AERIAL RADIOMETRIC AND MAGNETIC SURVEY

DEATH VALLEY

NATIONAL TOPOGRAPHIC MAP

NEVADA, CALIFORNIA

PREPARED FOR THE U.S. DEPARTMENT OF ENERGY

GRAND JUNCTION OFFICE

GRAND JUNCTION, COLORADO

UNDER SMALL BUSINESS ADMINISTRATION SUBCONTRACT NO. SB0308(a) 77-C-508

WITH

GEO-LIFE, A JOINT VENTURE

BETWEEN

HIGH LIFE HELICOPTERS, INC.

PUYALLUP, WASHINGTON

AND

GEODATA INTERNATIONAL, INC.

DALLAS, TEXAS

Geodata International, inc.

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September 17, 1979

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SECTION I

INTRODUCTION

A. GENERAL

1. Area Surveyed

Geo-Life, a joint venture between High Life Helicopters, Inc., Puyallup, Washington, and Geodata International, Inc., Dallas, Texas., conducted an airborne gamma ray and total magnetic field survey during the period November 22-30 and December 1-22, 1977 and January 7-25, 1978. The survey covered a region of the states of California and Nevada, identified as the Death Valley National Topographic Map NJ-11. The specific area of this report as outlined on Figure 1 was surveyed from an aircraft using large-volume radiation detectors with associated airborne electronic equipment. Each tie line was flown in an east-west direction with an average length of 111 miles, and each map line was flown in a north-south direction with an average length of 69 miles. Map lines and tie lines were surveyed using a Sikorsky S-58T helicopter. Flight Line location is shown in Figure 2;

The Death Valley NTMS report describes the program, results, flight line profile data and statistical analysis results.

2. Summary of the Location, Geology and Physiography of the Death Valley Map Sheet

The Death Valley Topographic Map Sheet Area (N.T.M.S., 1954) is delimited by latitudes 36°00' and 37°00' north, and longitudes 116°00' and 118°00' west. The area straddles the California-Nevada State Boundary Line. The Death Valley Map Sheet area lies within the Basin and Range Physiographic Province. The landscape is one of alternating valleys and ranges. Topography is largely fault-controlled. Drainage is interior, with the central portions of many basins acting as sinks. The geologic history is complex. Rock units range in age from Precambrian metamorphics and meta-sedimentaries to Pleistocene and Recent units. The Precambrian, Paleozoic, Mesozoic, and many of the Tertiary units crop-out in the ranges. Quaternary sedimentary units are relatively thin veneers, which cover the basins and lowermost flanks of the ranges. Marine sedimentary environments predominated during the Precambrian and Paleozoic eons. Intrusive igneous rocks formed during the Mesozoic. Volcanism and block faulting characterizes the Cenozoic.

Uranium prospects occur in the Bullfrog Mining District in southern Nye County, and at a number of locations in the western third of the map area in Inyo County.

Fig. 1. Index Map Showing Area Surveyed

Fig. 2. NTMS Indicating Flight Line Location

The airborne data gathered were reduced using ground-based computer facilities to give the basic uranium, thorium and potassium equivalent gamma radiation intensities, ratios of these intensities, aircraft altitude above the earth's surface, total gamma ray and earth's magnetic field intensity, correlated as a function of geologic units indicated from the developed geologic map. Results of analyses of these field data are presented as profile plots of the gamma radiation and earth's magnetic field. The surveyed area of Figure 1, which indicates latitude/longitude position, has been based according to the National Topographic Map Series (NTMS) which covers the United States with 1⁰ latitude/2⁰ longitude sheets. The topographic maps have a scale of approximately 1 inch = 4 miles. Each final base map is an overlay of the NTMS base map from which certain geographic data have been transposed, and includes the available geologic data. Each final anomaly map has the surveyed flight lines superpositioned with the standard deviations of each fifth data point relative to the average value within each geologic unit as determined for each NTMS map. These anomaly maps are identified as National Gamma Ray Map Series Maps (NGRMS).

The magnetic data tapes containing (1) raw data, (2) the single record reduced data, (3) the statistical analysis data, and (4) the magnetic field data are converted to the EBCDIC format and retained for filing within the USDOE permanent data bank.

This report also contains a discussion of the area surveyed, and includes all single record reduced data and averaged record data listings on MICROFICHE.

SECTION II
THE GEODATA AIRBORNE SYSTEM

A. GENERAL

The Geodata Phase I Airborne System is mounted in a Sikorsky S58T helicopter shown in Figure 4. The functional block diagram is shown in Figure 5 and the airborne system is presented in Figure 6. Seven (7) 1½" dia. by 4" thick NaI(Tl) detectors are used to measure the spectral gamma ray intensity at an aircraft elevation of about 400 feet above the earth's surface. Six (6) of these seven (7) detectors are positioned to measure the gamma rays from the earth's surface (from 4πsolid angle). The seventh detector is mounted, partially shielded, to monitor 214Bi radiation incoming from the upper 2π solid angle.

Each detector has a volume of 415.5 cubic inches. Six detectors give a total volume for measurement of 4π solid angle data of 2493 cubic inches, or a V/V = 20.0 allows an aircraft speed of 124.7 mph (V = detector volume, in.³; v = aircraft speed, mph.)

The system block diagram of Figure 5 shows the center of the system to be the Canberra /000 multichannel pulse height analyzer system. The six-detector data are accumulated for each one-second data integration period in a matter giving no dead-time for read out onto magnetic tapes. A single magnetic tape recorder is used recording total spectral data (LDT). Analog presentation of the total gamma count intensity, magnetic and altitude data are plotted onto multitrack paper as data are gathered allowing immediate examination for data quality. A spectral presentation giving the sum of all one-second data sets is created by the ground-based computer for each flight line (EOFL) as quality control, Figure 7. The spectral data from both the unshielded and shielded detector arrays are normally accumulated each 1.0 second. Data from the shielded detector are used to determine the concentration of the atmospheric 214Bi which allows calculation of the surface-emanaed 214Bi values before altitude corrections. All data are then corrected to a constant aircraft altitude above the surface of 400 feet. A highly accurate radar altimeter, the Collins ALI-50 system, makes measurement during each second. Automatic digital gain calibration of the six detector and one detector systems is accomplished by stabilizing on the 40 K photoppeak data.

A proton precession magnetometer having an 0.25 gamma resolution and less than 2.0 gamma noise envelope is also sampled once per second providing a measurement of the total intensity of the earth's magnetic field. The sensor is carried as a "bird" on a 100 foot cable to minimize the magnetic effects of the helicopter. A permanent record of flight location is also made using 35mm film which records a continuous recoverable track with 20% overlap-frame at an elevation of 400 feet. Position data

Figure 4. Sikorsky S-58T Helicopter N47246.

Figure 5. Functional Block Diagram

Figure 6. The Geodata Airborne System.

from the Global Navigation encoding of latitude and longitude is placed on magnetic tape each second. The record number-of-the-day along the flight line is displayed during flight and key locations are marked on the flight map with their appropriate record number.

The attenuation of gamma radiation is calculated using equations accounting for air density and uses experimentally determined values for mass attenuation coefficients. The energy region 3 MeV and greater is used to allow cosmic events to be removed from the data in the energy range 0 - 3 MeV. Energy resolution of the ^{137}Cs 662.0 keV photopeak was 9.5% or better for each detector. The system resolution was 10.5%.

The Phase I equipment has three basic operating modes: (1) CALIBRATE, which allows proper gain calibrations of the radiation detectors to be set; (2) OPERATE, which allows data to be received, reduced and recorded; and (3) PLAYBACK, which allows the operator to examine the newly acquired data.

B. FLIGHT RECOVERY METHODS

Visually recorded data and photographically recorded data have been used to locate the flight line position. The Global Navigation GNS-500A is used to maintain the aircraft on flight line with the latitude and longitude data being recorded on magnetic tape to assist in flight line location. These lines have been positioned by many locations as function of record numbers. These data are computer plotted giving the flight path as a line of dots, each dot representing every fifth record locations, and each "circle" represents every 50th record location. Figure 8 indicates the computer plot of a typical map line. These data are then transferred to form the flight line base shown in Figure 2. Location points used to position the flight line at least every 10 miles are shown on the flight line map as an "X" through each point.

C. DATA REDUCTION

The processing flow chart representative of the work performed for this survey is shown in Figure 3. The original field data tapes contain the various tag words, 4π spectral and 2π spectral data for each one second along the flight line. The REFORM program sums the proper energy intervals of the spectra for each second and produces a trailer record for each line which contains the accumulated 4π and 2π spectra for the line. The CDTCRT is a data certification program which is run immediately upon receipt of the field data tapes and produces the EOFL spectral plots, Figure 7. The program identification and function is given below:

Figure 7. Typical End-of-Flight Line Spectral Plot

Figure 8. Computer presentation of Typical Map Line

Figure 9. Typical Map Line Showing Statistical Deviations

PROGRAM	FUNCTION
REFORM FIXMOD	Produce energy group sums and EOFL spectra Primary processing for matrix reduction, BIAIR computation, live times, background and altitude correction.
STACK	Flight path recovery to produce plots of actual paths at a scale of 1:250,000
DOPTAP	Single record processing with latitude/ longitude, IGRF and single point statistical adequacy computation. Produces microfiche.
MMPLT	Averaged record processing with averaged statistical adequacy computation. Produces radiometric stacked profiles plot tapes.
GNDMRG	Merges aircraft magnetometer and ground magnetometer in proper time sequence and transfers temperature, pressure and altitude information
RMPLT	Produces tapes for magnetometer stacked profile plots.
GEOLOG	Produces averaged value microfiche with geology and plot tape for standard deviation "dot plots" related to geologic type
HISTO, MERGE and SRT1	Programs preliminary to obtaining the histograms as a function of geologic type for the entire area.
DMPLT	Produces plot tape for the area histograms

As stated in the above list of program functions, the FIXMOD program performs the primary processes for determining the reported eTh, eU and K counting rate associated with the earth's surface as measured at 400 feet above the surface. For this reason, the analytical work of this program is described in more detail below.

Each one second of 4π spectral data is summed by the REFORM program according to the following energy intervals:

Cosmic:	3.0	MeV and greater
²⁰⁸ Tl photopeak:	2.410	to 2.796 MeV
²¹⁴ Bi photopeak:	1.05	to 1.322 plus 1.638 to 2.410 MeV
⁴⁰ K photopeak:	1.322	to 1.638 MeV

In general, these raw sums contain counts not only from ground sources, but also from aircraft background and atmospheric radioactivity. To determine the counts in the energy intervals which are caused only by the isotope associated with the interval, a 4 x 4 matrix method is used. This matrix may be formed through the use of a standard cosmic spectrum, plus the Grand Junction Test Pad determinations of α, β, γ, f and g, or from four standard spectra representing respectively cosmic, thorium, uranium and potassium pure spectra at a 400 foot altitude.

This matrix multiplication is represented by:

$$\begin{bmatrix} A_{11} & A_{12} & A_{13} & A_{14} \\ A_{21} & A_{22} & A_{23} & A_{24} \\ A_{31} & A_{32} & A_{33} & A_{34} \\ A_{41} & A_{42} & A_{43} & A_{44} \end{bmatrix} \begin{bmatrix} \text{COS} \\ \text{TL} \\ \text{BI} \\ \text{K} \end{bmatrix} = \begin{bmatrix} \text{MCOS} \\ \text{MTL} \\ \text{MBI} \\ \text{MK} \end{bmatrix}$$

where the A_{ij} are the elements of the 4 x 4 matrix; the column matrix on the left represents the four raw data sums and the column matrix on the right is the counts in each energy interval caused only by the indicated isotope. These matrix result counts are for the measured live time. To obtain the counts per second, it is necessary to divide by the live time, LTC1, thus:

$$\begin{aligned} \text{MCOS/LTC1} &= \text{COS1} \\ \text{MTL/LTC1} &= \text{TL1} \\ \text{MBI/LTC1} &= \text{BI1} \\ \text{MK/LTC1} &= \text{K1} \end{aligned}$$

The Tl1, Bi1 and K1 counts per second contain the aircraft associated backgrounds caused by thorium, uranium and ⁴⁰K. Geodata has determined these backgrounds for this installation to be 5.5 counts per second in the ²⁰⁸Tl energy interval due to background ²⁰⁸Tl, 5.0 counts per second in the ²¹⁴Bi energy intervals due to background ²¹⁴Bi and 24.7 counts per second in the ⁴⁰K interval due to background ⁴⁰K. For this work, the background counting rates were determined by high altitude flights free from atmospheric ²¹⁴Bi. The backgrounds are checked during the survey by observing counting rates over large water bodies under the flight path.

These backgrounds are subtracted from the above determined count rate values

$$\overline{T\&l} = T\&l - 5.5$$

$$\overline{BII} = BII - 5.0$$

$$\overline{KI} = KI - 24.7$$

The $\overline{BII}$ value contains counts caused by atmospheric ^{214}Bi which must be subtracted before altitude correction is applied. The 2π crystal data are used to determine the magnitude of the count to be subtracted. Since the predominant variable source affecting the 2π crystal is the atmospheric ^{214}Bi , it is possible to utilize most of the spectrum in the BIAIR determination, and thereby produce some improvement in the statistical error. The energy range used for the 2π crystal is from 1.05 to 2.79 MeV. Within this range the aircraft background has been determined as 4.5 counts per second and the 2π cosmic count greater than 3.0 MeV must be multiplied by 1.607 to determine the cosmic count in the 1.05 to 2.79 MeV range.

The atmospheric ^{214}Bi (BIAIR) associated with the unshielded detector array is determined using the shielded detector by the relation:

$$BIAIR = \frac{G(X) \cdot VC - 1.607 \text{COS}2 - 4.5 - (k_1 \overline{T\&l} + k_2 \overline{BII} + k_3 \overline{KI})}{(1 - k_2 G(X))}$$

where: $G(X)$ is the relationship between the 4π and 2π detector measurement solid angle and the column change of the detector arrays.

VC is the total count, 2π , ch (91-239), c/s; COS2 is the 2π cosmic count, greater than 3.0 MeV c/s; k_1 , k_2 , k_3 are constant factors correcting for the penetration/spill of the surface emanated radiation, are respectively, 0.09, 0.023, 0.024.

$\overline{T\&l}$, $\overline{BII}$, $\overline{KI}$ are results of data reduction, 4π , c/s

The final ^{214}Bi counting rate caused by surface sources is then

$$BISUR = \overline{BII} - BIAIR$$

The quantities $\overline{T\&l}$, $BISUR$ and $\overline{KI}$ are then corrected to an equivalent counting rate at 400 feet through the equations indicated below:

$$\begin{aligned} TLS &= \overline{T\&l} \cdot e^{-\mu_1 \rho (400 - x)} \\ BIS &= BISUR \cdot e^{-\mu_2 \rho (400 - x)} \\ KS &= \overline{KI} \cdot e^{-\mu_3 \rho (400 - x)} \end{aligned}$$

where:

TLS, BIS, KS = respective counting rates at 400 feet caused by surface sources

ρ = air density

μ_1 , μ_2 , μ_3 = respective mass attenuation coefficients

x = aircraft height above the surface in feet

Following data reduction, average values for each radiation variable and variable ratios are plotted for each flight line to demonstrate the consistency of average values and that a smooth flow of results continues from day to day and from start to finish of each day. Quality control on the eU (BIAIR) in the atmosphere is also monitored through examination of data acquired over water with the requirement being that near-zero intensities should exist. (See Section IV (E)).

Each profile has a latitude or longitude degree line to give accurate surface location of all data.

Magnetic field data are determined at the crossings of the tie line and map line data, and the corrections for the diurnal variations are determined. Any heading errors have previously been removed from all data. The magnetic field data are then IGRF corrected to give the residual magnetic field.

D. DATA PRESENTATION

The surveyed area was positioned geographically to completely cover the specific National Topographic Map. Each topographic map has been used as the flight base and sufficient geographical and 15' location information has been shown. The flight line pattern has been superpositioned onto these created base maps where the standard deviation levels for each independent variable and each ratio of these variables have been plotted (NGRMS) based on the data contained within the total map area. Every fifth data point along each map line has its standard deviation value shown at the location of that value. Therefore, there are twelve NGRMS sheets which indicate the location and magnitude of anomalous data, Figure 9. To avoid confusion, odd and even maps were used to show standard deviations.

The multivariable map line profile, which represents all variables as a function of their latitude and longitude location for each line, is presented at a scale of 1:500,000. Each profile presents:

1. Aircraft altitude above the surface
2. eTh (^{208}Tl from ^{232}Th decay series)
3. eU (^{214}Bi from ^{238}U decay series)
4. K (^{40}K from natural potassium)
5. BIAIR (atmospheric ^{214}Bi)
6. Residual magnetic field
7. Gross count (greater than 400 keV)
8. eU/eTh ($^{214}\text{Bi}/^{208}\text{Tl}$) ratio
9. eU/K ($^{214}\text{Bi}/^{40}\text{K}$) ratio
10. eTh/K ($^{208}\text{Tl}/^{40}\text{K}$) ratio
11. Geologic data including aircraft flight path

The residual magnetic field map line profile, which represents five variables as a function of their latitude and longitude location for each line, plus geologic data at a scale of 1:500,000 is presented as:

1. Aircraft altitude
2. Atmospheric temperature
3. Atmospheric pressure
4. Residual magnetic field data
5. Magnetic field base line station data
6. Geological data including aircraft flight path

The output of these various computations supplies, beyond two profile sets, the following data:

- o Histograms of the radiation data distribution within each geologic unit.
- o Histograms of the average velocity distribution for each one-second record for each map and tie line.
- o Histograms of the average altitude distribution for each one-second record for each map and tie line.
- o Tables giving the average radiation concentration of each geologic unit for each flight line.
- o Average radiation concentration for each variable as a function of flight line, including the atmospheric ^{214}Bi .
- o Set of maps showing the standard deviation data as a function of location and radiation variable.

These types of presentation will be explained in this report.

SECTION III.

GEOLOGY OF THE SURVEYED AREA

A. LOCATION AND GENERAL PHYSIOGRAPHY

The aerial radioactivity survey was conducted over the landscape depicted by the Death Valley Topographic Map Sheet (NJMS, 1954), at a scale 1:250,000. The area is defined by latitudes 36°00' and 37°00' N. and longitudes 116°00' and 118°00' W. The area straddles the California-Nevada State Boundary Line, with approximately the western and southwestern two thirds of the area in California, the remainder is in Nevada. On the Californian side, the land is in Inyo County; whereas in Nevada, the land is located in the southernmost part of southern Nye County, with a very small area, in the north, in Esmeralda County.

The Death Valley Map Area lies within the Basin and Range Physio-graphic Province. The southern edge of the province terminates close to the Garlock Fault, some 30 miles to the south, and the western limit terminates at the eastern edge of the Sierra Nevada, a few miles to the west.

The landscape is one of alternating valleys and mountains. The topographic features are largely fault controlled. Displacement along the faults, which began during the Middle Cenozoic, has continued to Recent times, as is shown by fault-scarps in the Quaternary fan deposits. Many of the fault blocks have been rotated and tilted downward to the east. As a result, the western slopes of the ranges are steep; some of the basins are similarly deeper on their eastern sides; i.e., the central parts of Death and Panamint valleys (Chapman, Healey and Troxel, 1973). The western and central parts of the area have a general north-northwesterly trend to both mountain and valley; however, in the east, the topography is less uniformly orientated.

Topographic relief is considerable, and elevations vary from in excess of 11,000 feet a.s.l. in the Inyo Mountains to minus 279 feet a.s.l. in Death Valley. Drainage is interior with the central parts of many basins acting as sinks. Only in the wetter periods do ephemeral salt lakes exist.

The area has an arid to semi-arid climate characterized by low precipitation and humidity and high summer temperatures. Mean annual precipitation ranges from less than 4 inches in the desert valleys to nearly 20 inches in the mountains. Summer evaporation rates are very high.

The vegetation is typical of the southwestern deserts and ranges; it is zoned according to altitude. In the lower valleys, where the water table is closer to the surface, the most usual vegetation is mesquite, salt grass, greasewood and rabbit-brush. Creosote brush predominates on the alluvial fans and lower slopes, where the water table is deeper; bur-sage, salt brush, mormon tea brush, barrel cactus and yucca are also common in these locations. Joshua trees occur between 3,000 and 5,000 feet a.s.l. At greater elevations a.s.l. grasses become more prevalent as do juniper and piñon pine (Cornwall, 1972).

Cultural Geography

The rural population for the Death Valley Map Sheet Area is sparse. The dryness of the basins dictates that ranching is the only major rural occupation. Sparse lowland vegetation keep cattle/area ratios extremely low. Ranches are few and far between.

In the moister ranges, rugged terrain and steep slopes make agriculture inadvisable. Mining, for a variety of minerals, is the major occupation in the mountains and hills.

A sparse network of all-weather, hard surface roads criss-cross the map sheet area. With few exceptions, settlements are located along the primary roads and close to the road junctions. The settlements are small. The roads follow the major basins, traversing the linear ranges at low passes. One railroad, the Southwestern Pacific, cuts across the southwestern corner of the map sheet area. Cultural features, other than roads, railroads, small settlements and ranch complexes, are extremely scattered. They include soda evaporators in Owens Valley, salt wells, small airfields, spoil from mines, the Devil's Golf Course in Death Valley, and a meteorological station in Oasis Valley.

The northeastern section of the area is administered by the Atomic Energy Commission as the Nevada Test Site, and by the U.S.A.F. as the Nellis Air Force Range. Public access to these areas is restricted.

The southwestern corner of the area is administered as a Naval Weapons Center; public access may be restricted in this area.

Much of the central portion of the area is part of the Death Valley National Monument.

The major cultural feature which would significantly affect radio-activity anomalies is the Hawiwee Reservoir in the southwestern corner of the map sheet area. This is probably the only permanent body of standing water in the area.

B. GEOLOGY

Precambrian Geology

On the Californian side of the state boundary, the Precambrian rocks are divided informally into three chronological groups (Chapman, et al., 1973). They are the earlier Precambrian, later Precambrian and an even younger Precambrian sequence which grades upward into the Cambrian System. The division of the earlier and later Precambrian units is determined by (i) the greater degree of metamorphism of the earlier rocks, and (ii) by a regional unconformity that separates the earlier from the later units. The youngest Precambrian group includes sedimentary rocks that rest unconformably on the older units.

The earlier Precambrian rocks crop- out on the western side of the Panamint Range, on Tucki Mountain, and in the Black Mountains. Diorite in the Black Mountains is mapped as earlier Precambrian. Most of the units are meta-igneous or meta-sedimentary and most are strongly foliated.

In southern Nye County, rocks of older Precambrian time crop-out in the Bullfrog Hills. These rocks consist of gneissic granite and quartz monzonite, and quartz-biotite-schist (Cornwall, 1972).

Later Precambrian rocks in Inyo County include sedimentary strata of the Pahrump Group, which is divided into the Crystal Spring Formation, the Beck Spring Dolomite and the Kingston Peak Formation. Most of the rocks of the Pahrump Group are moderately to strongly metamorphosed. Whereas, they are relatively unmetamorphosed on the eastern side of the southern Panamint Range, they display greater metamorphism toward the Tucki Mountains (Chapman, et al., 1973). A similar trend is noted in the Funeral Mountains (Troxel and Wright, 1968). Rocks of the Pahrump Group are meta-sedimentary, with the exception of a diabase sill, which generally occurs with exposures of the Crystal Spring Formation. The Pahrump Group crops out in a discontinuous band along the western side of the Panamint Range and the Funeral Mountains (Chapman, et al., 1973).

The youngest group of Precambrian rocks that overlie the Pahrump Group include the Noonday Dolomite, the Johnnie Formation and the Sterling Quartzite. The latter two are widely distributed in southern Nye County. The rocks are composed of quartzite, siltstone, micaceous shale, marble, dolomite and limestone (Cornwall, 1972). In California, the youngest metasedimentaries are progressively more metamorphosed toward the north. Chapman et al. (1973) point out that siltstone in the southern Funeral Mountains is stratigraphically equivalent to a garnet muscovite schist or to a staurolite muscovite schist in the northern Funeral Mountains. These youngest Precambrian units underlie the crest and the eastern side of the Panamint Range, much of the Funeral Mountains and smaller areas on the western side of the Resting Spring Range (Chapman et al., 1973).

Paleozoic Geology

In the Death Valley area, Cambrian strata have an aggregate thickness of almost eight thousand feet, (Noble and Wright, 1954). In the Californian section, they are represented by one map unit; whereas in the Nevada section, individual units are, generally, mapped separately. In the southeastern corner of the area, in the Resting Spring Range and Nopah Range, the Cambrian section consists of the Wood Canyon, Cadiz, Bonanza King, Cornfield Springs and Nopah formations (Noble and Wright, 1954).

The Wood Canyon Formation of Precambrian-Cambrian age, consists predominantly of fine-to-medium grained clastic material. It has usually been considered a transitional unit into a Paleozoic sequence of shallow-water, miogeosynclinal strata, in which limestone and dolomite predominate over shale and quartzite. This sequence is named the Eastern, or Carbonate, Assemblage (Roberts et al., 1958). Most of the Late Precambrian and Cambrian units of Southern Nye County belong to the Eastern Assemblage. In the Californian section, the predominantly carbonate strata tend to grade westward into clastic strata. The Cambrian rocks and the later Paleozoic units appear to be relatively unmetamorphosed, compared to the Precambrian rocks, except near the margins of intrusive igneous masses.

Ordovician units are the same on either side of the state line. Whereas they are mapped separately in Nevada, they are combined into one map unit in California. The formations are a continuation of the shallow-water, miogeosynclinal environment that first formed in the Late Precambrian times. The Pogonip Group consists of the Goodwin Limestone, the Nine Mile Formation and the Antelope Valley Limestone. The Nine Mile Formation consists of interbedded limestone, siltstone and shale. The Eureka Quartzite contains some limy, or dolomitic, sandstone near its top and bottom. The Ely Springs Dolomite is considered to be Middle or Late Ordovician in age (Cornwall, 1972).

The Silurian units are mainly dolomitic. The Californian map unit includes the Hidden Valley Dolomite and the Silurian Dolomite undifferentiated; whereas in Nevada the Roberts Mountain Formation and the Lone Mountain Dolomite are someplaces mapped separately. The dolomitic composition of the sedimentary units continues into the Devonian System, but with the Nevada Formation and Devil's Gate Limestone in the eastern part of the area, and with the Sultan Limestone in the west, the section becomes predominantly limestone.

The Devonian and Mississippian rocks through to the Pennsylvanian System are mainly limestones; in the northernmost exposures, the Elcana Formation is conglomeratic and coarser grained, but becomes successively finer textured in the southernmost part of Nye County. Correlative units in the Pahrump Valley and Spring Mountains are mainly limestone (Cornwall, 1972).

In California, the units within the Devonian, Mississippian, or Pennsylvanian systems are undifferentiated. In Nevada, the Paleozoic section closes with the Pennsylvanian Tippipah Limestone; whereas, in California, the youngest Paleozoic unit combines the Pennsylvanian Bird Spring Formation with some Permian aged rocks.

Mesozoic

The final phase of marine sedimentation is represented by Triassic sedimentary rocks which crop-out, for a few miles, along the southwestern side of the Inyo Mountains, California. Isolated masses of metamorphosed sedimentary and volcanic rocks in the Coso Range may be of Mesozoic age (Chapman et al., 1973).

Granitic intrusive rocks of Mesozoic age are widespread in the Death Valley area. Small plutonic bodies are exposed in the Black, Greenwater, and southern Panamint ranges. Most of the granite approximates quartz monzonite; someplaces it is coarse-grained; elsewhere, porphyritic. The Mesozoic granites are thought to be genetically related to granites of the Sierra Nevada Batholith, and to the intrusive bodies of the eastern Californian deserts (Noble and Wright, 1954). Some of the granites may be of Tertiary-age, particularly in the Black Mountains and Greenwater Range.

Megabreccias that are virtually of one lithology (dolomite and limestone of the Bonanza King Formation) occur in several parts of southern Nye County. West of Pahrump Valley three megabreccias, the largest over two miles long and half a mile wide overlie the Sterling Quartzite. Similar breccias overlie the Pliocene-aged Timber Mountain Tuff, southeast of Bare Mountain (Cornwall, 1972). Smaller exposures of megabreccias, derived from the Bonanza King Formation, crop-out 11 to 13 miles southwest and south of the town of Beatty. These are overlain by Tertiary basalts and Tuffs (Cornwall, 1972).

Cenozoic

Volcanic and sedimentary rocks of Tertiary age are widespread. They underlie Death Valley, all the large topographic depressions, and occur discontinuously on the slopes and crests of the mountain ranges (Noble and Wright, 1954). In general the Terrestrial sedimentary rocks (clay, shales, siltstones, sandstones and conglomerates) occupy the depressions, which appear to have been troughs and basins of deposition during the Tertiary. Volcanic and sedimentary units interfinger (Noble and Wright, 1954). In Nye County, a conglomeratic unit (The Titus Canyon Formation) commonly occurs at the base of the Tertiary sequence (Cornwall, 1972). Pyroclastic tuffs and ash flows are most common, but lava flows and intrusive units also occur.

The oldest volcanic unit that is specifically distinguished in southern Nye County is the Monotony Valley Tuff; with a K-Ar date of 26.7 ± 0.7 m.y. The unit is very widespread, but in most places it is overlain by younger units (Cornwall, 1972).

In the Californian section, the oldest of the Tertiary units are the Titus Canyon Formation and the Artist Drive Formation. The Titus Canyon Formation lies on the northern flanks of the Grapevine and Funeral mountains, where it is some 1300 feet thick, and consists of conglomerate, sandstone and mudstone (Noble and Wright, 1954).

In the Black Mountains the Oligocene-Miocene Artist Drive Formation has an estimated thickness of 5,000 feet; it consists of alternating basaltic and latitic flows, tuffs and breccias, interbedded with various sedimentary rocks. Other older Tertiary volcanics and sedimentary rocks, which may be correlative with the Artist Drive Formation, crop-out in the central Black Mountains and Greenwater Range.

Significant in the later Tertiary units are the Furnace Creek Formation and the Greenwater volcanics; both units are mapped in the Californian section. In the northern part of the Black Mountains, the Artist Drive Formation is unconformably overlain by the Furnace Creek Formation. The Furnace Creek consists of volcanic rocks interbedded with fanglomerate and playa sediments, that contain gypsum and borates. The unit is some 2,500 feet thick. A 3,000 foot section of similar lithologies occurs in the Copper Canyon area of the Central Black Mountains (Noble and Wright, 1954).

Younger acidic to intermediate volcanic rocks, with little interlayered sediment, are mapped in the Death Valley region. These volcanics crop-out extensively in the Greenwater Range and are unconformable over the Furnace Creek Formation. They are known as the Greenwater Volcanics (Noble and Wright, 1954). Similar units occur in the Black Mountains and in the southern Panamint Range.

From Miocene time onward, a variety of volcanic and volcanoclastic sedimentary rocks were deposited in southern Nye County. Many of these have been intensively studied and mapped separately.

Dacite and Rhyodacite flows and intrusives of Miocene age are widespread in southern Nye County; however, the greatest number of outcrops occur north of the map sheet area.

Quartz Latite flows and intrusives are prominent to the northwest and west of Beatty. The latite overlies the Timber Mountain Tuff and may be younger than 11 million years.

Rhyolite flows and intrusions crop-out in southern Nye County. These units have a variety of ages, and are not necessarily synchronously formed (Cornwall, 1972). The rhyolitic bodies are commonly flow-layered, partially vitrophyric and felsitic (Cornwall, 1972).

A thick sequence of Miocene aged volcanic rocks, which crop-out in the northernmost part of the area, have been termed the Belted Range Tuff. The formation includes the Tub Spring and Grouse Canyon

members and local units. It is partially correlative with the Indian Trail Formation. The Tub Spring and Grouse Canyon members are compound cooling units of ash flow tuff (Cornwall, 1972).

A Tertiary sequence of lava flows, volcanic breccias, tuff and tuffaceous sandstones east of Jackass Flats has been named the Salzer and Wahmonie formations (Poole et al., 1965). The volcanic rocks of these formations are thought to be comagmatic and to have been from adjacent volcanic centers, located near the center of the outcrop area.

The Paintbrush Tuff (Orkild, 1965) includes, the Stockade Wash, Tonopah Spring, Pah Canyon, Yucca Mountain and Tiva Canyon members. It crops-out in the Bullfrog Hills, west of Beatty.

The Timber Mountain Tuff (Orkild, 1965) is comprised of the Rainier Mesa Member, and the Ammonia Tanks Member. These members crop-out in the caldera, and for a wide area around Timber Mountain to the north of the map sheet area. They also occur in the Bullfrog Hills. The Reinier Mesa and Ammonia Tanks members have rhyolitic lower parts and quartz latitic upper parts.

Tertiary basalt flows and plugs crop-out in many places in southern Nye County. North of Bare Mountain and westward across the Bullfrog Hills are scattered exposures of basaltic flows and dikes. Near Jackass Flats basalt flows crop-out, particularly on, and west of, Skull Mountain. The basalts are from Late Miocene to Late Pliocene in age. In the Bullfrog Hills, they are intercalated with the Paintbrush and Timber Mountain Tuffs. Around Jackass Flats, they overlie the Timber Mountain Tuff (Cornwall, 1972).

In the Californian section, the Funeral Fanglomerate, of Pliocene age, is widespread. Most places it consists of fanglomerate, interbedded with black basaltic flows and finer grained sedimentary rocks. It is usually much less deformed than the older formation upon which it unconformably rests (Noble and Wright, 1954). At most places the formation is more than 1,000 feet thick.

Older gravels and locally finer-grained alluvia crop-out in a sizeable area to the north of Bare Mountain and to the west. The gravels, of Pliocene/Pleistocene age are characterized by variable sorting of detritus, and represent old dissected fans. The lower ends of the fans have relatively fine detritus and cobbles; whereas, the higher parts are strewn with boulders. The composition of the gravels and boulders closely reflects that of the neighboring hills and mountains.

Quaternary rocks in southern Nye County consist of basaltic flows and cinder cones, alluvial fans, stream gravels, dune sands and playa deposits. Alluvial fans cover much of the desert basins; however, playa deposits and volcanic flows are prominent in some localities.

Basaltic flows and cinder cones crop-out in and close-by Crater Flat, to the east of Bare Mountain (Cornwall and Kleinhampl, 1961); the basalt is trachytic.

Alluvial fans that consist of gravel and rubble in the highlands grade into sand and silt in the basins. Some places the gravels are thin veneers over rock-pediments (Cornwall, 1972); elsewhere fans, other alluvia, and playa deposits are thick. Sand dunes form in some basins, e.g., the Amargosa Desert; many of the dunes are stable.

The playa deposits occupy the lower areas of most basins. Alluvium covers much of the playa deposits, which are variously comprised of sand, silt, clay, and some gravel lenses. Tuffaceous deposits and evaporites are also present.

Similar Quaternary deposits are mapped in the Californian section. Pleistocene lake beds, with thin aeolian covering, are more widespread. This is true for Owens Lake; Pleistocene lacustrine deposits formed when lakes occupied the Panamint, Death and Amargosa valleys. Salt, interlayered with clay, underlies more than 100 square miles of the floor of Death Valley.

Structure

Structural deformation in southern Nye County may be divided into (i) folding, thrust and related tear faulting, (ii) wrench faulting, (iii) cauldron subsidence, doming and high angle faulting related to volcanic activity, (iv) Basin-Range high angle faulting and (v) gravity sliding (Cornwall, 1972, p.28).

Folding, thrust and tear faulting are most developed in the Late Precambrian and Paleozoic rocks. The deformation may be associated with the Las Vegas Valley Shear Zone of Middle Cretaceous time (Cornwall, 1972). The shear zone, right laterally displaced, enters southern Nye County north of the Spring Mountains and continues northwestward to the Spotted Range Oroflex (Cornwall, 1972). Late Tertiary volcano-tectonic activity formed many calderas or graben. Associated features include domes, elevated blocks and normal faults in the Bullfrog Hills. Two volcanic centers are situated to the east of Jackass Flats.

Basin and Range normal faults vary in age from Miocene to Holocene. North trending normal faults are most common; however, northeast and northwest trends to the normal faults also occur.

In California, the most abundant of the recognized faults are normal faults that trend mainly north to northeast. They are very closely associated with northwest trending lateral slip faults. The major fault-zones are (i) the Saline Valley Fault Zone and (ii) the Death Valley-Furnace Creek Fault Zone (Wright and Troxel, 1967).

C. BRIEF DESCRIPTION OF THE GEOLOGIC UNITS

Precambrian

ep6: Earlier Precambrian Metamorphic Rocks

Archean rocks which include the Panamint metamorphic complex and the World Beater Porphyry. The unit is mapped in California.

lp6: Later Precambrian Sedimentary and Metamorphic Rocks

Algonkian rocks which include the Pahrump Series (Beck Spring Dolomite, Crystal Spring Formation, Kingston Peak Formation), the Marvel Dolomitic Limestone, the Middle Park Formation, the Mountain Girl Quartzite, the Sourdough Limestone, the Surprise Formation, the Wildrose Formation. The unit is mapped in California.

p6: Undivided Precambrian Metamorphic and Granitic Rock

An undivided unit of meta-sedimentary rocks mapped in California.

p6u: Gneiss and Schist, undivided

A unit of Precambrian gneiss and schist undivided, mapped in Nevada.

p6j: Johnnie Formation

Micaceous shale, fine-grained quartzite and minor amounts of marble comprise the Johnnie Formation of southern Nye County.

p6s: Sterling Quartzite

The Sterling Quartzite consists of quartzite with interbedded mica schist and minor marble. It is mapped in southern Nye County.

