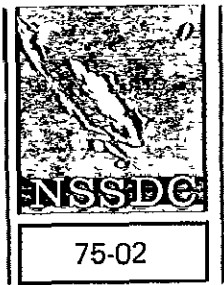
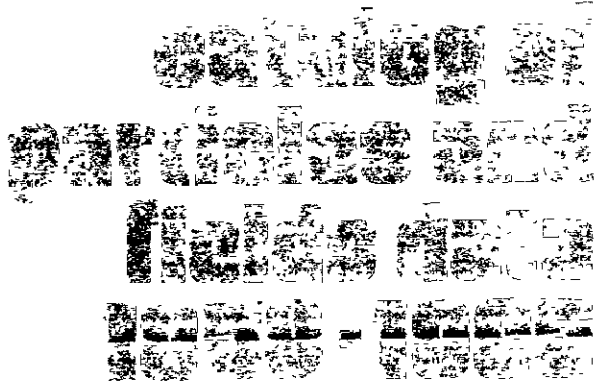


NASA TMX- 72574



NATIONAL SPACE SCIENCE
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GODDARD SPACE FLIGHT CENTER
GREENBELT MD

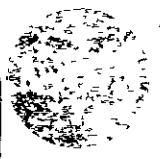


June 1975

(NASA-TM-X-72574) CATALOG OF PARTICLES AND
FIELDS DATA 19581965 (NASA) 142 p HC \$5.75
CSCI 04A

N75-24211

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G3/46 23181



DEFINITIONS OF DISCIPLINES

ASTRONOMY — This category includes all observations of astronomical objects, both outside and within the solar system, made at various wavelengths (i.e., gamma rays through radio waves). Observed objects outside the solar system include stars, nebulae, galaxies, and all other matter. Observed objects within the solar system include zodiacal light sources, meteoroids, asteroids, dust, micrometeorites, and planetary radio emission sources. Other planetary observations (see Planetary Atmospheres, Planetology, or Ionospheric Physics) and solar observations (see Solar Physics) are excluded. Observations of cosmic-ray particles are listed under Particles and Fields. Celestial mechanics measurements are included under Geodesy and Gravimetry.

GEODESY AND GRAVIMETRY — This category includes experiments that measure size, shape, mass, coordinates, altitudes, or gravity fields or experiments concerned with the mapping of a body. It includes the mechanics of orbiting artificial and natural bodies.

IONOSPHERIC PHYSICS — This category includes observations of the ionosphere, which is defined as that region of a planetary atmosphere which contains a significant number of free thermal electrons on a daily basis and which has a free electron density maximum in the vertical direction. Its upper and lower extents are roughly defined as the areas in which densities approach 10^{-4} of the peak values. Included are all in situ and remotely sensed observations of ionospheric charged particles with thermal energies. This category is used for remotely sensed propagation experiments that primarily focus on the ionosphere, including very low frequency (VLF) and extremely low frequency (ELF) experiments; for other remotely sensed propagation experiments, an appropriate category, such as Particles and Fields, is used.

METEOROLOGY — This category includes observations made in the Earth's hydrosphere and atmosphere up to the mesopause or D region.

PARTICLES AND FIELDS — The subcategory Particles includes all in situ charged-particle measurements except those of thermal plasma in terrestrial or other planetary ionospheres (see Ionospheric Physics). It includes all neutron measurements and electromagnetic signal propagation experiments designed to measure columnar electron densities (except those in which the most significant portion of the free electrons within the column is within an ionosphere). The subcategory Fields includes all in situ measurements of electric and magnetic fields. It includes VLF and ELF experiments other than those primarily concerned with observing ionospheric properties. It excludes electromagnetic radiation (radio waves through gamma waves) propagating away from remote sources. (In such cases, either Solar Physics or Astronomy is used, as appropriate.)

PLANETARY ATMOSPHERES — This category includes all observations of the gaseous envelope above the surface of a planet. For the Earth the lower limit for observations that belong in this category is about 65 km, the height of the mesopause or D region. (For studies below this altitude, Meteorology is used.) The upper limit is defined as the transition level of the lightest gas. This region overlaps the ionosphere for planets which have an ionosphere; however, ionospheric observations are restricted to observations related to the charge aspects of matter, while Planetary Atmospheres relates to the mass aspects of matter (e.g., composition measurements). For cases in which both atmospheric and ionospheric categories apply, both may be used.

PLANETOLOGY — This category includes experiments for the purpose of deriving and analyzing data from the solid or liquid parts (excluding the oceans of the Earth) of any solar system body. Chemical, physical, and geologic studies of properties of gross or small surface features, materials of the surface, internal properties, magnetic properties, etc., are included. Gravitational and geodetic experiments are excluded from this category (see Geodesy and Gravimetry). When the primary purpose of the study is to measure the residual effects of some external phenomena (such as meteorite or cosmic-ray impacts), the external phenomena should determine the choice of category. If necessary, the experiment may be assigned to more than one category.

SOLAR PHYSICS — This category includes all solar observations regardless of the wavelength being observed. The source region considered here extends outward from the Sun to include that area observed with solar coronagraphs (nominally to 10 solar radii). All in situ measurements of electric or magnetic fields and of particles for which the source is believed to be the Sun are considered to fall in the domain of Particles and Fields.



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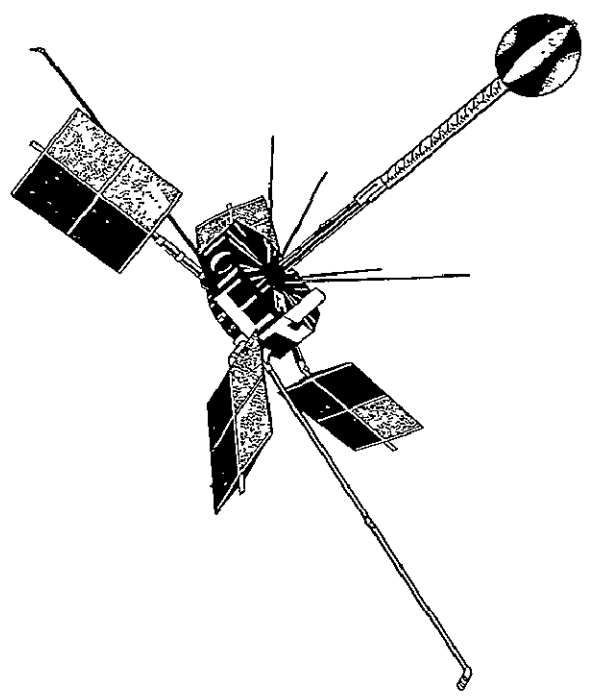


catalog of particles and fields data 1958 - 1965

technical coordinator
JOSEPH H. KING

editor
MARGARET L. KING

June 1975



PREFACE

Many individuals have participated in some way toward the production of this catalog and deserve recognition for such efforts. I would like to both acknowledge and thank the many spacecraft experimenters and their colleagues who have submitted their documented data. In addition, a number of National Space Science Data Center (NSSDC) personnel have interacted with experimenters in bringing to NSSDC the data announced and have generated the many descriptions in this catalog. Of the present staff, these personnel include L. R. Davis, D. J. Hej, J. H. King, and E. G. Stassinopoulos. A great many other NSSDC personnel, too numerous to name, have also been involved in the data and information handling necessary to produce this catalog. Most of these personnel are associated with the Data Center's onsite contractor, PMI Facilities Management Corporation. To all these, my thanks are extended.

The Data Center is continually striving to increase the usefulness of this document by improving its form and content. Scientists are invited to submit their comments or recommendations to NSSDC regarding the data available, the services provided, and the contents and format of the catalog. Recipients are urged to inform potential data users of its availability.

Joseph H. King

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1. INTRODUCTION

1.1 PURPOSE AND ORGANIZATION

The National Space Science Data Center (NSSDC) was established by the National Aeronautics and Space Administration (NASA) to provide data and information from space science experiments in support of additional studies beyond those performed by principal investigators. Available particles and fields data, covering the period 1958-1965 inclusive, are announced in this catalog. The period after 1965 is included in a companion catalog. Data available in other disciplines (see inside front cover) comprise additional catalogs to be published in the near future.

Virtually all the data sets available at or through NSSDC result from individual experiments carried on board individual spacecraft. The Data Center has developed an information system utilizing the spacecraft/experiment/data set hierarchy displayed in this document. The major part of this catalog consists of two photoreduced reports, produced by this information system, each sorted by spacecraft common name and then by principal investigator's last name. One report relates to electric and magnetic field data; the other concerns particle data.

In addition to the actual photoreduced reports, this catalog contains a variety of user-oriented data. There are discussions concerning a newly created composite interplanetary magnetic field data set and other data products that may interest the particles/fields community. Many indexes are also provided to assist the user find the specific information he requires.

1.2 NSSDC FACILITIES AND SERVICES

NSSDC provides facilities for reproduction of data and for onsite data use. Resident and visiting scientists are invited to study the data while at the Data Center. The Data Center staff will assist users with additional data searches and with the use of equipment. In addition to satellite and space probe data, the Data Center maintains some supporting information and other supporting data that may be related to the needs of such scientists. See section 5 of this catalog and the *NSSDC Handbook of Correlative Data*, NSSDC 71-05, for further details on supporting data.

In addition to its main function of providing selected data and supporting information for further analysis of space science flight experiments, the Data Center produces a wide spectrum of publications. Among these are a report on active and planned spacecraft and experiments, a report of recent sounding rocket launchings, lunar and planetary photographic data user notes, and users guides. For additional information on NSSDC document availability and distribution services, write to the address identified in section 1.3 and ask for document NSSDC/WDC-A-R&S 74-10.

1.3 DATA AVAILABILITY, COSTS, AND ORDERING PROCEDURES

The services provided by NSSDC are available to any individual or organization resident in the United States and to scientists outside the United States. Normally a charge is made for the requested data to cover the cost of reproduction and the processing of the request. The requester will be notified of the charge, and payment must be received prior to processing the request. The Director of NSSDC may waive, as resources permit, the charge for modest amounts of data when they are to be used for scientific studies or for specific educational purposes and when they are requested by an individual affiliated with: (1) U.S. Government agencies, their contractors, or their grantees; (2) universities and colleges; (3) state and local governments; or (4) nonprofit organizations. A user may obtain data by a letter or telephone request, an onsite visit, or the NSSDC Data Request Form (contained at the end of this document).

Anyone who wishes to obtain data for a scientific study should specify the NSSDC identification number, the common name and/or number of the satellite and the experiment, the form of data, and the time span (or location, when appropriate) of interest. A requester should also specify why the data are needed, the subject of his work, his affiliation, and any Government contracts he may have for performing his study. Data may be provided in a format or medium other than that noted in the data set descriptions. For example, magnetic tapes may be reformatted, computer printout or microfilmed listings can be produced from magnetic tape data sets, enlarged paper prints are available from data sets on photographic film and microfilm, etc. The Data

Center will provide the requester with an estimate of the response time and, when appropriate, the charge for such requests. When requesting data on magnetic tape, the user should specify whether he will supply new tapes prior to the processing, return the original NSSDC tapes after the data have been copied, or pay for new tapes.

The Data Center's address for requests is:

National Space Science Data Center
Code 601.4
Goddard Space Flight Center
Greenbelt, Maryland 20771
Phone: (301) 982-6695

Users who reside outside the U.S. should direct requests for data to:

World Data Center A for Rockets and Satellites
Code 601
Goddard Space Flight Center
Greenbelt, Maryland 20771 U.S.A.
Phone: (301) 982-6695

Since the World Data Center A for Rockets and Satellites (WDC-A-R&S) also maintains listings of rocket experiments, requests for information concerning rocket launchings and the experiments flown may be directed to this institution.

1.4 DATA ACQUISITION

NSSDC invites members of the scientific community to contribute data from satellite experiments. The Data Center assigns a specialist in the appropriate scientific discipline for each experiment to arrange for data acquisition with the principal investigator and to help solve related problems. Acquired data are cataloged and made available to users according to established procedures. Scientists who have not been contacted by one of the subject specialists and who have analyzed or reduced data available for contribution are requested to contact NSSDC so that transfer of the data may be discussed.

2. COMPOSITE INTERPLANETARY MAGNETIC FIELD DATA

Most data (codes, models, etc.) that do not conform to the spacecraft/experiment/data set hierarchy are discussed in section 5 of this catalog. Because experience indicates that interplanetary magnetic field (IMF) data are among the most requested types of particles/fields data, this section has been prepared to announce a newly created, composite IMF data set. The data set consists of a single 9-track, 800-bpi, IBM 360 binary magnetic tape containing hourly averaged, near-Earth IMF parameters (solar ecliptic Cartesian components, magnitude, latitude and azimuth angles, rms standard deviations, etc.) for almost 53,000 hours between November 27, 1963, and May 17, 1974. This composite data set was generated at NSSDC from data acquired on eight IMP/AIMP spacecraft (original data acquired by Dr. N. F. Ness and colleagues at Goddard Space Flight Center) and two HEOS spacecraft (original data acquired by Dr. P. C. Hedgecock and colleagues at Imperial College, London). As with all other NSSDC tape data sets, tapes with alternate formats can be made available. From the data tape, a data book was recently issued by NSSDC (NSSDC 75-04). The book contains listings of field magnitude and direction angles, the field component normal to the ecliptic, an rms standard deviation, and a spacecraft identifier for each hour of data coverage. The book also contains 27-day plots of field magnitude, direction angles, and the rms standard deviation. NSSDC will periodically update the composite tape so that data coverage may be as extensive and complete as possible.

3. AUTOMATED REPORTS

3.1 CONTENT AND ORGANIZATION

The following two reports, from the automated information system files of NSSDC, are concerned with electric and magnetic field data and particle data, respectively. Each report contains discussions of individual spacecraft, applicable experiments carried on board the spacecraft, and data sets resulting from these experiments.

Each report is ordered by spacecraft common name, then by principal investigator's last name, and finally by a data set identification number. Because spacecraft common names (the first sort parameter) are not universally common, the Spacecraft Name Index (section 4.1) contains all known names of relevant spacecraft. So that all IMP and AIMP spacecraft may be grouped, prelaunch designations have been used as common names; e.g., AIMP-1 reverts to IMP-D. The Investigator Name Index (section 4.4) may also assist the user find data from a given experimenter (the second sort parameter). The third sort parameter, data set ID, consists of a spacecraft ID; e.g., IMP 7 = 72-073A, with both an experiment sequence number (72-073A-01) and a data set sequence letter (72-073A-01A) attached.

For a few spacecraft listed in these reports, there are ephemeris data sets of special interest that are also identified. For the majority of spacecraft, however, NSSDC has available other ephemeris data sets (primarily world maps), which are not specifically identified for each spacecraft.

Each entry in these reports consists of two parts: a heading and a brief description. Each type of entry; i.e., spacecraft, experiment, and data set, contains its own heading. The headings list generic characteristics of satellites, experiments, and data sets.

3.1.1 CONTENTS OF SPACECRAFT ENTRIES

The heading for each spacecraft description contains the following information about the spacecraft: launch date, weight in orbit, status of operation, and, for inoperable or operationally off spacecraft, the date last spacecraft data were recorded or, if available, the date last usable spacecraft data were recorded. Orbiting spacecraft also have the following orbital parameters included in the heading: epoch date, orbit type, orbit period, apoapsis

and periapsis (distance from the surface of the reference body to the furthest and nearest orbit points, respectively), and inclination (the angle between the satellite orbital plane and the equatorial plane of the primary gravitational body). For satellites with heliocentric orbits, the ecliptic plane is used in lieu of the equatorial plane.

Each spacecraft brief description contains a concise summary of the spacecraft mission, specifically outlining the overall objectives of the mission and the scientific studies being performed. Information about the operational performance and status of the spacecraft during a given period of time is also included and is frequently updated.

3.1.2 CONTENTS OF EXPERIMENT ENTRIES

Each experiment entry heading lists the name of the original experiment institution and the name and present affiliation of the principal investigator (PI) for the experiment. The names and present affiliations of other investigators (OI) associated with the experiment are also listed. The experiment status of operation is then listed as "normal," "partial," "operational off," or "inoperable." For inoperable or operationally off experiments, the date last experiment data were recorded or, if available, the date last usable experiment data were recorded, is also presented. In addition, if the experiment is functioning in other than a normal mode, the brief description explains the circumstances of, and periods affected by, the change.

The experiment brief description contains a concise summary of the experiment purpose and instrument characteristics, emphasizing those relevant to the scientific use of the resulting data. Information about the operational performance and status of the experiment during a given period of time is also included and is frequently updated.

3.1.3 CONTENTS OF DATA SET ENTRIES

Each data set entry contains three elements in the heading: the time period covered by the data, the quantity of data and medium on which the data are stored, and an indicator describing the availability of the data. The time period covered is annotated with one of

two additional comments: “as verified by NSSDC” — identifying that portion of the data set for which the period of data coverage has been verified; or “as reported by the experimenter” — identifying the period of

coverage provided by the experimenter, regardless of the amount held or verified by NSSDC. Several indicators are used to describe the status of data availability to requesters:

- “Data at NSSDC Ready for Distribution” — designates a data set for which cataloging, verification, and documentation are sufficient to provide a comprehensible set of data to satisfy requests.
- “Data in Published Reports” — indicates that either all or a significant portion of the data are contained in a published report or journal, or that the only accessible source of any reduced data from an experiment is the published document. The publications cited in the brief descriptions for spacecraft, experiment, or data set entries normally are available through scientific libraries or document distribution centers. NSSDC provides copies of publications only if they cannot be obtained through such libraries or centers.
- “Data at NSSDC” — identifies data sets for which documentation and verification activities are in process. These data are usually sufficiently documented and verified to satisfy routine requests.
- “Data at NSSDC Processing Deferred” — indicates that the verifying, documenting, or cataloging of the data set is not complete, and that no additional work will be performed unless specifically requested. NSSDC may be able to supply the data from such a data set in a suitable form, depending upon the completeness of the processing and documentation and the particular requirements of the user. The completeness of the data set is indicated in its brief description.
- “Data Available from Experimenter” — used for data sets that NSSDC does not plan to acquire and that the experimenter is willing to make available, usually in limited amount, to other scientists. These data sets are not feasible for storing at NSSDC, either because they are large in volume or because they require special equipment to process. Requests for data sets carrying this indicator should be addressed directly to the experimenter. The experimenter’s name and address and the expected date that the data will be ready for processing are given in the brief description of such a data set.
- “Data at Another Center” — used for data sets stored and distributed by any other data center. Requests for data sets with this indicator should be made directly to the organization identified in the brief description.
- “Data at Another Center that NSSDC can Process” — denotes a data set held by another data center but to which NSSDC has access for limited processing. Requests for this type of data set should be submitted to NSSDC.

For information on the procedures for ordering data, please refer to section 1.3 of the Introduction.

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1964-083C/COSMOS 49

SPACECRAFT COMMON NAME- 1964-083C

ALTERNATE NAMES- 5E 5, 00959

NSSDC ID- 64-083C

LAUNCH DATE- 12/13/64 WEIGHT- 76. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 06/26/65

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 12/24/64
ORBIT PERIOD- 106.3 MIN INCLINATION- 89.99 DEG
PERIAPSIS- 1027.00 KM ALT APOAPSIS- 1086.00 KM ALT

THE SCIENTIFIC OBJECTIVES OF THIS USN-APL SPACECRAFT WERE TO ACCURATELY MAP THE EARTH'S MAGNETIC FIELD OVER THE REGIONS COVERED BY THE SATELLITE ORBIT. TO MAP THE CELESTIAL SPHERE IN THE ULTRAVIOLET REGION, TO STUDY THE SOLAR SPECTRUM, AND TO DETERMINE THE SUBLIMATION RATES OF SELECTED METALS. THIS MAGNETICALLY ALIGNED AND POLAR ORBITING SPACECRAFT WAS POWERED WITH SOLAR CELLS AND NICKEL-CADMIUM BATTERIES. THERE WERE THREE TRANSMITTERS -- TWO WERE USED FOR TRACKING, AND THE THIRD WAS USED FOR THE TRANSMISSION OF ANALOG AND DIGITAL DATA. THE DIGITAL DATA WERE TRANSMITTED AT 195 BPS. ONLY REAL-TIME DATA WERE ACQUIRED FROM THE SATELLITE. ORBITAL COVERAGE FROM LAUNCH TO THE DATE OF LAST USEFUL DATA WAS LESS THAN 25 PERCENT. BECAUSE OF POWER LIMITATIONS, IT WAS NECESSARY TO SWITCH THE POWER FROM EXPERIMENT TO EXPERIMENT AND TO THE DOPPLER NAVIGATIONAL TRANSMITTERS WITH THE EXPERIMENTS TURNED OFF. THE SATELLITE PROVIDED GOOD QUALITY DATA UNTIL JUNE 1965.

ZHUDA, 1964-083C

EXPERIMENT NAME- RUBIDIUM VAPOR MAGNETOMETER

NSSDC ID- 64-083C-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 06/26/65

PERSONNEL

PI - A.J. ZHUDA APPLIED PHYSICS LAB
SILVER SPRING, MD

THE PURPOSE OF THIS EXPERIMENT WAS TO MAP THE INTENSITY OF THE MAGNETIC FIELD OVER THE SATELLITE'S ORBIT AND TO LOOK FOR MAGNETIC EFFECTS OF CURRENTS IN THE IONOSPHERE AND RADIATION BELTS. THE DETECTOR SYSTEM CONSISTED OF A SINGLE-CELL, OPTICALLY PUMPED, SELF OSCILLATING, RUBIDIUM (85) VAPOR MAGNETOMETER. THE MAGNETOMETER WAS MOUNTED AT THE END OF A BOOM THAT EXTENDED ALONG THE MAGNETICALLY ALIGNED AXIS OF THE SATELLITE. THE OPTICAL AXIS OF THE DETECTOR WAS SET AT AN ANGLE OF 45 DEG TO THE BOOM, THUS PROVIDING A MAXIMUM SIGNAL TO NOISE RATIO AND ALLOWING DATA TO BE RECEIVED OVER THE WHOLE ORBIT WITH THE SINGLE MAGNETOMETER. THE DETECTOR OUTPUT WAS COUNTED FOR AN INTERVAL OF 0.08 SEC WITH SUCCESSIVE INTERVALS SEPARATED BY 0.66 SEC. DURING THESE PERIODS, THE SATELLITE TRAVERSED LATITUDINAL ARCS OF 0.6 AND 4.8 KM, RESPECTIVELY. THE BOOM DID NOT EXTEND TO ITS FULL LENGTH IN ORBIT, BUT INFIGHT CALIBRATION (AVAILABLE ON COMMAND) ALLOWED DETERMINATION OF THE BIAS FIELD AT THE MAGNETOMETER. INSTRUMENTAL EFFECTS PRECLUDED THE MEASUREMENT OF FIELD MAGNITUDES GREATER THAN 31,000 GAMMAS. THUS, DATA COVERAGE WAS RESTRICTED TO MIDDLE AND LOW LATITUDES BELOW ABOUT 60 DEGREES. THE EXPERIMENT PROVIDED USEFUL DATA WITH AN ACCURACY OF PLUS OR MINUS 19 GAMMAS FOR THE PERIODS DECEMBER 13 TO 31, 1964, AND APRIL 10 TO JUNE 26, 1965. FOR A DETAILED DISCUSSION OF THE INSTRUMENTATION AND SOME OF THE RESULTS, SEE ZHUDA ET AL. JGR, VOL 73, P 2495, 1968.

DATA SET NAME- MAGNETIC FIELD DATA ON MAGNETIC TAPE

NSSDC ID- 64-083C-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/17/64 TO 06/26/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF A SINGLE 7-TRACK, 556-BPI, CARD IMAGE RECORDING TAPE PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE GEOMAGNETIC SCALAR INTENSITY, SATELLITE POSITION (LATITUDE, LONGITUDE, AND RADIAL DISTANCE IN EARTH-FIXED SPHERICAL GEOCENTRIC COORDINATES), AND TIME. THESE DATA ARE FOR INTEGER LATITUDES AND REPRESENT EITHER DIRECT MEASUREMENTS

AT THESE LATITUDES OR POINTS LINEARLY INTERPOLATED TO THESE LATITUDES USING CONSECUTIVE MEASUREMENTS SEPARATED BY LATITUDINAL ARCS OF 4.8 KM. THE ERROR IN EACH FIELD VALUE IS ESTIMATED BY THE EXPERIMENTER TO BE PLUS OR MINUS 18 GAMMAS. THE DATA CONSIST OF 1333 FIELD VALUES (ONE PER CARD IMAGE) ORDERED ACCORDING TO LATITUDE FOR DECEMBER 1964 AND APRIL TO JUNE 1965.

SPACECRAFT COMMON NAME- COSMOS 49

ALTERNATE NAMES- 00913

NSSDC ID- 64-069A

LAUNCH DATE- 10/24/64 WEIGHT- 400. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/06/64

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 10/24/64
ORBIT PERIOD- 91.78 MIN INCLINATION- 48.99 DEG
PERIAPSIS- 264.000 KM ALT APOAPSIS- 466.000 KM ALT

COSMOS 49 WAS INSTRUMENTED WITH PROTON MAGNETOMETERS TO MAP THE EARTH'S MAGNETIC FIELD. THIS SPACECRAFT, ALONG WITH COSMOS 26, REPRESENTED THE U.S.-S.R. CONTRIBUTION TO THE IGY WORLD MAGNETIC SURVEY. THE CORRESPONDING U.S. MEASUREMENTS WERE PERFORMED ON OGO 2 AND OGO 4. COSMOS 49 WAS AN ELLIPSOID ABOUT 1.8 M LONG AND 1.2 M IN DIAMETER. IT APPEARS TO HAVE BEEN BATTERY POWERED FOR ABOUT 30 DAYS OF OPERATION. A BOOM 3.3 M LONG WAS ATTACHED TO ONE END OF THE SPACECRAFT TO CARRY THE MAGNETOMETERS. THE PERFORMANCE OF THE SPACECRAFT WAS SATISFACTORY.

DOLGINOV, COSMOS 49

EXPERIMENT NAME- PROTON PRECESSIONAL MAGNETOMETERS

NSSDC ID- 64-069A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/06/64

PERSONNEL

PI - S. DOLGINOV IZMIRAN
P-O AKADEMGORODOK, MOSCOW REGION, US
OI - V.I. NALIVAYKO IZMIRAN
MOSCOW, USSR

THE COSMOS 49 SPACECRAFT CARRIED TWO PROTON MAGNETOMETERS WITH THE AXES OF THEIR POLARIZED-SENSE COILS ORIENTED AT AN ANGLE OF 90 DEG TO EACH OTHER. AN ONBOARD TIMER TURNED ON THE TWO MAGNETOMETERS ALTERNATELY, AND ONE OR THE OTHER WAS SAMPLED ONCE EVERY 32.76 SEC. THE MAGNETOMETER SIGNALS WERE DIGITIZED BY MEASURING THE NUMBER OF CYCLES FROM A 100-KHZ REFERENCE QUARTZ OSCILLATOR WHICH OCCURRED DURING 512 CYCLES OF THE PROTON PRECESSION SIGNAL. THE MEASURED SCALAR TOTAL FIELD VALUES ALONG WITH TIME SIGNALS WERE STORED IN A MEMORY DEVICE WHICH COULD HOLD UP TO 800 MIN OF DATA. THE DATA WERE THEN READ OUT AS THE SPACECRAFT FLEW OVER THE RECEIVING STATIONS. THE EXPERIMENT PERFORMED SATISFACTORILY, AND THE REPORTED ACCURACY OF THE DATA IS WITHIN 2 GAMMAS.

DATA SET NAME- REDUCED SCALAR MAGNETIC FIELD DATA
TABLES ON MICROFILM

NSSDC ID- 64-069A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/24/64 TO 11/03/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONTAINS THE COMPLETE SET OF ORIGINAL REDUCED SCALAR MAGNETIC FIELD DATA AND DOCUMENTATION AS RECEIVED FROM WDC-81, MOSCOW, ALONG WITH AN ENGLISH TRANSLATION OF THE DOCUMENTATION, ALL ON ONE REEL OF 35-MM MICROFILM. THE DATA CONSIST OF 17,489 FIELD MEASUREMENTS WITH THE FOLLOWING PARAMETERS FOR EACH MEASUREMENT -- (1) MAGNETOMETER NUMBER (1 OR 2), (2) MEASUREMENT NUMBER, (3) MOSCOW TIME (UT PLUS 3 HR) OF MEASUREMENT TO THE MINUTE, (4) SATELLITE ALTITUDE (TO A TENTH OF A KM), (5, 6) GEOGRAPHIC LATITUDE AND LONGITUDE TO ONE HUNDREDTH OF A DEGREE, (7) THE

COSMOS 49/EPE-A

MEASURED FIELD INTENSITY IN GAMMAS, (8) THE COMPUTED FIELD INTENSITY FOR A GIVEN MODEL, AND (9) THE DIFFERENCE BETWEEN THE MEASURED AND COMPUTED FIELDS. THE DATA ARE CONTAINED IN TABLES IN THREE UNPUBLISHED REPORTS, THE FIRST OF WHICH CONTAINS TEXT DESCRIBING THE MEASUREMENTS, THEIR PROCESSING, CERTAIN RESULTS, AND THE CONTENT OF THE DATA TABLES. THE MEASUREMENTS ARE SCATTERED RATHER UNIFORMLY -- (1) IN TIME FROM OCTOBER 24 TO NOVEMBER 3, 1964, (2) IN LATITUDE FROM +49 DEG TO -49 DEG, (3) IN LONGITUDE, AND (4) IN ALTITUDE FROM 260 KM TO 436 KM. FALSE READINGS WHICH OCCURRED IN CASES OF UNFAVORABLE POSITIONS OF EITHER TRANSDUCER AXIS RELATIVE TO THE FIELD HAVE BEEN REMOVED. THE MICROFILM CONTAINS 360 MEASUREMENTS FROM ONE MAGNETOMETER ORDERED BY TIME, AND THEN 360 MEASUREMENTS FROM THE OTHER MAGNETOMETER, ETC.

DATA SET NAME- COMPRESSED REDUCED SCALAR MAGNETIC FIELD DATA TABLES ON MAGNETIC TAPE

NSSDC ID- 64-059A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/24/64 TO 11/03/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONTAINS THE COMPLETE SET OF REDUCED SCALAR MAGNETIC FIELD DATA ON ONE 7-TRACK, 556-BPI, 800 MAGNETIC TAPE WITH EVEN PARITY. THE TAPE WAS CREATED ON AN IBM 360 COMPUTER, WITH EACH PHYSICAL RECORD CONTAINING 2400 CHARACTERS, COMPRISING 30 LOGICAL RECORDS, EACH LOGICAL RECORD CONTAINS 80 CHARACTERS REPRESENTING ONE FIELD MEASUREMENT. THE PARAMETERS GIVEN FOR EACH MEASUREMENT ARE AS FOLLOWS -- MAGNETOMETER NUMBER, MEASUREMENT NUMBER, DAY (UT), MONTH (UT), HOUR (UT), MINUTE (UT), ALTITUDE (KM), LATITUDE (DEG), LONGITUDE (DEG), MEASURED FIELD (GAMMAS), COMPUTED FIELD FOR GSFC COSMOS 49 MODEL, AND THE DIFFERENCE BETWEEN THE MEASURED AND COMPUTED FIELDS. THE DATA ARE TIME ORDERED. THE TAPE WAS PROVIDED BY J. CAIN, AS A REPLACEMENT FOR DATA SETS 64-059A-01B AND 64-069A-01C.

SPACECRAFT COMMON NAME- EPE-A

ALTERNATE NAMES- 1961 UPSILON 1, EXPLORER 12
S 3, 00170

NSSDC ID- 61-020A

LAUNCH DATE- 08/16/61 WEIGHT- 37.6 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/06/61

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPOCH DATE- 08/16/61
ORBIT PERIOD- 1590. MIN	INCLINATION- 33. DEG
PERIAPSIS- 293.000 KM ALT	APOAPSIS- 77250.0 KM ALT

EXPLORER 12 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE COSMIC-RAY PARTICLES, TRAPPED PARTICLES, SOLAR WIND PROTONS, AND MAGNETOSPHERIC AND INTERPLANETARY MAGNETIC FIELDS. IT WAS THE FIRST OF THE S 3 SERIES OF SPACECRAFT, WHICH ALSO INCLUDED EXPLORERS 14, 15, AND 26. A 16-CHANNEL PPM/PM TIME-DIVISION MULTIPLEXED TELEMETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.324 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION, AND THE OTHER CHANNELS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING OF THE TELEMETERED DATA, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/100 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A 16-FRAME-LONG PATTERN AND WAS USED TO TELEMETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.041 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT FUNCTIONED WELL UNTIL DECEMBER 6, 1961, WHEN IT CEASED TRANSMITTING DATA APPARENTLY AS A RESULT OF FAILURES IN THE POWER SYSTEM. GOOD DATA WERE RECORDED FOR APPROXIMATELY 90 PERCENT OF THE ACTIVE LIFETIME OF THE SPACECRAFT. THE INITIAL SPIN RATE WAS 28.0 RPM, AND THE SPIN AXIS DIRECTION WAS RIGHT ASCENSION 48 DEG, DECLINATION -28 DEG. THE DIRECTION WAS NEARLY CONSTANT WITH TIME, AND THE SPIN RATE SLOWLY INCREASED WITH TIME TO 34.3 RPM. APOGEE DIRECTION VARIED FROM ABOUT 1200 TO 0600 LOCAL TIME.

CAHILL, JR., EPE-A

EXPERIMENT NAME- FLUXGATE MAGNETOMETERS

NSSDC ID- 61-020A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/06/61

PERSONNEL

PI - L.J. CAHILL, JR. U OF MINNESOTA
MINNEAPOLIS, MN

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE MAGNITUDE AND DIRECTION OF THE EARTH'S MAGNETIC FIELD BETWEEN 3 AND 13 EARTH RADII. IT CONSISTED OF THREE ORTHOGONAL FLUXGATE MAGNETOMETERS MOUNTED ON THE END OF AN 86.4-CM BOOM. ONE MAGNETOMETER AXIS WAS WITHIN 2 DEG OF THE SPACECRAFT SPIN AXIS. EACH OF THE THREE SENSORS HAD A RANGE OF -1000 TO +1000 GAMMAS WITH A DIGITIZATION UNCERTAINTY OF 12 GAMMA. THE THREE COMPONENTS OF THE MAGNETIC FIELD WERE ALL MEASURED WITHIN A 50-MSEC TIME PERIOD ONCE EVERY 327 MSEC. AN INFLIGHT CALIBRATION SYSTEM APPLIED A KNOWN MAGNETIC FIELD TO EACH SENSOR IN TURN ONCE EVERY 115 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH DECEMBER 6, 1961. FOR ADDITIONAL EXPERIMENT DETAILS, SEE CAHILL AND AMAZEEN, J. GEOPHYS. RES., VOL 68, P 1835, 1963.

DATA SET NAME- PLOTS OF 10-SEC AVERAGED MAGNETIC FIELD COMPONENTS ON MICROFILM

NSSDC ID- 61-020A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/16/61 TO 12/05/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM THE DATA PRESENTED IN 61-020A-02A. EACH FRAME PRESENTS, FROM TOP TO BOTTOM, PLOTS OF THE AZIMUTHAL ANGLE OF THE FIELD VECTOR MEASURED RELATIVE TO THE SATELLITE MERIDIAN PLANE PASSING THROUGH THE SUN, THE POLAR ANGLE OF THE FIELD VECTOR MEASURED RELATIVE TO THE SATELLITE SPIN AXIS, AND THE FIELD MAGNITUDE. EACH DATA POINT IS A 10-SEC AVERAGE COMPUTED AND PLOTTED ONCE EVERY 5 MIN. EACH FRAME CONTAINS 24 HR OF DATA. THESE DATA, WHICH ARE TIME ORDERED, CONTAIN NO EPHEMERIS INFORMATION AND COVER APPROXIMATELY 80 PERCENT OF THE PERIOD FROM AUGUST 16, 1961, TO DECEMBER 5, 1961. MANY OF THE GAPS ARE DUE TO PERIGEE PASSING (MAGNITUDE OF THE MAGNETIC FIELD IS GREATER THAN 1000 GAMMAS), AND THESE OCCUR WITH A PERIOD OF APPROXIMATELY 26.6 HR.

DATA SET NAME- TEN-SEC AVERAGED MAGNETIC FIELD AND EPHEMERIS INFORMATION ON TAPE

NSSDC ID- 61-020A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/16/61 TO 12/05/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 7-TRACK, 800, 556-BPI, UNBLOCKED TAPE THAT WAS GENERATED AT NSSDC BY MERGING THE DATA IN THE EXPERIMENTER SUPPLIED DATA SET 61-020A-02A WITH EPHEMERIS INFORMATION AND CERTAIN ELEMENTS OF THE 1961 JENSEN AND GAIN GEOMAGNETIC FIELD MODEL. EACH LOGICAL RECORD, CONSISTING OF 120 CHARACTERS, INCLUDES SIX MEASURED MAGNETIC FIELD ITEMS, FOUR TIME INFORMATION ITEMS, EIGHT EPHEMERIS INFORMATION ITEMS, AND FIVE MODEL GEOMAGNETIC FIELD ITEMS. THE SIX MEASURED MAGNETIC FIELD VALUES DERIVED FROM THE ORTHOGONAL COMPONENT MEASUREMENTS ARE THE FIELD MAGNITUDE AND ITS STANDARD DEVIATION, THE POLAR ANGLE OF THE FIELD VECTOR (MEASURED RELATIVE TO THE SATELLITE SPIN AXIS) AND ITS STANDARD DEVIATION, AND THE AZIMUTHAL ANGLE OF THE FIELD VECTOR (MEASURED RELATIVE TO THE SATELLITE MERIDIAN PLANE PASSING THROUGH THE SUN) AND ITS STANDARD DEVIATION. EACH OF THE FIELD VALUES IS A 10-SEC AVERAGE, AND THESE ARE PRESENTED ONCE EVERY 5 MIN. THE TIME INFORMATION ITEMS ARE THE DAY NUMBER, HR, MIN, AND MSEC OF THE MIDPOINT OF THE 10-SEC AVERAGE. THE EPHEMERIS INFORMATION ITEMS ARE THE ORBIT NUMBER, LONGITUDE, LATITUDE, GEOCENTRIC RANGE, RIGHT ASCENSION, RIGHT ASCENSION L-PARAMETER, AND THE SUN'S RIGHT ASCENSION AND DECLINATION. THE MODEL FIELD ITEMS INCLUDE THE FIELD

MAGNITUDE, RIGHT ASCENSION, DECLINATION, AND POLAR AND AZIMUTHAL ANGLES. THESE DATA ARE TIME ORDERED AND COVER APPROXIMATELY 80 PERCENT OF THE PERIOD FROM AUGUST 16, 1961, TO DECEMBER 5, 1961. MANY OF THE DATA GAPS ARE DUE TO PERIGEE PASSING (MAGNITUDE OF THE MAGNETIC FIELD IS GREATER THAN 1000 GAMMAS), AND THESE OCCUR WITH A PERIOD OF APPROXIMATELY 26.6 HR.

TIME PERIOD COVERED- 01/01/63 TO 05/30/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 6 REELS) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF SIX 7-TRACK, BCD, 556-BPI TAPES SUBMITTED BY THE EXPERIMENTER. INFORMATION RELATED TO A SINGLE OBSERVATION OCCUPIES THREE 112-CHARACTER RECORDS. TWO OF THESE RECORDS CONTAIN 10-SEC AVERAGES OF CERTAIN MEASURED FIELD VALUES PRESENTED EVERY 5 MIN. THESE VALUES, DERIVED FROM THE ORTHOGONAL COMPONENT MEASUREMENTS, ARE THE RIGHT ASCENSION, DECLINATION, AND MAGNITUDE OF THE FIELD, THE POLAR ANGLE OF THE FIELD VECTOR (MEASURED RELATIVE TO THE SATELLITE SPIN AXIS), THE AZIMUTHAL ANGLE OF THE FIELD VECTOR (MEASURED RELATIVE TO THE SATELLITE MERIDIAN PLANE PASSING THROUGH THE SUN), AND THE STANDARD DEVIATION OF EACH COMPONENT. THE THIRD RECORD CONTAINS THE FOLLOWING -- DAY NUMBER (FROM DAY OF LAUNCH), HR, MIN, MSEC, GEOCENTRIC LONGITUDE, LATITUDE, AND RADIUS, L VALUE, AND THE THEORETICAL FIELD MAGNITUDE BASED ON THE 1962 MODEL OF JENSEN AND CAIN. THESE DATA ARE TIME ORDERED AND COVER APPROXIMATELY 70 PERCENT OF THE PERIOD FROM JANUARY 1, 1963, TO MAY 30, 1963. MANY OF THE DATA GAPS ARE DUE TO PERIGEE PASSING (MAGNITUDE OF THE MAGNETIC FIELD IS GREATER THAN 500 GAMMAS), AND THESE OCCUR WITH A PERIOD OF APPROXIMATELY 36.4 HR.

SPACECRAFT COMMON NAME- EPE-B

ALTERNATE NAMES- 1962 BETA GAMMA 1, EXPLORER 14
S 3A, 00432

NSSDC ID- 62-051A

LAUNCH DATE- 10/02/62 WEIGHT- 40.0 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/11/63

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPDCH DATE- 10/02/62
ORBIT PERIOD- 2184. MIN	INCLINATION- 33. DEG
PERIAPSIS- 267.000 KM ALT	APDAPSTS- 98517. KM ALT

EXPLORER 14 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE COSMIC-RAY PARTICLES, TRAPPED PARTICLES, SOLAR WIND PROTONS, AND MAGNETOSPHERIC AND INTERPLANETARY MAGNETIC FIELDS. IT WAS THE SECOND OF THE S 3 SERIES OF SPACECRAFT, WHICH ALSO INCLUDED EXPLORERS 12, 15, AND 26. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMEETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.323 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION, AND THE OTHERS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING OF THE TELEMEETERED DATA, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/100 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A 16-FRAME-LONG PATTERN AND WAS USED TO TELEMEETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.041 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT FUNCTIONED WELL EXCEPT FOR THE PERIOD FROM JANUARY 10 TO 24, 1963, AND AFTER AUGUST 11, 1963, WHEN THE ENCODER MALFUNCTIONED TERMINATING THE TRANSMISSION OF USABLE DATA. GOOD DATA WERE RECORDED FOR APPROXIMATELY 85 PERCENT OF THE ACTIVE LIFETIME OF THE SPACECRAFT. THE SPACECRAFT WAS CONING (37-DEG MAXIMUM HALF ANGLE) UNTIL JANUARY 10, 1963. AFTER JANUARY 24, 1963, IT WAS SPIN-STABILIZED AT A RATE OF 10 RPM. THIS RATE SLOWLY DECREASED TO 1 RPM ON JULY 8, 1963. INITIALLY, THE LOCAL TIME OF APDGE WAS 0700 HOURS.

SPACECRAFT COMMON NAME- EPE-D

ALTERNATE NAMES- EXPLORER 26, S 3C
00963

NSSDC ID- 64-086A

LAUNCH DATE- 12/21/64 WEIGHT- 45.8 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/26/67

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPDCH DATE- 12/21/64
ORBIT PERIOD- 456. MIN	INCLINATION- 20.1 DEG
PERIAPSIS- 305.000 KM ALT	APDAPSTS- 27192.0 KM ALT

EXPLORER 26 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE TRAPPED PARTICLES AND THE GEOMAGNETIC FIELD. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMEETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.29 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION. THE OTHER CHANNELS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/800 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A 16-FRAME-LONG PATTERN AND USED TO TELEMEETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.036 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT SYSTEMS FUNCTIONED WELL, EXCEPT FOR SOME UNDERVOLTAGE TURNOFFS, UNTIL MAY 26, 1967 WHEN THE TELEMEETER FAILED. THE INITIAL SPIN RATE WAS 33 RPM, AND THE SPIN AXIS DIRECTION WAS RIGHT ASCENSION 272.8 DEG, AND THE DECLINATION 21.5 DEG. THE SPIN RATE DECREASED WITH TIME TO 2 RPM ON SEPTEMBER 9, 1965. FOR THE BALANCE OF ITS LIFE, THE SPACECRAFT WAS CONING OR TUMBLING AT A RATE OF ABOUT 1 RPM.

CAHILL, JR., EPE-B

EXPERIMENT NAME- FLUXGATE MAGNETOMETERS

NSSDC ID- 62-051A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/11/63

PERSONNEL

PI - L.J. CAHILL, JR. U OF MINNESOTA
MINNEAPOLIS, MN

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE MAGNITUDE AND DIRECTION OF THE EARTH'S MAGNETIC FIELD BETWEEN 3 AND 13 EARTH RADII. IT CONSISTED OF THREE ORTHOGONAL FLUXGATE MAGNETOMETERS MOUNTED ON THE END OF AN 86.4-CM BOOM. ONE MAGNETOMETER AXIS WAS WITHIN 2 DEG OF THE SPACECRAFT SPIN AXIS. EACH OF THE THREE SENSORS HAD A RANGE OF -500 TO +500 GAMMAS WITH A SENSITIVITY OF 1 GAMMA. THE THREE COMPONENTS OF THE MAGNETIC FIELD WERE ALL MEASURED WITHIN A 50-MSEC TIME PERIOD ONCE EVERY 327 MSEC. AN INFLIGHT CALIBRATION SYSTEM APPLIED A KNOWN MAGNETIC FIELD TO EACH SENSOR IN TURN ONCE EVERY 115 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH AUGUST 11, 1963. FOR FURTHER DETAILS, SEE CAHILL, SPACE RES. VOL 6, P 662, 1966.

CAHILL, JR., EPE-D

EXPERIMENT NAME- FLUXGATE MAGNETOMETERS

NSSDC ID- 64-086A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/26/67

PERSONNEL

PI - L.J. CAHILL, JR. U OF MINNESOTA
MINNEAPOLIS, MN

THE PURPOSE OF THIS EXPERIMENT WAS TO MEASURE THE MAGNITUDE AND DIRECTION OF THE EARTH'S MAGNETIC FIELD OVER THE SPACECRAFT ORBIT. THREE ORTHOGONAL COMPONENTS WERE MEASURED BY A BOOM-MOUNTED BIAXIAL MAGNETOMETER DURING EACH SPACECRAFT REVOLUTION. EACH AXIS HAD A RANGE OF PLUS AND MINUS 2000 GAMMAS AND AN ACCURACY OF 5 GAMMAS. THE SAMPLING RATE WAS 3.13 HZ. THE EXPERIMENT PROVIDED USEFUL DATA FROM LAUNCH UNTIL JUNE 30, 1965, AFTER WHICH SPACECRAFT TUMBLE RENDERED FIELD DIRECTION DETERMINATION IMPRACTICAL. USEFUL FIELD MAGNITUDE INFORMATION WAS OBTAINED UNTIL MAY 26, 1967.

DATA SET NAME- TEN-SEC AVERAGES OF FIELD COMPONENTS AT
5-MIN INTERVALS ON TAPE

NSSDC ID- 62-051A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

EPE-D/EXPLORER 6/IMP-A

DATA SET NAME- SIX-HOUR MAGNETIC VECTOR PLOTS ON MICROFILM

NSSDC ID- 64-086A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 02/01/65 TO 06/30/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF 35-MM MICROFILM GENERATED AT NSSDC FROM HARDCOPY PLOTS SUPPLIED BY THE EXPERIMENTER. EACH FRAME CONTAINS 6 HR OF DATA. MAGNETIC VECTORS ARE GIVEN ONCE EVERY 5 MIN. EACH VECTOR IS SPECIFIED IN TERMS OF -- (1) THE DIFFERENCE BETWEEN THE OBSERVED FIELD MAGNITUDE AND A MODEL FIELD MAGNITUDE (JENSEN AND CATN, 1962), (2) THE ANGLE (α) BETWEEN THE MEASURED VECTOR AND THE SPACECRAFT SPIN AXIS, AND (3) THE FIELD AZIMUTHAL ANGLE (ψ) RELATIVE TO THE SPACECRAFT-SUN DIRECTION. TIME AND EPHEMERIS INFORMATION (DISTANCE, LATITUDE, LOCAL TIME, L) ARE GIVEN ONCE AN HR. SAMPLES OF THE PLOTS ARE USED AND EXPLAINED IN GREATER DETAIL IN CAHILL, JGR, VOL 71, P. 4505 (1966). DATA COVERAGE IS ESSENTIALLY COMPLETE BETWEEN FEBRUARY 1 AND JUNE 30, 1965.

