA: RELATIVE AGE AND DETRMINTN METHOD
SD: SEGMENT DATE

..... E N D (CALIF. COORDINATES: 6 1349782 0850332) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO01A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 7
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1412190 0337750

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----		
DEPTH TO TOP OF LAYER (FEET)	LAYER THICKNESS (FEET)	
33	6	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980

GL: GENERAL LITHOLOGY
SI: STRATIGRAPHIC ID
RA: RELATIVE AGE AND DETRMINTN METHOD
SD: SEGMENT DATE

..... E N D (CALIF. COORDINATES: 6 1412190 0337750) .....

REPORT ID: GDQ01 STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION QUERY DEM001A
PROGRAM ID: P1A2E10 DIVISION OF MINES AND GEOLOGY PAGE 8
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1455120 0514980

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----		
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	
37	4	GL: SAND
		SI: _____
		RA: _____
		SD: 04 SEP 1980

..... E N D (CALIF. COORDINATES: 6 1455120 0514980) .....

REPORT ID: GDQ01 STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION QUERY DEM001A
PROGRAM ID: P1A2E10 DIVISION OF MINES AND GEOLOGY PAGE 9
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1509020 0118800

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----		
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	
35	3	GL: CLAY
		SI: _____
		RA: _____
		SD: 04 SEP 1980
38	1	GL: SAND
		SI: _____
		RA: _____
		SD: 04 SEP 1980

..... E N D (CALIF. COORDINATES: 6 1509020 0118800) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO01A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 10
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1602600 0115290

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----		
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	
38	4	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980
43	3	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980

..... E N D (CALIF. COORDINATES: 6 1602600 0115290) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO01A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 11
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1814320 0354030

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----		
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	
33	16	GL: SAND SI: _____ RA: _____ SD: 04 SEP 1980

..... E N D (CALIF. COORDINATES: 6 1814320 0354030) .....

REPORT ID: GDQ01 STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION QUERY DEMO01A
PROGRAM ID: P1A2E10 DIVISION OF MINES AND GEOLOGY PAGE 12
TIME OF RUN: 21 OCT 1980 17:11:05

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 2446450 0257910

COUNTY: SAN BERNADINO

--- LITHOLOGIC LAYER INFORMATION ----

DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)		
30	12	GL:	SEDIMENTARY RK
		SI:	_____
		RA:	_____
		SD:	04 SEP 1980

GL: GENERAL LITHOLOGY
SI: STRATIGRAPHIC ID
RA: RELATIVE AGE AND DETRMINTN METHOD
SD: SEGMENT DATE

..... E N D (CALIF. COORDINATES: 6 1814320 0354030) .....

STRATIGRAPHIC PROPERTIES AND DATA REPORT

U S E R R U N P R O F I L E

WHAT WAS RUN

USER NAME SPECIFIED WAS: DEMO
QUERY NAME SPECIFIED WAS: DEMO01A

QUERY CONTROL SERVICES IN EFFECT ----------

RELEASE AUTHORITY AUTHORIZED	2
INDICATE DATA AT ANY RELEASE AUTHORITY	NO
QUERY ALL HISTORY	NO
PRINT RUN PROFILE ONLY	NO
SAVE DATA SELECTED	NO

WHAT WERE THE RESULTS

TOTAL SEGMENTS PROCESSED		82
SURFACE POINTS		11
LITHOLOGIC LAYERS		16
LITHOLOGIC SAMPLES		21
GEOTECHNICAL PARAMETERS		55
SPECIFIC PARAMETER COUNTS ----------		
ABSOLUTE GEOLOGIC AGE	(AGA)	
APPARENT SPECIFIC GRAVITY	(ASG)	
BULK DENSITY	(BD)	16
BULK MODULUS	(BM)	
GRAIN SIZE	(GS)	
P-WAVE VELOCITY	(VP)	
PERMEABILITY	(PERM)	
POISSON'S RATIO	(PR)	
POROSITY	(POR)	
RELATIVE DENSITY	(RD)	
S-WAVE VELOCITY	(VS)	
SEISMIC IMPEDANCE		
SHEAR MODULUS	(SM)	
SHEAR STRENGTH	(SHST)	9
SPECIFIC SAMPLE LITHOLOGY	(SSL)	20
STANDARD PENETRATION TEST	(SPT)	9
TAN PHI	(TAN)	
TRUE SPECIFIC GRAVITY	(TSG)	
UNIT COHESION	(UC)	
VOID RATIO	(VR)	
WATER TABLE	(WT)	1
YOUNG'S MODULUS	(YM)	
MINIMUM SAMPLE DEPTH FOUND		36.0
MAXIMUM SAMPLE DEPTH FOUND		48.0