Precambrian - Paleozoic

Precambrian - Cambrian

6pm: Marine Sedimentary and Meta-sedimentary Rocks

The unit is mapped in California and includes the Hanaupah Formation, the Johnnie Formation, the Noonday Dolomite, the Radcliff Formation, the Redlands Dolomitic Limestone, the Sentinel Dolomite, the Sterling Quartzite.

6p6w: Cambrian Wood Formation

A unit comprised of quartzitic sandstone, siltstone, micaceous shale and marble, which is mapped in southern Nye County.

Paleozoic

Cambrian

Gm₁: Cambrian Marine Sedimentary and Meta-sedimentary Rocks

The unit of undifferentiated Cambrian rocks includes the Bonanza King Formation, the Cadiz Formation, the Cornfield Springs Formation, the Death Valley Formation, the Nopah Formation, the Racetrack Dolomite, the Wood Canyon Formation, and undifferentiated Cambrian sedimentary rocks.

Gz: Zabriskie Quartzite

The Zabriskie Quartzite is mapped in southern Nye County. It is Lower Cambrian age.

Gc: Carrara Formation

A Lower and Middle Cambrian unit of interbedded limestone, siltstone, and micaceous shale; which locally includes rocks of the lower section of the Emigrant Formation in the Belted Range. The unit is mapped in southern Nye County.

Gb: Bonanza King Formation

A Middle and Upper Cambrian unit of dolomite and limestone, which is mapped in southern Nye County.

Gn: Nopah Formation

An Upper Cambrian unit of dolomite, limestone and minor shale. It is mapped in southern Nye County.

Ordovician

O: Marine Sedimentary and Meta-sedimentary Rocks

A unit of undifferentiated Ordovician sediments which includes the Ely Spring Dolomite, the Eureka Quartzite and the Pogonip Limestone. It is mapped in California.

Op: Pogonip Group

A limestone, shaly limestone unit, with minor dolomite, which is mapped in southern Nye County.

Oee: Ely Springs Dolomite and Eureka Quartzite

The undifferentiated unit includes the Ely Springs Dolomite, of Middle and Upper Ordovician age, and the Eureka Quartzite of Middle Ordovician age. It is mapped in southern Nye County.

Silurian

S: Marine Sedimentary and Meta-sedimentary Rocks

The undifferentiated unit, which is mapped in California, consists of the Hidden Valley Dolomite and the Silurian Dolomite.

Su: Sedimentary Rocks Undivided

The unit is comprised of dolomite with minor limestone, and is mapped in southern Nye County.

Srm: Roberts Mountain Formation

A Middle Silurian unit of platy dolomite and limestone. It is mapped in southern Nye County.

Slm: Lone Mountain Dolomite

A middle Silurian dolomite which is mapped in southern Nye County.

Silurian - Devonian

D: Marine Sedimentary and Meta-sedimentary Rocks

An undifferentiated unit of sedimentary and meta-sedimentary rocks which includes the Lost Burro Formation, the Lost Burro-Hidden Valley Dolomite undifferentiated, and the Sultan Limestone. The unit is mapped in California.

Dn: Nevada Formation

A Lower and Middle Devonian unit which consists of dolomite, and minor sandstone. It is mapped in southern Nye County.

Dd: Devils Gate Limestone

A Middle and Upper Devonian unit of limestone, with minor dolomite and lenticular quartzite. The unit is mapped in southern Nye County.

Ddn: Devils Gate Limestone and Nevada Formation

The Nevada Formation and Devils Gate Limestone are undifferentiated in this unit, which is mapped in southern Nye County.

Devonian-Carboniferous

Devonian-Mississippian

Mde: Eleana Formation

A unit of vari-colored argillite, dark chert conglomerate, quartzite, shale and limestone. It is mapped in southern Nye County.

Carboniferous Undivided

C: Carboniferous, Undivided, Sedimentary and Meta-sedimentary Rocks

These are undivided Carboniferous Rocks of the Nopah Range, California.

Mississippian

CM₂: Marine Sedimentary and Meta-sedimentary Rocks

An undifferentiated unit of marine sedimentary and meta-sedimentary rocks, which includes both the Perfido Formation and the Tin Mountain Limestone. It is mapped in California.

Mmc: Monte Cristo Limestone

A Lower and Upper Mississippian limestone unit, mapped in southern Nye County.

Pennsylvanian

CP: Marine Sedimentary and Meta-sedimentary Rocks

The unit consists of the Keeler Canyon Formation, the Rest Spring Shale, the Tehvipah Limestone and the lower member of the Bird Spring Formation. The unit is mapped in California.

lPt: Tippipah Limestone

A Lower Pennsylvanian unit of limestone, which is mapped in southern Nye County.

Permian

Pm: Marine Sedimentary and Meta-sedimentary Rocks

The unit includes the Bird Spring Formation, and undivided Carboniferous and Permian aged rocks. It is mapped in California.

Paleozoic Undivided

Pzu: Paleozoic Sedimentary Rocks, Undivided

A undivided unit of sedimentary and meta-sedimentary rocks, mapped in California.

1P: Marine Sedimentary and Meta-sedimentary Rocks

An undifferentiated Paleozoic unit mapped in southern Nevada.

Mesozoic

Triassic

Tr: Triassic Marine Sedimentary and Meta-sedimentary Rocks

An undifferentiated unit of marine shale and limestone of Lower Triassic age. It is mapped in California.

Triassic-Jurassic

JTrv: Jurassic and Triassic Meta-volcanic Rocks

An undifferentiated unit of meta-volcanic rocks mapped in California.

Mesozoic Undivided

gr: Mesozoic Granitic Rocks

A unit of undifferentiated granitic rocks, which includes the Hunter Mountain Quartz Monzonite, and the Little Chief Porphyry. The unit is mapped in California.

Mesozoic or Cenozoic

mb: Megabreccia

Landslide blocks of monolithologic dolomite breccia, derived from the Bonanza King Formation. It is mapped in southern Nye County.

Cenozoic

Cenozoic Undivided

QTV^b: Cenozoic Basaltic Rocks, Undivided

A Cenozoic aged unit of basaltic and andesitic rocks mapped in southern California.

Qtc: Cenozoic Non-Marine Sedimentary Rocks

A Cenozoic aged unit of basaltic and andesitic rocks mapped in southern California.

Tertiary

Tertiary Undivided

Tv: Tertiary Volcanic Rocks

Tertiary rhyolite and latites of Late Miocene and Pliocene age. The unit is mapped in California.

Tc: Sedimentary Rocks

A unit of Late Tertiary lake beds and fanglomerate. It includes some Plio-Pleistocene Older Alluvium. It is mapped in California.

Oligocene

Ov: Oligocene Volcanic Rocks

This unit of Oligocene volcanic rocks includes the Artist Drive Formation. It is mapped in California.

Oc: Oligocene Sedimentary Rocks

A unit that includes older Tertiary sedimentary rocks and the Titus Canyon Formation. It is mapped in California.

Ttc: Titus Canyon Formation

Conglomerate with interbedded sandstone, siltstone, limestone and tuff. Unit mapped in southern Nye County.

Oligocene-Miocene

Tt: Ash Fall Tuff and Non-Welded Ash Flow Tuff

The unit is mapped in Southern Nye County.

Tw: Welded Tuff

A unit of welded, usually rhyolitic, ash flow tuffs. It occurs in southern Nye County.

Miocene

Td: Dacite and Rhyodacite

Rocks of intermediate composition which include flows and intrusive masses of dacite, less extensive rhyodacite and minor andesite and quartz latite. It is mapped in southern Nye County.

Tl: Quartz Latite

A unit of flows and intrusions which is mapped in southern Nye County.

Tts: Tuff and Tuffaceous Sedimentary Rocks

A Miocene unit of tuff and tuffaceous sedimentary rocks, which is mapped in southern Nye County.

Ts: Tuffaceous Sedimentary Rocks

A unit of tuffaceous sedimentary rocks mapped in southern Nye County.

Mv; Mv^r: Miocene Volcanic Rocks

Mv: Is a unit of undifferentiated Miocene volcanic rocks, which includes the Greenwater volcanics.

Mv^r: is a unit of rhyolite and tuff.

Both Mv and Mv^r are mapped in California.

Mc: Miocene Non-Marine Sedimentary Rocks

A unit of Miocene aged sedimentary rocks which includes the Furnace Creek Formation, and is mapped in California.

Tbr: Belted Range Tuff

A comenditic ash flow and ash fall tuff mapped in Southern Nye County.

Ti: Indian Trail Formation

This unit includes rhyolitic ash flow, and ash fall tuff, it locally includes older units around Yucca Flat.

Tws: Wahmonie and Salyer Formations

Dacite, rhyodacite and latite flows, breccias, tuffs and tuffaceous sandstones; locally includes tuffaceous sediments underlying these formations. It is mapped in southern Nye County.

Miocene and Pliocene

Tr₁: Rhyolite

A unit of flows and intrusive masses of rhyolitic composition mapped in southern Nye County.

Tp: Timber Mountain (Pliocene) and Paintbrush Tuffs and Tuffs of Crater Flat (Miocene)

It includes ash fall tuffs and conformably overlying Paintbrush and Timber Mountain Tuffs. It consists of rhyolitic ash flows and minor ash fall tuffs. It is mapped in southern Nye County.

Pliocene

Tb: Basalt

A unit of basaltic flows and plugs mapped in southern Nye County.

Tw: Welded Tuff

Ash flows, mostly rhyolitic, which locally include older ash flows; it is mapped in southern Nye County, (not distinguished on map from earlier Tw unit).

Tt: Ash Fall Tuff and Non-Welded Ash Flow Tuff

A unit of ash fall tuff and non-welded ash flow tuff has been mapped in southern Nye County, (not distinguished on map from earlier Tt unit).

Tl: Quartz Latite

Flows and intrusive masses of Quartz latite mapped in southern Nye County, (Not distinguished on map from earlier Tl unit).

Pv^a;Pv^b;Pv^p: Pliocene Volcanic Rocks

Pv^a: Andesitic volcanic rocks of the Pliocene, mapped in California

Pv^b: basalt associated with the Funeral Fanglomerate in California

Pv^p: pyroclastic agglomerates and tuff, mapped in California, and of Pliocene age

Tertiary - Quaternary

QP: Pliocene-Pleistocene Sedimentary Deposits

A Plio-Pleistocene unit which includes the Coso Formation, the Funeral Fanglomerate, the Nova Formation and various un-named Plio-Pleistocene fanglomerates. The unit is mapped in California.

Qtal: Older Alluvium

Boulders, cobbles and finer material of varied lithology, in older partly dissected fans. It is mapped in southern Nye County.

Quaternary

Pleistocene

Qpv; Qpvr;Qpv^b: Pleistocene Volcanic Rocks

Qpv: A unit of undifferentiated Pleistocene volcanic rocks

Qpv^r: A unit of Pleistocene rhyolitic volcanic rocks

Qpv^b: A unit of Pleistocene basaltic rocks

All are mapped in southern California

Qc: Pleistocene Non-Marine Sedimentary Rocks

Older gravel and older alluvium of Pleistocene age comprise this southern Californian unit.

Pleistocene-Recent

Ql: Quaternary Lake Deposits

These are lake deposits and playa deposits. They are mapped in southern California.

Qst: Quaternary Salt Deposits

Salt deposits of Pleistocene and Recent ages, which are located in southern California.

Qb: Basalt

Flows, plugs and cinder cones of Pleistocene to Recent age. They are located in southern Nye County.

Qa^l: Alluvium

Fan and stream gravels flanking mountains and hills, and grading outward into sands and silts in valley bottoms. The units are mapped in southern Nye County.

Qp^l: Playa Lake Deposits

Playa lake deposits of Pleistocene and Recent ages are mapped in southern Nye County.

Recent

Qal: Recent Alluvium

This unit is comprised of alluvia and fan deposits. It is mapped in California.

Qs: Recent Sand Dunes

An eolian unit of Recent age which includes sand dunes.

D. RADIOACTIVE MINERAL OCCURRENCES

Nevada

Southern Nye County

Four uranium prospects occur in the Bullfrog Mining District. The prospects are situated in Tertiary rhyolitic rocks, thought by Garside (1973, p.91) to be welded tuffs.

The Red Dog No. 3 prospect occurs along a fracture in tuff and rhyolite.

The Black Bart Extension Claim (Black Bonanza Claims, Nos. 1-27) occurs in association with silicified fault breccias, along north trending faults in a Tertiary rhyolite. Uranophane and autunite are reported.

The National Bank Group occurs along a fault traversing a Tertiary rhyolitic ash flow tuff. Similarly, the Virginia Lode Claim (Gibraltar Mine) has anomalous radioactivity along a fracture zone in a rhyolitic ash flow tuff.

Anomalous radioactivity has been reported at two fluorite mines in the Fluorine Mining District. The fluorite mineralization is thought by Garside (1973 p.92) to be related to Tertiary volcanism.

At the Daisy Fluorspar Mine, slightly anomalous radioactivity occurs along with purple earthy fluorite. It is associated with a series of pipes, and irregular bodies and veins, in a zone of chaotic structure along a large thrust fault. The fractured zones are in the Nopah Formation. Ore solutions may have been derived from a local Tertiary rhyolitic magma chamber.

The Butler Prospect has anomalous radioactivity associated with fluorite in a Cambrian Limestone (Garside, 1973). The limestone is fractured, and silicification and iron staining have formed.

California

Olancha Area, Inyo County

Secondary uranium minerals are found in the Pliocene-Pleistocene aged Coso Formation, along the eastern side of Owens Valley, some 12 miles southeast and east of the town of Olancha (Troxel et al., 1957). Coarse-grained, arkosic sandstone and tuffaceous and bentonitic beds comprise the Coso which overlies Mesozoic granite.

Four of the more extensively developed prospects are the (i) Ontario Minerals Company, (ii) Coso Uranium Inc., (iii) Inland Oil Company and (iv) the Green Velvet and Valley View claims.

At the Ontario Minerals Company property, radioactive minerals occur in lenses of opaline material along an east-trending fault, which separates granitic rocks from the Coso Formation. Uranium mineralization occurs in the arkosic sandstone at the base of the Coso.

At the Coso Uranium Inc. site, the host rocks for uranophane and autunite are arkosic sandstone and conglomerate, at the base of the Coso Formation. The secondary minerals occur in iron-stained bedding planes and fractures. Several hundred tons of low grade ore have been removed from this location.

Autunite occurs along bedding planes and fractures in bentonitic clay seams, at the Inland Oil Company. The clay seams lie several tens of feet above the base of the Coso. The extensive seams are only locally anomalously radioactive.

The Green Velvet and Valley View claims report autunite and radioactive opal in tiny fractures in bentonitic seams, and in fine grained, poorly cemented sandstones (Troxel et al., 1957). These deposits lie several hundred feet above the base of the Coso Formation.

The Ubehebe Mine and Lippincott Mine are some 20 miles northeast of Owens Lake at an altitude of approximately 4,000 feet. The deposits are irregular replacement bodies, and fracture fillings, in dolomite of Paleozoic age, which has been intruded by quartz monzonite, syenite and minette dikes. Anomalous radioactivity is caused by an undetermined uranium mineral, associated with wulfenite in the ore zones (Walker et al., 1956).

The Santa Rosa Mine is in the extreme southern part of the Inyo Mountains, Inyo County. The location is one of an inlier of silicated limestone of Permian age bounded by volcanic rocks of Tertiary age. The volcanic rocks include andesite, basalt and pyroclastic material. The silicated limestone is cut by three andesite porphyry dikes, which range from two to three feet in thickness (Walker et al., 1956). Slightly anomalous radioactivity was recorded in oxidized parts of the veins associated with faults in the limestone. The source of radioactivity is not known.

The Empress Mine is near the northern end of the Argus Range. The deposits are in a roof pendant of limestone, of Mississippian age, which is surrounded by an up-faulted block of quartz monzonite. Anomalous radioactivity has been detected in a quartz-rich replacement zone as much as six feet thick in the limestone; there are also quartz veins in the monzonite. No uranium minerals have been identified (Walker et al., 1956).

SECTION IV
RESULTS OF DATA ANALYSIS

A. GEOLOGIC BASE MAPS

The Death Valley geologic base map is created to the scale of the NTMS with geologic data and includes latitude, longitude and major geological features. The geologic base map is shown without the super-positioned flight lines at the scale of 1:250,000 and 1:500,000.

B. NATIONAL GAMMA RAY MAP SERIES (NGRMS)

The geologic base has been photographically screened to allow emphasizing of the flight line locations and information regarding data analyses. These maps are the base to which the statistical information for six variables has been added for every fifth data point and are identified as the National Gamma Ray Map Series which are presented at the scale of 1:250,000 and 1:500,000. The detail data for each of these map lines are presented as profile information for six variables and location of geologic information with statistical data included along each map line as discussed in Section IV (F).

C. RADIOMETRIC STACKED PROFILES

The profiles of Map Lines 1 - 112 and Tie Lines 1 - 6 are presented within this report at the scale of 1:500,000. The same vertical scale is used for a given variable for all map lines, but the vertical scale changes to fit the specific variable plotted. The scale used for each variable are:

- Altitude
100 feet/division, aircraft altitude above the surface; no averaging.
- T_{L} (^{208}Tl)
10 counts/second/division (C/S/div.). Seven seconds of data are averaged with weighting of 1:2:3:4:3:2:1 and the average value plotted at the center of the group of 7. 5.3 c/s = 1 ppm eTh.
- Bi (^{214}Bi)
20 C/S/div; 7-second weighted average as for T_{L} . 51.1 c/s = 1 ppm eU.

- K (^{40}K)
30 C/S/div; 7-second weighted average as for T_{L} . 77.1 c/s = 1%K.
- BiAir
20 C/S/div; 50 -second average.
- Residual Magnetic Field (RMAG)
100 gammas/division; the residual magnetic field is the total magnetic field as measured by a proton precession magnetometer from which has been subtracted the International Geomagnetic Reference Field (Stassinapoulos; NSSDC-72-12).
- Total Count, 400 keV to 3.00 MeV (GC)
1000 C/S/div; no averaging
- $^{214}\text{Bi}/^{208}\text{Tl}$ Ratio (Bi/ T_{L})
.40 /div; 7-second weighted averaging as for T_{L} .
- $^{214}\text{Bi}/^{40}\text{K}$ Ratio (Bi/K)
.12 /div; 7-second weighted averaging as for T_{L} .
- $^{208}\text{Tl}/^{40}\text{K}$ Ratio (T_{L} /K)
.06 /div; 7-second weighted averaging as for T_{L} .
- Geology
The surface geology along the flight line, with a width of about six miles, is displayed above the profiles and the flight path is superimposed.

D. MAGNETIC STACKED PROFILE DATA

For each Map Line and Tie Line, a magnetic multiple-parameter stacked profile is produced at a scale of 1:500,000 and at a scale of 1:250,000 as separate sheets. The same vertical scale is used for a given variable for all Map Lines, but the vertical scale varies to fit the specific variable plotted. The scales used for each variable are:

- Altitude
100 feet/division; aircraft altitude above the surface; no averaging.

2. Temperature

2 degree celsius/division; no averaging.

3. Barometric Pressure

0.40 inches mercury/division; no averaging.

4. Base Station - Magnetic Field

5 gammas/div; no averaging

5. Residual Magnetic Field

50 gammas/division; no averaging.

TABLES 1-6

E. MAGNETIC TAPES AND LISTINGS

The description of the magnetic tapes and their listings is presented in Appendix II.

F. STATISTICAL AND GEOLOGICALLY-CREATED DEVIATIONS IN RESULTANT DATA

A set of tables are included; see Tables 1-6. These list the average value for each geologic unit encountered on each flight line as a function of flight line for each of the radiation variables.

Standard deviations of the data have been calculated assuming the data to have a normal distribution within the geologic type. When geochemical anomalies modify the normal distribution, then the frequency distribution of the data will be distorted about the mean. Geologic unit data have been analyzed to determine the variance.

$$\sigma^2 = \frac{1}{N-1} \left\{ \sum_{i=1}^N x_i^2 - N\bar{x}^2 \right\}$$

where the standard deviation is σ , N is the number of samples, x_i is the value at the sample number i, and $\bar{x}$ is the mean value for the geologic type. The listing for averaged record data output gives the mean value and magnitude of deviations, relative to the mean, with the $\pm 1\sigma$, $\pm 2\sigma$, and $\pm 3\sigma$ levels being placed on the NGRMS Sheets for the six variables as previously explained. The distribution of data within the geologic units encountered are included.

A statistical adequacy test is run on all data. If the test fails, the value of the displayed ratio variable is set to zero and not included in summary tables which give the average value. The test is made on $T_2(eTh)$, Bi (eU) and K where:

	C	CH	CC	CM1	CM2	EN	CP	EPCW	EPM	EZ	D	DD	UDN	UN	EPC	GR	JTRV	LP	LPE
ML 1																			
ML 2																	48		
ML 3		27	50			7		24									90		
ML 4		27	44			20		53				10	19				63		
ML 5		21	76			10		26				9	13				54		
ML 6		28	49			16		44				59	42	55			76		
ML 7	32	32	34	12		49		5			30	12	34	37			61		
ML 8	13	14	14	6		29		6			0		22				72		
ML 9	18	22	21	9		17		40	44		2		21	9			92		
ML10		17	47	23				65				10		7			101		
ML11		15	33	16		25		61				20		19			100		
ML12		22	34	19		43		56				31	39				81		
ML13		16	41	29		19		22				17					72		
ML14		21		35		13		18				35					62		
ML15		16		40		7		31	51			14					79		
ML16		16		14		10			45			12					65		
ML17		22			15	12						28					51		
ML18		21			11	14						66					65		
ML19		17			13	10		29				83					92		
ML20		34		16		27		29				10					94		
ML21		45		23		61		45						32			88		
ML22						19		38								76	99		
ML23						28		22				31					121		
ML24						36		24				17				68	86		
ML25								30								73	73		
ML26																64	52		
ML27								29									60		
ML28						33		42								68	63		
ML29						15		30								66	54		
ML30						30		32			16	25			61	63	55		
ML31						22		36				15				66	56	28	
ML32						18		43				14					60	45	
ML33								23				20					67	88	
ML34				52				31								66	55	62	
ML35				10				22			14					76	85	59	
ML36	42	12		30		61		32		21	13	62		56	39	77	63	79	
ML37		20	10	16		15		55	50			38		29	65	77	63	58	
ML38		8	17	23		5		35	45	29		27		34	48	65	47	46	
ML39		11	17	57		14		48	59	26	13	44		25	32	68	52	26	
ML40		21	36	33		58		26		53					41	64	60	41	
ML41		46	25	37				80							58		67	43	
ML42			122	38				50							56	57	66	58	
ML43				43	24			80		38					47	34	83		
ML44			33	34	38			104	42	40						64	59		
ML45		71	16	27	42	52		13	33	45		6					70		
ML46			12	24	14	44	14	23				29			22		116	75	
ML47					27	28						16					87		
ML48			57						73					74			57		
ML49									51										
ML50									42										
ML51				62					48										
ML52				50					45										
ML53				48					43										
ML54				47					44										
ML55				35					37										
ML56				27					48										
ML57				20					46										
ML58	10			37					62		11								
ML59				48					58		9						47		
ML60				11					57		7						96		
ML61				8					53		12						46		
ML62				13					58						173		68		
ML63				14					47						178		71		
ML64				48					55						151		69		
ML65				36					55						58		72		
ML66																	65		
ML67									51						59		57		
ML68															65				
ML69																			
ML70																			
ML71																			
ML72																	48		
ML73	27	50			7		24										90		
ML74	27	44			20		53				10	19					63		
ML75	21	76			10		26				9	13					54		
ML76	28	49			16		44				59	42	55				76		
ML77	32	34	12		49		5			30	12	34	37				61		
ML78	14	14	6		29		6			0		22					72		
ML79	22	21	9		17		40	44		2		21	9				92		
ML80	17	47	23				65				10						101		
ML81	15	33	16		25		61				20		19				100		
ML82	22	34	19		43		56				31	39					81		
ML83	16	41	29		19		22				17						72		
ML84	21		35		13		18				35						62		
ML85	16		40		7		31	51			14						79		
ML86	16		14		10			45			12						65		
ML87	22			15	12						28						51		
ML88	21			11	14						66						65		
ML89	17			13	10		29				83						92		
ML90	34		16		27		29				10						94		
ML91	45		23		61		45						32				88		
ML92					19		38								76		99		
ML93					28		22				31						121		
ML94					36		24				17						68	86	
ML95							30										73	73	
ML96																	64	52	
ML97							29										60		
ML98					33		42										68	63	
ML99					15		30										66	54	
ML100					30		32			16	25			61			63	55	
ML101					22		36				15						66	56	28
ML102					18		43				14						60	45	
ML103							23				20						67	88	
ML104			52				31										66	55	62
ML105			10				22			14							76	85	59
ML106	12		30		61		32		21	13	62		56	39			77	63	79
ML107	20	10	16		15		55	50			38		29	65			77	63	58
ML108	8	17	23		5		35	45	29		27		34	48			65	47	46
ML109	11	17	57		14		48	59	26	13	44		25	32			68	52	26
ML110	21	36	33		58		26		53					41			64	60	41
ML111	46	25	37				80							58			67	43	
ML112		122	38				50							56			57	66	58
TL 1			43	24			80		38					47			34	83	
TL 2			33	38			104	42	40								64	59	
TL 3	71	16	27	42	52		13	33	45		6						70		
TL 4																			

	ML	MC	MDE	MMC	MV	MVR	U	OC	DEE	OP	OV	PC	PEJ	PES	PEU	PM	PVA	PVB
ML 1									24	40			61	41				
ML 2										29			58					
ML 3										17			39	54				
ML 4				17				8		37			51	35				
ML 5								9	13	20			40	41				
ML 6	25		42				41	15	42	45			39	37				
ML 7				51			16	28		32				43				
ML 8	13			18			5	13	11	15				42				
ML 9							5	19	14	23				48				
ML10			66				20	19	6	10								
ML11								12										
ML12	22	30							16					39			33	
ML13					59				12					46			24	
ML14	89													44			19	
ML15														43			30	
ML16								10									31	
ML17								20									39	
ML18			37					42									34	
ML19			70					17			28						39	
ML20			39		64			48					6				26	51
ML21					63								61					62
ML22					65								58					42
ML23					66								23				36	53
ML24					67			17					49					65
ML25					72								28				62	
ML26					72			15									43	
ML27					75												43	50
ML28		70			74			55									33	47
ML29		61			72			6									32	34
ML30		71			66	63		41									32	18
ML31		42			67	55	16										37	37
ML32		45			69	66											37	41
ML33	45	54				67	20										42	35
ML34		57				75	13										53	45
ML35		63				72	16							95			25	50
ML36		66				72	13	27						56			32	43
ML37		45	24			65	12		22	19		50	47	56			48	43
ML38		34	34			38			31	25		51		44			41	57
ML39		29				63	6	49		62		48		56			49	63
ML40		19				53	9	54				55		59			49	62
ML41		32			62	60	11				52	57		75			28	
ML42		32			55	49		49			61	71		68			40	
ML43		25				60	63	46			57	68		78			43	
ML44		31	57		50	41	50				47	51	58			28	33	
ML45		30	29		81			9			35	62			28			24
ML46		41	47		48			22			16	78	63				41	
ML47		48						29			44	56			56			
ML48		46					71					58						
ML49		37						52				61						
ML50		39						54				76						
ML51		40						45				62						
ML52						87		36				62						
ML53						69		57				49						
ML54					48	58	96	45				47						
ML55					65	54	23	48				35						
ML56						83	10	56										
ML57						98		28										
ML58						114		62				70						
ML59						115	10	90				68						
ML60						107	12	74				97						
ML61						130	10	88										
ML62						75	10	43										
ML63						74		27				9						
ML64						98												
ML65						91		55		105								
ML66								5										
ML67																		
ML68																		
ML69																		
ML70																		
ML71								24	40			61	41					
ML72									29			58						
ML73									17			39	54					
ML74			17				8		37			51	35					
ML75							9	13	20			40	41					
ML76	25		42			41	15	42	45			39	37					
ML77				51		16	28		32				43					
ML78	13			18		5	13	11	15				42					
ML79						5	19	14	23				48					
ML80			66			20	19	6	10									
ML81							12											
ML82	22	30						16					39				33	
ML83					59			12					46				24	
ML84	89												44				19	
ML85													43				30	
ML86								10									31	
ML87								20									39	
ML88			37					42									34	
ML89			70					17									39	
ML90			39		64			48			28		6				39	
ML91					63							61					26	51
ML92					65							58						62
ML93					66							23					36	42
ML94					67							49						53
ML95					72			17				28					62	65
ML96					72												43	
ML97					75			15									43	50
ML98		70			74			55									33	47
ML99		61			72			6									32	34
ML100		71			66	63		41									32	18
ML101		42			67	55	16										37	37
ML102		45			69	66											37	41
ML103	45	54				67	20										42	35
ML104		57				75	13										53	45
ML105		63				72	16										25	50
ML106		66				72	13	27					95				32	43
ML107		45	24			65	12		22	19		50	47	56			48	43
ML108		34	34			38			31	25		51		44			41	57
ML109		29				63	6	49		62		48		56			49	63
ML110		19				53	9	54				55		59			49	62
ML111		32			62	60	11				52	57		75			28	
ML112		32			55	49		49			61	71		68			40	
TL 1		25				60	63	46				57	68	78			43	
TL 2		31	57		50	41	50					47	51					53
TL 3		30	29		81			9				35	62		28		33	34
TL 4		41	47		48			22				16	78		34			
TL 5		48						29				44					41	
TL 6		46					71					56		56				

	PVP	PZU	QAL	QAL1	QB	QC	QL	QP	QPI	QPV	QPVH	QPVH	QS	QST	QTAL	QTC	QTVH	S	SLM
ML 1			32	50			43	69	33			39							
ML 2			29	53			48		50			30							
ML 3		44	28	60			44		51			36							
ML 4			32	67			45		35			25							
ML 5		35	34	70			42		81			36							
ML 6			24	67					81			42						65	
ML 7			28	57			37					32							
ML 8			30	57			46	47	49			7							
ML 9			23	56			46	57	42										
ML10			26	53			48	60	48										
ML11			35	61			49		48			38						41	
ML12			33	59										56				50	
ML13				65					52			31							12
ML14			52	67				67	44			36							
ML15			46	64			96		28			28							
ML16			43	69			48	26	37			44							
ML17			44	90			70	80	29			36							
ML18		38	54	76				66	29			36							
ML19		27	62	86					32			60							
ML20		32	54	61					30			70							
ML21		39	45	73					65			58							
ML22			68	97					36			56							
ML23		35	77	82					33			51							
ML24			71	73					64			38			132				
ML25			60	75					49			46			121				35
ML26		16	54	59			40		53			41			118				46
ML27	32		54	55			47	51	50			36		72	109				
ML28		45	50	57			48	42	41			35		63	113		28		
ML29			53	57	61		41	43	67			41			32				
ML30			40	46	64	56	49	43	56			37			35		41		13
ML31			43	65	89	52	46	45	67			41	103	41	32				15
ML32			44	67	94	53	40	25	46			71	115	53	39				
ML33	56		55	66	97	63	46	40	40		62	48	125	46					
ML34			43	43	63	64	41	25	32		89	38		35	110			5	21
ML35			32	57		38	55	37	61			53		50	78			5	28
ML36			55	58		60	53	47	60			52		45	106			6	27
ML37			56	61		43	46	46	61			51		46	113				
ML38			48	53		34	55	37	54			64		33	114				19
ML39			45	44		54	25	30	36						92				21
ML40			40	49				25							114			12	16
ML41			32	55		43		34							99				42
ML42			38	56		49	87	34						65	147				53
ML43	53		35	58		57	25	40	62		70	42			37	41			
ML44	34		39	56	38		58	21	55	46		48			38	25			
ML45		50	48	44	51		25	53	25	34		43			52	37			9
ML46			45	43	69			65	62						37				18
ML47			50	52	83	84		45				55			58	68			
ML48			111	62	102			40		104		53			41	75	123		
ML49			46	109		43		45							31	79			
ML50		100	52	105											29				
ML51		112	51	112											27				
ML52			51	107											32				
ML53			47	120											37				
ML54		117	45	126											32				
ML55			41	132											26				
ML56			40	136											22				
ML57			38	144															
ML58			31	168															
ML59			37	153															
ML60			31	164															
ML61			43	133									50					8	
ML62			60										58						
ML63			55										48	62					
ML64			58										47						
ML65			49					89					58						
ML66			54					63					58						
ML67			55					46					69						
ML68			54					50											
ML69			49				50	45			60								
ML70			53				53	43											
ML71		32	50			43	69	33				39							
ML72		29	53			48		50				30							
ML73	44		28	60		44		51				36							
ML74		32	67			45		35				25							
ML75	35	34	70			42		81				36							
ML76		24	67					81				42					65		
ML77		28	57			37						32							
ML78		30	57			46	47	49				7							
ML79		23	56			46	57	42											
ML80		26	53			48	60	48											
ML81		35	61			49		48									41		
ML82		33	59									38					50		
ML83			65					52				31		56				12	
ML84		52	67				67	44				36							
ML85		46	64			96		28				28							
ML86		43	69			48	26	37				44							
ML87		44	90			70	80	29				36							
ML88	38		54	76				29				36							
ML89	27	62	86					32				60							
ML90	32	54	61					30				70							
ML91	39	45	78					65				58							
ML92		68	97					36				56							
ML93	35	77	82					33				51							
ML94		71	73					64				38			132				
ML95		60	75					49				46			121				
ML96	16	54	59			40		53				41			118			35	
ML97		54	55			47	51	50				36		72	109			46	
ML98	45	50	57			48	42	41				35		63	113		28		
ML99		53	57	61		41	43	67				41			32				
ML100		40	46	64	56	49	43	56				37			35			13	
ML101		43	65	89	52	46	45	67				41	103	41	32			15	
ML102		44	67	94	53	40	25	46				71	115	53	39				
ML103		55	66	97	63	46	40	40		62		48	125	46					
ML104		43	43	53	64	41	25	32		89		38		35	110			5	21
ML105		32	57		38	55	37	61				53		50	78			5	28
ML106		55	58		60	53	47	60				52		45	106			6	27
ML107		56	61		43	46	46	61				51		46	113				45
ML108		48	53		34	55	37	54				64		33	114				15
ML109		45	44		54	25	30	36							92			19	5
ML110		40	49				25								114			21	18
ML111		32	55		43		34								99			42	
ML112		38	56		49	87	34						65	147				53	
TL 1		35	58		57	25	40	62		70									

	SRM	SU	TB	TBR	TC	TD	TI	TL	TP	TR	TR1	TS	TT	TTC	TTS	TV	TW	TWS
ML 1						38			109						56		45	91
ML 2						51			123						71		49	70
ML 3						76			106						49			71
ML 4						60			85			47			53			74
ML 5		7				97			65			49			47		126	68
ML 6									74			49			40			62
ML 7		53	67				67		82			81			74			69
ML 8		22				54			115			49			39			77
ML 9		14	59			44	53		103			23						74
ML10		12	59			45	61		100									75
ML11		11	88			42	56		110									84
ML12		11	58			39	64		106			38						81
ML13		12	58			56	65		119			32						
ML14			68						122									86
ML15			68				83		129		112	42						48
ML16			48	136			67		117		110	33						62
ML17			52	102			61		112		120	41						53
ML18			60	107			61		121		143	38						67
ML19			52	98			89		117		129	43						96
ML20		21		125					111		119	41						
ML21		29		119					122		122							
ML22			82						108		109							
ML23			89						110		134	80						
ML24			86						108		133							
ML25			101						115		136							
ML26			126						122		147							
ML27									116		110							
ML28			128						116		116							
ML29			95						105	76	124							
ML30									118		31							
ML31									120		31							
ML32									113		27							
ML33									118		32							
ML34									111		23							
ML35								77	107		29							
ML36	45								109		22							
ML37	15								104		29							
ML38	5								91		104							
ML39	18								103		97							
ML40			84						102		40							
ML41			79						88		40						101	
ML42									141		40			103				
ML43								124	76		145			121				
ML44									135		126			143	68			
ML45									163		130			177	88			
ML46			10			32			162	159	49			87	71			
ML47				49					161	93	186			155	67			
ML48						45			157	114	166	120		132				
ML49									108		117			104				
ML50									115					69				
ML51									107					104	69			
ML52									112					96	100		97	
ML53			71		57			142	117		117			101				
ML54			81		43			134	124		138			119				
ML55					47			141	131		171			98				
ML56					39			147	144		154							
ML57					36				137		155							
ML58					37				139		155							
ML59					32				130		168							
ML60					44				144		147							
ML61					35						137			131				
ML62					33						137							
ML63					50	185			120		168							
ML64					12	130			137		139							
ML65					3	159			138									
ML66																		
ML67																		
ML68																		
ML69					12													
ML70					39													
ML71					38			109						56		45	91	
ML72					51			123						71		49	70	
ML73					76			106						49			71	
ML74					60			85			47			53			74	
ML75	7				97			65			49			47		126	68	
ML76								74			49			40			62	
ML77	53	67						82			81			74			69	
ML78	22				54	67		115			49			39			77	
ML79	14	59			44	53		103			23						74	
ML80	12	59			45	61		100									75	
ML81	11	88			42	56		110									84	
ML82	11	58			39	64		106			38						81	
ML83	12	58			56	65		119			32							
ML84			68					122										
ML85			68			83		129		112	42						86	
ML86			48	136		67		117		110	33						48	
ML87			52	102		61		112		120	41						62	
ML88			60	107		61		121		143	38						53	
ML89			52	98		89		117		129	43						67	
ML90	21			125				111		119	41						96	
ML91	29			119				122		122								
ML92		82						108		109								
ML93		89						110		134	80							
ML94		86						108		133								
ML95		101						115		136								
ML96		126						122		147								
ML97								116		110								
ML98		128						116		116								
ML99		95						105	76	124								
ML100								118		31								
ML101								120		31								
ML102								113		27								
ML103								118		32								
ML104								111		23								
ML105							77	107		29								
ML106								109		22								
ML107								104		29								
ML108								91		104								
ML109								103		97								
ML110		84						102		40								
ML111		79						88		40							101	
ML112								141		40								
TL 1							124	76		145		103						
TL 2								135		126		143	68					
TL 3							163	130		177		87	88					
TL 4		10			32		162	131	159	49			71					
TL 5			49				161	155	93	186		155	67					
TL 6					45		157	142	114	166	120		132					77