SPACECRAFT COMMON NAME- EXPLORER 6

ALTERNATE NAMES- ABL 3, 1959 DELTA 1
00015

NSSDC ID- 59-004A

LAUNCH DATE- 08/07/59 WEIGHT- 64. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/06/59

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 12/19/59
ORBIT PERIOD- 754. MIN INCLINATION- 47.0 DEG
PERIAPSIS- 237.000 KM ALT APOAPSIS- 41900.0 KM ALT

EXPLORER 6 WAS A SMALL, SPHEROIDAL SATELLITE DESIGNED TO STUDY TRAPPED RADIATION OF VARIOUS ENERGIES, GALACTIC COSMIC RAYS, GEOMAGNETISM, RADIO PROPAGATION IN THE UPPER ATMOSPHERE, AND THE FLUX OF MICROMETEORITES. IT ALSO TESTED A SCANNING DEVICE DESIGNED FOR PHOTOGRAPHING THE EARTH'S CLOUD COVER. THE SATELLITE WAS LAUNCHED INTO A HIGHLY ELLIPTICAL ORBIT WITH AN INITIAL LOCAL TIME OF APOGEE OF 2100 HR. THE SATELLITE WAS SPIN STABILIZED AT 2.8 RPM, WITH THE DIRECTION OF THE SPIN AXIS HAVING A RIGHT ASCENSION OF 217 DEG AND A DECLINATION OF 23 DEG. FOUR SOLAR CELL PADDLES MOUNTED NEAR ITS EQUATOR RECHARGED THE STORAGE BATTERIES WHILE IN ORBIT. EACH EXPERIMENT EXCEPT THE TELEVISION SCANNER HAD TWO OUTPUTS, DIGITAL AND ANALOG. A UHF TRANSMITTER WAS USED FOR THE DIGITAL TELEMETRY AND THE TV SIGNAL. TWO VHF TRANSMITTERS WERE USED TO TRANSMIT THE ANALOG SIGNAL. THE VHF TRANSMITTERS WERE OPERATED CONTINUOUSLY. THE UHF TRANSMITTER WAS OPERATED FOR ONLY A FEW HOURS EACH DAY. ONLY THREE OF THE SOLAR CELL PADDLES FULLY ERECTED, AND THIS OCCURRED DURING SPIN UP RATHER THAN PRIOR TO SPIN UP AS PLANNED. CONSEQUENTLY, INITIAL OPERATION OF THE PAYLOAD POWER SUPPLY WAS 63 PERCENT NOMINAL, AND THIS DECREASED WITH TIME. THE DECREASED POWER CAUSED A LOWER SIGNAL TO NOISE RATIO AFFECTING MOST OF THE DATA, ESPECIALLY NEAR APOGEE. ONE VHF TRANSMITTER FAILED ON SEPTEMBER 11, 1959, AND THE LAST CONTACT WITH THE PAYLOAD WAS MADE ON OCTOBER 6, 1959, AT WHICH TIME THE SOLAR CELL CHARGING CURRENT HAD FALLEN BELOW THAT REQUIRED TO MAINTAIN THE SATELLITE EQUIPMENT. A TOTAL OF 827 HR OF ANALOG AND 23 HR OF DIGITAL DATA WAS OBTAINED.

DATA SET NAME- MICROFILM PLOTS OF GEOMAGNETIC LATITUDE VS RANGE

NSSDC ID- 59-004A-00F

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 08/07/59 TO 10/07/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM. EACH FRAME CONTAINS A PLOT FOR ONE FULL ORBIT, SHOWING SPACECRAFT GEOMAGNETIC LATITUDE VS GEOCENTRIC RANGE. PLOTS ARE GIVEN FOR THE FIRST 115 ORBITS, COVERING THE FIRST 2 MONTHS OF SPACECRAFT OPERATION. THE PLOTS WERE GENERATED BY PERSONNEL AT U OF MINNESOTA.

SONETT, EXPLORER 6

EXPERIMENT NAME- SEARCH-COIL MAGNETOMETER

NSSDC ID- 59-004A-04

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/06/59

PERSONNEL

PI - G.P. SONETT U OF ARIZONA
TUCSON, AZ
OI - E.J. SMITH NASA-JPL
PASADENA, CA
OI - D.L. JUDGE U OF SOUTHERN CALIF
LOS ANGELES, CA
OI - P.J. COLEMAN, JR. U OF CALIF, LA
LOS ANGELES, CA

THIS EXPERIMENT WAS DESIGNED TO SURVEY THE GROSS MAGNETIC FIELD OF THE EARTH, TO INVESTIGATE THE INTERPLANETARY MAGNETIC FIELD, AND TO DETECT EVIDENCE OF ANY LUNAR MAGNETIC FIELD. NO INTERPLANETARY OR LUNAR MAGNETIC FIELDS WERE ABLE TO BE MEASURED, HOWEVER, BECAUSE OF THE SPACECRAFT'S LOW APOGEE. THE INSTRUMENT WAS SIMILAR TO THAT FLOWN ON PIONEER 1 AND CONSISTED OF A SINGLE SEARCH COIL MOUNTED SO THAT IT MEASURED THE MAGNETIC FIELD PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. THE INSTRUMENT HAD A RANGE OF 6 MICROGAUSS TO 12 MILLIGAUSS. NO INFLIGHT CALIBRATION WAS PROVIDED FOR. SOME DEGRADATION OF THE TELEMETRY SIGNAL OCCURRED DUE TO IONOSPHERIC EFFECTS. INSUFFICIENT GROUND OBSERVATIONS ON THE ELECTRON CONTENT OF THE IONOSPHERE PREVENTED CORRECTING THE DATA FOR THESE EFFECTS. THE EXPERIMENT HAD BOTH DIGITAL AND ANALOG OUTPUTS. THE MAGNETOMETER AMPLITUDE AND PHASE WERE SAMPLED CONTINUOUSLY FOR ANALOG TRANSMISSION AND INTERMITTENTLY (EVERY 2 MIN, 15 SEC, OR 1.9 SEC, DEPENDING ON SATELLITE BIT RATE) FOR DIGITAL TRANSMISSION. THE MAGNETOMETER WORKED UNTIL LOSS OF TELEMETRY SIGNAL ON OCTOBER 6, 1959. FOR FURTHER DETAILS, SEE JUDGE AND COLEMAN, JGR, VOL 67, P 5071, 1962.

DATA SET NAME- PLOTS OF REDUCED MAGNETIC FIELD DATA ON MICROFILM

NSSDC ID- 59-004A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 08/08/59 TO 09/10/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF PLOTS OF ALL THE AVAILABLE REDUCED MAGNETIC FIELD DATA (ANALOG AND DIGITAL) OBTAINED BY THIS EXPERIMENT. THE DATA COMPILATION CONSISTS OF LINEAR GRAPHS OF THE PHASE ANGLE AND SEMILOG PLOTS OF THE PERPENDICULAR FIELD COMPONENT VS TIME. THIS PHASE ANGLE WAS THE ANGLE BETWEEN THE COMPONENT OF THE FIELD PERPENDICULAR TO THE SPACECRAFT SPIN AXIS AND THE PROJECTION INTO THE SPACECRAFT EQUATORIAL PLANE OF A UNIT VECTOR POINTING IN THE DIRECTION OF THE SUN. DATA POINTS THAT WERE DERIVED FROM ANALOG DATA ARE INDICATED, AS IS THE RECEIVING STATION. DATA POINTS THAT WERE DERIVED FROM DIGITAL DATA ARE ALSO INDICATED. IN ADDITION TO THE MAGNETOMETER DATA, THE GRAPHS CONTAIN CURVES REPRESENTING THEORETICAL VALUES OF THE PHASE ANGLE AND THE PERPENDICULAR FIELD COMPONENT. THESE WERE BASED ON AN EIGHT-COEFFICIENT, SPHERICAL HARMONIC EXPANSION OF THE GEOMAGNETIC FIELD. THE DATA ARE CONTAINED ON ONE REEL OF 35-MM MICROFILM, ARE TIME ORDERED, AND HAVE A 70 PERCENT COVERAGE FOR THE TIME PERIOD INDICATED.

SPACECRAFT COMMON NAME- IMP-A

ALTERNATE NAMES- EXPLORER 18, IMP 1
00693, S 74

NSSDC ID- 63-046A

LAUNCH DATE- 11/27/63 WEIGHT- 138. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/10/65

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 11/27/63
ORBIT PERIOD- 5583. MIN INCLINATION- 33.34 DEG
PERIAPSIS- 197.000 KM ALT APOAPSIS- 195552. KM ALT

EXPLORER 18 (IMP 1) WAS A SOLAR CELL AND CHEMICAL BATTERY-POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND

DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE OF 1020, A SPIN RATE OF 22 RPM, AND A SPIN DIRECTION OF 115 DEG RIGHT ASCENSION AND -25 DEG DECLINATION. EACH NORMAL PFM TELEMETRY SEQUENCE OF 81.9 SEC IN DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. THE SPACECRAFT PERFORMED NORMALLY UNTIL MAY 30, 1964, THEN INTERMITTENTLY UNTIL MAY 10, 1965 WHEN IT WAS ABANDONED. THE PRINCIPAL PERIODS OF DATA COVERAGE ARE NOVEMBER 27, 1963-MAY 30, 1964, SEPTEMBER 17, 1964-JANUARY 7, 1965, AND FEBRUARY 21, 1965-MARCH 25, 1965, ALTHOUGH ONLY THE FIRST OF THESE IS VERY USEFUL.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON TAPE

NSSDC ID- 63-046A-00G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 12/21/63 TO 12/30/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE BLOCKED, 7-TRACK, 800-BPI, IBM 7094 BINARY MAGNETIC TAPE GENERATED AT NSSDC FROM UNBLOCKED TAPES (63-046A-00F) SUBMITTED BY N. F. NESS. THERE ARE FIVE LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES CONTAIN THE FOLLOWING INFORMATION AT 5-MIN INTERVALS - (1) GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND RADIAL DISTANCE OF THE SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND THE SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS GREATER THAN 80 PERCENT. A SEPARATE DATA SET (63-046A-00H) WITH ONE SET OF EPHEMERIS PARAMETERS PER HR IS AVAILABLE ON AN NSSDC-GENERATED TAPE.

NESS, IMP-A

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID- 63-046A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/30/64

PERSONNEL
PI - N.F. NESS NASA-GSFC
GREENBELT, MD

EACH OF TWO UNIAXIAL FLUXGATE MAGNETOMETERS, HAVING DYNAMIC RANGES OF PLUS OR MINUS 40 GAMMAS, SAMPLED THE MAGNETIC FIELD 30 TIMES WITHIN EACH OF SIX 4.8-SEC INTERVALS EVERY 5.46 MIN. DETECTOR SENSITIVITIES WERE PLUS OR MINUS 0.25 GAMMA, AND DIGITIZATION UNCERTAINTY WAS PLUS OR MINUS 0.40 GAMMA. A RUBIDIUM VAPOR MAGNETOMETER WAS USED TO CALIBRATE THE FLUXGATES BUT DID NOT PRODUCE AN INDEPENDENTLY USEFUL DATA SET. THE FLUXGATES FUNCTIONED NORMALLY THROUGHOUT THE USEFUL LIFE OF THE SATELLITE AND PROVIDED USABLE DATA THROUGH MAY 30, 1964. SEE NESS ET AL., JGR, VOL 69, PP 3531-3569, 1964.

DATA SET NAME- 5.46-MIN VECTOR MAGNETIC FIELD DATA MERGED WITH EPHEMERIS DATA ON TAPE

NSSDC ID- 63-046A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 11/27/63 TO 05/30/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPE GENERATED AT NSSDC. THE FLUXGATE DATA CONTAINED IN THE EXPERIMENTER-SUPPLIED DATA SET 63-046A-02A ARE MERGED WITH COMPLETE EPHEMERIS DATA GIVEN IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES. THE FLUXGATE DATA CONSIST OF 5.46-MIN AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL POLAR

REPRESENTATIONS IN SOLAR ECLIPTIC COORDINATES.

DATA SET NAME- HOURLY AVERAGED VALUES OF INTERPLANETARY MAGNETIC FIELD DATA

NSSDC ID- 63-046A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 11/27/63 TO 02/15/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF A SINGLE 9-TRACK, 800-BPI, EBCDIC MAGNETIC TAPE PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE SPACECRAFT POSITION AND HOURLY AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL POLAR REPRESENTATIONS IN A SOLAR ECLIPTIC COORDINATE SYSTEM. ONLY DATA OBTAINED IN INTERPLANETARY SPACE ARE INCLUDED. THE PERIOD NOVEMBER 27, 1963, TO FEBRUARY 15, 1964, IS COVERED WITH AT LEAST 80 PERCENT COMPLETENESS. A MICROFILMED LISTING OF THE CONTENTS OF THIS DATA SET IS ALSO AVAILABLE (63-046A-02E).

DATA SET NAME- HOURLY AVERAGED VALUES OF MAGNETOSPHERIC MAGNETIC FIELD DATA

NSSDC ID- 63-046A-02F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 02/28/64 TO 05/26/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 9-TRACK, 800-BPI, EBCDIC MAGNETIC TAPE PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE SPACECRAFT POSITION AND HOURLY AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL POLAR REPRESENTATIONS IN SOLAR MAGNETOSPHERIC COORDINATES. ONLY HOURLY AVERAGES WITHIN THE MAGNETOSPHERE ARE INCLUDED. A MICROFILMED LISTING OF THE CONTENTS OF THIS DATA SET IS ALSO AVAILABLE (63-046A-02G).

SPACECRAFT COMMON NAME- IMP-B

ALTERNATE NAMES- IMP 2, EXPLORER 21
S 74A, 00889

NSSDC ID- 64-060A

LAUNCH DATE- 10/04/64 WEIGHT- 135. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/01/65

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 10/04/64
ORBIT PERIOD- 2097. MIN INCLINATION- 33.5 DEG
PERIAPSIS- 193.000 KM ALT APOAPSIS- 95400. KM ALT

EXPLORER 21 (IMP 2) WAS A SOLAR CELL AND CHEMICAL BATTERY POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. EACH NORMAL PFM TELEMETRY SEQUENCE OF 81.9 SEC IN DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE AT NOON, A SPIN RATE OF 14.6 RPM, AND A SPIN DIRECTION OF 41.4 DEG RIGHT ASCENSION AND 47.4 DEG DECLINATION. THE SIGNIFICANT DEVIATION OF THE SPIN RATE AND DIRECTION FROM THEIR PLANNED VALUES AND THE ACHIEVEMENT OF AN APOGEE LESS THAN HALF THE PLANNED VALUE ADVERSELY AFFECTED DATA USEFULNESS. OTHERWISE, SPACECRAFT SYSTEMS PERFORMED WELL, WITH NEARLY COMPLETE DATA TRANSMISSION FOR THE FIRST 4 MONTHS AND FOR THE SIXTH MONTH AFTER LAUNCH. DATA TRANSMISSION WAS INTERMITTENT FOR OTHER TIMES, AND THE FINAL TRANSMISSION OCCURRED ON OCTOBER 13, 1965.

IMP-B/IMP-C

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON TAPE

NSSDC ID- 64-060A-00G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 10/05/64 TO 09/30/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE BLOCKED, 7-TRACK, 800-BPI, IBM 7094 BINARY MAGNETIC TAPE, GENERATED AT NSSDC FROM UNBLOCKED TAPES SUBMITTED BY N. F. NESS. THERE ARE FIVE LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES CONTAIN THE FOLLOWING INFORMATION AT 5-MIN INTERVALS - (1) GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND RADIAL DISTANCE OF THE SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND THE SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS GREATER THAN 80 PERCENT. A SEPARATE DATA SET (64-060A-00H) WITH ONE SET OF EPHEMERIS PARAMETERS PER HR IS AVAILABLE ON AN NSSDC-GENERATED TAPE.

NESS, IMP-B

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID- 64-060A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 04/05/65

PERSONNEL
PI - N.F. NESS NASA-GSFC
GREENBELT, MD

EACH OF TWO UNIAXIAL FLUXGATE MAGNETOMETERS, HAVING DYNAMIC RANGES OF PLUS OR MINUS 40 GAMMAS, SAMPLED THE MAGNETIC FIELD 30 TIMES WITHIN EACH OF SIX 4.8-SEC INTERVALS EVERY 5.46 MIN. DETECTOR SENSITIVITIES WERE PLUS OR MINUS 0.25 GAMMA, AND DIGITIZATION UNCERTAINTY WAS PLUS OR MINUS 0.40 GAMMA. A RUBIDIUM VAPOR MAGNETOMETER WAS USED TO CALIBRATE THE FLUXGATES BUT DID NOT PRODUCE AN INDEPENDENTLY USEFUL DATA SET. THE FLUXGATES FUNCTIONED NORMALLY THROUGHOUT THE USEFUL LIFE OF THE SATELLITE. SEE FAIRFIELD AND NESS, JGR, VOL 72, PP 2379-2402, 1967.

DATA SET NAME- 5.46-MIN VECTOR MAGNETIC FIELD DATA MERGED WITH EPHEMERIS DATA ON TAPE

NSSDC ID- 64-060A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 10/04/64 TO 04/05/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPE GENERATED AT NSSDC. THE FLUXGATE DATA CONTAINED IN THE EXPERIMENTER SUPPLIED DATA SET 64-060A-02A ARE MERGED WITH COMPLETE EPHEMERIS DATA GIVEN IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES. THE FLUXGATE DATA CONSIST OF 5.46-MIN AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL POLAR REPRESENTATIONS IN SOLAR ECLIPTIC COORDINATES.

SPACECRAFT COMMON NAME- IMP-C

ALTERNATE NAMES- EXPLORER 28, IMP 3
S 748, 01388

NSSDC ID- 65-042A

LAUNCH DATE- 05/29/65 WEIGHT- 128. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/12/67

ORBIT TYPE- GEOCENTRIC
ORBIT PERIOD- 8550. MIN
PERIAPSIS- 200.000 KM ALT

EPOCH DATE- 05/29/65
INCLINATION- 34.0 DEG
APOAPSIS- 264000. KM ALT

EXPLORER 28 (IMP 3) WAS A SOLAR-CELL AND CHEMICAL-BATTERY POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE OF 2020 HR, A SPIN RATE OF 23.7 RPM, AND A SPIN DIRECTION OF 64.9 DEG RIGHT ASCENSION AND -10.9 DEG DECLINATION. EACH NORMAL PFM TELEMETRY SEQUENCE 81.9 SEC IN DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL TELEMETRY SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. PERFORMANCE WAS ESSENTIALLY NORMAL UNTIL LATE APRIL 1967, THEN INTERMITTENT UNTIL MAY 12, 1967, AFTER WHICH NO FURTHER DATA WERE ACQUIRED.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON TAPE

NSSDC ID- 65-042A-00G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 05/29/65 TO 05/11/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 4 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF BLOCKED, 7-TRACK, 800-BPI, IBM 7094 BINARY MAGNETIC TAPES GENERATED AT NSSDC FROM UNBLOCKED TAPES SUBMITTED BY N. F. NESS. THERE ARE FIVE LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES CONTAIN THE FOLLOWING INFORMATION AT 5-MIN INTERVALS - (1) GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND RADIAL DISTANCE OF THE SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND THE SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS GREATER THAN 80 PERCENT. A SEPARATE DATA SET (65-042A-00H) WITH ONE SET OF EPHEMERIS PARAMETERS PER HR IS AVAILABLE ON AN NSSDC-GENERATED TAPE.

NESS, IMP-C

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID- 65-042A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/11/67

PERSONNEL
PI - N.F. NESS NASA-GSFC
GREENBELT, MD

EACH OF TWO UNIAXIAL FLUXGATE MAGNETOMETERS HAD A DYNAMIC RANGE OF PLUS OR MINUS 40 GAMMAS AND A SENSITIVITY OF PLUS OR MINUS 0.25 GAMMA. ONE FLUXGATE FAILED AT LAUNCH, BUT THE OTHER PERFORMED NORMALLY, SAMPLING THE MAGNETIC FIELD 30 TIMES WITHIN EACH OF SIX 4.8-SEC INTERVALS EVERY 5.46 MIN. UNCERTAINTIES IN DATA ARE PLUS OR MINUS 1.0 GAMMA. USEFUL FLUXGATE DATA WERE TRANSMITTED UNTIL MAY 11, 1967. A RUBIDIUM VAPOR MAGNETOMETER WAS INCLUDED IN THE EXPERIMENT PACKAGE, BUT IT PRODUCED NO USEFUL DATA. THE INSTRUMENTATION AND ANALYSIS WERE SIMILAR TO THOSE OF EXPLORERS 18 AND 21, DESCRIBED IN JGR, VOL 69, P 3531, 1964, AND IN JGR, VOL 72, P 2379, 1967.

DATA SET NAME- 5.46-MIN VECTOR MAGNETIC FIELD DATA MERGED WITH EPHEMERIS DATA ON TAPE

NSSDC ID- 65-042A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 05/29/65 TO 05/11/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 3 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF THREE 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPES. THE FLUXGATE DATA CONTAINED ON NINE EXPERIMENTER-SUPPLIED TAPES (65-042A-02A) WERE MERGED AT NSSDC WITH COMPLETE EPHEMERIS DATA GIVEN IN SOLAR ECLIPTIC AND

SOLAR MAGNETOSPHERIC COORDINATES. THE FLUXGATE DATA CONSIST OF 5.46-MINUTE AVERAGED MAGNETIC VECTORS IN BOTH CARTESIAN AND SPHERICAL REPRESENTATIONS IN A SOLAR ECLIPTIC COORDINATE SYSTEM.

DATA SET NAME- HOURLY AVERAGED VALUES OF INTERPLANETARY MAGNETIC FIELD DATA

NSSDC ID- 65-042A-02E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 06/01/65 TO 01/29/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF TWO 9-TRACK, 800-BPI, IBM 360, EBCDIC MAGNETIC TAPES PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE SPACECRAFT POSITION AND HOURLY AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL REPRESENTATIONS IN A SOLAR ECLIPTIC COORDINATE SYSTEM. ONLY DATA OBTAINED IN INTERPLANETARY SPACE ARE INCLUDED. THE PERIODS JUNE 1, 1965, TO JANUARY 26, 1966, AND JULY 1, 1966, TO JANUARY 29, 1967, ARE COVERED WITH 90 PERCENT COMPLETENESS. A MICROFILMED LISTING OF THE CONTENTS OF THIS DATA SET IS ALSO AVAILABLE (65-042A-02F).

DATA SET NAME- HOURLY AVERAGED VALUES OF MAGNETOSPHERIC MAGNETIC FIELD DATA ON TAPE

NSSDC ID- 65-042A-02G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 05/29/65 TO 05/10/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 9-TRACK, 800-BPI, IBM 360, EBCDIC MAGNETIC TAPE PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE SPACECRAFT POSITION AND HOURLY AVERAGED VECTOR MAGNETIC FIELD DATA IN BOTH CARTESIAN AND SPHERICAL REPRESENTATIONS IN SOLAR MAGNETOSPHERIC COORDINATES. ONLY HOURLY AVERAGES WITHIN THE MAGNETOSPHERE ARE INCLUDED. TIME COVERAGE EXTENDS FROM MAY 29, 1965, TO MAY 10, 1967, WITH ABOUT 20 PERCENT COMPLETENESS. A MICROFILMED LISTING OF THE CONTENTS OF THIS DATA SET IS ALSO AVAILABLE (65-042A-02H).

DATA SET NAME- MULTI-SPACECRAFT HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD VECTORS ON TAPE

NSSDC ID- 65-042A-02I

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 06/01/65 TO 05/06/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, WAS GENERATED FROM EXPLORER 28, 34, 33, AND 35 (IMP 3 AND 4, AIMP 1 AND 2) DATA TO HAVE AS COMPLETE AS POSSIBLE A RECORD OF THE INTERPLANETARY MAGNETIC FIELD, WITH 1-HR TIME RESOLUTION, OVER THE PERIOD JUNE 1965 THROUGH DECEMBER 1968. THE DATA WERE SUBMITTED ON ONE 9-TRACK, 800-BPI, EBCDIC CARD IMAGE MAGNETIC TAPE. EACH CARD IMAGE CONTAINS DATA FOR 1 HR AS OBTAINED ON ONE SPACECRAFT. NO HOUR IS COVERED BY MORE THAN ONE SPACECRAFT. EACH RECORD CONTAINS TIME, SPACECRAFT IDENTIFICATION AND LOCATION (RADIAL DISTANCE AND SOLAR ECLIPTIC CARTESIAN COORDINATES), AND HOURLY AVERAGED MAGNETIC FIELD VECTOR MAGNITUDE, SOLAR ECLIPTIC LATITUDE AND LONGITUDE ANGLES, AND CARTESIAN COMPONENTS WITH THEIR STANDARD DEVIATIONS.

SPACECRAFT COMMON NAME- INJUN 1

ALTERNATE NAMES- 1961 OMICRON 2, INJUN-SR-3
00117

NSSDC ID- 61-015B

LAUNCH DATE- 06/29/61

WEIGHT- 16. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/31/62

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC
ORBIT PERIOD- 103.9 MIN
PERIAPSIS- 882.000 KM ALT

EPOCH DATE- 06/29/61
INCLINATION- 66.82 DEG
APOAPSIS- 999.000 KM ALT

THE SATELLITE INJUN 1 WAS THE FIRST OF A SERIES OF SPACECRAFT DESIGNED AND BUILT BY THE UNIVERSITY OF IOWA TO STUDY THE NATURAL AND ARTIFICIAL TRAPPED RADIATION BELTS, AURORAE AND AIRGLOW, AND OTHER GEOPHYSICAL PHENOMENA. INJUN 1 WAS LAUNCHED SIMULTANEOUSLY WITH TRANSIT 4A AND GREB 3. TRANSIT 4A SUCCESSFULLY SEPARATED FROM INJUN 1, BUT GREB 3 DID NOT. INJUN 1 WAS DESIGNED TO BE MAGNETICALLY ALIGNED, HOWEVER, DUE TO THE PRESENCE OF GREB 3 (WHICH BLOCKED THE VIEW OF THE PHOTOMETER), IT WAS IMPOSSIBLE TO KEEP THE SATELLITE CONSTANTLY ORIENTED ON THE TERRESTRIAL MAGNETIC FIELD THROUGHOUT AN ORBIT. A SINGLE AXIS FLUXGATE MAGNETOMETER WAS USED TO MONITOR THE ORIENTATION OF THE SPACECRAFT WITH RESPECT TO THE LOCAL MAGNETIC FIELD. INJUN 1 HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH AN ILL DEFINED AND VARIABLE PERIOD OF SEVERAL MINUTES. THE SATELLITE SENT BACK RADIATION DATA UNTIL MARCH 6, 1963, AND IS EXPECTED TO BE IN ORBIT FOR ABOUT 900 YR.

VAN ALLEN, INJUN 1

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID- 61-015B-05

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/31/62

PERSONNEL

PI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA

THIS DETECTOR CONSISTED OF A ONE-AXIS FLUXGATE MAGNETOMETER THAT WAS INTENDED TO CHECK THE MAGNETIC FIELD ALIGNMENT OF INJUN 1 AND TO DETERMINE THE LOOK DIRECTIONS OF THE VARIOUS DETECTORS. THE MAGNETOMETER, MOUNTED IN A POINTING DIRECTION NORMAL TO THE MAGNETIC FIELD VECTOR, HAD A RANGE OF 0 TO 0.5 GAUSS. MEASUREMENTS WERE MADE AT THE RATE OF ONE PER SECOND, WITH EACH FOURTH MEASUREMENT BEING USED AS A CALIBRATION CHECK. THE MAGNETOMETER PERFORMED NORMALLY THROUGHOUT THE LIFETIME OF INJUN 1.

DATA SET NAME- MASTER TAPE, MONITOR MAGNETOMETER DATA

NSSDC ID- 61-015B-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 06/30/61 TO 08/31/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 17 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF A TIME-ORDERED MASTER SCIENCE FILE FOR INJUN 1. THE REDUCED DATA ARE CONTAINED ON SEVENTEEN 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 34 WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE MAGNETOMETER DATA OCCUPIES THREE BITS (ONE-HALF WORD) OF WORD 18 AND IS EXPRESSED IN THE UNIT COUNTS PER SECOND. A CONVERSION FACTOR FROM COUNTS PER SECOND TO GAUSS HAS BEEN PROVIDED BY THE EXPERIMENTER. ALSO INCLUDED ON THESE TAPES ARE DATA FROM THE OTHER INJUN 1 DETECTORS (EXCEPT FOR THE NRL X-RAY EXPERIMENT), AS WELL AS EPHEMERIS DATA INCLUDING UT, LOCAL TIME, LONGITUDE, LATITUDE, ALTITUDE, MODEL MAGNETIC FIELD, MCILMAIN L PARAMETER, AND 8/80. THIS SET OF TAPES IS REFERENCED AS DATA SETS 61-015B-01B, -02A, -03A, -05A, AND -06A.

MARINER 2/MARINER 4

SPACECRAFT COMMON NAME- MARINER 2

ALTERNATE NAMES- 1962 ALPHA RHD 1, P 38
MARINER R-2, 00374

NSSDC ID- 62-041A

LAUNCH DATE- 08/27/62

WEIGHT- 203. KG

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 01/03/63

ORBIT PARAMETERS

ORBIT TYPE- HELIOCENTRIC	EPOCH DATE- 08/27/62
ORBIT PERIOD- 292. DAYS	INCLINATION- 0. DEG
PERIAPSIS- 0.72 AU RAD	APDAPSIS- 1.0 AU RAD

THE MARINER 2 SPACECRAFT WAS THE SECOND OF A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN THE FLYBY, OR NON-LANDING, MODE. MARINER 2 WAS A BACKUP FOR THE MARINER 1 MISSION WHICH FAILED SHORTLY AFTER LAUNCH TO VENUS. THE SPACECRAFT WAS ATTITUDE STABILIZED USING THE SUN AND EARTH AS REFERENCES. THE SPACECRAFT WAS SOLAR POWERED AND CAPABLE OF CONTINUOUS TELEMETRY OPERATION. THE SPACECRAFT OBTAINED DATA ON THE INTERPLANETARY MEDIUM DURING THE FLIGHT TO VENUS AND BEYOND AND OBTAINED PLANETARY DATA DURING THE ENCOUNTER OF VENUS. THE SPACECRAFT PASSED 41,000 KM FROM VENUS ON DECEMBER 14, 1962.

COLEMAN, JR., MARINER 2

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID- 62-041A-03

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 01/03/63

PERSONNEL

PI - P.J. COLEMAN, JR. U OF CALIF. LA
LOS ANGELES, CA

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE MAGNITUDE AND DIRECTION OF THE INTERPLANETARY AND VENUSIAN MAGNETIC FIELDS. IT CONSISTED OF THREE ORTHOGONAL FLUXGATE MAGNETOMETERS MOUNTED ON TOP OF A 152.4-M TOWER. ONE MAGNETOMETER AXIS WAS PARALLEL TO THE SPACECRAFT ROLL AXIS. IN THE HIGH SENSITIVITY MODE, EACH MAGNETOMETER HAD A DYNAMIC RANGE OF -64 TO +64 GAMMAS WITH AN ACCURACY OF +0.5 GAMMA. IN THE LOW SENSITIVITY MODE, THIS RANGE WAS -320 TO +320 GAMMAS WITH AN ACCURACY OF +2.5 GAMMAS. ALL THREE MAGNETOMETERS WERE SAMPLED WITHIN 8.64 SEC, AND THIS SEQUENCE OF SAMPLING WAS REPEATED EVERY 36.96 SEC (OR EVERY 20.16 SEC DURING THE VENUS ENCOUNTER ON DECEMBER 14, 1962). AN INFIGHT CALIBRATION SYSTEM WAS DESIGNED TO CHECK THE SENSITIVITY OF THE THREE MAGNETOMETERS ONCE DURING EACH 15.77-HR PERIOD. DUE TO A FAILURE IN THE CONTROL CIRCUIT, INFIGHT CALIBRATIONS WERE PERFORMED MORE OFTEN AND IN A RANDOM FASHION. OTHER THAN THE FAILURE IN THE INFIGHT CALIBRATION SYSTEM, THE EXPERIMENT PERFORMED NORMALLY UNTIL JANUARY 3, 1963, WHEN CONTACT WITH MARINER 2 WAS LOST.

DATA SET NAME- MAGNETIC FIELD COMPONENTS ON TAPE

NSSDC ID- 62-041A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/29/62 TO 11/15/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BINARY TAPE, WRITTEN ON AN IBM 7094, AS SUBMITTED BY THE EXPERIMENTER. THE TAPE CONSISTS OF 7709 PHYSICAL RECORDS, EACH CONTAINING 21 LOGICAL RECORDS. THERE IS ONE DATA POINT (LOGICAL RECORD) ON THE TAPE FOR EACH 36.96 SEC. EACH DATA POINT CONTAINS THE TIME OF THE OBSERVATION (DAY, HR, MIN, AND SEC), THE HELIOCENTRIC RADIUS, SOLAR COLATITUDE, AND SOLAR LONGITUDE OF THE SPACECRAFT, THREE ORTHOGONAL COMPONENTS IN A QUASI-SOLAR EQUATORIAL COORDINATE SYSTEM, PLUS THE MAGNITUDE OF THE TOTAL FIELD AND AN INDICATION OF WHETHER AN INFIGHT CALIBRATION IS OCCURRING. THE DATA ARE TIME ORDERED AND COVER APPROXIMATELY 70 PERCENT OF THE PERIOD FROM AUGUST 29, 1962, TO NOVEMBER 15, 1962.

DATA SET NAME- PLOTS OF MAGNETIC FIELD COMPONENTS ON MICROFILM

NSSDC ID- 62-041A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/29/62 TO 10/31/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM THAT WERE GENERATED AT NSSDC FROM HARD-COPY PLOTS SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS 2 HR OF DATA WITH DATA POINTS PRESENTED EVERY 36.96 SEC. THE PLOTS ON EACH FRAME, FROM TOP TO BOTTOM, GIVE APPROXIMATE PROJECTIONS OF THE MEASURED MAGNETIC FIELD ON THE SOLAR EQUATORIAL PLANE AND ON A PERPENDICULAR PLANE CONTAINING THE SUN DIRECTION. A THIRD GRAPH GIVES THE MEASURED MAGNETIC FIELD MAGNITUDE AND MARINER 2 PLASMA VELOCITY DATA SUPPLIED BY DR. H. NEUGEBAUER. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 70 PERCENT OF THE PERIOD FROM AUGUST 29, 1962, TO OCTOBER 31, 1962.

SPACECRAFT COMMON NAME- MARINER 4

ALTERNATE NAMES- 00942

NSSDC ID- 64-077A

LAUNCH DATE- 11/28/64

WEIGHT- 262. KG

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 12/20/67

ORBIT PARAMETERS

ORBIT TYPE- HELIOCENTRIC	EPOCH DATE- 07/15/65
ORBIT PERIOD- 567. DAYS	INCLINATION- 0. DEG
PERIAPSIS- 1.1 AU RAD	APDAPSIS- 1.58 AU RAD

MARINER 4 WAS THE FOURTH IN A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN A FLYBY MODE. IT WAS DESIGNED TO CONDUCT CLOSEUP SCIENTIFIC OBSERVATIONS OF THE PLANET MARS AND TO TRANSMIT THESE OBSERVATIONS TO EARTH. OTHER MISSION OBJECTIVES WERE TO PERFORM FIELD AND PARTICLE MEASUREMENTS IN INTERPLANETARY SPACE AND IN THE VICINITY OF MARS AND TO PROVIDE EXPERIENCE IN AND KNOWLEDGE OF THE ENGINEERING CAPABILITIES FOR INTERPLANETARY FLIGHTS OF LONG DURATION. AFTER 7.5 MONTHS OF FLIGHT, THE SPACECRAFT FLEW BY MARS ON JULY 14, 1965, AND RETURNED 21 AND A PORTION PHOTOGRAPHS. THE CLOSEST APPROACH WAS 9846 KM FROM THE MARTIAN SURFACE. THE SPACECRAFT PERFORMED ALL PROGRAMMED ACTIVITIES SUCCESSFULLY AT THE PROPER TIMES AND RETURNED USEFUL DATA FROM LAUNCH UNTIL OCTOBER 1965, WHEN THE DISTANCE FROM EARTH AND ITS ANTENNA ORIENTATION TEMPORARILY HALTED THE SIGNAL ACQUISITION. DATA ACQUISITION RESUMED IN LATE 1967 AND CONTINUED UNTIL DECEMBER 20, 1967.

SMITH, MARINER 4

EXPERIMENT NAME- HELIUM MAGNETOMETER

NSSDC ID- 64-077A-02

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 10/01/65

PERSONNEL

PI - E.J. SMITH NASA-JPL
PASADENA, CA

A VECTOR LOW-FIELD HELIUM MAGNETOMETER, NOT TO BE CONFUSED WITH THE RUBIDIUM VAPOR OR HELIUM VAPOR MAGNETOMETER, WAS USED TO MEASURE THE INTERPLANETARY MAGNETIC FIELD. THE THREE COMPONENTS OF THE FIELD WERE MEASURED ESSENTIALLY SIMULTANEOUSLY BUT LATER TRANSMITTED SEQUENTIALLY. EACH OBSERVATION REPRESENTED AN AVERAGE OVER APPROXIMATELY 1 SEC. THE RESPONSE DROPPED 3 DB FOR FREQUENCIES OF 1 HZ, AND HIGHER FREQUENCY INFORMATION WAS ESSENTIALLY LOST. IN EACH DATA FRAME, FOUR VECTOR MEASUREMENTS WERE MADE SEPARATED BY INTERVALS OF 1.5, 0.9, AND 2.4 SEC. THE WHOLE FRAME WAS REPEATED EVERY 12.5 SEC. THERE WAS AN UNCERTAINTY OF PLUS OR MINUS 0.35 GAMMA PER COMPONENT.

MARINER 4/OGO 1

DATA SET NAME- THREE-HR AVERAGED ANALYZED MAGNETIC
FIELD DATA ON TAPE

NSSDC ID- 64-077A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/28/64 TO 10/01/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS ANALYZED DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, 800 MAGNETIC TAPE AS SUPPLIED BY THE EXPERIMENTER. IT CONTAINS (1) 3-HR AVERAGED VALUES OF THE SPHERICAL COMPONENTS OF THE VECTOR MAGNETIC FIELD IN AN INERTIAL HELIOCENTRIC EQUATORIAL COORDINATE SYSTEM, (2) THE FIELD MAGNITUDE, (3) THE RMS DEVIATION OF EACH OF THE AVERAGED VALUES, AND (4) THE NUMBER OF DATA POINTS USED IN THE AVERAGE. THESE DATA PROVIDE ESSENTIALLY COMPLETE COVERAGE FOR HELIOCENTRIC RADIAL DISTANCES FROM 1 TO 1.54 AU AND FOR TIME PERIODS INCLUDING 11 SOLAR ROTATIONS.

DATA SET NAME- 50.4-SEC AVERAGED MAGNETIC FIELD DATA ON
TAPE

NSSDC ID- 64-077A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/28/64 TO 10/01/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 3 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF THREE REELS OF IBM 7094, EXPERIMENTER GENERATED, 556-BPI, BINARY, 7-TRACK TAPE. THE DATA CONSIST OF 50.4-SEC AVERAGES OF THE MAGNITUDE OF THE MAGNETIC FIELD AND ITS THREE SPHERICAL COMPONENTS, IN AN INERTIAL HELIOCENTRIC EQUATORIAL COORDINATE SYSTEM, EXPRESSED AS FUNCTIONS OF TIME. THESE TAPES INCLUDE ALL AVAILABLE DATA FOR THE TIME PERIOD FROM NOVEMBER 28, 1964, TO OCTOBER 1, 1965. THERE ARE TWO SIGNIFICANT DATA GAPS, ONE FROM JULY 15 TO AUGUST 3, AND THE OTHER FROM AUGUST 31 TO SEPTEMBER 2. EACH RECORD CONTAINS 253 WORDS (SIX BYTES/WORD) AND INCLUDES 21 DATA POINTS.

DATA SET NAME- MAGNETIC FIELD MICROFILM

NSSDC ID- 64-077A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/29/64 TO 10/01/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS EXPERIMENTER-GENERATED MICROFILM CONTAINS CARTESIAN COMPONENTS OF MAGNETIC FIELD AND FIELD MAGNITUDE PLOTTED AS A FUNCTION OF TIME. AVERAGES OF 2-8 MIN ARE PLOTTED TO A SCALE OF 24 HR PER 35MM FRAME. THE DATA ARE PRESENTED IN SOLAR ECLIPTIC COORDINATES. TIME COVERAGE IS NEARLY CONTINUOUS FOR THE INTERVAL INCLUDED. ALSO AVAILABLE ON ONE REEL OF MICROFILM EACH ARE 4-2 SEC AVERAGES (1 HR PER FRAME COVERING NOVEMBER 29, 1964 TO JANUARY 3, 1965 - NSSDC ID 64-077A-02D) AND 16-8 SEC AVERAGES (3 HR PER FRAME COVERING JANUARY 3, 1965 TO OCTOBER 1, 1965 - NSSDC ID 64-077A-02E).

SPACECRAFT COMMON NAME- OGO 1

ALTERNATE NAMES- EOGO 1, OGO-A
00879, S 49

NSSDC ID- 64-054A

LAUNCH DATE- 09/05/64

WEIGHT- 487. KG

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 11/25/69

ORBIT TYPE- GEOCENTRIC
ORBIT PERIOD- 3839. MIN
PERIAPSIS- 281.000 KM ALT

EPOCH DATE- 09/07/64
INCLINATION- 31.2 DEG
APOAPSIS- 149385. KM ALT

THE PURPOSE OF THE OGO 1 SPACECRAFT, THE FIRST OF A SERIES OF SIX ORBITING GEOPHYSICAL OBSERVATORIES, WAS TO CONDUCT MANY DIVERSIFIED GEOPHYSICAL EXPERIMENTS TO OBTAIN A BETTER UNDERSTANDING OF THE EARTH AS A PLANET AND TO DEVELOP AND OPERATE A STANDARDIZED OBSERVATORY-TYPE SATELLITE. OGO 1 CONSISTED OF A MAIN BODY THAT WAS PARALLELEPIPED IN FORM, TWO SOLAR PANELS, EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP) AND SIX APPENDAGES EP-1 THROUGH EP-6 SUPPORTING THE BOOM EXPERIMENT PACKAGES. ONE FACE OF THE MAIN BODY WAS DESIGNED TO POINT TOWARD THE EARTH (+Z AXIS), AND THE LINE CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS INTENDED TO BE PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS WERE ABLE TO ROTATE ABOUT THE X AXIS. THE OPEP'S WERE MOUNTED ON AND COULD ROTATE ABOUT AN AXIS WHICH WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE MAIN BODY. DUE TO A BOOM DEPLOYMENT FAILURE SHORTLY AFTER ORBITAL INJECTION, THE SPACECRAFT WAS PUT INTO A PERMANENT SPIN MODE OF 5 RPM ABOUT THE Z AXIS. THIS SPIN AXIS REMAINED FIXED WITH A DECLINATION OF ABOUT -10 DEG AND RIGHT ASCENSION OF ABOUT 40 DEG AT LAUNCH. THE INITIAL LOCAL TIME OF APOGEE WAS 2100 HR. OGO 1 CARRIED 20 EXPERIMENTS. TWELVE OF THESE WERE PARTICLE STUDIES AND TWO WERE MAGNETIC FIELD STUDIES. IN ADDITION, THERE WAS ONE EXPERIMENT FOR EACH OF THE FOLLOWING TYPES OF STUDIES -- INTERPLANETARY DUST, VLF, LYMAN-ALPHA, GEGENSCHEIN, ATMOSPHERIC MASS, AND RADIO ASTRONOMY. REAL-TIME DATA WERE TRANSMITTED AT 1, 8, OR 64 KBS DEPENDING ON THE DISTANCE OF THE SPACECRAFT FROM THE EARTH. PLAYBACK DATA WERE TAPE RECORDED AT 1 KBS AND TRANSMITTED AT 64 KBS. TWO WIDEBAND TRANSMITTERS, ONE FEEDING INTO AN OMNIDIRECTIONAL ANTENNA AND THE OTHER FEEDING INTO A DIRECTIONAL ANTENNA, WERE USED TO TRANSMIT DATA. A SPECIAL-PURPOSE TELEMETRY SYSTEM, FEEDING INTO EITHER ANTENNA, WAS ALSO USED TO TRANSMIT WIDEBAND DATA IN REAL TIME ONLY. TRACKING WAS ACCOMPLISHED BY USING RADIO BEACONS AND A RANGE AND RANGE-RATE S-BAND TRANSPONDER. BECAUSE OF THE BOOM DEPLOYMENT FAILURE, THE BEST OPERATING MODE FOR THE DATA HANDLING SYSTEM WAS THE USE OF ONE OF THE WIDEBAND TRANSMITTERS AND THE DIRECTIONAL ANTENNA. ALL DATA RECEIVED FROM THE OMNIDIRECTIONAL ANTENNA WERE NOISY. DURING SEPTEMBER 1964, ACCEPTABLE DATA WERE RECEIVED OVER 70 PERCENT OF THE ORBITAL PATH. BY JUNE 1969, DATA ACQUISITION WAS LIMITED TO 10 PERCENT OF THE ORBITAL PATH. THE SPACECRAFT WAS PLACED IN A STAND-BY STATUS NOVEMBER 25, 1969, AND ALL SUPPORT WAS TERMINATED NOVEMBER 1, 1971. BY APRIL 1970, THE SPACECRAFT PERIGEE HAD INCREASED TO 46.000 KM AND THE INCLINATION HAD INCREASED TO 58.8 DEG.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS PLOTS

NSSDC ID- 64-054A-00H

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/07/64 TO 06/03/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF 35-MM MICROFILM, FILMED BY NSSDC FROM EXPERIMENTER-GENERATED CALCOMP PLOTS. THE DATA SET CONTAINS TWO-DIMENSIONAL PROJECTIONS OF INDIVIDUAL ORBITS, WITH TIC MARKS FOR TIME, IN A VARIETY OF COORDINATE SYSTEMS. INCLUDED ARE THE DISTANCE FROM THE EARTH-SUN-LINE GEOMAGNETIC DIPOLE PLANE, DISTANCE FROM THE NEUTRAL SHEET, THE ORBIT IN GEOCENTRIC SOLAR MAGNETOSPHERIC COORDINATES, DISTANCE FROM THE EARTH-SUN-LINE ECLIPTIC POLE PLANE, AND THE ORBIT IN GEOCENTRIC ECLIPTIC COORDINATES. ONE ORBIT IS INCLUDED PER PLOT, AND DISTANCES ARE ALL IN EARTH RADII.

SMITH, OGO 1

EXPERIMENT NAME- TRIAXIAL SEARCH-COIL MAGNETOMETER

NSSDC ID- 64-054A-01

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 11/25/69

PERSONNEL

PI - E.J. SMITH NASA-JPL
PASADENA, CA
OI - R.E. HOLZER U OF CALIF, LA
LOS ANGELES, CA

THE OGO 1 TRIAXIAL SEARCH COIL MAGNETOMETER WAS DESIGNED TO MEASURE THE MAGNETIC FIELD FLUCTUATIONS FROM 0.01 TO 1 KHZ. DUE TO A SPACECRAFT MALFUNCTION, THE OGO SATELLITE ASSUED A SPIN-STABILIZED MODE WITH A 12-SEC PERIOD. THIS KEANT THE

OGO 1/OGO 2

MAGNETOMETER OUTPUT WAS MODULATED WITH AN APPROXIMATELY SINUSOIDAL SIGNAL, PROVIDING A MEASURE OF THE DC COMPONENT OF THE MAGNETIC FIELD PERPENDICULAR TO THE SPIN AXIS AS WELL AS THE AC DATA. THE MAGNETOMETER ASSEMBLY WAS ON A 6.1-K BOOM, AND THE ELECTRONICS WERE IN THE BODY OF THE SPACECRAFT. THE SENSITIVITY WAS 10 MICROVOLTS PER GAMMA-SEC. THE LOW-FREQUENCY CHANNEL WAS SAMPLED FIVE TIMES EVERY 1.152 SEC BY THE TELEMETRY SYSTEM WHEN THE DATA RATE WAS 1 KBS, AND PROPORTIONALLY FASTER FOR THE HIGHER TELEMETRY RATES OF 8 AND 64 KBS. HOWEVER, DUE TO THE SPACECRAFT SPIN, THE HIGHEST BIT RATE COULD NOT BE USED WHEN THE SATELLITE WAS MORE THAN 10 EARTH RADII AWAY. THE UPPER FREQUENCY CUTOFF (TO AVOID ALIASING IN THE DATA) WAS 2 HZ FOR THE 1- AND 8-KBS TELEMETRY RATES, AND 130 HZ FOR THE 64-KBS RATE. THE HIGH-FREQUENCY CHANNEL PROVIDED SPECTRAL ANALYSIS INFORMATION FOR FREQUENCIES FROM 1 TO 10 KHZ IN FIVE STEPS. THE EXPERIMENT OPERATED SATISFACTORILY, AVERAGING ABOUT 4000 HR OF DATA PER YEAR.

DATA SET NAME- MAGNETIC FIELD MAGNITUDE AND DIRECTION
NORMAL TO THE SPACECRAFT SPIN AXIS ON FILM

NSSDC ID- 64-054A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 09/05/64 TO 09/29/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM MADE BY NSSDC FROM EXPERIMENTER-GENERATED CALCOMP PLOTS CONTAINING MEASUREMENTS OF THE AMPLITUDE AND DIRECTION OF THE MAGNETIC FIELD COMPONENT IN THE PLANE NORMAL TO THE OGO SPACECRAFT SPIN AXIS. THE TIME RESOLUTION RETRIEVABLE FROM THESE PLOTS IS LIMITED TO ABOUT 10 MINUTES.

DATA SET NAME- 36.864-SEC AVERAGED SEARCH-COIL
MAGNETOMETER DATA ON TAPE

NSSDC ID- 64-054A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 09/23/64 TO 11/17/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 29 REEL(S) OF MAGNETIC TAPE

THESE 29 EXPERIMENTER-GENERATED 7-TRACK, 556-BPI, 800 MAGNETIC TAPES CONTAIN 36.864-SEC AVERAGED SEARCH COIL MAGNETOMETER DATA FROM ALL EXPERIMENT MODES. EACH FILE CONTAINS, IN ABOUT 1600 RECORDS, DATA FROM ONE ORBIT, WITH THE POSSIBILITY OF SOME OVERLAP AT THE END OF EACH FILE. AN INDEX TO EACH FILE IS CONTAINED ON MICROFILM IN DATA SET 64-054A-01D. IN EACH RECORD ARE TIME AND THE AVERAGED VECTOR FIELD NOISE AMPLITUDES FOR THE 10-, 30-, 100-, 300-, AND 800-HZ CENTER FREQUENCY CHANNELS. REAL-TIME DATA AND TAPE RECORDED PLAYBACK DATA WERE PROCESSED SEPARATELY. THOUGH THE TAPES CONTAIN CONSECUTIVE DATA, MERGING OF THESE TWO TYPES OF DATA WAS NOT PERFORMED. AS THE INSTRUMENT RESPONDED DIFFERENTLY TO BROADBAND AND MONOTONE SIGNALS, IT WAS NOT POSSIBLE TO CALIBRATE THE MEASURED FIELD SIGNAL MAGNITUDES WITHOUT INDEPENDENT KNOWLEDGE OF THE NATURE OF THE MEASURED SIGNAL. IN ANY CASE, THESE DATA ARE USEFUL AS INDICATORS OF THE TIMES AND PLACES OF MAGNETIC ACTIVITY, AND MAY BE USED TO IDENTIFY SHOCK FRONTS, MAGNETOPAUSE CROSSINGS, PLASMAPAUSE CROSSINGS, THE NATURE OF MAGNETOSPHERIC WAVES, ETC., TO THE NEAREST MINUTE.