TOTAL PAGES PRINTED	12
TOTAL LINES PRINTED	254

WHEN WAS IT RUN

THE RUN STARTED AT 17:11:05 ON 21 OCT 1980
AND COMPLETED AT 17:12:11 ON 21 OCT 1980

```
 REPORT ID: GDQ01              STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION                   QUERY DEMO03
PROGRAM ID: P1A2E10                       DIVISION  OF  MINES  AND  GEOLOGY                                 PAGE    1
TIME OF RUN: 21 OCT 1980 17:15:26
                                     STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                                              U S E R   C O D E D   Q U E R Y

        |COMMENT                                                      |
        ||------------------ Q U E R Y   T E X T -------------------|
  LINE  ||        1         2         3         4         5         6 |
NUMBER |V...5....0....5....0....5....0....5....0....5....0....5....0.|
        *                                                             |
   1... *-------------------------------------------------------------|
   2... *    SAMPLE QUERY  -  D E M O 0 3                             |
   3... *-------------------------------------------------------------|
   4... *                                                             |
   5... *    PRINT THE LOCATIONS WHERE THE WATER DEPTH IS AT THE      |
   6... *    TOP OF A LITHOLOGIC LAYER, DISPLAY ANY PARAMETERS STORE  |
   7... *    WITH THE SAMPLE AND FOR EACH PARAMETER DISPLAY THE       |
   8... *    DEPTH TO SAMPLE, THE DATE THE SAMPLE WAS TAKEN AND       |
   9... *    THE PARAMETER VALUE                                      |
  10... *                                                             |
  11... *-------------------------------------------------------------|
  12...                                                               |
  13...      MOVE '2' TO RELEASE-AUTHORITY-AUTHORIZED                 |
  14...                                                               |
  15...      IF  DEPTH-TO-TOP-AVAIL AND WT-VALUE-AVAIL                |
  16...          AND DEPTH-TO-TOP = WT-VALUE                          |
  17...                                                               |
  18...          MOVE YES TO PRINT-THICKNESS-OF-LAYER                 |
  19...                      PRINT-GENERAL-LITHOLOGY                  |
  20...                      PRINT-STRATIGRAPHIC-ID                   |
  21...                                                               |
  22...                      PRINT-DEPTH-TO-SAMPLE                    |
  23...                      PRINT-DATE-SAMPLE-TAKEN                  |
  24...                      PRINT-PARAMETER-VALUE                    |
  25...                                                               |
  26...                      PRINT-ALL-GEOTECH-PARAMETERS             |
                                                                      |
        |         1         2         3         4         5         6 |
        |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEM003
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 2
TIME OF RUN: 21 OCT 1980 17:15:26

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1094700 0590000

LITHOLOGIC LAYER INFORMATION			SAMPLE INFORMATION			
THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID		DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
6	GL: SAND SI: _____		35.0	- W A T E R -- T A B L E -		11 JUL 69

..... E N D (CALIF. COORDINATES: 6 1094700 0590000) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEM003
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 3
TIME OF RUN: 21 OCT 1980 17:15:26

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1349782 0850332

LITHOLOGIC LAYER INFORMATION			SAMPLE INFORMATION			
THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID		DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
3	GL: SAND SI: _____		15.0	- W A T E R -- T A B L E -		14 JUL 69

..... E N D (CALIF. COORDINATES: 6 1349782 0850332) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEM003
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 4
TIME OF RUN: 21 OCT 1980 17:15:26

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1421950 0415980

LITHOLOGIC LAYER INFORMATION			SAMPLE INFORMATION			
THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID		DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
6	GL: CLAY SI: _____		3.0	- W A T E R -- T A B L E -		07. JUL 64

..... E N D (CALIF. COORDINATES: 6 1421950 0415980) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEM003
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 5
TIME OF RUN: 21 OCT 1980 17:15:26

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1922610 0028350

--- LITHOLOGIC LAYER INFORMATION ---			SAMPLE INFORMATION			
THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID		DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
2	GL: GRAVEL SI: _____		27.0	- W A T E R -- T A B L E -		09 JUL 69

..... E N D (CALIF. COORDINATES: 6 1922610 0028350) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEM003
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 6
TIME OF RUN: 21 OCT 1980 17:15:26

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 2446500 0257940

--- LITHOLOGIC LAYER INFORMATION ---			SAMPLE INFORMATION			
THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID		DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
12	GL: SAND SI: _____		9.0	- W A T E R -- T A B L E -		24 APR 72

..... E N D (CALIF. COORDINATES: 6 1922610 0028350) .....

REPORT ID: GDQ01
PROGRAM ID: P1A2E10
TIME OF RUN: 21 OCT 1980 17:16:55

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY DEM003A
PAGE 1

STRATIGRAPHIC PROPERTIES AND DATA REQUEST

USER CODED QUERY