	C	EC	EC	EM1	CM2	EN	CP	EPCW	CPM	EZ	D	DD	DDN	DN	EPC	GR	JTRV	LP	LPE
ML 1																			151
ML 2																			180
ML 3		52	107			-10		48											140
ML 4		48	122			34		111				32	50						191
ML 5		31	196			-7		85				31	-20						175
ML 6		30	125			53		94				140	102	126					178
ML 7	77	89	41	-8		79		-30			85	9	45	125					167
ML 8	26	27	27	-34		102		47			-5		79						198
ML 9	50	57	38	13		53		125	124		29		84	70					190
ML10		45	122	66				173				21		11					164
ML11		54	61	39		83		151				45		64					175
ML12		53	77	32		92		151				96	86						147
ML13		67	103	70		42		41				65							139
ML14		38		88		44		90				85							189
ML15		71		129		48		81	143			55							116
ML16		58		57		46			120			38							108
ML17		95			26	47						122							117
ML18		89			59	63						178							174
ML19		79			40	45		124				148							197
ML20		100		49		79		132				16							184
ML21		147		61		150		127						86					210
ML22						45		123								173			234
ML23						93		76				80							172
ML24						106		96				49							106
ML25								104											239
ML26																			113
ML27								114											163
ML28						116		154											105
ML29						17		114											109
ML30						79		130			19	77			97				80
ML31						68		111				32							145
ML32						41		137				44							164
ML33								52				-15							169
ML34				82				75											125
ML35				-2				61			10								128
ML36	115	-3		45		229		162		42	-39	195		117	105	164	173	223	
ML37		49	44	39		43		88	110			174		69	115	153	138	139	
ML38		4	12	47		21		56	86	43		98		-6	109	139	62	117	
ML39		-23	10	108		-73		127	101	37	25	81		34	32	149	128	51	
ML40		20	78	58		97		84		99					62	154	121	119	
ML41		114	78	80				197							74		150	119	
ML42			243	82				171							107	147	135	128	
ML43				84	65			169		59					87	77	157		
ML44			117	106	117			175	127	108						84	138		
ML45		168	41	81	90	143		69	75	81		47					176		
ML46			66	79	64	107	60	91				93			66		312	264	
ML47					129	101						81					241		
ML48			141						155					172			156		
ML49								117											
ML50								103											
ML51				109				94											
ML52				103				102											
ML53				111				123											
ML54				116				101											
ML55				87				83											
ML56				59				99											
ML57				41				95											
ML58	49			63				100			42								
ML59				90				103			1						89		
ML60				11				85			24						163		
ML61				62				124			46						104		
ML62				46				120							256	150			
ML63				75				119							189	191			
ML64				158				133							236	162			
ML65				113				132							134	190			
ML66																166			
ML67								105							125	129			
ML68															96				
ML69																			
ML70																			
ML71																			
ML72																			151
ML73	52	107			-10			48											180
ML74	48	122			34			111				32	50						140
ML75	31	196			-7			85				31	-20						191
ML76	30	125			53			94				140	102	126					175
ML77	89	41	-8		79			-30			85	9	45	125					178
ML78	27	27	-34		102			47			-5		79						167
ML79	57	38	13		53			125	124		29		84	70					198
ML80	45	122	66					173				21		11					190
ML81	54	61	39		83			151				45		64					164
ML82	53	77	32		92			151				96	86						175
ML83	67	103	70		42			41				65							147
ML84	38		88		44			90				85							139
ML85	71		129		48			81	143			55							189
ML86	58		57		46				120			38							116
ML87	95			26	47							122							108
ML88	89			59	63							178							117
ML89	79			40	45			124				148							174
ML90	100		49		79			132				16							197
ML91	147		61		150			127						86					184
ML92					45			123							173				210
ML93					93			76				80							234
ML94					106			96				49							172
ML95								104											106
ML96																			239
ML97								114											113
ML98								154											163
ML99					17			114											105
ML100					79			130			19	77			97				109
ML101					68			111				32							80
ML102					41			137				44							164
ML103								52				-15							169
ML104			82					75											125
ML105			-2					61		10									128
ML106	-3		45		229			162		42	-39	195		117	105	164	173	223	
ML107	49	44	39		43			88	110			174		69	115	153	138	139	
ML108	4	12	47		21			56	86	43		98		-6	109	139	62	117	
ML109	-23	10	108		-73			127	101	37	25	81		34	32	149	128	51	
ML110	20	78	58		97			84		99					62	154	121	119	
ML111	114	78	80					197							74		150	119	
ML112		243	82					171							107	147	135	128	
ML 1			84	65				169		59					87	77	157		
ML 2		117	106	117															

	LPT	MB	MC	MDE	MDC	MV	MVR	U	UC	DEE	OP	UV	PC	PEJ	PCS	PEU	PM	PVA	PVB
AL 1										49	94			132	60				
AL 2											58			140					
AL 3											25			54	111				
AL 4					39				18		78			107	65				
AL 5									88	11	33			80	69				
AL 6		53		83				166	8	110	130			63	81				
AL 7					95			1	52		100				79				
AL 8		69			58			-26	39	0	32				100				
AL 9								18	127	86	106				139				
AL10				174				51	32	37	22								
AL11									22										
AL12		83	50							23					79			116	
AL13						198				42					128			93	
AL14		232													110			89	
AL15															115			102	
AL16									38									116	
AL17									62									149	
AL18				111					101									140	
AL19				210					69			46		41				141	
AL20				102		170			134					136				85	158
AL21						154								135					171
AL22						143								93				117	184
AL23						204								80					186
AL24						175			38					44				206	270
AL25						180												149	
AL26						173			56									157	166
AL27						177												114	120
AL28			159			190			120									113	23
AL29			101			127			57										65
AL30			130			126	104		87									134	37
AL31			62			153	68	13										145	49
AL32			73			92	93											96	46
AL33		108	110				143	33										150	95
AL34			108				155	0										52	101
AL35			94				156	33							186			77	115
AL36			139				141	48	127						137			162	155
AL37			91	53			139	18		46	14		114	120	102			113	171
AL38			84	16			83			17	28		96		145			148	286
AL39			53				145	21	122		121		114					39	249
AL40			29				139	-4	115				127		106			110	
AL41			88			153	148	24				168	128		182			101	
AL42			90			95	147		165			180	149		140			136	
AL43			85				125	142	157			160	166		195				
AL44			103	158		165	109	159				126	99	134		54		113	
AL45			73	130		155			4			104	135			72			67
AL46			108	141		111			92			71	169	177				174	
AL47			133						99			177	117			128			
AL48			113					119					122						
AL49			104						117				147						
AL50			110						128				135						
AL51			89						88				102						
AL52							164		62				108						
AL53							161		128				126						
AL54						127	144	222	96				107						
AL55						111	138	50	125				107						
AL56							185	22	105										
AL57							189		91										
AL58							214		131				80						
AL59							161	12	154				100						
AL60							156	16	99				133						
AL61							232	43	147										
AL62							151	10	127										
AL63							147		35				1						
AL64							209												
AL65							194		99		250								
AL66									-4										
AL67																			
AL68																			
AL69																			
AL70																			
AL71									49	94			132	60					
AL72										58			140						
AL73										25			54	111					
AL74				39				18		78			107	65					
AL75								88	11	33			80	69					
AL76		53		83				166	8	110	130			63	81				
AL77								1	52		100				79				
AL78		69			95			-26	39	0	32				100				
AL79					58			18	127	86	106				139				
AL80								51	32	37	22								
AL81				174					22										
AL82		83	50							23					79			116	
AL83						198				42					128			93	
AL84		232													110			89	
AL85															115			102	
AL86									38									116	
AL87									62									149	
AL88				111					101									140	
AL89				210					69			46		41				141	
AL90				102		170			134					136				85	158
AL91						154								135					171
AL92						143								93				117	184
AL93						204								80					186
AL94						175			38					44				206	270
AL95						180												149	
AL96						173			56									157	166
AL97						177												114	120
AL98			159			190			120									113	23
AL99			101			127			57										65
AL100			130			126	104		87									134	37
AL101			62			153	68	13										145	49
AL102			73			92	93											96	46
AL103		108	110				143	33										150	95
AL104			108				155	0										52	101
AL105			94				156	33						186				77	115
AL106			139				141	48	127					137				162	155
AL107			91	53			139	18		46	14		114	120	102			113	171
AL108			84	16			83			17	28		96		145			148	286
AL109			53				145	21	122		121		114					39	249
AL110			29				139	-4	115				127		106			110	
AL111			88			153	148	24				168	128		182			101	
AL112			90			95	147		165			180	149		140			136	
AL 1			85				125	142	157			160	166		195				137
AL 2		103	158			165	109	159				126	99	134		54		113	
AL 3			73	130		155			4			104	135			72			67
AL 4			108	141		111			92			71	1						

	PVP	PZO	QAL	QAL1	QB	QC	QL	QP	QPI	QPV	QPV8	QPV8	QS	QST	QTAL	QTC	QTV8	S	SLM
ML 1			81	120			135	136	75			96							
ML 2			52	116			138		106			52							
ML 3		93	52	136			128		145			80							
ML 4			68	136			198		88			66							
ML 5		83	55	151			163		201			92							
ML 6			55	136					158			79						104	
ML 7			70	143			84					69							
ML 8			78	133			159	129	135			29							
ML 9			72	133			205	151	150										
ML10			57	121			160	142	198										
ML11			100	148			173		180			116						75	
ML12			72	143										149				148	
ML13				154					184			91							48
ML14			142	157				189	179			98							
ML15			154	173			267		107			113							
ML16			117	182			110	146	126			117							
ML17			143	186			223	175	142			90							
ML18		94	146	167				168	119			91							
ML19		67	204	165					125			113							
ML20		94	163	146					119			175							
ML21		118	156	193					178			145							
ML22			234	214					103			131							
ML23		94	275	174					138			117							
ML24			201	164					176			81			297				
ML25			175	165					129			90			238				76
ML26		65	166	135			161		209			77			252				121
ML27	86		135	129			175	164	136			79		200	222				
ML28		112	120	125			93	120	122			56		180	179		86		
ML29			98	169	130		132	103	115			99			89				
ML30			62	155	94	112	180	125	187			87			108		137		38
ML31			61	179	155	72	131	104	189			118	242	97	80				1
ML32			54	176	161	84	149	67	196			176	272	111	101				
ML33	107		88	163	247	110	155	90	150		135	126	312	104					
ML34			80	82	136	100	96	86	86		188	77		77	181			-17	66
ML35			77	115		65	114	108	133			106		122	157			32	34
ML36			109	186		134	187	211	245			174		152	188			10	143
ML37			135	137		100	144	131	185			206		152	247				
ML38			103	106		73	132	94	271			111		114	219				-11
ML39			118	131		141	120	89	141						177				48
ML40			96	123				67							222				
ML41			90	142		74		109							251			13	44
ML42			86	136		73	142	98						81	252				76
ML43	137		96	117		97	77	138	146		149	80		89	103				
ML44	97		103	144	123		137	78	180	170		133		80	73				
ML45		166	94	115	112		92	181	97	79		138		187	103				8
ML46			118	156	208			263	235					73					65
ML47			122	172	164	170		111				226		224	122				
ML48			248	144	237			141		411		141		90	172	274			
ML49			112	230		103		111						76	171				
ML50		168	114	191										70					
ML51		209	113	211										81					
ML52			102	183										72					
ML53			126	262										105					
ML54		191	108	246										88					
ML55			107	295										83					
ML56			102	241										74					
ML57			95	297															
ML58			84	320															
ML59			72	293															
ML60			58	242															
ML61			113	269										190				46	
ML62			145											161					
ML63			154											197	187				
ML64			155					211						148					
ML65			153					174						199					
ML66			145					160						209					
ML67			128					106						191					
ML68			131					111											
ML69			104				117	82			114								
ML70			98				101	85											
ML71		81	120			135	136	75				96							
ML72		52	116			138		106				52							
ML73	93	52	136			128		145				80							
ML74		68	136			198		88				66							
ML75	83	55	151			163		201				92							
ML76		55	136					158				79							
ML77		70	143			84						69					104		
ML78		78	133			159	129	135				29							
ML79		72	133			205	151	150											
ML80		57	121			160	142	198											
ML81		100	148			173		180				116						75	
ML82		72	143											149				148	
ML83			154					184				91							48
ML84		142	157					179				98							
ML85		154	173			267		107				113							
ML86		117	182			110	146	126				117							
ML87		143	186			223	175	142				90							
ML88	94	146	167				168	119				91							
ML89	67	204	165					125				113							
ML90	94	163	146					119				175							
ML91	118	156	193					178				145							
ML92		234	214					103				131							
ML93	94	275	174					138				117							
ML94		201	164					176				81			297				
ML95		175	165					129				90			238				76
ML96	65	166	135			161		209				77			252				121
ML97		135	129			175	164	136				79		200	222				
ML98	112	120	125			93	120	122				56		180	179		86		
ML99		98	169	130		132	103	115				99			89				
ML100		62	155	94	112	180	125	187				87			108		137		38
ML101		61	179	155	72	131	104	189				118	242	97	80				1
ML102		54	176	161	84	149	67	196				176	272	111	101				
ML103		88	163	247	110	155	90	150		135	126	312	104						
ML104		80	82	136	100	96	86	86		168	77		77	181				-17	66
ML105		77	115		65	114	108	133				106		122	157			32	34
ML106		109	186		134	187	211	245				174		152	188			10	143
ML107		135	137		100	144	131	185				206		152	247				48
ML108		103	106		73	132	94	271				111		114	219				-11
ML109		118	131		141	120	89	141											

	SRA	SU	Tb	TBR	TC	TD	TI	TL	TP	TR	TR1	TS	TT	TTC	TTS	TV	T#	TWS
ML 1						79			252						137		91	171
ML 2						87			266						148		124	157
ML 3						141			236						95			158
ML 4						94			174			113			101			150
ML 5		-8				183			148			86			78		172	132
ML 6									202			99			77			136
ML 7		131	172				184		220			119			154			169
ML 8		46				141			254			103			88			181
ML 9		72	144			137	163		225			106						172
ML10		19	124			101	152		214									174
ML11		58	211			78	137		243									226
ML12		33	124			118	168		218			83						187
ML13		41	169			123	179		262			99						
ML14			159						237									159
ML15			166				184		345		277	118						130
ML16			98	228			108		256		294	117						123
ML17			189	277			155		256		280	147						136
ML18			150	201			182		215		306	117						178
ML19			177	250			237		266		312	166						244
ML20		60		241					205		235	143						
ML21		57		239					267		231							
ML22			170						255		236							
ML23			220						281		312	303						
ML24			180						251		304							
ML25			183						228		236							
ML26			244						250		265							
ML27									216		178							
ML28			199						196		191							
ML29			163						179	150	207							
ML30									198		113							
ML31									217		134							
ML32									173		89							
ML33									230		116							
ML34									198		42							
ML35								161	225		115							
ML36	119								195		81							
ML37	46								216		90							
ML38	16								171		232							
ML39	9								220		206							
ML40			114						226		139							
ML41			182						169		101						223	
ML42									225		124		239					
ML43								190	156		268		250					
ML44									232		196		233	154				
ML45								253	237		249		181	188				
ML46			50			155			217	215	248	207		145				
ML47				140					251	296	197	267	293	163				
ML48						80			251	241	246	123	244	248				
ML49									239		253			231				
ML50									208					185				
ML51									210					122				
ML52									183					180	140			
ML53			187		142			255	267		250			187	183		182	
ML54			109		104			239	218		239			247				
ML55					118			303	275		283			183				
ML56					96			290	252		247			186				
ML57					109				281		305							
ML58					94				228		238							
ML59					66				242		272							
ML60					90				195		192							
ML61					118						254		273					
ML62					96						241							
ML63					139	291			249		297							
ML64					27	242			246		231							
ML65					59	319			285									
ML66																		
ML67																		
ML68																		
ML69					-11													
ML70					61													
ML71					79			252						137		91	171	
ML72					87			266						148		124	157	
ML73					141			236						95			158	
ML74					94			174			113			101			150	
ML75		-8			183			148			86			78		172	132	
ML76								202			99			77			136	
ML77	131	172				184		220			119			154			169	
ML78	46				141			254			103			88			181	
ML79	72	144			137	163		225			106						172	
ML80	19	124			101	152		214									174	
ML81	58	211			78	137		243									226	
ML82	33	124			118	168		218			83						187	
ML83	41	169			123	179		262			99							
ML84		159						237										159
ML85		166				184		345		277	118						130	
ML86		98	228			108		256		294	117						123	
ML87		189	277			155		256		280	147						136	
ML88		150	201			182		215		306	117						178	
ML89		177	250			237		266		312	166						244	
ML90	60		241					205		235	143							
ML91	57		239					267		231								
ML92		170						255		236								
ML93		220						281		312	303							
ML94		180						251		304								
ML95		183						228		236								
ML96		244						250		265								
ML97								216		178								
ML98		199						196		191								
ML99		163						179	150	207								
ML100								198		113								
ML101								217		134								
ML102								173		89								
ML103								230		116								
ML104								198		42								
ML105						161		225		115								
ML106								195		81								
ML107								216		90								
ML108								171		232								
ML109								220		206								
ML110		114						226		139								
ML111		182						169		101							223	
ML112								225		124		239						
TL 1							190		156		268			250				
TL 2								232		196		233	154					
TL 3							253	237		249		181	188					
TL 4		50			155			217	215	248	207		145					
TL 5			140					251	296	197	267	293	163					151
TL 6					80			251	241	246	123	244	248					

	C	CB	CC	CM1	CM2	CM	CP	CPEN	CPM	CPZ	D	DD	DDN	DN	EPE	GR	JTRV	LP	LPE
ML 1																			
ML 2																	169		
ML 3		98	180			24		93									231		
ML 4		87	150			64		232				31	58				316		
ML 5		68	220			40		74				25	39				287		
ML 6		101	159			82		150				247	154	188			337		
ML 7	106	103	89	57		161		58			85	48	105	159			245		
ML 8	60	54	53	32		101		32			13		66				242		
ML 9	73	83	122	29		57		207	230		21		73	28			253		
ML10		70	180	77				183				33		34			255		
ML11		57	120	78		78		120				55		63			236		
ML12		87	118	87		78		109				74	107				232		
ML13		70	148	124		84		89				53					217		
ML14		87		124		44		105				58					189		
ML15		53		177		32		126	244			51					240		
ML16		70		63		54		191				54					188		
ML17		88			38	57						160					224		
ML18		94			39	54						132					227		
ML19		87			53	40		130				216					253		
ML20		163		43		67		72				40					246		
ML21		216		94		136		178						128			232		
ML22						46		106								331	255		
ML23						72		72				67					250		
ML24						124		86				34					287	209	
ML25								102									126	205	
ML26																	379	145	
ML27								92									160		
ML28						93		119									217	221	
ML29						38		106									148	225	
ML30						88		125			58	89			233	268	230		
ML31						80		151				47				128	230	118	
ML32						53		158				41					236	225	
ML33								90				77					266	407	
ML34				208				79								196	186	234	
ML35				69				47			61					246	296	262	
ML36	262	41		131		148		100		74	59	190		175	123	345	244	300	
ML37		86	35	70		80		221	202			141		85	244	362	216	249	
ML38		40	58	71		51		180	162	136		92		159	293	326	209	198	
ML39		43	62	239		92		169	212	47	39	205		83	228	381	200	162	
ML40		72	112	123		155		74		169					254	366	209	239	
ML41		133	88	129				194							229		206	218	
ML42			404	166				151							228	362	186	284	
ML43				159	125			214		154					251	167	206		
ML44			123	122	164			259	163	151						182	236		
ML45		249	65	99	130	147		50	135	138		30					300		
ML46			41	85	44	156	44	81				84			54		313	275	
ML47					116	77						44					288		
ML48			166						242					260			178		
ML49								159											
ML50								125											
ML51				253				139											
ML52				163				149											
ML53				213				161											
ML54				182				161											
ML55				135				132											
ML56				113				189											
ML57				81				166											
ML58	37			148				193			22								
ML59				221				207			32					145			
ML60				42				195			69					266			
ML61				27				168			31					140			
ML62				44				183							374	255			
ML63				49				153							309	294			
ML64				184				166							348	255			
ML65				105				159							230	314			
ML66																303			
ML67								209							182	247			
ML68															201				
ML69																			
ML70																			
ML71																			
ML72																	169		
ML73	98	180			24			93									231		
ML74	87	150			64			232				31	58				316		
ML75	68	220			40			74				25	39				287		
ML76	101	159			82			150				247	154	188			337		
ML77	103	89	57		161			58		85	48	105	159				245		
ML78	54	53	32		101			32		13		66					242		
ML79	83	122	29		57			207	230	21		73		28			253		
ML80	70	180	77					183				33		34			255		
ML81	57	120	78		78			120				55		63			236		
ML82	87	118	87		78			109				74	107				232		
ML83	70	148	124		84			89				53					217		
ML84	87		124		44			105				58					189		
ML85	53		177		32			126	244			51					240		
ML86	70		63		54			191				54					188		
ML87	88			38	57							160					224		
ML88	94			39	54							132					227		
ML89	87			53	40			130				216					253		
ML90	163		43		67			72				40					246		
ML91	216		94		136			178						128			232		
ML92					46			106								331	255		
ML93					72			72				67					250		
ML94					124			86				34					287	209	
ML95								102									126	205	
ML96																	379	145	
ML97								92									160		
ML98					93			119									217	221	
ML99					38			106									148	225	
ML100					88			125		58	89			233	268	230			
ML101					80			151			47				128	230	118		
ML102					53			158			41					236	225		
ML103								90			77					266	407		
ML104				208				79								196	186	234	
ML105				69				47			61					246	296	262	
ML106	41		131		148			100		74	59	190		175	123	345	244	300	
ML107	86	35	70		80			221	202			141		85	244	362	216	249	
ML108	40	58	71		51			180	162	136		92		159	293	326	209	198	
ML109	43	62	239		92			169	212	47	39	205		83	228	381	200	162	
ML110	72	112	123		155			74		169					254	366	209	239	
ML111	133	88	129					194							229		206	218	
ML112		404	166					151											

	LEP	PH	PC	MDE	MMC	MV	MVR	U	OC	DEE	OP	OV	PE	PEU	PES	PEU	PM	PVA	PVB
ML 1										69	125			184	161				
ML 2											97			200					
ML 3											74			144	212				
ML 4					50				32		103			177	129				
ML 5									33	38	76			142	147				
ML 6		74		130				153	58	170	184			137	148				
ML 7					181			57	129		98				150				
ML 8		71			65			21	69	38	77				152				
ML 9								24	57	56	89				184				
ML10				199				66	55	90	40								
ML11									33										
ML12		82	96							66					157			117	
ML13						282				33					212			119	
ML14		296													180			94	
ML15															176			118	
ML16									27									123	
ML17									83									131	
ML18				105					145									121	
ML19				204					68		118			36				136	
ML20				129		243			194					95				94	206
ML21						251								103					213
ML22						257								74				119	155
ML23						257								84					209
ML24						257			46					121				192	313
ML25						262												140	
ML26						297			41									126	197
ML27						310												118	163
ML28			250			276			222									105	132
ML29			232			304			37										97
ML30			287			306	257		167									134	154
ML31			163			500	206	81										164	172
ML32			169			248	275											183	168
ML33		161	231				395	53										193	167
ML34			210				377	63										83	201
ML35			239				347	69							318			108	230
ML36			296				337	54	70						189			199	240
ML37			145	61			288	47		75	77		250	151	139			170	258
ML38			158	145			193			103	104		172		205			222	283
ML39			125				376	26	304				151					187	240
ML40			108				396	17	142				195		168			86	
ML41			221			297	452	41				499	193		235			136	
ML42			179			269	642		444				530	226	207			162	
ML43			163				214	356	656				525	208	236				
ML44			152	252		453	233	361					314	254	198		76	84	
ML45			122	160		368			36				218	182		113			113
ML46			159	128		272			55				48	211	176			156	
ML47			158						91				304	187		177			
ML48			162					209						175					
ML49			138						146					169					
ML50			130						131					198					
ML51			115						107					172					
ML52							258		105					163					
ML53							206		149					124					
ML54						180	190	291	147					149					
ML55						219	198	89	159					128					
ML56							324	37	167										
ML57							283		93										
ML58							331		209				155						
ML59							304	31	303				184						
ML60							325	41	239				301						
ML61							317	42	262										
ML62							223	52	186										
ML63							244		96					28					
ML64							293												
ML65							302		177		329								
ML66									17										
ML67																			
ML68																			
ML69																			
ML70																			
ML71									69	125			184	161					
ML72										97			200						
ML73										74			144	212					
ML74				50				32		103			177	129					
ML75								33	38	76			142	147					
ML76		74		130				153	58	170	184		137	148					
ML77					181			57	129		98			150					
ML78		71			65			21	69	38	77			152					
ML79								24	57	56	89			184					
ML80				199				66	55	90	40								
ML81									33										
ML82		82	96							66					157			117	
ML83						282				33					212			119	
ML84		296													180			94	
ML85															176			118	
ML86									27									123	
ML87									83									131	
ML88				105					145									121	
ML89				204					68		118			36				136	
ML90				129		243			194					95				94	206
ML91						251								103					213
ML92						257								74				119	155
ML93						257								84					209
ML94						257			46					121				192	313
ML95						262												140	
ML96						297			41									126	197
ML97						310												118	163
ML98			250			276			222									105	132
ML99			232			304			37										97
ML100			287			306	257		167									134	154
ML101			163			500	206	81										164	172
ML102			169			248	275											183	168
ML103		161	231				395	53										193	167
ML104			210				377	63										83	201
ML105			239				347	69							318			108	230
ML106			296				337	54	70						189			199	240
ML107			145	61			288	47		75	77		250	151	139			170	258
ML108			158	145			193			103	104		172		205			222	283
ML109			125				376	26	304				151					187	240
ML110			108				396	17	142				195		168			86	
ML111			221			297	452	41				499	193		235			136	
ML112			179			269	642		444				530	226	207			162	
TL 1			163				214	356	656				525	208					
TL 2			152	252		453	233	361					314	254	198		76	84	
TL 3			122	160		368			36				218	182		113		11	

	PVP	PZU	QAL	QAL1	GB	GC	QL	QP	QP1	QPV	QPV8	QPV8	QS	QST	QTAL	QTC	QTV8	S	SL*
ML 1			106	175			152	178	119				132						
ML 2			96	174			171		186				104						
ML 3		197	103	188			159		188				125						
ML 4			102	198			154		137				102						
ML 5		175	106	202			132		221				151						
ML 6			85	202					227				172					184	
ML 7			112	165			125						108						
ML 8			120	175			141	174	149				26						
ML 9			86	184			160	151	140										
ML10			98	169			183	157	192										
ML11			136	196			176		196				152					144	
ML12			121	191										329				172	
ML13				233					259				123						33
ML14			196	208				203	220				132						
ML15			167	225			290		121				96						
ML16			168	216			160	130	122				137						
ML17			175	248			284	226	138				112						
ML18		115	209	232				166	140				117						
ML19		90	233	244					163				163						
ML20		98	210	211					175				169						
ML21		124	202	223					196				151						
ML22			245	214					116				154						
ML23		108	274	244					110				142						
ML24			276	256					228				110		337				
ML25			233	269					168				127		354			110	
ML26		43	209	239			141		169				115		316			192	
ML27	128		220	266			174	175	173				126	269	285				
ML28		124	198	216			142	178	201				124	252	369		99		
ML29			208	248	267		150	156	212				150		161				
ML30			141	234	189	224	303	155	315				138		138		148	41	
ML31			159	257	268	200	167	145	270				154	248	163	130		25	
ML32			159	260	231	256	129	101	255				194	250	206	137			
ML33	184		182	235	251	246	177	143	154		208		167	265	236				
ML34			152	156	195	235	156	122	211		184		113		146	284		22	67
ML35			146	238		156	202	131	250				167		193	214		31	86
ML36			230	228		336	290	162	294				164		234	252		17	77
ML37			268	224		181	286	125	264				207		264	329			
ML38			250	232		156	305	118	249				180		168	309			66
ML39			204	230		290	297	122	184							255			66
ML40			175	229				107								274		40	53
ML41			163	226		201		175								304			161
ML42			187	240		206	252	165						177	324			229	
ML43	444		175	181		219	150	153	184		222	133		149	133				
ML44	133		226	199	124		235	88	216	163		152		154	106				
ML45		186	247	151	168		87	161	114	173		141		111	149				29
ML46			232	141	221			266	219					126					65
ML47			215	174	252	239		207					166		216	167			
ML48			387	183	260			198		268		163		136	255	270			
ML49			158	304		121		150						127	222				
ML50		345	161	305										126					
ML51		324	164	338										140					
ML52			161	317										124					
ML53			148	304										150					
ML54		390	137	343										139					
ML55			128	302										118					
ML56			149	320										82					
ML57			130	307															
ML58			110	329															
ML59			130	329															
ML60			119	350															
ML61			145	290														32	
ML62			200										248						
ML63			194										238						
ML64			195					271					267	225					
ML65			178					220					215						
ML66			185					221					276						
ML67			185					171					284						
ML68			180					164					300						
ML69			177				179	171			223								
ML70			195				185	169											
ML71		106	175			152	178	119				132							
ML72		96	174			171		186				104							
ML73	197	103	188			159		188				125							
ML74		102	198			154		137				102							
ML75	175	106	202			132		221				151							
ML76		85	202					227				172					184		
ML77		112	165			125						108							
ML78		120	175			141	174	149				26							
ML79		86	184			160	151	140											
ML80		98	169			183	157	192											
ML81		136	196			176		196									144		
ML82		121	191														172		
ML83			233					259				123		329				33	
ML84		196	208				203	220				132							
ML85		167	225			290		121				96							
ML86		168	216			160	130	122				137							
ML87		175	248			284	226	138				112							
ML88	115	209	232				166	140				117							
ML89	90	233	244					163				163							
ML90	98	210	211					175				169							
ML91	124	202	223					196				151							
ML92		245	214					116				154							
ML93	108	274	244					110				142							
ML94		276	256					228				110		337					
ML95		233	269					168				127		354				110	
ML96	43	209	239			141		169				115		316				192	
ML97		220	266			174	175	173				126	269	285					
ML98	124	198	216			142	178	201				124	252	369		99			
ML99		208	248	267		150	156	212				150		161					
ML100		141	234	189	224	303	155	315				138		138		148		41	
ML101		159	257	268	200	167	145	270				154	248	163	130			25	
ML102		159	260	231	256	129	101	255				194	250	206	137				
ML103		182	235	251	246	177	143	154		208		167	265	236					
ML104		152	156	195	235	156	122	211		184		113		146	284		22	67	
ML105		146	238		156	202	131	250				167		193	214		31	86	
ML106		230	228		336	290	162	294				164		234	252		17	77	140
ML107		268	224		181	286	125	264				207		264	329			32	
ML108		250	232		156														

	SPH	SU	TH	TBR	TC	TD	TI	TL	TP	TR	TR1	TS	TI	TIC	TTS	TV	Tw	TWS
ML 1						113			286						194		109	232
ML 2						126			287						201		148	220
ML 3						186			290						148			223
ML 4						140			255			138			152			223
ML 5		39				289			177			151			151		314	213
ML 6									184			156			128			174
ML 7		161	195				183		189			269			227			192
ML 8		66				150			276			171			127			222
ML 9		49	191			153	180		257			96						222
ML10		45	194			149	204		259									248
ML11		35	245			148	193		275									252
ML12		46	191			154	200		285			109						249
ML13		38	203			215	207		318			118						
ML14			213						332									251
ML15			215				234		341		287	167						174
ML16			165	348			189		323		326	136						186
ML17			184	293			191		293		323	177						162
ML18			223	273			213		297		367	174						225
ML19			259	255			287		320		308	184						284
ML20		85		398					299		315	275						
ML21		129		347					341		314							
ML22			256						332		306							
ML23			259						346		362	293						
ML24			238						315		346							
ML25			254						312		336							
ML26			293						332		356							
ML27									338		295							
ML28			373						346		333							
ML29			301						320	230	341							
ML30									340		135							
ML31									339		133							
ML32									349		123							
ML33									341		161							
ML34									322		96							
ML35								239	315		94							
ML36	140								312		83							
ML37	32								283		125							
ML38	33								239		294							
ML39	72								277		288							
ML40			211						313		179							
ML41			210						243		181						288	
ML42									373		165		408					
ML43								298	217		280		302					
ML44									309		261		341	261				
ML45								339	298		373		257	318				
ML46			31			136		306	379	325	167			224				
ML47				159				325	354	271	328		316	216				
ML48						109		302	373	315	331	294		281				
ML49									388		348			227	291			
ML50									341					236				
ML51									342					357	252			
ML52									337					340	365		337	
ML53			208		139			352	376		433			329				
ML54			232		120			383	328		320			316				
ML55					154			316	307		322			240				
ML56					138			280	329		286							
ML57					128				332		339							
ML58					134				334		311							
ML59					129				333		343							
ML60					170				350		352							
ML61					148						285		285					
ML62					117						294							
ML63					170	368			326		348							
ML64					43	271			331		299							
ML65					23	366			317									
ML66																		
ML67																		
ML68																		
ML69					38													
ML70					125													
ML71					113			286						194		109	232	
ML72					126			287						201		148	220	
ML73					186			290						148			223	
ML74					140			255			138			152			223	
ML75	39				289			177			151			151		314	213	
ML76								184			156			128			174	
ML77	161	195				183		189			269			227			192	
ML78	66				150			276			171			127			222	
ML79	49	191			153	180		257			96						222	
ML80	45	194			149	204		259									248	
ML81	35	245			148	193		275									252	
ML82	46	191			154	200		285			109						249	
ML83	38	203			215	207		318			118							
ML84		213						332										251
ML85		215				234		341		287	167						174	
ML86		165	348			189		323		326	136						186	
ML87		184	293			191		293		323	177						162	
ML88		223	273			213		297		367	174						225	
ML89		259	255			287		320		308	184						284	
ML90	85		398					299		315	275							
ML91	129		347					341		314								
ML92		256						332		306								
ML93		259						346		362	293							
ML94		238						315		346								
ML95		254						312		336								
ML96		293						332		356								
ML97								338		295								
ML98		373						346		333								
ML99		301						320	230	341								
ML100								340		135								
ML101								339		133								
ML102								349		123								
ML103								341		161								
ML104								322		96								
ML105							239	315		94								
ML106								312		83								
ML107								283		125								
ML108								239		294								
ML109								277		286								
ML110		211						313		179								
ML111		210						243		181						288		
ML112								373		165		408						
TL 1							298	217		280		302						
TL 2								309		261		341	261					
TL 3							339	298		373		257	318					
TL 4		31			136			306	379	325	167			224				
TL 5			159					325	354	271	328		316	216				232
TL 6					109			302	373	315	331	294		281				