SPACECRAFT COMMON NAME- OGO 2

ALTERNATE NAMES- OGO-C, POGO 1
S 50, 01620

NSSDC ID- 65-081A

LAUNCH DATE- 10/14/65

WEIGHT- 520. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 02/00/68

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC

EPOCH DATE- 10/15/65

ORBIT PERIOD- 104. MIN

INCLINATION- 87.356 DEG

PERIAPSIS- 414.000 KM ALT

APOAPSIS- 1510.00 KM ALT

OGO 2 WAS A LARGE OBSERVATORY INSTRUMENTED WITH 20 EXPERIMENTS DESIGNED TO MAKE SIMULTANEOUS, CORRELATIVE OBSERVATIONS OF AURORA AND AIRGLOW EMISSIONS, ENERGETIC PARTICLES, MAGNETIC FIELD VARIATIONS, IONOSPHERIC PROPERTIES, ETC., ESPECIALLY OVER THE POLAR AREAS. OGO 2 CONSISTED OF A MAIN BODY, GENERALLY PARALLELEPIPED IN FORM, TWO RECTANGULAR SOLAR PANELS, EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). IT ALSO INCLUDED SIX EXPERIMENT PACKAGES (EP) MOUNTED ON BOOMS EXTENDING GENERALLY FORE AND AFT OF THE SPACECRAFT ALONG THE Y AXIS. ANTENNA AND ATTITUDE CONTROL FIXTURES ALSO EXTENDED FROM SEPARATE AND/OR EP BOOMS. THE MAIN BODY WAS ATTITUDE-CONTROLLED BY USE OF HORIZON SCANNERS AND GAS JETS AND WAS DESIGNED TO POINT TOWARD THE EARTH (Z AXIS). THE AXIS CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS DESIGNED TO OSCILLATE IN ORDER TO REMAIN PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS ACTIVATED BY SUN SENSORS COULD ROTATE ABOUT THIS X AXIS IN ORDER TO OBTAIN MAXIMUM RADIATION FOR THE SOLAR CELLS AND CONCURRENTLY ORIENT THE SOEP PROPERLY. THE OPEP'S WERE REORIENTED ON EITHER END OF AN AXIS THAT WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE FORWARD END OF THE MAIN BODY. THESE OPEP SENSORS NORMALLY WERE MAINTAINED LOOKING FORWARD IN THE ORBITAL PLANE OF THE SATELLITE. TO MAINTAIN THIS ORIENTATION, THE OPEP AXIS COULD ROTATE OVER 90 DEG. IN ADDITION, AN ANGULAR DIFFERENCE OF OVER 90 DEG WAS POSSIBLE BETWEEN THE ORIENTATION OF THE UPPER AND LOWER OPEP PACKAGES. THE SOEP CONTAINED FOUR EXPERIMENTS, AND THE OPEP CONTAINED FIVE EXPERIMENTS. NEWTON'S PARTICLE EXPERIMENT FAILED ON LAUNCH, AND KREPLIN'S SCALAR X-RAY EXPERIMENT FAILED SHORTLY THEREAFTER. SOON AFTER ACHIEVING ORBIT, DIFFICULTIES IN MAINTAINING EARTH LOCK WITH HORIZON SCANNERS CAUSED EXHAUSTION OF ATTITUDE CONTROL GAS BY OCTOBER 23, 1965, 10 DAYS AFTER LAUNCH. AT THIS TIME, THE SPACECRAFT ENTERED A SPIN MODE (ABOUT 0.11 RPM) WITH A LARGE CONING ANGLE ABOUT THE PREVIOUSLY VERTICAL AXIS. FIVE EXPERIMENTS BECAME USELESS WHEN THE SATELLITE WENT INTO THIS SPIN MODE. SIX ADDITIONAL EXPERIMENTS WERE DEGRADED BY THIS LOSS OF ATTITUDE CONTROL. BY APRIL 1966, BOTH BATTERIES HAD FAILED, SO SUBSEQUENT OBSERVATIONS WERE LIMITED TO SUNLIT PORTIONS OF THE ORBIT. BY DECEMBER 1966, ONLY EIGHT EXPERIMENTS WERE OPERATIONAL, FIVE OF WHICH WERE NOT DEGRADED BY THE SPIN MODE OPERATION. BY APRIL 1967, THE TAPE RECORDERS HAD MALFUNCTIONED AND ONLY ONE THIRD OF THE RECORDED DATA COULD BE PROCESSED. SPACECRAFT POWER AND PERIODS OF OPERATIONAL SCHEDULING CONFLICTS CREATED SIX LARGE DATA GAPS SO THAT DATA WERE OBSERVED ON A TOTAL OF ABOUT 306 DAYS OF THE TWO-YR 18-DAY TOTAL SPAN OF OBSERVED SATELLITE DATA TO NOVEMBER 1, 1967. THE DATA GAPS WERE -- (A) OCTOBER 24, 1965 TO NOVEMBER 5, 1965; (B) DECEMBER 6, 1965 TO JANUARY 7, 1966; (C) APRIL 9, 1966 TO JUNE 21, 1966; (D) SEPTEMBER 2, 1966 TO NOVEMBER 18, 1966; (E) DECEMBER 27, 1966 TO APRIL 11, 1967; AND (F) MAY 9, 1967 TO SEPTEMBER 19, 1967. THE SPACECRAFT WAS SHUT DOWN ON NOVEMBER 1, 1967 WITH EIGHT EXPERIMENTS STILL OPERATIONAL. IT WAS REACTIVATED FOR TWO WEEKS IN FEBRUARY 1968 TO OPERATE EXPERIMENT 5 (J. CAIN).

DATA SET NAME- SEARCH-COIL MAGNETOMETER SQUISH PLOTS ON
MICROFILM

NSSDC ID- 64-054A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 09/23/64 TO 03/10/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS REEL OF EXPERIMENTER-GENERATED 35-MM MICROFILM HAS 13 SEPARATE ABSCISSA-ORDINATE COMBINATIONS PLOTTED AGAINST COMMON TIME. THE REEL CONTAINS THE MAGNITUDE OF THE VECTOR -- 10-, 30-, 100-, AND 800-HZ DATA, AVERAGED OVER 147.45 SEC. THE 36.864-SEC AVERAGED 10-HZ Z CHANNEL IN SPACECRAFT COORDINATES (COMPONENT ALONG SPIN AXIS) AND AN INDICATOR OF THE DATA QUALITY ARE ALSO INCLUDED. AS WELL AS DATA FROM THIS INSTRUMENT, PROCESSED INTO TWO BANDS, VECTOR DATA (IN SPINNING SPACECRAFT COORDINATES) FOR FREQUENCIES GREATER THAN 0.2 HZ, AND VECTOR DATA FOR FREQUENCIES BETWEEN 0.15 AND 0.1 HZ ARE AVERAGED OVER 36.864 SEC. THESE DATA WERE RECEIVED IN AN EXTREMELY COMPRESSED FORMAT, AND BLOWN BACK TO A FULL-SIZE PLOT 6 FT IN LENGTH AND 1 FT IN WIDTH. THESE DATA CAN BE USED TO LOCATE REGIONS OF MAGNETIC ACTIVITY SUCH AS SHOCK FRONTS, MAGNETOPAUSE CROSSINGS, ETC., TO A CRUDE TIME OR SPATIAL SCALE. UNFORTUNATELY, MUCH OF THE FILM IS OF POOR QUALITY AND MAY BE DIFFICULT TO USE. SHORT PORTIONS OF THE DATA WHICH WERE ORIGINALLY OF POOR QUALITY WERE REFILMED AND ARE INCLUDED AT THE END OF THE ORIGINAL DATA SET. AN INDEX IN THE FRONT OF THE DATA SET IDENTIFIES THE INTERVALS THAT ARE NOT IN CHRONOLOGICAL ORDER.

CAIN, OGO 2

EXPERIMENT NAME- RUBIDIUM VAPOR MAGNETOMETER

NSSDC ID- 65-081A-05

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/02/67

PERSONNEL

PI - J.C. CAIN NASA-GSFC
GREENBELT, MD
OI - R.A. LANGFL NASA-GSFC
GREENBELT, MD

THE PRIMARY OBJECTIVES OF THIS EXPERIMENT WERE TO REFINe THE ANALYTICAL DESCRIPTION OF THE MAIN GEOMAGNETIC FIELD (AS PART OF THE U.S. CONTRIBUTION TO THE WORLD MAGNETIC SURVEY) AND TO MEASURE THE SECULAR CHANGE IN THE MAIN FIELD. THE DETECTOR SYSTEM CONSISTED OF TWO DUAL-CELL, OPTICALLY PUMPED, SELF-OSCILLATING, RUBIDIUM (85) VAPOR MAGNETOMETERS. THE OSCILLATION FREQUENCY (PROPORTIONAL TO THE AMBIENT FIELD MAGNITUDE) WAS COUNTED BY TWO ELECTRONIC SCALERS FOR ALTERNATE HALF-SECONDS. EACH SCALER WAS READ OUT ONCE IN EACH MAIN FRAME. SINCE THE SPACECRAFT OPERATED AT 4 KBS, 16 KBS, OR 64 KBS, THE MAIN FRAME WAS READ OUT IN 0.288, 0.072, OR 0.018 SEC. BECAUSE OF THE RATE DIFFERENCE BETWEEN THE HALF-SECOND SAMPLING TIMES AND THE TIMES BETWEEN READOUTS, THE SAME DATA POINT WAS OFTEN READ OUT MORE THAN ONCE. THE OSCILLATION FREQUENCY OF THE MAGNETOMETER WAS ALSO TRANSMITTED IN REAL TIME ON ONE CHANNEL OF THE SPACECRAFT'S SPECIAL PURPOSE TELEMETRY TO PROVIDE INFORMATION ON FIELD FLUCTUATIONS. THIS MAGNETOMETER SYSTEM MADE SCALAR MEASUREMENTS OVER A RANGE OF 15,000 TO 64,000 GAMMAS AND HAD PRECISION OF 0.5 TO 1.5 GAMMAS OVER THIS RANGE. SPACECRAFT FIELDS ARE EXPECTED TO INTRODUCE AN OFFSET INTO THE ABSOLUTE FIELD MEASUREMENT. IN SPIE OF THE SPACECRAFT ATTITUDE CONTROL SYSTEM PROBLEMS, THE MAGNETOMETER FUNCTIONED WELL. THE INSTRUMENT OPERATION WAS NOMINAL FOR THE FIRST SIX MONTHS OF THE SATELLITE LIFETIME, AFTER WHICH A FAILURE OF ONE SCALAR POWER SUPPLY CAUSED THE LOSS OF THE SPECIAL PURPOSE TELEMETRY SIGNAL AND HALF OF THE DIGITAL DATA. THE REDUCTION IN THE SCIENTIFIC USEFULNESS OF THE DATA RECEIVED FROM THE REMAINING SCALER WAS MINOR, HOWEVER, BECAUSE OF THE REDUNDANCIES BUILT INTO THE SYSTEM. THE REST OF THE DATA FROM THE MAGNETOMETER WERE OBTAINED WITH THE REMAINING SCALER UNTIL MAY 1967 AND THEN IN THE INTERVAL FROM SEPTEMBER 19 TO OCTOBER 2, 1967, DURING WHICH TIME DATA COLLECTION WAS VERY INTERMITTENT.

ALTITUDES, AND LONGITUDES INDICATED ON EACH PLOT. EACH PLOT COVERS 1.5 HR. OR ABOUT ONE ORBIT. THE DATA ARE CONTAINED ON TWO REELS OF 35-MM MICROFILM AND HAVE AN 80 PERCENT COVERAGE FOR THE FOLLOWING TIME PERIODS -- OCTOBER 14, 1965, TO OCTOBER 24, 1965, OCTOBER 29, 1965, TO APRIL 2, 1966, JUNE 11, 1966, TO JUNE 12, 1966, JUNE 29, 1966, TO AUGUST 4, 1966, NOVEMBER 22, 1966, TO DECEMBER 22, 1966, APRIL 11, 1967, TO MAY 8, 1967, AND SEPTEMBER 19, 1967, TO OCTOBER 2, 1967.

DATA SET NAME- COMPRESSED 0.5-SEC REDUCED MAGNETIC FIELD AVERAGES ON TAPE

NSSDC ID- 65-081A-05G

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/14/65 TO 10/02/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 4-REEL(S) OF MAGNETIC TAPE

THIS REDUCED DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF 0.5-SEC AVERAGES OF THE MAGNETIC FIELD MAGNITUDE EVERY 0.5 SEC OR EVERY 1 SEC. NO EPHEMERIS INFORMATION IS INCLUDED. THE DATA ARE CONTAINED ON FOUR 7-TRACK, 800-BPI, BINARY MAGNETIC TAPES. THESE TAPES WERE PRODUCED ON AN IBM 7094. THE DATA ON EACH TAPE ARE CONTAINED IN ONE FILE OF VARIABLE-LENGTH RECORDS. THE DATA ARE TIME ORDERED, AND TIME IS EXPRESSED IN JULIAN DAY AND MSEC OF THE JULIAN DAY. A FORTRAN IV PROGRAM IS AVAILABLE TO COMPUTE THE DIFFERENCE BETWEEN THE OBSERVED FIELD AND EITHER THE GEOMAGNETIC FIELD MODEL THAT USES THE POGO 10/68 COEFFICIENTS OR THE MODEL THAT USES THE GSFC 12/66 COEFFICIENTS. THE COEFFICIENTS AND THE EPHEMERIS TAPE REQUIRED FOR THIS PROGRAM ARE AVAILABLE. THE EPHEMERIS TAPE IS 7-TRACK, BINARY, WRITTEN AT 556 BPI AND PRODUCED ON A 7094. IT CONTAINS ONE FILE.

DATA SET NAME- 0.5-SEC AVERAGES OF MAGNETIC FIELD MAGNITUDE SAMPLED EVERY 10 SEC ON TAPE

NSSDC ID- 65-081A-05H

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/14/65 TO 10/02/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF 0.5-SEC AVERAGES OF THE MAGNETIC FIELD MAGNITUDE EVERY 10 SEC. NO EPHEMERIS INFORMATION IS INCLUDED. THE DATA ARE CONTAINED ON ONE 7-TRACK, 800-BPI, BINARY MAGNETIC TAPE. THIS TAPE WAS PRODUCED ON AN IBM 7094. THE DATA ARE CONTAINED IN ONE FILE OF VARIABLE-LENGTH RECORDS. THE DATA ARE TIME ORDERED, AND TIME IS EXPRESSED IN JULIAN DAY AND MSEC OF THE JULIAN DAY. A FORTRAN IV PROGRAM IS AVAILABLE TO COMPUTE THE DIFFERENCE BETWEEN THE OBSERVED FIELD AND EITHER THE GEOMAGNETIC FIELD MODEL THAT USES THE POGO 10/68 COEFFICIENTS OR THE MODEL THAT USES THE GSFC 12/66 COEFFICIENTS. THE COEFFICIENTS AND THE EPHEMERIS TAPE REQUIRED FOR THIS PROGRAM ARE AVAILABLE. THE EPHEMERIS TAPE IS 7-TRACK, BINARY, WRITTEN AT 556 BPI AND PRODUCED ON A 7094. IT CONTAINS ONE FILE.

DATA SET NAME- MICROFILM PLOTS OF REDUCED MAGNETIC AND DELTA FIELD (CAIN 12/66 GSFC MODEL) DATA

NSSDC ID- 65-081A-05C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/14/65 TO 01/22/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS REDUCED DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF PLOTS OF 0.5-SEC AVERAGES OF THE MAGNETIC FIELD MAGNITUDE AND PLOTS OF THE DIFFERENCE BETWEEN THE MEASURED FIELD AND THE CAIN (12/66) GSFC FIELD MODEL, APOGEE, PERIGEE, TIME, LONGITUDE, LATITUDE, AND SATELLITE ALTITUDE ARE MARKED ON EACH PLOT. THERE ARE SIX TIMES AND NINE LATITUDES, ALTITUDES, AND LONGITUDES INDICATED ON EACH PLOT. EACH PLOT COVERS 1.5 HR. OR ABOUT ONE ORBIT. THE DATA ARE CONTAINED ON ONE REEL OF 35-MM MICROFILM AND HAVE AN 80 PERCENT COVERAGE FOR THE TIME PERIOD INDICATED.

SPACECRAFT COMMON NAME- P 11-AS

ALTERNATE NAMES- 00851

NSSDC ID- 64-045B

LAUNCH DATE- 08/14/64

WEIGHT- 79. KG

STATUS OF OPERATION- UNKNOWN

DATE LAST USABLE DATA RECORDED- 09/01/65

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPOCH DATE- 08/16/64
ORBIT PERIOD- 127.4 MIN	INCLINATION- 95.67 DEG
PERIAPSIS- 275.000 KM ALT	APOAPSIS- 3748.00 KM ALT

DATA SET NAME- MICROFILM PLOTS OF REDUCED MAGNETIC AND DELTA FIELD (CAIN 10/68 POGO MODEL) DATA

NSSDC ID- 65-081A-05F

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/14/65 TO 10/02/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

THIS REDUCED DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF PLOTS OF 0.5-SEC AVERAGES OF THE MAGNETIC FIELD MAGNITUDE AND PLOTS OF THE DIFFERENCE BETWEEN THE MEASURED FIELD AND THE CAIN POGO (10/68) GSFC FIELD MODEL, APOGEE, PERIGEE, TIME, LONGITUDE, LATITUDE, AND SATELLITE ALTITUDE ARE MARKED ON EACH PLOT. THERE ARE SIX TIMES AND NINE LATITUDES,

P 11-AS WAS A POLAR ORBITING AIR FORCE SCIENTIFIC SATELLITE THAT CARRIED SIX EXPERIMENTS. INSTRUMENTATION ON BOARD INCLUDED SPECTROMETERS AND GEIGER TUBES TO MEASURE ELECTRONS AND PROTONS IN VARIOUS ENERGY RANGES (BOTH DIRECTIONAL AND OMMIDIRECTIONAL EXPERIMENTS), A FARADAY CUP, A VLF EXPERIMENT, AND A MAGNETOMETER. THE SPACECRAFT SPIN AXIS

P 11-AS/PIONEER 1/PIONEER 5

WAS APPROXIMATELY ALIGNED WITH THE EARTH'S SPIN AXIS. TELEMETRY CONSISTED OF FOUR DATA CHANNELS -- TWO TAPE RECORDED, TWO REAL TIME. EACH OF TWO COMMUTATORS HAD ONE REAL-TIME AND ONE TAPE RECORDED CHANNEL. THE SATELLITE OPERATED PERFECTLY FOR 2 WEEKS, THEN ONE OF THE COMMUTATORS TEMPORARILY STOPPED AND THEREAFTER OPERATED INTERMITTENTLY, FOUR WEEKS LATER, THE TAPE RECORDED CHANNEL ON THE OTHER COMMUTATOR FAILED. ON SEPTEMBER 1, 1966, THE TAPE RECORDER FAILED, AND VERY LITTLE SCIENTIFIC DATA WERE OBTAINED AFTER THAT DATE. TO SUMMARIZE TELEMETRY OPERATIONS, ONE REAL-TIME CHANNEL OPERATED THROUGHOUT THE LIFE OF THE SPACECRAFT. THE OTHER REAL-TIME CHANNEL AND ONE TAPE RECORDED CHANNEL OPERATED FOR 1751 ORBITS, OR 41 PERCENT OF THE SPACECRAFT LIFE, AND THE OTHER TAPE CHANNEL LASTED FOR THE FIRST 460 ORBITS, OR 11 PERCENT OF THE SPACECRAFT LIFE.

ORBIT TYPE- GEOCENTRIC
ORBIT PERIOD- 2584. MIN
PERIAPSIS- 0.00000 KM ALT
EPOCH DATE- 10/11/58
INCLINATION- DEG
APOAPSIS- 121091. KM ALT

PIONEER 1, THE SECOND AND MOST SUCCESSFUL OF THREE PROJECT ABLE SPACE PROBES, WAS INTENDED TO STUDY THE IONIZING RADIATION, COSMIC RAYS, MAGNETIC FIELDS, AND MICROMETEORITES IN THE VICINITY OF THE EARTH AND IN LUNAR ORBIT. IT CARRIED A TV SCANNER TO PHOTOGRAPH THE MOON'S SURFACE. IT WAS A BATTERY-POWERED SPACECRAFT WITH A MAGNETIC DIPOLE FOR TV TRANSMISSION AND AN ELECTRIC DIPOLE FOR OTHER TELEMETRY TRANSMISSION AND DOPPLER INFORMATION. DUE TO A LAUNCH VEHICLE MALFUNCTION, THE CYLINDRICAL SPACECRAFT ATTAINED ONLY A BALLISTIC TRAJECTORY WITH A LOCAL TIME OF APOGEE AROUND 1300 HR. THE SPACECRAFT WAS SPIN STABILIZED AT 1.8 RPS, AND THE SPIN AXIS DIRECTION WAS APPROXIMATELY PERPENDICULAR TO THE GEOMAGNETIC MERIDIAN PLANES OF THE TRAJECTORY. THE REAL-TIME TRANSMISSION WAS OBTAINED FOR ABOUT 75 PERCENT OF THE FLIGHT, BUT THE PERCENTAGE OF DATA RECORDED FOR EACH EXPERIMENT WAS VARIABLE. EXCEPT FOR THE FIRST HOUR OF FLIGHT, THE SIGNAL TO NOISE RATIO WAS GOOD. THE SPACECRAFT REENTERED THE EARTH'S ATMOSPHERE ON OCTOBER 13, 1958, AT 0400 UT, AFTER RETURNING A SMALL QUANTITY OF USEFUL SCIENTIFIC INFORMATION.

SCARF, P 11-AS

EXPERIMENT NAME- VLF ELECTRIC FIELD DETECTOR

NSSDC ID- 64-0458-06

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 09/13/64

PERSONNEL

PI - F.L. SCARF TRV SYSTEMS GROUP
REDONDO BEACH, CA

THE INSTRUMENTATION FOR THIS EXPERIMENT CONSISTED OF A 45.72-CM WHIP ANTENNA ALIGNED WITH THE SPACECRAFT SPIN AXIS AND CONNECTED TO FOUR BANDPASS CHANNELS EACH WITH A BANDWIDTH OF 15 PERCENT OF THE CENTER FREQUENCY. THE EXPERIMENT, DESIGNED TO MEASURE AMBIENT ELECTRIC FIELDS, HAD A NOISE THRESHOLD OF 400 MICROVOLTS PER METER. A 1 V/M OVERCOUNTER TO INDICATE STRONG EMISSIONS WAS INCLUDED. THE EXPERIMENT HAD EIGHT DATA POINTS PER 1.068 MIN TAKEN IN THE FOLLOWING SEQUENCE -- 1.7, 3.9, 7.35, 14.5 KHZ. OVERCOUNTER, 7.35, 3.9, AND 1.7 KHZ. EACH POINT WAS SEPARATED BY 1 SEC. IN REAL TIME. TRANSMISSION OCCURRED OVER A FEW SPECIFIC GEOGRAPHIC LOCATIONS FOR PERIODS FROM 5 TO 15 MIN EACH. THE ONBOARD TAPE RECORDER PERIODICALLY ALLOWED SAMPLING OF THE FIELDS FOR A COMPLETE ORBIT. DURING PLAYBACK OF THE TAPE DATA, MALFUNCTIONS IN THE SYSTEM CAUSED DATA FROM ALL BUT 16 COMPLETE ORBITS TO BE DEGRADED. ON SEPTEMBER 13, 1964, A DRIFT IN THE VOLTAGE-CONTROLLED OSCILLATOR FREQUENCY FOR THE TAPE RECORDED CHANNEL LIMITED SUBSEQUENT TAPE DATA OBTAINED TO SPORADIC AND NOISY RECORDINGS. A MORE COMPLETE DESCRIPTION OF THE EXPERIMENT CAN BE OBTAINED FROM RADIO SCIENCE, 1, PAGE 939, 1966.

DATA SET NAME- PLOTS OF ELECTRIC FIELD AMPLITUDE ON MICROFILM

NSSDC ID- 64-0458-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/15/64 TO 09/13/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF A SINGLE REEL OF 35-MM MICROFILM CONTAINING TAPE RECORDED DATA FOR 16 ORBITS OCCURRING BETWEEN AUGUST 15, 1964, AND SEPTEMBER 13, 1964. THE LAST ORBIT OF THIS DATA SET CORRESPONDS TO THE 339TH SATELLITE ORBIT. ON THE MICROFILM ARE PLOTS OF ELECTRIC FIELD AMPLITUDES (IN MV/M) IN EACH OF THE FOUR FREQUENCY INTERVALS, AS WELL AS PLOTS OF EPHEMERIS INFORMATION (ALTITUDE, L) AND OF PRECIPITATING ELECTRON DATA.

SPACECRAFT COMMON NAME- PIONEER 1

ALTERNATE NAMES- 1959 FTA 1, ABLE 1
00110

NSSDC ID- 58-007A

LAUNCH DATE- 10/11/58 WEIGHT- 34. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/13/58

SONETT, PIONEER 1

EXPERIMENT NAME- SINGLE AXIS SEARCH-COIL MAGNETOMETER

NSSDC ID- 58-007A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/11/58

PERSONNEL

PI - C.P. SONETT U OF ARIZONA
TUCSON, AZ

THIS MAGNETOMETER WAS DESIGNED TO STUDY THE MAGNETIC FIELD BETWEEN THE EARTH AND THE MOON AND TO TEST FOR A LUNAR MAGNETIC FIELD. DUE TO A LAUNCH VEHICLE MALFUNCTION, IT WAS USED TO STUDY THE GEOMAGNETIC FIELD ALONG THE TRAJECTORY. THE MAGNETOMETER WAS A SINGLE SEARCH COIL DESIGNED TO MEASURE THE COMPONENT OF THE MAGNETIC FIELD PERPENDICULAR TO THE SPIN AXIS. THE RETURNED SIGNAL WAS DIGITIZED AT 52 SAMPLES PER SEC. THE MAGNETOMETER HAD A RANGE OF 6 MICROGAUSS TO 12 MILLIGAUSS. NO INFLIGHT CALIBRATION WAS PROVIDED FOR. THE MAGNETOMETER OPERATED ON OCTOBER 11, 1958, FOR PERIODS BETWEEN 0945 AND 1106 UT AND BETWEEN 1543 AND 1719 UT WHEN THE SPACECRAFT WAS AT RADIAL DISTANCES OF 3.7 TO 7.0 AND 12.3 TO 14.8 EARTH RADII. THE EXPERIMENT IS DESCRIBED IN DETAIL BY SONETT, JGR, VOL 67, P 1191, 1962.

DATA SET NAME- PLOTS OF THE PERPENDICULAR COMPONENT OF THE MAGNETIC FIELD ON MICROFILM

NSSDC ID- 58-007A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 10/11/58 TO 10/11/58
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF 14 MICROFILMED PLOTS OF THE PERPENDICULAR COMPONENT OF THE MAGNETIC FIELD (RELATIVE TO THE SPACECRAFT SPIN AXIS) VS TIME (SEC). LIMITED INFORMATION ON THE FIELD DIRECTION IS ALSO INCLUDED ON THESE PLOTS. THESE DATA ARE ON ONE REEL OF 35-MM MICROFILM. THE DATA COVER THE TIME PERIODS FROM 0954 TO 1106 UT AND FROM 1543 TO 1719 UT ON OCTOBER 11, 1958, WITH 90 PERCENT COVERAGE.

SPACECRAFT COMMON NAME- PIONEER 5

ALTERNATE NAMES- 1960 ALPHA 1, 00027

NSSDC ID- 60-001A

LAUNCH DATE- 03/11/60 WEIGHT- 43. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 04/30/60

ORBIT TYPE- HELIOCENTRIC
ORBIT PERIOD- 311.6 DAYS
PERIAPSIS- 0.7061 AU RAD

EPOCH DATE- 03/11/60
INCLINATION- 3.35 DEG
APOAPSIS- 0.9931 AU RAD

PIONEER 5 (1960 ALPHA 1) WAS A SPIN-STABILIZED SPACE PROBE USED TO INVESTIGATE INTERPLANETARY SPACE BETWEEN THE ORBITS OF EARTH AND VENUS. THE SPACECRAFT MEASURED MAGNETIC FIELD PHENOMENA, SOLAR FLARE PARTICLES, AND IONIZATION IN THE INTERPLANETARY REGION. THE DIGITAL DATA WERE TRANSMITTED AT 1, 8, AND 64 BPS, DEPENDING ON THE DISTANCE OF THE SPACECRAFT FROM THE EARTH AND THE SIZE OF THE RECEIVING ANTENNA. WEIGHT LIMITATIONS ON THE SOLAR CELLS PREVENTED CONTINUOUS OPERATION OF THE TELEMETRY TRANSMITTERS. ABOUT FOUR OPERATIONS OF 25-MIN DURATION WERE SCHEDULED PER DAY WITH OCCASIONAL INCREASES DURING TIMES OF SPECIAL INTEREST. A TOTAL OF 138.9 HR OF OPERATION WAS COMPLETED, AND OVER 3 MILLION BINARY BITS OF DATA WERE RECEIVED. THE MAJOR PORTION OF THE DATA WAS RECEIVED AT THE MANCHESTER AND HAWAII TRACKING STATIONS BECAUSE THEIR ANTENNAS PROVIDED GRID RECEPTION. PIONEER 5 PERFORMED NORMALLY UNTIL APRIL 30, 1960, AFTER WHICH TELEMETRY TRANSMISSION BECAME TOO INFREQUENT FOR ANY SIGNIFICANT ADDITION TO THE DATA. THE SPACECRAFT ESTABLISHED A COMMUNICATIONS LINK WITH THE EARTH FROM A RECORD DISTANCE OF 22.5 MILLION MILES ON JUNE 26, 1960, WHICH WAS THE LAST DAY OF TRANSMISSION.

GREENSTADT, PIONEER 5

EXPERIMENT NAME- SEARCH-COIL MAGNETOMETER

NSSDC ID- 60-001A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/06/60

PERSONNEL

PI - E.W. GREENSTADT	TRW SYSTEMS GROUP REDONDO BEACH, CA
OI - D.L. JUDGE	U OF SOUTHERN CALIF LOS ANGELES, CA
OI - C.P. SONETT	U OF ARIZONA TUCSON, AZ

THIS SEARCH COIL MAGNETOMETER, WHICH WAS SIMILAR TO THOSE FLOWN ON PIONEER 1 AND EXPLORER 6, WAS DESIGNED TO STUDY THE INTERPLANETARY MAGNETIC FIELD. THE DETECTOR CONSISTED OF A SINGLE SEARCH COIL THAT WAS MOUNTED ON THE SPACECRAFT SO THAT IT MEASURED THE MAGNETIC FIELD PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. THE MAGNETOMETER COULD MEASURE FIELDS FROM 1 MICROGAUSS TO 12 MILLIGAUSS. NO INFLIGHT CALIBRATION WAS PROVIDED FOR. THE EXPERIMENT HAD BOTH DIGITAL AND ANALOG OUTPUTS. THE MAGNETOMETER AMPLITUDE AND PHASE WERE SAMPLED CONTINUOUSLY FOR ANALOG TRANSMISSION AND INTERMITTENTLY (EVERY 96, 12, AND 1.5 SEC, DEPENDING ON SATELLITE BIT RATE) FOR DIGITAL TRANSMISSION. APPROXIMATELY 21,000 DIGITAL READINGS OF THE MAGNETIC FIELD AMPLITUDE WERE OBTAINED. THE LAST DATA WERE TAKEN ON MAY 6, 1960. HOWEVER, NO INFORMATION WAS OBTAINED ON THE PHASE ANGLE OF THE FIELD ABOUT THE SPIN AXIS. SEE COLEMAN, JGR, VOL 69, P 3051, 1964, FOR FURTHER DETAILS.

DATA SET NAME- TABLES AND PLOTS OF MAGNETIC FIELD
AMPLITUDE ON MICROFILM

NSSDC ID- 60-001A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 03/11/60 TO 05/06/60
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THESE REDUCED DATA ARE AVAILABLE IN THE TRW PUBLICATION, "A COMPENDIUM AND CRITIQUE OF PIONEER V MAGNETOMETER DATA," BY EUGENE W. GREENSTADT, SPACE TECHNOLOGY LABORATORIES, 9890-5001-RU000, JANUARY 12, 1965. THE DATA ARE ALSO AVAILABLE AT NSSDC ON ONE REEL OF 16-MM MICROFILM. THE DATA ARE COMPILED ACCORDING TO INDIVIDUAL DIGITAL TELEMETRY TRANSMISSION PERIODS, AND THESE TIME PERIODS ARE ORDERED CHRONOLOGICALLY. WITHIN EACH TELEMETRY TRANSMISSION PERIOD ALL THE DIGITAL OUTPUTS ARE LISTED IN DECREASING ORDER, AND THE NUMBER OF TIMES THAT NUMBER WAS TRANSMITTED IS INDICATED. THE FOLLOWING INFORMATION IS CONTAINED ON TABLES IN THE PUBLICATION (AND ON MICROFILM) -- DATE, TIME (BEGINNING AND END), TRANSMISSION SEQUENCE NUMBER, BIT RATE, DIGITAL READING, NUMBER OF DATA POINTS AT EACH DIGITAL READING AND THE TOTAL FOR EACH TRANSMISSION, AND MAGNITUDE OF THE FIELD (IN GAMMAS) AT THE CENTER OF THE DIGITAL READING. THE TABLES HAVE A 10 PERCENT COVERAGE FOR THE PERIOD INDICATED. ALSO INCLUDED WITH THESE DATA ARE SOME STATISTICAL PLOTS. FOR EACH DAY FROM MARCH 12, 1960, TO APRIL 30, 1960, THE MEASURED FIELD IN GAMMAS VS THE PERCENT OF THE MEASURED POINTS THAT LIE BELOW VARIOUS VALUES OF THE MEASURED FIELD IS PLOTTED.

SPACECRAFT COMMON NAME- PIONEER 6

ALTERNATE NAMES- PIONEER-A, 01841

NSSDC ID- 65-105A

LAUNCH DATE- 12/16/65

WEIGHT- 146. KG

STATUS OF OPERATION- PARTIAL

ORBIT PARAMETERS

ORBIT TYPE- HELIOCENTRIC
ORBIT PERIOD- 311.3 DAYS
PERIAPSIS- .8143 AU RAD

EPOCH DATE- 12/16/65
INCLINATION- .1639 DEG
APOAPSIS- .936 AU RAD

PIONEER 6 WAS THE FIRST IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, AND SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS ON A CONTINUING BASIS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE. ITS EXPERIMENTS STUDIED THE POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, AND THE INTERPLANETARY MAGNETIC FIELD. ITS MAIN ANTENNA WAS A HIGH-GAIN DIRECTIONAL ANTENNA. THE SPACECRAFT WAS SPIN-STABILIZED AT ABOUT 60 RPM, AND THE SPIN AXIS WAS PERPENDICULAR TO THE ECLIPTIC PLANE AND POINTED TOWARD THE SOUTH ECLIPTIC POLE. BY GROUND COMMAND, ONE OF FIVE BIT RATES, ONE OF FOUR DATA FORMATS, AND ONE OF FOUR OPERATING MODES COULD BE SELECTED. THE FIVE BIT RATES WERE 512, 256, 64, 16, AND 8 BPS. THREE OF THE FOUR DATA FORMATS CONTAINED PRIMARILY SCIENTIFIC DATA AND CONSISTED OF THIRTY-TWO 7-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS FOR USE AT THE TWO HIGHEST BIT RATES. ANOTHER WAS FOR USE AT THE THREE LOWEST BIT RATES. THE THIRD CONTAINED DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT CONTAINED MAINLY ENGINEERING DATA. THE FOUR OPERATING MODES WERE REAL TIME, TELEMETRY STORE, DUTY CYCLE STORE, AND MEMORY READOUT. IN THE REAL-TIME MODE, DATA WERE SAMPLED AND TRANSMITTED DIRECTLY (WITHOUT STORAGE) AS SPECIFIED BY THE DATA FORMAT AND BIT RATE SELECTED. IN THE TELEMETRY STORE MODE, DATA WERE STORED AND TRANSMITTED SIMULTANEOUSLY IN THE FORMAT AND AT THE BIT RATE SELECTED. IN THE DUTY CYCLE STORE MODE, A SINGLE FRAME OF SCIENTIFIC DATA WAS COLLECTED AND STORED AT A RATE OF 512 BPS. THE TIME INTERVAL BETWEEN THE COLLECTION AND STORAGE OF SUCCESSIVE FRAMES COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS UP TO 19 HR, AS LIMITED BY THE BIT STORAGE CAPACITY. IN THE MEMORY READOUT MODE, DATA WERE READ OUT AT WHATEVER BIT RATE WAS APPROPRIATE TO THE SATELLITE DISTANCE FROM THE EARTH. THE BIT RATE WAS 512 BPS FROM DECEMBER 16, 1965, TO FEBRUARY 28, 1966, 256 BPS FROM MARCH 1, 1966, TO MARCH 17, 1966, 64 BPS FROM MARCH 18, 1966, TO APRIL 13, 1966, AND 16 OR 8 BPS FOR ALL SUBSEQUENT PERIODS. THE REAL-TIME TRANSMISSION MODE WAS USED PREDOMINANTLY THROUGHOUT THE FLIGHT WHEN TRACKING STATIONS WERE AVAILABLE. BETWEEN TRACKING PERIODS, THE DUTY CYCLE STORE MODE WAS GENERALLY USED. DATA COVERAGE AMOUNTED TO ALMOST 100 PERCENT FOR THE FIRST 23 WEEKS AFTER LAUNCH. THEN THE COVERAGE DROPPED TO BETWEEN 10 AND 20 PERCENT UNTIL NOVEMBER, 1969 AT WHICH TIME THE DATA COVERAGE ROSE TO BETWEEN 20 AND 60 PERCENT. THERE HAS BEEN ALMOST NO TRACKING SINCE JULY, 1972. A LEAK IN THE ATTITUDE GAS SYSTEM PREVENTED FURTHER ATTITUDE CORRECTIONS FOLLOWING AN ADJUSTMENT MADE ON JUNE 9, 1966. HOWEVER, THE SENSORS THAT DETERMINED THE SPIN AXIS DIRECTION CONTINUED TO WORK AND INDICATED THAT THE SPIN AXIS DIRECTION REMAINED CLOSE TO NOMINAL DURING THE MAJOR PERIODS OF DATA ACQUISITION.

DATA SET NAME- COMPRESSED EPHEMERIS DATA ON MAGNETIC TAPE

NSSDC ID- 65-105A-00F

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/16/65 TO 05/16/72
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET WHICH CONTAINS COMPLETE TRAJECTORY INFORMATION WAS GENERATED AT NSSDC BY TAKING THE MOST ACCURATE INFORMATION FROM EACH EPHEMERIS TAPE PROVIDED BY JPL (DATA SET 65-105A-00E) AND ELIMINATING OVERLAP. THE DATA SET CONSISTS OF ONE 7-TRACK, IBM 7094, 800-BPI, BINARY MAGNETIC TAPE. EACH LOGICAL RECORD CONTAINS 89 WORDS, AND EACH PHYSICAL RECORD CONTAINS 20 LOGICAL RECORDS. THE FOLLOWING INFORMATION IS AVAILABLE IN INTERVALS OF ONE DAY (EXCEPT FOR PERIODS WHEN THE SPACECRAFT IS CLOSE TO THE EARTH, WHEN THE INTERVAL MAY BE SHORTER) -- (1) DATE, (2) TIME, (3) DISTANCE FROM THE EARTH TO THE PROBE, (4) DISTANCE FROM THE EARTH TO THE SUN, (5) DISTANCE FROM THE EARTH TO THE MOON, (6) DISTANCE FROM THE SUN TO THE PROBE, (7) GEOCENTRIC RIGHT ASCENSION AND DECLINATION OF PROBE, SUN, AND MOON, (8) GEOCENTRIC LATITUDE, LONGITUDE, AND ALTITUDE ABOVE THE EARTH, (9) EARTH-SUN-PROBE ANGLE, (10) EARTH-PROBE-SUN ANGLE, (11) SUN-PROBE-NEAR LNB OF EARTH ANGLE (SUN-PROBE-EARTH ANGLE MINUS THE ANGULAR SEMI-DIAMETER OF

PIONEER 6/VANGUARD 3

EARTH WHERE THE ANGULAR SEMI-DIAMETER WOULD BE THE PROBE-CENTERED ANGLE BETWEEN EARTH LIMB AND CENTER OF EARTH), (12) MOON-EARTH-PROBE ANGLE, (13) MOON-PROBE-SUN ANGLE, (14) EARTH-PROBE-MOON ANGLE, (15) CANOPUS-PROBE-EARTH ANGLE, (16) CANOPUS-PROBE-SUN ANGLE, (17) ANGLE MADE BY THE SUN TO PROBE VECTOR AND THE ECLIPTIC PLANE OF DATE, (18) X, Y, Z COMPONENTS OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM (SUN-CENTERED SYSTEM, X AXIS IS ALONG THE SUN-TO-EARTH VECTOR, Z AXIS IS TOWARD ECLIPTIC NORTH POLE), (19) LONGITUDE OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM, (20) X, Y, Z COMPONENTS OF SPACECRAFT IN GEOCENTRIC, SELENOCENTRIC, HELIOCENTRIC VENUS-CENTERED, MARS-CENTERED, SATURN-CENTERED, AND JUPITER-CENTERED INERTIAL COORDINATE (X POINTS TO VERNAL EQUINOX, Z POINTS ALONG THE NORTH POLE VECTOR WITH THE REFERENCE PLANE BEING THE EARTH'S TRUE EQUATOR OF DATE), (21) MAGNITUDE OF THE VELOCITY VECTOR AND X, Y, Z COMPONENTS OF THE VELOCITY VECTOR IN GEOCENTRIC INERTIAL COORDINATES, (22) GEOCENTRIC INERTIAL PATH ANGLE (ANGLE MADE BY PROBE VELOCITY VECTOR AND PLANE NORMAL TO EARTH-TO-PROBE VECTOR), (23) GEOCENTRIC INERTIAL AZIMUTH ANGLE (ANGLE BETWEEN THE PLANE DEFINED BY THE EARTH-TO-PROBE VECTOR AND THE GEOCENTRIC INERTIAL VELOCITY VECTOR), (24) HELIOCENTRIC INERTIAL VELOCITY, (25) HELIOCENTRIC INERTIAL PATH ANGLE (ANGLE MADE BY THE HELIOCENTRIC VELOCITY VECTOR AND THE PLANE NORMAL TO THE SUN-TO-PROBE VECTOR), (26) CELESTIAL LONGITUDE OF PROBE (ANGULAR DISTANCE MEASURED COUNTERCLOCKWISE ALONG THE ECLIPTIC PLANE OF DATE FROM THE VERNAL EQUINOX TO THE PROJECTION OF THE SUN-PROBE VECTOR ON A PLANE AS VIEWED FROM THE ECLIPTIC NORTH POLE), (27) CELESTIAL LONGITUDE OF EARTH, (28) CELESTIAL LATITUDE OF EARTH, AND (29) VARIOUS CLOCK ANGLES AND HINGE AND SWIVEL ANGLES WHICH ARE DESCRIBED IN THE DOCUMENTATION.

NESS, PIONEER 6

EXPERIMENT NAME- UNIAXIAL FLUXGATE MAGNETOMETER

NSSDC ID- 65-105A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 07/06/70

PERSONNEL

PI - N.F. NESS NASA-GSFC
GREENBELT, MD

A SINGLE, BOOM-MOUNTED UNIAXIAL FLUXGATE MAGNETOMETER, WITH A DYNAMIC RANGE OF PLUS OR MINUS 64 GAMMAS AND PLUS OR MINUS 0.25-GAMMA RESOLUTION, OBTAINED A COMPLETE VECTOR MAGNETIC FIELD MEASUREMENT BY MEANS OF THREE MEASUREMENTS TAKEN AT EQUAL TIME INTERVALS DURING EACH SPACECRAFT SPIN PERIOD (APPROXIMATELY 1 SEC). AT TELEMETRY BIT RATES LESS THAN OR EQUAL TO 16 BPS, AVERAGES WERE COMPUTED ON BOARD FOR TRANSMISSION TO EARTH. THE INSTRUMENT WORKED WELL FROM LAUNCH TO JULY 6, 1970. NO USEFUL DATA WERE OBTAINED AFTER THAT DATE. FOR FURTHER DETAILS, SEE NESS ET AL. JGR, VOL 71, P 3305, 1966.

DATA SET NAME- HOURLY AVERAGED VECTOR MAGNETIC FIELD
DATA ON MICROFILM

NSSDC ID- 65-105A-010

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 12/17/65 TO 09/05/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF A MICROFILMED (ONE 35-MM REEL) VERSION OF GODDARD X DOCUMENT "MAGNETIC FIELD MEASUREMENTS BY PIONEER 6, 1-HOURLY AVERAGES" (X-690-71-449) BY N. F. NESS AND F. W. OTTENS. DATA PRESENTED IN THE DOCUMENT INCLUDE HOURLY AVERAGED MAGNETIC FIELD PLOTS (MAGNITUDE, LATITUDE, LONGITUDE) IN SPACECRAFT-CENTERED SOLAR ECLIPTIC COORDINATES. TIME COVERAGE IS NEARLY COMPLETE FROM LAUNCH UNTIL MAY 22, 1966. AFTER WHICH THE COVERAGE, AS LIMITED BY SPACECRAFT TELEMETRY, IS VERY SPOTTY. EACH OF 21 FRAMES CONTAINS PLOTS FOR ONE SOLAR ROTATION COVERING THE INTERVAL DECEMBER 17, 1965 THROUGH SEPTEMBER 5, 1967.

SPACECRAFT COMMON NAME- VANGUARD 3

ALTERNATE NAMES- 1959 ETA 1, 00020
VANGUARD TV4 BACKUP

NSSDC ID- 59-007A

LAUNCH DATE- 09/18/59 WEIGHT- 22.7 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/11/59

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 09/21/59
ORBIT PERIOD- 130.12 MIN INCLINATION- 33.34 DEG
PERIAPSIS- 520.1 KM ALT APOAPSIS- 3734.4 KM ALT

VANGUARD 3 WAS LAUNCHED BY A VANGUARD ROCKET FROM THE EASTERN TEST RANGE INTO A GEOCENTRIC ORBIT. THE OBJECTIVES OF THE FLIGHT WERE TO MEASURE THE EARTH'S MAGNETIC FIELD, THE SOLAR X-RAY RADIATION AND ITS EFFECTS ON THE EARTH'S ATMOSPHERE, AND THE NEAR-EARTH MICROMETEOROID ENVIRONMENT. INSTRUMENTATION INCLUDED A PROTON MAGNETOMETER, X-RAY IONIZATION CHAMBERS, AND VARIOUS MICROMETEOROID DETECTORS. THE SPACECRAFT WAS A 50.8-CM-DIAMETER MAGNESIUM SPHERE. THE MAGNETOMETER WAS HOUSED IN A GLASS FIBER PHENOLIC RESIN CONICAL TUBE ATTACHED TO THE SPHERE. DATA TRANSMISSION STOPPED ON DECEMBER 11, 1959. AFTER 84 DAYS OF OPERATION, THE DATA OBTAINED PROVIDED A COMPREHENSIVE SURVEY OF THE EARTH'S MAGNETIC FIELD OVER THE AREA COVERED, DEFINED THE LOWER EDGE OF THE VAN ALLEN RADIATION BELT, AND PROVIDED A COUNT OF MICROMETEOROID IMPACTS. THE SPACECRAFT IS STILL IN ORBIT WITH AN EXPECTED LIFETIME OF 300 YEARS.

HEPPNER, VANGUARD 3

EXPERIMENT NAME- PROTON PRECESSIONAL MAGNETOMETER

NSSDC ID- 59-007A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/11/59

PERSONNEL

PI - J.P. HEPPNER NASA-GSFC
GREENBELT, MD

THIS EXPERIMENT EMPLOYED A PROTON PRECESSIONAL MAGNETOMETER TO MEASURE THE EARTH'S MAGNETIC FIELD AT ALTITUDES RANGING FROM 510 TO 3750 KM AND AT LATITUDES BETWEEN PLUS OR MINUS 33.4 DEG. THE MEASUREMENTS WERE MADE ON COMMAND AS THE SPACECRAFT PASSED SEVEN MINITRACK STATIONS IN NORTH AND SOUTH AMERICA AND ONE EACH IN AUSTRALIA AND SOUTH AFRICA. WHEN SWITCHED ON BY COMMAND, THE POLARIZATION COIL AROUND THE PROTON SAMPLE (NORMAL HEXANE) WAS TURNED ON FOR 2 SEC FOLLOWED BY A 2-SEC READOUT OF THE PRECESSION SIGNAL. SEVERAL READINGS WERE TAKEN DURING EACH PASS OVER A STATION. THE EXPERIMENT WORKED WELL DURING ITS 85-DAY ACTIVE LIFE, AND APPROXIMATELY 4300 READINGS WERE RECORDED. THE EXPERIMENT IS DESCRIBED IN NASA TN D-1418, "MEASUREMENTS OF THE GEOMAGNETIC FIELD BY THE VANGUARD 3 SATELLITE," BY J. C. CAIN ET AL., OCTOBER 1962. THE OVERALL ACCURACY OF THE FIELD MEASUREMENTS IS ABOUT 10 GAMMAS.