```
     |COMMENT
     ||------------------ Q U E R Y   T E X T --------------------|
LINE ||       1        2        3        4        5        6     |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
     |*                                                           |
  1... *-----------------------------------------------------------|
  2... *    SAMPLE QUERY  -  D E M O 0 3 A                       |
  3... *-----------------------------------------------------------|
  4... *                                                         |
  5... *    PRINT THE LOCATIONS WHERE THE WATER DEPTH IS AT THE  |
  6... *    TOP OF A LITHOLOGIC LAYER, DISPLAY ANY PARAMETERS STORE |
  7... *    WITH THE SAMPLE AND FOR EACH PARAMETER DISPLAY THE   |
  8... *    DEPTH TO SAMPLE, THE DATE THE SAMPLE WAS TAKEN AND   |
  9... *    THE PARAMETER VALUE                                  |
 10... *                                                         |
 11... *    ALSO PRINT THE DEPTH TO THE TOP OF THE LAYER         |
 12... *                                                         |
 13... *-----------------------------------------------------------|
 14...                                                           |
 15...      MOVE '2' TO RELEASE-AUTHORITY-AUTHORIZED             |
 16...                                                           |
 17...      IF  DEPTH-TO-TOP-AVAIL AND WT-VALUE-AVAIL            |
 18...          AND DEPTH-TO-TOP = WT-VALUE                      |
 19...                                                           |
 20...          MOVE YES TO PRINT-THICKNESS-OF-LAYER             |
 21...                      PRINT-GENERAL-LITHOLOGY              |
 22...                      PRINT-STRATIGRAPHIC-ID               |
 23...                      PRINT-DEPTH-TO-LAYER-TOP             |
 24...                                                           |
 25...                      PRINT-DEPTH-TO-SAMPLE                |
 26...                      PRINT-DATE-SAMPLE-TAKEN              |
 27...                      PRINT-PARAMETER-VALUE                |
 28...                                                           |
 29...                      PRINT-ALL-GEOTECH-PARAMETERS         |
     |                                                           |
     |       1        2        3        4        5        6     |
     |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO03A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 2
TIME OF RUN: 21 OCT 1980 17:16:55

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1094700 0590000

--- LITHOLOGIC LAYER INFORMATION ---	S A M P L E I N F O R M A T I O N			
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID	DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
35	6	GL: SAND SI: _____	35.0	- W A T E R -- T A B L E -		11 JUL 69

..... E N D (CALIF. COORDINATES: 6 1094700 0590000) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO03A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 3
TIME OF RUN: 21 OCT 1980 17:16:55

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1349782 0850332

--- LITHOLOGIC LAYER INFORMATION ---	S A M P L E I N F O R M A T I O N			
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID	DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
15	3	GL: SAND SI: _____	15.0	- W A T E R -- T A B L E -		14 JUL 69

..... E N D (CALIF. COORDINATES: 6 1349782 0850332) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO03A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 4
TIME OF RUN: 21 OCT 1980 17:16:55

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1421950 0415980

--- LITHOLOGIC LAYER INFORMATION ---	S A M P L E I N F O R M A T I O N			
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID	DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
3	6	GL: CLAY	3.0	- W A T E R -- T A B L E -		07 JUL 64

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO03A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 5
TIME OF RUN: 21 OCT 1980 17:16:55

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1922610 0028350

--- LITHOLOGIC LAYER INFORMATION ---				SAMPLE INFORMATION			
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID		DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
27	2	GL: GRAVEL SI: _____		27.0	- W A T E R -- T A B L E -		09 JUL 69

..... E N D (CALIF. COORDINATES: 6 1922610 0028350) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO03A
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY
TIME OF RUN: 21 OCT 1980 17:16:55

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 2446500 0257940

--- LITHOLOGIC LAYER INFORMATION ---				SAMPLE INFORMATION			
DEPTH TO TOP OF LAYER (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID		DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
9	12	GL: SAND SI: _____		9.0	- W A T E R -- T A B L E -		24 APR 72