	C	EB	EC	EM	CM2	EN	CP	EPCW	EPM	EZ	D	DD	DDN	DN	EPC	GR	JTRV	LP	LPC
ML 1																			
ML 2																	305		
ML 3		171	218			-127		186									199		
ML 4		186	277			147		209				370	256				224		
ML 5		110	257			-76		340				384	-161				372		
ML 6		55	266			347		200				226	245	230			236		
ML 7	238	258	121	-72		163		1820			288	-39	124	332			310		
ML 8	176	189	192	-730		339		-452			-456		411				257		
ML 9	231	217	169	143		343		322	290		6614		395	917			216		
ML10		276	251	310				274				271		253			195		
ML11		127	195	257		343		276				244		347			167		
ML12		254	226	161		235		310				315	235				197		
ML13		418	261	237		361		182				432					218		
ML14		163		271		336		509				269					234		
ML15		458		341		763		259	278			468					238		
ML16		490		354		435			265			318					203		
ML17		487			181	382						435					230		
ML18		453			552	455						268					190		
ML19		562			312	579		428				180					202		
ML20		303		342		296		471				0					215		
ML21		325		266		249		326						256			221		
ML22						238		324								228	221		
ML23						352		393				246					206		
ML24						289		392				367					212		
ML25								346									210		
ML26																	234		
ML27								384									200		
ML28						358		412									215		
ML29						103		398									263		
ML30						267		427			145	406			160		233		
ML31						416		315				267					268	537	
ML32						352		337				-342					281	214	
ML33								252				-210					259	246	
ML34				156				226								198	139	149	
ML35				-74				299			69						187	331	
ML36	249	-20		42		424		540		200	-290	339		209	272	223	285	280	
ML37		437	456	234		299		331	218			463		261	180	201	233	256	
ML38		32	77	202		613		239	200	145		377		-6	237	217	124	258	
ML39		-261	57	185		-699		267	173	157	197	185		133	95	223	272	213	
ML40		103	208	155		155		343		187					131	245	210	298	
ML41		255	335	243				257							140		236	287	
ML42			200	153				360							196	261	211	231	
ML43				166		451		218		159					200	295	194		
ML44			367	309	364			170	299	286						135	246		
ML45		235	275	300	252	303		638	228	193		718					249		
ML46			678	344	455	255	440	456				370			300		312	371	
ML47					475	439						680					344		
ML48			296						213					234			295		
ML49									233										
ML50									249										
ML51				176					199										
ML52				202					227										
ML53				230					295										
ML54				256					234										
ML55				253					237										
ML56				211					209										
ML57				203					205										
ML58	479			167					170		372								
ML59				194					182		19						225		
ML60				87					140		398						176		
ML61				749					245		391						253		
ML62				393					207						169		227		
ML63				567					322						89		270		
ML64				341					271						179		232		
ML65				332					250						226		264		
ML66																	259		
ML67									207						222		223		
ML68															150				
ML69																			
ML70																			
ML71																			
ML72																	305		
ML73	171	218			-127			186									199		
ML74	186	277			147			209				370	256				224		
ML75	110	257			-76			340				384	-161				372		
ML76	55	266			347			200				226	245	230			236		
ML77	258	121	-72		163			1820		288	-39	124	332				310		
ML78	189	192	-730		339			-452		-456		411					257		
ML79	217	169	143		343			322	290	6614		395	917				216		
ML80	276	251	310					274				271		253			195		
ML81	127	195	257		343			276				244		347			167		
ML82	254	226	161		235			310				315	235				197		
ML83	418	261			361			182				432					218		
ML84	163		271		336			509				269					234		
ML85	458		341		763			259	278			468					238		
ML86	490		354		435				265			318					203		
ML87	487			181	382							435					230		
ML88	453			552	455							268					190		
ML89	562			312	579			428				180					202		
ML90	303		342		296			471				0					215		
ML91	325		266		249			326						256			221		
ML92					238			324									221		
ML93					352			393				246					206		
ML94					289			392				367					212		
ML95								346									210		
ML96																	234		
ML97								384									200		
ML98					358			412									243		
ML99					103			398									160		
ML100					267			427		145	406			160			174		
ML101					416			315			267						122		537
ML102					352			337			-342						281	214	
ML103								252			-210						259	246	
ML104				156				226									198	139	149
ML105				-74				299			69						172	187	331
ML106	-20			42		424		540		200	-290	339		209	272	223	285	280	
ML107	437	456	234		299			331	218			463		261	180	201	233	256	
ML108	32	77	202		613			239	200	145		377		-6	237	217	124	258	
ML109	-261	57	185		-699			267	173	157	197	185		133	95	223	272	213	
ML110	103	208	155		155			343		187					131	245	210	298	
ML111	255	335	243																

	LPT	MC	MDE	MMC	MV	MVR	O	OC	OE	OP	OV	PE	PEJ	PEs	PEU	PM	PVA	PVB
ML 1									191	233			214	148				
ML 2										199			245					
ML 3										146			109	205				
ML 4				235				288		207			204	179				
ML 5								-1212	79	174			201	169				
ML 6	204		195				403	6	269	296			160	217				
ML 7				184			-62	186		306				176				
ML 8	535			347			-1938	370	-12	204				237				
ML 9							613	675	614	531				296				
ML10			274				279	165	740	260								
ML11								194										
ML12	368	169							146					203			354	
ML13					331				466					289			399	
ML14	262													245			485	
ML15														255			370	
ML16								416									379	
ML17								351									381	
ML18			335					237									428	
ML19			302					412		166			621				370	
ML20			275					275					253				329	299
ML21					268								261					274
ML22					223								410				343	440
ML23					310								185					352
ML24					262			228					159				329	411
ML25					249												353	
ML26					242			382									368	329
ML27					238												353	251
ML28		232			257			220									364	64
ML29		168			177			654										403
ML30		183			191	153		221									439	84
ML31		144			226	124	59										388	122
ML32		162			136	142											252	121
ML33	247	214				222	178										287	214
ML34		192				207	-11										199	225
ML35		155				215	208							196			259	268
ML36		210				197	404	471						246			376	366
ML37		220	233			214	197		257	79		232	256	228			295	325
ML38		261	39			216			176	106		187		273			339	397
ML39		171				232	390	254		186		237					70	411
ML40		152				265	-34	214				230		175			525	
ML41		332			248	249	349				331	227		238			300	
ML42		325			173	312		360				296		205			319	
ML43		371				212	239	344				283		248				
ML44		334	278		331	267	321					287	197	240		199	340	
ML45		237	447		187			-46				295	215		206			282
ML46		250	302		231			405				478	217	288			422	
ML47		299						350				409	211		227			
ML48		250					174						205					
ML49		283						227					267					
ML50		283						244					182					
ML51		227						196					163					
ML52						187		174					181					
ML53						239		228					265					
ML54					259	257	235	217					223					
ML55					181	259	298	265					305					
ML56						223	251	188										
ML57						192		336										
ML58						189		217										
ML59						142	0	175					116					
ML60						146	136	130					148					
ML61						179	441	165					138					
ML62						223	107	312										
ML63						203		138										
ML64						215							55					
ML65						211		172		237								
ML66								-76										
ML67																		
ML68																		
ML69																		
ML70																		
ML71								191	233			214	148					
ML72									199			245						
ML73									146			109	205					
ML74			235					288		207		204	179					
ML75								-1212	79	174		201	169					
ML76	204		195				403	6	269	296		160	217					
ML77				184			-62	186		306			176					
ML78	535			347			-1938	370	-12	204			237					
ML79							613	675	614	531			296					
ML80			274				279	165	740	260								
ML81								194										
ML82	368	169							146					203			354	
ML83					331				466					289			399	
ML84	262													245			485	
ML85														255			370	
ML86								416									379	
ML87								351									381	
ML88			335					237									428	
ML89			302					412		166			621				370	
ML90			275					275					253				329	299
ML91					243								261					274
ML92					223								410				343	440
ML93					310								185					352
ML94					262			228					159				329	411
ML95					249												353	
ML96					242			382									368	329
ML97					238												353	251
ML98		232			257			220									364	64
ML99		168			177			654										403
ML100		183			191	153		221									439	84
ML101		144			226	124	59										388	122
ML102		162			136	142											252	121
ML103	247	214				222	178										287	214
ML104		192				207	-11										199	225
ML105		155				215	208							196			259	268
ML106		210				197	404	471						246			376	366
ML107		220	233			214	197		257	79		232	256	228			295	325
ML108		261	39			216			176	106		187		273			339	397
ML109		171				232	390	254		186		237					70	411
ML110		152				265	-34	214				230		175			525	
ML111		332			248	249	349				331	227		238			300	
ML112		325			173	312		360				296		205			319	
EL 1		371				212	239	344				283	248	252				256
EL 2		334	278		331	267	321					287	197	240		199	340	284
EL 3		237	447		187			-46				295	215		206		282	
EL 4		250	302		231			405				478	217	288			422	
EL 5		299						350					211					
EL 6		250					174					205		227				

	PVP	PZU	QAL	QAL1	QB	QC	QL	QP	QPI	QPV	QPV8	QPV8	QS	QST	QTAL	QTC	QTV8	S	SLM
ML 1			246	243			310	199	292				252						
ML 2			181	223			284		212				170						
ML 3		208	179	230			292		316				225						
ML 4			208	217			448		255				270						
ML 5		234	156	226			382		247				249						
ML 6			116	205				194					188					161	
ML 7			131	316			231						217						
ML 8			234	274			342	277	277				-1310						
ML 9			311	296			446	270	360										
ML10			208	242			337	236	418										
ML11			285	248			352	381					303					192	
ML12			224	247										274				298	
ML13				242				351					296						406
ML14			272	230				285	411				280						
ML15			350	284			277		381				401						
ML16			267	290			232	548	361				274						
ML17			328	216			321	225	498				248						
ML18		246	272	238				256	411				277						
ML19		231	329	199					409				196						
ML20		287	313	261					419				262						
ML21		297	357	263					277				255						
ML22			350	231					295				247						
ML23		260	357	222					420				233						
ML24			286	232					275				218		223				
ML25			308	225					274				202		199			214	
ML26		452	321	232			399		394				187		215			259	
ML27	284		262	241			387	329	283				219	281	207				
ML28		249	236	221			197	280	298				155	289	158		310		
ML29			199	306	215		308	247	175				253		278				
ML30			141	339	145	207	378	347	339				243		327		329		311
ML31			108	296	172	127	287	251	286				294	237	234	253			1
ML32			58	267	172	101	386	318	422				257	236	211	259			
ML33	187		159	255	259	180	339	222	405		218		280	248	227				
ML34			178	193	213	155	233	339	270		211		204		224	166		-1012	343
ML35			289	209		182	210	293	226				204		246	208		559	106
ML36			185	328		223	358	452	440				333		339	181		244	585
ML37			284	233		243	316	283	322				402		331	219			
ML38			210	206		214	244	243	510				177		345	192			-54
ML39			262	311		260	468	602	451							194			377
ML40			249	262				3								193		258	316
ML41			317	271		184		256								257			258
ML42			238	254		152	167	0					136		173				142
ML43	256		311	210		172	304	387	235		211	188			242	248			
ML44	284		300	278	329		235	392	344	366		299			210	227			
ML45		335	197	275	226		451	338	536	239		314			358	283			129
ML46			258	379	317			404	393				0						-173
ML47			255	360	199	201		253				449			388	179			
ML48			223	291	269			377		413		271			227	229	233		
ML49			271	215		236		243							260	219			
ML50		169	226	185											259				
ML51		186	229	189											311				
ML52			206	174											229				
ML53			285	222											300				
ML54		166	246	198											290				
ML55			273	224											342				
ML56			262	176											394				
ML57			269	206															
ML58			289	192															
ML59			194	191															
ML60			220	148															
ML61			288	202									383					649	
ML62			284										282						
ML63			316										415	301					
ML64			278					237					325						
ML65			335					277					353						
ML66			280					258					354						
ML67			232					239					277						
ML68			242					238											
ML69			212				233	186			191								
ML70			183				186	194											
ML71		246	243			310	199	292				252							
ML72		181	223			284		212				170							
ML73	208		179	230				316				225							
ML74			208	217			448	255				270							
ML75	234		156	226			382	247				249							
ML76			116	205				194				188						161	
ML77			131	316			231					217							
ML78			234	274			342	277	277			-1310							
ML79			311	296			446	270	360										
ML80			208	242			337	236	418										
ML81			285	248			352	381					303					192	
ML82			224	247										274				298	
ML83				242				351				296							406
ML84		272	230				285	411				280							
ML85		350	284			277		381				401							
ML86		267	290			232	548	361				274							
ML87			328	216		321	225	498				248							
ML88	246		272	238			256	411				277							
ML89	231		329	199				409				196							
ML90	287		313	261				419				262							
ML91	297		357	263				277				255							
ML92			350	231				295				247							
ML93		260	357	222				420				233							
ML94			286	232				275				218			223				
ML95			308	225				274				202			199			214	
ML96	452		321	232		399		394				187			215			259	
ML97			262	241		387	329	283				219		281	207				
ML98	249		236	221		197	280	298				155		289	158		310		
ML99			199	306	215	308	247	175				253			278				
ML100			141	339	145	207	378	347	339			243			327		329		311
ML101			108	296	172	127	287	251	286			294	237	234	253				1
ML102			58	267	172	101	386	318	422			257	236	211	259				
ML103			159	255	259	180	339	222	405		218	280	248	227					
ML104			178	193	213	155	233	339	270		211	204		224	166			-1012	343
ML105			289	209		182	210	293	226			204		246	208			559	106
ML106			185	328		223	358	452	440			333		339	181			244	585
ML107			284	233		243	316	283	322			402		331	219				255
ML10																			

	SRP	SH	TS	TBR	TC	TD	TI	TL	TP	TR	TRI	TS	TT	TTC	TTS	TV	TW	TWS
ML 1						212			229						245		203	191
ML 2						174			216						210		250	225
ML 3						204			225						193			225
ML 4						180			205			245			190			204
ML 5		-97				193			229			180			166		143	194
ML 6									269			203			199			220
ML 7		258	255					296	267			146			208			249
ML 8		233				311			225			215			222			236
ML 9		560	244			324	304		220			477						235
ML10		176	217			226	255		216									234
ML11		577	243			185	249		225									275
ML12		393	214			307	298		206			217						232
ML13		338	297			226	273		224			320						
ML14			231						196									193
ML15			240					216	265		246	283						265
ML16			204	168				166	219		267	356						197
ML17			365	270				254	229		233	356						253
ML18			252	192				300	180		215	305						267
ML19			339	262				265	228		243	394						254
ML20		320		195					186		197	349						
ML21		285		199					220		192							
ML22			210						236		215							
ML23			250						256		232	384						
ML24			209						234		229							
ML25			181						201		174							
ML26			192						205		185							
ML27									187		161							
ML28			155						169		164							
ML29			170						174	197	167							
ML30									169		371							
ML31									182		478							
ML32									153		329							
ML33									194		378							
ML34									181		200							
ML35								210	210		401							
ML36	255								179		370							
ML37	402								209		313							
ML38	325								204		222							
ML39	53								213		214							
ML40			137						222		342							
ML41			220						193		247						221	
ML42									160		306		232					
ML43								153	207		185		212					
ML44									173		156		166	228				
ML45								155	183		140		207	216				
ML46			626			480		133	166	157	427			208				
ML47				290				157	193	214	144		191	246				
ML48						207		159	172	220	72	204		187				
ML49									223		215		226	221				
ML50									174				178					
ML51									200				174	204				
ML52									163				195	183			187	
ML53			262		256			181	231		213		244					
ML54			139		241			178	176		174		154					
ML55					252			216	209		166		191					
ML56					251			196	176		159							
ML57					305				205		196							
ML58					253				165		154							
ML59					202				186		162							
ML60					207				135		130							
ML61					336						186		208					
ML62					288						174							
ML63					309	157			209		178							
ML64					258	187			184		168							
ML65					5806	200			208									
ML66																		
ML67																		
ML68																		
ML69					-204													
ML70					160													
ML71					212			229						245		203	191	
ML72					174			216						210		250	225	
ML73					204			225						193			225	
ML74					180			205			245			190			204	
ML75	-97				193			229			180			166		143	194	
ML76								269			203			199			220	
ML77	258	255				296		267			146			208			249	
ML78	233				311			225			215			222			236	
ML79	560	244			324	304		220			477						235	
ML80	176	217			226	255		216									234	
ML81	577	243			185	249		225									275	
ML82	393	214			307	298		206			217						232	
ML83	338	297			226	273		224			320							
ML84		231						196									193	
ML85		240				216		265		246	283						265	
ML86		204	168			166		219		267	356						197	
ML87		365	270			254		229		233	356						253	
ML88		252	192			300		180		215	305						267	
ML89		339	262			265		228		243	394						254	
ML90	320		195					186		197	349							
ML91	285		199					220		192								
ML92		210						236		215								
ML93		250						256		232	384							
ML94		209						234		229								
ML95		181						201		174								
ML96		192						205		185								
ML97								187		161								
ML98		155						169		164								
ML99		170						174	197		167							
ML100								169		371								
ML101								182		478								
ML102								153		329								
ML103								194		378								
ML104								181		200								
ML105							210	210		401								
ML106								179		370								
ML107								209		313								
ML108								204		222								
ML109								213		214								
ML110		137						222		342								
ML111		220						193		247						221		
ML112								160		306		232						
TL 1							153	207		185		212						
TL 2								173		156		166	228					
TL 3							155	183		140		207	216					
TL 4		626			480		133	166	157	427			208					
TL 5			290				157	193	214	144		191	246					197
TL 6					207		159	172	220	72	204		187					

	C	CC	EC	CM1	CM2	EN	CP	EPCW	EPM	EZ	D	DD	DDN	DN	EPC	GR	JTRV	LP	LPC
ML 1																			
ML 2																	915		
ML 3		464	592			-496		464									765		
ML 4		550	835			464		481				1060	864				456		
ML 5		348	894			-175		1196				2676	-414				767		
ML 6		157	759			1068		606				537	696	673			530		
ML 7	730	848	470	-218		496		350			1020	-314	396	786			754		
ML 8	372	481	511	-844		1002		1906			-117		1285				759		
ML 9	682	615	294	724		1028		604	566		1464		1286	3076			768		
ML10		662	672	1038				877				805		408			741		
ML11		938	546	510		1086		1235				855		1045			678		
ML12		623	668	339		1314		1451				1338	772				782		
ML13		1039	727	590		591		476				1379					722		
ML14		399		777		1081		902				1369					751		
ML15		1390		828		1669		636	595			1311					789		
ML16		939		921		815			641			830					622		
ML17		1169			747	775						788					506		
ML18		1179			1708	1188						1391					551		
ML19		1028			803	1255		1024				705					708		
ML20		646		1448		1187		1854				134					843		
ML21		680		655		1056		990						662			808		
ML22						1073		1174								530	886		
ML23						1334		1133				1160					1008		
ML24						867		1070				3110					637	887	
ML25								1054									937	824	
ML26																	660	886	
ML27								1236										884	
ML28						1305		1390									834	605	
ML29						440		1093									754	653	
ML30						866		1072			381	885			487	406	552		
ML31						1027		817				760				880	658	1274	
ML32						841		918				874					705	469	
ML33								782				-181					649	536	
ML34				397				937									647	413	379
ML35				17				1237			167						542	547	768
ML36	523	1		288		1938		1714			635	-637	1186		665	883	552	765	764
ML37		827	1412	597		687		546	569			1239		1001	485	445	640	609	
ML38		56	226	641		475		317	602	321		1150		-7	376	424	323	608	
ML39		-653	218	455		-851		832	493	848	766	400		368	119	402	721	323	
ML40		286	676	459		611		1271		596					182	438	622	526	
ML41		907	970	672				1017							341		816	559	
ML42			605	432				1210							527	456	796	463	
ML43				555	622			806		406					386	486	787		
ML44			1013	888	831			693	805	767					460		612		
ML45		671	652	917	737	784		1741	607	638		1592					622		
ML46			1899	937	1482	763	1343	1318				1423			1245		995	1000	
ML47					1502	1901						2138					896		
ML48			1138							643				690			888		
ML49										742									
ML50										856									
ML51				441						686									
ML52				626						700									
ML53				540						826									
ML54				668						704									
ML55				732						680									
ML56				604						552									
ML57				562						609									
ML58	1380			439						533	4989								
ML59				436						507	82					755			
ML60				330						399	346					619			
ML61				2380						780	1567					859			
ML62				1396						663					680	615			
ML63				1756						943					520	651			
ML64				859						934					682	674			
ML65				1158						864					609	616			
ML66																562			
ML67									503						688	525			
ML68															484				
ML69																			
ML70																			
ML71																			
ML72																	915		
ML73	464	592			-496		464										765		
ML74	550	835			464		481				1060	864					456		
ML75	348	894			-175		1196				2676	-414					767		
ML76	157	759			1068		606				537	696	673				530		
ML77	848	470	-218		496		350			1020	-314	396	786				754		
ML78	481	511	-844		1002		1906			-117		1285					759		
ML79	615	294	724		1028		604	566		1464		1286	3076				768		
ML80	662	672	1038				877				805		408				741		
ML81	938	546	510		1086		1235				855		1045				678		
ML82	623	668	339		1314		1451				1338	772					782		
ML83	1039	727	590		591		476				1379						722		
ML84	399		777		1081		902				1369						751		
ML85	1390		828		1669		636	595			1311						789		
ML86	939		921		815			641			830						622		
ML87	1169			747	775						788						506		
ML88	1179			1708	1188						1391						551		
ML89	1028			803	1255		1024				705						708		
ML90	646		1448		1187		1854				134						843		
ML91	680		655		1056		990						662				808		
ML92					1073		1174												
ML93					1334		1133				1160					530	886		
ML94					867		1070				3110						1008		
ML95							1054										937	824	
ML96																	660	886	
ML97								1236										884	
ML98					1305		1390										834	605	
ML99					440		1093										754	653	
ML100					866		1072			381	885			487			406	552	
ML101					1027		817				760						880	658	1274
ML102					841		918				874							705	469
ML103							782				-181							649	536
ML104			397				937										647	413	379
ML105			17				1237			167							542	547	768
ML106	1		288		1938		1714			635	-637	1186		665	883	552	765	764	
ML107	827	1412	597		687		546	569				1239		1001	485	445	640	609	
ML108	56	226	641		475		317	602	321			1150		-7	376	424	323	608	
ML109	-653	218	455		-851		832	493	848	766</									

	IPP	IB	MC	MDE	MMC	MV	MVR	U	OC	OEE	OP	OV	PE	PCJ	PES	PCU	PM	PVA	PVB
ML 1										708	758			717	377				
ML 2											613			713					
ML 3											336			313	522				
ML 4					796				624		763			594	520				
ML 5									2295	327	455			576	478				
ML 6		696		622				1090	87	695	766			455	557				
ML 7					538			-129	402		1050				516				
ML 8		981			982			-1257	652	72	441				667				
ML 9								923	2305	1582	1524				795				
ML10				892				872	608	420	564								
ML11									746										
ML12	1034		568							361					532			1003	
ML13						703				1368					660			840	
ML14		779													610			984	
ML15															633			876	
ML16									1473									954	
ML17									885									1155	
ML18				1248					734									1186	
ML19				1189					1159					1129				1082	
ML20				890					690			400						928	742
ML21						716								1452					
ML22						624								1330				797	
ML23						561								1284			1066	1221	
ML24						804								1009				900	
ML25						835			822					377			1080	862	
ML26						702											1103		
ML27						588			1620								1262	886	
ML28						575											986	748	
ML29			667			704			540								1100	136	
ML30			439			429			5375									672	
ML31			453			435	385		540									994	204
ML32			377			334	337	127										900	293
ML33			453			372	341											666	257
ML34	686		527				405	649										781	623
ML35			547				425	-61										651	620
ML36			424				463	433										684	516
ML37			472				427	1130	2099						585			956	660
ML38			638	999			490	407		888	219		467	795	734			696	715
ML39			580	180			427			420	294		571		761			888	917
ML40			393				419	858	405		513		782					216	1039
ML41			279				359	1024	846				688		610			1357	
ML42			536			513	344	1207				353	699		781			844	
ML43			644			356	232		376			348	652		676			873	
ML44			598				606	415	240			309	821		828				
ML45			691	642		383	473	451				407	397	692		708		1488	
ML46			561	970		426			-300			490	764			642			626
ML47			674	1108		412			1676			1689	807	1027				1236	
ML48			860						1137			595	643			724			
ML49			700					588					694						
ML50			772						823				910						
ML51			852						1008				697						
ML52			809						839				599						
ML53							627		642				682						
ML54						720	906		877				1031						
ML55						530	790	760	706				709						
ML56							706	693	859				860						
ML57							571	799	636										
ML58							650		1015										
ML59							656		635				529						
ML60							539	684	529				568						
ML61							481	431	400				455						
ML62							739	1175	560										
ML63							709	289	681										
ML64							644		396				125						
ML65							720												
ML66							640		550		756								
ML67									-246										
ML68																			
ML69																			
ML70																			
ML71									708	758				717	377				
ML72										613				713					
ML73										336				313	522				
ML74				796					624		763			594	520				
ML75									2295	327	455			576	478				
ML76	696		622				1090	87	695	766			455	557					
ML77					538		-129	402		1050				516					
ML78	981			982			-1257	652	72	441				667					
ML79							923	2305	1582	1524				795					
ML80				892			872	608	420	564									
ML81								746											
ML82	1034		568							361					532			1003	
ML83						703				1368					660			840	
ML84		779													610			984	
ML85															633			876	
ML86									1473									954	
ML87									885									1155	
ML88			1248						734									1186	
ML89			1189						1159					1129				1082	
ML90			890						690									928	742
ML91						716								1452					
ML92						624								1330				797	
ML93						561								1284			1066	1221	
ML94						804								1009				900	
ML95						835			822					377			1080	862	
ML96						702											1103		
ML97						588			1620								1262	886	
ML98						575											986	748	674
ML99			667			704			540								1100	136	
ML100			439			429			5375									672	
ML101			453			435	385		540									994	204
ML102			377			334	337	127										900	293
ML103			453			372	341											666	257
ML104	686		527				405	649										781	623
ML105			547				425	-61										651	620
ML106			424				463	433						585				684	516
ML107			472				427	1130	2099					737				956	660
ML108			638	999			490	407		888	219		467	795	734			696	715
ML109			580	180			427			420	294		571		761			888	917
ML110			393				419	858	405		513		782					216	1039
ML111			279				359	1024	846				688		610			1357	
ML112			536			513	344	1207				353	699		781			844	
TL 1			644			356	232		376			348	652		676			873	
TL 2			598				606												

	PVP	P2U	QAL	QAL1	QB	QC	QL	QP	QPI	QPV	QPV8	QPV8	QS	QST	QTAL	QTC	QTV8	S	SLM
ML 1			778	723			903	799	809				737						
ML 2			567	713			813		579				508						
ML 3		472	493	752			815		860				657						
ML 4			671	720			1305		676				667						
ML 5		485	514	779			1268		919				682						
ML 6			322	671					703				461				577		
ML 7			423	881			718						641						
ML 8			587	836			1136	753	909				1573						
ML 9			818	1626			1294	1036	1089										
ML10			563	709			885	911	1042										
ML11			760	762			992		941				778				550		
ML12			620	780										457			875		
ML13				697					715				751					1693	
ML14			716	731				970	827				756						
ML15			945	794			920		897				1197						
ML16			697	894			702	1167	1061				892						
ML17			828	759			787	784	1059				847						
ML18		821	706	750				1025	881				839						
ML19		725	876	702					784				708						
ML20		967	798	796					727				1064						
ML21		957	783	941					899				991						
ML22			971	1028					936				895						
ML23		852	1013	752					1280				823						
ML24			742	730					777				747		892				
ML25			798	636					823				743		674			679	
ML26		2139	859	574			1135		1234				668		817			702	
ML27	674		659	489			1021	952	829				654	754	796				
ML28		904	599	591			643	674	616				455	725	488		864		
ML29			515	709	493		882	708	551				736		609				
ML30			416	690	496	558	602	824	599				662		829	932		1178	
ML31			340	718	576	350	824	773	698				813	980	605			37	
ML32			162	687	708	161	1163	758	766				885	1085	548				
ML33	572		521	713	1015	466	892	624	972		660		795	1168	481				
ML34			519	560	702	428	642	718	411		1020		743		581	640	-741	1200	
ML35			662	505		430	565	957	550				747		644	753	1098	354	
ML36			472	838		413	650	1457	894				1079		670	752	-1505	2137	
ML37			561	644		705	509	1786	723				1045		584	754			
ML38			426	486		513	436	1032	1111				669		714	712		-186	
ML39			585	616		498	405	981	1235							697		910	
ML40			601	545				315								812	846	954	
ML41			641	645		376		520								830		625	
ML42			486	578		381	584	468						462	789			328	
ML43	313		736	662		464	509	969	793		666		628		642	778			
ML44	732		590	809	1007		589	886	866	1066			968		555	1081			
ML45		931	463	783	670		1124	1258	1077	489			977		1689	700		216	
ML46			580	1238	980			994	1117						494			1237	
ML47			649	1125	653	716		575								734			
ML48			642	202	1019			744		1557			910		650	682	1024		
ML49			720	760		859		744							647	773			
ML50		493	737	628											562				
ML51		646	704	628											599				
ML52			658	589											598				
ML53			901	873											740				
ML54		488	826	728											680				
ML55			868	983											758				
ML56			759	755										1024					
ML57			922	975															
ML58			883	980															
ML59			563	897															
ML60			635	694															
ML61			868	931															
ML62			845															1484	
ML63			1015																
ML64			822					776											
ML65			934					810											
ML66			846					726											
ML67			688					636											
ML68			715					698											
ML69			583				671	487			518								
ML70			491				546	500											
ML71		778	723			903	799	809					737						
ML72			567	713			813		579				508						
ML73	472		493	752			815		860				657						
ML74			671	720			1305		676				667						
ML75	485		514	779			1268		919				682						
ML76			322	671					703				461						
ML77			423	881			718						641				577		
ML78			587	836			1136	753	909				1573						
ML79			818	1626			1294	1036	1089										
ML80			563	709			885	911	1042										
ML81			760	762			992		941				778				550		
ML82			620	780													875		
ML83				697					715				751	457				1693	
ML84			716	731				970	827				756						
ML85			945	794			920		897				1197						
ML86			697	894			702	1167	1061				892						
ML87			828	759			787	784	1059				847						
ML88		821	706	750				1025	881				839						
ML89		725	876	702					784				708						
ML90		967	798	796					727				1064						
ML91		957	783	941					899				991						
ML92			971	1028					936				895						
ML93		852	1013	752					1280				823						
ML94			742	730					777				747		892				
ML95			798	636					823				743		674			679	
ML96		2139	859	574			1135		1234				668		817			702	
ML97			659	489			1021	952	829				654	754	796				
ML98		904	599	591			643	674	616				455	725	488		864		
ML99			515	709	493		882	708	551				736		609				
ML100			416	690	496	558	602	824	599				662		829	932		1178	
ML101			340	718	576	350	824	773	698				813	980	605			37	
ML102			162	687	708	161	1163	758	766				885	1085	548				
ML103			521	713	1015	466	892	624	972		660		795	1168	481				
ML104			519	560	702	428	642	718	411		1020		743		581	640	-741	1200	
ML105			662	505		430	565	957	550				747		644	753	1098	354	
ML106			472	838		413	650	1457	894				1079		670	752	-1505	2137	838
ML107			561	644		705	509	1786	723										

	SPR	SU	TH	TBR	TC	TD	TI	TL	TP	TR	TR1	TS	TT	TTC	TTS	TV	TW	TWS
ML 1						713			905						721		841	755
ML 2						709			929						752		860	728
ML 3						761			819						636			714
ML 4						768			682			846			670			676
ML 5		-179				637			861			581			533		552	630
ML 6									1095			642			632			782
ML 7		840	880				1030		1182			446			688			889
ML 8		755				1004			927			607			692			827
ML 9		1527	757			930	907		871			1112						785
ML10		493	647			692	762		835									713
ML11		1738	864			535	721		884									904
ML12		855	663			889	906		758			765						753
ML13		1132	843			608	868		831			891						
ML14			748						721									636
ML15			768						1009		994	716						745
ML16			601	656			573		802		909	900						658
ML17			1037	957			808		886		869	836						840
ML18			678	741			857		753		839	677						796
ML19			692	1003			826		844		1023	913						863
ML20		769		606					711		758	526						
ML21		540		695					788		751							
ML22			686						783		765							
ML23			860						818		866	1036						
ML24			756						806		882							
ML25			722						738		710							
ML26			832						759		755							
ML27									642		602							
ML28			537						571		577							
ML29			540						574	660	612							
ML30									588		873							
ML31									642		1108							
ML32									497		736							
ML33									678		744							
ML34									620		455							
ML35								680	719		1279							
ML36	838								631		1002							
ML37	1564								821		766							
ML38	522								750		786							
ML39	109								797		723							
ML40			541						723		790							
ML41			840						696		557						776	
ML42									615		761		589					
ML43								638	719		961		821					
ML44									764		754		691		586			
ML45								756	805		666		705		606			
ML46			1840			1200		714	570	768	1253				655			
ML47				893				779	840	724	815		933		757			
ML48						757		837	660	795	378	854			897			
ML49									633		726				795			
ML50									605						521			
ML51									617						505			
ML52									544						553		553	
ML53			913		1028			725	717		576				756			
ML54			479		880			646	672		748				588			
ML55					779			956	895		881				819			
ML56					700			1043	783		861							
ML57					887				859		921							
ML58					723				691		770							
ML59					584				730		800							
ML60					532				571		551							
ML61					810						901		969					
ML62					820						818							
ML63					858	797			783		866							
ML64					638	899			753		782							
ML65					2794	873			911									
ML66																		
ML67																		
ML68																		
ML69					-531													
ML70					493													
ML71					713			905						721		841	755	
ML72					709			929						752		860	728	
ML73					761			819						636			714	
ML74					768			682			846			670			676	
ML75		-179			637			861			581			533		552	630	
ML76								1095			642			632			782	
ML77		840	880			1030		1182			446			688			889	
ML78		755						927			607			692			827	
ML79		1527	757			930	907	871			1112						785	
ML80		493	647			692	762	835									713	
ML81		1738	864			535	721	884									904	
ML82		855	663			889	906	758			765						753	
ML83		1132	843			608	868	831			891							
ML84			748					721									636	
ML85			768				773	1009		994	716						745	
ML86			601	656			573	802		909	900						658	
ML87			1037	957			808	886		869	836						840	
ML88			678	741			857	753		839	677						796	
ML89			692	1003			826	844		1023	913						863	
ML90		769		606				711		758	526							
ML91		540		695				788		751								
ML92			686					783		765								
ML93			860					818		866	1036							
ML94			756					806		882								
ML95			722					738		710								
ML96			832					759		755								
ML97								642		602								
ML98			537					571		577								
ML99			540					574	660	612								
ML100								588		873								
ML101								642		1108								
ML102								497		736								
ML103								678		744								
ML104								620		455								
ML105							680	719		1279								
ML106								631		1002								
ML107								821		766								
ML108								750		786								
ML109								797		723								
ML110			541					723		790								
ML111			840					696		557						776		
ML112								615		761		589						
TL 1							638	719		961		821						
TL 2								764		754		691	586					
TL 3								756	805	666		705	606					
TL 4		1840			1200			714	570	768	1253							
TL 5			893					779	840	724	815	933	757				663	
TL 6					757			837	660	795	378	854	897					

	DPT	MB	MC	MDE	MMC	MV	MVR	O	OC	DEF	OP	OV	PC	PCJ	PES	PEU	PM	PVA	PVB
ML 1										358	324			336	259				
ML 2											302			291					
ML 3											246			269	258				
ML 4					353				308		369			290	296				
ML 5									316	363	275			286	291				
ML 6		355		320				271	282	265	265			296	265				
ML 7					290			282	220		343				290				
ML 8		190			291			321	198	335	207				283				
ML 9								180	338	254	284				267				
ML10				330				315	365	76	290								
ML11									383										
ML12		281	329							245					267			289	
ML13						211				436					230			210	
ML14		298													253			208	
ML15															245			268	
ML16									427									256	
ML17									259									302	
ML18				377					310									283	
ML19				386					300									298	
ML20				326					250			238		181				290	244
ML21						265								619					291
ML22						256								567					276
ML23						252								322			324		276
ML24						261								609				259	
ML25						350			384					236			327	210	
ML26						285											313		
ML27						246			402								343	269	
ML28						243											291	295	
ML29			287			279			246								309	261	
ML30			263			247			225									187	
ML31			250			231	254		246									235	242
ML32			266			154	271	250										230	244
ML33			276			281	247											253	215
ML34		280	253				190	383										279	284
ML35			286				211	336										333	277
ML36			269				216	266							298			402	192
ML37			223				225	265	432				206	314	304			258	181
ML38			301	412			232	267		342	270		206		325			254	222
ML39			231	274			197			295	258		309		277			252	217
ML40			242				176	255	161		283		327					265	257
ML41			198				152	1142	392				300		353			354	
ML42			167			206	148	485				115	306		326			294	
ML43			196			205	82		115			123	323		336			271	
ML44			162				299	188	71			117	335		331				
ML45			209	231		126	178	142				152	203	292		370	423		
ML46			249	212		226			530			165	355			307		220	
ML47			275	368		182			408			367	371	363			297		
ML48			310						320			147	306			319			
ML49			283					342					337						
ML50			281						360				362						
ML51			306						415				384						
ML52			358						436				366						
ML53							334		360				382						
ML54							374		387				398						
ML55						279	308	325	322				318						
ML56						296	271	270	324				281						
ML57							258	347	346										
ML58							338		306										
ML59							348		294				453						
ML60							380	439	299				385						
ML61							331	312	306				328						
ML62							412	281	336										
ML63							327	225	227										
ML64							322		285				337						
ML65							336												
ML66							304		315		318								
ML67									316										
ML68																			
ML69																			
ML70																			
ML71									358	324			336	259					
ML72										302			291						
ML73										246			269	258					
ML74				353				308		369			290	296					
ML75								316	363	275			286	291					
ML76	355		320				271	282	265	265			296	265					
ML77				290			282	220		343				290					
ML78	190			291			321	198	335	207				283					
ML79							180	338	254	284				267					
ML80							315	365	76	290									
ML81			330					383											
ML82		281	329						245						267		289		
ML83						211			436						230		210		
ML84		298													253		208		
ML85															245		268		
ML86									427								256		
ML87									259								302		
ML88			377						310								283		
ML89			386						300	238			181				298		
ML90			326						250					619			290	244	
ML91						265								567				291	
ML92						256								322			324	276	
ML93						261								609				259	
ML94						350			384					236			327	210	
ML95						285											313		
ML96						246			402								343	269	
ML97						243											291	295	247
ML98		287				279			246								309	261	
ML99		263				247			225									187	
ML100		250				231	254		246								235	242	
ML101		266				154	271	250									230	244	
ML102		276				281	247										253	215	
ML103	280	253					190	383									279	284	305
ML104		286					211	336									333	277	
ML105		269					216	266							298		402	192	
ML106		223					225	265	432					304			258	181	
ML107		301	412				232	267		342	270		206	314	325		254	222	
ML108		231	274				197			295	258		309		277		252	217	
ML109		242					176	255	161		283		327				265	257	
ML110		198					152	1142	392				300		353		354		
ML111		167				206	148	485				115	306		326		294		
ML112		196				205	82		115			123	323		336		271		
TL 1		162					299	188	71			117	335		331				122
TL 2		209	231			126	178	142				152							