DATA SET NAME- REDUCED SCALAR MAGNETIC FIELD VALUES ON
MAGNETIC TAPE

NSSDC ID- 59-007A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 09/18/59 TO 12/11/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET SUPPLIED BY THE EXPERIMENTER, IS ON A 7-TRACK BCD MAGNETIC TAPE THAT CONTAINS THE COMPLETE SET OF FINAL REDUCED DATA FROM THE PROTON PRECESSIONAL MAGNETOMETER. EACH RECORD IS 84 CHARACTERS LONG AND CONTAINS (1) STATION NUMBER, (2) DATE AND TIME TO 1 SEC, (3) THE MEASURED FIELD STRENGTH IN GAMMAS, (4) THE STANDARD DEVIATION OF THE MEASUREMENT, (5) THE POSITION OF THE SATELLITE, (6) THE FIELD STRENGTH COMPUTED FOR SEVERAL REFERENCED MODELS, AND (7) DATA QUALITY FLAGS. THE TAPE CONTAINS ABOUT 4000 RECORDS. IT IS DESCRIBED IN "MAGNETIC FIELD MEASUREMENTS DATA USER'S MANUAL", NSSDC, JUNE 1964, WHICH INCLUDES A DESCRIPTION OF THE EXPERIMENT AND TAPE FORMAT.

DATA SET NAME- REDUCED SCALAR MAGNETIC FIELD VALUES IN
PUBLISHED DOCUMENT

NSSDC ID- 59-007A-01B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 09/18/59 TO 12/11/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 3 CARDS OF B/W MICROFICHE

THIS DATA SET IS THE PUBLISHED REPORT, *MEASUREMENTS OF
THE GEOMAGNETIC FIELD BY THE VANGUARD 3 SATELLITE*, J. C. CAIN
ET AL., NASA TND-1418, OCTOBER 1962. THE REPORT INCLUDES A
DESCRIPTION OF THE EXPERIMENT, THE DATA PROCESSING, AND THE
APPROXIMATELY 4000 FIELD MEASUREMENTS OBTAINED ALONG WITH
STATION, TIME, SATELLITE LOCATION, AND REFERENCE FIELD MODEL
VALUES.

SPACECRAFT COMMON NAME- 1963-038C
 ALTERNATE NAMES- SN 39, SE 1
 00671
 NSSDC ID- 63-038C
 LAUNCH DATE- 09/28/63 WEIGHT- 59. KG
 STATUS OF OPERATION- OPERATIONAL OFF
 DATE LAST DATA RECORDED- 11/00/74
 ORBIT PARAMETERS
 ORBIT TYPE- GEOCENTRIC EPOCH DATE- 09/28/63
 ORBIT PERIOD- 107.5 MIN INCLINATION- 89.94 DEG
 PERIAPSIS- 1067.00 KM ALT APOAPSIS- 1147.00 KM ALT

THE MAGNETICALLY ALIGNED 1963-038C SPACECRAFT WAS DESIGNED TO MEASURE ENERGETIC CHARGED PARTICLES, MAGNETIC FIELDS, AND THE SOLAR SPECTRUM, AND TO ACQUIRE GEODETIC DATA. AFTER AUGUST 1969, THE SATELLITE, WHICH ATTAINED A NEARLY CIRCULAR POLAR ORBIT, SAMPLED ITS ENVIRONMENT ONLY INFREQUENTLY. THE LAST DATA WERE TRANSMITTED DURING NOVEMBER 1974. THE MISSION WAS HIGHLY SUCCESSFUL.

BOSTRUM, 1963-038C
 EXPERIMENT NAME- ENERGETIC ELECTRON AND PROTON DETECTORS
 NSSDC ID- 63-038C-01
 STATUS OF OPERATION- PARTIAL
 PERSONNEL
 PI - C.O. BOSTRUM APPLIED PHYSICS LAB
 SILVER SPRING, MD
 DI - D.J. WILLIAMS NOAA-ERL
 BOULDER, CO

THE CHARGED PARTICLE EXPERIMENT ON 1963-038C CONSISTED OF AN ARRAY OF SOLID-STATE DETECTORS. FIVE DETECTORS COMPRISED AN ELECTRON SPECTROMETER THAT MEASURED THE DIRECTIONAL INTENSITY OF ELECTRONS WITH ENERGIES GREATER THAN 0.28, 1.2, 2.4, AND 3.6 MEV. EACH OF TWO PROTON SPECTROMETERS UTILIZED TWO SENSORS AND THREE ELECTRONIC DISCRIMINATION LEVELS IN VARIOUS COMBINATIONS TO MEASURE THE DIRECTIONAL INTENSITY OF PROTONS IN THE ENERGY RANGES 1.2 TO 2.2 MEV, 2.2 TO 8.5 MEV, 8.5 TO 25 MEV, AND 25 TO 100 MEV. THREE OMNIDIRECTIONAL (2 PI) DETECTORS MEASURED THE SUM OF ELECTRON AND PROTON INTENSITIES (IE AND IP) ACCORDING TO THE FOLLOWING -- IE (E GREATER THAN .28 MEV) PLUS IP (E GREATER THAN 2.2 MEV), IE (E GREATER THAN .41 MEV) PLUS IP (E GREATER THAN 8.5 MEV), AND IE (E GREATER THAN 1.8 MEV) PLUS IP (E GREATER THAN 25 MEV). THE ELECTRON SPECTROMETER AND ONE PROTON SPECTROMETER WERE ORIENTED WITH THEIR AXES NORMAL TO THE GEOMAGNETIC FIELD. ALL OTHER DETECTORS WERE PARALLEL TO THE FIELD LOOKING UPWARD WHEN IN THE NORTHERN HEMISPHERE. MOST DETECTORS WERE SAMPLED 22.9 TIMES PER MINUTE. THE LOWEST ENERGY OMNIDIRECTIONAL DETECTOR WAS SAMPLED 45.8 TIMES PER MINUTE. EXCEPT FOR THE GREATER THAN 3.6-MEV ELECTRON SPECTROMETER DETECTOR, WHICH HAS BEEN UNUSABLE MOST OF THE TIME DUE TO NOISE, AND ONE OF THE PROTON SPECTROMETERS, WHICH WAS INTERMITTENT FOR PERIODS DURING THE FIRST MONTH, THE EXPERIMENT HAS WORKED WELL THROUGH THE SPACECRAFT LIFETIME. AFTER AUGUST 1969, DATA WERE ACQUIRED ONLY INFREQUENTLY AND ON SPECIAL EXPERIMENTER REQUEST. VIRTUALLY NO DATA WERE ACQUIRED AFTER 1970.

DATA SET NAME- TIME-ORDERED REDUCED PROTON AND ELECTRON
 COUNT RATES ON TAPE
 NSSDC ID- 63-038C-01D
 AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION
 TIME PERIOD COVERED- 09/28/63 TO 12/31/68
 (AS VERIFIED BY NSSDC)
 QUANTITY OF DATA- 103 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF 9 TRACK, 800 SPI, IBM 360, BINARY MAGNETIC TAPES SUBMITTED BY THE EXPERIMENTER. THESE TAPES REPRESENT A TIME ORDERED, COMPRESSED VERSION OF THE EXPERIMENTER SUPPLIED DATA SET 63-038C-01A (COVERAGE FOR SEPTEMBER 28, 1963 TO MARCH 4, 1967, ON 430 TAPES) EXCEPT THAT THE OBSERVED MAGNETIC FIELD VALUES FOUND IN 63-038C-01A ARE NOT FOUND IN THIS DATA SET. TIME COVERAGE FOR THIS DATA SET IS ALSO GREATER THAN THAT OF 63-038C-01A. EACH RECORD CONTAINS, FOR EACH DETECTOR, DEAD TIME CORRECTED COUNT RATES WITH STATISTICAL UNCERTAINTIES AND EPHEMERIS DATA (INCLUDING R AND L).

DATA SET NAME- INDEX TO TIME-ORDERED REDUCED PROTON AND
 ELECTRON COUNT RATE DATA TAPES
 NSSDC ID- 63-038C-01E
 AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION
 TIME PERIOD COVERED- 09/28/63 TO 12/31/68
 (AS VERIFIED BY NSSDC)
 QUANTITY OF DATA- 6 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE TAPE PER YEAR OF DATA. FOR A TOTAL OF SIX TAPES, EACH 9-TRACK, 800-SPI, IBM 360, BINARY TAPE IS AN INDEX OF THE INFORMATION CONTAINED IN DATA SET 63-038C-010. START AND STOP TIMES FOR INDIVIDUAL PASSES ARE LISTED CHRONOLOGICALLY.

DATA SET NAME- PLOTS OF PARTICLE COUNT RATES VS TIME OR
 VS B AT DISCRETE L ON MICROFILM
 NSSDC ID- 63-038C-01F
 AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION
 TIME PERIOD COVERED- 09/28/63 TO 12/31/67
 (AS VERIFIED BY NSSDC)
 QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM CONTAINING EXPERIMENTER GENERATED PLOTS OF RAW COUNT RATE DATA (EXCEPT ELECTRONS ABOVE 3.6 MEV) FROM ALL DETECTORS. IN SOME PLOTS, COUNT RATES ARE GIVEN VS TIME AT DISCRETE L VALUES BETWEEN 1.2 AND 20 AND WITHIN A FIXED RANGE OF B FOR EACH L. IN OTHER PLOTS, COUNT RATES ARE GIVEN VS B AT DISCRETE L VALUES BETWEEN 1.2 AND 20 FOR ONE 15-DAY INTERVAL IN EACH OF 5 YR. THE PLOTS COVER THE PERIOD SEPTEMBER 28, 1963, THROUGH DECEMBER 31, 1967. SEVERAL PAGES OF A MORE DETAILED DESCRIPTION OF THIS DATA SET ARE FOUND ON THE FIRST REEL OF MICROFILM THAT ALSO INCLUDES THE DATA.

DATA SET NAME- ELECTRON COUNT RATE PLOTS ON MICROFILM
 NSSDC ID- 63-038C-01G
 AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION
 TIME PERIOD COVERED- 09/28/63 TO 04/16/66
 (AS VERIFIED BY NSSDC)
 QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT GIVES THE COUNT RATES OF ELECTRONS ABOVE 280 KEV AND 1.2 MEV PLOTTED VS TIME. THESE PLOTS ARE PRESENTED AT DISCRETE L VALUES BETWEEN 2.6 AND 8.0 (280 KEV) OR 2.6 AND 4.5 (1.2 MEV). DAYSIDE AND NIGHTSIDE DATA ARE DISTINGUISHABLE. DST AND KP VALUES ARE ALSO PLOTTED. THE PLOTS WERE GENERATED BY D.J. WILLIAMS.

SPACECRAFT COMMON NAME- ALOUETTE 1
 ALTERNATE NAMES- 1962 BETA ALPHA 1, S 27
 ALOUETTE-A, 00424
 S 27A
 NSSDC ID- 62-049A
 LAUNCH DATE- 09/29/62 WEIGHT- 145.7 KG
 STATUS OF OPERATION- OPERATIONAL OFF
 DATE LAST USABLE DATA RECORDED- 09/29/72

ORBIT PARAMETERS
 ORBIT TYPE- GEOCENTRIC EPOCH DATE- 09/28/62
 ORBIT PERIOD- 105.41 MIN INCLINATION- 80.4726 DEG
 PERIAPSIS- 1002. KM ALT APOAPSIS- 1026. KM ALT

ALOUETTE 1 WAS A SMALL IONOSPHERIC OBSERVATORY INSTRUMENTED WITH AN IONOSPHERIC SOUNDER, A VLF RECEIVER, AN ENERGETIC PARTICLE DETECTOR, AND A COSMIC NOISE EXPERIMENT. EXTENDED FROM THE SATELLITE SHELL WERE TWO DIPOLE ANTENNAS (45.7- AND 22.8-M LONG, RESPECTIVELY) WHICH WERE SHARED BY

PRECEDING PAGE BLANK NOT FILMED

ALOUETTE 1/ALOUETTE 2

THREE OF THE EXPERIMENTS ON THE SPACECRAFT. THE SATELLITE WAS SPIN-STABILIZED AT ABOUT 1.4 RPM AFTER ANTENNA EXTENSION. AFTER ABOUT 500 DAYS, THE SPIN SLOWED MORE THAN HAD BEEN EXPECTED, TO ABOUT 0.6 RPM WHEN SATELLITE SPIN-STABILIZATION FAILED. IT IS BELIEVED THAT THE SATELLITE GRADUALLY PROGRESSED TOWARD A GRAVITY GRADIENT STABILIZATION WITH THE LONGER ANTENNA POINTING EARTHWARD. ATTITUDE INFORMATION WAS DEDUCED ONLY FROM A SINGLE MAGNETOMETER, AND FROM TEMPERATURE MEASUREMENTS ON THE UPPER AND LOWER HEAT SHIELDS. (ATTITUDE DETERMINATION MAY BE IN ERROR BY AS MUCH AS 10 DEG.) THERE WAS NO TAPE RECORDER, SO DATA WERE AVAILABLE ONLY FROM THE VICINITY OF TELEMETRY STATIONS. TELEMETRY STATIONS WERE LOCATED TO PROVIDE PRIMARY DATA COVERAGE NEAR THE 80 DEG W MERIDIAN PLUS AREAS NEAR HAWAII, SINGAPORE, AUSTRALIA, EUROPE, AND CENTRAL AFRICA. INITIALLY, DATA WERE RECORDED FOR ABOUT 6 HR PER DAY. IN SEPTEMBER 1972, THE SPACECRAFT WAS PLACED ON STANDBY STATUS DUE TO BATTERY DEGRADATION, AND HAS SINCE BEEN OPERATED OCCASIONALLY TO CHECK ITS OPERATING CONDITION.

MCDIARMID, ALOUETTE 1

EXPERIMENT NAME- ENERGETIC PARTICLES DETECTORS

NSSDC ID- 62-049A-02

STATUS OF OPERATION- OPERATIONAL OFF
DATE LAST USABLE DATA RECORDED- 01/29/68

PERSONNEL

PI - I.B. MCDIARMID NATL RES COUNC OF CA
OTTAWA, ONTARIO, CANADA

THIS EXPERIMENT CONSISTED OF SIX DETECTORS WHOSE OBJECTIVES WERE TO DETERMINE THE INTENSITY STRUCTURE OF THE LOWER PORTION OF THE OUTER VAN ALLEN RADIATION BELT AT HIGH LATITUDES AND MEASURE INTENSITY CHANGES ASSOCIATED WITH SOLAR AND GEOPHYSICAL PHENOMENA, PARTICULARLY AURORA. THE FIRST, AN ANTON 302 GEIGER COUNTER, WAS IN A SHIELDED PART OF THE PACKAGE AND WAS USED ONLY FOR OMNIDIRECTIONAL MEASUREMENTS OF PROTONS AND ELECTRONS WITH ENERGIES GREATER THAN 33 AND 2.8 MEV, RESPECTIVELY. A SECOND ANTON 223 GEIGER COUNTER, WHICH POINTED 10 DEG OFF THE SPACECRAFT SPIN AXIS, RESPONDED DIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 40 AND 500 KEV, RESPECTIVELY. A SECOND ANTON 223 GEIGER COUNTER, POINTED PARALLEL TO THE SPACECRAFT SPIN AXIS AND COUPLED TO A MAGNETIC BROOM, RESPONDED DIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 250 AND 500 KEV. OMNIDIRECTIONALLY, BOTH GEIGER COUNTERS RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 2.8 AND 33 MEV, RESPECTIVELY. THE FOURTH DETECTOR, A SILICON JUNCTION, WAS COLLIMATED TO LOOK 10 DEG OFF THE SPIN AXIS. DIRECTIONALLY, IT RESPONDED TO PROTONS AND ALPHA PARTICLES IN THE ENERGY RANGES 1.3 TO 7 AND 4.3 TO 28 MEV, RESPECTIVELY. OMNIDIRECTIONALLY, THE SILICON JUNCTION RESPONDED TO PROTONS IN THE ENERGY RANGE 55 TO 60 MEV. THE LAST TWO DETECTORS, A GEIGER TELESCOPE CONSISTING OF TWO TRAYS OF PHILIPS 18509 GEIGER COUNTERS AND A PLASTIC SCINTILLATOR LOCATED BETWEEN THE TWO GEIGER COUNTER TRAYS OF THE TELESCOPE, WERE POINTED PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. THESE DETECTORS HAD ONLY DIRECTIONAL RESPONSES TO PROTONS AND ALPHA PARTICLES WITH ENERGIES GREATER THAN 100 AND 400 MEV, RESPECTIVELY. THIS EXPERIMENT PERFORMED WELL INITIALLY AND WAS TURNED OFF ON JANUARY 29, 1968, THOUGH STILL PERFORMING NORMALLY. AN INDEX OF OPERATION TIMES AND LOCATIONS FOR THIS EXPERIMENT IS AVAILABLE IN DATA SETS 62-049A-006 AND 62-049A-001.

DATA SET NAME- TEN-SEC AVERAGED COUNT RATES ON TAPE

NSSDC ID- 62-049A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/29/62 TO 03/26/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF 9-TRACK, 800-BPI, EBCDIC, UNBLOCKED TAPES GENERATED BY THE EXPERIMENTER. EACH RECORD CONTAINS 6509 CHARACTERS. THE FIRST 20 CHARACTERS ARE USED FOR PASS IDENTIFICATION AND CONTAIN THE RECEIVING STATION NAME, PASS NUMBER, NUMBER OF 10-SEC AVERAGES IN THE PASS, 3-HR AND DAILY KP VALUES, UNIVERSAL TIME AT THE MIDPOINT OF THE ASCENDING (NORTHBOUND) NODE, AND THE SATELLITE SPIN AXIS DIRECTION. THE REMAINING CHARACTERS WERE DIVIDED INTO 90 SETS OF 72 CHARACTERS EACH. EACH SET CONTAINS, FOR THE MIDPOINT OF THE 10-SEC INTERVAL, THE UT (DAY OF THE YR, HR, MIN, AND SEC), EAST GEOGRAPHIC LONGITUDE, GEOGRAPHIC LATITUDE, ALTITUDE, PITCH ANGLE, INVARIANT LATITUDE, MAGNITUDES OF THE MAGNETIC FIELD FROM THE SATELLITE MAGNETOMETER AND THE JENSEN AND CAIN MODEL, INVARIANT RADIUS, AND L VALUE. DATA FROM EACH DETECTOR IN THE FORM OF THE LOGARITHM OF THE COUNTING RATE AVERAGED

OVER THE 10-SEC INTERVAL AND CORRECTED FOR DEAD TIME ONLY ARE ALSO CONTAINED IN EACH SET. BOTH TAPES ARE IN TIME ORDER. THE FIRST TAPE CONTAINS ONLY THOSE DATA RECEIVED AT COLLEGE, ALASKA, DURING THE PERIOD FROM SEPTEMBER 29, 1962, TO MARCH 26, 1964. THE SECOND TAPE CONTAINS DATA RECEIVED AT 11 OTHER STATIONS, GROUPED BY STATION, DURING THE PERIOD FROM OCTOBER 17, 1962, TO JANUARY 17, 1964.

SPACECRAFT COMMON NAME- ALOUETTE 2

ALTERNATE NAMES- ALOUETTE-B, S 27B
IS1S-X, 0180A

NSSDC ID- 65-098A

LAUNCH DATE- 11/29/65

WEIGHT- 145. KG

STATUS OF OPERATION- OPERATIONAL OFF
DATE LAST DATA RECORDED- 06/03/73

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPOCH DATE- 11/29/65
ORBIT PERIOD- 121. MIN	INCLINATION- 79.724 DEG
PERIAPSIS- 529.000 KM ALT	APDAPSIS- 2956.00 KM ALT

ALOUETTE 2 WAS ENERGYICL IONOSPHERIC OBSERVATORY INSTRUMENTED WITH A SWEEP FREQUENCY IONOSPHERIC SOUNDER, A VLF RECEIVER, TWO ENERGETIC PARTICLE EXPERIMENTS, A COSMIC NOISE EXPERIMENT, AND AN ELECTROSTATIC PROBE. THE SPACECRAFT USED TWO LONG DIPOLE ANTENNAS (78.9 M AND 22.8 M LONG, RESPECTIVELY) FOR THE SOUNDER, VLF, AND COSMIC NOISE EXPERIMENTS. THE SATELLITE WAS SPIN-STABILIZED AT ABOUT 2.25 RPM AFTER ANTENNA DEPLOYMENT. BY JANUARY 1970, THE SPIN HAD DECAYED TO 1.84 RPM. END PLATES ON THE LONG ALOUETTE 2 ANTENNA SEEM TO HAVE CORRECTED THE RAPID DESPIN OCCURRING ON ALOUETTE 1, WHICH WAS BELIEVED TO RESULT FROM THERMAL DISTORTION OF THE ANTENNA AND FROM RADIATION PRESSURE. THERE WAS NO TAPE RECORDER, SO THAT DATA ARE AVAILABLE ONLY FROM WHEN THE SPACECRAFT WAS IN LINE OF SIGHT OF TELEMETRY STATIONS. TELEMETRY STATIONS ARE LOCATED SO THAT PRIMARY DATA COVERAGE IS NEAR THE 80 DEG W MERIDIAN PLUS AREAS NEAR HAWAII, SINGAPORE, AUSTRALIA, ENGLAND, INDIA, NORWAY, AND CENTRAL AFRICA. INITIALLY, DATA WERE RECORDED FOR ABOUT 7-1/2 HR PER DAY. IN 1972, OBSERVATIONS WERE MADE FOR ABOUT 2 HR PER DAY. ROUTINE SPACECRAFT OPERATION WAS DISCONTINUED AFTER MARCH 31 IN 1973, BUT SPECIAL REQUEST OPERATION HAS OCCURRED OCCASIONALLY SINCE THEN.

MCDIARMID, ALOUETTE 2

EXPERIMENT NAME- ENERGETIC PARTICLES DETECTORS

NSSDC ID- 65-098A-04

STATUS OF OPERATION- OPERATIONAL OFF
DATE LAST DATA RECORDED- 06/03/73

PERSONNEL

PI - I.B. MCDIARMID NATL RES COUNC OF CA
OTTAWA, ONTARIO, CANADA

THE ALOUETTE 2 COSMIC PARTICLE DETECTION EXPERIMENT WAS COMPOSED OF SEVEN DETECTORS. FOUR OF THESE WERE GEIGER-MULLER TUBES. THE FIRST RESPONDED TO ELECTRONS GREATER THAN 3.9 MEV AND PROTONS GREATER THAN 40 MEV. THE SECOND HAD A MAGNETIC BROOM AND RESPONDED TO ELECTRONS GREATER THAN 250 KEV AND PROTONS GREATER THAN 500 KEV. THE THIRD RESPONDED TO ELECTRONS GREATER THAN 40 KEV AND PROTONS GREATER THAN 500 KEV. THESE THREE GM TUBES WERE PERPENDICULAR TO THE SPIN AXIS. THE FOURTH GM TUBE WAS 10 DEG FROM THE SPIN AXIS AND RESPONDED TO ELECTRONS GREATER THAN 40 KEV AND PROTONS GREATER THAN 500 KEV. THE FIFTH DETECTOR WAS A SILICON JUNCTION WHICH DETECTED PROTONS AND ALPHA PARTICLES WITH MINIMUM ENERGIES OF 1 AND 5 MEV, RESPECTIVELY, AND MAXIMUM ENERGIES OF 8 AND 24 MEV, RESPECTIVELY. THE SIXTH DETECTOR WAS A GEIGER TELESCOPE WHICH DETECTED PROTONS GREATER THAN 100 MEV. THE SEVENTH DETECTOR WAS A PLASTIC SCINTILLATOR WHICH DETERMINED THE PROTON SPECTRA IN THE ENERGY RANGE FROM 100 TO 600 MEV. PARTICLES ASSOCIATED WITH AURORAL AND SOLAR EVENTS WERE STUDIED. AN INDEX OF OPERATION TIMES AND LOCATIONS FOR THIS EXPERIMENT IS AVAILABLE IN DATA SET 65-098A-00E.

DATA SET NAME- REDUCED COUNT RATE DATA ON MAGNETIC TAPE

NSSDC ID- 65-098A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/02/66 TO 11/08/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 7 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF 9-TRACK MAGNETIC TAPES WRITTEN IN BINARY AT 800 BPI ON AN IBM 360 COMPUTER. EACH TAPE SUBMITTED BY THE EXPERIMENTER CONTAINS 1 FILE OF REDUCED DATA. ALL LOGICAL RECORDS ARE 80 BYTES LONG, AND ALL BLOCKS CONTAIN 50 RECORDS (BLOCKSIZE EQUAL TO 4000). ALL RECORDS WERE WRITTEN UNDER FORMAT CONTROL (20A4). EACH RECORD CONTAINS ORBIT AND TIME INFORMATION, KP INDEX, ALTITUDE, B, INVARIANT LATITUDE, LOCAL MAGNETIC TIME, ORIENTATION AND PITCH ANGLE, COUNT RATES FOR ALL COUNTING MODES WITH TIME RESOLUTION OF ONE SECOND, AND MISCELLANEOUS OTHER INFORMATION. THE DATA ARE STORED IN CHRONOLOGICAL ORDER COVERING THE PERIOD FROM DECEMBER 2, 1965, TO NOVEMBER 8, 1967 AND INCLUDE ONLY THOSE TIMES WHEN THE INVARIANT LATITUDE EXCEEDED 50 DEG. THERE ARE GAPS IN THE DATA.

DATA SET NAME- ANALYZED SELECTED BOUNDARY DATA ON MAGNETIC TAPE

NSSDC ID- 65-098A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/29/65 TO 06/18/69
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 9-TRACK MAGNETIC TAPE WRITTEN IN EBCDIC AT 800 BPI ON AN IBM 360 COMPUTER. THE TAPE, SUBMITTED BY THE EXPERIMENTER, CONTAINS 1 FILE OF REDUCED DATA. THE FILE IS MADE UP OF 1784 RECORDS, ONE RECORD FOR EACH SATELLITE PASS, IN CHRONOLOGICAL ORDER, AND ALL RECORDS ARE 120 BYTES LONG, WRITTEN UNDER FORMAT CONTROL. EACH RECORD CONTAINS ORBIT NUMBER, TIME INFORMATION, PASS DIRECTION, INTERPLANETARY FIELD POLARITY, MAGNETIC SOLAR CO-DECLINATION, KP AND AP INDICES, LOCAL MAGNETIC TIME AND INVARIANT LATITUDE FOR VARIOUS 40-KEV ELECTRON BOUNDARIES, INVARIANT LATITUDE FOR 250 KEV, 3.9 MEV, AND 1- TO 8-NEV ELECTRON BOUNDARIES, INVARIANT LATITUDE, INTENSITY, B, LOCAL MAGNETIC TIME FOR INTENSITY MAXIMA OF 40 KEV, 3.9 MEV AND 250 KEV ELECTRONS, AND SIMILAR INFORMATION FOR INTENSITY MINIMA. THERE ARE SOME GAPS IN THE DATA, THE DATA ON THIS TAPE COVER THE PERIOD FROM NOVEMBER 29, 1965, TO JUNE 18, 1969. THE INTERPLANETARY FIELD POLARITY IS OBTAINED FROM WILCOX AND COLBURN, JGR, VOL. 74, P 2388, 1969.

SPACECRAFT COMMON NAME- ARIEL 1

ALTERNATE NAMES- S 51, UK 1
1962 OMICRON 1, 00285

NSSDC ID- 62-015A

LAUNCH DATE- 04/26/62 WEIGHT- 136. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/09/64

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 04/26/62
ORBIT PERIOD- 101. MIN INCLINATION- 53.870 DEG
PERIAPSIS- 390.000 KM ALT APOAPSIS- 1214.00 KM ALT

ARIEL 1 WAS DESIGNED TO CONTRIBUTE TO THE CURRENT KNOWLEDGE OF THE IONOSPHERE AND OF THE COMPLEX SUN-IONOSPHERE RELATIONSHIPS. THE SATELLITE WAS A 62-KG CYLINDER WITH A 58-CM DIAMETER AND A HEIGHT OF 22 CM. A TAPE RECORDER AND INSTRUMENTATION FOR ONE COSMIC-RAY, TWO SOLAR EMISSION, AND THREE IONOSPHERIC EXPERIMENTS WERE ON BOARD THE SATELLITE, EXCEPT FOR FAILURE AT LAUNCH OF THE SOLAR LYMAN-ALPHA EXPERIMENT, THE SPACECRAFT OPERATED NOMINALLY UNTIL JULY 9, 1962. BETWEEN THAT DATE AND SEPTEMBER 8, 1962, SPACECRAFT OPERATION WAS LIMITED. THE SPACECRAFT WAS OPERATED AGAIN FROM AUGUST 25, 1964, TO NOVEMBER 9, 1964, TO OBTAIN DATA CONCURRENT IN TIME WITH EXPLORER 20 (64-051A).

ELLIOT, ARIEL 1

EXPERIMENT NAME- COSMIC-RAY DETECTOR

NSSDC ID- 62-015A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 07/12/62

PERSONNEL

PI - H.	ELLIOT	IMPERIAL COLLEGE LONDON, ENGLAND
OI - J.J.	QUENBY	IMPERIAL COLLEGE LONDON, ENGLAND
OI - R.J.	HYNDS	IMPERIAL COLLEGE LONDON, ENGLAND
OI - A.C.	DURNEY	ESRO-ESTEC NOORDWIJK, NETHERLANDS

THE EXPERIMENT WAS DESIGNED TO STUDY THE PRIMARY COSMIC-RAY RIGIDITY SPECTRUM WITH 2.0 GE. 5 AND RIGIDITIES BETWEEN 2.5 AND 16.0 GV USING AN OMNIDIRECTIONAL CERENKOV COUNTER AND AN ANTON TYPE 302 GEIGER TUBE DETECTOR (USED FOR BACKGROUND MONITORING). THE DETECTOR ACCUMULATORS WERE READ OUT EVERY 31 SEC. THE INITIAL SPACECRAFT PERIOD WAS 1.7 SEC. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH TO JULY 12, 1962. AFTER THAT DATE, TRANSMISSION WAS INTERMITTENT UNTIL MID-AUGUST 1962, AFTER WHICH NO FURTHER INFORMATION WAS RECEIVED. FOR FURTHER DETAILS, SEE DURNEY ET AL, PROC. ROY. SOC. LONDON, VOL 281, P 553, 1964.

DATA SET NAME- REDUCED COUNT RATE AND ORBITAL DATA ON MAGNETIC TAPE

NSSDC ID- 62-015A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 04/27/62 TO 07/12/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THE 31-SEC CERENKOV COUNTER AND GEIGER TUBE ACCUMULATIONS, AND ORBITAL DATA ARE ON ONE 7-TRACK BCD MAGNETIC TAPE WRITTEN AT 556 BPI. THE DATA ARE IN CHRONOLOGICAL ORDER COVERING THE TIME PERIOD FROM APRIL 27, 1962, TO JULY 12, 1962. EACH OF THE 595 FILES ON THE TAPE CONSISTS OF SEVERAL PHYSICAL RECORDS. EACH PHYSICAL RECORD HAS A FIXED LENGTH OF 2460 CHARACTERS, AND EACH LOGICAL RECORD IS 55 CHARACTERS LONG.

SPACECRAFT COMMON NAME- EPE-A

ALTERNATE NAMES- 1961 UPSILON 1, EXPLORER 12
S 3, 00170

NSSDC ID- 61-020A

LAUNCH DATE- 08/16/61 WEIGHT- 37.6 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/06/61

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 08/16/61
ORBIT PERIOD- 1590. MIN INCLINATION- 33. DEG
PERIAPSIS- 293.000 KM ALT APOAPSIS- 77250.0 KM ALT

EXPLORER 12 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE COSMIC-RAY PARTICLES, TRAPPED PARTICLES, SOLAR WIND PROTONS, AND MAGNETOSPHERIC AND INTERPLANETARY MAGNETIC FIELDS. IT WAS THE FIRST OF THE S 3 SERIES OF SPACECRAFT, WHICH ALSO INCLUDED EXPLORERS 14, 15, AND 26. A 16-CHANNEL PFM/PH TIME-DIVISION MULTIPLEXED TELEMETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.324 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION, AND THE OTHER CHANNELS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING OF THE TELEMETERED DATA, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/100 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMPUTATED IN A 16-FRAME-LONG PATTERN AND WAS USED TO TELEMETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.041 SEC. AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT FUNCTIONED WELL UNTIL DECEMBER 6, 1961, WHEN IT CEASED TRANSMITTING DATA APPARENTLY AS A RESULT OF FAILURES IN THE POWER SYSTEM. GOOD DATA WERE RECORDED FOR APPROXIMATELY 90 PERCENT OF THE ACTIVE LIFETIME

EPE-A

OF THE SPACECRAFT. THE INITIAL SPIN RATE WAS 28.0 RPM, AND THE SPIN AXIS DIRECTION WAS RIGHT ASCENSION 48 DEG, DECLINATION -28 DEG. THE DIRECTION WAS NEARLY CONSTANT WITH TIME, AND THE SPIN RATE SLOWLY INCREASED WITH TIME TO 34.3 RPM. APOGEE DIRECTION VARIED FROM ABOUT 1200 TO 0600 LOCAL TIME.

DAVIS, EPE-A

EXPERIMENT NAME- PROTON-ELECTRON SCINTILLATION DETECTOR

NSSDC ID- 61-020A-05

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/06/61

PERSONNEL

PI - L.R. DAVIS NASA-GSFC
GREENBELT, MD
OI - J.M. WILLIAMSON NASA-GSFC
GREENBELT, MD

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIRECTIONAL FLUXES AND SPECTRA OF LOW-ENERGY TRAPPED AND AURORAL PROTONS AND ELECTRONS. IT EMPLOYED A 5-MG-THICK POWDER PHOSPHOR SCINTILLATOR COVERED WITH A 1000-A ALUMINUM COATING. ADDITIONAL ABSORBERS WERE INSERTED IN THE DETECTOR APERTURE BY A 16-POSITION STEPPED WHEEL. THE APERTURE WAS POINTED AT 45 DEG TO THE SPIN AXIS. DUE TO THE THICKNESS AND TYPE OF PHOSPHOR, THE DETECTOR IN THE PULSE MODE WOULD RESPOND ONLY TO LOW-ENERGY IONS, AND, THEREFORE, ESSENTIALLY MEASURED THE FLUX OF PROTONS THAT PENETRATED THE ABSORBERS AND STOPPED IN THE PHOSPHOR. BOTH THE PULSE COUNTING RATE AND THE PHOTOTUBE CURRENT WERE TELEMETERED ONCE EACH FRAME PERIOD. SIXTEEN READINGS WERE TELEMETERED IN EACH WHEEL POSITION, AND THUS ONE COMPLETE SET OF DATA WAS OBTAINED EVERY 256 FRAMES (ONE WHEEL REVOLUTION = 80 SEC). PROTONS IN SEVEN ENERGY RANGES WERE MEASURED. THE HIGH ENERGY WAS ABOUT 10 MEV FOR ALL RANGES, AND THE LOW-ENERGY CUTOFFS WERE 100, 135, 186, 251, 312, 971, AND 1668 KEV. THE ENERGY FLUXES OF ELECTRONS IN THREE RANGES WERE MEASURED SEPARATELY USING SCATTER GEOMETRY, ABSORBERS, AND THE PHOTOTUBE CURRENT. THE LOW-ENERGY CUTOFFS WERE 15, 26, AND 31 KEV. AND THE HIGH-ENERGY CUTOFF WAS ABOUT 100 KEV FOR ALL THREE RANGES. EXCEPT FOR SATURATION OF SOME OF THE PROTON CHANNELS IN THE HEART OF THE OUTER BELT, THE EXPERIMENT WORKED PROPERLY THROUGHOUT THE LIFE OF THE SPACECRAFT.

DATA SET NAME- COMPLETE SET OF REDUCED PROTON AND ELECTRON DATA ON MAGNETIC TAPES

NSSDC ID- 61-020A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/16/61 TO 12/06/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 20 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUBMITTED BY THE EXPERIMENTER, CONTAINS A COMPLETE SET OF REDUCED DATA FOR THE LIFE OF THE EXPERIMENT WITH ABOUT 80 PERCENT TIME COVERAGE. THE DATA ARE WRITTEN ON 7-TRACK TAPES IN IBM 7094 BINARY FORMAT. EACH RECORD IS 460 WORDS LONG AND CONTAINS ONE ABSORBER WHEEL REVOLUTION OF DATA. THE DATA INCLUDE TIME (UT), SATELLITE POSITION PARAMETERS IN GEOCENTRIC INERTIAL AND S.L. COORDINATES, ATTITUDE PARAMETERS, ETC., STORED IN FLOATING POINT FORMAT. ALSO INCLUDED ARE CURRENT, COUNT RATES, AND HOUSEKEEPING CHANNEL READINGS FOR 256 TELEMETRY FRAMES. THE CHANNEL READINGS FOR EACH FRAME ARE PACKED TOGETHER AS BINARY INTEGERS IN ONE 36-BIT WORD. THERE ARE FIVE ORBITS, WHICH AMOUNT TO ABOUT 5.2 DAYS, OF DATA ON EACH TAPE.

DATA SET NAME- ORBIT PLOTS OF PEAK COUNT RATE AND CURRENT READINGS ON MICROFILM

NSSDC ID- 61-020A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/16/61 TO 12/06/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16 MM MICROFILM SUBMITTED BY THE EXPERIMENTER. IT CONTAINS 101 PLOTS AND SHOWS

THE PEAK DETECTOR OUTPUT FOR EACH SPIN PERIOD AS A FUNCTION OF TIME (UT). SATELLITE POSITION PARAMETERS IN GEOCENTRIC INERTIAL AND S.L. COORDINATES. EACH PLOT CONTAINS ONE ORBIT OF DATA. INCLUDED ARE DATA FOR THE FULL LIFE OF THE SATELLITE, AUGUST 16 TO DECEMBER 6, 1961, WITH ABOUT 80 PERCENT COVERAGE.

MCDONALD, EPE-A

EXPERIMENT NAME- COSMIC RAYS

NSSDC ID- 61-020A-04

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/06/61

PERSONNEL

PI - F.B. MCDONALD NASA-GSFC
GREENBELT, MD

THE INSTRUMENTATION FOR THE COSMIC-RAY EXPERIMENT CONSISTED OF (1) A DOUBLE SCINTILLATION COUNTER THAT MEASURED 55- TO 500-MEV PROTONS IN SIX ENERGY INTERVALS AND PROTONS ABOVE 600 MEV. (2) A SINGLE SCINTILLATOR THAT MEASURED 1.4- TO 22-MEV PROTONS AT FIVE ENERGY THRESHOLDS AND ELECTRONS ABOVE 150 KEV. AND (3) A GM COUNTER TELESCOPE THAT MEASURED PROTON FLUXES ABOVE 30 MEV. A COMPLETE SET OF MEASUREMENTS WAS MADE EVERY 6.8 MIN. THE EXPERIMENT OPERATED THROUGHOUT THE ACTIVE LIFETIME OF THE SPACECRAFT. FOR FURTHER DETAILS, SEE BRYANT ET AL, AP.J., VOL 141, P 478, 1965.

DATA SET NAME- REDUCED COUNT RATE DATA

NSSDC ID- 61-020A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/16/61 TO 12/06/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 7 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF SEVEN 800 BPI, 7 TRACK, IBM 7094 BINARY MAGNETIC TAPES THAT WERE SUBMITTED BY THE EXPERIMENTER. THE TAPES CONTAIN A COMPLETE SET OF REDUCED DATA FROM ALL THREE DETECTORS, ALONG WITH THE TIME, ORBIT, AND ATTITUDE PARAMETERS. THE TAPES ARE BLOCKED WITH 6.8 MIN OF DATA PER TAPE RECORD. THE DATA SET INCLUDES DATA FOR THE ACTIVE LIFETIME OF THE SPACECRAFT, AUGUST 16, 1961, TO DECEMBER 6, 1961, WITH ABOUT 80 PERCENT COVERAGE. LISTINGS OF THE SAME DATA ARE AVAILABLE ON 10 REELS OF MICROFILM IN DATA SET 61-020A-04C.

DATA SET NAME- AVERAGED COUNT RATE DATA

NSSDC ID- 61-020A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/16/61 TO 12/06/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE IBM 7094 BINARY MAGNETIC TAPE WRITTEN AT 800 BPI. THE TAPE WAS SUBMITTED BY THE EXPERIMENTER AND CONTAINS A COMPLETE SET OF TIME-AVERAGED DATA (FOR 6.8-MIN PERIODS) FROM ALL THREE DETECTORS, ALONG WITH TIME AND SPACECRAFT HEIGHT. INCLUDED ARE DATA FOR THE ACTIVE LIFETIME OF THE SPACECRAFT, AUGUST 16, 1961, TO DECEMBER 6, 1961, WITH ABOUT 80 PERCENT COVERAGE. LISTINGS OF THE SAME DATA ARE AVAILABLE ON 2 REELS OF MICROFILM AS DATA SET 61-020A-04D.

VAN ALLEN, EPE-A

EXPERIMENT NAME- CHARGED PARTICLES

NSSDC ID- 61-020A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/06/61

TIME PERIOD COVERED- 08/16/61 TO 12/06/61
(AS VERIFIED BY NSSDC)

PERSONNEL

PI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA
OI - L.A. FRANK U OF IOWA
IOWA CITY, IA
OI - B.J. O'BRIEN DEPT OF ENVIRON PROT
PERTH, AUSTRALIA
OI - C.D. LAUGHLIN McDONALD OBS
FT. DAVIS, TX
OI - J.W. FREEMAN RICE U
HOUSTON, TX

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF L-INTERPOLATED, DEAD-TIME CORRECTED, ELECTRON COUNT RATES (FROM DATA SET 61-020A-03A) ON ONE 7-TRACK, IBM 7094, EVEN PARITY, BCD MAGNETIC TAPE WRITTEN AT 556 SPI. THE DATA CONSIST OF CARD IMAGES. THE NSSDC-GENERATED TAPE CONTAINS ONE FILE (FILE 5) FOR THE TYPE 302 GM COUNTER DATA. THE DATA RECORDS (ONE LOGICAL RECORD PER PHYSICAL RECORD) ARE ORDERED BY L VALUE. EACH DATA RECORD WITHIN THE FILE IS 80 CHARACTERS LONG AND IS PRECEDED BY A 60-CHARACTER HEADER RECORD AND IS FOLLOWED BY A TWO-CHARACTER TRAILER RECORD. THE EXPERIMENTAL DATA HAVE BEEN INTERPOLATED TO L= 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 9.0, 10.0, 11.0, 12.0 AND ARE GROUPED BY L VALUE. THE DATA ARE TIME ORDERED WITHIN A GIVEN L-VALUE GROUP. THE DATA FORMAT ALSO INCLUDES TIME (LOCAL, UT, SOLAR ROTATION TIME), GEOMAGNETIC LATITUDE, GEOGRAPHIC LATITUDE, B/BD, AND MCILWAIN'S L VALUE. A SIMILAR DATA SET (62-051A-03D) FROM EXPLORER 14 IS ALSO CONTAINED ON THIS TAPE (FILES 1 THROUGH 4).

THE EXPERIMENT WAS DESIGNED TO MEASURE THE FLUX AND ENERGY SPECTRUM OF CHARGED PARTICLES AND COSMIC RAYS AND TO DETERMINE THEIR SPATIAL AND TEMPORAL DISTRIBUTION OVER THE SPACECRAFT ORBIT. THE DETECTORS INCLUDED (1) A SHIELDED ANTON TYPE 302 OMNIDIRECTIONAL GEIGER-MUELLER TUBE, WHICH DETECTED PROTONS E.GT. 23 MEV AND ELECTRONS E.GE. 1.6 MEV. (2) AN ELECTRON MAGNETIC SPECTROMETER UTILIZING THREE THIN-WINDOWED ANTON TYPE 213 DIRECTIONAL GEIGER-MUELLER TUBES SENSITIVE TO ELECTRONS WITH ENERGIES FROM 40 TO 100 KEV, AND (3) THREE DIRECTIONAL CADMIUM SULFIDE CRYSTALS FOR MEASUREMENTS OF THE TOTAL FLUX OF PROTONS WITH ENERGIES FROM 1 KEV TO 10 MEV AND ELECTRONS WITH ENERGIES FROM 200 EV TO 500 KEV. ALL DIRECTIONAL DETECTORS WERE MOUNTED SO THAT THE AXES OF THEIR FIELDS OF VIEW WERE PERPENDICULAR TO THE SATELLITE SPIN AXIS. (THE INITIAL SPIN PERIOD WAS 2.2 SEC.) COUNTS IN EACH DETECTOR WERE ACCUMULATED FOR 10.24 SEC, AND THE CONTENTS OF THE ACCUMULATORS WERE TELEMETERED AT THE END OF EACH SAMPLING INTERVAL. THE ENCODER ACCUMULATORS WERE TIME SHARED SO THAT EACH DETECTOR RESPONSE WAS SAMPLED ONCE EVERY 79 SEC. THE EXPERIMENT OPERATED SATISFACTORILY FROM LAUNCH UNTIL SPACECRAFT FAILURE ON DECEMBER 6, 1961. FOR FURTHER DETAILS, SEE FRANK, JGR, VOL 71, P 4631, 1966.

SPACECRAFT COMMON NAME- EPE-B

ALTERNATE NAMES- 1962 BETA GAMMA 1, EXPLORER 14
S 3A, 00432

NSSDC ID- 62-051A

LAUNCH DATE- 10/02/62

WEIGHT- 40.0 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/11/63

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 10/02/62
ORBIT PERIOD- 2184. MIN INCLINATION- 33. DEG
PERIAPSIS- 267.000 KM ALT APOAPSIS- 98517. KM ALT

DATA SET NAME- COUNT RATES AND ORBITAL DATA ON MAGNETIC TAPE

NSSDC ID- 61-020A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 08/16/61 TO 12/06/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 3 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF THREE 7-TRACK MAGNETIC TAPES WRITTEN ON AN IBM 7094 AT 556 SPI IN BCD MODE (FIVE RECORDS PER BLOCK WITH A LOGICAL RECORD LENGTH OF 342 CHARACTERS). EACH RECORD CONTAINS A TIME REFERENCE, COUNT RATES OF DETECTORS, B AND L COORDINATES BASED ON JENSEN-CAIN COEFFICIENTS, AND ORBITAL DATA IN VARIOUS SYSTEMS. THE DATA ARE IN CHRONOLOGICAL ORDER.

EXPLORER 14 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE COSMIC-RAY PARTICLES, TRAPPED PARTICLES, SOLAR WIND PROTONS, AND MAGNETOSPHERIC AND INTERPLANETARY MAGNETIC FIELDS. IT WAS THE SECOND OF THE S 3 SERIES OF SPACECRAFT, WHICH ALSO INCLUDED EXPLORERS 12, 15, AND 26. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.323 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION, AND THE OTHERS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING OF THE TELEMETERED DATA, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/100 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A 16-FRAME-LONG PATTERN AND WAS USED TO TELEMETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.041 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT FUNCTIONED WELL EXCEPT FOR THE PERIOD FROM JANUARY 10 TO 24, 1963, AND AFTER AUGUST 11, 1963, WHEN THE ENCODER MALFUNCTIONED TERMINATING THE TRANSMISSION OF USABLE DATA. GOOD DATA WERE RECORDED FOR APPROXIMATELY 85 PERCENT OF THE ACTIVE LIFETIME OF THE SPACECRAFT. THE SPACECRAFT WAS CONING (37-DEG MAXIMUM HALF ANGLE) UNTIL JANUARY 10, 1963. AFTER JANUARY 24, 1963, IT WAS SPIN-STABILIZED AT A RATE OF 10 RPM. THIS RATE SLOWLY DECREASED TO 1 RPM ON JULY 8, 1963. INITIALLY, THE LOCAL TIME OF APOGEE WAS 0700 HOURS.

DATA SET NAME- GRAPHICAL SUMMARY OF RESPONSES OF DETECTORS ON MICROFILM

NSSDC ID- 61-020A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/16/61 TO 12/06/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

GRAPHS OF THE RESPONSES (APPROXIMATELY 24 HR PER PLOT) OF THE IOWA CHARGED PARTICLE DETECTORS ON EXPLORER 12 ARE DISPLAYED ON ONE REEL OF 35-MM MICROFILM FOR THE PERIOD AUGUST 16, 1961 (LAUNCH) TO DECEMBER 6, 1961, WHEN TRANSMISSION OF DATA TERMINATED. ALSO INCLUDED ON THE MICROFILM IS A FORMAT FOR THE MASTER FILE OF ORBITAL DATA MERGED WITH SCIENCE DATA (DATA SET 61-020A-03A) AND A COVER LETTER FOR THE EXPLORER 12 DATA FROM DR. L.A. FRANK.