..... E N D (CALIF. COORDINATES: 6 1922610 0028350) .....

```
 REPORT ID: GDQ01                    STATE  OF  CALIFORNIA  --  DEPARTMENT  OF  CONSERVATION                    QUERY DEMO03B
PROGRAM ID: P1A2E10                             DIVISION  OF  MINES  AND  GEOLOGY                                    PAGE    1
TIME OF RUN: 21 OCT 1980 17:19:10
                                                 STRATIGRAPHIC  PROPERTIES  AND  DATA  REQUEST

                                                        U S E R   C O D E D   Q U E R Y

      |COMMENT                                                        |
      ||------------------ Q U E R Y   T E X T ---------------------|
LINE  ||        1         2         3         4         5         6 |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
       *                                                             |
  1... *-------------------------------------------------------------|
  2... *    SAMPLE QUERY  -  D E M O 0 3 B                           |
  3... *-------------------------------------------------------------|
  4... *                                                             |
  5... *    PRINT THE LOCATIONS WHERE THE WATER DEPTH IS AT THE      |
  6... *    TOP OF A LITHOLOGIC LAYER,                               |
  7... *                                                             |
  8... *-------------------------------------------------------------|
  9...                                                               |
 10...      MOVE '2' TO RELEASE-AUTHORITY-AUTHORIZED                 |
 11...                                                               |
 12...      IF  DEPTH-TO-TOP-AVAIL AND WT-VALUE-AVAIL                |
 13...          AND DEPTH-TO-TOP = WT-VALUE                          |
 14...                                                               |
 15...          MOVE YES TO PRINT-CALIF-COORDINATES                  |
                                                                     |
      |         1         2         3         4         5         6 |
      |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

REPORT ID: GDQ01
PROGRAM ID: P1A2E10
TIME OF RUN: 21 OCT 1980 17:19:10

STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY

QUERY DEM003B
PAGE 2

STRATIGRAPHIC PROPERTIES AND DATA REPORT
- CALIFORNIA - COORDINATE - LIST -

POINT	CALIF	COORDINATES	POINT	CALIF	COORDINATES	POINT	CALIF	COORDINATES	POINT	CALIF	COORDINATES	POINT	CALIF	COORDINATES
001-	6	1094700 0590000												
002-	6	1349782 0850332												
003-	6	1421950 0415980												
004-	6	1922610 0028350												
005-	6	2446500 0257940												

```
 REPORT ID: GDQ01              STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION
PROGRAM ID: P1A2E10                     DIVISION OF MINES AND GEOLOGY
TIME OF RUN: 21 OCT 1980 17:21:22
                                   STRATIGRAPHIC PROPERTIES AND DATA REQUEST