	PVP	PZU	QAL	QAL1	QB	QC	QL	QP	QP1	QPV	QPV8	QPV8	QS	QST	QTAL	QTC	QTV8	S	SLM
ML 1			317	302			291	399	283				295						
ML 2			315	317			286		276				295						
ML 3		226	278	328			281		277				292						
ML 4			325	339			293		281				255						
ML 5		204	336	350			328		369				274						
ML 6			328	329					361				250					358	
ML 7			240	382			315						296						
ML 8			268	317			333	272	330				296						
ML 9			267	220			292	383	307										
ML10			279	309			264	385	252										
ML11			274	314			284		246				257					291	
ML12			284	319										171				292	
ML13				290					203				256						419
ML14			268	315				338	202				279						
ML15			274	285			331		234				302						
ML16			262	316			306	219	303				338						
ML17			256	365			247	353	217				341						
ML18		338	262	333				401	218				317						
ML19		302	268	359					200				353						
ML20		330	257	305					179				410						
ML21		320	224	359					325				386						
ML22			280	453					315				370						
ML23		329	286	355					304				358						
ML24			262	303					285				349		398				
ML25			265	292					299				371		342				323
ML26		454	281	251			285		316				361		381				275
ML27	247		257	207			271	295	295				303	270	385				
ML28		362	259	273			330	246	211				296	254	307		280		
ML29			264	244	231		274	286	316				291		227				
ML30			306	206	340	269	162	266	178				292		266		284		357
ML31			289	256	332	282	281	313	247				275	417	261	265			599
ML32			311	261	409	232	307	217	180				348	460	261	289			
ML33	305		329	286	394	270	264	285	250		299		292	472	210				
ML34			295	287	326		277	272	151		482		367		249	390		314	348
ML35			238	248			242	273	326	247			346		261	363		195	435
ML36			260	260			184	185	333	210			327		195	420		-878	394
ML37			219	283			286	163	690	229			262		177	344			
ML38			207	244			245	180	442	219			377		207	371			318
ML39			228	212		195	87	290	253							361			328
ML40			242	227				239								417		363	331
ML41			222	252		225		191								325			262
ML42			210	237		248	377	206						381	466				231
ML43	122		242	328		268	166	260	336		314		341		269	314			
ML44	259		205	298	308		253	238	269	288			325		272	276			
ML45		279	231	296	303		281	374	219	208			307		475	255			341
ML46			234	332	313			248	288						290				347
ML47			260	318	331	355		232					340		272	410			
ML48			288	-203	394			210		390			337		305	296	455		
ML49			287	357		361		306							255	354			
ML50		292	328	344											238				
ML51		346	311	334											199				
ML52			321	342											266				
ML53			322	396											261				
ML54		301	339	374											250				
ML55			324	439											230				
ML56			288	426											273				
ML57			325	474															
ML58			302	514															
ML59			297	468															
ML60			283	469															
ML61			314	457									203					247	
ML62			300										248						
ML63			314										182	282					
ML64			303					328					219						
ML65			288					294					210						
ML66			310					287					206						
ML67			304					271					230						
ML68			298					303											
ML69			277				290	261			270								
ML70			273				295	259											
ML71		317	302			291	399	283					295						
ML72			315	317			286		276				295						
ML73	226		278	328			281		277				292						
ML74			325	339			293		281				255						
ML75	204		336	350			328		369				274						
ML76			328	329					361				250					358	
ML77			240	382			315						296						
ML78			266	317			333	272	330				296						
ML79			267	220			292	383	307										
ML80			279	309			264	385	252										
ML81			274	314			284		246				257					291	
ML82			284	319										171				292	
ML83				290					203				256						419
ML84		268	315					338	202				279						
ML85			274	285		331			234				302						
ML86			262	316		306	219	303					338						
ML87			256	365		247	353	217					341						
ML88	338		262	333			401		218				317						
ML89	302		268	359					200				353						
ML90	330		257	305					179				410						
ML91	320		224	359					325				386						
ML92			280	453					315				370						
ML93	329		286	355					304				358						
ML94			262	303					285				349		398				
ML95			265	292					299				371		342				323
ML96	454		281	251		285			316				361		381				275
ML97			257	207		271	295	295					303	270	385				
ML98	362		259	273		330	246	211					296	254	307		280		
ML99			264	244	231		274	286	316				291		227				
ML100			306	206	340	269	162	266	178				292		266		284		357
ML101			289	256	332	282	281	313	247				275	417	261	265			599
ML102			311	261	409	232	307	217	180				348	460	261	289			
ML103			329	286	394	270	264	285	250		299		292	472	210				
ML104			295	287	326	277	272	213	151		482		367		249	390		314	348
ML105			238	248		242	273	326	247				346		261	363		195	435
ML106			260	260		184	185	333	210				327		195	420		-878	394
ML107			219	283		286	163	690	229				262		177	344			325

	SRM	SU	TB	TRR	TC	TD	TI	TL	TP	TR	TR1	TS	TT	TTC	TTS	TV	TW	TWS
ML 1						346			388						293		417	393
ML 2						410			431						358		341	321
ML 3						396			365						330			318
ML 4						435			331			342			355			332
ML 5		223				337			375			324			321		407	324
ML 6									405			320			325			358
ML 7		331	346				357		442			305			331			359
ML 8		344				340			414			289			312			352
ML 9		310	308			290	297		400			237						336
ML10		279	302			305	301		385									308
ML11		341	358			291	293		395									335
ML12		249	309			285	319		368			350						327
ML13		332	287			274	318		375			279						
ML14			322						370									344
ML15			321				352		380		409	257						280
ML16			294	390			367		365		342	248						335
ML17			286	354			318		397		372	236						330
ML18			270	405			288		417		391	222						298
ML19			204	389			312		371		421	234						338
ML20		247		315					382		381	151						
ML21		216		346					357		395							
ML22			325						331		361							
ML23			344						321		372	274						
ML24			369						343		386							
ML25			399						371		410							
ML26			432						370		412							
ML27									343		374							
ML28			345						338		352							
ML29			315						332	334	367							
ML30									349		241							
ML31									355		239							
ML32									325		228							
ML33									348		201							
ML34									346		250							
ML35								324	344		319							
ML36	325								351		280							
ML37	465								384		240							
ML38	188								376		354							
ML39	273								380		339							
ML40			396						327		231							
ML41			375						360		225						355	
ML42									382		248		252					
ML43								416	352		519		394					
ML44									450		490		431	262				
ML45								486	438		474		340	279				
ML46			351			252		535	347	491	296			319				
ML47				310				496	440	340	567		490	313				
ML48						409		526	387	369	507	424		479				
ML49									281		337			362	359			
ML50									338					293				
ML51									311					291	288			
ML52									335					284	274		296	
ML53			347		411			406	315		270			310				
ML54			345		362				364		432			378				
ML55					312				448		531			428				
ML56					286			527	446		540							
ML57					294				419		468							
ML58					290				423		500							
ML59					292				393		493							
ML60					257				420		424							
ML61					240						485		464					
ML62					290						468							
ML63					289	507			384		496							
ML64					281	482			421		466							
ML65					117	435			440									
ML66																		
ML67																		
ML68																		
ML69					345													
ML70					314													
ML71					346			388						293		417	393	
ML72					410			431						358		341	321	
ML73					396			365						330			318	
ML74					435			331			342			355			332	
ML75	223				337			375			324			321		407	324	
ML76								405			320			325			358	
ML77	331	346				357		442			305			331			359	
ML78	344				340			414			289			312			352	
ML79	310	308			290	297		400			237						336	
ML80	279	302			305	301		385									308	
ML81	341	358			291	293		395									335	
ML82	249	309			285	319		368			350						327	
ML83	332	287			274	318		375			279							
ML84		322						370										
ML85		321				352		380		409	257						344	
ML86		294	390			367		365		342	248						280	
ML87		286	354			318		397		372	236						335	
ML88		270	405			288		417		391	222						330	
ML89		204	389			312		371		421	234						298	
ML90	247		315					382		381	151						338	
ML91	216		346					357		395								
ML92		325						331		361								
ML93		344						321		372	274							
ML94		369						343		386								
ML95		399						371		410								
ML96		432						370		412								
ML97								343		374								
ML98		345						338		352								
ML99		315						332	334	367								
ML100								349		241								
ML101								355		239								
ML102								325		228								
ML103								348		201								
ML104								346		250								
ML105							324	344		319								
ML106								351		280								
ML107								384		240								
ML108								376		354								
ML109								380		339								
ML110		396						327		231								
ML111		375						360		225						355		
ML112								382		248		252						
TL 1							416	352		519		394						
TL 2								450		490		431	262					
TL 3							486	438		474		340	279					
TL 4		351			252		535	347	491	296			319					
TL 5			310				496	440	340	567		490	313					335
TL 6					409		526	387	369	507	424		479					

- (1) $\sigma_{T\bar{L}} = \sqrt{\frac{T\bar{L} - T\bar{L}_1}{\Sigma}}$; Test does not fail if $T\bar{L}_1 \geq 1.5 \sigma_{T\bar{L}}$
- (2) $\sigma_{Bi} = \sqrt{\frac{Bi - Bi_{SUR}}{\Sigma}}$; Test does not fail if $Bi_1 \geq 1.5 \sigma_{Bi}$
- (3) $\sigma_K = \sqrt{\frac{K - K_1}{\Sigma}}$; Test does not fail if $K_1 \geq 1.5 \sigma_K$

Where Σ represents the total raw count in the energy interval, and subscript (1) represents results of 4 π data analysis. A column set is placed onto the microfiche for the single point listings of reduced data which lists A-K-U-T as altitude (A), potassium (K), uranium (U) and thorium (T). If the statistical adequacy test does not fail, a zero (0) is inserted. If it fails, a one (1) is inserted for the K-U-T. However, for altitude (A), 0 represents data from 0-700 feet. 1 represents data from 701-1000 feet, and 2 represents data from 1001 and greater feet.

G. FREQUENCY DISTRIBUTIONS OF DATA FOR EACH GEOLOGIC TYPE

The geologic units have been the basis for separation of the six radiation variables. Frequency distribution plots, which display the number of occurrences at a specific magnitude as a function of the magnitude for each of the six radiation variables, are included for each geologic unit. Data from all map line and tie lines have been included to determine these frequency distributions in Appendix I. Table A1-1 gives a summary of the average and standard deviation values for all geologic units, (also included on all histograms in Appendix I).

H. MICROFICHE REPRODUCTION OF THE SINGLE RECORD REDUCED AND AVERAGED RECORD DATA

The output listings of the single record non-averaged reduced data and averaged record data have been reproduced on MICROFICHE and are included with the report where up to 208 computer listings may be placed on a projectable 4" x 5-3/4" transparency.

I. TEST LINES

Flight lines within the map sheet area were chosen having a length of about five miles, and were surveyed prior to and following each day's operation, conditions allowing such flights. The results of these test line surveys over the same morning and evening surface location are summarized in Appendix III.

J. ALTITUDE AND GROUND SPEED HISTOGRAMS

A histogram of the ground speed of the helicopter and its altitude are included for each map and tie line in Appendix III.

K. ANOMALOUS DATA DETERMINED FROM EXAMINATION OF PROFILE LINE DATA

An evaluation of the results of all data from flight line profiles and statistical deviation maps (NGRMS maps) is made for each line. Particular attention should be given to the eU/eTh ratio in the profile data and in the NGRMS map to detect regions of anomalous eU.

1. Analysis of Histograms

The radioactivity data is shown in histogram form with counts per second (c/s) plotted against number of events (Appendix I). The histograms for ²⁰⁸Tl and ⁴⁰K were examined for conformity to a Gaussian curve. It is generally assumed that a geologic map unit, which encompasses a fairly homogeneous lithology, would have a unimodal distribution. Where map units vary significantly from a unimodal distribution, a further subdivision into more homogeneous lithologic types may be recommended. Table 7 shows the map units which vary from a unimodal model, and for which separation of two or more distributions is feasible. Only units with excess of 200 events are considered.

2. Interpretation of Radioactivity Data

Introduction

The ²⁰⁸Tl, ²¹⁴Bi, and ²¹⁴Bi/²⁰⁸Tl (ratio) data were examined for anomalous values. An anomaly is defined by a minimum of two adjacent, two-standard deviation values, or a single, three-standard deviation value. The anomalies were listed by flight line in Table 8; by geologic map unit in Table 9; Table 9 is statistically summarized in Table 10. Only positive anomalies were examined for ²⁰⁸Tl and ²¹⁴Bi, but both positive and negative values were studied for the ratio anomaly.

Relationship of Radioactivity Anomalies to Geologic Units

Quaternary Geologic Units: Qpv,Qpvb,Qc,Ql,Qst,Qal,Qp,Qal,Qs

²⁰⁸Tl Anomalies

Forty-six percent of the ²⁰⁸Tl anomalies occur in seven Quaternary units (Qpvb,Ql,Qst,Qal,Qp,Qs) which occupy some fifty-two percent of the land area. The Qal unit has twenty-six percent of the ²⁰⁸Tl anomalies in twenty-four percent of the land area; whereas, the Qal unit has two percent of the ²⁰⁸Tl anomalies in fifteen percent of the area. The ²⁰⁸Tl anomalies in the sedimentary units are either placer deposits or, as in most cases, they are the result of intra-unit variation in lithology. One of the ²⁰⁸Tl anomalies is coincident with a negative ratio anomaly at ML105, station 2505, in the Qal unit. The anomalies in the Qpvb unit, which is volcanic, may be associated with vein formation.

²¹⁴Bi and ²¹⁴Bi/²⁰⁸Tl Anomalies

Forty-nine percent of the ²¹⁴Bi and forty-eight percent of the positive ratio anomalies occur in Quaternary units, which occupy almost fifty-three percent of the map area. Most of the ²¹⁴Bi anomalies are in the Qal unit and the Qp unit; whereas, most of the positive ratio anomalies are in the Qal, Qp, Qal, and Qpvb units. ²¹⁴Bi anomalies coincide with positive ratio anomalies at the following locations:

TABLE 7. List of Radioactivity Histograms with Distributions which Deviate Significantly from a Unimodal Model

Geologic Unit	Number of Events	Recommended Split c/s (²⁰⁸ Tl)
lp6	4677	None
p6	4164	None
p6j	759	None
p6s	1659	87
Gpm	7170	None
Gml	6466	None
Gc	322	None
Gn	371	None
Op	655	None
Oee	378	35
S	959	45
Su	463	30
D	1627	None
Dn	337	29
Ddn	384	None
Mde	233	51
C	282	45
CM2	1282	57
CP	3234	None
Tr	490	110
JTrv	964	None
Øv	823	None
Øc	578	67
Tt	468	None
Tl	349	110
Tts	321	None
Ts	445	70
Mvr	2276	None
Mc	2910	None
Tbr	210	None
Ti	347	None
Tb	866	None
Ttc	379	92
Pva	773	None
Pvp	292	None
QP	7589	None
Qpvr	261	None
Qc	2240	None
Ql	6625	14
Qb	297	None
Qal1	42238	None
Qp1	3216	87
Qs	1108	None

TABLE 8. Summary of Anomalies

	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ML1	p6j,1090-1110;		Qa1,1785-1790,1850-1855,1865-1870;
ML2	Qp1,2200-2240,2250-2300;	p6j,1270;	Qa1,1000,1650;p6j,1265,1380;
ML3	Qp1,120,170;	Qa1,175;	Qa1,175-180;
ML4			Qa1,295-300,355; [p6j,220-225;]
ML5			Qa1,1510-1525;[Qa1,1745 1750]
ML6			1P,380-385,400-415,460- 465,475-480,510-520;0, 525-560;Qa1,560-570, 615;Q1,640,675;
ML7			Ddn,1450-1460;Gb,1580, Qa1,1620-1625;[Qa1,1635, 1680;]
ML8			Ddn,1785-1795;Tp 105;
ML9		Su,1460-1470;	Qa1,30-40,55,70-80,95, 205,235 450-460;0,85; Q1,490;Qa1,500-535,1325 p6s,490,930; Ddn,740-750 2215-2220,1420-1425; Su,1435-1445,1470;Tws, 1915-1925;
ML10			Oee,815-820;Dn,835;Qa1, 930;Gb,1495[Qa1,2040- 2045]
ML11	Tws,1900-1905;	Gb,1510;Tws,1905-1915;	Qa1,1245,1255-1260,1395 1495-1505,1515;
ML12	Ddn,115;		Ddn,160;Qa1,975-980, 1475;Gm,1940;Qa1, 2075;
ML13			Gm,165,440;Qa1,1055 1065,1130-1135,1145, 1150;1370;Oee,1335-1340; Gb,1445,1450,1460;
ML14	Gb,680;	Qa1,425-440;	[Qa1,405-415;]Qa1,425- 450,1020-1040,1200, 1205;Gm,1,2105-2125 2135;
		50a	

(TABLE 8. Cont'd.)

	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ML15	Gm,	Qa1,040-070;Gm,760-775; Tb,1960;Tp,2220-2320;	Gm,205-210,295;Qa1,855 955,995-1005,1190, 1200-1210,1240 Qp,1320 1325;Gm,1765;
ML16			Gb,805-810,1265-1275;Qa1, 855-860,1025-1045,1055, 1095,1200;Qp,1115-1120 Qa1,1230;Qp,1320-1325; Gm,1765;
ML17		Q1,020;	Qa1,290-295,460;Qa1,885, 1045-1060,1100,1205,1220 1225,1300-1315,1330-1340, Qp,775,800-815,975-980 Eb,1265-1270,1280;
ML18			Qp,1125-1135,1275-1280; Gm,1195-1205;
ML19		Qa1,015-020,035-040,170; Tws,1405-1420;	Qa1,430,455-460;Qp,690 695;Qa1,860-885,905-935, 1210-1215;Gb,1130-1145, 1240;Tbr,1755-1760;
ML20		Pvb,2160;Qa12175-2180;	Qp,1280-1285;Qa1,1410, 1430-1440;Gm,1780;Mv, 1905;
ML21			
ML21W			Qa1,600-605,670 ;
ML21E			
ML22		Qa1-1480-1520,1530-1550 1570-1580	Pv,1660;
ML23		Mv,040-060,190;Qa1,430- 435,470-880 Tb,2050- 2060-2100	Mv,100,185;Qa1,760-765, 785-795;Qa1,940-945;
ML24		Qa1 1720-1735;	Mv,1990-2000;
ML25			Qa1,1335-1340,1380-1400;
ML26			gr,90-95;Qa1,710-720,750, 760,780-790,820-825,980- 995; Tr,2275-2280;
ML27			Qa1,1355;
ML28			
ML28N	Qta1,1330;	50b	

(TABLE 8. Cont'd.)

	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ML28S	Mc,380-420;		
ML28W			
ML28E			
ML29	Q1,2560;		1P,2825-2840;
ML30	Mc,3900-3920;Q1,4480- 4500;		Pvb,3580-3585; [Qa1,4435-4440;]
ML31	Q1,1560-1590,1620-1640 ;Qa1,080		Tp,140;[Qa1,1520-1525; Qa1,1680-1685,2670-2690; Mc,2400-2410;]
ML32	Qa1,3900;Q13905-3925;		[Qa1,3550-3560,3575- 3580,3600-3610;Q1,3945- 3960;]
ML33			[Qa1,1780-1785;]
ML34	Pvb,2880,2940-2960, 3070;		Pvb,3515;Qa1,3565;
ML35	p6s,920-930;		Qa1,1165-1175,1200,1635, 1645;Gm,1530;
ML36			[Qa1,3270-3275;]0,3520- 3525;S,3555;
ML37	Qa1,2260-2270;	Pvb,1470-1500;	Tp,105-115;Gb,380;Gz,445 Gp6w,455;Qp,1360-1370; Qa1,1430-1460;Pvb,1470-1,
ML38			
ML38W			Gpm,3640;p6s,3910-3915;
ML38E			Tp,5280-5295;
ML39N		Tp,4560,Dn,4570-4580;	[Gb,4720-4725;]
ML40		Tp4100;	ep6,2285;Qp,2320; Mc,2465-2485,2915,2925;
ML41	p6s,700;		Qa1,35-40;Qa1,1175- 1185,1290,1365; Mc,1220-1225; Øv,1770;
ML42	Qst,2670-2690;Øv,2810, 2830;p6s,4030;		ep6,2890,3090-3095;gr 2930-3000;Øc,3115-3130; Qa1,3395,3415;Mc,3405, 3425,3435-3440;
		50c	

(TABLE 8. Cont'd.)

	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ML43	Qa11,100-110;p6,1050;	p6s,870-880;	Mc,1465-1475;1565,1580-1590;Qa1,1475-1480;
ML44	6p6w,4900-4920;	Qta1,5030-5040;	Mv,3305-3320,3360-3370; 0,3430-3440;Qa1,3685-3695 3715,3795;6m1,3815-3830; Ttc,4450;
ML45			[Mv,1635-1640;]
ML46	p6,4030-4050;Tr,4890-4900 Tp,4950-4990;	p6,4040-4050;Tp, 4950-4960 ;	6m1,3835;
ML47	Tr1,120;Tp,130,190;Qst, 1935,1955;		Mc,1155-1160,1355;Qs1, 1715-1725;
ML48	Qst,2620-2700;Tp,4690- 4700;	Qst,2620-2650,3100, 3120,3320-3350;	Qst,3315-3355;Qa1,3380- 3400;Qp1,3400-3420; [Tr,4705-4720]
ML49N ML49S ML50	Qa1,085-095; p6,4430,4450;	p6,710-725; Qst,2230-2250;	p6,710-725; Qst,3600-3605,3620,3630, 3640,3690-3700;[Qst,3885 3895;]
ML51	Qa1,2040		Qst,1435;
ML52			
ML53	Qst,900;		Qst,945;Qa1,1355,1550; 6pm,2060-2070;
ML54	Qa1,2770;0,2810-2830;	6pm,2660-2670;0,2800- 2830	1p6,2240-2245;6pm,2400, 2645;Qst,3330;
ML55	Qa11,080;		Tp,185-195;Qst,1100-1105 Qa1,1180;6m1,1385;0, 1405;[6pm,1880-1885;] 6pm,2220-2225;
ML56			0,3175;1P,3435-3440; Qst,3445-3460 ;

(TABLE 8. Cont'd.)

	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ML57	Mvr,410-425 ;	Mvr,405-415;	Qa1,1070-1080,1095-1100; [Qa1,1360-1365;]
ML58	6pm,2720;Mvr,4450;Tr1, 4800;		D,3580;Qa1,3715-3720, 3735-3740,3775-3780, 3795-3800,3810-3830;[Tr1, 4655-4665;]
ML59	Qa1,080-100 ;0c480; 6pm,2240,2270-2280;	6pm,2230-2235,2280;	[6pm,1460-1465;1745-1750]
ML60	6pm,3120,Qa1,5160-5200;		[6pm,3470-3480;]Qa1,4205- 4210;[Qa1,4540-4545;Tr1, 5060-5075;]
ML61	Mvr,250;	6pm,1360-1380,1640-1650;	Qa1,860-870,900-905; 0,1020,1080;6m1,1100-1300 1P6,1240;6pm,1320-1330;
ML62	1p6,2400-2445;ep6 2445-2460;Qa11,4700- 4740;	1p6,2440-2445;Qa11, 4700-4705;	[p6,2140-2150];6m1,3690- 3750;1P,4120-4140;
ML63	Tr1,140-145;Td,230-235; Qst,920-945;6pm,1840;ep6, 2360-2430;		Qa1,640-650,670-690, 1030-1050;Qs,975-980;6m1, 1050-1150;6pm,1150-1160; 1180-1200,1250-1260;1P6,1
ML64	1p6,2670,2690-2700;ep6, 2810-2820;6pm,3375;	1p6,2690;ep6,2800- 2810;6pm,3365;3190;	p6,2960;1p6,3800;6pm,3920 Tc,4370,4390;1P,4420-4450 4840;
ML65	6pm,2260;	6pm,1180;p6,1940;	1P,410;Tc,450;Qa1,470-500 1P6,1060-1090;
ML66	Qa1,3200-3205 ;		p6,2800,2820,2860;Qa1, 3800;1P,4580;
ML67	1P,4690,4705;		p6,2875-2880;
ML68	Qp,2300-2320,2340-2345;		1P,390;p6,1950;
ML69			
ML70			
ML71			1P,070;Qa1,850;Qp,1380- 1400,1440;
ML72			gr,3540;1P,3755-3760,3880 3890;Qa1,3980,3990,4020
ML73	1P,980-1040;Tc,70-125;	Tc,070-080;1P,900-1005; QP,1040-1060	1P,650,700,715-720,760; Qp,920,1500-1510,1525- 1530;

(TABLE 8. Cont'd.)

	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ML74	1P,4250-4270;Qa1,4540- 660;Tc,4660-4680;		1P,3490,3900,4200,4280 Qa1,4300-4320;
ML75	Tc,060-090;Qa1,090- 135,160-180,1915- 1940;	QTvb,070-090;Qa1,1910;	Qa1,300;1P,490-500,800, 915-940,955-970;gr,1060- 1080,1170-1180;
ML76	Qa1,2520-2535,4700, 4720-4750;		CP,3505,3520;
ML77			Tc,120,140,160;1P,290,820, 860;gr,950;Qa1,1365-1380, 1390-1400,1480-1500;
ML78	gr,260-270;Qa1,3290-3305, 3330-3335;	Qa1,3290-3300;	0,3030-3055,3080;CP, 3090-4000,4005-4020;gr, 3420-3425;1P,3640,3740; gr,3940;Tc,4220;
ML79	1P,440-450,510;Qa1,1020- 1025,1120-1160;gr,1010- 1020,1075,1100-1120;	Tc,050;1P,440-455,460- 470;1P,2190-2195; gr,1100-1140,2360-2370; Qa1,1140-1160,1945- 1950,2285;	1P,210-220,250-270,285, 300-305,310,700,890;Qa1, 1415-1440;0,1440-1460; Qa1,1490-1510;CP,1730; 1P,2030,2070,3000;Qa1, 2280
ML80	1P,410-435,2210-2215;CP, 470;S,520-540;gr,485,500- 520,1000-1050;Qa1,1280- 1290,2000;	1P,420-440;gr,470-500, 995-1020,1030-1040; Qa1,1275-1290;	1P,280,1940-1945,2105- 2115,2130-2135;
ML81	1P,2465-2510,2705-2720; Qa1,3390-3420,3495-4520; gr,3710-3780;CP,4250- 4275,510-530;	Qa1,3360-3420,3490- 3505;gr,3700-3730;CP,4230 4240;	Qa1,3110-3120;
ML82	CM,580-590;gr,995-1010 2265-2270;Qa1,205-235;	gr,990-1010,1200-1205; Qa1,1225;	CP,1680;S,690-700;1P,305 330,350;
ML83	gr,2830,3715-3740;		1P,4340; D,475;
ML84N	gr,960-985;	gr,980-990;	Qa1,130;150,160-175, 185-190;1P,460;Qa1,630; CM2,705-715;gr,930-950; Qpnb,1495
ML84S		Qa1,1000;	PM,300,310;CP,350;Qpnb, 400;CP,450;1P,635;

(TABLE 8. Cont'd.)

	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ML85N	Qa1,1945-2350;	Qa1,2350-2355;gr,2325;	Qa1,1650;Pm,1680-1690; gr,2060;D,2510;CM ₂ , 2525,2540-2545;
ML85S	Qa1,1250;	Qa1,1430,1450-1455;	Pm,1880-1885;Qa1,1560- 1580
ML86N	gr,4030-4040;	gr,4020-4040;	CM ₂ ,3705-3715,3750;gr, 3975;
ML86S	Qpvb2640-2650;	Qa1,2440-2460;Qpv, 2650-2655;	Pm,2155;Qa1,2280-2290, 2300-2320,2340-2345;
ML87N	gr,4650,4870-4875 ;	Qpvb,4650-4655;gr, 4860-4880;	1P,5165-5170;Qvpb,4650- 4660,4750,4770,4785- 4790;
ML87S	Qa1,3325-3355,3385- 3435;Q1,3540-3550;		gr,2995;
ML88N	gr,1190-1195,1265;	gr,1270;	CM ₁ ,560,590,895;gr,1020- 1030;
ML88S	Qa1,4105-4135,4305- 4350;4500-4520;	Qa1,4120-4140;	
ML89N	D,2090-2110;		gr,2260;D,2345;Qa1,2480, 2575,2590-2610;
ML89S	Qpvb,4805-4820;4980- 5000;gr,4840-4850;	Qa1,5050-5060;	
ML90N	Qa1,3420-3430;Qpvb, 4450-4460;		
ML90S	gr,060-075,100-120 ;	gr,105-115;	
ML90C			Qa1,5070-5075;
ML91			
ML91N		CM ₂ ,4630-4640;	Pm,5320;
ML91S		Qa1,725-730;	
ML92N			Qa1,350;p6,570;gr,695-720; Pm,760;Qa1,920;
ML92S	gr,1610-1630,1635-1650, 1685-1700,1900-1930,1930, 1960-1980;Qa1,1730-1770, 1860; 1810-1870;	gr,1610-1660,1680-1695 1970;Qa1,1740-1755,1830-	

50g

(TABLE 8. Cont'd.)

	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ML93N	Qa1,2410-2470;	Qa1,2405-2465;1P 2780-2785,3330-3355;	gr,2280;Qa1,2600;CP,2730; Qa1,3095,3110,3120-3125, 3140-3180,3185-3200,3160, 3165;
ML93S	Qpvb,2320;gr,2350,2390 2445,2640-2670;Qa1,2360 2380,2505,2520;	gr,2390-2405;	
ML94N	Qa1,4150-4210;	Qa1,4155-4180,4200-4220; gr,4250-4260 ;	Qa1,3950-3980,1005-1030, 1060;
ML94S	gr,3400-3420;		
ML95C	Qa1,5690-5710,5720- 5760;	Qa1,5695-5700,5730- 5760;	Qa1,5880;gr,6000;
ML95S	Qa1,4320-4340;Qpvb,4060;	gr,4300-4305;	
ML95N			none
ML96N	Qa1,820-910;Qpvb,460-470;	Qa1,770-835;gr,790-800	Qpvb,280;Qa1,640-650,670- 690;
ML97N	Qs,2500-2525;Qpvb,2750; 1P,2895-2905,3000-3100, Qpvb,3080 ;	Qa1,2400-2425;Qpvb, 2900-2905,3090-3100	Qpvb,3080-3100,Pm,2250; Qa1,1710-1725;
ML97S			none
ML98N	1P,3510-3520;Qa1,3460- 3470;		CP,4260-4270
ML98			
ML98S			[Qpvb,1460];
ML99			
ML99C		Qc,4960;	Qa1,5620-5630;CP,5590; Qpvb,5095,5010;Qc,4970- 4980,5010;
ML99N			Qp ₁ ,2480,2490;Qa1,2520, 2535;
ML99S			
ML100			
ML100N			Qst,595,720;Qa1,730;CP, 980;S,1110;Qpvb,1350,1390- 1400,1425;

50h

(TABLE 8. Cont'd.)

	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ML100S			Qp ₁ ,2645;gr,2960-2965;Qpvt 3095;
ML101S	Qpvb,3760;		gr,3930,4120;
ML101N		Qpvb,1800;	
ML102N	Qpvb,4850;		gr,4300;Qc,4700;Qa1,4710;
ML102			
ML102S			none
ML103N	Pm,460,480;		Qa1,310;
ML103			
ML103S	Qa1,5230;Qp5920;		
ML104			[Pm,1100-1130;Trv,1230- 1240;Qa1,1930-1945]
ML105	Qa1,2505,2530-2560; gr,2580-2620,2670; Qpvb,2970;	Qa1,2505-2510,2520- 2545;2655-2660;gr, 2580-2600,2665-2670 ;	[Qa1,2500,4240,4310,4325, 4370,4410;]
ML106	S,600;Pm,1020;D,1060; QP,1920-1940 ;	Qa1,485-550;Q1,1490- 1415,1445-1450;Qp ₁ , 1875-1900,1920, 1935-1940;	S,640,730-740;CP,960; Qa1,1300-1320,Q1,1370- 1415;Qa1,1620,1640-1670; Qp ₁ ,1680-1700;Pva,2150;
ML107	gr,1845;Pva,2330-2340;	1P,660,Qp ₁ ,1825,1885, 1930-1960,1980;	CP,1010;Qp ₁ ,1900-1910, 1940,1950-1960,2030; Qpvb,1975;Pva,2040;
ML108	Pva,2890,2930,2960;	Pva,2900,2940-2970; Qp3060-4050;	Pva,2940-2950;Qp ₁ ,3100, 3115,3150,3205-3235;S, 3965;
ML109		gr,650-660;	gr,345,370-380;CP,790; gr,820,830,890;Q1,980, 990,1005;Qc,1565;Qa1 1575-1590,1605-1615, 1675-1695;Pva,1940;Qa1, 1970;
ML110	1P,4440-4460;	1P,4445-4450;gr,4460- 4465;	Qa1,2715-2730,2800;Q1, 3305;Qa1,3705;Tr,3900;
ML111	gr,670;Q1,1325;	gr,670-675;	gr,100,140,170;Pm,710; Q1,1205,1530-1540;Qa1, 1615-1630;

50i

(TABLE 8. Cont'd.)

	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ML112	Qa1,2485;Q1,3160;gr,3660-gr,3660-3700,4025-3700;S,3740;	gr,3660-3700,4025-4030;	gr,4410,4540;
TL1W	Qp vb ,680-685,780-795,gr,850-855,870;	gr,710;	none
TL1E	Qa1,430-435,4120-4150;gr,4155-4165;		Mvr,3840
TL2	Gpm,1880-1895;Qa11900-1905;	Qst,1430-1470;Pm2870-2875;Qa12875-2880,2650;Qp,3510;	[Qst,1400-1450];[gr,2615-2655];Qa1,2060-2070;3690-3700;
TL3	Q1,2155-2160;Qs2160-2170;	Q1,255-260;Qs,270;270;Qp vb ,430-435;Qp1,2580,2595,2620;	[0,2760]; [Qp,2590-2600];Pvb,500-510];[Mc,2195-2200];
TL4E	Qa1,1520;	Qa1,280,295;	[Qa1,270-290];
TL4W		S,1800,2140;	[Qa1,180-190,220-235];Pm2055,2075;gr,1270-1280;gr,1190-1200;gr,1170;1P,670-580;
TL5W	D,1140;	Qp vb ,805-825;gr,825-850,870-895;Qa1,1075-1090,1555-1580;1P,1460-1495;	[Qa1,1805-1825];gr,760;Qp vb ,780;1P,2140
TL5E			none
TL6E	Qp1,245-255;	Qa11,1290,1340;	[QTa1,60-70];Tr1,70-80];Tr,520;Tr,860-880;MDe,1220,1240;
TL6W	Qa11,370;	1P,1560-1570;	Tp,640;[Tt,930];[Tr1,940-990] 1P,1075;1P,2140-2180; Qp vb ,2200-2220;
(.....) Denotes Negative Anomaly			

TABLE 9. Radioactivity Anomalies per Geologic Map Unit

Geologic Map Unit	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
ep6	3	1	3
lp6	3	2	5
p6	4	2	8 (1)
p6j	1	1	1 (1)
p6s	3	0	3
Gp6w	1	0	1
Gpm	9	8	10 (4)
Gm1	1	1	18
G3	0	0	2
Gb	1	1	9 (1)
Gn	0	0	1
0	1	1	10 (1)
Oee	0	0	2
S	2	1	6
Su	0	1	2
D	3	0	5
Dn	0	1	2
Ddn	1	0	5
Mde	0	0	1
CM2	1	1	11
CP	4	1	13
Pm	3	1	15 (1)
1P	9	11	59
Tr	1	1	1 (1)
JTrv	0	0	0 (1)
gr	43	30	43 (1)
QTvb	0	1	0
Tc	2	2	7
Øv	1	0	2
Øc	1	0	1
Tt	0	0	0 (1)
Td	2	0	0
Mv	0	2	6 (1)
Mvr	4	1	1
Mc	2	0	11 (2)
Thr	0	0	1
Tws	1	2	3 (4)
Tr1	4	0	6
Tp	4	3	0
Tb	0	3	6
Pva	4	1	3 (1)
Pvb	3	2	1
Ptc	0	0	4
Qp	2	1	0 (1)
QTa1	1	0	0
Qpv	0	1	21 (1)
Qp vb	16	7	7
Qc	0	1	8
Q1	9	3	

TABLE 9. (Continued)

Geologic Unit	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
Qst	7	6	13 (2)
Qa11	5	7	46 (1)
Qp1	7	10	34 (3)
Qa1	60	45	130 (21)
Qs	2	1	1

(.....) denotes negative anomalies

TABLE 10. Statistical Summary of Radioactivity Anomalies

Geologic Unit	²⁰⁸ Tl	²¹⁴ Bi	²¹⁴ Bi/ ²⁰⁸ Tl
Precambrian Units			
No. of Anomalies	5	4	5 (2)
No. of units with Anomalies	14	6	20 (2)
Paleozoic Units			
No. of Anomalies	12	11	18 (4)
No. of units with Anomalies	36	28	161 (7)
Mesozoic Units			
No. of Anomalies	2	2	2 (3)
No. of units with Anomalies	44	31	44 (3)
Tertiary Units			
No. of Anomalies	13	10	14 (6)
No. of units with Anomalies	31	18	53 (10)
Quaternary Units			
No. of Anomalies	7	9	8 (6)
No. of units with Anomalies	106	81	260 (28)
Total Sample			
No. of Anomalies	39	36	47 (21)
No. of Units with Anomalies	231	164	538 (50)

(....) denotes negative anomalies

- Qa₁ - ML3, station 175;
Qa₁ - ML14, stations 425-440;
Qa₁ - ML39N, station 80;
Qa₁ - ML79, station 2280;
Qa₁ - TL4E, station 280;
Qst - ML48, station 3315-3355;
Qpvb - ML87N, stations 4650-4655;
Qpvb - ML97N, stations 3090-3100;
Qpvb - ML101N, station 1880;
Qpvb - ML106, station 1415;
Qp₁ - ML106, station 1940;
Qp₁ - ML106, stations 1950-1960;
Qp₁ - ML108, stations 3100-3235.