DAVIS, EPE-B

EXPERIMENT NAME- PROTON-ELECTRON SCINTILLATION DETECTOR

NSSDC ID- 62-051A-05

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/11/63

PERSONNEL

PI - L.R. DAVIS NASA-GSFC
GREENBELT, MD
OI - J.W. WILLIAMSON NASA-GSFC
GREENBELT, MD

DATA SET NAME- L-INTERPOLATED ELECTRON COUNT RATES ON MAGNETIC TAPE

NSSDC ID- 61-020A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIRECTIONAL FLUXES AND SPECTRA OF LOW-ENERGY TRAPPED AND AURORAL PROTONS AND ELECTRONS. IT EMPLOYED A 5-MG-THICK POWDER PHOSPHOR SCINTILLATOR COVERED WITH A 1000-A ALUMINUM COATING. ADDITIONAL ABSORBERS WERE INSERTED IN THE DETECTOR APERTURE BY A 16-POSITION STEPPED WHEEL. THE APERTURE WAS POINTED AT 45 DEG TO THE SPIN AXIS. DUE TO THE THINNESS AND TYPE OF PHOSPHOR, THE DETECTOR IN THE PULSE MODE WOULD RESPOND ONLY TO

EPE-B

LOW-ENERGY IONS, AND, THEREFORE, ESSENTIALLY MEASURED THE FLUX OF PROTONS THAT PENETRATED THE ABSORBERS AND STOPPED IN THE PHOSPHOR. BOTH THE PULSE COUNTING RATE AND THE PHOTOTUBE CURRENT WERE TELEMETERED ONCE EACH FRAME PERIOD. SIXTEEN READINGS WERE TELEMETERED IN EACH WHEEL POSITION, AND THUS ONE COMPLETE SET OF DATA WAS OBTAINED EVERY 256 FRAMES (ONE WHEEL REVOLUTION = 80 SEC). PROTONS IN SEVEN ENERGY RANGES WERE MEASURED. THE HIGH-ENERGY LIMIT WAS ABOUT 10 MEV FOR ALL RANGES, AND THE LOW-ENERGY CUTOFFS WERE 97, 125, 168, 295, 495, 970, AND 1700 KEV. THE ENERGY FLUXES OF ELECTRONS IN THREE RANGES WERE MEASURED SEPARATELY USING SCATTER GEOMETRY, ABSORBERS, AND THE PHOTOTUBE CURRENT. THE LOW-ENERGY CUTOFFS WERE 13, 21, AND 25 KEV, AND THE HIGH-ENERGY CUTOFF WAS ABOUT 100 KEV FOR ALL THREE RANGES. THE ELECTRON MEASUREMENTS WORKED THROUGHOUT THE LIFE OF THE SATELLITE. THE PROTON CHANNEL SLOWLY BECAME INTERMITTENT AND BY MID-DECEMBER 1962 WAS INOPERATIVE. DUE TO THE SPACECRAFT CONING, IT IS DIFFICULT TO OBTAIN THE DIRECTIONAL INTENSITIES.

DATA SET NAME- COMPLETE SET OF REDUCED PROTON AND ELECTRON DATA ON MAGNETIC TAPES

NSSDC ID- 62-051A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/02/62 TO 08/10/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 69 REEL(S) OF MAGNETIC TAPE

THIS MAGNETIC TAPE DATA SET, SUBMITTED BY THE EXPERIMENTER, CONTAINS A COMPLETE SET OF REDUCED DATA FOR THE LIFE OF THE EXPERIMENT WITH ABOUT 80 PERCENT TIME COVERAGE. THE DATA ARE WRITTEN ON 7-TRACK TAPES AT 800 BPI IN IBM 7094 BINARY FORMAT. EACH RECORD IS 460 WORDS LONG AND CONTAINS ONE ABSORBER WHEEL REVOLUTION OF DATA. THE DATA INCLUDE TIME (UT), SATELLITE POSITION PARAMETERS IN GEOCENTRIC INERTIAL AND B, L COORDINATES, ATTITUDE PARAMETERS, ETC., STORED IN FLOATING POINT FORMAT. ALSO INCLUDED ARE CURRENT, COUNT RATES, AND HOUSEKEEPING CHANNEL READINGS FOR 256 TELEMETER FRAMES. THE CHANNEL READINGS FOR EACH FRAME ARE PACKED TOGETHER AS BINARY INTEGERS IN ONE 36-BIT WORD. THERE ARE THREE ORBITS, WHICH AMOUNT TO ABOUT 4.6 DAYS OF DATA ON EACH TAPE.

MCDONALD, EPE-B

EXPERIMENT NAME- COSMIC RAYS

NSSDC ID- 62-051A-04A

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/11/63

PERSONNEL

PI - F.B. MCDONALD NASA-GSFC
GREENBELT, MD

THE INSTRUMENTATION FOR THE COSMIC-RAY EXPERIMENT CONSISTED OF (1) A DOUBLE SCINTILLATION COUNTER TELESCOPE THAT MEASURED 55- TO 500-MEV PROTONS IN SIX ENERGY INTERVALS AND PROTONS ABOVE 600 MEV, (2) A SINGLE SCINTILLATOR THAT MEASURED 1.4- TO 22-MEV PROTONS AT FIVE ENERGY THRESHOLDS AND ELECTRONS ABOVE 150 KEV, AND (3) A GM COUNTER TELESCOPE THAT MEASURED PROTON FLUXES ABOVE 30 MEV. A COMPLETE SET OF MEASUREMENTS WAS MADE EVERY 6.3 MIN. THE EXPERIMENT WORKED THROUGHOUT THE USEFUL LIFE OF THE SPACECRAFT, OCTOBER 2, 1962, TO AUGUST 11, 1963.

DATA SET NAME- REDUCED COUNT RATE DATA

NSSDC ID- 62-051A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/02/62 TO 08/11/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 17 REEL(S) OF MAGNETIC TAPE

SEVENTEEN 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPES, WHICH WERE SUBMITTED BY THE EXPERIMENTER, CONTAIN A COMPLETE SET OF REDUCED DATA FROM ALL THREE DETECTORS, ALONG WITH TIME, ORBIT, AND ATTITUDE PARAMETERS. THE TAPES ARE BLOCKED WITH 6.3 MIN OF DATA PER TAPE RECORD. INCLUDED ARE DATA FOR PERIODS WHEN THE SPACECRAFT ENCODER WAS WORKING.

OCTOBER 2, 1962, TO JANUARY 10, 1963, AND JANUARY 24, 1963, TO AUGUST 11, 1963, WITH ABOUT 80 PERCENT COVERAGE. LISTINGS OF THE SAME DATA ARE AVAILABLE ON 27 REELS OF MICROFILM IN DATA SET 62-051A-04C.

DATA SET NAME- AVERAGED COUNT RATE DATA

NSSDC ID- 62-051A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/02/62 TO 08/11/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 3 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF THREE IBM 7094, 7-TRACK, BINARY MAGNETIC TAPES, TWO WRITTEN AT 556 BPI AND ONE WRITTEN AT 800 BPI. SUBMITTED BY THE EXPERIMENTER, THE TAPES CONTAIN A COMPLETE SET OF TIME-AVERAGED DATA (FOR 55-MIN PERIODS) FROM ALL THREE DETECTORS, ALONG WITH TIME AND SPACECRAFT HEIGHT. DATA ARE INCLUDED FOR PERIODS WHEN THE SPACECRAFT ENCODER WAS WORKING, OCTOBER 2, 1962, TO JANUARY 10, 1963, AND JANUARY 24, 1963, TO AUGUST 11, 1963, WITH ABOUT 80 PERCENT COVERAGE. LISTINGS OF THE SAME DATA ARE AVAILABLE ON 5 REELS OF MICROFILM IN DATA SET 62-051A-04D.

VAN ALLEN, EPE-B

EXPERIMENT NAME- TRAPPED PARTICLE RADIATION

NSSDC ID- 62-051A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/11/63

PERSONNEL

PI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA
OI - L.A. FRANK U OF IOWA
IOWA CITY, IA

THE EXPERIMENT WAS DESIGNED TO OBTAIN SEPARATELY DEFINITIVE VALUES OF THE ABSOLUTE INTENSITIES OF GEOMAGNETICALLY TRAPPED ELECTRONS (E.GE. 40 KEV AND E.GE. 230 KEV) AND PROTONS (E.GE. 500 KEV) PARTICULARLY IN THE OUTER ZONE. THE EXPERIMENT USED AN ARRAY OF THREE THIN-WINDOWED ANTON TYPE 213 DIRECTIONAL GM COUNTERS. THE DETECTORS WERE ORIENTED PERPENDICULAR TO THE SPACECRAFT SPIN AXIS (THE SPACECRAFT HAD AN INITIAL SPIN PERIOD OF ABOUT 6 SEC.) THE EXPERIMENT WAS ALSO DESIGNED TO STUDY THE PHYSICAL PHENOMENA NEAR THE BOUNDARY OF THE MAGNETOSPHERE. AN OMNIDIRECTIONAL 302 GM DETECTOR WAS USED TO GATHER DATA FOR COMPARISON WITH MEASUREMENTS OBTAINED WITH THE 302 TYPE GM DETECTORS ON EARLIER SATELLITES. EACH DETECTOR WAS SAMPLED FOR 10.24 SEC, AND THE ACCUMULATED COUNTS WERE TRANSMITTED REDUNDANTLY EVERY 76.8 SEC. THE TRAPPED PARTICLES EXPERIMENT OPERATED SATISFACTORILY UNTIL AUGUST 11, 1963, WHEN MODULATION OF THE TELEMETRY SIGNAL CEASED.

DATA SET NAME- COMPACTED GEIGER TUBE COUNT RATES AND ORBITAL DATA ON MAGNETIC TAPE

NSSDC ID- 62-051A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 10/02/62 TO 08/11/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MAGNETIC TAPE

THE DATA FROM 62-051A-03B (EIGHT EXPERIMENTER SUPPLIED TAPES) HAVE BEEN COMPACTED TO TWO 7-TRACK, IBM 7094, BCD, EVEN PARITY, MAGNETIC TAPES WRITTEN AT 556 BPI. IN THIS DATA SET, THE DATA INCLUDE TIME-ORDERED COUNTING RATES OF THE DETECTORS MERGED WITH B (GAUSS), MCILWAIN'S L PARAMETER (EARTH RADIUS), KP INDICES, AND ADDITIONAL EPHEMERIS DATA.

DATA SET NAME- L-INTERPOLATED ELECTRON COUNT RATES ON
MAGNETIC TAPE

NSSDC ID- 62-051A-030

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/02/62 TO 08/11/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS NSSDC-GENERATED DATA SET CONSISTS OF L-INTERPOLATED, DEAD-TIME CORRECTED, ELECTRON COUNT RATES (FROM DATA SET 62-051A-03A) ON ONE 7-TRACK, IBM 7094, EVEN PARITY, BCD MAGNETIC TAPE WRITTEN AT 556 BPI. THE DATA CONSIST OF CARD IMAGES. THERE ARE FOUR TAPE FILES (FILES 1 THROUGH 4) FOR THESE DATA CONTAINING, RESPECTIVELY, COUNT RATES FROM THE TYPE 302, 213A, 213B, AND 213C GM COUNTERS. THE DATA RECORDS (ONE LOGICAL RECORD PER PHYSICAL RECORD) ARE ORDERED BY L VALUE. EACH DATA RECORD WITHIN A FILE IS 80 CHARACTERS LONG AND IS PRECEDED BY A 60-CHARACTER HEADER RECORD AND FOLLOWED BY A TWO-CHARACTER TRAILER RECORD. THE EXPERIMENTAL DATA HAVE BEEN INTERPOLATED TO L = 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 9.0, 10.0, 11.0, AND 12.0 AND ARE GROUPED BY L VALUE. THE DATA ARE TIME ORDERED WITHIN A GIVEN L-VALUE GROUP. THE DATA SET ALSO INCLUDES TIME (LOCAL TIME, UT, SOLAR ROTATION TIME), GEOMAGNETIC LATITUDE, GEOGRAPHIC LATITUDE, B/RO, AND MCILWAIN'S L VALUE. A SIMILAR DATA SET (61-020A-03C) FROM EXPLORER 12 IS ALSO CONTAINED ON THIS TAPE (FILE 5).

SPACECRAFT COMMON NAME- EPE-C

ALTERNATE NAMES- 1962 BETA LAMBDA 1, S 3B
EXPLOREP 15, 00445

NSSDC ID- 62-059A

LAUNCH DATE- 10/27/62 WEIGHT- 44.4 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 01/30/63

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 10/27/62
ORBIT PERIOD- 317. MIN INCLINATION- 18. DEG
PERIAPSIS- 309.000 KM ALT APOAPSIS- 17629.0 KM ALT

EXPLORER 15 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO STUDY THE ARTIFICIAL RADIATION BELT PRODUCED BY THE STARFISH HIGH-ALTITUDE NUCLEAR BURST OF JULY 1962. THE BACKUP PAYLOAD FOR EXPLORER 14 WAS MODIFIED AND USED FOR EXPLORER 15. THE INSTRUMENTATION INCLUDED THREE SETS OF PARTICLE DETECTORS TO STUDY BOTH ELECTRONS AND PROTONS, AND A TWO-AXIS FLUXGATE MAGNETOMETER TO DETERMINE MAGNETIC ASPECT. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.323 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION, AND THE OTHERS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING OF THE TELEMETERED DATA, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/100 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A PATTERN 16 FRAMES LONG AND WAS USED TO TELEMETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.041 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND THE SUN DIRECTION TO ABOUT 3-DEG INTERVALS. DURING LAUNCH THE SPACECRAFT FAILED TO DESPIN. THE SPIN RATE RANGED FROM 72.9 TO 73.2 RPM DURING THE LIFE OF THE SPACECRAFT. THE SPIN AXIS POINTED AT RIGHT ASCENSION 80.97 DEG AND DECLINATION 20.9 DEG. EXCEPT FOR THE DESPIN FAILURE AND SOME OTHER MINOR, SHORT-PERIOD ENCODER MALFUNCTIONS, THE PAYLOAD FUNCTIONED WELL FROM LAUNCH UNTIL JANUARY 27, 1963 WHEN AN UNDERVOLTAGE TURN-OFF OCCURRED. ON RECOVERY THE SPACECRAFT CONTINUED TO PROVIDE SOME DATA UNTIL JANUARY 30, 1963 WHEN THE SECOND UNDERVOLTAGE TURN-OFF OCCURRED, AFTER WHICH TIME THE ENCODER PERMANENTLY MALFUNCTIONED.

BROWN, EPE-C

EXPERIMENT NAME- ELECTRON AND PROTON SOLID-STATE
DETECTORS

NSSDC ID- 62-059A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/23/62

PI - W.L. BROWN BELL TELEPHONE LAB
MURRAY HILL, NJ
OI - U.O. DESAI NASA-GSFC
GREENBELT, MD

SIX DIFFUSED SILICON P-N JUNCTION SEMICONDUCTOR DIODES WERE USED TO MEASURE THE ENERGY SPECTRUM OF ELECTRONS AND PROTONS IN THE ARTIFICIAL RADIATION BELT. DETECTOR A WAS SENSITIVE TO ELECTRONS IN THE ENERGY RANGE 0.5 TO 2.8 MEV AND TO PROTONS IN THE RANGE 2.1 TO 4.0 MEV. DETECTORS B THROUGH F WERE SENSITIVE TO ELECTRONS IN THE RANGE 0.5 TO 2.9 MEV AND TO PROTONS IN THE RANGE 2.1 TO 2.2 MEV. THE DETECTORS WERE OPERATED IN HIGH AND LOW BIAS MODES, ENABLING DISCRIMINATION OF PROTONS FROM ELECTRONS. DETECTORS B AND C WERE LOCATED ON PROTRUDING OMNIDIRECTIONAL MOUNTS WITH A LOOK ANGLE OF ABOUT 2 PI STER. THE OTHER FOUR DETECTORS LOOKED PERPENDICULAR TO THE SPIN AXIS OF THE SATELLITE. THE DETECTORS FED THROUGH PRESCALERS AND LOG RATE METERS TO 16 ANALOG TELEMETER CHANNELS. COUNTS WERE ACCUMULATED FOR 0.15 SEC EVERY 0.3 SEC. ALL DATA TRANSMISSION WAS IN REAL TIME. USEFUL DATA WERE OBTAINED FROM THE EXPERIMENT FROM LAUNCH THROUGH DECEMBER 23, 1962.

DATA SET NAME- REDUCED L-ORDERED PROTON-ELECTRON DATA
FOR L FROM 1.1 TO 4.8 ON MAGNETIC TAPE

NSSDC ID- 62-059A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/27/62 TO 01/01/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE REDUCED DATA GENERATED AT BELL TELEPHONE LABORATORIES ARE ON ONE BESYS, IBM 7094, 7-TRACK, 800-BPI, ODD PARITY MAGNETIC TAPE WITH A BLOCK SIZE OF ONE HUNDRED AND SIXTY-SIX 36-BIT WORDS. DATA ARE INTERPOLATED TO 62 MCILWAIN L VALUES RANGING FROM 1.10 TO 4.8 AND ORDERED FIRST BY L AND THEN BY TIME. DATA FROM THE TWO OMNIDIRECTIONAL AND THE TWO MEDIUM-APERTURE (HALF-ANGLE OF 20 DEG) DETECTORS ARE PRESENTED FOR HIGH AND LOW BIAS MODES OF OPERATION. DATA FROM THE 2.9-MEV ELECTRON MODE ARE NOT VALID BEYOND DECEMBER 23, 1962. AN IBM FORTRAN IV PROGRAM WRITTEN FOR THE IBM 7094 IS AVAILABLE TO READ OUT THE DATA ON THE TAPE AND DETERMINE THE MAXIMUM AND MINIMUM FLUX VALUES FOR EACH DETECTOR FOR EACH FILE.

DAVIS, EPE-C

EXPERIMENT NAME- PROTON-ELECTRON SCINTILLATION DETECTOR

NSSDC ID- 62-059A-05

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 01/30/63

PERSONNEL
PI - L.R. DAVIS NASA-GSFC
GREENBELT, MD
OI - J.M. WILLIAMSON NASA-GSFC
GREENBELT, MD

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIRECTIONAL FLUXES AND SPECTRA OF LOW-ENERGY TRAPPED AND AURORAL PROTONS AND ELECTRONS. IT EMPLOYED A 5-MG-THICK POWDER PHOSPHOR SCINTILLATOR COVERED WITH A 1000-A ALUMINUM COATING. ADDITIONAL ABSORBERS WERE INSERTED IN THE DETECTOR APERTURE BY A 16-POSITION STEPPED WHEEL. THE APERTURE WAS POINTED AT 45 DEG TO THE SPIN AXIS. DUE TO THE THINNESS AND TYPE OF PHOSPHOR, THE DETECTOR IN THE PULSE MODE WOULD RESPOND ONLY TO LOW-ENERGY IONS, AND, THEREFORE, ESSENTIALLY MEASURED THE FLUX OF PROTONS THAT PENETRATED THE ABSORBERS AND STOPPED IN THE PHOSPHOR. BOTH THE PULSE COUNTING RATE AND THE PHOTOTUBE CURRENT WERE TELEMETERED ONCE EACH FRAME PERIOD. SIXTEEN READINGS WERE TELEMETERED IN EACH WHEEL POSITION, AND THUS ONE COMPLETE SET OF DATA WAS OBTAINED EVERY 256 FRAMES (ONE WHEEL REVOLUTION = 80 SEC). PROTONS IN SEVEN ENERGY RANGES WERE MEASURED. THE HIGH ENERGY LIMIT WAS ABOUT 10 MEV FOR ALL RANGES, AND THE LOW-ENERGY CUTOFFS WERE 105, 140, 177, 254, 512, 971, AND 1668 KEV. THE ENERGY FLUXES OF ELECTRONS IN THREE RANGES WERE MEASURED SEPARATELY USING SCATTER GEOMETRY, ABSORBERS, AND THE PHOTOTUBE CURRENT. THE LOW-ENERGY CUTOFFS WERE 15, 21, AND 27 KEV, AND THE HIGH-ENERGY CUTOFF WAS ABOUT 100 KEV FOR ALL THREE RANGES. THE EXPERIMENT WORKED WELL THROUGHOUT THE LIFE OF THE SPACECRAFT. HOWEVER, THE DIRECTIONAL RESOLUTION WAS POOR BECAUSE THE SPIN RATE WAS HIGHER THAN PLANNED.

EPE-C/EPE-D

DATA SET NAME- COMPLETE SET OF REDUCED PROTON AND ELECTRON DATA ON MAGNETIC TAPES

NSSDC ID- 62-059A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/26/62 TO 01/27/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 18 REEL(S) OF MAGNETIC TAPE

THIS MAGNETIC TAPE DATA SET, SUBMITTED BY THE EXPERIMENTER, CONTAINS A COMPLETE SET OF REDUCED DATA FOR THE LIFE OF THE EXPERIMENT WITH ABOUT 90 PERCENT TIME COVERAGE. THE DATA ARE WRITTEN ON 7-TRACK TAPES IN IBM 7094 BINARY FORMAT. EACH RECORD IS 460 WORDS LONG AND CONTAINS ONE ABSORBER WHEEL REVOLUTION OF DATA. THE DATA INCLUDE TIME (UT), SATELLITE POSITION PARAMETERS IN GEOCENTRIC INERTIAL AND B, L COORDINATES, ATTITUDE PARAMETERS, ETC., STORED IN FLOATING POINT FORMAT. ALSO INCLUDED ARE CURRENT, COUNT RATES, AND HOUSEKEEPING CHANNEL READINGS FOR 256 TELEMETRY FRAMES. THE CHANNEL READINGS FOR EACH FRAME ARE PACKED TOGETHER AS BINARY INTEGERS IN ONE 36-BIT WORD. THERE ARE 24 ORBITS, WHICH AMOUNT TO ABOUT 5.2 DAYS OF DATA ON EACH TAPE.

MCILWAIN, EPE-C

EXPERIMENT NAME- DIRECTIONAL AND OMNIDIRECTIONAL NEUTRONIC PROTONS AND ELECTRONS

NSSDC ID- 62-059A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 01/30/63

PERSONNEL

PI - C.E. MCILWAIN U OF CALIF. SAN DIEGO
SAN DIEGO, CA

THE UCSD PARTICLE EXPERIMENT CONSISTED OF TWO PLASTIC SCINTILLATOR DETECTORS. THERE WAS A TWO-LEVEL PULSE HEIGHT DISCRIMINATOR ASSOCIATED WITH EACH DETECTOR. ONE DETECTOR WAS ORIENTED PERPENDICULAR TO THE SPACECRAFT SPIN AXIS AND HAD A 16-DEG FULL-ANGLE APERTURE. COUNTING RATES FROM THE TWO DISCRIMINATION LEVELS OF THIS DETECTOR YIELDED INFORMATION ON DIRECTIONAL FLUXES OF ELECTRONS WITH ENERGIES ABOVE 0.5 MEV. THE SECOND DETECTOR WAS OMNIDIRECTIONAL, AND IT SEPARABLY MEASURED FLUXES OF PROTONS WITH ENERGIES FROM 40 MEV TO 110 MEV AND OF ELECTRONS WITH ENERGIES ABOVE ABOUT 4 MEV. COUNTS IN EACH OF THE FOUR DISCRIMINATION STATES WERE ACCUMULATED FOR 9.3 SEC ONCE EACH 69-SEC TELEMETRY SEQUENCE. IN CONNECTION WITH THE DIRECTIONAL FLUXES, IT IS SIGNIFICANT THAT 9.3 SEC IS ABOUT 7.6 TIMES THE SPACECRAFT SPIN PERIOD. THE DETECTORS FUNCTIONED NORMALLY FROM OCTOBER 27, 1962 UNTIL JANUARY 30, 1963, AFTER WHICH NO FURTHER DATA WERE OBTAINED.

DATA SET NAME- REDUCED COUNT RATES ON TAPE

NSSDC ID- 62-059A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/27/62 TO 01/30/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 6 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF SIX REELS OF 7-TRACK, 556-BPI, CDC/3600, BINARY MAGNETIC TAPES THAT WERE SUPPLIED BY THE EXPERIMENTER. THERE ARE TWELVE 48-BIT WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES ARE TIME ORDERED, COVERING ABOUT 75 PERCENT OF THE INTERVAL OCTOBER 27, 1962, TO JANUARY 30, 1963. EACH LOGICAL RECORD CONTAINS TIME, A DEAD-TIME CORRECTED COUNT RATE, A FLAG INDICATING WHICH OF THE FOUR DISCRIMINATION STATES IS INVOLVED, SPACECRAFT LATITUDE, LONGITUDE, AND ALTITUDE, COMPUTED MAGNETIC FIELD MAGNITUDE AND DIRECTION, COMPUTED L VALUE, AND OTHER HOUSEKEEPING DATA.

SPACECRAFT COMMON NAME- EPE-D

ALTERNATE NAMES- EXPLORER 26, S 3C
00963

NSSDC ID- 64-086A

LAUNCH DATE- 12/21/64 WEIGHT- 45.8 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/26/67

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 12/21/64
ORBIT PERIOD- 456, MIN INCLINATION- 29.1 DEG
PERTAPSIS- 305,000 KM ALT' APGAPSIS- 27192.0 KM ALT

EXPLORER 26 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE TRAPPED PARTICLES AND THE GEOMAGNETIC FIELD. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMETRY WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.29 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION. THE OTHER CHANNELS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/800 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A 16-FRAME-LONG PATTERN AND USED TO TELEMETRY SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.036 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT SYSTEMS FUNCTIONED WELL, EXCEPT FOR SOME UNDERVOLTAGE TURNOFFS, UNTIL MAY 26, 1967 WHEN THE TELEMETRY FAILED. THE INITIAL SPIN RATE WAS 33 RPM, AND THE SPIN AXIS DIRECTION WAS RIGHT ASCENSION 272.8 DEG, AND THE DECLINATION 21.5 DEG. THE SPIN RATE DECREASED WITH TIME TO 2 RPM ON SEPTEMBER 9, 1966. FOR THE BALANCE OF ITS LIFE, THE SPACECRAFT WAS CONING OR TUMBLING AT A RATE OF ABOUT 1 RPM.

BROWN, EPE-D

EXPERIMENT NAME- SOLID-STATE ELECTRON DETECTOR

NSSDC ID- 64-086A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/22/67

PERSONNEL

PI - W.L. BROWN BELL TELEPHONE LAB
MURRAY HILL, NJ
OI - L.J. LANZAROTTI BELL TELEPHONE LAB
MURRAY HILL, NJ
OI - L. WEDFORD BELL TELEPHONE LAB
MURRAY HILL, NJ

TRAPPED ELECTRONS AND PROTONS IN THE EARTH'S VAN ALLEN BELTS WERE MEASURED USING A COMBINATION OF SIX OMNIDIRECTIONAL AND DIRECTIONAL SOLID-STATE PARTICLE DETECTORS (SILICON P-N JUNCTIONS). ELECTRONS WERE ANALYZED IN THE ENERGY RANGES E.G.T. 1 MEV, E.G.T. 3.5 MEV, AND E.G.T. 2.5 MEV WITH THE THREE OMNIDIRECTIONAL DETECTORS (E1, E2, E3), AND IN THE RANGES E.G.T. 0.3 MEV AND E.G.T. 0.45 MEV WITH THE THREE DIRECTIONAL DETECTORS (E5, E6, E7). PROTONS WERE ANALYZED IN THE ENERGY RANGES E.G.T. 10 MEV, E.G.T. 27 MEV, AND E.G.T. 21 MEV WITH THE OMNIDIRECTIONAL DETECTORS, AND IN THE RANGES E.G.T. 1.7 MEV, E.G.T. 2.2 MEV, AND E.G.T. 16 MEV WITH THE DIRECTIONAL DETECTORS. SPECIES DISCRIMINATION WAS NOT ALWAYS POSSIBLE. OMNIDIRECTIONAL DATA WERE ACCUMULATED AND TELEMETERED EVERY 1.43 SEC. DIRECTIONAL DATA WERE ACCUMULATED FOR 0.145 SEC AND TELEMETERED EVERY 0.29 SEC. DURING THE SPACECRAFT SPIN PERIOD INCREASED FROM 0.03 SEC TO 0.5 SEC. THE SPACECRAFT LIFE, PROTON DATA ARE PRIMARILY USEFUL IN IDENTIFYING PROTON CONTAMINATION OF ELECTRON COUNTING RATES. THE INSTRUMENT BEHAVED WELL THROUGHOUT THE SPACECRAFT LIFE.

DATA SET NAME- REDUCED ELECTRON DATA ON MAGNETIC TAPE
(THRESHOLDS 0.3 TO 3.5 MEV)

NSSDC ID- 64-086A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/21/64 TO 05/15/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 68 REEL(S) OF MAGNETIC TAPE

THESE DATA ARE ON SIXTY-EIGHT 7-TRACK, IBM, BINARY TAPES GENERATED AT BELL TELEPHONE LABORATORIES FROM THE ORIGINAL

DATA AT 800 BPI (BESYS FORMAT) IN A TIME-ORDERED SEQUENCE. THE DATA INCLUDE THE OUTPUT FROM COUNTERS E1, E2, E3, E5, E6, AND E7 IN A DIGITAL FORMAT, MAGNETIC COORDINATES (L, X), THE ANGLE BETWEEN THE DETECTOR AND (W X B) IN RADIAN (WHERE W IS FOR SPIN VECTOR), GEOGRAPHIC SATELLITE POSITION, SATELLITE SPIN RATE, UT, TEMPERATURE (PLUS OR MINUS 1 DEG C), AND VARIOUS CONTROL PARAMETERS. COUNTERS E1, E2, AND E3 WERE OMNIDIRECTIONAL, AND COUNTERS E5, E6, AND E7 WERE DIRECTIONAL. THE THRESHOLDS FOR COUNTING ELECTRONS FOR THE SIX COUNTERS WERE 1 MEV, 3.5 MEV, 2.5 MEV, 0.3 MEV, 0.45 MEV, AND 1.7 MEV, RESPECTIVELY. THESE DATA COMPRISE ALL USEFUL DATA FROM THIS EXPERIMENT.

THIS 146 MAGNETIC TAPE DATA SET, SUBMITTED BY THE EXPERIMENTER, CONTAINS A COMPLETE SET OF REDUCED DATA FOR THE LIFE OF THE EXPERIMENT WITH ABOUT 80 PERCENT TIME COVERAGE. THE DATA ARE WRITTEN ON 7-TRACK TAPES IN IBM 7094 BINARY FORMAT. EACH RECORD IS 460 WORDS LONG AND CONTAINS ONE ABSORBER WHEEL REVOLUTION OF DATA. THE DATA INCLUDE TIME (UT), SATELLITE POSITION PARAMETERS IN GEOCENTRIC INERTIAL AND B, L COORDINATES, ATTITUDE PARAMETERS, ETC., STORED IN FLOATING POINT FORMAT. ALSO INCLUDED ARE CURRENT, COUNT RATES, AND HOUSEKEEPING CHANNEL READINGS FOR 256 TELEMETRY FRAMES. THE CHANNEL READINGS FOR EACH FRAME ARE PACKED TOGETHER AS BINARY INTEGERS IN ONE 36-BIT WORD. THERE ARE 12 ORBITS, WHICH AMOUNT TO ABOUT 3.8 DAYS OF DATA ON EACH TAPE.

DATA SET NAME- L-INTERPOLATED OUTER ZONE ELECTRON DATA
ON MAGNETIC TAPES

NSSDC ID- 64-086A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/21/64 TO 05/15/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 6 REEL(S) OF MAGNETIC TAPE

THESE DATA CONSIST OF SIX 556-BPI, 7-TRACK, EVEN PARITY, BCD TAPES, ONE FOR EACH OF THE SIX DETECTORS OF EXPERIMENT 64-086A-01, GENERATED AT NSSDC FROM DATA SET 64-086A-01A. EACH TAPE CONTAINS L-INTERPOLATED ELECTRON COUNT RATES, MAGNETIC FIELD, TIME, AND POSITIONAL INFORMATION. DATA WERE INTERPOLATED TO L-VALUES FROM 3.5 TO 7.5 EARTH RADII IN INCREMENTS OF 0.5 EARTH RADII. THE DATA WERE SORTED ON L, AND ORDERED CHRONOLOGICALLY WITHIN EACH L-SET.

MCILWAIN, EPE-D

EXPERIMENT NAME- OMNIDIRECTIONAL AND UNIDIRECTIONAL
ELECTRON AND PROTON FLUXES

NSSDC ID- 64-086A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/25/67

PERSONNEL

PI - C.E. MCILWAIN U OF CALIF, SAN DIEG
SAN DIEGO, CA
OI - R.W. FILLIUS U OF CALIF, SAN DIEG
SAN DIEGO, CA

OMNIDIRECTIONAL FLUXES OF 40- TO 110-MEV PROTONS AND OF ELECTRONS GREATER THAN ABOUT 4 MEV WERE SEPARABLY MEASURED BY A PLASTIC SCINTILLATOR. A SECOND PLASTIC SCINTILLATOR WITH AN 8-DEG HALF-ANGLE APERTURE AND A LOOK DIRECTION PERPENDICULAR TO THE SPACECRAFT SPIN AXIS SEPARABLY MEASURED PROTONS ABOVE 5.2 MEV AND ELECTRONS ABOVE 0.5 MEV. THE ABILITY TO DISTINGUISH BETWEEN THE ENERGY LEVELS WAS DUE TO THE PRESENCE OF TWO DISCRIMINATION LEVELS ASSOCIATED WITH EACH DETECTOR. HIGH QUALITY DATA TRANSMISSION FROM THIS EXPERIMENT WAS ESSENTIALLY CONTINUOUS FROM LAUNCH UNTIL ABOUT THE MIDDLE OF 1966. THEN INTERMITTENT UNTIL MAY 25, 1967, AFTER WHICH NO FURTHER DATA WERE OBTAINED.

DAVIS, EPE-D

EXPERIMENT NAME- PROTON-ELECTRON SCINTILLATION DETECTOR

NSSDC ID- 64-086A-04

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 06/23/66

PERSONNEL

PI - L.R. DAVIS NASA-GSFC
GREENBELT, MD
OI - J.H. WILLIAMSON NASA-GSFC
GREENBELT, MD

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIRECTIONAL FLUXES AND SPECTRA OF LOW-ENERGY TRAPPED AND AURORAL PROTONS AND ELECTRONS. IT EMPLOYED A 5-MG-THICK POWDER PHOSPHOR SCINTILLATOR WITH A 1000-A ALUMINUM COATING. ADDITIONAL ABSORBERS WERE INSERTED IN THE DETECTOR APERTURE BY A 16-POSITION STEPPED WHEEL. THE APERTURE WAS POINTED AT 45 DEG TO THE SPIN AXIS. DUE TO THE THINNESS AND TYPE OF PHOSPHOR, THE DETECTOR IN THE PULSE MODE WOULD RESPOND ONLY TO LOW-ENERGY IONS, AND, THEREFORE, ESSENTIALLY MEASURED THE FLUX OF PROTONS THAT PENETRATED THE ABSORBERS AND STOPPED IN THE PHOSPHOR. BOTH THE PULSE COUNTING RATE AND THE PHOTOTUBE CURRENT WERE TELEMETRED ONCE EACH FRAME PERIOD. SIXTEEN READINGS WERE TELEMETRED IN EACH WHEEL POSITION, AND THUS ONE COMPLETE SET OF DATA WAS OBTAINED EVERY 256 FRAMES (ONE WHEEL REVOLUTION = 80 SEC). PROTONS IN SEVEN ENERGY RANGES WERE MEASURED. THE HIGH ENERGY LIMIT WAS, ABOUT 10 MEV FOR ALL RANGES, AND THE LOW-ENERGY CUTOFFS WERE 97, 125, 168, 295, 495, 970, AND 1700 KEV. THE ENERGY FLUXES OF ELECTRONS IN THREE RANGES WERE MEASURED SEPARATELY USING SCATTER GEOMETRY, ABSORBERS, AND THE PHOTOTUBE CURRENT. THE LOW-ENERGY CUTOFFS WERE 17, 33, AND 75 KEV, AND THE HIGH-ENERGY CUTOFF WAS ABOUT 100 KEV FOR ALL THREE RANGES. THE EXPERIMENT WORKED WELL FROM LAUNCH UNTIL JUNE 23, 1966, AT WHICH TIME THE WHEEL STOPPED. THE DATA OBTAINED AFTER SEPTEMBER 9, 1965 ARE DIFFICULT TO ANALYZE DUE TO THE CONING OF THE SPACECRAFT.

DATA SET NAME- L-ORDERED COUNT RATES ON TAPE

NSSDC ID- 64-086A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/21/64 TO 02/28/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MAGNETIC TAPE

THIS ANALYZED DATA SET CONSISTS OF TWO 7-TRACK, 556-BPI, BCD MAGNETIC TAPES ON WHICH THE DATA HAVE BEEN INTERPOLATED TO ABOUT 65 DISCRETE L VALUES BETWEEN 1.15 AND 7.00. THERE ARE 10 LOGICAL RECORDS OF 144 CHARACTERS EACH PER PHYSICAL RECORD. COUNT RATES FOR BOTH DISCRIMINATION LEVELS OF BOTH DETECTORS ARE PRESENTED. FOR EACH SET OF FOUR COUNTS, TIME (UT), COMPUTED MAGNETIC FIELD MAGNITUDE, AND SPACECRAFT POSITION (ALTITUDE, LATITUDE, LONGITUDE) AND ORIENTATION ARE GIVEN. THESE TAPES, ORDERED ON B AND L, WERE GENERATED BY THE EXPERIMENTER FROM HIS TIME-ORDERED TAPES.

DATA SET NAME- REDUCED COUNT RATES ON TAPE

NSSDC ID- 64-086A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/21/64 TO 05/21/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 42 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF FORTY-TWO 7-TRACK, 556-BPI, CDC 3600, BINARY MAGNETIC TAPES. THERE ARE 10 LOGICAL RECORDS OF 96 CHARACTERS EACH PER PHYSICAL RECORD. TIME-ORDERED REDUCED COUNT RATES FOR BOTH DISCRIMINATION LEVELS OF BOTH DETECTORS, ALONG WITH NOISE FLAGS, SPACECRAFT EPHEMERIS INFORMATION (LATITUDE, LONGITUDE, ALTITUDE, COMPUTED B AND L), AND HOUSEKEEPING INFORMATION, ARE PRESENTED IN EACH LOGICAL RECORD. THE TAPES WERE GENERATED BY THE EXPERIMENTER.

DATA SET NAME- COMPLETE SET OF REDUCED PROTON AND
ELECTRON DATA ON MAGNETIC TAPES

NSSDC ID- 64-086A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/00/64 TO 06/00/65
(AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA- 146 REEL(S) OF MAGNETIC TAPE

ERS 13/ERS 17

SPACECRAFT COMMON NAME- ERS 13

ALTERNATE NAMES- TRS 6, TRS 2(B)
00838

NSSDC ID- 64-040C

LAUNCH DATE- 07/17/64

WEIGHT- 2.0 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/08/64

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 07/17/64
ORBIT PERIOD- 2364. MIN INCLINATION- 36.7 DEG
PERIAPSIS- 220. KM ALT APOAPSIS- 105000. KM ALT

ERS 13 WAS A SPIN-STABILIZED TETRAHEDRON THAT WEIGHED 2.1 KG AND MEASURED 22.86 CM ALONG EACH TRIANGULAR EDGE. THE SPIN RATE WAS APPROXIMATELY 10 RPM, AND POWER WAS OBTAINED BY SOLAR CELLS. THE SATELLITE CARRIED A SCINTILLATION COUNTER AND A SOLID-STATE DETECTOR TO MEASURE ELECTRONS AND PROTONS IN THE RADIATION BELTS. BECAUSE OF THE LDM (100 MW) TRANSMITTER POWER AT 136 MHZ, NO DATA WERE OBTAINED BEYOND 6 EARTH RADII (40,280 KM). THE TRANSMISSION WAS NORMAL FROM LAUNCH UNTIL OCTOBER 20, 1964 WHEN THE TRANSMITTER BECAME INTERMITTENT. FROM THIS TIME UNTIL JANUARY 4, 1965, SOME TRANSMISSIONS WERE RECEIVED. A PAM/FM/PM TELEMETRY SYSTEM USING IRIG CHANNEL 5 WAS EMPLOYED.

VETTE, ERS 13

EXPERIMENT NAME- CHARGED PARTICLE DETECTORS

NSSDC ID- 64-040C-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/08/64

PERSONNEL

PI - J.I. VETTE NASA-GSFC
GREENBELT, MD
OI - J.B. GARDNER TRW SYSTEMS GROUP
REDONDO BEACH, CA

THE EXPERIMENT CONSISTED OF (1) A LITHIUM DRIFTED SILICON DETECTOR TO MEASURE SEPARATELY ELECTRONS ABOVE 700 KEV AND PROTONS BETWEEN 12 AND 23 MEV, AND (2) A PLASTIC SCINTILLATION COUNTER TO MEASURE SEPARATELY ELECTRONS ABOVE 3.5 MEV AND PROTONS BETWEEN 39 AND 50 MEV IN THE RADIATION BELTS. THE PHOTOMULTIPLIER TUBE USED WITH THE SCINTILLATION COUNTER SHOWED A CHANGE IN GAIN AROUND SEPTEMBER 27, 1964. BOTH DETECTOR SYSTEMS WERE OMNIDIRECTIONAL AND USED LOGARITHMIC COUNT RATE METERS TO CONVERT RATES INTO ANALOG SIGNALS. TWO PULSE HEIGHT DISCRIMINATORS WERE USED WITH EACH DETECTOR TO PROVIDE THE FOUR MEASUREMENTS.

DATA SET NAME- ORIGINAL CORRECTED COUNT RATES ON
MAGNETIC TAPE

NSSDC ID- 64-040C-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/17/64 TO 12/08/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THE COUNT RATES FROM THE FOUR DISCRIMINATORS WERE SCALED FROM ANALOG STRIP CHARTS. EACH RATE CHANNEL WAS SAMPLED FOR APPROXIMATELY 10 SEC IN SEQUENCE. A SINGLE RATE AVERAGED OVER THIS SAMPLE PERIOD WAS DETERMINED. BOTH TEMPERATURE AND VOLTAGE CORRECTIONS WERE MADE BEFORE THE SUBCARRIER OSCILLATOR FREQUENCY WAS CONVERTED TO A COUNT RATE. APPROXIMATELY 20,000 DATA POINTS FROM OVER 400 HR OF DATA WERE OBTAINED AND PUT ON PUNCHED CARDS. BESIDES THE COUNT RATES, THE TIME OF YEAR (DECIMAL DAYS), LONGITUDE (DEG), RADIAL DISTANCE (KM), GEOMAGNETIC EQUATORIAL RADIUS (EARTH RADII), GEOMAGNETIC LATITUDE (DEG), L SHELL (EARTH RADII), B/B0 AND THE CARD NUMBER APPEAR. THE DATA SET CONSISTS OF A SINGLE 7-TRACK, 556-BPI, CDC 3600, BINARY MAGNETIC TAPE CONTAINING THESE CARD IMAGES.

DATA SET NAME- 10-SEC AVERAGED, L-ORDERED ELECTRON FLUX
DATA ABOVE 700 KEV ON TAPE

NSSDC ID- 64-040C-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/18/64 TO 11/29/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THE COUNT RATES FROM THE LITHIUM DRIFTED SILICON DETECTOR ELECTRON CHANNEL WERE INTERPOLATED TO THE FIXED L VALUES 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, AND 8.0 AND CONVERTED TO FLUX GREATER THAN 700 KEV USING A MULTIPLICATIVE FACTOR EQUAL TO 300. BESIDES THE FLUX, LOCAL TIME (HR), SOLAR ROTATION TIME (DAYS), UT (HR), MONTH, DAY OF MONTH, YEAR (MINUS 1900), GEOGRAPHIC LATITUDE (DEG), EAST LONGITUDE (DEG), ORBIT NUMBER, AND L VALUE (EARTH RADII) ARE GIVEN. THE DATA ARE ORDERED BY L VALUE. THE CARD IMAGES ARE ON A SINGLE 7-TRACK, 556-BPI, IBM 7094, BCD, EVEN PARITY MAGNETIC TAPE. THE DATA SET WAS USED IN CONSTRUCTING THE AE-4 MODEL ELECTRON ENVIRONMENT. THIS DATA SET APPEARS AS FILE 4 ON THE SAME TAPE AS THAT WHICH CONTAINS DATA SET 65-058C-01D (ERS 17).

SPACECRAFT COMMON NAME- ERS 17

ALTERNATE NAMES- ORS 3, ORS 3(A)
01460

NSSDC ID- 65-058C

LAUNCH DATE- 07/20/65

WEIGHT- 5.5 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/03/65

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 07/20/65
ORBIT PERIOD- 2595. MIN INCLINATION- 36. DEG
PERIAPSIS- 131.000 KM ALT APOAPSIS- 69723.0 KM ALT

THE ENVIRONMENTAL RESEARCH SATELLITE 17 CARRIED A SET OF FIVE RADIATION DETECTORS DESIGNED TO MEASURE CHARGED PARTICLES, X RAYS, GAMMA RAYS, AND COSMIC RAYS IN THE NEAR-EARTH ENVIRONMENT. THE SATELLITE WAS LAUNCHED ON JULY 20, 1965, INTO A HIGHLY ELLIPTICAL ORBIT WHOSE INITIAL APOGEE AND PERIGEE ALTITUDES WERE 112,200 KM AND 192 KM. INITIAL LOCAL TIME OF APOGEE WAS 1630 HR. THE SATELLITE WAS SPIN STABILIZED WITH A SPIN RATE OF APPROXIMATELY 6 RPM. A 16-CHANNEL PAM/FM/PM TELEMETRY USING A SUBCOMMUTATOR AND IRIG FX CHANNEL 5 WAS EMPLOYED. EACH CHANNEL WAS SAMPLED FOR 4.5 SEC EVERY 72 SEC. DATA COVERAGE WAS OBTAINED AT ABOUT AN 86 PERCENT LEVEL FOR THE INITIAL 4 WEEKS OF OPERATION AND AT ABOUT A 26 PERCENT LEVEL THEREAFTER UNTIL NOVEMBER 3, 1965 WHEN THE TRANSMITTER CEASED. APPROXIMATELY 1500 HR OF DATA WERE OBTAINED.

VETTE, ERS 17

EXPERIMENT NAME- CHARGED PARTICLE DETECTORS

NSSDC ID- 65-058C-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/03/65

PERSONNEL

PI - J.I. VETTE NASA-GSFC
GREENBELT, MD

DETECTORS SENSITIVE TO TRAPPED PARTICLES INCLUDED A LITHIUM-DRIFTED SILICON DEVICE FOR DETECTING ELECTRONS ABOVE 320 KEV AND PROTONS FROM 8 TO 21 MEV, A PLASTIC SCINTILLATION COUNTER FOR ELECTRONS ABOVE 100 KEV AND PROTONS FROM 3.5 TO 27 MEV, AND A SHIELDED SODIUM IODIDE SCINTILLATION COUNTER FOR ELECTRONS ABOVE 3.2 MEV AND PROTONS ABOVE 35 MEV. THE PULSE SIGNAL FROM EACH OF THE THREE DETECTORS WAS FED TO TWO INTEGRAL PULSE HEIGHT DISCRIMINATORS. THE PULSE OUTPUTS OF THE LOWER LEVEL DISCRIMINATORS MEASURED ELECTRONS, AND THOSE FROM THE HIGHER LEVEL DISCRIMINATORS MEASURED PROTONS. FOUR OF THE SIX OUTPUTS WERE FED SEPARATELY INTO TWO LOGARITHMIC COUNT RATE METERS, ONE FOR HIGH AND ONE FOR LOW COUNT RATES. THE LITHIUM AND SODIUM HIGH-LEVEL DISCRIMINATOR OUTPUTS WERE EACH FED INTO TWO SINGLE-RATE METERS. THE 10 ANALOG VOLTAGES FROM THE RATE METERS AND A QUASI-DIGITAL OUTPUT FROM THE LITHIUM HIGH-LEVEL DISCRIMINATOR WERE EACH TELEMETRED ON A SEPARATE CHANNEL AND SAMPLED FOR 4.5 SEC EVERY 72 SEC. THE LOW-COUNT-RATE CHANNEL FOR ELECTRONS GREATER THAN 3.2 MEV

FAILED ON JULY 23, 1965. ALL OTHER CHANNELS OF THIS EXPERIMENT OPERATED UNTIL THE CESSATION OF TELEMETRY. ALL OF THESE DETECTOR SYSTEMS WERE OMNIDIRECTIONAL EXCEPT FOR THE PLASTIC SCINTILLATION COUNTER, WHICH HAD A CONICAL FIELD OF VIEW WITH A 45-DEG HALF ANGLE.

DATA SET NAME- MERGED CHARGED PARTICLE DETECTOR
COUNT RATES ON TAPE

NSSDC ID- 65-058C-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/20/65 TO 11/03/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 32 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF THIRTY-TWO 7-TRACK, 800 BPI, BCD TAPES WHICH CONTAIN IDENTIFICATION AND HEADER INFORMATION, TIME, SUBCARRIER FREQUENCY, DETECTOR COUNT RATES, FLAGS, ORBITAL COORDINATES, AND ALL OF THE RAW DATA SAMPLED 20 TIMES PER SECOND. THESE TAPES ALSO CONTAIN DATA SETS 65-058C-02A AND 65-058C-03A. THE DETECTOR COUNT RATES WERE OBTAINED BY AVERAGING OVER EACH 4.5-SEC SAMPLE OF EACH DETECTOR IN THE SATELLITE. THE EPHEMERIS DATA ALSO INCLUDE GEOMAGNETIC AND ECLIPTIC COORDINATES. THE BCD TAPE FORMAT CONSISTS OF EIGHT LOGICAL RECORDS PER PHYSICAL RECORD. EACH LOGICAL RECORD IS 120 CHARACTERS LONG. THE TIME PERIOD COVERED IS FROM 0849 UT ON JULY 20, 1965, TO 2332 UT ON NOVEMBER 3, 1965, WITH NUMEROUS TIME GAPS IN THE INTERVAL. APPROXIMATELY 1500 HR OF DATA WERE ACQUIRED IN THIS TIME PERIOD.

DATA SET NAME- CHARGED PARTICLE DETECTOR COUNT RATES
PLOTTED VS TIME ON MICROFILM

NSSDC ID- 65-058C-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 07/20/65 TO 11/03/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THE DATA ARE ON ONE ROLL OF 16-MM MICROFILM ALONG WITH TWO OTHER DATA SETS -- ORBIT PARAMETERS (DATA SET 65-058C-00E) AND HOUSEKEEPING DATA (DATA SET 65-058C-00F). THE COUNT RATES FOR ALL DETECTOR CHANNELS OF THE SATELLITE EXCEPT FOR THE QUASI-DIGITAL CHANNELS ARE PLOTTED VS UT. THE FOLLOWING MEASUREMENTS ARE INCLUDED -- (1) ELECTRONS GREATER THAN 100 KEV, (2) ELECTRONS GREATER THAN 320 KEV, (3) ELECTRONS GREATER THAN 3.2 MEV, (4) PROTONS 3.5 TO 27 MEV, (5) PROTONS 8 TO 21 MEV, (6) PROTONS GREATER THAN 35 MEV, (7) GAMMA RAYS 30 TO 100 KEV, (8) COSMIC-RAY PROTONS GREATER THAN 30 MEV, AND (9) SOLAR X RAYS 1- TO 14-A OR ELECTRONS ABOVE 40 KEV. THE MEASUREMENTS LISTED IN (7) AND (8) ARE DATA FROM EXPERIMENT 65-058C-03, AND THE MEASUREMENTS LISTED IN (9) ARE FROM EXPERIMENT 65-058C-02. EACH PLOT CONTAINS 15 HR OF DATA.