                                          U S E R   C O D E D   Q U E R Y

      |COMMENT                                                     |
      ||------------------ Q U E R Y   T E X T --------------------|
 LINE ||        1         2         3         4         5         6 |
NUMBER|V...5....0....5....0....5....0....5....0....5....0....5....0.|
      *                                                             |
  1...*-------------------------------------------------------------|
  2...*    SAMPLE QUERY  -  D E M O O 3 C                           |
  3...*-------------------------------------------------------------|
  4...*                                                             |
  5...*    PRINT THE LOCATIONS WHERE THE WATER DEPTH IS AT THE      |
  6...*    TOP OF A LITHOLOGIC LAYER.  PRINT SOME OF THE LITHOLOGIC |
  7...*    LAYER INFORMATION.                                       |
  8...*    FOR THE SAMPLES FOUND PRINT THE DEPTH TO SAMPLE,         |
  9...*    THE DATE THE SAMPLE WAS TAKEN AND THE PARAMETER VALUE    |
 10...*    FOR THE SPECIFIC SAMPLE LITHOLOGY AND THE TRUE SPECIFIC -|
 11...*    GRAVITY                                                  |
 12...*                                                             |
 13...*-------------------------------------------------------------|
 14...                                                              |
 15...     MOVE '2' TO RELEASE-AUTHORITY-AUTHORIZED                 |
 16...                                                              |
 17...     IF  DEPTH-TO-TOP-AVAIL AND WT-VALUE-AVAIL                |
 18...         AND DEPTH-TO-TOP = WT-VALUE                          |
 19...                                                              |
 20...         MOVE YES TO PRINT-THICKNESS-OF-LAYER                 |
 21...                     PRINT-GENERAL-LITHOLOGY                  |
 22...                     PRINT-STRATIGRAPHIC-ID                   |
 23...                     PRINT-DEPTH-TO-LAYER-TOP                 |
 24...                                                              |
 25...                     PRINT-DEPTH-TO-SAMPLE                    |
 26...                     PRINT-DATE-SAMPLE-TAKEN                  |
 27...                     PRINT-PARAMETER-VALUE                    |
 28...                                                              |
 29...                     PRINT-SPEC-SMPL-LITHOLOGY                |
 30...                     PRINT-TRUE-SPEC-GRAVITY                  |
                                                                    |
      |         1         2         3         4         5         6 |
      |*...5....0....5....0....5....0....5....0....5....0....5....0.|
```

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO03C
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 2
TIME OF RUN: 21 OCT 1980 17:21:22

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1094700 0590000

--- LITHOLOGIC LAYER INFORMATION ---				---------- SAMPLE INFORMATION ----------			
DEPTH TO LAYER TOP (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID		DEPTH TO SAMPLE (FEET)	PARAMETER	MEASURED	PARAMETER VALUE / DATE SAMPLE TAKEN
35	6	GL: SAND SI: _____		35.0	NONE OF THE GEOTECHNICAL PARAMETERS REQUESTED WERE FOUND IN THE SAMPLE WHICH SATISFIED YOUR QUERY.		

..... E N D (CALIF. COORDINATES: 6 1094700 0590000) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO03C
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 3
TIME OF RUN: 21 OCT 1980 17:21:22

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1349782 0850332

--- LITHOLOGIC LAYER INFORMATION ---				---------- SAMPLE INFORMATION ----------			
DEPTH TO LAYER TOP (FEET)	THICKNESS OF LAYER (FEET)	GL: GENERAL LITHOLOGY SI: STRATIGRAPHIC ID		DEPTH TO SAMPLE (FEET)	PARAMETER	MEASURED	PARAMETER VALUE / DATE SAMPLE TAKEN
15	3	GL: SAND SI: _____		15.0	NONE OF THE GEOTECHNICAL PARAMETERS REQUESTED WERE FOUND IN THE SAMPLE WHICH SATISFIED YOUR QUERY.		

..... E N D (CALIF. COORDINATES: 6 1349782 0850332) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO03C
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 4
TIME OF RUN: 21 OCT 1980 17:21:22

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1421950 0415980

--- LITHOLOGIC LAYER INFORMATION ---			S A M P L E I N F O R M A T I O N			
DEPTH TO TOP OF LAYER (FEET)	THICKNESS (FEET)		DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
3	6	GL: CLAY SI: _____	3.0	NONE OF THE GEOTECHNICAL PARAMETERS REQUESTED WERE FOUND IN THE SAMPLE WHICH SATISFIED YOUR QUERY.		

..... E N D (CALIF. COORDINATES: 6 1421950 0415980) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — QUERY DEMO03C
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY — PAGE 5
TIME OF RUN: 21 OCT 1980 17:21:22

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 1922610 0028350

--- LITHOLOGIC LAYER INFORMATION ---			S A M P L E I N F O R M A T I O N			
DEPTH TO TOP OF LAYER (FEET)	THICKNESS (FEET)		DEPTH TO SAMPLE (FEET)	PARAMETER MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
27	2	GL: GRAVEL SI: _____	27.0	NONE OF THE GEOTECHNICAL PARAMETERS REQUESTED WERE FOUND IN THE SAMPLE WHICH SATISFIED YOUR QUERY.		

..... E N D (CALIF. COORDINATES: 6 1922610 0028350) .....

STRATIGRAPHIC PROPERTIES AND DATA REPORT

CALIF. COORDINATES: 6 2446500 0257940

--- LITHOLOGIC LAYER INFORMATION ---				SAMPLE INFORMATION			
DEPTH TO TOP OF LAYER (FEET)	THICKNESS (FEET)			DEPTH TO SAMPLE (FEET)	PARAMETER	MEASURED	PARAMETER VALUE	DATE SAMPLE TAKEN
9	12	GL: SAND SI: _____		9.0	NONE OF THE GEOTECHNICAL PARAMETERS REQUESTED WERE FOUND IN THE SAMPLE WHICH SATISFIED YOUR QUERY.			

..... E N D (CALIF. COORDINATES: 6 1922610 0028350) .....

REPORT ID: GDQ01 — STATE OF CALIFORNIA -- DEPARTMENT OF CONSERVATION — PAGE 1
PROGRAM ID: P1A2E10 — DIVISION OF MINES AND GEOLOGY
COMPILED ON: 28 AUG 1980 18:42:55
TIME OF RUN: 21 OCT 1980 17:21:22 — STRATIGRAPHIC PROPERTIES AND DATA REPORT

U S E R R U N P R O F I L E

WHAT WAS RUN

USER NAME SPECIFIED WAS: DEMO
QUERY NAME SPECIFIED WAS: DEMO03C

WHAT WERE THE RESULTS

TOTAL SEGMENTS PROCESSED	15
SURFACE POINTS	5
LITHOLOGIC LAYERS	5
LITHOLOGIC SAMPLES	5
GEOTECHNICAL PARAMETERS	5

SPECIFIC PARAMETER COUNTS

ABSOLUTE GEOLOGIC AGE	(AGA)	
APPARENT SPECIFIC GRAVITY	(ASG)	
BULK DENSITY	(BD)	
BULK MODULUS	(BM)	
GRAIN SIZE	(GS)	
P-WAVE VELOCITY	(VP)	
PERMEABILITY	(PERM)	
POISSON'S RATIO	(PR)	
POROSITY	(POR)	
RELATIVE DENSITY	(RD)	
S-WAVE VELOCITY	(VS)	
SEISMIC IMPEDANCE		
SHEAR MODULUS	(SM)	
SHEAR STRENGTH	(SHST)	
SPECIFIC SAMPLE LITHOLOGY	(SSL)	
STANDARD PENETRATION TEST	(SPT)	
TAN PHI	(TAN)	
TRUE SPECIFIC GRAVITY	(TSG)	
UNIT COHESION	(UC)	
VOID RATIO	(VR)	
WATER TABLE	(WT)	5
YOUNG'S MODULUS	(YM)	

MINIMUM SAMPLE DEPTH FOUND	3.0
MAXIMUM SAMPLE DEPTH FOUND	35.0

QUERY CONTROL SERVICES IN EFFECT

RELEASE AUTHORITY AUTHORIZED	2
INDICATE DATA AT ANY RELEASE AUTHORITY	NO
QUERY ALL HISTORY	NO
PRINT RUN PROFILE ONLY	NO
SAVE DATA SELECTED	NO

TOTAL PAGES PRINTED	6
TOTAL LINES PRINTED	118

WHEN WAS IT RUN

THE RUN STARTED AT 17:21:22 ON 21 OCT 1980
AND COMPLETED AT 17:22:52 ON 21 OCT 1980

257 (p. 259 follows)

ATTACHMENT H

ADDITIONAL QUERY EXAMPLES

QUESTION 1

PRINT OUT THE LOCATION AND DEPTH OF ALL GROUNDWATER
MEASUREMENTS AND THE DATE OF MEASUREMENT.

==========

EXAMPLE 1:

```
*PRINT OUT THE LOCATION AND DEPTH OF ALL GROUNDWATER
*MEASUREMENTS AND THE DATE OF MEASUREMENT.

 MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED

 IF WT-VALUE-AVAIL
     MOVE YES TO PRINT-DEPTH-TO-SAMPLE
                 PRINT-DATE-OF-MEASUREMENT
                 PRINT-PARAMETER-VALUE
                 PRINT-WATER-TABLE-DATA
```

QUESTION 2

PRINT OUT THE LOCATIONS OF ALL DATA WHERE:

A. GENERAL LITHOLOGY IS SAND
B. BULK DENSITY IS BETWEEN 90.0 AND 110.0 LB/CU FT
C. DEPTH TO SAMPLE IS LESS THAN 50 FEET
D. GROUNDWATER IS LESS THAN 10 FEET

==========

EXAMPLE 1:

```
*PRINT OUT THE LOCATIONS OF ALL DATA WHERE:

*A. GENERAL LITHOLOGY IS SAND
*B. BULK DENSITY IS BETWEEN 90.0 AND 110.0 LB/CU FT
*C. DEPTH TO SAMPLE IS LESS THAN 50 FEET
*D. GROUNDWATER IS LESS THAN 10 FEET

 MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED

 IF GENERAL-LITHOLOGY = 'SD'
     AND BD-VALUE-AVAIL
         AND BD-VALUE OF BULK-DENSITY-DATA NOT < 90
                                          AND NOT > 110
     AND DEPTH-TO-SAMPLE-AVAIL
         AND DEPTH-TO-SAMPLE < 50
     AND WT-VALUE-AVAIL
         AND WT-VALUE OF WATER-TABLE-DATA < 10

     MOVE YES TO PRINT-CALIF-COORDINATES
```

EXAMPLE 2:

```
MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED

IF GENERAL-LITHOLOGY = 'SD'
    AND BD-VALUE-AVAIL
    AND BD-VALUE NOT < 90 AND NOT > 110
    AND DEPTH-TO-SAMPLE-AVAIL
    AND DEPTH-TO-SAMPLE < 50
    AND WT-VALUE-AVAIL AND WT-VALUE < 10

    MOVE YES TO PRINT-CALIF-COORDINATES
```

QUESTION 2 (CONTINUED)

EXAMPLE 3:

```
MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED

IF GL-IS-SAND
    AND DEPTH-TO-SAMPLE-AVAIL
        AND DEPTH-TO-SAMPLE < 50
    AND BD-VALUE-AVAIL
        AND BD-VALUE NOT < 90 AND NOT > 110
    AND WT-VALUE-AVAIL
        AND WT-VALUE < 10

    MOVE YES TO PRINT-CALIF-COORDINATES
```

QUESTION 3

PRINT OUT THE DATA FOUND PLUS OR MINUS 1000 FEET OF THE LINE RUNNING FROM 6 1480,000E 540,000N TO 6 1515,000E 624,000N FOR:

A. GENERAL LITHOLOGY
B. GROUNDWATER LEVEL
C. BULK DENSITY
D. SHEAR WAVE VELOCITY
E. STANDARD PENETRATION TEST
F. SEISMIC IMPEDANCE (CALCULATED FROM BULK DENSITY AND SHEAR WAVE VELOCITY DATA)

==========

EXAMPLE 1:

```
*PRINT OUT THE DATA FOUND PLUS OR MINUS 1000 FEET OF THE
*LINE RUNNING FROM 6 1480,000E 540,000N TO 6 1515,000E
*624,000N FOR:

*A. GENERAL LITHOLOGY
*B. GROUNDWATER LEVEL
*C. BULK DENSITY
*D. SHEAR WAVE VELOCITY
*E. STANDARD PENETRATION TEST
*F. SEISMIC IMPEDANCE (CALCULATED FROM BULK DENSITY AND
*   SHEAR WAVE VELOCITY DATA)

 MOVE '6 1480000E 0539000N' TO CALIF-COORDINATE-POINT (1)
 MOVE '6 1480000E 0541000N' TO CALIF-COORDINATE-POINT (2)
 MOVE '6 1515000E 0623000N' TO CALIF-COORDINATE-POINT (3)
 MOVE '6 1515000E 0625000N' TO CALIF-COORDINATE-POINT (4)

 MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED

 IF A-SAMPLE-IS-IN-THE-POLYGON
     MOVE YES TO PRINT-GENERAL-LITHOLOGY
                 PRINT-WATER-TABLE
                 PRINT-BULK-DENSITY
                 PRINT-S-WAVE-VELOCITY
                 PRINT-STND-PENETRATION-TEST
                 PRINT-SEISMIC-IMPEDANCE
                 PRINT-ALL-SAMPLE-DATA-ITEMS
```

QUESTION 4

PLOT THE LOCATION AND DEPTH OF ALL VALUES OF SEISMIC IMPEDANCE DATA IN THE BASIN.

==========

EXAMPLE 1:

```
*PLOT THE LOCATION AND DEPTH OF ALL VALUES OF SEISMIC
*IMPEDANCE DATA IN THE BASIN.

 MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED

 IF SEISMIC-IMPEDANCE-AVAIL
     MOVE 7-AND-A-HALF-MINUTE-QUAD
               TO PLOT-DEPTH-TO-SAMPLE
```

EXAMPLE 2:

```
*PLOT THE LOCATION AND DEPTH OF ALL VALUES OF SEISMIC
*IMPEDANCE DATA IN THE BASIN.

 MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED

 IF SEISMIC-IMPEDANCE-AVAIL
     MOVE 15-MINUTE-QUAD
               TO PLOT-DEPTH-TO-SAMPLE
```

QUESTION 5

PRINT OUT ALL AVAILABLE DATA IN THE FILE.

==========

EXAMPLE 1:

```
MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED

MOVE YES TO PRINT-ALL-DATA-ITEMS
            PRINT-SURFACE-HISTORY
            PRINT-LITHOLOGIC-LAYER-HISTORY
            PRINT-ALL-GEOTECH-PARAMETERS
            PRINT-SAMPLE-HISTORY
            PRINT-RELEASE-AUTHORITY
```

==========
==========

(ALTERNATE FORM FOR CURRENT DATA ONLY)

PRINT OUT ALL CURRENT DATA IN THE FILE. (I.E. NO HISTORY)

==========

EXAMPLE 2:

```
MOVE '1'     TO RELEASE-AUTHORITY-AUTHORIZED

MOVE YES TO PRINT-ALL-DATA-ITEMS
            PRINT-ALL-GEOTECH-PARAMETERS
            PRINT-RELEASE-AUTHORITY
```

QUESTION 6

ENGLISH QUESTION

PRINT THE CALIFORNIA COORDINATES, SURFACE ELEVATION, DEPTH TO SAMPLE, SPECIFIC LITHOLOGY, AGE VALUE AND METHOD OF DETERMINATION FOR ALL ABSOLUTE GEOLOGIC AGE VALUES BETWEEN 500 AND 15,000 YEARS.

INCORRECTLY CODED QUESTION

```
                                                    RESPONSE
                                                    REFERENCES
                                                    ----------
IF ABSOLUTE-GEOLOGIC-AGE-AVAIL                      <- A.....
AND ABSOLUTE-GEOLOGIC-AGE-VALUE                     <- A.....
NOT  > 15,000 AND NOT  < 500                        <- ..B.....
                                                    <- ....C.....
MOVE '1' TO RELEASE-AUTHORITY-AUTHORIZED            <- ......D.....
                                                    <- ....C.....
MOVE YES TO PRINT - CALIF. COORDINATES              <- .....E.F.G.H
            PRINT - SURFACE-ELEVATION               <- .....E.F...H
            PRINT - DEPTH-TO-SAMPLE                 <- .....E.F...H
            PRINT - SPECIFIC-LITHOLOGY              <- A.....E.F...H
            PRINT - ABSOLUTE-GEOLOGIC-AGE-VALUE     <- A.....E.F...H
            PRINT - METHOD-OF-DETERMINATION         <- .....E.F...H
```

==========

CORRECTLY CODED QUESTION