The coinciding pairs of anomalies in the sedimentary units may reflect the precipitation of uranyl ions from ground, soil or surface waters in reducing environments, or as a result of evaporation sinks. The coinciding pairs of anomalies in the volcanic units may indicate hypogenetically formed deposits.

Tertiary Geologic Units: Qtvb,Tc,Øv,Ø,Tt,Td,Mv,Mvr,Mc,Tbr,Tbr,Tws,Tr₁,Tp,Tb,Pva,Pub,Ttc,Qp,Qtal.

²⁰⁸Tl Anomalies

Thirteen percent of the ²⁰⁸Tl anomalies occur in thirteen Tertiary units, which occupy some fifteen percent of the map area. The anomalies are fairly evenly distributed throughout the Tertiary units, with no unit having more than four ²⁰⁸Tl anomalies. Most of the anomalies appear to be the result of intra-unit changes in lithology. Some of the anomalies in the volcanic units may be associated with hydrothermal veins. None of the ²⁰⁸Tl anomalies coincide with ratio anomalies.

²¹⁴Bi and ²¹⁴Bi/²⁰⁸Tl Anomalies

Eleven percent of the ²¹⁴Bi anomalies and ten percent of the positive ratio anomalies occur in ten and fourteen, respectively, of the Tertiary units, which occupy between fourteen and fifteen percent of the map area. The ²¹⁴Bi anomalies are very evenly distributed throughout the geologic units, with no unit having a higher aggregate than three. The ratio anomalies are less evenly distributed, with by far the greatest number of ²¹⁴Bi/²⁰⁸Tl anomalies occurring in the Mc unit (11). ²¹⁴Bi anomalies coincide with ratio anomalies at: ML23, station 190 (Mv) and ML 108, stations 2940-2950 (Pva). The coinciding pairs of anomalies may reflect epigenetically or supergenetically-formed concentrations of uranyl ions. The source of the uranyl ions may well be volcanic or tuffaceous units. Some of the anomalies in the volcanic units may be associated with vein, fracture or brecciated zones.

Tertiary Geologic Units: Qtvb,Tc,Øv,Ø,Tt,Td,Mv,Mvr,Mc,Tbr,Tbr,Tws,Tr₁,Tp,Tb,Pva,Pub,Ttc,Qp,Qtal.

²⁰⁸Tl Anomalies

Thirteen percent of the ²⁰⁸Tl anomalies occur in thirteen Tertiary units, which occupy some fifteen percent of the map area. The anomalies are fairly evenly distributed throughout the Tertiary units, with no unit having more than four ²⁰⁸Tl anomalies. Most of the anomalies appear to be the result of intra-unit changes in lithology. Some of the anomalies in the volcanic units may be associated with hydrothermal veins. None of the ²⁰⁸Tl anomalies coincide with ratio anomalies.

²¹⁴Bi and ²¹⁴Bi/²⁰⁸Tl Anomalies

Eleven percent of the ²¹⁴Bi anomalies and ten percent of the positive ratio anomalies occur in ten and fourteen, respectively, of the Tertiary units, which occupy between fourteen and fifteen percent of the map area. The ²¹⁴Bi anomalies are very evenly distributed throughout the geologic units, with no unit having a higher aggregate than three. The ratio anomalies are less evenly distributed, with by far the greatest number of ²¹⁴Bi/²⁰⁸Tl anomalies occurring in the Mc unit (11). ²¹⁴Bi anomalies coincide with ratio anomalies at: ML23, station 190 (Mv) and ML 108, stations 2940-2950 (Pva). The coinciding pairs of anomalies may reflect epigenetically or supergenetically-formed concentrations of uranyl ions. The source of the uranyl ions may well be volcanic or tuffaceous units. Some of the anomalies in the volcanic units may be associated with vein, fracture or brecciated zones.

Mesozoic Geologic Units: Tr,Jtrv,gr

²⁰⁸Tl Anomalies

Twenty five percent of the ²⁰⁸Tl anomalies occur in the gr unit, which occupies some eight percent of the map area. Thus the concentration of ²⁰⁸Tl anomalies in the gr unit is denser than in any other major unit. None of the ²⁰⁸Tl anomalies coincide with negative ratio anomalies. The ²⁰⁸Tl anomalies may be thorium-rich mineral concentrations associated with: (i) pegmatites; (ii) hydrothermal veins; (iii) unmapped placer deposits, where the thorium-rich minerals are derived from the granitic source rocks.

²¹⁴Bi and ²¹⁴Bi/²⁰⁸Tl Anomalies

Nineteen percent of the ²¹⁴Bi anomalies and eight percent of the positive ratio anomalies occur in the gr unit, which occupies some eight percent of the map area. None of the ²¹⁴Bi anomalies coincide with ratio anomalies. The ²¹⁴Bi anomalies are often the result of intra-unit changes in lithology, but some may be associated with: (i) Pegmatites; (ii) hydrothermal veins; (iii) unmapped placer deposits; (iv) epigenetically precipitated uranyl ions from soil, or near-surface, aqueous solutions.

Paleozoic Geologic Units: GpGw,Gpm,Gm₁,Gz,Gb,Gn, O,Oee,S,Su, Dn,Ddn,Mde,CM2,CP,Pm,lp.

²⁰⁸Tl Anomalies

Sixteen percent of the ²⁰⁸Tl anomalies occur in twelve Paleozoic units, which occupy some fifteen percent of the map area. The Epm(9) and lp(9) units have the highest aggregates, and the largest areal extents. None of the ²⁰⁸Tl anomalies coincide with negative ratio anomalies. Most of the anomalies are associated with intra-unit changes in lithology.

²¹⁴Bi and ²¹⁴Bi/²⁰⁸Tl Anomalies

Seventeen percent of the ²¹⁴Bi anomalies and thirty percent of the positive ratio anomalies occur in the Paleozoic units, which occupy between fifteen and eighteen percent of the land area. Coinciding pairs of anomalies occur at: ML9, stations 1460-1470 (Su), and ML61, stations 1360-1380 (Epm). The coinciding pairs of anomalies may be related to groundwater precipitation of uranyl ions in pore spaces, with carbonaceous material, or they may be associated with geologic obstructions to the groundwater flow. Other anomalies may be associated with vein, fracture, and brecciated zones in the Paleozoic rocks.

Precambrian Geologic Units: epG,lpG,pG,pGj,pGs

²⁰⁸Tl Anomalies

Six percent of the ²⁰⁸Tl anomalies occur in the Precambrian geologic units. The Precambrian units occupy about five percent of the map area. The ²⁰⁸Tl anomalies are fairly evenly distributed throughout the units. Most of the anomalies are associated with changes in lithology within a unit; some may be associated with placer deposits.

²¹⁴Bi and ²¹⁴Bi/²⁰⁸Tl

Greater than three percent of the ²¹⁴Bi anomalies and almost four percent of the positive ratio anomalies are located in the Precambrian geologic units, which occupy some five percent of the surveyed area. The anomalies are fairly evenly distributed throughout the area. A Bi anomaly in the pGj unit coincides with a ratio anomaly at ML2, station 1270. The anomalies are mostly associated with intra-unit changes in lithology. Some may be associated with faulted and brecciated areas, or with placer deposits.

Relationship of Radioactivity Anomalies to Known Occurrences

Southern Nye County

A ²¹⁴Bi anomaly on ML44, station 5030-5040, is in the general vicinity of the Red Dog No. 3 Prospect, the Black Bart Extension Claim and the Black Bonanza claims (Nos. 1-27). The anomaly appears to be in

a QTa1 unit, surrounded by Tertiary volcanics. The Red Dog No. 3 Prospect has anomalous radioactivity along a fracture in tuff and rhyolite; the Black Bart Extension Claim and the Black Bonanza claims (Nos. 1-27) has radioactivity associated with silicified fault breccias along north-trending faults in a Tertiary rhyolite; uranophane and autunite have been reported for this location (Garside, 1973).

²¹⁴Bi anomalies on ML39N, stations 4560-4580, in Tp and Dn units are in the general vicinity of the Daisy Fluorspar Mine and the Butler Prospect. At the Daisy Fluorspar Mine anomalous radioactivity occurs with purple earth fluorite in a series of pipes, irregular bodies, and veins with pipe-like shoots associated with a thrust fault. The pipes are localized in dolomitic zones of the Nopah Formation (Garside, 1973).

At the Butler Prospect anomalous radioactivity occurs with fluorite in a Cambrian limestone. Silicification and iron-staining have been observed (Garside, 1973).

California

²¹⁴Bi anomalies on ML88, stations 4120-4140 (Qal), and TL2, stations 2870-2875 (Pm), are in the general vicinity of the Empress Mine in the northern end of the Argus Range; these ²¹⁴Bi anomalies do not coincide with ratio anomalies.

²¹⁴Bi anomalies on ML106, stations 1875-1940, ML107, stations 1825-1980, and ML108, stations 3060-4050 and 2940-2970, occur in the Qp1 and Pva units, and are in the general vicinity of the developed prospects of the Olancha area on the eastern side of Owens Valley. In this area, secondary uranium minerals are found in the Pliocene-Pleistocene aged Coso Formation, which overlies Mesozoic granitic rocks. Ratio anomalies coincide with many of these ²¹⁴Bi anomalies.

²¹⁴Bi anomalies on ML99C, station 4960(Qc), and TL3, stations 430-435(Pva), are in the general area of the Santa Rosa Mine in the extreme southern part of the Inyo Mountains. The Santa Rosa Mine is in silicated limestone of Permian age, and is bounded by Tertiary volcanics.

Extensive ²¹⁴Bi anomalies on ML93N, stations 2405-2465 (Qal); ML94N, stations 4155-4220 (Qal) and 4250-4260 (gr); ML95C, stations 5695-5760 (Qal); ML96N, stations 770-830 (Qal and gr units); ML97N, stations 2400-2425 (Qal), are to the south of the Ubehebe Mine; whereas, ²¹⁴Bi anomalies on ML93N, stations 2780-2785 (lp), and TL5W, stations 825-895 (gr), are in the general vicinity of the Lippincott Mine. The Ubehebe and Lippincott mines are associated with quartz monzonite, syenite and minette dikes, and irregular replacement bodies and fracture fillings in Paleozoic dolomites.

and Lippincott mines are associated with quartz monzonite, syenite and minette dikes, and irregular replacement bodies and fracture fillings in Paleozoic dolomites.

Relationship of the Radioactivity Anomalies to Cultural Features

There appears to be no significant relationship between the loci of ²⁰⁸Tl anomalies and the distribution of cultural features on the map sheet.

²¹⁴Bi Anomalies

There appears to be an absence of significant relationship between the loci of ²⁰⁸Tl anomalies and the distribution of cultural features in the area.

²¹⁴Bi/²⁰⁸Tl Anomalies

The distribution of ratio anomalies does not appear to be associated with the distribution of cultural features.

Trends

²⁰⁸Tl Anomalies

The distribution of the ²⁰⁸Tl anomalies is uneven. Large areas are almost devoid of anomalies; whereas, other areas tend to have developed clusters of anomalies. There are relatively few ²⁰⁸Tl anomalies in the northeastern quadrant of the map sheet area, particularly in the Amargosa Desert area (Qal₁).

Several clusters of ²⁰⁸Tl anomalies exist in the western third of the map area. These clusters are located: (i) south of TL2 between ML72 and ML 96, an area dominated by the Argus and Coso ranges and intervening Etcherson Valley; (ii) between TL3 and TL4 and ML74 and ML92, at the junction of the Cottonwood and Nelson ranges and the Panamint Valley; (iii) between TL4 and TL5 and ML89 and ML99, in the southern part of the Saline Valley; (iv) a group of anomalies lies north of TL6, between ML77 and ML43, which traverses the Grapevine Mountains, the Sarcobatus Flat, and the Bullfrog Hills.

²¹⁴Bi Anomalies

The ²¹⁴Bi anomalies are not as densely distributed as the T anomalies, but as is the case with the ²⁰⁸Tl anomalies, they are unevenly distributed throughout the map area, and in some places form noticeable clusters. There are almost no anomalies noted in the north-eastern quadrant. However, a very dense group of anomalies occurs in the southeastern quadrant between TL1 and TL3 and ML22 and 23. The greatest concentration of both ²¹⁴Bi anomalies, and clusters of these anomalies, occurs in the western third of the map area. These clusters

are located: (i) between TL1 and TL2 and ML86 and ML92, in the eastern Coso Range; (ii) in the vicinity of TL2, between ML103 and ML107, on the southeastern margin of Owens Valley; (iii) between TL3 and TL4 and ML79 and ML86, at the junction of the Cottonwood Mountains and the Nelson Range; (iv) between TL4 and TL5 and ML94 and ML96, in the south-central Saline Valley and northern Nelson Range area.

$^{214}\text{Bi}/^{208}\text{Tl}$ Anomalies

The number of ratio anomalies is much greater than the number of ^{208}Tl or ^{214}Bi anomalies. The distribution is more even throughout the map area than are the distributions of the other characters. However, the ^{214}Bi anomalies tend to form a number of small clusters that generally coincide with discrete areas of ranges or basins; in places, there is a tendency for anomalies to cross the boundary between adjacent basins and ranges.

3. Summary and Recommendations

Between forty and fifty percent of the anomalies occur in the Quaternary sediments or volcanics of the basins. The Qal unit, in Inyo County, has a particularly high aggregate of all anomalies. Some of the ^{214}Bi anomalies may well reflect supergenetically or epigenetically concentrated uranyl ions from ground or surface waters. Intrusive and volcanic rocks underlie and flank many of the basin areas and are potential sources for uranyl ions.

In the ranges Tertiary volcanic and tuffaceous units, Mesozoic granitic units, and Paleozoic limestones, with intruded quartz veins, are the most likely locations for uranium mineralization. Many faults and brecciated areas in these units are ideal loci for uranium mineralization. The gr unit, in Inyo County, has a high density of ^{214}Bi anomalies. The gr unit underlies many of the Quaternary sediments.

The ratio anomalies are far more numerous than either the Bi, or the ^{208}Tl anomalies. Many of these anomalies are extremely localized, and are really only significant when coinciding with ^{214}Bi or ^{208}Tl anomalies.

There are a number of prospects, claims and productive uranium locations in the Death Valley Map Sheet area. Generally, ^{214}Bi anomalies are clustered in the general vicinity of these prospects and mines, although they do not necessarily coincide.

APPENDIX I

FREQUENCY DISTRIBUTION OF RADIATION DATA

AS A FUNCTION OF GEOLOGIC UNIT

T ₁		B ₁		K		B ₁ /T ₁		B ₁ /K		T ₁ /K		NO. EVENTS	GEOL. UNIT
σ	̄	σ	̄	σ	̄	σ	̄	σ	̄	σ	̄		
21.5706	26.1	61.0472	68.11	21.3966	116.3	2.2644	2.4600	0.6076	0.6226	0.1270	0.2803	282	C
14.9527	21.3	45.7736	56.8	46.7608	79.8	12.8856	2.6850	0.6359	0.7380	0.0981	0.2694	2071	CB
23.6747	40.5	58.0741	97.4	73.5557	137.0	1.0487	2.4605	0.3180	0.7205	0.0666	0.2974	332	CC
20.0843	31.2	54.9412	72.5	88.4265	125.0	3.4964	2.3505	0.6632	0.6521	0.1731	0.2796	6466	CM1
25.4574	30.7	73.7683	90.2	63.4642	87.0	6.1161	3.4943	1.0304	1.1511	0.2982	0.3678	1282	CM2
16.2784	23.9	47.4953	47.5	50.5428	80.6	2.9859	1.9739	0.6589	0.5617	0.1035	0.3054	371	CN
24.6038	35.6	62.8848	110.7	72.6033	115.7	17.1177	3.7266	1.5882	1.1123	0.5743	0.3247	3234	CP
22.1737	49.0	44.8725	109.2	64.6652	176.3	0.8934	2.3339	0.2212	0.6358	0.0691	0.2814	832	EPCW
20.2731	51.0	46.3428	102.1	66.5939	177.9	0.9622	2.0941	0.5930	0.6082	0.9129	0.2967	7170	CPM
39.3234	67.0	86.7883	130.4	142.0280	226.5	0.4853	1.8555	0.2311	0.5987	0.1246	0.3297	110	EZ
21.3272	21.0	58.8699	54.3	61.0819	65.0	26.6747	2.6835	2.6013	1.0141	0.5623	0.3632	1625	D
19.6253	45.7	25.8832	159.8	32.7621	106.0	1.4510	4.0563	0.4621	1.6160	0.1324	0.4274	35	DD
20.2886	29.6	62.2062	62.9	68.4896	92.9	2.4173	1.9269	0.7133	0.6252	0.1552	0.3547	384	DDN
20.3446	31.1	52.8479	62.3	66.8843	107.4	2.6202	2.5713	0.9122	0.8042	0.0968	0.3043	337	DN
50.5501	59.7	76.2113	93.9	120.7939	242.2	1.5494	1.7345	0.2707	0.3830	0.1679	0.2624	2562	EPC
36.8891	74.5	78.0711	162.0	87.2067	241.2	2.3487	2.2993	0.3813	0.7075	0.1689	0.3233	21760	GR
22.0074	27.3	58.4288	69.4	72.2052	94.1	3.7917	2.7358	9.0144	0.9177	1.3545	0.3214	16591	LP
27.8093	54.1	53.2985	122.6	73.7441	189.1	1.1164	2.4779	0.3508	0.7010	0.1003	0.2946	4677	IPC
23.9317	58.9	71.3540	162.1	98.6868	252.0	1.1253	2.9074	0.2889	0.6823	0.0610	0.2379	964	JTRV
31.5295	51.8	79.4152	135.0	100.3675	176.3	1.1138	2.8311	0.1696	0.7804	0.0571	0.2921	107	MB
19.3186	43.6	48.3586	101.5	90.0531	182.3	1.3596	2.5443	0.3176	0.6099	0.0818	0.2508	2910	MC
21.5396	42.7	63.2586	94.8	64.9307	131.6	1.1740	2.2196	0.4815	0.7834	0.1036	0.3407	233	MDE
12.9524	22.7	24.9421	57.1	46.5408	76.8	1.3254	2.8662	0.4201	0.8571	0.0854	0.3119	134	MMC
12.5994	64.9	44.7473	156.5	90.8328	276.7	0.6725	2.4456	0.2258	0.6042	0.0916	0.2532	2809	MV
26.7084	75.3	54.7572	149.2	122.8127	320.0	0.6867	2.0645	0.1908	0.4995	0.0888	0.2548	2276	NVR
15.9910	17.2	49.9545	39.8	52.6715	63.0	28.7353	1.5908	2.2752	0.6893	0.6941	0.3283	2189	O
21.8606	48.8	43.6450	107.8	116.1279	192.4	10.1076	2.4129	1.5406	0.7762	0.1083	0.2887	578	OC
16.6223	26.7	50.0402	54.1	67.8136	97.0	2.4310	2.2431	0.6055	0.6124	0.1547	0.3092	378	QEE
22.7695	28.2	57.8711	64.1	69.6100	101.4	1.8413	2.3933	0.5780	0.6782	0.0960	0.2842	655	OP
13.5674	49.9	48.2034	150.1	116.0281	401.3	0.9449	3.1119	0.1288	0.4060	0.0441	0.1372	823	OV
19.1828	62.5	55.8063	134.3	60.0424	184.6	1.0111	2.2173	0.3483	0.7609	0.1052	0.3510	4164	PE
13.7234	52.2	45.9098	113.4	38.5355	174.4	0.7036	2.1378	0.2286	0.6407	0.0561	0.3009	759	PCJ
17.7165	49.6	50.7564	108.8	59.3301	174.4	0.7267	2.1778	0.2222	0.6239	0.0585	0.2901	1659	PES
3.6016	49.4	13.1636	95.9	9.7575	172.1	0.2995	1.9500	0.0980	0.5607	0.0281	0.2880	15	PES
13.6983	36.2	49.6600	120.3	56.4428	131.2	1.6807	3.5307	0.3917	0.9760	0.1007	0.2922	3000	PM
20.0276	53.7	171.0788	196.5	65.5482	240.8	1.7385	3.4516	0.4822	0.7810	0.0549	0.2240	773	PVA
15.6259	44.9	48.4913	100.3	72.1144	160.2	0.9105	2.2681	0.3183	0.6707	0.0712	0.2927	1607	PVB
11.0840	36.7	41.9598	103.5	48.1318	125.7	1.0412	2.8725	0.5654	0.9392	0.0893	0.3143	292	PVP
10.3559	108.0	38.6148	196.3	30.9064	353.8	0.3683	1.8271	0.1145	0.5579	0.0365	0.3069	58	PZU
23.9361	53.5	61.3607	131.5	79.1729	187.6	2.8033	2.5782	1.4346	0.7430	1.1018	0.2923	67669	QAL
38.0222	77.3	195.6242	175.0	87.3709	236.0	3.5475	2.4317	2.6291	0.7492	0.0690	0.3217	42238	QAL1
17.4112	84.2	51.2971	168.2	41.5180	248.7	0.4878	2.0050	0.2244	0.6875	0.0665	0.3422	297	QB
22.1350	48.8	54.7884	112.0	95.0802	211.8	1.2524	2.3974	0.3366	0.5670	0.0918	0.2472	2240	QC
21.6635	42.7	66.4484	116.9	81.0223	154.1	8.4620	2.3546	0.7125	0.7963	0.2256	0.3091	6223	QL
20.3319	44.9	67.1322	120.2	78.2247	176.9	3.6029	2.9448	0.8009	0.7158	0.1461	0.2613	7589	QP
21.1255	45.3	64.1450	150.5	52.6002	186.1	1.4389	3.6704	0.3180	0.8369	0.0681	0.2394	3216	QP1
16.1386	81.3	44.2255	172.2	27.2220	197.7	0.3163	2.1236	0.2523	0.8857	0.1052	0.4171	116	QPV
17.9064	44.0	54.1047	110.6	54.2307	141.4	2.8857	2.5634	0.3398	0.8060	0.1037	0.3194	12935	QPVb
19.8151	111.5	58.6141	264.9	25.8878	251.8	0.3776	2.3875	0.2006	1.0511	0.0678	0.4432	261	QPVr
12.3123	52.9	52.1202	158.9	57.6669	230.1	0.8679	3.0259	0.2645	0.7154	0.0629	0.2386	1108	QS
13.6116	35.4	34.8635	82.8	48.0484	133.8	2.7468	2.2519	0.3192	0.6354	0.0860	0.2724	7420	QST
26.8827	110.4	55.1242	217.4	57.2342	286.4	0.4521	2.0116	0.1829	0.7696	0.0741	0.3877	1289	QTAL
6.7557	39.2	22.8315	127.1	23.5304	138.8	0.3757	3.2592	0.1122	0.9188	0.0371	0.2832	25	QTC
12.0274	53.5	33.1815	112.5	24.7886	169.0	0.7383	2.1873	0.2099	0.6758	0.0581	0.3170	121	QTVB
15.3388	19.8	51.9128	57.6	59.1547	65.7	14.7229	2.5770	4.6334	0.8153	4.0527	0.2148	959	S
10.9827	34.0	38.0797	41.2	27.1989	95.3	1.0865	0.9323	0.3993	0.3900	0.0849	0.3632	22	SLM
13.4975	20.0	43.4268	39.2	39.1535	65.8	2.2590	2.2900	0.7408	0.6994	0.1595	0.3220	50	SRM
13.9132	18.4	36.4686	53.4	44.1502	64.3	3.0780	3.6798	0.7307	1.0002	0.1196	0.2938	463	SU
22.9533	72.0	50.4725	165.6	51.3887	220.4	0.7097	2.3930	0.1997	0.7596	0.0581	0.3247	866	TB
19.7470	109.5	42.0434	245.9	64.8547	304.4	0.5564	2.3152	0.2156	0.8425	0.0680	0.3672	210	TBR
22.0672	45.3	46.0871	103.1	57.4019	140.9	21.7129	2.8885	0.4203	0.7558	0.0925	0.3250	2464	TC
25.4562	155.0	41.5215	276.9	53.1943	325.5	0.2797	1.8104	0.1285	0.8609	0.0520	0.4784	57	TD
20.8843	66.6	39.4318	166.3	39.1738	206.6	0.8142	2.6151	0.2011	0.8169	0.0608	0.3203	347	T1
26.8176	149.8	45.9230	232.2	46.6942	311.9	0.3729	1.5915	0.1405	0.7496	0.0824	0.4828	349	TL
23.7760	116.2	56.2347	230.5	59.7811	317.2	0.4638	2.0220	0.1977	0.7442	0.0644	0.3703	9137	TP
48.2620	52.9	65.4177	131.8	83.8178	162.3	1.3925	3.2213	0.3297	0.8673	0.1058	0.2933	490	TR
24.2426	132.8	56.5958	255.6	53.3215	320.0	0.4543	1.9602	0.1825	0.8109	0.0775	0.4210	3393	TR1
17.0580	46.2	49.9645	129.1	62.1608	176.2	1.1124	2.9999	0.2500	0.7697	0.0619	0.2686	445	TS
26.9352	123.8	45.9798	226.6	59.4449	311.5	0.3977	1.8785	0.1791	0.7455	0.0904	0.4053	468	TT
18.3852	74.1	40.6342	158.8	67.2505	256.1	0.4735	2.1835	0.1354	0.6345	0.0569	0.2958	379	TTC
13.8735	56.1	37.2404	114.0	40.8063	169.5	0.5194	2.0421	0.1653	0.6755	0.0503	0.3336	321	TTS
23.7042	126.0	22.3073	172.7	29.5665	314.2	0.3990	1.4358	0.0869	0.5526	0.1022	0.4074	19	TV
27.9658	74.8	52.9671	155.8	107.0197	227.8	0.3402	2.1343	0.1694	0.7429	0.0640	0.3483	42	TW
13.1012	74.3	40.7308	166.8	36.9887	222.3	0.5141	2.2677	0.1771	0.7594	0.0488	0.3375	2049	TWS
43.0191	36.0	72.1767	82.6	110.6010	119.7	8.0860	2.6931	7.6792	0.9304	1.6996	0.3036	7684	UNK

AI-1 Summary of Average and Standard Deviation Values
for the NTMS as a Function of Geologic Unit.

A 1

A 2

A3

A4

R 5

R 6

R7

R8

A 9

A 10

A 11

A 12

R 15

R 16

A 17

A 18

A23

A24

A25

A26

A27

A28

A 29

A 30

A 31

A 32

A 37

A 38

R43

R44

DEATH VALLEY
GEOLOGIC UNIT QP

DEATH VALLEY
GEOLOGIC UNIT QP1

A 47

A 48

DEATH VALLEY

A51

DEATH VALLEY

A52

A 53

A 54

A 57

A 58

A 61

A 62

R 65

R 66

A 67

A 68

A69

A70

A71

A72

A73

A74

APPENDIX II
DESCRIPTION OF MAGNETIC TAPES AND LISTINGS

A. DESCRIPTION OF DATA TAPES

A1. General

All data tapes are 9-track, 800 BPI (NRZI), odd parity, EBCDIC code. Each tape contains a gum label giving the survey project name, month and year of survey, tape type, subcontractor name, date tape created, tape reel count, tape recording characteristics, block size in Bytes and location of tape format information.

The general description for each of the tape types is as follows:

Block Number	Description
1	Format Description
2	Tape Identification
3	First Data Block
4	Second Data Block
.	.
.	.
.	Last Data Block
EOF	

A2. Raw Spectral Data Tapes

Block Size (Physical Record): 6600 characters
Logical Record, Data : 1100 characters

1. Format Description Block (Block 1)

The Format Description utilizes 4248 characters. The remaining 2352 characters of this block are blanks.

Line Number	Character Number
1234567890123456789012345678901234567890123456789012	
1	01 0978 (DATA TAPE TYPE AND FORMAT SPECIFICATION DATE CODES)
2	
3	RAW SPECTRAL DATA TAPE
4	
5	FORMAT FOR TAPE IDENTIFICATION BLOCK (SECOND BLOCK ON TAPE)
6	
7	ITEM FORMAT DESCRIPTION
8	1 A40 QUADRANGLE NAME AS PROJECT IDENTIFICATION
9	2 A20 NAME OF SUBCONTRACTOR
10	3 I4 APPROXIMATE DATE OF SURVEY (MONTH, YEAR)

Line Number	Character Number
1234567890123456789012345678901234567890123456789012	
11	4 I1 AERIAL SYSTEM IDENTIFICATION CODE
12	5 A20 AIRCRAFT IDENTIFICATION BY TYPE AND FAA NUMBER
13	6 I3 BFEC CALIBRATION REPORT NUMBER
14	7 F6.3 4PI SYSTEM DATA COLLECTION INTERVAL TO THREE DECIMAL PLACES IN SECONDS
15	
16	8 F6.3 2PI SYSTEM DATA COLLECTION INTERVAL TO THREE DECIMAL PLACES IN SECONDS
17	
18	9 I3 NUMBER OF CHANNELS (0-3 MEV) FOR 4PI SYSTEM
19	10 I3 NUMBER OF CHANNELS (0-3 MEV) FOR 2PI SYSTEM
20	11 I3 NUMBER OF FLIGHT LINES ON THIS TAPE
21	12 I4 FIRST FLIGHT LINE NUMBER ON THIS TAPE
22	13 I6 FIRST RECORD NUMBER OF FIRST FLIGHT LINE
23	14 I3 JULIAN DATE (DAY OF YEAR) FIRST FLIGHT LINE WAS COLLECTED
24	
25	15-17 I4,I6,I3 REPEAT OF ITEMS 12-14 FOR SECOND FLIGHT LINE ON THIS TAPE
26	
27	* * *
28	* * *
29	* * *
30	306-308 I4,I6,I3 REPEAT OF ITEMS 12-14 FOR 99TH FLIGHT LINE ON THIS TAPE
31	
32	
33	FORMAT FOR RAW SPECTRAL DATA RECORD (THIRD THRU LAST BLOCK ON TAPE)
34	
35	ITEM FORMAT DESCRIPTION
36	1 I1 AERIAL SYSTEM IDENTIFICATION CODE
37	2 I4 FLIGHT LINE NUMBER
38	3 I6 RECORD IDENTIFICATION NUMBER
39	4 I6 GMT TIME OF DAY (HHMMSS)
40	5 F8.4 LATITUDE TO FOUR DECIMAL PLACES IN DEGREES
41	6 F8.4 LONGITUDE TO FOUR DECIMAL PLACES IN DEGREES
42	7 F6.1 TERRAIN CLEARANCE TO ONE DECIMAL PLACE IN METERS
43	8 F7.1 TOTAL MAGNETIC FIELD INTENSITY TO ONE DECIMAL PLACE IN GAMMAS
44	
45	9 A8 SURFACE GEOLOGIC MAP UNIT CODE
46	10 I4 QUALITY FLAG CODES
47	11 F4.1 OUTSIDE AIR TEMPERATURE TO ONE DECIMAL PLACE IN DEGREES CELSIUS
48	
49	12 F5.1 OUTSIDE AIR PRESSURE TO ONE DECIMAL PLACE IN MMHG
50	13 F5.3 LIVE TIME COUNTING PERIOD TO THREE DECIMAL PLACES IN SECONDS
51	
52	14 I4 SUMMED RAW OUTPUT FROM COSMIC CHANNELS (3-6 MEV) IN COUNTS
53	
54	15 I4 RAW OUTPUT FROM CHANNEL 1 IN COUNTS
55	16 I4 RAW OUTPUT FROM CHANNEL 2 IN COUNTS
56	* * *
57	* * *
58	* * *
59	270 I4 RAW OUTPUT FROM CHANNEL 256 IN COUNTS
-	- - 2352 BLANK CHARACTERS

2. Tape Identification Block (Block 2)

The information and format for this block are indicated in lines 8 through 30 of the Format Description Block A2.1, and 1396 characters are produced. The remaining 5204 characters in this block are blanks.

If fewer than 99 flight lines exist, the unused flight line information, 13 characters per flight line, is filled with 9's through the 99th flight line.

3. Raw Spectral Data Blocks

The information and format for the logical records in these blocks are indicated in lines 36 through 59 of the Format Description Block A2.1. One logical record contains 1100 characters. There are six such logical records per 6600 character physical record or block.

The 2 π data logical record is recorded after the corresponding 4 π data collection intervals at a frequency dependent on the 2 π system data collection interval. For example, if the 4 π data collection interval is 1 second and the 2 π data collection interval is 10 seconds, then 10 records of 4 π data are recorded followed by 1 record of the 2 π data which was collected during the preceding 10 seconds. The format for the 2 π data is identical to that of the 4 π data, except for lines 40 through 49 of the Format Description Block given above. These variables are expressed in the 2 π record as all nines in the format specified for I and F fields; and all zeros for A fields.

A3. Single Record Reduced Data Tapes

Block Size (Physical Record): 6900 characters
Logical Record, Data : 138 characters

1. Format Description Block (Block 1)

The Format Description utilizes 6768 characters. The remaining 132 characters of this block are blanks.

Line Number	Character Number
1	02 0978 (DATA TAPE TYPE AND FORMAT SPECIFICATION DATE CODES)
2	
3	SINGLE RECORD REDUCED DATA TAPE
4	
5	FORMAT FOR TAPE IDENTIFICATION BLOCK (SECOND BLOCK)
6	

Line Number	Character Number
7	ITEM FORMAT DESCRIPTION
8	1 A40 QUADRANGLE NAME AS PROJECT IDENTIFICATION
9	2 A20 NAME OF SUBCONTRACTOR
10	3 I4 APPROXIMATE DATE OF SURVEY (MONTH, YEAR)
11	4 I1 NUMBER OF AERIAL SYSTEMS USED TO COLLECT DATA FOR THIS QUADRANGLE
12	
13	5 I1 AERIAL SYSTEM IDENTIFICATION CODE FOR FIRST SYSTEM
14	6 A20 AIRCRAFT IDENTIFICATION BY TYPE AND FAA NUMBER FOR FIRST SYSTEM
15	
16	7 F6.1 NOMINAL ALTITUDE SYSTEM SENSITIVITY RELATIVE TO TERRESTRIAL POTASSIUM (K-40) TO ONE DECIMAL PLACE IN CPS PER PERCENT K FOR FIRST SYSTEM
17	
18	
19	8 F6.1 NOMINAL ALTITUDE SYSTEM SENSITIVITY RELATIVE TO TERRESTRIAL URANIUM (BI-214) TO ONE DECIMAL PLACE IN CPS PER PPM EQUIVALENT U
20	
21	
22	9 F6.1 NOMINAL ALTITUDE SYSTEM SENSITIVITY RELATIVE TO TERRESTRIAL THORIUM (TL-208) TO ONE DECIMAL PLACE IN CPS PER PPM EQUIVALENT TH
23	
24	
25	10 I6 BLANK FIELD (999999)
26	11 F6.3 4PI-SYSTEM DATA COLLECTION INTERVAL TO THREE DECIMAL PLACES IN SECONDS FOR FIRST SYSTEM
27	
28	12 F6.3 2PI-SYSTEM DATA COLLECTION INTERVAL TO THREE DECIMAL PLACES IN SECONDS FOR FIRST SYSTEM
29	
30	13 I3 NUMBER OF CHANNELS (0-3 MEV) IN 4PI SYSTEM FOR FIRST AERIAL SYSTEM
31	
32	14 I3 NUMBER OF CHANNELS (0-3 MEV) IN 2PI SYSTEM FOR FIRST AERIAL SYSTEM
33	
34	15-24 (SAME) REPEAT OF ITEMS 5-14 FOR SECOND AERIAL SYSTEM
35	* *
36	* *
37	* *
38	85-94 (SAME) REPEAT OF ITEMS 5-14 FOR NINTH AERIAL SYSTEM
39	95 I3 NUMBER OF FLIGHT LINES ON THIS TAPE
40	96 I4 FIRST FLIGHT LINE NUMBER ON THIS TAPE
41	97 I6 FIRST RECORD NUMBER OF FIRST FLIGHT LINE
42	98 I3 JULIAN DATE (DAY OF YEAR) FIRST FLIGHT-LINE DATA WAS COLLECTED
43	
44	99-101 I4,I6,I3 REPEAT OF ITEMS 96-98 FOR SECOND FLIGHT LINE ON THIS TAPE
45	
46	* *
47	* *
48	* *
49	390-392 I4,I6,I3 REPEAT OF ITEMS 96-98 FOR 99TH FLIGHT LINE ON THIS TAPE
50	
51	
52	FORMAT FOR SINGLE RECORD REDUCED DATA RECORD (THIRD THRU LAST BLOCK)
53	
54	ITEM FORMAT DESCRIPTION
55	1 I1 AERIAL SYSTEM IDENTIFICATION CODE
56	2 I4 FLIGHT LINE NUMBER
57	3 I6 RECORD IDENTIFICATION NUMBER
58	4 I6 GMT TIME OF DAY (HHMMSS)
59	5 F0.4 LATITUDE TO FOUR DECIMAL PLACES IN DEGREES

Line Number	Character Number
60	6 F8.4 LONGITUDE TO FOUR DECIMAL PLACES IN DEGREES
61	7 F6.1 TERRAIN CLEARANCE TO ONE DECIMAL PLACE IN METERS
62	8 F7.1 RESIDUAL (IGRF REMOVED) MAGNETIC FIELD INTENSITY TO ONE DECIMAL PLACE IN GAMMAS
63	
64	9 A8 SURFACE GEOLOGIC MAP UNIT CODE
65	10 I4 QUALITY FLAG CODES
66	11 F6.1 APPARENT CONCENTRATION OF TERRESTRIAL POTASSIUM (K-40) TO ONE DECIMAL PLACE IN PERCENT K
67	
68	12 F4.1 UNCERTAINTY IN TERRESTRIAL POTASSIUM TO ONE DECIMAL PLACE IN PERCENT K
69	
70	13 F6.1 APPARENT CONCENTRATION OF TERRESTRIAL URANIUM (BI-214) TO ONE DECIMAL PLACE IN PPM EQUIVALENT U
71	
72	14 F4.1 UNCERTAINTY IN TERRESTRIAL URANIUM TO ONE DECIMAL PLACE IN PPM EQUIVALENT U
73	
74	15 F6.1 APPARENT CONCENTRATION OF TERRESTRIAL THORIUM (TL-208) TO ONE DECIMAL PLACE IN PPM EQUIVALENT TH
75	
76	16 F4.1 UNCERTAINTY IN TERRESTRIAL THORIUM TO ONE DECIMAL PLACE IN PPM EQUIVALENT TH
77	
78	17 F6.1 URANIUM-TO-THORIUM RATIO TO ONE DECIMAL PLACE IN PPM EQUIVALENT U PER PPM EQUIVALENT TH
79	
80	18 F6.1 URANIUM-TO-POTASSIUM RATIO TO ONE DECIMAL PLACE IN PPM EQUIVALENT U PER PERCENT K
81	
82	19 F6.1 THORIUM-TO-POTASSIUM RATIO TO ONE DECIMAL PLACE IN PPM EQUIVALENT TH PER PERCENT K
83	
84	20 F8.1 GROSS GAMMA (0.4-3.0 MEV) COUNT RATE TO ONE DECIMAL PLACE IN COUNTS PER SECOND
85	
86	21 F6.1 UNCERTAINTY IN GROSS GAMMA COUNT RATE TO ONE DECIMAL PLACE IN COUNTS PER SECOND
87	
88	22 F5.1 ATMOSPHERIC BI-214 4PI CORRECTION TO ONE DECIMAL PLACE IN PPM EQUIVALENT U
89	
90	23 F4.1 UNCERTAINTY IN ATMOSPHERIC BI-214 4PI CORRECTION TO ONE DECIMAL PLACE IN PPM EQUIVALENT U
91	
92	24 F4.1 OUTSIDE AIR TEMPERATURE TO ONE DECIMAL PLACE IN DEGREES CELSIUS
93	
94	25 F5.1 OUTSIDE AIR PRESSURE TO ONE DECIMAL PLACE IN MMHG

2. Tape Identification Block (Block 2)

The information and format for this block are indicated in lines 8 through 49 of the Format Description Block A3.1, and 1922 characters are produced. The remaining 4978 characters of this block are blanks.