DATA SET NAME- L-ORDERED ELECTRON AND PROTON COUNT RATES
ON TAPE

NSSDC ID- 65-058C-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/20/65 TO 10/31/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THE COUNT RATES FROM THE LITHIUM DRIFTED SILICON DETECTOR (SSD) ELECTRON CHANNEL, AND THE TWO CHANNELS OF THE PLASTIC SCINTILLATION COUNTER (LEPM) WERE INTERPOLATED TO THE FOLLOWING L VALUES -- 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 8.0, 9.0, 10.0, 11.0, AND 12.0. THE DATA ARE ORGANIZED INTO SEPARATE FILES FOR EACH ENERGY THRESHOLD. WITHIN EACH FILE THE DATA ARE ORDERED BY L VALUE. THE LEPM RESPONDED TO ELECTRONS ABOVE 100 KEV IN ONE CHANNEL AND ELECTRONS ABOVE 600 KEV AND PROTONS BETWEEN 3.5 AND 27 MEV IN THE OTHER. THE SSD ELECTRON CHANNEL RESPONDED TO ELECTRONS ABOVE 320 KEV. THE 100 KEV AND 320 KEV DATA WERE USED IN THE CONSTRUCTION OF THE AE-4 MODEL ELECTRON ENVIRONMENT. THE DATA HAVE BEEN CORRECTED FOR DETECTOR DEAD TIME. THE CORRECTED COUNT RATE, B/R, LOCAL TIME (HR), SOLAR ROTATION TIME (DAYS),

UT (HR), MONTH, DAY OF MONTH, YEAR (-1900), GEOMAGNETIC LATITUDE (DEG), GEOGRAPHIC EAST LONGITUDE, GEOGRAPHIC LATITUDE, AND L VALUE APPEAR AS CARD IMAGES ON A 556-BPI, 8CD, 7-TRACK, EVEN PARITY, IBM 7094 MAGNETIC TAPE. THE THREE FILES FOR THIS DATA SET AND THE DATA SET 64-040C-01B (ERS 13) ARE INCLUDED ON THE SAME TAPE.

YETTE, ERS 17

EXPERIMENT NAME- X-RAY DETECTORS

NSSDC ID- 65-058C-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 09/15/65

PERSONNEL

PI - J.I. YETTE	NASA-GSFC GREENBELT, MD
OI - L.E. PETERSON	U OF CALIF. SAN DIEG LA JOLLA, CA
OI - J.L. MATTESON	U OF CALIF. SAN DIEG LA JOLLA, CA

THREE EON 6213 GEIGER TUBES WERE MOUNTED ALONG THREE MUTUALLY PERPENDICULAR AXES. THE CONICAL FIELD OF VIEW OF EACH DETECTOR WAS APPROXIMATELY A 50-DEG HALF ANGLE. THE OUTPUTS OF THESE THREE DETECTORS WERE ADDED TOGETHER AND CONVERTED BY A LOGARITHMIC COUNT RATE METER INTO AN ANALOG VOLTAGE. A QUASI-DIGITAL OUTPUT FOR LOW RATES WAS OBTAINED BY MEASURING A SUMMED SCALE OF 4 AND SCALE OF 64. THE ANALOG AND QUASI-DIGITAL CHANNELS WERE SAMPLED FOR 4.5 SEC EVERY 7.2 SEC. THE DETECTOR SYSTEM WAS SENSITIVE TO SOLAR X RAYS IN THE 1- TO 14-A RANGE AND TO ELECTRONS ABOVE 40 KEV. THIS SYSTEM FAILED ON SEPTEMBER 15, 1965. THE SUM OF THE OUTPUT OF THE THREE ORTHOGONAL SOLAR CELLS, WITH THE SAME LOOK ANGLES AS THE DETECTORS, WAS USED TO GIVE CRUDE SOLAR ASPECT INFORMATION.

DATA SET NAME- MERGED X-RAY DETECTOR COUNT RATES
ON TAPE

NSSDC ID- 65-058C-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/20/65 TO 09/15/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 32 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF 7-TRACK, 800-BPI, BCD TAPES THAT CONTAIN IDENTIFICATION AND HEADER INFORMATION, TIME, SUBCARRIER FREQUENCY, GEIGER TUBE COUNT RATES, FLAGS, ORBITAL COORDINATES, AND ALL OF THE RAW DATA SAMPLES 20 TIMES A SECOND. THESE TAPES ALSO CONTAIN DATA SETS 65-058C-01A AND 65-058C-03A. THE COUNT RATE SUM OF THE THREE GEIGER TUBES WAS OBTAINED BY AVERAGING OVER EACH 4.5-SEC SAMPLE. THE 0.05-SEC SAMPLES OF THE RAW DATA AND THE QUASI-DIGITAL CHANNEL ARE ALSO AVAILABLE. THE EPHEMERIS DATA ALSO INCLUDE GEOMAGNETIC AND ECLIPTIC COORDINATES. THE BCD TAPE FORMAT CONSISTS OF EIGHT LOGICAL RECORDS PER PHYSICAL RECORD. EACH LOGICAL RECORD IS 120 CHARACTERS LONG. THE TIME PERIOD COVERED ON THE TAPES IS FROM 0844 UT ON JULY 20, 1965, TO 2332 UT ON NOVEMBER 3, 1965, WITH NUMEROUS TIME GAPS IN THE INTERVAL. THE GEIGER TUBE COUNT RATES ARE ZERO AFTER SEPTEMBER 15, 1965. PLOTS OF THE DATA ARE CONTAINED IN DATA SET 65-058C-01B.

SPACECRAFT COMMON NAME- EXPLORER 1

ALTERNATE NAMES- 1958 ALPHA 1, 00004

NSSDC ID- 58-001A

LAUNCH DATE- 02/01/58 WEIGHT- 19.8 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 03/16/58

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPOCH DATE- 02/01/58
ORBIT PERIOD- 114.8 MIN	INCLINATION- 33.24 DEG
PERIAPSIS- 358,000 KM ALT	AP0APSIS- 2550.00 KM ALT

EXPLORER 1, THE FIRST U.S. ARTIFICIAL EARTH SATELLITE, WAS INSTRUMENTED FOR THE STUDY OF COSMIC RAYS, MICROMETEORITES, AND SATELLITE TEMPERATURES. DATA WERE

EXPLORER 1/EXPLORER 4

CONTINUOUSLY TRANSMITTED USING A 60-MW AMPLITUDE-MODULATED TRANSMITTER AND A 10-MW PHASE-MODULATED TRANSMITTER. DATA WERE RECORDED ONLY WHEN THE CYLINDRICAL SPIN-STABILIZED SPACECRAFT WAS OVER ONE OF 17 RECEIVING STATIONS. BOTH THE HIGH-POWER AND LOW-POWER TRANSMITTERS WERE BATTERY POWERED AND OPERATED PROPERLY UNTIL FEBRUARY 12, 1958, AND MARCH 16, 1958, RESPECTIVELY.

VAN ALLEN, EXPLORER, 1

EXPERIMENT NAME- COSMIC-RAY DETECTOR

NSSDC ID- 58-001A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 03/16/58

PERSONNEL

PI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA
OI - G.H. LUDWIG NOAA
SUITLAND, MO

AN ANTON 314 OMNIDIRECTIONAL GEIGER TUBE DETECTOR WAS USED TO MEASURE THE FLUX OF ENERGETIC CHARGED PARTICLES (PROTONS E.G.T. 30 MEV AND ELECTRONS E.G.T. 3 MEV). THE DETECTOR WAS SATURATED MUCH OF THE TIME. THE EXPERIMENT PERFORMED NORMALLY UNTIL MARCH 16, 1958, AT WHICH TIME THE BATTERIES POWERING THE GEIGER TUBE CIRCUITS BECAME EXHAUSTED. NO USABLE DATA WERE RECEIVED AFTER THAT TIME.

DATA SET NAME- TABULATION OF ANTON 314 GM COUNTS

NSSDC ID- 58-001A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 02/01/58 TO 03/15/58
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 BOOK(S) OR BOUND VOLUME(S)

THIS DATA SET CONSISTS OF REDUCED DATA LISTINGS COVERING THE PERIOD FEBRUARY 1, 1958, TO MARCH 15, 1958. THE TABULATION CONSISTS OF TIME OF OBSERVATION, GEOGRAPHIC POSITION OF THE SATELLITE, RECEIVING STATION NAME, COUNTING RATE (UNCORRECTED FOR DEAD TIME), AND NUMBER OF COUNTS (SCALED BY 32) THAT OCCURRED DURING THE ACCUMULATION TIME. ALL RECORDINGS OF THE SATELLITE SIGNALS OBTAINED BY THE RECEIVING STATION NETWORK ARE LISTED IN A MASTER RECORDING LOG WHICH IS ALSO PROVIDED. THE DATA ARE CONTAINED IN 'RADIATION OBSERVATIONS WITH SATELLITE 1958 ALPHA (EXPLORER 1),' BY G.H. LUDWIG, VOL. 1-5, SUI 61-3, MARCH 1961. A 16-MM MICROFILM VERSION OF THESE DATA IS AVAILABLE AT NSSDC (ID 58-001A-01B).

SPACECRAFT COMMON NAME- EXPLORER 4

ALTERNATE NAMES- 1958 EPSILON 1, 00009

NSSDC ID- 58-005A

LAUNCH DATE- 07/26/58 WEIGHT- 25.5 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/05/58

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 07/26/58
ORBIT PERIOD- 110.2 MIN INCLINATION- 50.3 DEG
PERTAPSIS- 263,000 KM ALT APDAPSIS- 2213.00 KM ALT

EXPLORER 4 WAS A CYLINDRICALLY SHAPED SATELLITE INSTRUMENTED TO MAKE THE FIRST DETAILED MEASUREMENTS OF CHARGED PARTICLES (PROTONS AND ELECTRONS) TRAPPED IN THE TERRESTRIAL RADIATION BELTS. AN UNEXPECTED TUMBLE MOTION OF THE SATELLITE MADE THE INTERPRETATION OF THE DETECTOR DATA VERY DIFFICULT. THE LOW-POWER TRANSMITTER AND THE PLASTIC SCINTILLATOR DETECTOR FAILED SEPTEMBER 3, 1958. THE TWO GM TUBES AND THE CSI CRYSTAL DETECTORS CONTINUED TO OPERATE NORMALLY UNTIL SEPTEMBER 19, 1958. THE HIGH-POWER TRANSMITTER CEASED SENDING SIGNALS ON OCTOBER 5, 1958. IT IS BELIEVED THAT EXHAUSTION OF THE POWER BATTERIES CAUSED THESE FAILURES. THE SPACECRAFT DECAYED FROM ORBIT AFTER 454 DAYS ON OCTOBER 23, 1959.

VAN ALLEN, EXPLORER 4

EXPERIMENT NAME- CHARGED PARTICLE DETECTOR

NSSDC ID- 58-005A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 09/19/58

PERSONNEL

PI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA
OI - L.A. FRANK U OF IOWA
IOWA CITY, IA
OI - C.E. MCILWAIN U OF CALIF, SAN DIEG
SAN DIEGO, CA
OI - G.H. LUDWIG NOAA
SUITLAND, MO

THE PURPOSE OF THIS EXPERIMENT WAS TO EXTEND THE FIRST MEASUREMENTS OF THE TRAPPED RADIATION BELT DISCOVERED WITH EXPLORERS 1 AND 3 AND TO PROVIDE MEASUREMENTS OF ARTIFICIALLY INJECTED ELECTRONS FROM THE THREE HIGH-ALTITUDE ARGUS NUCLEAR DETONATIONS. FOUR SEPARATE RADIATION DETECTORS WERE USED IN THE EXPERIMENT -- A SHIELDED DIRECTIONAL PLASTIC SCINTILLATION COUNTER SENSITIVE TO ELECTRONS (E.G.T. 700 KEV) AND PROTONS (E.G.T. 10 MEV), A SHIELDED DIRECTIONAL CESIUM IODIDE SCINTILLATION COUNTER SENSITIVE TO ELECTRONS (E.G.T. 20 KEV) AND PROTONS (E.G.T. 400 KEV), AN OMNIDIRECTIONAL ANTON TYPE 302 GM COUNTER SENSITIVE TO ELECTRONS (E.G.T. 3 MEV) AND PROTONS (E.G.T. 30 MEV), AND A SHIELDED OMNIDIRECTIONAL ANTON TYPE 302 GM TUBE SENSITIVE TO ELECTRONS (E.G.T. 5 MEV) AND PROTONS (E.G.T. 40 MEV). THE PLASTIC SCINTILLATION COUNTER AND THE CESIUM IODIDE SCINTILLATION COUNTER WERE EACH VIEWED BY A SEPARATE PHOTOMULTIPLIER TUBE. THESE DETECTORS WERE MOUNTED ORTHOGONALLY TO THE LONGITUDINAL AXIS OF THE SATELLITE WITH APERTURES FACING IN OPPOSITE DIRECTIONS. THE TWO GM COUNTERS WERE LOCATED SIDE BY SIDE ALONG THE SATELLITE LONGITUDINAL AXIS. THE PLASTIC SCINTILLATION COUNTER FAILED ABOUT SEPTEMBER 3, 1958, WHILE THE TWO GM COUNTERS AND THE CESIUM IODIDE DETECTORS CONTINUED TO OPERATE NORMALLY UNTIL SEPTEMBER 19, 1958. THE FAILURES WERE PROBABLY DUE TO EXHAUSTION OF THE POWER BATTERIES.

DATA SET NAME- COUNT RATE DATA (STATION ORDERED) ON MAGNETIC TAPE

NSSDC ID- 58-005A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/26/58 TO 09/19/58
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF REDUCED DATA ON TWO 7-TRACK, CDC, BCD MAGNETIC TAPES WRITTEN AT 556 BPI WITH 120 CHARACTERS (15 CDC WORDS) PER LOGICAL AND PHYSICAL RECORD. THE DATA CONSIST OF DETECTOR COUNTING RATES ALONG WITH TIME (MONTH, DAY, HR), MODEL MAGNETIC FIELD MAGNITUDE (B IN GAUSS), MCILWAIN'S L PARAMETER (EARTH RADII), B/BO, LATITUDE, LONGITUDE, AND ALTITUDE (KM). THE DATA ARE ORDERED BY SATELLITE TRACKING STATION. A TIME ORDERED VERSION OF THIS DATA SET IS ALSO AVAILABLE (NSSDC ID 58-005A-01B).

DATA SET NAME- COUNT RATE DATA (TIME ORDERED) WITH RECALCULATED B&L COORDINATES ON TAPE

NSSDC ID- 58-005A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/26/58 TO 09/19/58
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF REDUCED DATA IN ONE FILE ON ONE 7-TRACK, IBM 7094, BCD MAGNETIC TAPE WRITTEN AT 556 BPI. THE TAPE HAS 120 CHARACTERS (20 WORDS) PER LOGICAL AND PHYSICAL RECORD AND 23,896 RECORDS. THE DATA CONSIST OF DETECTOR COUNTING RATES ALONG WITH TIME (MONTH, DAY, HR), MODEL MAGNETIC FIELD (B IN GAUSS), AND MCILWAIN'S L PARAMETER (THE 48-TERM JENSEN-CAIN MODEL USED IN DATA SET 58-005A-01A AND A 120-TERM GSFC 1966 MODEL), B/BO, LATITUDE, LONGITUDE, AND ALTITUDE. THE DATA WERE ORDERED ON TIME AT NSSDC. THESE DATA ARE THE SAME AS THOSE APPEARING IN DATA SET 58-005A-01A EXCEPT THAT THE 120-TERM MODEL MAGNETIC FIELD AND MCILWAIN'S L PARAMETER WERE ADDED TO THE FORMAT AT NSSDC. FOR FURTHER

EXPLORER 4/EXPLORER 6

INFORMATION CONCERNING THIS DATA SET, SEE THE PAPER BY J. P. LAVINE AND J. I. VETTE IN J. GEOPHYS. RES., 75, P 1940, 1970.

SPACECRAFT COMMON NAME- EXPLORER 6

ALTERNATE NAMES- ABLE 3, 1959 DELTA 1
00015

NSSDC ID- 59-004A

LAUNCH DATE- 08/07/59 WEIGHT- 64. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/06/59

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 12/19/59
ORBIT PERIOD- 754. MIN INCLINATION- 47.0 DEG
PERIAPSIS- 237.000 KM ALT APOAPSIS- 41900.0 KM ALT

EXPLORER 6 WAS A SMALL, SPHEROIDAL SATELLITE DESIGNED TO STUDY TRAPPED RADIATION OF VARIOUS ENERGIES, GALACTIC COSMIC RAYS, GEOMAGNETISM, RADIO PROPAGATION IN THE UPPER ATMOSPHERE, AND THE FLUX OF MICROMETEORITES. IT ALSO TESTED A SCANNING DEVICE DESIGNED FOR PHOTOGRAPHING THE EARTH'S CLOUD COVER. THE SATELLITE WAS LAUNCHED INTO A HIGHLY ELLIPTICAL ORBIT WITH AN INITIAL LOCAL TIME OF APOGEE OF 2100 HR. THE SATELLITE WAS SPIN STABILIZED AT 2.8 RPS, WITH THE DIRECTION OF THE SPIN AXIS HAVING A RIGHT ASCENSION OF 217 DEG AND A DECLINATION OF 23 DEG. FOUR SOLAR CELL PADDLES MOUNTED NEAR ITS EQUATOR RECHARGED THE STORAGE BATTERIES WHILE IN ORBIT. EACH EXPERIMENT EXCEPT THE TELEVISION SCANNER HAD TWO OUTPUTS, DIGITAL AND ANALOG. A UHF TRANSMITTER WAS USED FOR THE DIGITAL TELEMETRY AND THE TV SIGNAL. TWO VHF TRANSMITTERS WERE USED TO TRANSMIT THE ANALOG SIGNAL. THE VHF TRANSMITTERS WERE OPERATED CONTINUOUSLY. THE UHF TRANSMITTER WAS OPERATED FOR ONLY A FEW HOURS EACH DAY. ONLY THREE OF THE SOLAR CELL PADDLES FULLY ERECTED, AND THIS OCCURRED DURING SPIN UP RATHER THAN PRIOR TO SPIN UP AS PLANNED. CONSEQUENTLY, INITIAL OPERATION OF THE PAYLOAD POWER SUPPLY WAS 63 PERCENT NOMINAL, AND THIS DECREASED WITH TIME. THE DECREASED POWER CAUSED A LOWER SIGNAL TO NOISE RATIO AFFECTING MOST OF THE DATA, ESPECIALLY NEAR APOGEE. ONE VHF TRANSMITTER FAILED ON SEPTEMBER 11, 1959, AND THE LAST CONTACT WITH THE PAYLOAD WAS MADE ON OCTOBER 6, 1959, AT WHICH TIME THE SOLAR CELL CHARGING CURRENT HAD FALLEN BELOW THAT REQUIRED TO MAINTAIN THE SATELLITE EQUIPMENT. A TOTAL OF 827 HR OF ANALOG AND 23 HR OF DIGITAL DATA WAS OBTAINED.

DATA SET NAME- MICROFILM PLOTS OF GEOMAGNETIC LATITUDE
VS RANGE

NSSDC ID- 59-004A-00F

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 08/07/59 TO 10/07/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM. EACH FRAME CONTAINS A PLOT FOR ONE FULL ORBIT, SHOWING SPACECRAFT GEOMAGNETIC LATITUDE VS GEOCENTRIC RANGE. PLOTS ARE GIVEN FOR THE FIRST 115 ORBITS, COVERING THE FIRST 2 MONTHS OF SPACECRAFT OPERATION. THE PLOTS WERE GENERATED BY PERSONNEL AT U OF MINNESOTA.

SIMPSON, EXPLORER 6

EXPERIMENT NAME- PROPORTIONAL COUNTER TELESCOPE

NSSDC ID- 59-004A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/06/59

PERSONNEL
PI - J.A. SIMPSON U OF CHICAGO
CHICAGO, IL
OI - C.Y. FAN U OF ARIZONA
TUCSON, AZ
OI - P. MEYER U OF CHICAGO
CHICAGO, IL

A TRIPLE COINCIDENCE OMNIDIRECTIONAL PROPORTIONAL
COUNTER TELESCOPE WAS USED TO OBSERVE PROTONS (E.G.T. 75 MEV)

AND ELECTRONS (E.G.T. 13 MEV) IN THE TERRESTRIAL TRAPPED RADIATION REGION. SEVERAL MAGNETIC STORMS OCCURRED DURING THE ACTIVE LIFE OF THE EXPERIMENT. THE DATE OF TRANSMISSION OF THE LAST USEFUL INFORMATION WAS OCTOBER 6, 1959, AFTER WHICH THE TRANSMITTER FAILED TO OPERATE.

DATA SET NAME- SINGLE AND TRIPLE COINCIDENCE COUNT
RATES VS TIME ON MICROFILM

NSSDC ID- 59-004A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 08/07/59 TO 10/06/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF GRAPHICAL PLOTS OF TRIPLE COINCIDENCE (TC) COUNTING RATES AND SINGLE COUNTING RATES VS TIME COVERING THE TIME INTERVAL AUGUST 7, 1959, TO OCTOBER 6, 1959 (APPROXIMATELY 15 DAYS PER PLOT). THE DATA ARE TIME ORDERED ON ONE REEL OF 35-MM MICROFILM. DIGITIZED TC RATE LISTINGS ARE ALSO AVAILABLE ON MICROFILM (59-004A-01B).

SONETT, EXPLORER 6

EXPERIMENT NAME- SCINTILLATION COUNTER

NSSDC ID- 59-004A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 09/10/59

PERSONNEL
PI - C.P. SONETT U OF ARIZONA
TUCSON, AZ
OI - A. ROSEN TRW SYSTEMS GROUP
REDONDO BEACH, CA
OI - T.A. FARLEY U OF CALIF. LA
LOS ANGELES, CA

THE SCINTILLATION COUNTER EXPERIMENT WAS DESIGNED TO MAKE DIRECT OBSERVATIONS OF ELECTRONS IN THE EARTH'S RADIATION BELTS WITH A DETECTOR INSENSITIVE TO BREMSSTRAHLUNG. THIS EXPERIMENT CONSISTED OF A CYLINDRICAL PLASTIC SCINTILLATOR CEMENTED TO A PHOTOMULTIPLIER TUBE. THE INSTRUMENT VIEWED SPACE THROUGH A FOIL-COVERED WINDOW IN THE PAYLOAD SHELL, BUT THE INSTRUMENT ALSO RESPONDED TO MORE ENERGETIC PARTICLES PASSING THROUGH THE PAYLOAD SHELL. THE MINIMUM ENERGIES DETECTABLE WERE 200 KEV FOR ELECTRONS AND 2 MEV FOR PROTONS. FOR ELECTRONS BETWEEN 200 AND 500 KEV, THE DETECTOR EFFICIENCY TIMES THE OMNIDIRECTIONAL GEOMETRIC FACTOR WAS 0.0008 SQ CM COUNT PER ELECTRON WHEREAS, FOR ELECTRONS OF ENERGY GREATER THAN 500 KEV, IT WAS 0.16 SQ CM COUNT PER ELECTRON. FOR VERY PENETRATING PARTICLES, THE GEOMETRIC FACTOR ROSE TO ITS MAXIMUM VALUE OF 3.5 SQ CM. THE SCINTILLATION COUNTER WAS SAMPLED CONTINUOUSLY FOR ANALOG TRANSMISSION AND INTERMITTENTLY (EVERY 2 MIN. 15 SEC. OR 1.9 SEC. DEPENDING UPON THE SATELLITE BIT RATE) FOR DIGITAL TRANSMISSION. THE TRANSMITTER BROADCASTING THE ANALOG DATA FOR THIS EXPERIMENT FAILED ON SEPTEMBER 11, 1959. DATA WERE RECEIVED ON A LIMITED DUTY CYCLE FROM THE DIGITAL TRANSMITTER UNTIL OCTOBER 6, 1959.

DATA SET NAME- PUBLISHED PLOTS OF REDUCED COUNT RATE VS
TIME ON MICROFILM

NSSDC ID- 59-004A-02A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 08/08/59 TO 09/10/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THESE REDUCED DATA CONSIST OF PUBLISHED PLOTS OF COUNT RATE VS UNIVERSAL TIME. EACH PLOT IS ABOUT 3 HR LONG, AND THE PLOTS ARE TIME ORDERED. AT THE BOTTOM OF EACH PLOT IS A NOMOGRAPH GIVING THE GEOMAGNETIC LATITUDE AND RADIAL DISTANCE FROM EARTH ASSOCIATED WITH THE PLOTTED COUNT RATE AT ANY INSTANT OF TIME. THESE COUNT RATES HAVE BEEN CORRECTED FOR THE SATURATION EFFECTS INHERENT IN THE INSTRUMENT, BUT THE DETECTION EFFICIENCY CURVES MUST BE USED TO INTERPRET THESE DATA. THE DATA HAVE BEEN PUBLISHED IN "FINAL REPORT, REDUCTION AND ANALYSIS OF EXPLORER 6 AND PIONEER 5 DATA, VOL. II," TRW

EXPLORER 6

8626-6005-RU-000. NOVEMBER 30, 1962. THE DATA ARE ALSO CONTAINED ON ONE REEL OF 35-MM MICROFILM AT NSSDC, AND THERE IS AN 80 PERCENT COVERAGE FOR THE TIME PERIOD INDICATED.

DATA SET NAME- RAW MULTI-EXPERIMENT DIGITAL DATA ON MICROFILM

NSSDC ID- 59-004A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 08/07/59 TO 10/02/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 3 REEL(S) OF MICROFILM

THESE RAW DATA, SUPPLIED BY TRW, CONSIST OF COMPUTER LISTINGS ON THREE REELS OF 16-MM MICROFILM OF THE DIGITAL OUTPUTS CONVERTED TO BASE 10 FROM EACH OF THE EXPERIMENTS ON THE SATELLITE. TIME, DATE, AND GROUND STATION ARE INDICATED.

DATA SET NAME- SANBORN OSCILLOGRAMS OF RAW TELEMETRY CHANNEL DATA (FILTERED) ON MICROFILM

NSSDC ID- 59-004A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 08/08/59 TO 09/20/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 13 REEL(S) OF MICROFILM

THESE RAW DATA, SUPPLIED BY TRW, CONSIST OF SANBORN OSCILLOGRAMS (PLOTS OF FREQUENCY VS TIME FOR EACH TELEMETRY CHANNEL) MADE FROM THE ANALOG MAGNETIC TAPES USING COMB FILTERING ADDITIONAL TO THAT USED IN PRODUCING THE INITIAL OSCILLOGRAMS. THIS WAS DONE PRIMARILY FOR TIMES WHEN THE SCINTILLATION COUNTER WAS OPERATING AT ITS HIGHEST RATE. THESE OSCILLOGRAMS ARE AVAILABLE ON 13 REELS OF 35-MM MICROFILM. THE INITIAL OSCILLOGRAMS ARE ALSO AVAILABLE AT NSSDC ON 29 REELS OF MICROFILM (59-004A-02C).

DATA SET NAME- L-INTERPOLATED COUNT RATES ON MAGNETIC TAPE

NSSDC ID- 59-004A-02F

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 08/08/59 TO 09/04/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET WAS DERIVED AT NSSDC FROM DATA SETS 59-004A-02A AND 59-004A-000 (EPHEMERIS DATA) BY INTERPOLATION TO THE FOLLOWING L VALUES - L = 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, AND 8.0. THE DATA ARE L-ORDERED (THE SECONDARY ORDERING PARAMETER IS TIME) AND CONSIST OF THE FOLLOWING INFORMATION -- COUNT RATE, B/SD, LOCAL TIME, SOLAR ROTATION TIME (IN DAYS STARTING WITH THE FIRST DAY OF THE CURRENT SOLAR ROTATION), UNIVERSAL TIME, MONTH, DAY, YEAR, GEOGRAPHIC LONGITUDE, AND GEOGRAPHIC LATITUDE. THE DATA ARE CONTAINED IN THE FIRST FILE IN CARD IMAGE ON A 7-TRACK, 556-BPI, BCD TAPE WITH EVEN PARITY.

WINCKLER, EXPLORER 6

EXPERIMENT NAME- ION CHAMBER AND GM COUNTER

NSSDC ID- 59-004A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/06/59

PERSONNEL

PI - J.R. WINCKLER U OF MINNESOTA
MINNEAPOLIS, MN
DI - R.A. HOFFMAN NASA-GSFC
GREENBELT, MD

OI - R.L. ARNOLDY U OF NEW HAMPSHIRE
DURHAM, NH

THE INSTRUMENTATION FOR THIS EXPERIMENT CONSISTED OF A NEHER-TYPE INTEGRATING IONIZATION CHAMBER AND AN ANTON 302 GEIGER-MUELLER TUBE. THE GM TUBE WAS POINTED NORMAL TO THE SPACECRAFT SPIN AXIS. DUE TO THE COMPLEX, NONUNIFORM SHIELDING OF THE DETECTORS, ONLY APPROXIMATE ENERGY THRESHOLD VALUES ARE AVAILABLE. THE ION CHAMBER RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 1.5 AND 23.6 MEV, RESPECTIVELY. THE GM TUBE RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 2.9 AND 36.4 MEV, RESPECTIVELY. COUNTS FROM THE GM TUBE AND PULSES FROM THE ION CHAMBER WERE ACCUMULATED IN SEPARATE REGISTERS AND TELEMETERED BY THE ANALOG SYSTEM. THE TIME THAT LAPSED BETWEEN THE FIRST TWO ION CHAMBER PULSES FOLLOWING A DATA TRANSMISSION AND THE ACCUMULATION TIME FOR 1024 GM TUBE COUNTS WERE TELEMETERED DIGITALLY. VERY LITTLE DIGITAL DATA WERE ACTUALLY TELEMETERED. THE ION CHAMBER OPERATED NORMALLY FROM LAUNCH THROUGH AUGUST 25, 1959. THE GM TUBE OPERATED NORMALLY FROM LAUNCH THROUGH OCTOBER 6, 1959.

DATA SET NAME- LISTING OF COUNTS AND PULSES ON MICROFILM

NSSDC ID- 59-004A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/07/59 TO 10/06/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM THAT WERE GENERATED FROM LISTINGS SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS THE DESIGNATION OF THE SANBORN CHART FROM WHICH THE DATA WERE TAKEN, THE CHART SPEED, THE DATE AND UT OF THE OBSERVATION, AND THE SPACECRAFT PASS NUMBER. ALSO PRESENTED ARE THE NUMBER OF ION CHAMBER PULSES AND GM TUBE COUNTS AND THE TIME INTERVAL OVER WHICH THESE WERE ACCUMULATED. PULSE AND COUNT RATES ARE ALSO CALCULATED, WITH SATURATION CORRECTIONS BEING MADE IN THE CASE OF THE GM TUBE. EPHEMERIS INFORMATION (RANGE, LATITUDE, AND LONGITUDE) IS GIVEN IN BOTH GEOGRAPHIC AND GEOMAGNETIC COORDINATES. THESE DATA ARE TIME ORDERED AND COVER THE PERIOD AUGUST 7, 1959, TO OCTOBER 6, 1959.

DATA SET NAME- CALIBRATED DIGITAL DATA ON MICROFILM

NSSDC ID- 59-004A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/07/59 TO 10/02/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM THAT WERE GENERATED FROM COMPUTER LISTINGS SUBMITTED BY THE EXPERIMENTER. EACH FRAME LISTS THE DATE AND TIME (HR, MIN, SEC) OF THE OBSERVATIONS AND THE STATION AT WHICH THE DATA WERE RECEIVED. THE CONTENTS OF THE GM TUBE AND ION CHAMBER REGISTERS ARE PRESENTED. EPHEMERIS INFORMATION IS GIVEN AS GEOCENTRIC RANGE, RIGHT ASCENSION, DECLINATION, AND EAST LONGITUDE OF THE SPACECRAFT. THESE DATA, WHICH ARE TIME ORDERED, COVER THE PERIOD AUGUST 7, 1959, TO OCTOBER 2, 1959. ALSO PRESENTED ARE THE CONTENTS OF THE UNIVERSITY OF CHICAGO REGISTERS FROM EXPERIMENT 59-004A-01.

DATA SET NAME- PLOTS OF COUNT RATES AND PULSE RATES ON MICROFILM

NSSDC ID- 59-004A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/07/59 TO 10/06/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM THAT WERE GENERATED FROM PLOTS SUBMITTED BY THE EXPERIMENTER. EACH FRAME IS IDENTIFIED ACCORDING TO PASS NUMBER AND DATE.

EXPLORER 6/EXPLORER 7

AND EACH CONTAINS 2 HR OF DATA. PLOTTED ARE THE LOGARITHMS OF THE ION CHAMBER PULSE RATE, THE GM TUBE COUNT RATE, AND THE RATIO OF THE TWO RATFS VERSUS UT. EPHEMERIS INFORMATION IN THE FORM OF A PLOT OF GEOCENTRIC RANGE VS UT IS ALSO PRESENTED ON EACH FRAME. THESE DATA ARE TIME ORDERED AND COVER THE PERIOD AUGUST 7, 1959, TO OCTOBER 6, 1959.

DATA SET NAME- MERGED L-ORDERED COUNT RATES ON TAPE

NSSDC ID- 59-004A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/07/59 TO 10/06/59
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BCD TAPE THAT WAS GENERATED AT NSSDC ON AN IBM 7094 COMPUTER. THE DATA ON THIS TAPE ARE AN L-VALUE SORTED VERSION OF THE DATA FOUND IN DATA SET 59-004A-03B, MERGED WITH EPHEMERIS INFORMATION FROM DATA SET 59-004A-00D. DATA ARE PRESENTED FOR THE FOLLOWING L VALUES -- 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, AND 8.0. DATA FROM THE GM TUBF ARE PRESENTED IN ONE FILE, AND DATA FROM THE ION CHAMBER ARE PRESENTED IN A SECOND FILE. EACH 84-CHARACTER LOGICAL RECORD CONTAINS THE COUNT RATE, RATIO OF THE MAGNETIC FIELD STRENGTH TO THE EQUATORIAL MAGNETIC FIELD STRENGTH (FOR THE SAME L VALUE), LOCAL TIME, UT, MONTH, DAY, YEAR, GEOGRAPHIC LONGITUDE AND LATITUDE, AND L VALUE.

SPACECRAFT COMMON NAME- EXPLORER 7

ALTERNATE NAMES- 1959 IOTA 1, S 1A
00022

NSSDC ID- 59-009A

LAUNCH DATE- 10/13/59 WEIGHT- 41.50 KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 09/24/61

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 10/16/59
ORBIT PERIOD- 101.4 MIN INCLINATION- 50.3 DEG
PERIAPSIS- 571,000 KM ALT APOAPSIS- 592,000 KM ALT

EXPLORER 7 WAS DESIGNED TO MEASURE SOLAR X-RAY AND LYMAN-ALPHA FLUX, TRAPPED ENERGETIC PARTICLES, AND HEAVY PRIMARY COSMIC PAYS (Z GREATER THAN 5). ADDITIONAL OBJECTIVES INCLUDED COLLECTING DATA ON MICROMETEOROID PENETRATION AND MOLECULAR SPUTTERING AND STUDYING THE EARTH-ATMOSPHERE HEAT BALANCE. THE SPIN-STABILIZED SATELLITE'S EXTERNAL STRUCTURE CONSISTED OF TWO TRUNCATED CONICAL FIBERGLASS SHELLS JOINED BY A CYLINDRICAL ALUMINUM CENTER SECTION. THE SPACECRAFT WAS 75 CM WIDE AT ITS EQUATOR AND ABOUT 75 CM HIGH. MOUNTED ON BOTH THE UPPER AND LOWER SHELLS WERE APPROXIMATELY 3000 SOLAR CELLS. THE SPACECRAFT WAS ALSO POWERED BY 15 NICKEL-CADMIUM BATTERIES THAT WERE POSITIONED ON ITS EQUATOR NEAR THE OUTER SKIN AS AN AID IN MAINTAINING A PROPER SPIN RATE. TWO CROSSED DIPOLE (1 W, 20 MHZ) TELEMETRY ANTENNAS PROJECTED OUTWARD FROM THE CENTER SECTION, AND A 108-MHZ CLOVERLEAF ANTENNA USED FOR TRACKING WAS MOUNTED ON THE BOTTOM OF THE LOWER SHELL. LOCATED AROUND THE PERIPHERY OF THE CENTER SECTION WERE FIVE BOLOMETERS FOR THERMAL RADIATION MEASUREMENTS AND THREE CDS MICROMETEOROID DETECTOR CELLS. A CYLINDRICAL ION CHAMBER (LIF WINDOW) AND A BE X-RAY CHAMBER WERE LOCATED ON OPPOSITE SIDES OF THE UPPER CONE, AND A COSMIC-RAY GEIGER COUNTER WAS LOCATED ON THE VERY TOP. A PRIMARY COSMIC-RAY IONIZATION CHAMBER WAS LOCATED WITHIN THE CENTER PORTION OF THE UPPER CONE. USEFUL REAL-TIME DATA WERE TRANSMITTED FROM LAUNCH UNTIL FEBRUARY 1961 AND INTERMITTENTLY UNTIL AUGUST 24, 1961.

POHERANTZ, EXPLORER 7

EXPERIMENT NAME- HEAVY PRIMARY COSMIC RAYS

NSSDC ID- 59-009A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/31/60

PI - M.A. POHERANTZ BARTOL RESEARCH FOUN
SWATHMORE, PA

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE OMNIDIRECTIONAL FLUX OF HEAVY PRIMARY COSMIC RAYS IN THE RIGIDITY RANGE 1 TO 15.5 GV. PARTICLES WITH ATOMIC NUMBERS (Z) GREATER THAN 5, 8, AND 15 WERE COUNTED SEPARATELY BY AN IONIZATION CHAMBER IN WHICH EACH INCIDENT PARTICLE YIELDED A PULSE. PULSE AMPLITUDE WAS SUBSTANTIALLY INDEPENDENT OF THE ENERGY OF THE INCIDENT PARTICLE BUT WAS PROPORTIONAL TO THE SQUARE OF ITS Z VALUE. EACH OF THE THREE COUNTING RATES WAS DETERMINED EVERY 15 SEC. THE EXPERIMENT PERFORMED AS PLANNED FROM LAUNCH UNTIL OCTOBER 25, 1959. ABOUT 80 PERCENT OF THE DATA ACQUIRED FOR THE OCTOBER 25, 1959 TO MAY 31, 1960, PERIOD ARE USEFUL, WITH MOST PROBLEMS OCCURRING IN THE LOWEST Z MODE. VERY LITTLE USEFUL DATA WERE ACQUIRED AFTER MAY 31, 1960.

DATA SET NAME- COUNTING RATES OF HEAVY PRIMARY COSMIC
RAYS ON MAGNETIC TAPE

NSSDC ID- 59-009A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 10/13/59 TO 05/31/60
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THE EXPERIMENTER HANDLED HIS DATA AS FOLLOWS. HE DEFINED BOXES OF 5-DEG LATITUDE, 10-DEG LONGITUDE, AND 100-KM THICKNESS. DATA COUNTS OBTAINED DURING A GIVEN SPACECRAFT PASS THROUGH A GIVEN BOX WERE ACCUMULATED FROM THE 15-SEC COUNTS. THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE PRODUCED AT NSSDC USING APPROXIMATELY 17,250 PUNCHED CARDS SUBMITTED BY THE EXPERIMENTER. EACH 80-CHARACTER LOGICAL RECORD IS A CARD IMAGE, AND EACH CONTAINS THE TIME, THE GEOGRAPHIC LATITUDE, LONGITUDE, AND ALTITUDE OF THE BOX, ACCUMULATED COUNTS FOR PARTICLES WITH ATOMIC NUMBER (Z) GREATER THAN 5, ACCUMULATION TIME (TIME SPACECRAFT IS IN BOX, TYPICALLY 1 TO 2 MIN), AND COMPUTED AND CORRELATIVE DATA. THE LATTER INCLUDES MAGNETIC CUTOFF RIGIDITY, NEUTRON MONITOR DATA, KP AND RZ INDICES, AND 10.7-CM SOLAR FLUX. IT SHOULD BE NOTED THAT NO DATA FROM THE Z ABOVE 8 OR 15 CHANNELS ARE INCLUDED. DATA ARE CONTAINED FOR THE FOLLOWING THREE TIME PERIODS -- OCTOBER 13, 1959, TO OCTOBER 24, 1959, NOVEMBER 1, 1959, TO MARCH 15, 1960, AND APRIL 12, 1960, TO MAY 31, 1960. IN EACH INTERVAL, COVERAGE IS ABOUT 50 PERCENT COMPLETE.

VAN ALLEN, EXPLORER 7

EXPERIMENT NAME- TRAPPED RADIATION AND SOLAR PROTONS

NSSDC ID- 59-009A-04

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 02/28/61

PERSONNEL

PI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA
OI - G.H. LUDWIG NOAA
SUITLAND, MD
OI - L.A. FRANK U OF IOWA
IOWA CITY, IA

TWO OMNIDIRECTIONAL GEIGER COUNTERS (ANTON 302 AND 112) WERE USED TO CONDUCT A COMPREHENSIVE SPATIAL AND TEMPORAL MONITORING OF TOTAL COSMIC-RAY INTENSITY, GEOMAGNETICALLY TRAPPED CORPUSCULAR RADIATION, AND SOLAR PROTONS. THE DETECTOR WAS SENSITIVE TO PROTONS (E.G.T. 20 MEV) AND ELECTRONS (E.G.T. 30 KEV). THE EXPERIMENT OPERATED SATISFACTORILY FROM LAUNCH UNTIL FEBRUARY 28, 1961, EXCEPT FOR A BRIEF PERIOD IN SEPTEMBER AND OCTOBER 1960.

DATA SET NAME- REDUCED COUNT RATE AND ORBITAL DATA ON
MAGNETIC TAPE

NSSDC ID- 59-009A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 10/13/59 TO 02/28/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 14 REEL(S) OF MAGNETIC TAPE

EXPLORER 7/IMP-A

THE DATA SET CONSISTS OF REDUCED DATA ON FOURTEEN 7-TRACK, 800 MAGNETIC TAPES WRITTEN AT 556 BPI WITH A LOGICAL (AND PHYSICAL) RECORD LENGTH OF 114 CHARACTERS. THE DATA CONSIST OF DETECTOR COUNTING RATES ALONG WITH ORBITAL INFORMATION IN A TIME-ORDERED FORMAT COVERING THE PERIOD OCTOBER 13, 1959, TO FEBRUARY 28, 1961.

SPACECRAFT COMMON NAME- IMP-A

ALTERNATE NAMES- EXPLORER 18, IMP 1
00693, 5 74

NSSDC ID- 63-046A

LAUNCH DATE- 11/27/63 WEIGHT- 138. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/10/65

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 11/27/63
ORBIT PERIOD- 5583. MIN INCLINATION- 33.34 DEG
PERIAPSIS- 197.000 KM ALT APOAPSIS- 195552. KM ALT

EXPLORER 18 (IMP 1) WAS A SOLAR CELL AND CHEMICAL BATTERY-POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE OF 1020, A SPIN RATE OF 22 RPM, AND A SPIN DIRECTION OF 115 DEG RIGHT ASCENSION AND -25 DEG DECLINATION. EACH NORMAL PFM TELEMETRY SEQUENCE OF 81.9 SEC IN DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. THE SPACECRAFT PERFORMED NORMALLY UNTIL MAY 30, 1964, THEN INTERMITTENTLY UNTIL MAY 10, 1965 WHEN IT WAS ABANDONED. THE PRINCIPAL PERIODS OF DATA COVERAGE ARE NOVEMBER 27, 1963-MAY 30, 1964, SEPTEMBER 17, 1964-JANUARY 7, 1965, AND FEBRUARY 21, 1965-MARCH 25, 1965. ALTHOUGH ONLY THE FIRST OF THESE IS VERY USEFUL.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON TAPE

NSSDC ID- 63-046A-00G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 12/21/63 TO 12/30/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE BLOCKED, 7-TRACK, 800-BPI, IBM 7094 BINARY MAGNETIC TAPE GENERATED AT NSSDC FROM UNBLOCKED TAPES (63-046A-00F) SUBMITTED BY N. F. NESS. THERE ARE FIVE LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES CONTAIN THE FOLLOWING INFORMATION AT 5-MIN INTERVALS - (1) GEODEIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND RADIAL DISTANCE OF THE SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND THE SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS GREATER THAN 80 PERCENT. A SEPARATE DATA SET (63-046A-00H) WITH ONE SET OF EPHEMERIS PARAMETERS PER HR IS AVAILABLE ON AN NSSDC-GENERATED TAPE.

PERSONNEL
PI - K.A. ANDERSON

EXPERIMENT NAME- ION CHAMBER AND GM COUNTERS

NSSDC ID- 63-046A-05

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 03/26/65

U OF CALIF., BERKELEY
BERKELEY, CA

THE INSTRUMENTATION FOR THIS EXPERIMENT, DESIGNED TO MEASURE FLUXES OF GEOMAGNETICALLY TRAPPED PARTICLES, CONSISTED OF A 7.6-CM-DIAMETER NEHER-TYPE IONIZATION CHAMBER AND TWO ANTON 223 GEIGER-MUELLER TUBES. THE ION CHAMBER RESPONDED TO

ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 1 AND 17 MEV, RESPECTIVELY. BOTH GM TUBES WERE MOUNTED PARALLEL TO THE SPACECRAFT SPIN AXIS. GM TUBE A DETECTED ELECTRONS GREATER THAN 45 KEV SCATTERED OFF A GOLD FOIL. THE ACCEPTANCE CONE-FOR THESE ELECTRONS HAD A 61-DEG FULL ANGLE, AND ITS AXIS OF SYMMETRY MADE AN ANGLE OF 59.5 DEG WITH THE SPACECRAFT SPIN AXIS. GM TUBE A RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. GM TUBE B HAD NO DIRECT ACCESS TO THE SPACE ENVIRONMENT AND RESPONDED OMNIDIRECTIONALLY TO BACKGROUND ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. PULSES FROM THE ION CHAMBER WERE ACCUMULATED FOR 326.08 SEC AND READ OUT ONCE EVERY 327.68 SEC. COUNTS FROM GM TUBE A WERE ACCUMULATED FOR 39.36 SEC AND READ OUT SIX TIMES EVERY 327.68 SEC. COUNTS FROM GM TUBE B WERE ACCUMULATED FOR 39.36 SEC AND READ OUT FIVE TIMES EVERY 327.68 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH MAY 10, 1965. FOR FURTHER DETAILS, SEE ANDERSON ET AL, JGR, VOL 70, P 1039, 1965.

DATA SET NAME- TIME-ORDERED COUNT RATES ON TAPE

NSSDC ID- 63-046A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/28/63 TO 03/26/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 7-TRACK, 800, 556-BPI TAPE WHICH WAS GENERATED AT NSSDC BY TIME ORDERING THE EXPERIMENTER SUPPLIED DATA SET 63-046A-05A. THE FIRST FILE ON THE TAPE IS A 12-CHARACTER INDEX THAT IDENTIFIES THE ORIGINAL GSFC TAPE FROM WHICH THE DATA WERE TAKEN. FOLLOWING THE INDEX ARE A VARIABLE NUMBER OF 1032-CHARACTER DATA RECORDS, EACH CONSISTING OF EIGHTEEN 56-CHARACTER LOGICAL RECORDS AND A 24-CHARACTER GROUP THAT AGAIN IDENTIFIES THE DATA WITH RESPECT TO THE ORIGINAL GSFC TAPE. EACH LOGICAL RECORD CONTAINS THE UT (DAY, HR, MIN, AND MSEC), ONE ACCUMULATION EACH FROM THE ION CHAMBER AND GM TUBE B, TWO ACCUMULATIONS FROM GM TUBE A, THE AZIMUTHAL AND POLAR SOLAR ANGLES, THE SATELLITE SPIN PERIOD, AND SEVERAL PROCESSING ERROR FLAGS. THESE DATA COVER THE PERIOD FROM NOVEMBER 28, 1963, TO MARCH 26, 1965.

DATA SET NAME- PLOTS OF COUNT RATES VS TIME ON MICROFILM

NSSDC ID- 63-046A-05C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 12/28/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM WHICH WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE THE PULSE RATE OF THE ION CHAMBER TIMES 100, THE COUNT RATES OF GM TUBES A AND B TIMES 1 AND 10, RESPECTIVELY. THESE RATES ARE PLOTTED ON A LOGARITHMIC SCALE VS TIME. THE DAY OF THE YEAR IS GIVEN ON EACH FRAME. THESE DATA ARE TIME ORDERED, WITH NO EPHEMERIS INFORMATION.

DATA SET NAME- EXPANDED PLOTS OF COUNT RATE VS TIME ON MICROFILM

NSSDC ID- 63-046A-05D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 02/28/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM WHICH WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE THE PULSE RATE OF THE ION CHAMBER TIMES 100, THE COUNT RATES OF GM TUBES A AND B TIMES 1 AND 10, RESPECTIVELY, AND THE RATIO OF THE COUNT RATES OF GM TUBE A TO GM TUBE B TIMES 0.1. THESE RATES ARE PLOTTED ON A LOGARITHMIC SCALE VS TIME. THE DAY OF THE YEAR IS GIVEN ON EACH FRAME. EACH FRAME CONTAINS APPROXIMATELY 4 HR OF DATA. THESE DATA ARE

ORIGINAL PAGE IS
OF POOR QUALITY

IMP-A

TIME ORDERED, WITH NO EPHEMERIS INFORMATION, AND COVER APPROXIMATELY 40 PERCENT OF THE PERIOD FROM NOVEMBER 27, 1963, TO FEBRUARY 28, 1964. ALSO PRESENTED ARE 1.25-HR AVERAGES OF THE COUNT RATE OF G4 TUBE A VS TIME. THESE DATA ARE ALSO TIME ORDERED, WITH NO EPHEMERIS INFORMATION, AND COVER APPROXIMATELY 90 PERCENT OF THE PERIOD FROM NOVEMBER 27, 1963, TO FEBRUARY 28, 1964.