```
MOVE '1' TO RELEASE-AUTHORITY-AUTHORIZED

IF AGA-VALUE-AVAIL
AND AGA-AGE NOT > 15000 AND NOT < 500

MOVE YES TO PRINT-SURFACE-ELEVATION
            PRINT-SPEC-SMPL-LITHOLOGY
            PRINT-ABSOLUTE-GEOL-AGE

            PRINT-DEPTH-TO-SAMPLE
            PRINT-PARAMETER-VALUE
            PRINT-METHOD
```

RESPONSE -

A) THE QUERY PROCESSOR WILL NOT RECOGNIZE A DATA NAME OR VERB (I.E. "IF" OR "MOVE") THAT HAS BEEN SPELLED "ALMOST RIGHT".

WHERE THE QUERY PROCESSOR IS CONCERNED WHAT YOU CODE IS EITHER "RIGHT" (I.E. CORRECT) OR ELSE IT'S AN ERROR. THE QUERY PROCESSOR HAS NO UNDERSTANDING OF WHAT WE HUMANS CALL "FORGIVENESS FOR YOUR ERRORS." CODE ONLY THOSE DATA NAMES PROVIDED IN THE MENU LISTS. ALWAYS REFERENCE THE DATA NAME MENU AND THE PRINT OR PLOT SERVICE MENUS WHEN CODING YOUR QUERY. IF YOU WANT TO CHANGE THE NAMES PROVIDED IN THE MENUS, THIS CAN BE DONE.

B) DO NOT USE COMMAS WHEN CODING NUMERICAL VALUES. THE QUERY PROCESSOR DOES NOT LIKE THEM THERE, AND YOU WILL NOT LIKE THE RESULTING MESSAGES FROM THE QUERY PROCESSOR.

FOR DATA ITEMS WHOSE VALUE HAS A DECIMAL POINT, THE DECIMAL POINT NEED NOT BE CODED IF YOU ARE SPECIFYING AN INTEGER OF WHOLE NUMBER VALUE.

C) BLANK LINES MAY BE USED TO ENHANCE READABILITY. THE LIBERAL USE OF BLANK LINES AND "STRUCTURING" WILL ENHANCE READABILITY AND INSURE THAT THE QUESTION YOU CODE IS THE QUESTION YOU WANT TO ASK AND, MOREOVER, THAT THE DATA ITEMS YOU WANT TO BE PRINTED ARE IN FACT PRINTED.

D) THE "RELEASE-AUTHORITY-AUTHORIZED" MUST BE THE FIRST THING CODED.

E) WITH THE QUERY PROCESSOR, BLANKS ARE FINE IN SOME PLACES AND NOT FINE IN OTHER PLACES. BLANKS ARE NOT ALLOWED IN DATA NAMES. EACH DATA NAME MUST BE CODED EXACTLY AS SHOWN IN THE MENUS. AGAIN, IF YOU WANT TO CHANGE THE NAMES PROVIDED IN THE MENUS, THIS CAN BE DONE.

F) THE ORDER IN WHICH YOU CODE YOUR "PRINT" REQUESTS IN UNIMPORTANT. THE PRINT (OR PLOT) DATA NAMES MAY BE CODED IN ANY ORDER IN THE "MOVE" STATEMENT.

G) THE CALIFORNIA COORDINATES NEED NOT BE SPECIFIED TO BE PRINTED. WHY? THE CALIFORNIA COORDINATES WILL ALWAYS BE PRINTED IF ANY OTHER "PRINT" NAME IS SPECIFIED. THIS IS THE ONLY FIELD FOR WHICH THIS IS TRUE. ALL OTHER FIELDS YOU WISH TO SEE ON YOUR REPORT MUST BE SPECIFIED. (NOTE: SEE "H" BELOW.)
IF YOU WISH TO SEE ONLY THE CALIFORNIA COORDINATES THEN ITS "PRINT" NAME MUST BE SPECIFIED. A SPECIAL CONDENSED FORMAT WILL BE USED TO PRINT THE CALIFORNIA COORDINATES SELECTED.

PLEASE NOTE: FOR THOSE FIELDS NOT SPECIFIED THE FIELD HEADINGS WILL ALSO NOT BE PRINTED ON YOUR REPORT.

H) SEVERAL DATA NAMES ARE PROVIDED FOR SPECIFYING THAT ALL DATA NAMES FOR A LOGICAL DATA GROUPING SHOULD BE PRINTED (E.G. "PRINT-LITHOLOGIC-LAYER-INFO").

OTHER DATA NAMES CAN BE DEFINED WHICH IMPLY ANY COMBINATION OF FIELDS BE PRINTED. FOR EXAMPLE "PRINT-BASIC-SAMPLE-DATA-ITEMS" OR "PRINT-BASIC-GEOTECH-DATA-ITEMS" MIGHT BE DEFINED TO MEAN THAT THE DEPTH TO SAMPLE, PARAMETER VALUE, DATA OF MEASUREMENT AND METHOD ARE TO BE PRINTED. HENCE CODING

```
    MOVE YES TO PRINT-BASIC-SAMPLE-DATA-ITEMS
OR
    MOVE YES TO PRINT-BASIC-GEOTECH-DATA-ITEMS
```

COULD BE EQUIVALENT TO CODING

```
    MOVE YES TO PRINT-DEPTH-TO-SAMPLE
                PRINT-PARAMETER-VALUE
                PRINT-DATE-OF-MEASUREMENT
                PRINT-METHOD
```

PARTICULAR "PRINT" DATA NAMES FROM THE SURFACE OR LAYER MENUS COULD ALSO BE INCLUDED.

"GROUP" OR "COLLECTIVE" DATA NAMES MAY BE DEFINED OR ADDED AT ANY TIME ON AN AS-NEEDED OR AS-DESIRED BASIS.