If less than nine aerial systems are used, the space allocated for additional systems is filled with 9's in the format specified for each item using I and F fields, and with zeros for A fields.

Similarly, if fewer than 99 flight lines exist, the unused flight line information, 13 characters per flight line, is filled with 9's through the 99th flight line.

3. Single Record Reduced Data Blocks

The information and format for the logical records in these blocks are indicated in lines 55 through 94 of the Format Description Block A3.1. One logical record contains 138 characters. There are 50 such logical records per 6900 character physical record or block.

The data appearing in locations specified by lines 68, 72, 76, 86 and 90 of the Format Description Block A3.1 are 9's in the format specified in each case.

A4. Statistical Analysis Data Tapes

Block Size (Physical Record): 8000 characters
Logical Record, Data : 160 characters

1. Format Description Block (Block 1)

The Format Description utilizes 7560 characters. The remaining 440 characters are blanks.

Line Number	Character Number	1234567890123456789012345678901234567890123456789012
1	03 0978	(DATA TAPE TYPE AND FORMAT SPECIFICATION DATE CODES)
2		
3		STATISTICAL ANALYSIS DATA TAPE
4		
5		FORMAT FOR TAPE IDENTIFICATION BLOCK (SECOND BLOCK)
6		
7	ITEM	FORMAT DESCRIPTION
8	1	A40 QUADRANGLE NAME AS PROJECT IDENTIFICATION
9	2	A20 NAME OF SUBCONTRACTOR
10	3	I4 APPROXIMATE DATE OF SURVEY (MONTH, YEAR)
11	4	I1 NUMBER OF AERIAL SYSTEMS USED TO COLLECT DATA FOR THIS QUADRANGLE
12		
13	5	I1 AERIAL SYSTEM IDENTIFICATION CODE FOR FIRST SYSTEM
14	6	A20 AIRCRAFT IDENTIFICATION BY TYPE AND FAA NUMBER FOR FIRST SYSTEM
15		
16	7	F6.1 NOMINAL ALTITUDE SYSTEM SENSITIVITY RELATIVE TO TERRESTRIAL POTASSIUM (K-40) TO ONE DECIMAL PLACE IN CPS PER PERCENT K
17		
18		
19	8	F6.1 NOMINAL ALTITUDE SYSTEM SENSITIVITY RELATIVE TO TERRESTRIAL URANIUM (BI-214) TO ONE DECIMAL PLACE IN CPS PER PPM EQUIVALENT U
20		
21		
22	9	F6.1 NOMINAL ALTITUDE SYSTEM SENSITIVITY RELATIVE TO TERRESTRIAL THORIUM (TL-208) TO ONE DECIMAL PLACE IN CPS PER PPM EQUIVALENT TH
23		
24		
25	10	I6 BLANK FIELD (999999)
26	11	F6.3 4PI-SYSTEM DATA COLLECTION INTERVAL TO THREE DECIMAL PLACES IN SECONDS FOR FIRST SYSTEM
27		
28	12	F6.3 2PI-SYSTEM DATA COLLECTION INTERVAL TO THREE DECIMAL PLACES IN SECONDS FOR FIRST SYSTEM
29		

Line Number	Character Number	1234567890123456789012345678901234567890123456789012
30	13	I3 NUMBER OF CHANNELS (0-3 MEV) IN 4PI SYSTEM FOR FIRST AERIAL SYSTEM
31		
32	14	I3 NUMBER OF CHANNELS (0-3 MEV) IN 2PI SYSTEM FOR FIRST AERIAL SYSTEM
33		
34	15-24	(SAME) REPEAT OF ITEMS 5-14 FOR SECOND AERIAL SYSTEM
35	*	*
36	*	*
37	*	*
38	85-94	(SAME) REPEAT OF ITEMS 5-14 FOR NINTH AERIAL SYSTEM
39	95	I3 NUMBER OF FLIGHT LINES ON THIS TAPE
40	96	I4 FIRST FLIGHT LINE NUMBER ON THIS TAPE
41	97	I6 FIRST RECORD NUMBER OF FIRST FLIGHT LINE
42	98	I3 JULIAN DATE (DAY OF YEAR) FIRST FLIGHT LINE DATA WAS COLLECTED
43		
44	99-101	I4,I6,I3 REPEAT OF ITEMS 96-98 FOR SECOND FLIGHT LINE ON THIS TAPE
45		
46	*	*
47	*	*
48	*	*
49	390-392	I4,I6,I3 REPEAT OF ITEMS 96-98 FOR 99TH FLIGHT LINE ON THIS TAPE
50		
51		
52		FORMAT FOR STATISTICAL ANALYSIS DATA RECORD (THIRD THRU LAST BLOCK)
53		
54	ITEM	FORMAT DESCRIPTION
55	1	I1 AERIAL SYSTEM IDENTIFICATION CODE
56	2	I4 FLIGHT LINE NUMBER
57	3	I6 RECORD IDENTIFICATION NUMBER
58	4	I6 GMT TIME OF DAY (HHMMSS)
59	5	F8.4 LATITUDE TO FOUR DECIMAL PLACES IN DEGREES
60	6	F8.4 LONGITUDE TO FOUR DECIMAL PLACES IN DEGREES
61	7	F6.1 TERRAIN CLEARANCE TO ONE DECIMAL PLACE IN METERS
62	8	F7.1 RESIDUAL (IGRF REMOVED) MAGNETIC FIELD INTENSITY TO ONE DECIMAL PLACE IN GAMMAS
63		
64	9	A8 SURFACE GEOLOGIC MAP UNIT CODE
65	10	I5 QUALITY FLAG CODES
66	11	F6.1 AVERAGED CONCENTRATION OF TERRESTRIAL POTASSIUM (K-40) TO ONE DECIMAL PLACE IN PERCENT K
67		
68	12	F4.1 UNCERTAINTY IN TERRESTRIAL POTASSIUM TO ONE DECIMAL PLACE IN PERCENT K
69		
70	13	F5.1 POTASSIUM STANDARD DEVIATION FROM THE MEAN TO ONE DECIMAL PLACE AND ALGEBRAICALLY SIGNED
71		
72	14	F6.1 AVERAGED CONCENTRATION OF TERRESTRIAL URANIUM (BI-214) TO ONE DECIMAL PLACE IN PPM EQUIVALENT U
73		
74	15	F4.1 UNCERTAINTY IN TERRESTRIAL URANIUM TO ONE DECIMAL PLACE IN PPM EQUIVALENT U
75		
76	16	F5.1 URANIUM STANDARD DEVIATION FROM THE MEAN TO ONE DECIMAL PLACE AND ALGEBRAICALLY SIGNED
77		
78	17	F6.1 AVERAGED CONCENTRATION OF TERRESTRIAL THORIUM (TL-208) TO ONE DECIMAL PLACE IN PPM EQUIVALENT TH
79		
80	18	F4.1 UNCERTAINTY IN TERRESTRIAL THORIUM TO ONE DECIMAL PLACE IN PPM EQUIVALENT TH
81		

Line Number	Character Number	1234567890123456789012345678901234567890123456789012
82	19	F5.1 THORIUM STANDARD DEVIATION FROM THE MEAN TO ONE DECIMAL PLACE AND ALGEBRAICALLY SIGNED
83		
84	20	F8.1 GROSS GAMMA (0.4-3.0 MEV) COUNT RATE TO ONE DECIMAL PLACE IN COUNTS PER SECOND
85		
86	21	F6.1 UNCERTAINTY IN GROSS GAMMA COUNT RATE TO ONE DECIMAL PLACE IN COUNTS PER SECOND
87		
88	22	F5.1 ATMOSPHERIC BI-214 4PI CORRECTION TO ONE DECIMAL PLACE IN PPM EQUIVALENT U
89		
90	23	F4.1 UNCERTAINTY IN ATMOSPHERIC BI-214 4PI CORRECTION TO ONE DECIMAL PLACE IN PPM EQUIVALENT U
91		
92	24	F6.1 AVERAGED URANIUM-TO-THORIUM RATIO TO ONE DECIMAL PLACE IN PPM EQUIVALENT U PER PPM EQUIVALENT TH
93		
94	25	F5.1 URANIUM-TO-THORIUM RATIO STANDARD DEVIATION FROM THE MEAN TO ONE DECIMAL PLACE AND ALGEBRAICALLY SIGNED
95		
96	26	F6.1 AVERAGED URANIUM-TO-POTASSIUM RATIO TO ONE DECIMAL PLACE IN PPM EQUIVALENT U PER PERCENT K
97		
98	27	F5.1 URANIUM-TO-POTASSIUM RATIO STANDARD DEVIATION FROM THE MEAN TO ONE DECIMAL PLACE AND ALGEBRAICALLY SIGNED
99		
100		
101	28	F6.1 AVERAGED THORIUM-TO-POTASSIUM RATIO TO ONE DECIMAL PLACE IN PPM EQUIVALENT TH PER PERCENT K
102		
103	29	F5.1 THORIUM-TO-POTASSIUM RATIO STANDARD DEVIATION FROM THE MEAN TO ONE DECIMAL PLACE AND ALGEBRAICALLY SIGNED
104		
105		

2. Tape Identification Block (Block 2)

The information and format for this block are indicated in lines 8 through 49 of the Format Description Block A4.1, and 1922 characters are produced. The remaining 6078 characters of this block are blanks.

If less than nine aerial systems are used, the space allocated for additional systems is filled with 9's in the format specified for each item using I and F fields, and with zeros for A fields.

Similarly, if fewer than 99 flight lines exist, the unused flight line information, 13 characters per flight line, is filled with 9's through the 99th flight line.

3. Statistical Analysis Data Blocks

The information and format for the logical records in these blocks are indicated in lines 55 through 103 of the Format Description Block A4.1. One logical record contains 160 characters. There are 50 such logical records per 8000 character physical record or block.

The data appearing in locations specified by lines 68, 74, 80, 86 and 90 of the Format Description Block A4.1 are 9's in the format specified in each case.

A5. Magnetic Data Tapes

Block Size (Physical Record): 8000 characters
Logical Record (Data) : 80 characters

1. Format Description Block (Block 1)

The Format Description utilizes 3384 characters. The remaining 4616 characters are blanks.

Line Number	Character Number		
	12345678901234567890123456789012345678901234567890123456789012		
1	04	0978	(DATA TAPE TYPE AND FORMAT SPECIFICATION DATE CODES)
2			
3			MAGNETIC DATA TAPE
4			
5			FORMAT FOR TAPE IDENTIFICATION BLOCK (SECOND BLOCK)
6			
7	ITEM	FORMAT	DESCRIPTION
8	1	A40	QUADRANGLE NAME AS PROJECT IDENTIFICATION
9	2	A20	NAME OF SUBCONTRACTOR
10	3	I4	APPROXIMATE DATE OF SURVEY (MONTH, YEAR)
11	4	I3	NUMBER OF FLIGHT LINES ON THIS TAPE
12	5	I4	FIRST FLIGHT LINE ON THIS TAPE
13	6	I6	FIRST RECORD NUMBER OF FIRST FLIGHT LINE
14	7	I3	JULIAN DATE (DAY OF YEAR) FIRST FLIGHT LINE DATA WAS COLLECTED
15			
16	8	F8.4	LATITUDE OF GROUND BASE STATION TO FOUR DECIMAL PLACES IN DEGREES FOR FIRST FLIGHT LINE
17			
18	9	F8.4	LONGITUDE OF GROUND BASE STATION TO FOUR DECIMAL PLACES IN DEGREES FOR FIRST FLIGHT LINE
19			
20	10-14	(SAME)	REPEAT OF ITEMS 5-9 FOR SECOND FLIGHT LINE ON THIS TAPE
21			
22	*	*	*
23	*	*	*
24	*	*	*
25	495-499	(SAME)	REPEAT OF ITEMS 5-9 FOR 99TH FLIGHT LINE ON THIS TAPE
26			
27			FORMAT FOR MAGNETIC DATA RECORD (THIRD THRU LAST BLOCK)
28			
29			
30	ITEM	FORMAT	DESCRIPTION
31	1	I1	AERIAL SYSTEM IDENTIFICATION CODE
32	2	I4	FLIGHT LINE NUMBER
33	3	I6	RECORD IDENTIFICATION NUMBER
34	4	I6	GMT TIME OF DAY (HHMMSS)
35	5	F8.4	LATITUDE TO FOUR DECIMAL PLACES IN DEGREES
36	6	F8.4	LONGITUDE TO FOUR DECIMAL PLACES IN DEGREES
37	7	F6.1	TERRAIN CLEARANCE TO ONE DECIMAL PLACE IN METERS
38	8	F5.1	OUTSIDE AIR PRESSURE TO ONE DECIMAL PLACE IN MMHG
39	9	A8	SURFACE GEOLOGIC MAP UNIT CODE
40	10	F7.1	TOTAL MAGNETIC FIELD INTENSITY TO ONE DECIMAL PLACE IN GAMMAS
41			
42	11	F7.1	RESIDUAL (IGRF REMOVED) MAGNETIC FIELD INTENSITY

Line Number 12345678901234567890123456789012345678901234567890123456789012

44 12 F7.1 DIURNAL MAGNETIC INTENSITY VARIATION TO ONE DECIMAL PLACE IN GAMMAS
45
46 13 F7.1 MAGNETIC DEPTH-TO-BASEMENT TO ONE DECIMAL PLACE IN METERS (IF REQUIRED)
47

2. Tape Identification Block (Block 2)

The information and format for this block are indicated in lines 8 through 25 of the Format Description Block A5.1, and 2938 characters are produced. The remaining 5062 characters of this block are blanks.

If fewer than 99 flight lines exist, the unused flight line information, 29 characters per flight line, is filled with 9's through the 99th flight line in the format indicated.

3. Magnetic Data Blocks

The information and format for the logical records in these blocks are indicated in lines 31 through 46 of the Format Description Block A5.1. One logical record contains 80 characters. There are 100 such logical records per 8000 character physical record or block.

If the magnetic depth-to-basement is not required, this item is expressed as 99999.9.

A6. Statistical Analysis Summary Tapes

Block Size (Physical Record): 7000 characters
Logical Record (Data) : 140 characters

1. Format Description Block (Block 1)

The Format Description utilizes 4320 characters. The remaining 2680 characters are blanks.

Line Number 12345678901234567890123456789012345678901234567890123456789012

1 05 0978 (DATA TAPE TYPE AND FORMAT SPECIFICATION DATE CODE)
2
3 STATISTICAL ANALYSIS SUMMARY TAPE (OR FILE)
4
5 FORMAT FOR TAPE IDENTIFICATION BLOCK (SECOND BLOCK)
6
7 ITEM FORMAT DESCRIPTION
8 1 A40 QUADRANGLE NAME AS PROJECT IDENTIFICATION
9 2 A20 NAME OF SUBCONTRACTOR
10 3 I4 APPROXIMATE DATE OF SURVEY (MONTH, YEAR)
11 4 I6 NUMBER OF GEOLOGIC MAP UNITS USED FOR THIS

Line Number 12345678901234567890123456789012345678901234567890123456789012

12 QUADRANGLE
13
14 FORMAT FOR STATISTICAL ANALYSIS SUMMARY DATA RECORD (THIRD THRU LAST BLOCK)
15
16

ITEM	FORMAT	DESCRIPTION
17 1	A8	SURFACE GEOLOGIC MAP UNIT IDENTIFYING CODE
18 2	I6	TOTAL RECORDS FOR GEOLOGIC MAP UNIT
19 3	I6	NUMBER OF POTASSIUM RECORDS COMPUTED FOR GEOLOGIC UNIT
20 4	F6.1	POTASSIUM CONCENTRATION MEAN TO ONE DECIMAL PLACE IN PERCENT K
21 5	F6.1	POTASSIUM CONCENTRATION STANDARD DEVIATION TO ONE DECIMAL PLACE IN PERCENT K
22 6	A3	POTASSIUM CONCENTRATION DISTRIBUTION CODE
23 7	I6	NUMBER OF URANIUM RECORDS COMPUTED FOR GEOLOGIC UNIT
24 8	F6.1	URANIUM CONCENTRATION MEAN TO ONE DECIMAL PLACE IN PPM EQUIVALENT U
25 9	F6.1	URANIUM CONCENTRATION STANDARD DEVIATION TO ONE DECIMAL PLACE IN PPM EQUIVALENT U
26 10	A3	URANIUM CONCENTRATION DISTRIBUTION CODE
27 11	I6	NUMBER OF THORIUM RECORDS COMPUTED FOR GEOLOGIC UNIT
28 12	F6.1	THORIUM CONCENTRATION MEAN TO ONE DECIMAL PLACE IN PPM EQUIVALENT TH
29 13	F6.1	THORIUM CONCENTRATION STANDARD DEVIATION TO ONE DECIMAL PLACE IN PPM EQUIVALENT TH
30 14	A3	THORIUM CONCENTRATION DISTRIBUTION CODE
31 15	I6	NUMBER OF URANIUM-TO-THORIUM RATIO RECORDS COMPUTED FOR GEOLOGIC UNIT
32 16	F6.1	URANIUM-TO-THORIUM RATIO MEAN TO ONE DECIMAL PLACE IN PPM EQUIVALENT U PER PPM EQUIVALENT TH
33 17	F6.1	URANIUM-TO-THORIUM RATIO STANDARD DEVIATION TO ONE DECIMAL PLACE IN PPM EQUIVALENT U PER PPM EQUIVALENT TH
34 18	A3	URANIUM-TO-THORIUM RATIO DISTRIBUTION CODE
35 19	I6	NUMBER OF URANIUM-TO-POTASSIUM RATIO RECORDS COMPUTED FOR GEOLOGIC UNIT
36 20	F6.1	URANIUM-TO-POTASSIUM RATIO MEAN TO ONE DECIMAL PLACE IN PPM EQUIVALENT U PER PERCENT K
37 21	F6.1	URANIUM-TO-POTASSIUM RATIO STANDARD DEVIATION TO ONE DECIMAL PLACE IN PPM EQUIVALENT U PER PERCENT K
38 22	A3	URANIUM-TO-POTASSIUM RATIO DISTRIBUTION CODE
39 23	I6	NUMBER OF THORIUM-TO-POTASSIUM RATIO RECORDS COMPUTED FOR GEOLOGIC UNIT
40 24	F6.1	THORIUM-TO-POTASSIUM RATIO MEAN TO ONE DECIMAL PLACE IN PPM EQUIVALENT TH PER PERCENT K
41 25	F6.1	THORIUM-TO-POTASSIUM RATIO STANDARD DEVIATION TO ONE DECIMAL PLACE IN PPM EQUIVALENT TH PER PERCENT K
42 26	A3	THORIUM-TO-POTASSIUM RATIO DISTRIBUTION CODE

2. Tape Identification Block (Block 2)

The information and format for this block are indicated in lines 8 through 11 of the Format Description Block A6.1, and 70 characters are produced. The remaining 6930 characters of this block are blanks.

3. Statistical Analysis Summary Data Blocks

The information and format for the logical records in these blocks are indicated in lines 18 through 60 of the Format Description Block A6.1. One logical record contains 140 characters. There are 50 such logical records per 7000 character physical record or block.

B. DESCRIPTION OF LISTINGS

B1. Single record reduced data listings: include the following information on Microfiche:

ITEM	DESCRIPTION
REC	Sequential record number
Lat	Location Y in latitude
Long	Location X in longitude
RMag	Residual magnetic field, gammas
Alt	Surface altitude
GEO UNIT	Geologic Type
AKUT	A=Altitude; K=Potassium; U=Uranium T=Thorium - Results of statistical adequacy test
COS	Cosmic c/s
BiAir	Airborne ²¹⁴ Bi, 4π data
GC	Gross count, .4 MeV - 2.8 MeV
Tl	²⁰⁸ Tl c/s
Bi	²¹⁴ Bi c/s
K	⁴⁰ K c/s
BI:Tl	Ratio
BI:k	Ratio
Tl:k	Ratio
TEMP	Outside Air Temperature (°C)
BP	Atmospheric Pressure (In. Hg)

B2. Averaged record data listings: include the following information on Microfiche:

ITEM	DESCRIPTION
REC	Sequential Record number
GEO UNIT	Geologic type
AKUT	A=Altitude; K=Potassium; U=Uranium; T=Thorium - Results of statistical adequacy test
Long	Longitude of X location of geologic type
Lat	Latitude of Y location of geologic type
RMag	Residual magnetic field, gammas
COS	Cosmic, 4π
BiAir	Atmospheric Bi, 4π
GC	Gross count, c/s

ITEM

Tl
Rank
Bi
Rank
K
Rank
Bi/Tl
Rank
Bi/K
Rank
Tl/K
Rank

DESCRIPTION

Tl value, c/s
Tl standard deviation rank
Bi value, c/s
Bi standard deviation rank
K value, c/s
K standard deviation rank
Ratio value
Bi/Tl standard deviation rank
Ratio value
Bi/K standard deviation rank
Ratio value
Tl/K standard deviation rank

1 GEODATA INT. INC. SINGLE REC LISTING DEATH VALLEY																
REC	LAT	LONG	RMAG	ALT	GEOUNT	A	K	U	T	COS	BIAIR	GC	TL	BI	K	BI:TL
1	37.0270	117.4830	-158.2	357	ZNA	0	0	0	1	69	30.7	868	5	82	55	16.400
2	37.0265	117.4830	-152.7	359	ZNA	0	0	0	0	74	30.7	870	21	69	47	3.286
3	37.0260	117.4830	-144.9	359	ZNA	0	0	0	0	78	30.7	883	29	29	61	1.000
4	37.0256	117.4830	-136.8	364	ZNA	0	0	0	0	75	30.8	866	15	48	53	3.200
5	37.0251	117.4830	-112.5	367	ZNA	0	0	0	0	76	30.8	930	9	79	79	8.778
6	37.0247	117.4831	-87.5	363	ZNA	0	0	0	0	81	30.8	924	11	37	99	3.364
7	37.0242	117.4831	-61.1	353	ZNA	0	0	0	0	82	30.6	944	23	41	68	1.783
8	37.0237	117.4831	-35.6	348	ZNA	0	0	0	0	73	30.5	896	7	78	72	11.143
9	37.0233	117.4831	-15.1	347	ZNA	0	0	0	0	77	30.5	865	18	37	48	2.056
10	37.0228	117.4831	3.7	345	ZNA	0	0	0	0	74	30.4	888	21	46	63	2.190
11	37.0224	117.4831	3.0	345	ZNA	0	0	0	0	76	30.4	868	15	29	80	1.933
12	37.0219	117.4832	-2.0	343	ZNA	0	0	0	0	69	30.4	800	18	65	19	3.611
13	37.0215	117.4832	-16.7	342	ZNA	0	0	0	0	69	30.4	840	20	56	21	2.800
14	37.0210	117.4832	-35.4	346	ZNA	0	0	0	0	72	30.4	829	17	58	59	3.412
15	37.0205	117.4832	-59.7	345	ZNA	0	0	0	0	67	30.4	825	16	79	52	4.938
16	37.0201	117.4832	-92.1	352	ZNA	0	0	0	0	71	30.6	782	11	41	42	3.727
17	37.0196	117.4832	-121.9	366	ZNA	0	0	0	0	76	30.8	835	10	44	61	4.400
18	37.0192	117.4833	-149.6	373	ZNA	0	0	0	0	70	31.0	833	15	84	33	5.600
19	37.0187	117.4833	-166.6	373	ZNA	0	0	0	0	68	31.0	858	15	70	33	4.667
20	37.0183	117.4833	-185.5	375	ZNA	0	0	0	0	73	31.0	843	10	65	35	6.500
21	37.0178	117.4833	-196.8	377	ZNA	0	0	0	0	66	31.0	869	14	63	46	4.500
22	37.0173	117.4833	-222.2	382	ZNA	0	0	0	0	74	31.1	858	12	38	64	3.167
23	37.0169	117.4833	-240.1	387	ZNA	0	0	0	0	78	31.2	859	10	23	77	2.300
24	37.0164	117.4834	-238.6	391	ZNA	0	0	0	0	68	31.3	835	12	71	40	5.917
25	37.0160	117.4834	-239.5	392	ZNA	0	0	0	0	73	31.3	855	12	66	45	5.500
26	37.0155	117.4834	-242.2	392	ZNA	0	0	0	0	70	31.3	855	18	47	67	2.611
27	37.0151	117.4834	-243.0	387	ZNA	0	0	0	1	73	31.2	905	6	87	60	14.500
28	37.0146	117.4834	-248.8	381	ZNA	0	0	0	0	90	31.1	815	14	60	42	4.286
29	37.0141	117.4834	-248.6	373	ZNA	0	0	0	0	75	31.0	862	8	94	61	11.750
30	37.0137	117.4835	-249.3	369	ZNA	0	0	0	0	68	30.9	802	8	59	51	7.375
31	37.0132	117.4835	-257.6	365	ZNA	0	0	0	0	74	30.8	856	11	83	61	7.545
32	37.0128	117.4835	-260.8	366	ZNA	0	0	0	0	77	30.8	802	14	40	44	2.857
33	37.0123	117.4835	-264.0	366	ZNA	0	0	0	0	69	30.8	840	12	75	50	6.250
34	37.0118	117.4835	-261.5	367	ZNA	0	0	0	1	77	30.8	797	0	99	35	99.000
35	37.0114	117.4835	-261.2	367	ZNA	0	0	0	1	77	30.8	812	6	30	61	5.000
36	37.0109	117.4836	-261.2	365	ZNA	0	0	0	1	68	30.8	807	14	11	83	0.786
37	37.0105	117.4836	-264.4	370	ZNA	0	1	0	1	80	30.9	766	-5	97	11	-19.400
38	37.0100	117.4836	-272.5	379	ZNA	0	0	0	0	76	31.1	817	10	40	60	4.000
39	37.0096	117.4836	-270.2	378	ZNA	0	0	0	1	79	35.8	832	1	36	49	36.000
40	37.0091	117.4836	-263.5	374	ZNA	0	0	0	0	49	35.7	820	15	72	33	4.800
41	37.0086	117.4836	-264.5	369	ZNA	0	0	0	0	80	35.6	815	8	62	42	7.750
42	37.0082	117.4837	-267.3	364	ZNA	0	0	0	1	75	35.5	826	0	60	50	60.000
43	37.0077	117.4837	-266.3	365	ZNA	0	0	0	0	68	35.5	857	7	68	65	9.714
44	37.0073	117.4837	-269.0	363	ZNA	0	0	0	0	68	35.5	777	14	29	38	2.071
45	37.0068	117.4837	-284.5	361	ZNA	0	0	0	0	75	35.5	748	8	44	32	5.500
46	37.0064	117.4837	-275.9	363	ZNA	0	0	0	0	65	35.5	714	17	23	33	1.353
47	37.0059	117.4837	-269.1	367	ZNA	0	0	0	1	73	35.6	731	11	-18	63	-1.636
48	37.0054	117.4838	-265.3	370	ZNA	0	0	0	0	70	35.7	773	11	42	32	3.818
49	37.0050	117.4838	-263.0	380	ZNA	0	0	0	1	72	35.9	745	4	71	34	17.750
50	37.0045	117.4838	-263.9	387	ZNA	0	0	0	0	66	36.0	754	19	50	24	2.632
51	37.0041	117.4838	-260.1	391	ZNA	0	0	0	0	83	36.1	840	12	65	15	5.417
52	37.0036	117.4838	-254.0	393	ZNA	0	0	0	0	71	36.2	856	13	33	75	2.538
53	37.0032	117.4838	-253.0	394	ZNA	0	0	0	0	82	36.2	828	24	43	36	1.792
54	37.0027	117.4839	-251.1	404	ZNA	0	0	0	1	80	36.4	866	4	24	91	6.000
55	37.0022	117.4839	-249.1	405	OAL	0	0	0	0	85	36.4	881	17	53	47	3.118

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1 GEODATA INT. INC. AVERAGE REC LISTING DEATH VALLEY TIE LINE 1W																
1		DEATH VALLEY														
1		TIELINE 1W														
RCN	GEO UNIT	A	K	U	T	LONG	LAT	RMAG	COS	BIAIR	GC					
TL RANK	ZNA	BI RANK	K RANK	BI/TL RANK	BI/K RANK	TL/K RANK										
1	19-1	41-1	0 0 0 0	67-1	118.0203	36.0645	-245.6	106	69.1	1182						
2	44-0	-1	0 0 1 0	165-0	118.0203	36.0645	-234.8	108	85.1	1900						
3	-1	0	0 0 1 1	175-0	118.0203	36.0646	-220.8	107	85.1	1702						
4	29-0	23	0 0 1 0	138-0	118.0198	36.0646	-221.2	108	85.1	1809						
5	34-0	27	0 0 1 0	141-0	118.0193	36.0646	-212.8	113	85.1	1723						
6	43-0	27	0 0 1 0	143-0	118.0188	36.0646	-204.2	108	84.8	1795						
7	51-0	29	0 0 1 0	147-0	118.0182	36.0646	-212.0	95	84.6	2032						
8	52-0	24	0 0 1 0	164-0	118.0177	36.0646	-213.7	107	84.7	1925						
9	54-0	16	0 0 1 0	188-0	118.0172	36.0646	-215.8	123	84.5	1988						
10	53-0	8	0 0 1 0	220+0	118.0167	36.0646	-213.7	101	84.4	2052						
11	49-0	-1	0 0 1 0	252+0	118.0161	36.0646	-214.1	102	84.0	2036						
12	47-0	0	0 0 1 0	264+0	118.0156	36.0646	-203.2	100	83.4	1975						
13	42-0	15	0 0 1 0	258+0	118.0151	36.0647	-203.8	109	83.2	1969						
14	40-0	37-1	0 0 0 0	238+0	118.0146	36.0647	-192.2	103	83.1	1985						
15	43-0	59-0	0 0 0 0	208+0	118.0141	36.0647	-196.5	100	83.2	2071						
16	48-0	70-0	0 0 0 0	197-0	118.0135	36.0647	-194.7	109	83.4	2116						
17	55-0	68-0	0 0 0 0	198-0	118.0130	36.0647	-195.0	110	83.7	2195						
18	61-0	62-0	0 0 0 0	203+0	118.0125	36.0647	-167.2	106	83.8	2339						
19	63-0	57-0	0 0 0 0	213+0	118.0120	36.0647	-147.0	108	83.6	2218						
20	63-0	59-0	0 0 0 0	207+0	118.0114	36.0647	-122.9	109	82.8	2275						
21	64-0	66-0	1 0 0 0	200-0	118.0109	36.0647	-99.0	105	81.8	2181						
22	64-0	71-0	1 0 0 0	195-0	118.0104	36.0647	-84.4	99	81.1	2190						
23	63-0	80-0	1 0 0 0	191-0	118.0099	36.0648	-68.2	115	79.8	2064						
24	64-0	82-0	1 0 0 0	195-0	118.0094	36.0648	-64.0	108	78.5	2254						
25	64-0	81-0	1 0 0 0	191-0	118.0088	36.0648	-56.8	103	77.0	2047						
26	65-0	83-0	1 0 0 0	184-0	118.0083	36.0648	-65.8	105	76.4	2143						

APPENDIX III
PRODUCTION SUMMARY

APPENDIX III				
PRODUCTION SUMMARY - SURVEY TIME PERIOD				
ML/TL	DATE FLOWN	SURVEY LINE MILES	AVERAGE SPEED/DAY	AVERAGE ALTITUDE/DAY
TL4E	November 22, 1977	50.0	114.90	391.41
TL4W,5W	November 23, 1977	124.0	104.06	490.5
ML1-7 TL5E	November 30, 1977	539.0	115.27	441.03
ML8-13 TL6E	December 1, 1977	455	109.15	445.47
ML14-20, 21S	December 2, 1977	523	112.94	448.71
ML21N,22-24	December 3, 1977	236	114.25	448.31
ML25-27, 28S	December 4, 1977	237	112.82	441.00
ML28N,29-30, 69,70,59, 60	December 16, 1977	454	111.94	470.01
ML31-34	December 17, 1977	276	102.28	425.72
ML35-42	December 18, 1977	483	101.53	481.31
ML43,44, 71-76	December 19, 1977	552	105.38	419.14
ML45-50	December 20, 1977	414	104.34	385.59
ML51-58	December 22, 1977	552		
ML67,68	January 7, 1978	138	108.83	448.51
ML61-66	January 8, 1978	414	104.79	475.49
ML77-79	January 13, 1978	207	110.27	505.75
ML80-83, 84N-91N	January 18, 1978	628	122.52	488.24
ML92N-103N, 95C,99C	January 20, 1978	533	100.90	436.51

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Appendix III Continued				
PRODUCTION SUMMARY - SURVEY TIME PERIOD				
ML/TL	DATE FLOWN	SURVEY LINE MILES	AVERAGE SPEED/DAY	AVERAGE ALTITUDE/DAY
ML84S-103S, 90C,TL1W	January 21, 1978	540	107.86	378.12
ML104-112	January 22, 1978	621	105.06	451.38
TL1E-3E,6W	January 25, 1978	405	102.94	394.42

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TABLE AIII-1 Test Line Results

UNIT	NOVEMBER 1977					DECEMBER 1977							
	22	23	30/	1	2	3	4	16	17	18	19	20	22
PRE COS	45.6	44.3	45.8	47.2	46.8	44.9	48.2	45.2	44.9	47.1	46.6	45.6	46.6
POS COS	44.1	44.1	45.6	46.8	45.9	47.2	46.5	43.7	48.3	48.1	45.2	43.9	42.1
Tl	41.7	42.4	42.9	44.2	44.3	43.8	47.1	44.6	46.7	46.2	43.7	42.6	40.6
Tl	42.3	42.6	43.6	44.1	46.1	45.1	45.9	47.3	47.6	43.8	41.9	39.8	41.2
Bi	81.6	83.2	84.1	85.7	84.7	86.7	81.7	89.2	87.4	86.4	83.6	83.6	77.3
Bi	83.9	83.7	83.5	83.2	86.9	86.2	84.9	86.3	89.9	85.7	85.1	81.7	75.3
K	146.4	147.8	151.2	151.3	153.2	149.3	155.6	160.1	151.3	150.2	147.2	146.4	145.9
K	149.0	148.2	147.8	149.6	147.3	151.7	148.2	156.3	158.2	148.6	143.8	143.7	141.5
GC	2009.3	2017.4	2021.7	1996.8	2021.2	2031.6	2015.9	2032.6	2035.1	2039.6	2031.2	2028.6	2027.6
GC	2013.4	2015.9	2023.6	2012.1	2028.3	2023.5	2027.2	2037.4	2039.4	2040.3	2028.7	2032.9	2035.5
BiAir	91.7	93.1	94.2	93.7	94.8	97.1	98.2	95.3	96.7	97.2	95.3	94.6	91.6
BiAir	92.4	93.8	92.9	96.1	93.1	95.6	94.9	97.4	98.1	97.9	94.1	92.3	88.9
ALT	389.5	430.1	452.3	432.6	425.1	405.1	420.3	490.5	371.8	400.7	498.9	381.6	417.3
ALT	411.7	415.6	410.5	381.7	411.7	372.6	405.6	417.6	412.6	431.6	461.2	412.9	442.7

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TABLE AIII-1 Test Line Results (Cont'd.)