DATA SET NAME- MERGED L-ORDERED COUNT RATES ON TAPE

NSSDC ID- 63-046A-05E

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 05/27/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BCD TAPE THAT WAS GENERATED AT NSSDC ON AN IBM 7094 COMPUTER. THE DATA ON THIS TAPE ARE AN L-VALUE SORTED VERSION OF THE G4 TUBE A DATA FOUND IN MICROFILM DATA SET 63-046A-05C, MERGED WITH EPHEMERIS INFORMATION. DATA ARE PRESENTED FOR THE FOLLOWING L VALUES -- 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 9.0, 10.0, 11.0, AND 12.0. DATA ARE PRESENTED IN ONE FILE CONSISTING OF 84-CHARACTER LOGICAL RECORDS. EACH LOGICAL RECORD CONTAINS THE COUNT RATE (CORRECTED FOR DETECTOR DEAD TIME), THE RATIO OF THE MAGNETIC FIELD STRENGTH TO THE EQUATORIAL MAGNETIC FIELD STRENGTH (FOR THE SAME L VALUE), LOCAL TIME, UT, MONTH, DAY, YEAR, GEOMAGNETIC LATITUDE, GEOGRAPHIC LATITUDE AND LONGITUDE, AND L VALUE.

BRIDGE, IMP-A

EXPERIMENT NAME- FARADAY CUP

NSSDC ID- 63-046A-07

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 01/13/65

PERSONNEL

PI - H.S. BRIDGE MASS INST OF TECH
CAMBRIDGE, MA

A FIVE-ELEMENT SPLIT COLLECTOR FARADAY CUP WAS USED TO MEASURE SOLAR WIND PARTICLES IN THE FOLLOWING SEQUENCE -- POSITIVE IONS FROM 45 TO 105 EV, POSITIVE IONS FROM 95 TO 235 EV, POSITIVE IONS FROM 220 TO 640 EV, POSITIVE IONS FROM 560 TO 1800 EV, ELECTRONS FROM 65 TO 210 EV, AND POSITIVE IONS FROM 1700 TO 5400 EV. (THE SPLIT PLANE OF THE COLLECTOR WAS IN THE SPIN EQUATORIAL PLANE OF THE SPACECRAFT.) MEASUREMENTS CONSISTED OF 22 INSTANTANEOUS CURRENT SAMPLES, EACH SEPARATED BY 0.16 SEC (SPANNING MORE THAN ONE SATELLITE ROTATION). THESE MEASUREMENTS REPRESENTED THE SUM OF THE CURRENT TO THE SPLIT COLLECTOR, THE MAXIMUM DIFFERENCE IN CURRENT ENCOUNTERED DURING SPACECRAFT ROTATION, AND WHICH HALF OF THE COLLECTOR WAS MAXIMUM. THE ENTIRE SEQUENCE REQUIRED 2.8 MIN AND WAS REPEATED EVERY 5.5 MIN. THE ENTRANCE CONE FOR THIS FARADAY CUP HAD A HALF-ANGLE OF ABOUT 80 DEG. INTERFERENCE WAS ENCOUNTERED FROM REFRACTED PARTICLES (WITH THE MOST PRONOUNCED EFFECT AT ABOUT 70 DEG INCIDENCE TO CUP NORMAL), FROM SECONDARY ELECTRONS, AND FROM ULTRAVIOLET RADIATION. USEFUL DATA WERE OBTAINED FROM LAUNCH UNTIL JANUARY 13, 1965. HOWEVER, THERE WAS POOR DATA COVERAGE DURING THE LAST 7 MONTHS BECAUSE OF INTERMITTENT SATELLITE TRANSMISSION.

DATA SET NAME- THREE-HR AVERAGED PLASMA PARAMETERS ON MAGNETIC TAPE

NSSDC ID- 63-046A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 12/16/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE DATA WERE DERIVED FROM THE IRREGULAR INTERVAL PLASMA PARAMETERS (DATA SET 63-046A-07B). THE DATA SET CONTAINS 3-HR AVERAGES OF THE PLASMA CONVECTED VELOCITY, PROTON DENSITY, PLASMA ENERGY DENSITY (NOT THERMAL ENERGY DENSITY), AND PLASMA FLUX. ONE TO EIGHT AVERAGES ARE GIVEN PER

DAY, AND, FOR CONVENIENCE, KP IS ALSO GIVEN. THE DATA ARE ON ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE WITH 84 CHARACTERS PER LOGICAL RECORD AND ONE LOGICAL RECORD PER PHYSICAL RECORD.

DATA SET NAME- PLASMA PARAMETERS FOR IRREGULAR TIME INTERVALS ON MAGNETIC TAPE

NSSDC ID- 63-046A-07B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 12/16/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THE DATA IN THIS DATA SET WERE DERIVED THROUGH ANALYSIS OF THE SUPERIMPOSED CUP CURRENT PLOTS (DATA SET 63-046A-07C). INCLUDED IN THIS ANALYSIS WERE CORRECTIONS FOR ABERRATION (WHICH WERE CONSISTENTLY SELF VERIFIED USING WIDELY SPACED EPOCHS). BASED ON THE CORRECTED DATA, VALUES FOR BULK VELOCITY AND MOST PROBABLE THERMAL SPEED WERE DETERMINED. A CONVECTED MAXWELLIAN DISTRIBUTION WAS FIT TO THE SIX RANGES OF ENERGY-WINDOW DATA. A PROTON PLASMA DENSITY WAS THEN DETERMINED. THESE PLASMA PARAMETER DATA ARE PRESENTED FOR IRREGULAR TIME INTERVALS (WHILE THE SPACECRAFT WAS IN INTERPLANETARY SPACE) ON ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE. THERE ARE 84 CHARACTERS PER LOGICAL RECORD AND ONE LOGICAL RECORD PER PHYSICAL RECORD. THE DATA ON THE TAPE INCLUDE (1) CONVECTED VELOCITY AND UNCERTAINTY IN VELOCITY, (2) MOST PROBABLE THERMAL SPEED, IN UPPER AND LOWER LIMITS, (3) PROTON PLASMA DENSITY, AND (4) PLASMA TEMPERATURE ASSUMING AN ISOTROPIC MAXWELLIAN DISTRIBUTION, GIVEN AS FUNCTIONS OF TIME.

DATA SET NAME- SUPERIMPOSED CUP CURRENTS PLOTTED VS DETECTOR LOOK DIRECTION ON MICROFILM

NSSDC ID- 63-046A-07C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 12/28/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

FOR EACH SPECTRAL ENERGY LEVEL, DETECTOR CUP COLLECTOR CURRENTS ARE PLOTTED VS DETECTOR LOOK DIRECTION USING THE SUN-SPACECRAFT SPIN AXIS PLANE AS REFERENCE. DATA FROM SUCCESSIVE SPECTRA ARE SUPERIMPOSED. FOR A QUIET STEADY PLASMA, THESE DATA INDICATE THE AVERAGE NATURE OF THE SOLAR WIND. THE TIME PERIOD COVERED BY EACH PLOT, WHICH IS EQUIVALENT TO THE NUMBER OF SPECTRA SUPERIMPOSED, IS VARIABLE. THIS TIME PERIOD HAS BEEN DETERMINED BY THE EXPERIMENTER AND ROUGHLY INDICATES THE INTERVAL OVER WHICH THE PLASMA MAY BE CONSIDERED STEADY STATE. THE DATA ARE ON TWO REELS OF 16-MM MICROFILM WITH ABOUT 70 PERCENT COVERAGE FROM NOVEMBER 27, 1963, TO MAY 7, 1964, AND ABOUT 60 PERCENT COVERAGE FROM SEPTEMBER 17, 1964, TO DECEMBER 28, 1964.

DATA SET NAME- REDUCED PLASMA MEASUREMENTS ON MAGNETIC TAPE

NSSDC ID- 63-046A-07D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 01/13/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MAGNETIC TAPE

ALL AVAILABLE MEASUREMENTS MADE BY THE NIT EXPERIMENT HAVE BEEN CONVERTED BY THE EXPERIMENTER TO WHAT CAN BEST BE DESCRIBED AS 'ENGINEERING' UNITS. THIS PROCESS HAS TAKEN INTO ACCOUNT THE INSTRUMENT'S NONLINEAR TEMPERATURE-DEPENDENT TRANSFER FUNCTION, AND THE DATA HAVE BEEN CONVERTED TO FLUXES OF CHARGED PARTICLES IN TERMS OF MEASURED CURRENT (IN AMPS) WITHIN A SPECIFIED ENERGY WINDOW. THE SAMPLES IN EACH ENERGY WINDOW ARE PRESENTED IN THE SEQUENCE TAKEN, AS FUNCTIONS OF TIME. THE DATA ARE ON FIVE 800-BPI, 7-TRACK, FORTRAN IV MAGNETIC TAPES PRODUCED ON AN IBM 360 IN BCD MODE.

MCDONALD, IMP-A

EXPERIMENT NAME- COSMIC RAYS

NSSDC ID- 63-046A-04

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/26/64

PERSONNEL
PI - F.B. MCDONALD NASA-GSFC
GREENBELT, MD

THIS EXPERIMENT CONSISTED OF TWO DETECTOR SYSTEMS. THE FIRST WAS A DE/DX VS E TELESCOPE WITH THIN AND THICK CSI SCINTILLATORS (ONE EACH) AND AN ANTICOINCIDENCE PLASTIC SCINTILLATION COUNTER. THE TELESCOPE AXIS WAS NORMAL TO THE SPACECRAFT SPIN AXIS. COUNTS OF PARTICLES PENETRATING THE THIN CSI SCINTILLATOR AND STOPPING IN THE THICK CSI SCINTILLATOR WERE ACCUMULATED DURING ONE 39.36-SEC INTERVAL EVERY 5.46 MIN. THE RELATIVE CONTRIBUTION TO THE COUNT RATE OF VARIOUS SPECIES (ELECTRONS BETWEEN 3 AND 12 MEV, IONS WITH CHARGE = 1, 2, ATOMIC MASS = 1, 2, 3, 4, AND ENERGY BETWEEN 18.7 AND 81.6 KEV/NUCLEON) AND ENERGY SPECTRAL INFORMATION WERE DETERMINED BY 512-CHANNEL PULSE HEIGHT ANALYSIS PERFORMED SIMULTANEOUSLY ON THE OUTPUT OF BOTH CSI SCINTILLATORS SIX TIMES EVERY 5.46 MIN. THE SECOND DETECTOR SYSTEM CONSISTED OF TWO GEIGER-MUELLER (GM) TUBE TELESCOPES ORIENTED PARALLEL TO AND PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. EACH TELESCOPE CONSISTED OF TWO COLINEAR GM TUBES. THE PARALLEL AND PERPENDICULAR TELESCOPES MEASURED THE SUM OF COUNTS DUE TO PROTONS ABOVE 70 MEV AND ELECTRONS ABOVE 6.5 MEV AND THE SUM OF COUNTS DUE TO PROTONS ABOVE 65 MEV AND ELECTRONS ABOVE 6 MEV, RESPECTIVELY. COUNTS REGISTERED IN ANY ONE OF THE FOUR GM TUBES WERE ALSO ACCUMULATED. THESE OMNIDIRECTIONAL COUNTS WERE DUE TO PROTONS ABOVE 50 MEV PLUS ELECTRONS ABOVE 4 MEV. THE PARALLEL, PERPENDICULAR, AND OMNIDIRECTIONAL COUNT RATES WERE OBTAINED FOR ONE 40-SEC ACCUMULATION INTERVAL DURING SUCCESSIVE NORMAL 81.9-SEC TELEMETRY SEQUENCES. THUS, ANY ONE COUNT RATE WAS MEASURED FOR 40 SEC ONCE EACH 5.46 MIN. BOTH DETECTOR SYSTEMS WORKED WELL FROM LAUNCH UNTIL MAY 26, 1964.

DATA SET NAME- HOURLY AVERAGED COUNT RATES ON TAPE

NSSDC ID- 63-046A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 05/26/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BINARY MAGNETIC TAPE GENERATED BY THE EXPERIMENTER ON AN IBM 7040/709A DIRECT COUPLED SYSTEM. EACH LOGICAL RECORD CONTAINS DATA FROM 1 DAY IN 652 WORDS (CONTROL WORDS NOT INCLUDED). HOURLY AVERAGED COUNT RATES FOR THE SCINTILLATOR TELESCOPE AND FOR THE TWO GM TELESCOPES (DIRECTIONAL AND OMNIDIRECTIONAL MODES) ARE GIVEN.

DATA SET NAME- HOURLY AVERAGED COUNT RATES ON MICROFILM

NSSDC ID- 63-046A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 03/18/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, IS ON ONE REEL OF 16-MM MICROFILM WHICH ALSO CONTAINS DATA SETS 63-046A-04C AND -04D. THE DATA CONSIST OF TABULAR LISTINGS OF TIME, SPACECRAFT ALTITUDE, AND HOURLY AVERAGED COUNT RATES FOR ALL THE COUNTING MODES OF THE SCINTILLATOR TELESCOPE AND OF THE GEIGER MUELLER TUBES. THERE ARE NO SIGNIFICANT DATA GAPS BETWEEN NOVEMBER 27, 1963 AND FEBRUARY 29, 1964. THERE ARE NO DATA FOR THE FIRST 15 DAYS OF MARCH, BUT THERE ARE DATA FOR MARCH 16-18, 1964.

DATA SET NAME- 5-MINUTE COUNT RATES ON MICROFILM

NSSDC ID- 63-046A-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 03/18/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, IS ON ONE REEL OF 16-MM MICROFILM WHICH ALSO CONTAINS DATA SETS 63-046A-04B AND -04D. THE DATA CONSIST OF TABULAR LISTINGS OF TIME, SPACECRAFT ALTITUDE, AND ALL COUNT RATES (5-MIN RESOLUTION) FOR ALL THE COUNTING MODES OF THE SCINTILLATOR TELESCOPE AND OF THE GEIGER MUELLER TUBES. THERE ARE NO SIGNIFICANT DATA GAPS BETWEEN NOVEMBER 27, 1963 AND FEBRUARY 29, 1964. THERE ARE NO DATA FOR MARCH 1-15, 1964, BUT THERE ARE DATA FOR MARCH 16-18, 1964.

DATA SET NAME- DE/DX VS E MATRICES ON MICROFILM

NSSDC ID- 63-046A-04D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 03/14/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, IS ON ONE REEL OF 16-MM MICROFILM WHICH ALSO CONTAINS DATA SETS 63-046A-04B AND -04C. THE DATA CONSIST OF DE/DX VS E MATRICES FOR THE SCINTILLATOR TELESCOPE. EACH MATRIX WAS CONSTRUCTED USING DATA TAKEN DURING ONE FULL SPACECRAFT ORBIT (3.8 DAYS), EXCEPT THAT DATA TAKEN BELOW ABOUT 11 EARTH RADII WERE EXCLUDED. DATA FOR THE FIRST 28 ORBITS ARE PRESENTED (NOVEMBER 27, 1963 TO MARCH 14, 1964).

AVAILABILITY OF DATA SET- DATA AT NSSDC

SERBU, IMP-A

EXPERIMENT NAME- RETARDING POTENTIAL ANALYZER

NSSDC ID- 63-046A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/27/63

PERSONNEL
PI - G.P. SERBU NASA-GSFC
GREENBELT, MD
OI - E.J. MAIER NASA-GSFC
GREENBELT, MD

THE RETARDING POTENTIAL ANALYZER WAS A THREE-ELEMENT PLANAR FARADAY CUP. IT WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS AND HAD AN EFFECTIVE LOOK ANGLE OF 5 STER. COARSE AND FINE RESOLUTION MODES WERE PROGRAMMED FOR BOTH IONS AND ELECTRONS. THESE MODES CONSISTED OF 15 STEPS EACH FOR RETARDING VOLTAGES OF 0 TO 28 V AND 0 TO 100 V. THE ENTIRE ION AND ELECTRON SEQUENCE WAS REPEATED ONCE EVERY 10.92 MIN, AND EACH 15-STEP SPECTRAL ANALYSIS REQUIRED 5.4 SEC. THE EXPERIMENT OPERATED FROM LAUNCH FOR ABOUT 20 HR WHEN FAILURE OF A MECHANICAL PROGRAMMER SWITCH TERMINATED OPERATIONS. THE DATA WERE ADVERSELY AFFECTED BY SECONDARY ELECTRONS.

AVAILABILITY OF DATA SET- DATA AT NSSDC

DATA SET NAME- SEMILOG PLOTS OF COLLECTOR CURRENT VS RETARDING POTENTIAL VOLTAGE ON MICROFILM

NSSDC ID- 63-046A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 11/27/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THESE ELECTROSTATIC ANALYZER DETECTOR DATA CONSIST OF 100 PLOTS (ON SEMILOG PAPER), ON ONE REEL OF 35-MM MICROFILM, OF CALIBRATED COLLECTOR CURRENT IN AMPS VS RETARDING POTENTIAL VOLTAGE. THE PLOTS ARE FOR ALTITUDES FROM 6280 TO 193,885 KM

AND COVER APPROXIMATELY 20 HR OF CONTINUOUS DATA. EACH SPECTRUM IS PLOTTED ON A SEPARATE PAGE. AND DATA CONTAMINATED BY SOLAR UV BACKGROUND OR OTHER INTERFERENCE EFFECTS NOT INDICATED BY INSTRUMENT CALIBRATION CURVES HAVE NOT BEEN REMOVED. MOST DATA HAVE BEEN THUS AFFECTED. DATA FOR POSITIVE IONS AND ELECTRONS IN THE TWO RETARDING POTENTIAL RANGES 0 TO 28 V AND 0 TO 100 V ARE INCLUDED.

CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 204 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 48 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE ACCUMULATIONS -- D1, D1D2, D1D2D3, AND D1D2D3D4 CORRESPONDING TO PROTON ENERGY INTERVALS 0.9 TO 190 MEV, 6.5 TO 190 MEV, 19 TO 190 MEV, AND 90 TO 190 MEV. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION AND DATA QUALITY INFORMATION.

SIMPSON, IMP-A

EXPERIMENT NAME- COSMIC-PAY RANGE VS ENERGY LOSS

NSSDC ID- 63-046A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/15/64

PERSONNEL

PI - J.A. SIMPSON U OF CHICAGO
CHICAGO, IL
DI - C.Y. FAN U OF ARIZONA
TUCSON, AZ
OI - G. GLOECKLER U OF MARYLAND
COLLEGE PARK, MD

A CHARGED PARTICLE SOLID-STATE TELESCOPE WAS USED TO MEASURE RANGE AND ENERGY LOSS OF GALACTIC AND SOLAR COSMIC RAYS. THE EXPERIMENT WAS DESIGNED TO STUDY PARTICLE ENERGIES (ENERGY PER NUCLEON INTERVALS APPROXIMATELY PROPORTIONAL TO Z SQUARED/A FOR PROTONS 0.9 TO 190 MEV, 6.5 TO 190 MEV, 19 TO 190 MEV, AND 90 TO 190 MEV) AND CHARGE SPECTRA (Z.LE.6). THE DETECTOR WAS ORIENTED NORMAL TO THE SPACECRAFT SPIN AXIS. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED SIX TIMES EVERY 5.46 MIN. EACH ACCUMULATION WAS ABOUT 40 SEC LONG (INITIAL SPACECRAFT SPIN PERIOD WAS ABOUT 2 SEC). THE OUTPUT FROM TWO 128-CHANNEL PULSE HEIGHT ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND READ OUT ALONG WITH THE DETECTOR ACCUMULATIONS. FROM LAUNCH UNTIL OCTOBER 15, 1964, A MALFUNCTION LIMITED ALPHA STUDIES TO PARTICLES OF E GREATER THAN 30 MEV. NO USEFUL INFORMATION WAS RECEIVED AFTER OCTOBER 15, 1964. THERE WERE LARGE GAPS IN THE DATA COVERAGE AFTER MAY 30, 1964, INCLUDING THE GAP FROM JULY 1 TO SEPTEMBER 17, 1964. SEE FAN ET AL, JGR, VOL 70, P 3515, 1965, FOR FURTHER DETAILS.

DATA SET NAME- REDUCED PULSE HEIGHT, ANALYZER DATA ON MAGNETIC TAPE

NSSDC ID- 63-046A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 06/07/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED PULSE HEIGHT ANALYZER DATA ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 200 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 48 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE PULSE HEIGHT ANALYZER DATA -- D1 AND D3 DETECTOR ELEMENT PULSE HEIGHTS, TIME OF OBSERVATION, ORBIT NUMBER, AND DATA QUALITY INFORMATION. THE OUTPUT FROM THE TWO 128-CHANNEL ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND READ OUT ALONG WITH THE DETECTOR COUNT RATE DATA.

DATA SET NAME- COUNT RATE PLOTS (R VS ENERGY LOSS) ON MICROFILM

NSSDC ID- 63-046A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 05/30/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THE DATA SET CONSISTS OF CALCOMP COUNT RATE PLOTS FOR THE TELESCOPE SENSOR COMBINATIONS (D1, D1D2, D1D2D3, AND D1D2D3D4) WHICH CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.9 TO 190 MEV, 6.5 TO 190 MEV, 19 TO 190 MEV, AND 90 TO 190 MEV. EACH PLOT GIVES THE COUNT RATE (LOGARITHMIC) VS TIME (DAY NUMBER) FOR ONE SOLAR ROTATION. THE PLOTS ARE ON ONE REEL OF 35-MM MICROFILM THAT CONTAINS A TOTAL OF 32 PLOTS. THERE ARE EIGHT PLOTS FOR EACH OF THE FOUR SENSOR COMBINATIONS. THE TIME INTERVAL COVERED IS FROM SOLAR ROTATION NUMBER 1783 (NOVEMBER 27, 1963) THROUGH 1790 (MAY 30, 1964).

DATA SET NAME- FIVE-MINUTE AVERAGE COUNT RATES ON MAGNETIC TAPE

NSSDC ID- 63-046A-03E

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 05/31/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY TELESCOPE COUNTING RATES AVERAGED OVER 4 SEQUENCE COUNTS (APPROXIMATELY 320 SEC). THE DATA ARE CONTAINED ON ONE 7-TRACK, BLOCKED-8CD MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS 930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. THERE ARE 48 FILES ON THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 57 LOGICAL RECORDS PER PHYSICAL RECORD AND 33 WORDS PER LOGICAL RECORD. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE RATES -- D1, D1D2, D1D2D3, AND D1D2D3D4 CORRESPONDING TO PROTON ENERGY INTERVALS 0.9 TO 190, 6.5 TO 190, 19 TO 190, AND 90 TO 190 MEV, RESPECTIVELY. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION, SEQUENCE COUNT, SATELLITE GEOCENTRIC DISTANCE, AE INDEX, KP INDEX, AND DATA QUALITY INFORMATION.

DATA SET NAME- REDUCED COUNT ACCUMULATION DATA ON MAGNETIC TAPE

NSSDC ID- 63-046A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 06/06/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED COUNT ACCUMULATIONS ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA

WOLFE, IMP-A

EXPERIMENT NAME- SOLAR WIND PROTONS

NSSDC ID- 63-046A-06

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 04/03/64

PERSONNEL

PI - J.H. WOLFE NASA-ARC
HOFFETT FIELD, CA
OI - R.W. SILVA NASA-ARC
HOFFETT FIELD, CA

A QUADRISPHERICAL ELECTROSTATIC ANALYZER WITH A CURRENT COLLECTOR AND AN ELECTROMETER AMPLIFIER WAS USED TO DETECT AND ANALYZE THE POSITIVE ION COMPONENT OF THE INCIDENT PLASMA AND TO STUDY ITS GROSS FLOW CHARACTERISTICS. PROTONS WERE ANALYZED IN 14 ENERGY CHANNELS BETWEEN 0.025 AND 16 KEV. THE INSTRUMENT

IMP-A/IMP-B

WAS MOUNTED ON THE SATELLITE EQUATORIAL PLANE AND HAD A VIEW ANGLE OF 15 DEG IN THIS PLANE AND OF 90 DEG IN THE PLANE CONTAINING THE SPIN AXIS. THE SATELLITE'S EQUATORIAL PLANE WAS DIVIDED INTO THREE CONTIGUOUS SECTORS (111.8 DEG, 111.8 DEG, AND 136.4 DEG) BY USE OF AN OPTICAL ASPECT SENSOR. THE PEAK FLUX IN ONE SECTOR WAS RECORDED AT ONE ANALYZER PLATE POTENTIAL PER REVOLUTION OF THE SATELLITE. (NO INFORMATION AS TO THE POSITION WITHIN THE SECTOR IN WHICH THE PEAK FLUX OCCURRED WAS RETAINED.) AFTER 14 REVOLUTIONS, ALL ENERGY CHANNELS HAD BEEN SCANNED, AND THE PROCESS WAS REPEATED FOR THE NEXT SECTOR. A COMPLETE SCAN IN ENERGY AND SECTOR WAS REPEATED EVERY 5.46 MIN. NO DATA WERE OBTAINED FOR THE BRIEF PERIODS WHEN THE SATELLITE WAS IN THE MAGNETOSPHERE. THE INSTRUMENT OPERATED WELL UNTIL APRIL 1964 WHEN IT STARTED OPERATING INTERMITTENTLY. ITS OPERATION CONTINUED TO DEGRADE THEREAFTER.

DATA SET NAME- PLOTS OF FLUX VS TIME AND RADIAL DISTANCE ON MICROFILM

NSSDC ID- 63-046A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/27/63 TO 04/03/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THESE REDUCED DATA PLOTS WERE SUPPLIED BY THE EXPERIMENTER AND MICROFILMED BY NSSDC. ON EACH PLOT, ION FLUX (CONVERTED TO NORMAL INCIDENCE FLUX) IS PRESENTED VS TIME AND RADIAL DISTANCE FOR EACH OF THE THREE SECTORS OF THE SATELLITE'S EQUATORIAL PLANE. FOR EACH TIME PERIOD, THERE IS ONE PLOT FOR EACH OF THE FOLLOWING ENERGY LEVELS -- 600, 1700, 2970, AND 3700 EV. A SINGLE PLOT CONTINUED FOR 2 DAYS (ONE HALF OF AN ORBIT). THE DATA ARE AVAILABLE ON ONE REEL OF 16-MM MICROFILM AND COVER THE TIME PERIODS NOVEMBER 27, 1963, TO MARCH 22, 1964, AND MARCH 31 TO APRIL 3, 1964. THESE CORRESPOND TO ORBITS 1 THROUGH 30 PLUS ORBIT 33. THERE IS A 90 PERCENT COVERAGE FOR THE FIRST TIME PERIOD AND A 5 PERCENT COVERAGE FOR THE SECOND TIME PERIOD.

SPACECRAFT COMMON NAME- IMP-B

ALTERNATE NAMES- IMP 2, EXPLORER 21
S 74A, 00889

NSSDC ID- 64-060A

LAUNCH DATE- 10/04/64 WEIGHT- 135. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/01/65

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 10/04/64
ORBIT PERIOD- 2097. MIN INCLINATION- 33.5 DEG
PERIAPSIS- 193.000 KM ALT APOAPSIS- 95400. KM ALT

EXPLORER 21 (IMP 2) WAS A SOLAR CELL AND CHEMICAL BATTERY POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. EACH NORMAL PPM TELEMETRY SEQUENCE OF 81.9 SEC IN DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE AT NOON, A SPIN RATE OF 14.6 RPM, AND A SPIN DIRECTION OF 41.4 DEG RIGHT ASCENSION AND 47.4 DEG DECLINATION. THE SIGNIFICANT DEVIATION OF THE SPIN RATE AND DIRECTION FROM THEIR PLANNED VALUES AND THE ACHIEVEMENT OF AN APOGEE LESS THAN HALF THE PLANNED VALUE ADVERSELY AFFECTED DATA USEFULNESS. OTHERWISE, SPACECRAFT SYSTEMS PERFORMED WELL, WITH NEARLY COMPLETE DATA TRANSMISSION FOR THE FIRST 4 MONTHS AND FOR THE SIXTH MONTH AFTER LAUNCH. DATA TRANSMISSION WAS INTERMITTENT FOR OTHER TIMES, AND THE FINAL TRANSMISSION OCCURRED ON OCTOBER 13, 1965.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON TAPE

NSSDC ID- 64-060A-00G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 10/05/64 TO 09/30/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE BLOCKED, 7-TRACK, 800-BPI, IBM 7094 BINARY MAGNETIC TAPE GENERATED AT NSSDC FROM UNBLOCKED TAPES SUBMITTED BY N. F. NESS. THERE ARE FIVE LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES CONTAIN THE FOLLOWING INFORMATION AT 5-MIN INTERVALS - (1) GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND RADIAL DISTANCE OF THE SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND THE SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS GREATER THAN 80 PERCENT. A SEPARATE DATA SET (64-060A-00H) WITH ONE SET OF EPHEMERIS PARAMETERS PER HR IS AVAILABLE ON AN NSSDC-GENERATED TAPE.

ANDERSON, IMP-B

EXPERIMENT NAME- ION CHAMBER AND GM COUNTERS

NSSDC ID- 64-060A-05

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 09/23/65

PERSONNEL

PI - K.A. ANDERSON U OF CALIF. BERKELEY
BERKELEY, CA

THIS EXPERIMENT, DESIGNED TO MEASURE FLUXES OF GEOMAGNETICALLY TRAPPED PARTICLES, CONSISTED OF A 7.6-CM-DIAMETER NEHER-TYPE IONIZATION CHAMBER AND TWO ANTON 223 GEIGER-MUELLER TUBES. THE ION CHAMBER RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 1 AND 17 MEV, RESPECTIVELY. BOTH GM TUBES WERE MOUNTED PARALLEL TO THE SPACECRAFT SPIN AXIS. GM TUBE A DETECTED ELECTRONS GREATER THAN 45 KEV SCATTERED OFF A GOLD FOIL. THE ACCEPTANCE CONE FOR THESE ELECTRONS HAD A FULL ANGLE OF 61 DEG, AND ITS AXIS OF SYMMETRY MADE AN ANGLE OF 59.5 DEG WITH THE SPACECRAFT SPIN AXIS. GM TUBE A RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. GM TUBE B LOOKED DIRECTLY INTO SPACE THROUGH A HOLE IN THE SPACECRAFT SKIN. THE ACCEPTANCE CONE FOR GM TUBE B HAD A FULL ANGLE OF 38 DEG, AND ITS AXIS OF SYMMETRY WAS PARALLEL TO THE SPACECRAFT SPIN AXIS. OMNIDIRECTIONALLY, GM TUBE B RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. DIRECTIONALLY, GM TUBE B RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 40 AND 500 KEV, RESPECTIVELY. PULSES FROM THE ION CHAMBER WERE ACCUMULATED FOR 326.08 SEC AND READ OUT ONCE EVERY 327.68 SEC. COUNTS FROM GM TUBE A WERE ACCUMULATED FOR 39.36 SEC AND READ OUT SIX TIMES EVERY 327.68 SEC. COUNTS FROM GM TUBE B WERE ACCUMULATED FOR 39.36 SEC AND READ OUT FIVE TIMES EVERY 327.68 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH OCTOBER 13, 1965, THE DATE OF THE LAST DATA TRANSMISSION. FOR FURTHER DETAILS, SEE LIN AND ANDERSON, JGR, VOL 71, P 1827, 1966.

DATA SET NAME- TIME-ORDERED COUNT RATES ON TAPE

NSSDC ID- 64-060A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/05/64 TO 04/05/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 7-TRACK, BCD, 556-BPI TAPE THAT WAS GENERATED AT NSSDC BY TIME ORDERING THE EXPERIMENTER-SUPPLIED TAPE DATA SET 64-060A-05A. THE FIRST FILE ON THE TAPE IS A 12-CHARACTER INDEX THAT IDENTIFIES THE ORIGINAL GSFC TAPE FROM WHICH THE DATA WERE TAKEN. FOLLOWING EACH INDEX ARE A VARIABLE NUMBER OF 1032-CHARACTER DATA RECORDS, EACH CONSISTING OF EIGHTEEN 56-CHARACTER LOGICAL RECORDS AND A 24-CHARACTER GROUP THAT AGAIN IDENTIFIES THE DATA WITH RESPECT TO THE ORIGINAL GSFC TAPE. EACH LOGICAL RECORD CONTAINS THE UT (DAY, HR, MIN, AND NSEC), ONE ACCUMULATION EACH FROM THE ION CHAMBER AND GM TUBE B, TWO ACCUMULATIONS FROM GM TUBE A, THE AZIMUTHAL AND POLAR SOLAR ANGLES, SATELLITE SPIN PERIOD, AND A NUMBER OF PROCESSING ERROR FLAGS. THESE DATA COVER THE PERIOD FROM OCTOBER 5, 1964, TO APRIL 5, 1965.

DATA SET NAME- PLOTS OF COUNT RATES AND PULSE RATES VS
TIME ON MICROFILM

NSSDC ID- 64-060A-05C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/04/64 TO 09/23/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE THE PULSE RATE OF THE ION CHAMBER TIMES 100 AND THE COUNT RATES OF GM TUBES A AND B TIMES 1 AND 10, RESPECTIVELY. THESE RATES ARE PLOTTED ON A LOGARITHMIC SCALE VS TIME. THE DAY OF THE YEAR IS GIVEN ON EACH FRAME. THE DATA ARE TIME ORDERED AND CONTAIN NO EPHEMERIS INFORMATION. THE DATA COVER APPROXIMATELY 70 PERCENT OF THE PERIODS FROM OCTOBER 4, 1964, TO FEBRUARY 9, 1965, MARCH 3, 1965, TO APRIL 7, 1965, AND SEPTEMBER 12, 1965, TO SEPTEMBER 23, 1965.

BRIDGE, IMP-B

EXPERIMENT NAME- FARADAY CUP

NSSDC ID- 64-060A-07

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/13/65

PERSONNEL

PI - H.S. BRIDGE MASS INST OF TECH
CAMBRIDGE, MA
OI - J.H. BINSACK MASS INST OF TECH
CAMBRIDGE, MA

THE FIVE-ELEMENT FARADAY CUP ON EXPLORER 21 MEASURED ELECTRONS BETWEEN 130 AND 265 EV AND IONS IN THE FOLLOWING FIVE ENERGY WINDOWS --- 40 TO 90, 95 TO 230, 260 TO 650, 700 TO 2000, AND 1700 TO 5400 EV. FOR EACH 5.46 MIN INTERVAL, 22 USABLE, INSTANTANEOUS CURRENT SAMPLES WERE RECORDED FOR EACH ENERGY WINDOW, SEPARATED BY 0.16 SEC EACH. TWO COLLECTOR PLATES WERE USED TO YIELD INFORMATION ABOUT THE ANGULAR VARIATION OUT OF THE SATELLITE SPIN PLANE. THE SUM AND DIFFERENCE OF THE CURRENTS ON THE TWO PLATES AND THE DIRECTION WITH MAXIMUM CURRENT WERE TELEMETERED. THE EFFECT OF SECONDARY ELECTRONS HAS NOT BEEN ELIMINATED. THIS EFFECT COULD BE VERY SIGNIFICANT WITHIN THE EARTH'S PLASMAPAUSE. THE INSTRUMENT PRODUCED DATA THROUGHOUT THE OPERATIONAL LIFE OF THE SPACECRAFT AND PROVIDED ESSENTIALLY CONTINUOUS DATA THROUGH APRIL 5, 1965.

DATA SET NAME- REDUCED PLASMA MEASUREMENTS ON MAGNETIC
TAPE

NSSDC ID- 64-060A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 10/04/64 TO 09/24/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 4 REEL(S) OF MAGNETIC TAPE

ALL AVAILABLE MEASUREMENTS MADE BY THE MIT EXPERIMENT HAVE BEEN CONVERTED BY THE EXPERIMENTER TO WHAT CAN BEST BE DESCRIBED AS 'ENGINEERING' UNITS. THIS PROCESS HAS TAKEN INTO ACCOUNT THE INSTRUMENT'S NONLINEAR TEMPERATURE-DEPENDENT TRANSFER FUNCTION, AND THE DATA HAVE BEEN CONVERTED TO FLUXES OF CHARGED PARTICLES IN TERMS OF MEASURED CURRENT (IN AMPS) WITHIN A SPECIFIED ENERGY WINDOW. THE SAMPLES IN EACH ENERGY WINDOW ARE PRESENTED IN THE SEQUENCE TAKEN, AS FUNCTIONS OF TIME. THE DATA ARE ON FOUR 800-BPI, 7-TRACK, FORTRAN IV MAGNETIC TAPES PRODUCED ON AN IBM 360-IN BCD MODE.

SERBU, IMP-B

EXPERIMENT NAME- RETARDING POTENTIAL ANALYZER

NSSDC ID- 64-060A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/13/65

PERSONNEL

PI - G.P. SERBU NASA-GSFC
GREENBELT, MD
OI - E.J. MAIER NASA-GSFC
GREENBELT, MD

THE RETARDING POTENTIAL ANALYZER WAS A FOUR-ELEMENT FARADAY CUP. IT WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS AND HAD AN EFFECTIVE LOOK ANGLE OF 5 STER. THE EXPERIMENT OPERATED FOR 5.2 SEC IN EACH OF FOUR MODES ONCE EVERY 648 SEC. IN TWO MODES, 15-STEP SPECTRA FOR IONS WERE DETERMINED FOR RETARDING POTENTIALS IN THE RANGES MINUS 5 V TO PLUS 15 V AND MINUS 5 V TO PLUS 45 V. IN THE OTHER TWO MODES, SIMILAR INFORMATION FOR ELECTRONS WAS OBTAINED BY CHANGING THE SIGNS OF THE POTENTIALS. THE INSTRUMENT EXPERIENCED SECONDARY ELECTRON CONTAMINATION BUT RETURNED ESSENTIALLY CONTINUOUS DATA UNTIL APRIL 5, 1965.

DATA SET NAME- ANALYZED ELECTRON TEMPERATURE AND
DENSITY VALUES ON MAGNETIC TAPE

NSSDC ID- 64-060A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 10/04/64 TO 04/05/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE ANALYZED DATA, GENERATED BY THE EXPERIMENTER, ARE ON ONE IBM 7094, 7-TRACK, 800-BPI, EVEN PARITY, BCD MAGNETIC TAPE WITH EIGHTEEN 155-CHARACTER LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA TAKEN AT RADIAL DISTANCES FROM THE EARTH OF LESS THAN 5 EARTH RADII WILL PROBABLY BE THE MOST USEFUL. THE TIME-ORDERED TAPE CONTAINS A MEASURE OF THE ELECTRON DENSITY, TEMPERATURES FOR A TWO-ENERGY COMPONENT MAXWELLIAN FIT TO THE DATA, AND A MEASURE OF THE SPACECRAFT POTENTIAL. EPHEMERIS DATA ARE INCLUDED.

SIMPSON, IMP-B

EXPERIMENT NAME- COSMIC-RAY RANGE VS ENERGY LOSS

NSSDC ID- 64-060A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 04/09/65

PERSONNEL

PI - J.A. SIMPSON U OF CHICAGO
CHICAGO, IL
OI - C.Y. FAN U OF ARIZONA
TUCSON, AZ
OI - G. GLOECKLER U OF MARYLAND
COLLEGE PARK, MD

A CHARGED PARTICLE SOLID-STATE TELESCOPE WAS USED TO MEASURE RANGE AND ENERGY LOSS OF GALACTIC AND SOLAR COSMIC RAYS. THE EXPERIMENT WAS DESIGNED TO STUDY PARTICLE ENERGIES (ENERGY PER NUCLEON INTERVALS APPROXIMATELY PROPORTIONAL TO Z SQUARED/A FOR PROTONS 0.9 TO 190 MEV, 6.5 TO 19 MEV, 19 TO 90 MEV, AND 90 TO 190 MEV) AND CHARGE SPECTRA (Z.LE.6). THE DETECTOR WAS ORIENTED NORMAL TO THE SPACECRAFT SPIN AXIS. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED SIX TIMES EVERY 5.46 MIN. EACH ACCUMULATION WAS ABOUT 40 SEC LONG (INITIAL SPACECRAFT SPIN PERIOD WAS ABOUT 4.1 SEC). THE OUTPUT FROM TWO 128-CHANNEL PULSE HEIGHT ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND READ OUT ALONG WITH THE DETECTOR ACCUMULATIONS. USEFUL DATA WERE OBTAINED FROM LAUNCH UNTIL APRIL 9, 1965. DATA COVERAGE WAS INTERMITTENT THROUGHOUT THE LIFE OF THE SPACECRAFT DUE TO FREQUENT SPACECRAFT SHUTOFFS AND SPORADIC FAILURE OF SOME DETECTORS.

DATA SET NAME- COUNT RATE PLOTS (R VS ENERGY LOSS) ON
MICROFILM

NSSDC ID- 64-060A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC

IMP-B/IMP-C

TIME PERIOD COVERED- 10/04/64 TO 04/07/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THE DATA SET CONSISTS OF EXPERIMENTER-SUPPLIED, MACHINE-GENERATED COUNT RATE PLOTS FOR THE TELESCOPE SENSOR COMBINATIONS (D1, D1D2 NOT D3, D1D2D3 NOT D4, AND D1D2D3D4), WHICH CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.9 TO 190 MEV, 6.5 TO 19 MEV, 19 TO 90 MEV, AND 90 TO 190 MEV. EACH PLOT GIVES THE COUNT RATE (LOGARITHMIC) VS TIME (DAY NUMBER) FOR ONE SOLAR ROTATION. THE PLOTS ARE ON ONE REEL OF 35-MM MICROFILM THAT CONTAINS A TOTAL OF 32 PLOTS. THERE ARE EIGHT PLOTS FOR EACH OF THE FOUR SENSOR COMBINATIONS. THE TIME INTERVAL COVERED IS FROM SOLAR ROTATION NUMBER 1795 (OCTOBER 4, 1964) THROUGH 1802 (APRIL 7, 1965).

DATA SET NAME- REDUCED COUNT ACCUMULATION DATA ON MAGNETIC TAPE

NSSDC ID- 64-060A-030

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/04/64 TO 04/02/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED COUNT ACCUMULATIONS ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 204 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 134 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE ACCUMULATIONS -- D1, D1D2 NOT D3, D1D2D3 NOT D4, D1D2D3D4, AND D5 CORRESPONDING TO PROTON ENERGY INTERVALS 0.9 TO 190, 6.5 TO 19, 19 TO 90, 90 TO 190, AND ABOUT 1 MEV. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION AND DATA QUALITY INFORMATION.

DATA SET NAME- REDUCED PULSE HEIGHT ANALYZER DATA ON MAGNETIC TAPE

NSSDC ID- 64-060A-03E

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/04/64 TO 03/27/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED PULSE HEIGHT ANALYZER DATA ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 200 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 134 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE PULSE HEIGHT ANALYZER DATA -- D1 AND D3 DETECTOR ELEMENT PULSE HEIGHTS, TIME OF OBSERVATION, ORBIT NUMBER, AND DATA QUALITY INFORMATION. THE OUTPUT FROM THE TWO 128-CHANNEL ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND READ OUT ALONG WITH THE DETECTOR COUNT RATE DATA.

DATA SET NAME- FIVE-MINUTE AVERAGED COUNT RATES ON MAGNETIC TAPE

NSSDC ID- 64-060A-03F

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/05/64 TO 04/02/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY TELESCOPE COUNTING RATES AVERAGED OVER 4 SEQUENCE COUNTS (APPROXIMATELY

328 SEC). THE DATA ARE CONTAINED ON ONE 7-TRACK, BLOCKED BCD MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME ORDERED FORMAT USING AN XDS 930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. THERE ARE 134 FILES ON THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 57 LOGICAL RECORDS PER PHYSICAL RECORD AND 33 WORDS PER LOGICAL RECORD. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE RATES -- D1, D1D2 NOT D3, D1D2D3 NOT D4, D1D2D3D4, AND D5 CORRESPONDING TO PROTON ENERGY INTERVALS 0.9 TO 190, 6.5 TO 19, 19 TO 90, 90 TO 190 MEV, AND ABOUT 1 MEV, RESPECTIVELY. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION, SEQUENCE COUNT, SATELLITE GEOCENTRIC DISTANCE, AE INDEX, KP INDEX, AND DATA QUALITY INFORMATION.

WOLFE, IMP-B

EXPERIMENT NAME- SOLAR WIND PROTONS

NSSDC ID- 64-060A-06

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/23/64

PERSONNEL

PI - J.H. WOLFE NASA-ARC
KOFFETT FIELD, CA

A QUADRISPHERICAL ELECTROSTATIC ANALYZER WITH A CURRENT COLLECTOR AND AN ELECTROMETER AMPLIFIER WAS INTENDED TO DETECT AND ANALYZE THE POSITIVE ION COMPONENT OF THE INCIDENT PLASMA AND TO STUDY ITS GROSS FLOW CHARACTERISTICS. THE PLANNED MONITORING OF THE INTERPLANETARY MEDIUM WAS NOT ACCOMPLISHED BECAUSE THE APOGEE THAT THE SATELLITE ACHIEVED WAS LOWER THAN EXPECTED. PROTONS WERE ANALYZED IN 12 ENERGY CHANNELS BETWEEN 0.7 AND 8 KEV. THE INSTRUMENT WAS MOUNTED ON THE SATELLITE EQUATORIAL PLANE AND HAD A VIEW ANGLE OF 15 DEG IN THIS PLANE AND OF 90 DEG IN THE PLANE CONTAINING THE SPIN AXIS. THE SATELLITE EQUATORIAL PLANE WAS DIVIDED INTO THREE CONTIGUOUS SECTORS (61 DEG, 95 DEG, AND 204 DEG) BY USE OF AN OPTICAL ASPECT SENSOR. THE PEAK FLUX IN ONE SECTOR WAS RECORDED AT ONE ANALYZER PLATE POTENTIAL PER REVOLUTION OF THE SATELLITE. (NO INFORMATION AS TO THE POSITION WITHIN THE SECTOR IN WHICH THE PEAK FLUX OCCURRED WAS RETAINED.) AFTER 12 REVOLUTIONS, ALL THE ENERGY CHANNELS HAD BEEN SCANNED, AND THE PROCESS WAS REPEATED FOR THE NEXT SECTOR. A COMPLETE SCAN IN ENERGY AND SECTOR WAS REPEATED EVERY 5.46 MIN. BECAUSE THE INSTRUMENT WAS NOT CAPABLE OF OBSERVING MAGNETOSPHERIC PLASMA, NO DATA WERE OBTAINED FOR THE TIME WHEN THE SATELLITE WAS IN THE MAGNETOSPHERE. THE DATA MAY BE USEFUL IN IDENTIFYING THE MAGNETOPAUSE AND BOW SHOCK.

DATA SET NAME- PLOTS OF COLLECTOR CURRENT VS TIME FOR ALL ENERGY LEVELS ON MICROFILM

NSSDC ID- 64-060A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/05/64 TO 12/23/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THESE REDUCED DATA CONSIST OF SEMILOG PLOTS OF THE PEAK COLLECTOR PLATE CURRENT VS TIME FOR EACH ENERGY CHANNEL AND FOR EACH SECTOR. THESE PLOTS WERE SUPPLIED BY THE EXPERIMENTER AND MICROFILMED BY NSSDC. POSITIONS OF SATELLITE PERIGEE ARE MARKED. THE ORBIT NUMBER IS INCLUDED ON EACH PLOT. INDIVIDUAL PLOTS COVER ONE ORBIT. THE DATA ARE ON ONE REEL OF 35-MM MICROFILM AND COVER THE TIME PERIODS OCTOBER 5 TO DECEMBER 4, 1964, AND DECEMBER 9 TO DECEMBER 23, 1964. THESE CORRESPOND TO ORBITS 1 TO 43 AND 46 TO 57, WITH A 90 PERCENT COVERAGE FOR ALL ORBITS. THE LOCAL TIME OF APOGEE VARIES FROM NOON AT THE START OF THE DATA COVERAGE TO JUST BEFORE THE DAWN MERIDIAN AT THE END OF THE DATA COVERAGE.

SPACECRAFT COMMON NAME- IMP-C

ALTERNATE NAMES- EXPLORER 28, IMP 3
S 74B, 01388

NSSDC ID- 65-042A

LAUNCH DATE- 05/29/65

WEIGHT- 120. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/12/67

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC
ORBIT PERIOD- 8550. MIN
PERIAPSIS- 200.000 KM ALT
EPOCH DATE- 05/29/65
INCLINATION- 34.0 DEG
APOAPSIS- 264000. KM ALT

EXPLORER 28 (IMP 3) WAS A SOLAR-CELL AND CHEMICAL-BATTERY POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE OF 2020 HR, A SPIN RATE OF 23.7 RPM, AND A SPIN DIRECTION OF 64.9 DEG RIGHT ASCENSION AND +10.9 DEG DECLINATION. EACH NORMAL PFM TELEMETRY SEQUENCE 81.9 SEC IN DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL TELEMETRY SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. PERFORMANCE WAS ESSENTIALLY NORMAL UNTIL LATE APRIL 1967, THEN INTERMITTENT UNTIL MAY 12, 1967, AFTER WHICH NO FURTHER DATA WERE ACQUIRED.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON TAPE

NSSDC ID- 65-042A-00G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 05/29/65 TO 05/11/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 4 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF BLOCKED, 7-TRACK, 800-BPI, IBM 7094 BINARY MAGNETIC TAPES GENERATED AT NSSDC FROM UNBLOCKED TAPES SUBMITTED BY N. F. NESS. THERE ARE FIVE LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES CONTAIN THE FOLLOWING INFORMATION AT 5-MIN INTERVALS - (1) GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND PADIAL DISTANCE OF THE SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND THE SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS GREATER THAN 80 PERCENT. A SEPARATE DATA SET (65-042A-00H) WITH ONE SET OF EPHEMERIS PARAMETERS PER HR IS AVAILABLE ON AN NSSDC-GENERATED TAPE.