UNIT	January 1978									
	7	8	13	18	20	21	22	24	25	
PRE COS	51.6	48.3	46.1	50.3	49.1	50.7	48.2	47.4	45.3	
POS COS	49.8	46.1	43.9	48.5	46.8	51.6	46.1	43.6	42.1	
Tl	39.7	38.4	40.2	39.7	43.6	44.1	43.2	44.5	43.2	
Tl	41.9	42.1	37.6	43.6	46.6	43.6	41.6	41.2	39.5	
Bi	78.3	77.3	75.4	82.5	84.6	83.2	81.9	79.6	76.3	
Bi	76.4	79.6	78.7	81.3	81.9	85.3	85.2	82.5	80.1	
K	129.1	130.2	126.6	131.7	136.7	133.9	129.7	124.9	133.7	
K	134.7	136.6	132.5	135.4	139.2	136.7	133.6	130.2	126.1	
GC	1986.1	1996.3	1981.6	2010.6	2009.6	2019.2	2008.1	1990.3	1972.6	
GC	1995.3	1985.4	1993.8	2001.0	2017.8	2028.1	2017.7	2003.1	1989.5	
BiAir	85.1	87.1	84.1	85.6	89.3	92.6	88.3	89.2	84.3	
BiAir	86.9	84.5	80.7	84.2	91.2	94.2	89.7	87.1	86.5	
ALT	436.3	401.9	442.7	405.6	420.2	419.3	396.2	417.9	392.6	
ALT	425.2	428.6	389.5	417.2	406.1	427.6	411.9	403.5	400.8	

AIII-2b

TABLE AIII-2 Average S58T Speed and Altitude Determined from Data of Appendix II

LINE	AVERAGE SPEED, MPH	AVERAGE ALTITUDE, FT	LINE	AVERAGE SPEED, MPH	AVERAGE ALTITUDE, FT
ML 1	115.39	445.80	ML 28S	109.36	433.77
2	102.99	408.56	28N	115.75	432.54
3	123.67	440.46	29	116.17	447.90
4	109.80	402.50	30	117.40	413.35
5	130.57	485.64	31	87.54	400.78
6	116.61	468.61	32	119.49	471.73
7	126.56	438.93	33	89.08	374.81
8	101.76	470.54	34	113.02	455.54
9	110.23	425.48	35	108.03	447.96
10	118.20	434.86	36	104.03	431.20
11	111.91	440.05	37	104.36	455.03
12	107.79	450.51	38S	99.57	432.85
13	112.66	482.75	39S	100.48	507.14
14	114.70	496.97	40	103.75	505.91
15	110.38	442.61	39N	105.00	559.58
16	116.80	447.40	39N	88.80	613.45
17	116.38	414.35	41	108.41	446.29
18	112.99	432.39	42	92.86	413.67
19	104.81	436.56	43	112.39	481.96
20	107.89	450.22	44	91.37	401.29
21S	119.53	489.27	45	120.23	389.14
21N	103.82	475.86	46	90.83	367.00
22	117.45	471.33	47	113.63	394.03
23	116.82	422.23	48	90.23	394.65
24	118.91	423.80	49N	106.63	367.91
25	117.33	470.62	49S	105.98	394.29
26	103.16	409.28	50	102.84	392.08
27	121.43	540.34	51	119.24	401.84
			52	114.99	378.53
			53	113.35	382.21
			54	112.06	398.87
			55	108.89	430.83
			56	113.98	453.20
ML 57	108.92	504.69	ML 84N	109.71	386.98
58	95.44	553.23	85N	109.23	410.85
59	100.49	542.44	86N	113.21	455.72
60	105.47	558.21	87N	119.70	481.29
61	106.26	570.78	88N	104.80	454.13
62	103.07	467.56	89N	108.71	479.28
63	104.70	456.57	90N	105.92	421.74
64	103.58	458.67	91N	111.52	491.92
65	106.88	474.88	92N	114.60	509.00
66	104.24	424.50	93N	97.59	405.50
67	106.13	425.34	94N	114.44	446.70

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TABLE AIII-2 Continued Average S58T Lpeed and Altitude Determined from Data of Appendix II

LINE	AVERAGE SPEED, MPH	AVERAGE ALTITUDE, FT	LINE	AVERAGE SPEED, MPH	AVERAGE ALTITUDE, FT
68	111.52	471.68	95C	103.55	419.25
69	113.59	464.71	96N	105.94	454.98
70	114.73	430.92	97N	98.21	402.15
71	118.15	418.70	98N	107.93	446.41
72	99.33	377.62	99C	110.14	403.46
73	105.44	397.30	100N	102.64	446.34
74	105.37	408.49	101N	91.38	412.38
75	105.41	422.26	102N	95.93	451.25
76	105.55	445.51	103N	87.23	421.03
77	113.81	480.33	99N	105.00	446.41
78	117.82	516.61	95N	77.99	446.32
79	102.40	534.93	104	103.52	414.03
80	107.04	491.11	105	109.79	426.94
81	106.77	432.80	TL1W	107.86	422.49
82	106.25	417.71	1E	98.66	435.52
83	107.11	447.11	2	107.55	409.73
ML84S	103.02	482.03	3	106.14	377.81
85S	109.23	384.63	4E	114.90	391.41
86S	107.25	356.29	4W	92.29	463.42
87S	106.31	359.61	5W	106.07	527.75
88S	106.66	391.13	5E	96.55	437.74
89S	106.47	371.44	6E	101.50	484.07
90C	97.99	362.24	6W	102.68	441.55
90S	108.93	331.01			
91S	113.32	327.13			
92S	115.15	328.06			
93S	118.13	384.34			
94S	107.43	385.65			
95S	110.09	354.72			
96S	95.81	389.35			
97S	101.75	374.05			
98S	104.79	399.82			
99S	103.51	332.79			
100S	119.21	408.16			
101S	110.85	382.38			
102S	109.56	393.69			
103S	114.80	378.64			
106	99.44	354.62			
107	110.73	487.80			
108	93.26	455.75			
109	111.71	494.27			
110	99.20	463.06			
111	110.06	468.46			
112	104.30	457.68			

AIII-3b

TABLE AIII-3 Diurnal Corrections to Map Line Data

LINE	DIURNAL CORRECTIONS IN GAMMAS	LINE	DIURNAL CORRECTIONS IN GAMMAS
ML1	-8	ML30	-12
2	-3	31	-4
3	-13	32	-5
4	+6	33	+2
5	-4	34	+3
6	+2	35	-7
7	+9	36	-18
8	-12	37	-3
9	+1	38S	+6
10	-3	39S	+2
11	-11	40	+12
12	+4	39N	+3
13	+5	38N	+5
14	+5	41	+1
15	+1	42	-7
16	0	43	-8
17	-9	44	-14
18	-2	45	-3
19	+3	46	+2
20	+11	47	0
21S	+15	48	-3
21N	+17	49N	-13
22	+6	49S	-9
23	-3	50	-6
24	+2	51	+8
25	-9	52	+17
26	+2	53	+12
27	+7	54	+3
28S	+5	55	+4
28N	+3	56	+2
29	-6		
ML57	+2	ML84H	+3
58	+3	85N	0
59	+17	86N	+7
60	+8	87N	+12
61	-8	88N	-3
62	+1	89N	+6
63	+3	90N	+2
64	+2	91N	-6
65	-3	92N	-13
66	-7	93N	-7
67	+2	94N	-1
68	-4	95C	+3
69	-12	96N	0
70	+3	97N	-1
			-10

AIII-4a

TABLE AIII-3 Continued Diurnal Corrections to Map Line Data

LINE	DIURNAL CORRECTIONS IN GAMMAS	LINE	DIURNAL CORRECTIONS IN GAMMAS
ML71	+5	98N	-1
72	+7	99C	-3
73	+2	100N	+1
74	-2	101N	+12
75	0	102N	+8
76	+6	103N	+2
77	+2	99N	-6
78	-12	95N	+5
79	+5	104	-12
80	+1	105	
81	+2		
82	+2		
83	-10		
ML84S	+2	TL1W	+4
85S	-1	1E	+8
86S	+6	2	+2
87S	+10	3	-2
88S	-5	4E	-1
89S	+4	4W	+1
90C	0	5W	+3
90S	+3	5E	+12
91S	-4	6E	+5
92S	-11	6W	+2
93S	-6		
94S	+1		
95S	+1		
96S	+2		
97S	-3		
98S	-9		
99S	-3		
100S	-3		
101S	+2		
102S	+10		
103S	+6		
106	+5		
107	-2		
108	+3		
109	+7		
110	-10		
111	-1		
112	+6		

AIII-4b

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LEGEND

X X INDICATES FILM VERIFIED POINTS

NATIONAL GAMMA RAY MAP SERIES
DEATH VALLEY SHEET
FLIGHT BASE

0 5 10 15 MILES

NATIONAL GAMMA RAY MAP SERIES
DEATH VALLEY SHEET
200 T ± STANDARD DEVIATIONS

NATIONAL GAMMA RAY MAP SERIES
DEATH VALLEY SHEET
40K ± STANDARD DEVIATIONS

NATIONAL GAMMA RAY MAP SERIES
DEATH VALLEY SHEET
214 Bi / 208 T ± STANDARD DEVIATIONS

NATIONAL GAMMA RAY MAP SERIES
DEATH VALLEY SHEET
214Bi/208Tl ± STANDARD DEVIATIONS

NATIONAL GAMMA RAY MAP SERIES
DEATH VALLEY SHEET
214 Bi / 40K ± STANDARD DEVIATIONS

NATIONAL GAMMA RAY MAP SERIES
DEATH VALLEY SHEET
214 Bi / 40K ± STANDARD DEVIATIONS

NATIONAL GAMMA RAY MAP SERIES
DEATH VALLEY SHEET
208 T1/40K ± STANDARD DEVIATIONS

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 1 DEATH VALLEY

36°-30' 0 5 10 15 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.10 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 1 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 2 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 2 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 3 DEATH VALLEY

MILES 36°-30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 4 DEATH VALLEY 0 10 20 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 5 DEATH VALLEY

WILES 36°-30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 6 DEATH VALLEY

0 2 4 6 8 10 12 14 16 18 20 22 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 6 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

SC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 7 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 7 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 8 DEATH VALLEY

36°30'

0 5 10 15 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

RT
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 9 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
1 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 9 DEATH VALLEY

36°30'

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 10 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 10 DEATH VALLEY

0 5 10 15 MILES

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 11 DEATH VALLEY

36°30'

WILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 11 DEATH VALLEY

36°30'

10

11

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22

23

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.10 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 12 DEATH VALLEY

36°30'

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 13 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 13 DEATH VALLEY

36° 30'

0 5 10 15 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
10 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 14 DEATH VALLEY

36° 30'

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 14 DEATH VALLEY

36°30'

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 15 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 15 DEATH VALLEY

36°30'

10 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIRK
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 16 DEATH VALLEY

36°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GZ
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 17 DEATH VALLEY

0 10 20 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 17 DEATH VALLEY

36°30'

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.90 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 18 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 18 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

MI 19 DEATH VALLEY

36°30' 0 10 20 30 40 50 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 20 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

36°30'

WILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 20 DEATH VALLEY

36°30'

0 5 10 15 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 21 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.90 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 21 DEATH VALLEY

36°30'

0 5 10 15 20 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIRIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

RLT
100 FT/DIV

36°30'

ML 21 DEATH VALLEY

0 1 2 3 4 5 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

36°30'

ML 21 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 MILES

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GRAMMS/DIV
BASE = -200'

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 22 DEATH VALLEY

36°30'

10

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339

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 22 DEATH VALLEY

36°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 23 DEATH VALLEY

0 5 10 15 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.10 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 23 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 24 DEATH VALLEY

36°30'

0 5 10 15 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 25 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 25 DEATH VALLEY

36°30'

0 10 20 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 26 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 26 DEATH VALLEY

0 10 20 30 40 50 60 70 80 90 100 MILES

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 27 DEATH VALLEY

0 10 20 MILE

ML 28

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 28 DEATH VALLEY

36°15'

81

WILES

ML 28

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.10 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 28 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

36°45'

ML 28 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 28 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
6 DEC C/DIV
BASE = -15

ALT
100 FT/DIV

ML 29 DEATH VALLEY

36°30'

0 10 20 30 40 50 60 70 80 90 100 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIRIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 30 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 31 DEATH VALLEY

0 5 10 15 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 31 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 32 DEATH VALLEY

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230

36°30'

RMAG
50 GA MA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 32 DEATH VALLEY

36°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
09 0/0/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 33 DEATH VALLEY

0 10 20 30 40 50 MILES

36°30'

RMAG
50 GA MA DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.10 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 33 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 MILES

36°30'

ML 34

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.10 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 34 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

100 GAMMAS/DIV
BASE = -200

BI/IR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TI
10 C/S/DIV

ALT
100 FT/DIV

ML 35 DEATH VALLEY

0 10 20 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 35 DEATH VALLEY

0 5 10 15 MILES

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 36 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 36 DEATH VALLEY

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170 1180 1190 1200 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430 1440 1450 1460 1470 1480 1490 1500 1510 1520 1530 1540 1550 1560 1570 1580 1590 1600 1610 1620 1630 1640 1650 1660 1670 1680 1690 1700 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100 2110 2120 2130 2140 2150 2160 2170 2180 2190 2200 2210 2220 2230 2240 2250 2260 2270 2280 2290 2300 2310 2320 2330 2340 2350 2360 2370 2380 2390 2400 2410 2420 2430 2440 2450 2460 2470 2480 2490 2500 2510 2520 2530 2540 2550 2560 2570 2580 2590 2600 2610 2620 2630 2640 2650 2660 2670 2680 2690 2700 2710 2720 2730 2740 2750 2760 2770 2780 2790 2800 2810 2820 2830 2840 2850 2860 2870 2880 2890 2900 2910 2920 2930 2940 2950 2960 2970 2980 2990 3000 3010 3020 3030 3040 3050 3060 3070 3080 3090 3100 3110 3120 3130 3140 3150 3160 3170 3180 3190 3200 3210 3220 3230 3240 3250 3260 3270 3280 3290 3300 3310 3320 3330 3340 3350 3360 3370 3380 3390 3400 3410 3420 3430 3440 3450 3460 3470 3480 3490 3500 3510 3520 3530 3540 3550 3560 3570 3580 3590 3600 3610 3620 3630 3640 3650 3660 3670 3680 3690 3700 3710 3720 3730 3740 3750 3760 3770 3780 3790 3800 3810 3820 3830 3840 3850 3860 3870 3880 3890 3900 3910 3920 3930 3940 3950 3960 3970 3980 3990 4000 4010 4020 4030 4040 4050 4060 4070 4080 4090 4100 4110 4120 4130 4140 4150 4160 4170 4180 4190 4200 4210 4220 4230 4240 4250 4260 4270 4280 4290 4300 4310 4320 4330 4340 4350 4360 4370 4380 4390 4400 4410 4420 4430 4440 4450 4460 4470 4480 4490 4500 4510 4520 4530 4540 4550 4560 4570 4580 4590 4600 4610 4620 4630 4640 4650 4660 4670 4680 4690 4700 4710 4720 4730 4740 4750 4760 4770 4780 4790 4800 4810 4820 4830 4840 4850 4860 4870 4880 4890 4900 4910 4920 4930 4940 4950 4960 4970 4980 4990 5000 5010 5020 5030 5040 5050 5060 5070 5080 5090 5100 5110 5120 5130 5140 5150 5160 5170 5180 5190 5200 5210 5220 5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360 5370 5380 5390 5400 5410 5420 5430 5440 5450 5460 5470 5480 5490 5500 5510 5520 5530 5540 5550 5560 5570 5580 5590 5600 5610 5620 5630 5640 5650 5660 5670 5680 5690 5700 5710 5720 5730 5740 5750 5760 5770 5780 5790 5800 5810 5820 5830 5840 5850 5860 5870 5880 5890 5900 5910 5920 5930 5940 5950 5960 5970 5980 5990 6000 6010 6020 6030 6040 6050 6060 6070 6080 6090 6100 6110 6120 6130 6140 6150 6160 6170 6180 6190 6200 6210 6220 6230 6240 6250 6260 6270 6280 6290 6300 6310 6320 6330 6340 6350 6360 6370 6380 6390 6400 6410 6420 6430 6440 6450 6460 6470 6480 6490 6500 6510 6520 6530 6540 6550 6560 6570 6580 6590 6600 6610 6620 6630 6640 6650 6660 6670 6680 6690 6700 6710 6720 6730 6740 6750 6760 6770 6780 6790 6800 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000 7010 7020 7030 7040 7050 7060 7070 7080 7090 7100 7110 7120 7130 7140 7150 7160 7170 7180 7190 7200 7210 7220 7230 7240 7250 7260 7270 7280 7290 7300 7310 7320 7330 7340 7350 7360 7370 7380 7390 7400 7410 7420 7430 7440 7450 7460 7470 7480 7490 7500 7510 7520 7530 7540 7550 7560 7570 7580 7590 7600 7610 7620 7630 7640 7650 7660 7670 7680 7690 7700 7710 7720 7730 7740 7750 7760 7770 7780 7790 7800 7810 7820 7830 7840 7850 7860 7870 7880 7890 7900 7910 7920 7930 7940 7950 7960 7970 7980 7990 8000 8010 8020 8030 8040 8050 8060 8070 8080 8090 8100 8110 8120 8130 8140 8150 8160 8170 8180 8190 8200 8210 8220 8230 8240 8250 8260 8270 8280 8290 8300 8310 8320 8330 8340 8350 8360 8370 8380 8390 8400 8410 8420 8430 8440 8450 8460 8470 8480 8490 8500 8510 8520 8530 8540 8550 8560 8570 8580 8590 8600 8610 8620 8630 8640 8650 8660 8670 8680 8690 8700 8710 8720 8730 8740 8750 8760 8770 8780 8790 8800 8810 8820 8830 8840 8850 8860 8870 8880 8890 8900 8910 8920 8930 8940 8950 8960 8970 8980 8990 9000 9010 9020 9030 9040 9050 9060 9070 9080 9090 9100 9110 9120 9130 9140 9150 9160 9170 9180 9190 9200 9210 9220 9230 9240 9250 9260 9270 9280 9290 9300 9310 9320 9330 9340 9350 9360 9370 9380 9390 9400 9410 9420 9430 9440 9450 9460 9470 9480 9490 9500 9510 9520 9530 9540 9550 9560 9570 9580 9590 9600 9610 9620 9630 9640 9650 9660 9670 9680 9690 9700 9710 9720 9730 9740 9750 9760 9770 9780 9790 9800 9810 9820 9830 9840 9850 9860 9870 9880 9890 9900 9910 9920 9930 9940 9950 9960 9970 9980 9990 10000 10010 10020 10030 10040 10050 10060 10070 10080 10090 10100 10110 10120 10130 10140 10150 10160 10170 10180 10190 10200 10210 10220 10230 10240 10250 10260 10270 10280 10290 10300 10310 10320 10330 10340 10350 10360 10370 10380 10390 10400 10410 10420 10430 10440 10450 10460 10470 10480 10490 10500 10510 10520 10530 10540 10550 10560 10570 10580 10590 10600 10610 10620 10630 10640 10650 10660 10670 10680 10690 10700 10710 10720 10730 10740 10750 10760 10770 10780 10790 10800 10810 10820 10830 10840 10850 10860 10870 10880 10890 10900 10910 10920 10930 10940 10950 10960 10970 10980 10990 11000 11010 11020 11030 11040 11050 11060 11070 11080 11090 11100 11110 11120 11130 11140 11150 11160 11170 11180 11190 11200 11210 11220 11230 11240 11250 11260 11270 11280 11290 11300 11310 11320 11330 11340 11350 11360 11370 11380 11390 11400 11410 11420 11430 11440 11450 11460 11470 11480 11490 11500 11510 11520 11530 11540 11550 11560 11570 11580 11590 11600 11610 11620 11630 11640 11650 11660 11670 11680 11690 11700 11710 11720 11730 11740 11750 11760 11770 11780 11790 11800 11810 11820 11830 11840 11850 11860 11870 11880 11890 11900 11910 11920 11930 11940 11950 11960 11970 11980 11990 12000 12010 12020 12030 12040 12050 12060 12070 12080 12090 12100 12110 12120 12130 12140 12150 12160 12170 12180 12190 12200 12210 12220 12230 12240 12250 12260 12270 12280 12290 12300 12310 12320 12330 12340 12350 12360 12370 12380 12390 12400 12410 12420 12430 12440 12450 12460 12470 12480 12490 12500 12510 12520 12530 12540 12550 12560 12570 12580 12590 12600 12610 12620 12630 12640 12650 12660 12670 12680 12690 12700 12710 12720 12730 12740 12750 12760 12770 12780 12790 12800 12810 12820 12830 12840 12850 12860 12870 12880 12890 12900 12910 12920 12930 12940 12950 12960 12970 12980 12990 13000 13010 13020 13030 13040 13050 13060 13070 13080 13090 13100 13110 13120 13130 13140 13150 13160 13170 13180 13190 13200 13210 13220 13230 13240 13250 13260 13270 13280 13290 13300 13310 13320 13330 13340 13350 13360 13370 13380 13390 13400 13410 13420 13430 13440 13450 13460 13470 13480 13490 13500 13510 13520 13530 13540 13550 13560 13570 13580 13590 13600 13610 13620 13630 13640 13650 13660 13670 13680 13690 13700 13710 13720 13730 13740 13750 13760 13770 13780 13790 13800 13810 13820 13830 13840 13850 13860 13870 13880 13890 13900 13910 13920 13930 13940 13950 13960 13970 13980 13990 14000 14010 14020 14030 14040 14050 14060 14070 14080 14090 14100 14110 14120 14130 14140 14150 14160 14170 14180 14190 14200 14210 14220 14230 14240 14250 14260 14270 14280 14290 14300 14310 14320 14330 14340 14350 14360 14370 14380 14390 14400 14410 14420 14430 14440 14450 14460 14470 14480 14490 14500 14510 14520 14530 14540 14550 14560 14570 14580 14590 14600 14610 14620 14630 14640 14650 14660 14670 14680 14690 14700 14710 14720 14730 14740 14750 14760 14770 14780 14790 14800 14810 14820 14830 14840 14850 14860 14870 14880 14890 14900 14910 14920 14930 14940 14950 14960 14970 14980 14990 15000 15010 15020 15030 15040 15050 15060 15070 15080 15090 15100 15110 15120 15130 15140 15150 15160 15170 15180 15190 15200 15210 15220 15230 15240 15250 15260 15270 15280 15290 15300 15310 15320 15330 15340 15350 15360 15370 15380 15390 15400 15410 15420 15430 15440 15450 15460 15470 15480 15490 15500 15510 15520 15530 15540 15550 15560 15570 15580 15590 15600 15610 15620 15630 15640 15650 15660 15670 15680 15690 15700 15710 15720 15730 15740 15750 15760 15770 15780 15790 15800 15810 15820 15830 15840 15850 15860 15870 15880 15890 15900 15910 15920 15930 15940 15950 15960 15970 15980 15990 16000 16010 16020 16030 16040 16050 16060 16070 16080 16090 16100 16110 16120 16130 16140 16150 16160 16170 16180 16190 16200 16210 16220 16230 16240 16250 16260 16270 16280 16290 16300 16310 16320 16330 16340 16350 16360 16370 16380 16390 16400 16410 16420 16430 16440 16450 16460 16470 16480 16490 16500 16510 16520 16530 16540 16550 16560 16570 16580 16590 16600 16610 16620 16630 16640 16650 16660 16670 16680 16690 16700 16710 16720 16730 16740 16750 16760 16770 16780 16790 16800 16810 16820 16830 16840 16850 16860 16870 16880 16890 16900 16910 16920 16930 16940 16950 16960 16970 16980 16990 17000 17010 17020 17030 17040 17050 17060 17070 17080 17090 17100 17110 17120 17130 17140 17150 17160 17170 17180 17190 17200 17210 17220 17230 17240 17250 17260 17270 17280 17290 17300 17310 17320 17330 17340 17350 17360 17370 17380 17390 17400 17410 17420 17430 17440 17450 17460 17470 17480 17490 17500 17510 17520 17530 17540 17550 17560 17570 17580 17590 17600 17610 17620 17630 17640 17650 17660 17670 17680 17690 17700 17710 17720 17730 17740 17750 17760 17770 17780 17790 17800 17810 17820 17830 17840 17850 17860 17870 17880 17890 17900 17910 17920 17930 17940 17950 17960 17970 17980 17990 18000 18010 18020 18030 18040 18050 18060 18070 18080 18090 18100 18110 18120 18130 18140 18150 18160 18170 18180 18190 18200 18210 18220 18230 18240 18250 18260 18270 18280 18290 18300 18310 18320 18330 18340 18350 18360 18370 18380 18390 18400 18410 18420 18430 18440 18450 18460 18470 18480 18490 18500 18510 18520 18530 18540 18550 18560 18570 18580 18590 18600 18610 18620 18630 18640 18650 18660 18670 18680 18690 18700 18710 18720 18730 18740 18750 18760 18770 18780 18790 18800 18810 18820 18830 18840 18850 18860 18870 18880 18890 18900 18910 18920 18930 18940 18950 18960 18970 18980 18990 19000 19010 19020 19030 19040 19050 19060 19070 19080 19090 19100 19110 19120 19130 19140 19150 19160 19170 19180 19190 19200 19210 19220 19230 19240 19250 19260 19270 19280 19290 19300 19310 19320 19330 19340 19350 19360 19370 19380 19390 19400 19410 19420 19430 19440 19450 19460 19470 19480 19490 19500 19510 19520 19530 19540 19550 19560 19570 19580 19590 19600 19610 19620 19630 19640 19650 19660 19670 19680 19690 19700 19710 19720 19730 19740 19750 19760 19770 19780 19790 19800 19810 19820 19830 19840 19850 19860 19870 19880 19890 19900 19910 19920 19930 19940 19950 19960 19970 19980 19990 20000 20010 20020 20030 20040 20050 20060 20070 20080 20090 20100 20110 20120 20130 20140 20150 20160 20170 20180 20190 20200 20210 20220 20230 20240 20250 20260 20270 20280 20290 20300 20310 20320 20330 20340 20350 20360 20370 20380 20390 20400 20410 20420 20430 20440 20450 20460 20470 20480 20490 20500 20510 20520 20530 20540 20550 20560 20570 20580 20590 20600 20610 20620 20630 20640 20650 20660 20670 20680 20690 20700 20710 20720 20730 20740 20750 20760 20770 20780 20790 20800 20810 20820 20830 20840 20850 20860 20870 20880 20890 20900 20910 20920 20930 20940 20950 20960 20970 20980 20990 21000 21010 21020 21030 21040 21050 21060 21070 21080 21090 21100 21110 21120 21130 21140 21150 21160 21170 21180 21190 21200 21210 21220 21230 21240 21250 21260 21270 21280 21290 21300 21310 21320 21330 21340 21350 21360 21370 21380 21390 21400 21410 21420 21430 21440 21450 21460 21470 21480 21490 21500 21510 21520 21530 21540 21550 21560 21570 21580 21590 21600 21610 21620 21630 21640 21650 21660 21670 21680 21690 21700 21710 21720 21730 21740 21750 2

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
20 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 37 DEATH VALLEY

36°30'

ML 37

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 37 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

36°45'
ML 38 DEATH VALLEY
0 10 20 30 MILES

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 38 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 38 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 MILES

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 39 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 39 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIRIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 39 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -13

ALT
100 FT/DIV

ML 39 DEATH VALLEY

0 10 20 30 40 50 60 70 80 90 100 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 40 DEATH VALLEY

36°30' 11.00

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 41 DEATH VALLEY

36° 30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 41 DEATH VALLEY

0 5 10 15 MILES

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 42 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 MILES

36°30'

RMAG
50 GAM A/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
UNSC = 15

ALT
100 FT/DIV

ML 42 DEATH VALLEY

36°30' 00" N 115°00' 00" W

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 43 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 MILES

36°30'

RMAG
50 GAM A/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 43 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 44 DEATH VALLEY

0 5 10 15 MILES

36° 30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 44 DEATH VALLEY

0 5 10 15 MILES

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 45 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

36°30'

RMAG
50 G MA DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 45 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 46 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

MAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 48 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.10 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 48 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIRIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 49 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 49 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 49 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 49 DEATH VALLEY

0 5 10 15 18 MILES

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

36°30'

ML 50 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 50 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 51 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 51 DEATH VALLEY

36°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 52 DEATH VALLEY

36°30'

MILES

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 53 DEATH VALLEY

36°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
20 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 54 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DI
BASE = -15

ALT
100 FT/DIV

ML 54 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
20 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 55 DEATH VALLEY

36°30'

RMAG
50 GAMM /DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 55 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

RMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 56 DEHIA VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 57 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 57 DEATH VALLEY

0 5 10 15 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 58 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
20 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 59 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 59 DEATH VALLEY

0 10 20 30 40 50 60 70 80 90 100 MILES

36°30'

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 60 DEATH VALLEY

36°-30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DI
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 60 DEATH VALLEY

0 10 20 30 MILES

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 61 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.10 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 61 DEATH VALLEY

36°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 62 DEATH VALLEY

36°-30' 0 5 10 15 MILES

RMAG
50 GAMMA/DI
BASE = -1500

BMAG
5 GAMMA DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 62 DEATH VALLEY

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

Bi
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 63 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 63 DEATH VALLEY

0 5 10 15 MILES

36° 30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BI AIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 65 DEATH VALLEY 36°-30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 65 DEATH VALLEY

0 10 20 30 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 66 DEATH VALLEY

36°-30' 0 10 20 30 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 66 DEATH VALLEY

0 5 10 15 MILES

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
20 G/G/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 67 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 68 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 68 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 69 DEATH VALLEY

36°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 70 DEATH VALLEY

W. 36°-30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 L/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 71 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 71 DEATH VALLEY

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.90 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 72 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 72 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 73 DEATH VALLEY

36°30'

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

PIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TI
10 C/S/DIV

ALT
100 FT/DIV

ML 75 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 75 DEATH VALLEY

0 5 10 15 20 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 76 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 76 DEATH VALLEY

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 77 DEATH VALLEY

0 10 20 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 77 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 78 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 78 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 79 DEATH VALLEY

0 5 10 15 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 79 DEPTH VALLEY

0 10 20 MILES

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 80 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIRIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 81 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 81 DEATH VALLEY

0 5 10 15 20 MILES

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BI AIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 82 DEATH VALLEY

0 5 10 15

35° 30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.90 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 82 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 83 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 83 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 84 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 84 DEATH VALLEY

36730'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

IG
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 85 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

MI. 85 DEATH VALLEY

36°30'

WILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 85 DEATH VALLEY

36°45'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 85 DEATH VALLEY

36°45'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 86 DEATH VALLEY

0 10 20 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

HLT
100 FT/DIV

ML 86 DEATH VALLEY

36°45'

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 86 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 MILES

RMAG
50 GRAM/DIV
BASE = -1500

BMAG
5 GRAM/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 86 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 87 DEATH VALLEY

36°45'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 87 DEATH VALLEY

36°45'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 87 DEATH VALLEY

36°15'

WILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 87 DEATH VALLEY

36°15'

0 5 10 15 MILES

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 88 DEATH VALLEY 0 10 20 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 88 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

IL
10 C/S/DIV

ALT
100 FT/DIV

ML 88 DEATH VALLEY

0 10 20 30 40 50 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 88 DEATH VALLEY

36°45'

WILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

36°15'

ML 89 DEATH VALLEY 0 1 2 3 4 5 6 7 8 9 10 11 12 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 89 DEATH VALLEY

36°15'

0 10 20 30 40 50 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

MAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 89 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 MILES

RMAG
50 GAMM /DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 89 DEATH VALLEY

0 10 20 30 40 50 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
20 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 90 DEATH VALLEY

0 5 10 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 90 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 91 OFATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 91 DEATH VALLEY

0 10 20 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 91 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/6/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/8/DIV

BI
20 C/S/DIV

TL
10 C/8/DIV

ALT
100 FT/DIV

ML 92 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 92 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 92 DEATH VALLEY

0 10 20 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 92 DEATH VALLEY

36°45'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 64 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 MILES

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
0 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 64 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 93 DEATH VALLEY

36°15'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

BLT
100 FT/DIV

ML 93 DEATH VALLEY

36°15'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 93 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 93 DEATH VALLEY

36°45'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIATR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 94 DEATH VALLEY

36°15'

MILES

RMAG
50 GAM A/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 94 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 94 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 MILES

36°45'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 94 DEATH VALLEY

36°45'

MILES

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 95 DEATH VALLEY

36°15'

11 MILES

RMAG
50 GAM MA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 95 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 95 DEATH VALLEY

MILES

RMAG
53 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C./DIV
BASE = -15

ALT
100 FT/DIV

ML 95 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 95 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 95 DENTII VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 96 DEATH VALLEY

36°15'

MILES

RMAG
50 GAMM/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 96 DEATH VALLEY

36°15' 0 1 2 3 4 5 6 7 8 9 10 11 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
20 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 96 DEATH VALLEY

0 10 20 30 40 50 60 70 80 90 100 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 97 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 97 DEATH VALLEY

36°45'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

MI 97 DEATH VALLEY

36°45'

WILES

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
20 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 98 DEATH VALLEY

36°45'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 98 DEATH VALLEY

36°45'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 99 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 MILES

36°15'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 99 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP.
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 99 DEATH VALLEY

36°30'

WILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 99 DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 99 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.90 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 100 DEATH VALLEY

36°15'

MIL 93

RMAG
5.0 GAMMA/DIV
BASE = -1500

GMAG
4.0 GAMMA/DIV
BASE = 51760

PRESSURE
3.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 100 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 100 DEATH VALLEY

36°45'

RMAG
20 GA MA/IV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 100 DEATH VALLEY

36°45'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 101 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 101 DEATH VALLEY

36°45'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 S/WMS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
20 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 102 DEATH VALLEY

0 1 2 3 4 5 6 7 8 9 10 11 12 MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 102 DEATH VALLEY

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 102 DEATH VALLEY

36°45'

MILES

RMAG
50 GA MA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.10 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 102 DEATH VALLEY

0 10 20 MILES

36°45'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 103 DEATH VALLEY

36°15'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 103 DEATH VALLEY

36°45'

MILES

RMAG
50 GAM /DI
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 103 DEATH VALLEY

36°45'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 104 DEATH VALLEY

36°30'

MILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 104 DEATH VALLEY

36°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIRIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 105 DEATH VALLEY 36°-30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 105 DEATH VALLEY

36°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 106 DEATH VALLEY

6° 30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.90 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 107 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 108 DEATH VALLEY

36°30'

111.55

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 109 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 109 DEATH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
20 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 111 DEATH VALLEY

36°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

ML 111 DEATH VALLEY

36°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

ML 112 DEPTH VALLEY

36°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

TL 1 DEATH VALLEY

117°-30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL 1 DEATH VALLEY

117°30'

MILES

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

TL 16 DEATH VALLEY

116°45'

WILES

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL 1 DEATH VALLEY

TL 2

TL/K
.35 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIRIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

TL 2 DEATH VALLEY

117°00'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 I HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL 2 DEATH VALLEY

TL 3

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

TL 3 DEATH VALLEY

0 5 10 15 20 25 30 MILES

117°00'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL 3 DEATH VALLEY

117°00'

TL 4

TL/K
.05 /DIV

BI/K
.12 /DIV

BI/TL
.10 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIRIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

TL 4 W DEATH VALLEY 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 MILES

TL 4

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 I HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL 4 DEATH VALLEY

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

117° 30'

TL 4

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

PM-3G
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

TL 4E DEATH VALLEY

TL 4

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL 4 DEATH VALLEY

TL 5

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

TL 5 E DEATH VALLEY

TL 5

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.011 HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = 15

ALT
100 FT/DIV

TL 5 DEATH VALLEY

116°30'

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.90 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

TL 5w DEATH VALLEY

117°30'

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

Bi
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

TL 6W DEATH VALLEY

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL 6 DEATH VALLEY

0 5 10 15 MILES

116°15'

TL 6

TL/K
.06 /DIV

BI/K
.12 /DIV

BI/TL
.40 /DIV

GC
1000 C/S/DIV

RMAG
100 GAMMAS/DIV
BASE = -200

BIAIR
20 C/S/DIV

K
30 C/S/DIV

BI
20 C/S/DIV

TL
10 C/S/DIV

ALT
100 FT/DIV

TL 6 E DEATH VALLEY

TL 6

RMAG
50 GAMMA/DIV
BASE = -1500

BMAG
5 GAMMA/DIV
BASE = 51760

PRESSURE
0.40 IN HG/DIV
BASE = 22

TEMP
2 DEG C/DIV
BASE = -15

ALT
100 FT/DIV

TL 6 DEATH VALLEY

0 10 20 30 40 50 MILES