ANDERSON, IMP-C

EXPERIMENT NAME- ION CHAMBER AND GM COUNTERS

NSSDC ID- 65-042A-05

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/11/67

PERSONNEL

PI - K.A. ANDERSON U OF CALIF, BERKELEY
BERKELEY, CA
OI - G.H. PITT U OF CALIF, BERKELEY
BERKELEY, CA

THIS EXPERIMENT, DESIGNED TO MEASURE FLUXES OF GEOMAGNETICALLY TRAPPED PARTICLES, CONSISTED OF A 7.6-CM-DIAMETER NEHER-TYPE IONIZATION CHAMBER AND TWO ANTON 223 GEIGER-MUELLER TUBES. THE ION CHAMBER RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 1 AND 17 MEV, RESPECTIVELY. BOTH GM TUBES WERE MOUNTED PARALLEL TO THE SPACECRAFT SPIN AXIS. GM TUBE A DETECTED ELECTRONS GREATER THAN 45 KEV SCATTERED OFF A GOLD FOIL. THE ACCEPTANCE CONE FOR THESE ELECTRONS HAD A FULL ANGLE OF 61 DEG, AND ITS SPIN AXIS OF SYMMETRY MADE AN ANGLE OF 59.5 DEG WITH THE SPACECRAFT SPIN AXIS. GM TUBE A RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. GM TUBE B LOOKED DIRECTLY INTO SPACE THROUGH A HOLE IN THE SPACECRAFT SKIN. THE ACCEPTANCE CONE FOR GM TUBE B HAD A FULL ANGLE OF 38 DEG, AND ITS AXIS OF SYMMETRY WAS PARALLEL TO THE SPACECRAFT SPIN AXIS. OMNIDIRECTIONALLY, GM TUBE B RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. DIRECTIONALLY, GM TUBE B RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 40 AND 500 KEV, RESPECTIVELY. PULSES FROM THE ION CHAMBER WERE ACCUMULATED FOR 326.08 SEC AND READ OUT ONCE EVERY 327.68 SEC. COUNTS FROM GM TUBE A WERE ACCUMULATED FOR 39.36 SEC AND READ OUT SIX TIMES EVERY 327.68 SEC. COUNTS FROM GM TUBE B WERE ACCUMULATED FOR 39.36 SEC AND READ OUT FIVE TIMES EVERY 327.68 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH MAY 11, 1967, THE DATE OF THE LAST USEFUL DATA TRANSMISSION.

DATA SET NAME- PLOTS OF COUNT RATES AND PULSE RATES VS TIME ON MICROFILM

NSSDC ID- 65-042A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/29/65 TO 01/01/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE THE PULSE RATE OF THE ION CHAMBER TIMES 100 AND THE COUNT RATES OF GM TUBES A AND B TIMES 1 AND 10, RESPECTIVELY. THESE RATES ARE PLOTTED ON A LOGARITHMIC SCALE VS TIME. THE DAY OF THE YEAR IS GIVEN ON EACH FRAME. THE DATA ARE TIME ORDERED AND CONTAIN NO EPHEMERIS INFORMATION. THE DATA COVER APPROXIMATELY 70 PERCENT OF THE PERIOD FROM MAY 29, 1965, TO JANUARY 1, 1966.

DATA SET NAME- ION CHAMBER AND GEIGER TUBE ACCUMULATIONS ORDERED BY DAY OF YEAR ON MAGNETIC TAPE

NSSDC ID- 65-042A-05C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/29/65 TO 01/03/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 6 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF 7-TRACK, 800, 800-BPI MAGNETIC TAPES THAT WERE GENERATED AT NSSDC FROM EXPERIMENTER-SUPPLIED DATA SET 65-042A-05A. EACH TAPE HAS ONE FILE WITH A VARIABLE NUMBER OF 1028-CHARACTER PHYSICAL RECORDS, EACH CONSISTING OF EIGHTEEN 56-CHARACTER LOGICAL RECORDS. EACH LOGICAL RECORD CONTAINS THE TIME (UT DAY, HOUR, MINUTE, AND MSEC), ONE ACCUMULATION EACH FROM THE ION CHAMBER AND GM TUBE B, TWO ACCUMULATIONS FROM GM TUBE A, THE AZIMUTHAL ANGLE (SUN, SPACECRAFT, OPTICAL SENSOR ANGLE), THE POLAR SOLAR ANGLES (SPIN AXIS, SPACECRAFT, SUN ANGLE), THE SATELLITE SPIN PERIOD, AND A NUMBER OF PROCESSING ERROR FLAGS. THE DATA ARE ORDERED BY DAY OF YEAR. HOWEVER, ALTHOUGH THE YEAR NUMBER APPEARS IN THE FORMAT, THE DATA ARE NOT ORDERED BY YEAR. THE DATA COVER APPROXIMATELY 80 PERCENT OF THE PERIOD FROM MAY 29, 1965 TO JANUARY 3, 1967. THIS DATA SET DIFFERS FROM 65-042A-05A IN FORMAT AND IN ORDERING, AND CERTAIN NONSCIENTIFIC FIELDS HAVE BEEN DELETED.

SERBU, IMP-C

EXPERIMENT NAME- RETARDING POTENTIAL ANALYZER

NSSDC ID- 65-042A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/12/67

PERSONNEL

PI - G.P. SERBU NASA-GSFC
GREENBELT, MD

THE RETARDING POTENTIAL ANALYZER WAS A FOUR-ELEMENT FARADAY CUP. IT WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS AND HAD AN EFFECTIVE LOOK ANGLE OF 5 STER. THE EXPERIMENT OPERATED FOR 5.2 SEC IN EACH OF SIX MODES ONCE EVERY 648 SEC. IN TWO MODES, 15-STEP SPECTRA FOR IONS WERE DETERMINED FOR RETARDING POTENTIALS IN THE RANGES -5 V TO +5 V AND -5 V TO +45 V. IN TWO OTHER MODES, SIMILAR INFORMATION FOR ELECTRONS WAS OBTAINED BY CHANGING THE SIGNS OF THE POTENTIALS. THE REMAINING TWO MODES WERE NET CURRENT MODES WITH ZERO POTENTIAL APPLIED TO ALL ELEMENTS FOR 15 MEASUREMENTS. THE INSTRUMENT EXPERIENCED SECONDARY ELECTRON CONTAMINATION, BUT OPERATED WITHOUT DEGRADATION DURING THE SPACECRAFT LIFETIME (I.E., UNTIL MAY 12, 1967).

DATA SET NAME- ANALYZED ELECTRON TEMPERATURE AND DENSITY VALUES ON MAGNETIC TAPE

NSSDC ID- 65-042A-01A

IMP-C/INJUN 1

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 05/29/65 TO 05/05/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE ANALYZED DATA, GENERATED BY THE EXPERIMENTER, ARE ON ONE IBM 7094, 7-TRACK, 800-BPI, EVEN PARITY, BCD MAGNETIC TAPE WITH EIGHTEEN 155-CHARACTER LOGICAL RECORDS PER PHYSICAL RECORD. THOSE DATA TAKEN AT RADIAL DISTANCES FROM THE EARTH OF LESS THAN 5 EARTH RADII ARE THE MOST USEFUL. THE TIME-ORDERED TAPE CONTAINS A MEASURE OF THE ELECTRON DENSITY, TEMPERATURES FOR A TWO-ENERGY COMPONENT MAXWELLIAN FIT TO THE DATA, AND A MEASURE OF THE SPACECRAFT POTENTIAL. EPHEMERIS DATA ARE ALSO INCLUDED.

SIMPSON, IMP-C

EXPERIMENT NAME- COSMIC-RAY RANGE VS ENERGY LOSS

NSSDC ID- 65-042A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 04/29/67

PERSONNEL

PI - J.A. SIMPSON U OF CHICAGO
CHICAGO, IL
OI - C.Y. FAN U OF ARIZONA
TUCSON, AZ
OI - G. GLOECKLER U OF MARYLAND
COLLEGE PARK, MD

A CHARGED PARTICLE SOLID STATE TELESCOPE WAS USED TO MEASURE RANGE AND ENERGY LOSS OF GALACTIC AND SOLAR COSMIC RAYS. THE EXPERIMENT WAS DESIGNED TO STUDY PARTICLE ENERGIES (ENERGY PER NUCLEON INTERVALS APPROXIMATELY PROPORTIONAL TO Z SQUARED 2/A, FOR PROTONS 2.6-190 MEV, 13.3-26 MEV, 26-94 MEV, AND 94-190 MEV) AND CHARGE SPECTRA (Z-LE-6). THE DETECTOR WAS ORIENTED NORMAL TO THE SPACECRAFT SPIN AXIS. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED SIX TIMES EVERY 5.46 MINUTFS. EACH ACCUMULATION WAS ABOUT 40 SEC LONG (INITIAL SPACECRAFT SPIN PERIOD WAS ABOUT 3.3 SEC). THE OUTPUT FROM TWO 128-CHANNEL PULSE HEIGHT ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND WAS READ OUT ALONG WITH THE DETECTOR ACCUMULATORS. THE EXPERIMENT PERFORMED NORMALLY UNTIL APRIL 21, 1966, AFTER WHICH SEVERAL PROBLEMS WITH THE INSTRUMENTATION DEVELOPED, CAUSING SPIKES IN THE COUNT RATE DATA, ESPECIALLY IN THE LOWEST ENERGY CHANNEL. THE DATE OF TRANSMISSION OF LAST USEFUL INFORMATION WAS APRIL 29, 1967.

DATA SET NAME- COUNT RATE PLOTS (R VS ENERGY LOSS) ON MICROFILM

NSSDC ID- 65-042A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 05/29/65 TO 05/02/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THE DATA SET CONSISTS OF MACHINE-GENERATED COUNT RATE PLOTS FOR THE TELESCOPE SENSOR COMBINATIONS (D1, D1D2 NOT D3, D1D2D3 NOT D4, AND D1D2D3D4), WHICH CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 2.6 TO 100 MEV, 13.3 TO 26 MEV, 26 TO 94 MEV, AND 94 TO 190 MEV. EACH PLOT GIVES THE COUNT RATE (LOGARITHMIC) VS TIME (DAY NUMBER) FOR ONE SOLAR ROTATION. THE PLOTS ARE ON ONE REEL OF 35-MM MICROFILM THAT CONTAINS A TOTAL OF 108 PLOTS. THERE ARE 27 PLOTS FOR EACH OF THE FOUR SENSOR COMBINATIONS. THE TIME INTERVAL COVERED IS FROM SOLAR ROTATION NUMBER 1804 (MAY 29, 1965) THROUGH 1830 (MAY 2, 1967).

DATA SET NAME- REDUCED PULSE HEIGHT ANALYZER DATA ON MAGNETIC TAPE

NSSDC ID- 65-042A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 05/29/65 TO 04/26/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED PULSE HEIGHT ANALYZER DATA ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 200 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 120 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE PULSE HEIGHT ANALYZER DATA -- D1 AND D3 DETECTOR ELEMENT PULSE HEIGHTS, TIME OF OBSERVATION, ORBIT NUMBER, AND DATA QUALITY INFORMATION.

DATA SET NAME- REDUCED COUNT ACCUMULATION DATA ON MAGNETIC TAPE

NSSDC ID- 65-042A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 05/29/65 TO 04/26/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED COUNT ACCUMULATIONS ON ONE 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 204 LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 120 ORBITS OF DATA ON THE TAPE. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE ACCUMULATIONS -- D1, D1D2 NOT D3, D1D2D3 NOT D4, D1D2D3D4, AND D5 CORRESPONDING TO PROTON ENERGY INTERVALS 2.6 TO 190 MEV, 13.3 TO 26, 26 TO 94, 94 TO 190 MEV, AND ABOUT 1 MEV. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION AND DATA QUALITY INFORMATION.

DATA SET NAME- FIVE-MINUTE AVERAGE COUNT RATES ON MAGNETIC TAPE

NSSDC ID- 65-042A-03E

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/29/65 TO 04/29/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY TELESCOPE COUNTING RATES AVERAGED OVER 4 SEQUENCE COUNTS (APPROXIMATELY 328 SEC). THE DATA ARE CONTAINED ON TWO 7-TRACK, BLOCKED BCD MAGNETIC TAPES WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS 930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. THERE ARE 90 FILES ON THE FIRST TAPE AND 30 FILES ON THE SECOND TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 57 LOGICAL RECORDS PER PHYSICAL RECORD AND 33 WORDS PER LOGICAL RECORD. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE RATES -- D1, D1D2 NOT D3, D1D2D3 NOT D4, D1D2D3D4, AND D5 CORRESPONDING TO PROTON ENERGY INTERVALS 0.9 TO 190, 6.5 TO 19, 19 TO 90, 90 TO 190 MEV, AND ABOUT 1 MEV, RESPECTIVELY. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION, SEQUENCE COUNT, SATELLITE GEOCENTRIC DISTANCE, AE INDEX, KP INDEX, AND DATA QUALITY INFORMATION.

SPACECRAFT COMMON NAME- INJUN 1

ALTERNATE NAMES- 1961 OMICRON 2, INJUN-SR-3
00117

NSSDC ID- 61-0158

LAUNCH DATE- 06/29/61

WEIGHT- 16. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/31/62

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 06/29/61
ORBIT PERIOD- 103.9 MIN INCLINATION- 66.82 DEG
PERIAPSIS- 882.000 KM ALT APDAPSIS- 999.000 KM ALT

THE SATELLITE INJUN 1 WAS THE FIRST OF A SERIES OF SPACECRAFT DESIGNED AND BUILT BY THE UNIVERSITY OF IOWA TO STUDY THE NATURAL AND ARTIFICIAL TRAPPED RADIATION BELTS, AURORAE AND AIRGLOW, AND OTHER GEOPHYSICAL PHENOMENA. INJUN 1 WAS LAUNCHED SIMULTANEOUSLY WITH TRANSIT 4A AND GREB 3. TRANSIT 4A SUCCESSFULLY SEPARATED FROM INJUN 1, BUT GREB 3 DID NOT. INJUN 1 WAS DESIGNED TO BE MAGNETICALLY ALIGNED. HOWEVER, DUE TO THE PRESENCE OF GREB 3 (WHICH BLOCKED THE VIEW OF THE PHOTOMETER), IT WAS IMPOSSIBLE TO KEEP THE SATELLITE CONSTANTLY ORIENTED ON THE TERRESTRIAL MAGNETIC FIELD THROUGHOUT AN ORBIT. A SINGLE AXIS FLUXGATE MAGNETOMETER WAS USED TO MONITOR THE ORIENTATION OF THE SPACECRAFT WITH RESPECT TO THE LOCAL MAGNETIC FIELD. INJUN 1 HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH AN ILL DEFINED AND VARIABLE PERIOD OF SEVERAL MINUTES. THE SATELLITE SENT BACK RADIATION DATA UNTIL MARCH 6, 1963, AND IS EXPECTED TO BE IN ORBIT FOR ABOUT 900 YR.

BOSTROM, INJUN 1

EXPERIMENT NAME- SOLID-STATE PROTON DETECTOR

NSSDC ID- 61-0158-06

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 07/09/62

PERSONNEL
PI - C.O. BOSTROM APPLIED PHYSICS LAB
SILVER SPRING, MD
OI - A.J. ZNUDA APPLIED PHYSICS LAB
SILVER SPRING, MD
OI - G.F. PIEPFER NASA-GSFC
GREENBELT, MD

THIS EXPERIMENT CONSISTED OF FOUR SILICON P-N JUNCTION DETECTORS. TWO DETECTORS MOUNTED PERPENDICULAR WITH RESPECT TO EACH OTHER MEASURED DIRECTIONAL FLUXES OF PROTONS IN THE ENERGY RANGES 1.4 TO 17 MEV AND 1.6 TO 11 MEV, RESPECTIVELY. THE REMAINING TWO DETECTORS SERVED AS BACKGROUND DETECTORS. THE DETECTORS WERE INSENSITIVE TO NATURALLY OCCURRING ELECTRONS. COUNTS IN EACH DETECTOR WERE ACCUMULATED FOR ALMOST A FULL SECOND AND WERE TELEMETERED EVERY SECOND. THE DETECTORS WORKED WELL UNTIL JULY 9, 1962, AFTER WHICH STARFISH ELECTRONS CONTAMINATED THE DATA. LOSS OF THE INTENDED MAGNETIC ALIGNMENT RENDERED THE DATA USELESS FOR DETAILED PITCH ANGLE STUDIES.

DATA SET NAME- MASTER TAPE, P-N COUNTS

NSSDC ID- 61-0158-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 06/30/61 TO 08/31/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 17 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER SCIENCE FILE FOR INJUN 1 OF REDUCED DATA ON SEVENTEEN 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 34 WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 1 EXPERIMENTS, WITH THE EXCEPTION OF THE NRL X-RAY EXPERIMENT. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- UT AND LOCAL TIME, LONGITUDE, LATITUDE, ALTITUDE, MODEL MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND B/BO. THIS SET OF TAPES IS REFERENCED AS DATA SETS 61-0158-01B, -02A, -03A, -05A, AND -06A.

FRANK, INJUN 1

EXPERIMENT NAME- GM COUNTER

NSSDC ID- 61-0158-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/12/62

PERSONNEL
PI - L.A. FRANK U OF IOWA
IOWA CITY, IA
OI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA

AN ANTON TYPE 213 DIRECTIONAL GEIGER TUBE DETECTOR WAS USED TO DETECT SOLAR X RAYS IN THE 2- TO 12-A RANGE, ELECTRONS (E-GE. 40 KEV), AND PROTONS (E-GE. 0.5 MEV). THE DETECTOR WAS SAMPLED EVERY SECOND, AND THE ACCUMULATION TIME FOR THE DETECTOR WAS 61/64 SEC. THE SPACECRAFT HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH A POORLY DEFINED PERIOD OF SEVERAL MINUTES. THE SOFT X-RAY OBSERVATIONS WERE MADE AT SPORADIC INTERVALS FROM JUNE 29, 1961 THROUGH AUGUST 12, 1962 (ABOUT 74 MIN OF DATA). THE EXPERIMENT PERFORMED NOMINALLY THROUGHOUT THE LIFE OF THE SPACECRAFT.

DATA SET NAME- TABULATION OF 2- TO 12-A SOLAR X-RAY DATA

NSSDC ID- 61-0158-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 06/29/61 TO 08/12/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 CARD(S) OF B/W MICROFICHE

THIS IS A REDUCED DATA SET ON MICROFICHE CONSISTING OF A TABLE OF GM TUBE COUNTING RATES (IN CPS) DUE TO SOLAR X RAYS IN THE 2- TO 12-A RANGE WITH DATE (MONTH, DAY, YR), AND TIME (UT) CHRONOLOGICALLY ORDERED. THE X-RAY COUNTING RATES WERE DISTINGUISHED FROM PARTICLE COUNTING RATES BY OBSERVING WHEN THE GDS OPTICAL MONITOR DETECTOR (NSSDC EXPERIMENT NUMBER 61-0158-02) POINTED TOWARD THE SUN. THIS LATTER DETECTOR WAS ALIGNED PARALLEL TO THE GM TUBE. DATA ARE AVAILABLE FROM JUNE 29, 1961 TO AUGUST 12, 1962.

DATA SET NAME- MASTER TAPE, GM COUNTS

NSSDC ID- 61-0158-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 06/30/61 TO 08/31/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 17 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER SCIENCE FILE FOR INJUN 1 OF REDUCED DATA ON SEVENTEEN 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 204 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 1 EXPERIMENTS, WITH THE EXCEPTION OF THE NRL X-RAY EXPERIMENT. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, ALTITUDE, MODEL MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND B/BO. THIS SET OF TAPES INCLUDES DATA SETS 61-0158-01B, -02A, -03A, -05A, AND -06A.

FREEMAN, INJUN 1

EXPERIMENT NAME- CADMIUM SULFIDE DETECTOR

NSSDC ID- 61-0158-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/31/62

PERSONNEL
PI - J.W. FREEMAN RICE U
HOUSTON, TX
OI - B.J. O'BRIEN DEPT OF ENVIRON PROT
PERTH, AUSTRALIA

A SET OF FIVE DIRECTIONAL GDS CRYSTAL ENERGY FLUX DETECTORS WAS USED TO STUDY THE FLUX OF LOW-ENERGY PROTONS AND IONS TRAPPED IN THE INNER RADIATION BELT. TWO OF THE DETECTORS (GDS TOTAL ENERGY DETECTORS ORIENTED AT 90 AND 180 DEG WITH RESPECT TO THE SATELLITE SYMMETRY AXIS) HAD NO PHYSICAL OBSTRUCTION BETWEEN SPACE AND THE CRYSTAL AND WERE SENSITIVE

INJUN 1/INJUN 3

TO ELECTRONS (200 EV TO 500 KEV) AND PROTONS (1 KEY TO 10 KEV). THE SECOND TWO CDS DETECTORS (CDS PROTON ENERGY DETECTORS ORIENTED AT 90 AND 180 DEG WITH RESPECT TO THE SATELLITE SYMMETRY AXIS) WERE IDENTICAL TO THE TOTAL ENERGY DETECTORS BUT INCLUDED SMALL BROOM MAGNETS THAT SWEEP ELECTRONS WITH E+LT. 500 KEV FROM THE BEAM INCIDENT ON THE CRYSTAL. THE MAGNETS PROVIDED A FIELD OF 500 GAUSS AND SUBTENDED A SOLID ANGLE OF 0.5 STER AT THE CRYSTAL. THE FIFTH CDS DETECTOR (OPTICAL MONITOR ORIENTED AT 90 DEG WITH RESPECT TO THE SATELLITE SYMMETRY AXIS) WAS GEOMETRICALLY IDENTICAL TO THE OTHER FOUR BUT WAS, IN ADDITION, FITTED WITH A 0.5 GM/CM SQ TRANSPARENT QUARTZ WINDOW AND HENCE SERVED AS A LIGHT AND X-RAY DETECTOR. ALL FIVE DETECTORS HAD DIRECT CURRENT OUTPUTS PROPORTIONAL TO THE INCIDENT CHARGED CORPUSCULAR ENERGY FLUX. THE DETECTORS WERE SAMPLED AT LEAST ONCE EVERY SECOND, AND THE DETECTOR ACCUMULATION TIMES RANGED FROM 9/64 TO 61/64 SEC. (THE SPACECRAFT HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH AN ILL DEFINED AND VARIABLE PERIOD OF SEVERAL MINUTES.) THE EXPERIMENT PERFORMED NOMINALLY THROUGHOUT THE LIFETIME OF THE SPACECRAFT.

DATA SET NAME- MASTER TAPE, CDS COUNTS

NSSDC ID- 61-015B-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 06/30/61 TO 08/31/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 17 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER SCIENCE FILE FOR INJUN 1 OF REDUCED DATA ON SEVENTEEN 7-TRACK, IBM 7094, 800 MAGNETIC TAPES WRITTEN AT 800 BPI WITH 204 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 1 EXPERIMENTS, WITH THE EXCEPTION OF THE NRL X-RAY EXPERIMENT. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, ALTITUDE, MODEL MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND B/BO. THIS SET OF TAPES INCLUDES DATA SETS 61-015B-01B, -02A, -03A, -05A, AND -06A.

LAUGHLIN, INJUN 1

EXPERIMENT NAME- ELECTRON DIFFERENTIAL ENERGY SPECTROMETER

NSSDC ID- 61-015B-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/31/62

PERSONNEL

PI - C.D. LAUGHLIN MCDONALD OBS
FT. DAVIS, TX

THIS EXPERIMENT WAS DESIGNED TO STUDY AURORAL AND RADIATION ZONE PHENOMENA USING THREE END-WINDOW TYPE 213 DIRECTIONAL GM COUNTERS. SMALL MAGNETS WERE USED TO FOCUS ELECTRONS WITH ENERGIES BETWEEN 40 AND 50 KEV INTO ONE OF THE GM COUNTERS AND ELECTRONS WITH ENERGIES BETWEEN 90 AND 100 KEV INTO ANOTHER COUNTER. THE THIRD GM COUNTER SERVED AS A MONITOR OF PENETRATING X RAYS AND ENERGETIC PROTONS. THE DETECTOR ACCUMULATORS WERE SAMPLED ONCE PER SECOND, AND THE ACCUMULATION TIME FOR EACH DETECTOR WAS 61/64 SEC. (THE SPACECRAFT HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH AN ILL DEFINED AND VARIABLE PERIOD OF SEVERAL MINUTES.) THE EXPERIMENT PERFORMED NOMINALLY THROUGHOUT THE LIFETIME OF THE SPACECRAFT.

DATA SET NAME- MASTER TAPE, ELECTRON COUNTS

NSSDC ID- 61-015B-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 06/30/61 TO 08/31/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 17 REFL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER SCIENCE FILE FOR INJUN 1 OF REDUCED DATA ON SEVENTEEN 7-TRACK, IBM

7094, 800 MAGNETIC TAPES WRITTEN AT 800 BPI WITH 204 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 1 EXPERIMENTS, WITH THE EXCEPTION OF THE NRL X-RAY EXPERIMENT. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, ALTITUDE, MODEL MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND B/BO. THIS SET OF TAPES INCLUDES DATA SETS 61-015B-01B, -02A, -03A, -05A, AND -06A.

SPACECRAFT COMMON NAME- INJUN 3

ALTERNATE NAMES- 1962 BETA TAU 2, INJUN 2B
00504

NSSDC ID- 62-0678

LAUNCH DATE- 12/13/62

WEIGHT- 52. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/28/63

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 12/13/62
ORBIT PERIOD- 116.3 MIN INCLINATION- 70.39 DEG
PERIAPSIS- 235.000 KM ALT APOAPSIS- 2785.00 KM ALT

INJUN 3 WAS A MAGNETIC FIELD ALIGNED SPACECRAFT INSTRUMENTED FOR A STUDY OF GEOPHYSICAL PHENOMENA (PARTICULARLY HIGH LATITUDE AND AURORAL PHENOMENA) USING AN INTEGRATED SYSTEM OF SEVERAL PARTICLE DETECTORS, A VLF DETECTOR, AURORAL PHOTOMETERS, AND A BIAXIAL FLUXGATE MAGNETOMETER. THE FLUXGATE MAGNETOMETER WAS USED TO MONITOR THE ORIENTATION OF THE SPACECRAFT WITH RESPECT TO THE LOCAL MAGNETIC FIELD. INJUN 3 HAD TWO SEPARATE TELEMETRY AND ENCODING SYSTEMS (PCM/FSK/PM AND PCM/FSK/AM) POWERED BY A COMMON BATTERY-SOLAR CELL POWER SUPPLY. THE SPACECRAFT WAS LAUNCHED SIMULTANEOUSLY WITH AND SUCCESSFULLY SEPARATED FROM THE U.S. AIR FORCE SPACECRAFT 1962 BETA TAU. INJUN 3 PERFORMED NORMALLY UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED. THE SATELLITE COMMAND SYSTEM WAS PARTIALLY IMPAIRED AFTER SOME TIME IN MARCH 1963. THE SATELLITE DECAYED FROM ORBIT AUGUST 25, 1966. FOR FURTHER DETAILS ON INJUN 3 AND ITS COMPLEMENT OF EXPERIMENTS, SEE O'BRIEN ET AL. JGR. VOL 69, P 1, 1964.

O'BRIEN, INJUN 3

EXPERIMENT NAME- GEIGER TUBE DETECTORS

NSSDC ID- 62-0678-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/28/63

PERSONNEL

PI - B.J. O'BRIEN DEPT OF ENVIRON PROT
PERTH, AUSTRALIA
OI - L.A. FRANK U OF IOWA
IOWA CITY, IA

A SET OF FOUR GM TUBE DETECTORS WAS USED TO DETECT ELECTRONS AND PROTONS IN THE RADIATION BELTS. THREE TYPE 213 DETECTORS POINTED DIRECTIONALLY AT 90 DEG, 130 DEG, OR 180 DEG WITH RESPECT TO THE LOCAL MAGNETIC FIELD. THESE HAD FULL WIDTH VIEWING ANGLES OF 26, 26, AND 86 DEG. THE FOURTH DETECTOR WAS A TYPE 302 OMNIDIRECTIONAL GM TUBE. ORIENTATION OF THE DETECTORS IS DEFINED SUCH THAT 0 DEG CORRESPONDS TO A DETECTOR LOOKING DOWNWARD TOWARDS THE EARTH IN THE NORTHERN HEMISPHERE. THE 90 DEG GM TUBE HAD THRESHOLD ENERGIES OF 4 MEV FOR PROTONS AND 250 KEV FOR ELECTRONS. THE OTHER TWO 213 GM TUBES HAD 0.5 MEV (PROTONS) AND 40 KEV (ELECTRONS) THRESHOLDS, WHILE THE 302 TUBE HAD 20 MEV (PROTONS) AND 1.5 MEV (ELECTRONS) THRESHOLDS. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM) AND EVERY SECOND IN MODE 5 (PCM/FSK/AM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY FAILED. FOR FURTHER DETAILS, SEE O'BRIEN, JGR. VOL 69, P 13, 1964.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, GM COUNTS

NSSDC ID- 62-0678-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/14/62 TO 10/28/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, AND -07A.

DATA SET NAME- ANALYZED GM COUNTER PARTICLE FLUX PLOTS ON MICROFILM

NSSDC ID- 62-067B-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 01/01/63 TO 10/20/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS ANALYZED DATA SET CONSISTS OF MACHINE GENERATED PARTICLE FLUX PLOTS ON ONE REEL OF 16-MM MICROFILM FOR THE THREE 213 GM DETECTORS, D1, D4, AND D5, ORIENTED AT 90, 130, AND 180 DEG TO THE LOCAL MAGNETIC FIELD IN THE NORTHERN HEMISPHERE. THE DATA WERE GENERATED FROM THE UNIVERSITY OF IOWA MASTER FILE MAGNETIC TAPES (DATA SET 62-067B-01B) AND, IN SOME CASES, FROM THE PAW INJUN 3 TELEMETRY DATA. THE GM FLUX DATA ARE DIVIDED INTO THREE SEPARATE TIME-ORDERED GROUPS IN THIS DATA SET -- THE DATA THAT WERE OBTAINED IN SATELLITE TELEMETRY MODE 1 (DETECTORS D1 AND D5 SAMPLED ABOUT FOUR TIMES/SEC) ARE DIVIDED INTO THE NORTHERN HEMISPHERE AND THE SOUTHERN HEMISPHERE. THE DATA OBTAINED IN SATELLITE TELEMETRY MODE 5 IN BOTH HEMISPHERES COMPRISE THE THIRD GROUP OF DATA (DETECTORS D1 AND D4 SAMPLED ABOUT FIVE TIMES/SEC AND ABOUT TWO TIMES/SEC). EACH PAGE OF DATA CONSISTS OF TWO SEPARATE PLOTS. ONE FOR EACH DETECTOR, OF PARTICLE FLUX (I/CM-SQ-SEC-STER) VS INVARIANT LATITUDE, UT, MAGNETIC LOCAL TIME, AND MODEL MAGNETIC FIELD MAGNITUDE. EACH PAGE ALSO INCLUDES A PLOT OF THE CORRESPONDING RATIO OF FLUXES D4/D1 OR D5/D1 VS INVARIANT LATITUDE, AS WELL AS UT, MAGNETIC LOCAL TIME, AND MODEL MAGNETIC FIELD IN THE SAME GRAPH. THE PLOTS PROVIDE CONTINUOUS TIME COVERAGE FOR MOST OF THE LIFE OF THE EXPERIMENT FOR INVARIANT LATITUDES FROM 55 TO 90 DEG WITH ONE SATELLITE PASS PER PLOT. THE FLUXES ARE BASED ON 8-SEC SUMS OF DETECTOR OUTPUTS AND HAVE BEEN CORRECTED FOR GEOMETRIC FACTORS AND GM COUNTER SATURATION WHEN POSSIBLE.

O'BRIEN, INJUN 3

EXPERIMENT NAME- PULSE SCINTILLATOR

NSSDC ID- 62-067B-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/28/63

PERSONNEL
PI - B.J. O'BRIEN DEPT OF ENVIRON PROT
PERTH, AUSTRALIA
OI - C.E. MCILWAIN U OF CALIF, SAN DIEG
SAN DIEGO, CA

AN OMNIDIRECTIONAL PULSE SCINTILLATOR COMPOSED OF A SPHERICAL PLASTIC SCINTILLATOR AND PHOTOMULTIPLIER TUBE WAS USED TO DETECT PROTONS (E.GT. 40 MEV) IN THE NATURAL AND ARTIFICIAL RADIATION BELTS AS A FUNCTION OF SPATIAL LOCATION AND TIME. THE DETECTOR, WHICH PROTRUDED BEYOND THE SATELLITE SHELL, WAS ORIENTED AT 180 DEG TO THE LOCAL MAGNETIC FIELD DIRECTION AND HAD AN UNOBSTRUCTED VIEW OVER ALMOST 2 PI STER. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM) AND EVERY SECOND IN MODE 5 (PCM/FSK/AM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, PULSE SCINTILLATOR COUNTS

NSSDC ID- 62-067B-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/14/62 TO 10/28/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, -07A, -08A, AND -09A.

O'BRIEN, INJUN 3

EXPERIMENT NAME- MAGNETIC DIFFERENTIAL ELECTRON SPECTROMETER

NSSDC ID- 62-067B-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/28/63

PERSONNEL
PI - B.J. O'BRIEN DEPT OF ENVIRON PROT
PERTH, AUSTRALIA
OI - C.O. LAUGHLIN MCDONALD OBS
FT. DAVIS, TX

A MAGNETIC DIFFERENTIAL SPECTROMETER COMPOSED OF TWO DIRECTIONAL ANTON 213 GM COUNTERS, ONE OMNIDIRECTIONAL ANTON 213 GM COUNTER, AND TWO MAGNETS WAS USED TO DETECT LOCALLY MIRRORING ELECTRONS IN THE ENERGY RANGES 42 TO 53 KEV AND 83 TO 98 KEV. THE DIRECTIONAL COUNTERS HAD 6 DEG DIAMETER FIELDS OF VIEW. THE OMNIDIRECTIONAL GM TUBE MONITORED BACKGROUND DUE TO ELECTRONS ABOVE 5 MEV AND PROTONS ABOVE 40 MEV. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM) AND EVERY SECOND IN MODE 5 (PCM/FSK/AM). THE 83-98 KEV DETECTOR MALFUNCTIONED AFTER MAY 15, 1963, HOWEVER THE REST OF THE INSTRUMENTATION PERFORMED NORMALLY UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY FAILED.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, ELECTRON SPECTROMETER COUNTS

NSSDC ID- 62-067B-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/14/62 TO 10/28/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- UT AND LOCAL TIME, LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, AND -07A.

DATA SET NAME- ANALYZED MAGNETIC DIFFERENTIAL ELECTRON SPECTROMETER FLUX PLOTS ON MICROFILM

NSSDC ID- 62-067B-03B

INJUN 3

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 01/01/63 TO 05/15/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS ANALYZED DATA SET CONSISTS OF MACHINE GENERATED PARTICLE FLUX PLOTS ON ONE 16-MM REEL OF MICROFILM FOR TWO OF THE 213 GM COUNTERS (SPL AND SPH) OF THE MAGNETIC DIFFERENTIAL ELECTRON SPECTROMETER ORIENTED AT 90 DEG TO THE LOCAL MAGNETIC FIELD. DETECTOR SPL WAS SENSITIVE TO ELECTRONS IN THE ENERGY RANGE FROM 40 TO 60 KEV, AND SPH WAS SENSITIVE TO ELECTRONS IN THE ENERGY RANGE 80 TO 110 KEV. THE DETECTORS WERE NOT SENSITIVE TO PROTONS. THE DATA WERE GENERATED FROM THE UNIVERSITY OF IOWA MASTER FILE MAGNETIC TAPES (DATA SET 62-067B-03A). EACH PAGE OF THE DATA INCLUDES A PLOT FOR EACH OF THE TWO DETECTORS OF PARTICLE FLUX (1/CM SQ-SEC-STER) VS INVARIANT LATITUDE, UT, MAGNETIC LOCAL TIME, AND MODEL MAGNETIC FIELD MAGNITUDE. EACH PAGE ALSO SHOWS A PLOT OF THE EXPONENTIAL SPECTRAL PARAMETER, EO, AND THE POWER LAW SPECTRAL PARAMETER, GAMMA, VS INVARIANT LATITUDE, AS WELL AS UT, MAGNETIC LOCAL TIME, AND MODEL MAGNETIC FIELD. THE PLOTS ARE TIME ORDERED AND PROVIDE TIME COVERAGE FOR MOST OF THE LIFE OF THE EXPERIMENT FOR INVARIANT LATITUDES FROM 55 TO 90 DEG. EACH PLOT COVERS ONE SATELLITE PASS. THE FLUXES ARE BASED ON 8-SEC SUMS IN A TELEMETRY MODE IN WHICH THE DETECTORS WERE SAMPLED ONCE PER SECOND, AND THE FLUXES HAVE BEEN CORRECTED FOR GEOMETRIC FACTORS AND GM COUNTER SATURATION.

O'BRIEN, INJUN 3

EXPERIMENT NAME- INTEGRAL MAGNETIC ELECTRON SPECTROMETER

NSSDC ID- 62-067B-04

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/25/63

PERSONNEL

PI - B.J. O'BRIEN DEPT OF ENVIRON PROT
PERTH, AUSTRALIA
OI - C.O. LAUGHLIN MCDONALD OBS
FT. DAVIS, TX

AN INTEGRAL MAGNETIC SPECTROMETER COMPOSED OF THREE DIRECTIONAL ANTON 213 GM COUNTERS AND TWO BROOM MAGNETS WAS TO BE USED TO STUDY LOCALLY MIRRORING HIGH-ENERGY FISSION ELECTRONS (E.G. 1.5 MEV) INJECTED INTO THE GEOMAGNETIC FIELD BY THE STARFISH HIGH ALTITUDE NUCLEAR EXPLOSION. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY FAILED. HOWEVER, SINCE THE DETECTOR WAS DESIGNED AND BUILT JUST BEFORE THE INJUN 3 LAUNCH, PROPER ORIENTATION OF THE BROOM MAGNETS WAS NOT ACHIEVED. AS A RESULT, NEITHER OF THE CORRESPONDING GM COUNTERS RESPONDED SOLELY TO PARTICLES WHICH TRAVELED AT 90 DEG TO THE LOCAL MAGNETIC FIELD. THE ACTUAL PITCH ANGLES (ABOUT 70 DEG) OBSERVED WERE SOMEWHAT DEPENDENT ON ELECTRON ENERGY.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, GM COUNTS
(STARFISH)

NSSDC ID- 62-067B-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/14/62 TO 10/25/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN - TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, AND -07A.

O'BRIEN, INJUN 3

EXPERIMENT NAME- DC SCINTILLATOR

NSSDC ID- 62-067B-05

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/31/63

PERSONNEL

PI - B.J. O'BRIEN DEPT OF ENVIRON PROT
PERTH, AUSTRALIA
OI - R. HALE U OF IOWA
IOWA CITY, IA

A DIRECTIONAL CESIUM IODIDE SCINTILLATOR, ORIENTED AT 130 DEG WITH RESPECT TO THE LOCAL MAGNETIC FIELD, WAS USED TO STUDY OUTFLOW AND AURORAL PHENOMENA, I.E., TO DETECT LOW-ENERGY ELECTRONS (E.G. 5 KEV) AND PROTONS (E.G. 50 KEV). THE DETECTOR LOOKED AWAY FROM THE EARTH IN THE NORTHERN HEMISPHERE. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM) AND EVERY SECOND IN MODE 5 (PCM/FSK/AM). THE EXPERIMENT PERFORMED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY (CHEMICAL BATTERIES) FAILED.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, DC
SCINTILLATOR COUNTS

NSSDC ID- 62-067B-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/14/62 TO 10/31/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7094, BCD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN - TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, B/BO, AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, AND -07A.

O'BRIEN, INJUN 3

EXPERIMENT NAME- ELECTRON MULTIPLIER

NSSDC ID- 62-067B-06

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/25/63

PERSONNEL

PI - B.J. O'BRIEN DEPT OF ENVIRON PROT
PERTH, AUSTRALIA
OI - D.E. STILLWELL NASA-GSFC
GREENBELT, MD

THE EXPERIMENT USED A DIRECTIONAL ELECTRON MULTIPLIER DETECTOR SIMILAR TO THE ASCOP 541A PHOTOMULTIPLIER EXCEPT THAT IT LACKED A PHOTOCATHODE. THE DETECTOR WAS ORIENTED AT 130 DEG WITH RESPECT TO THE LOCAL MAGNETIC FIELD LINE TO OBTAIN TOTAL NUMBER FLUXES OF ELECTRONS WITH ENERGY ABOVE 10 KEV. THE DETECTOR LOOKED AWAY FROM THE EARTH IN THE NORTHERN HEMISPHERE. THE DETECTOR ACCUMULATOR WAS SAMPLED EVERY 0.25 SEC IN MODE 1 (PCM/FSK/PM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY FAILED.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, ELECTRON
MULTIPLIER COUNTS

NSSDC ID- 62-067B-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC

INJUN 3/INJUN 4

TIME PERIOD COVERED- 12/14/62 TO 10/25/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7094, 8CD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, θ/θ_0 , AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, AND -07A.

O'BRIEN, INJUN 3

EXPERIMENT NAME- PROTON SPECTROMETER

NSSDC ID- 62-067B-07

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/31/63

PERSONNEL

PI - G.J. O'BRIEN DEPT OF ENVIRON PROT
PERTH, AUSTRALIA
OI - G.O. BOSTROM APPLIED PHYSICS LAB
SILVER SPRING, MD
OI - G.F. PIEPER NASA-GSFC
GREENBELT, MD

A SET OF FOUR P-N JUNCTION DETECTORS, EACH HAVING ITS OWN AMPLIFIER, WAS USED APPLYING COINCIDENCE TECHNIQUES TO STUDY THE PROTON SPECTRUM IN THE FOLLOWING RANGES -- 1.2 TO 2.2 MEV, 2.2 TO 8 MEV, 8 TO 24 MEV, AND 24 TO 100 MEV. TWO OF THE DETECTORS WERE ORIENTED AT 90 DEG AND TWO AT 180 DEG WITH RESPECT TO THE LOCAL MAGNETIC FIELD LINES. EACH DETECTOR PAIR MEASURED PROTONS IN THE FOUR INDICATED ENERGY RANGES. THE DETECTOR ACCUMULATORS WERE SAMPLED EVERY 8.1 SEC IN MODE 1 (PCM/FSK/PM). THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH UNTIL LATE OCTOBER 1963 WHEN THE SATELLITE POWER SUPPLY FAILED.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, P-N COUNTS

NSSDC ID- 62-067B-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 12/14/62 TO 10/31/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED MASTER FILE FOR INJUN 3 OF REDUCED DATA ON FIVE 7-TRACK, IBM 7094, 8CD MAGNETIC TAPES WRITTEN AT 800 BPI WITH 408 CHARACTERS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR OUTPUT 8-SEC SUMS FOR THIS DETECTOR AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE INJUN 3 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT AND LOCAL TIME), LONGITUDE, LATITUDE, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, θ/θ_0 , AND DATA QUALITY INDICATORS. THIS SET OF TAPES CONTAINS DATA SETS 62-067B-01B, -02A, -03A, -04A, -05A, -06A, AND -07A.

SPACECRAFT COMMON NAME- INJUN 4

ALTERNATE NAMES- EXPLORER 25, 00932

NSSDC ID- 64-076B

LAUNCH DATE- 11/21/64

WEIGHT- 40. KG

STATUS OF OPERATION- OPERATIONAL OFF
DATE LAST USABLE DATA RECORDED- 07/19/66

ORBIT TYPE- GEOCENTRIC
ORBIT PERIOD- 116.3 MIN
PERIAPSIS- 522.000 KM ALT

EPOCH DATE- 11/21/64
INCLINATION- 81.36 DEG
APOAPSIS- 2494.00 KM ALT

EXPLORER 25 WAS A MAGNETICALLY ALIGNED SATELLITE LAUNCHED SIMULTANEOUSLY WITH EXPLORER 24 (AIR DENSITY EXPERIMENT) USING A SCOUT ROCKET. THE SATELLITE'S PRIMARY MISSION WAS TO MAKE MEASUREMENTS OF THE INFLUX OF ENERGETIC PARTICLES INTO THE EARTH'S ATMOSPHERE AND TO STUDY ATMOSPHERIC HEATING AND THE INCREASE IN SCALE HEIGHT WHICH HAVE BEEN CORRELATED WITH GEOMAGNETIC ACTIVITY. STUDIES OF THE NATURAL AND ARTIFICIAL TRAPPED RADIATION BELTS WERE ALSO CONDUCTED. A BIAXIAL FLUXGATE MAGNETOMETER WAS USED TO MONITOR THE ORIENTATION OF THE SPACECRAFT WITH RESPECT TO THE LOCAL MAGNETIC FIELD. EXPLORER 25 WAS EQUIPPED WITH A TAPE RECORDER AND ANALOG-TO-DIGITAL CONVERTERS. THE SATELLITE POWER WAS DERIVED FROM RECHARGEABLE BATTERIES AND SOLAR CELLS. A TRANSMITTER OPERATING IN AN AM MODE AT CARRIER FREQUENCY 136.29 MHZ WAS USED TO TRANSMIT REAL-TIME DATA, AND ONE OPERATING IN A PM MODE AT 136.86 MHZ WAS USED TO TRANSMIT TAPE RECORDER DATA. STABLE MAGNETIC ALIGNMENT WAS NOT ACHIEVED UNTIL LATE FEBRUARY 1965. THE SATELLITE SENT RADIATION DATA UNTIL DECEMBER 1966 AND IS EXPECTED TO BE IN ORBIT FOR ABOUT 200 YR.

VAN ALLEN, INJUN 4

EXPERIMENT NAME- GEIGER-MUELLER COUNTER.

NSSDC ID- 64-076B-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 07/19/66

PERSONNEL

PI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE NET DOWN-FLUX OF PARTICLES FROM THE TRAPPING REGION AND THE INTENSITIES OF GEOMAGNETICALLY TRAPPED PARTICLES AT LOW ALTITUDES OVER A WIDE RANGE OF LATITUDES AND LONGITUDES AND A LONG PERIOD OF TIME AND TO STUDY THE LONG-TERM DECAY OF ELECTRONS IN THE ARTIFICIALLY PRODUCED "STARFISH" RADIATION BELT. FOUR EON 6213 TYPE DIRECTIONAL GM COUNTERS WERE USED FOR ENERGY FLUX MEASUREMENTS. THESE COUNTERS WERE SENSITIVE TO ELECTRONS (E.GT. 40 KEV) AND PROTONS (E.GT. 600 KEV). THE DETECTORS WERE ARRANGED TO DETECT PARTICLES WITH PITCH ANGLES FROM 0 TO 180 DEG IN FOUR SEGMENTS CENTERED AT PITCH ANGLES OF 35, 90, 125, AND 160 DEG. ORIENTATION IS REFERRED TO THE DIRECTION OF THE LOCAL MAGNETIC FIELD LINE SUCH THAT 0 DEG CORRESPONDS TO A DETECTOR LOOKING DOWNWARD TOWARDS THE EARTH IN THE NORTHERN HEMISPHERE. THE 6213 GM COUNTERS AT 35 AND 160 DEG FUNCTIONED NORMALLY THROUGHOUT THE FLIGHT, WHILE THE COUNTER AT 90 DEG OPERATED PROPERLY ONLY UNTIL ABOUT MID-MARCH 1965. PERIODS OF INTERMITTENT OPERATION COMMENCED AT THAT TIME DUE TO CONTINUOUS DISCHARGE OF THE GM COUNTER, AND THE COUNTER FAILED COMPLETELY IN JUNE 1965. THE FOURTH COUNTER, AT 125 DEG, MALFUNCTIONED SHORTLY AFTER LAUNCH YIELDING NO USEFUL DATA. ONE HEAVILY SHIELDED OMNIDIRECTIONAL EON 6213 TYPE GM COUNTER WAS USED FOR THE STUDY OF THE STARFISH RADIATION. THIS COUNTER WAS SENSITIVE TO PROTONS (E.GT. 70 MEV) BUT INSENSITIVE TO ELECTRONS EXCEPT VIA BREMSSTRAHLUNG (E.GT. 1 MEV). ONE OMNIDIRECTIONAL 5112 TYPE GM COUNTER OF THE KIND FLOWN ON THE EXPLORER 7 SATELLITE AND ONE OMNIDIRECTIONAL 7302 TYPE GM COUNTER WERE USED FOR MONITORING THE NATURAL RADIATION ZONES AND COSMIC RAYS. THE 5112 GM COUNTER WAS SENSITIVE TO PROTONS (E.GT. 27 MEV) BUT INSENSITIVE TO ELECTRONS EXCEPT VIA BREMSSTRAHLUNG (E.GT. 1 MEV). THE FOUR DIRECTIONAL TYPE 6213 GM COUNTER ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 4 SEC, AND THE OTHER GM COUNTER ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 8 SEC.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, GM COUNTS

NSSDC ID- 64-076B-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 02/13/65 TO 07/19/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 47 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED *6-SEC AVERAGE* FILE FOR EXPLORER 25 (INJUN 4). THESE REDUCED DATA ARE ON FORTY-SEVEN 7-TRACK, IBM 7094, BINARY, ODD PARITY MAGNETIC TAPES WRITTEN AT 800 BPI WITH 400 THREE-CHARACTER WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THERE IS ONE FILE PER TAPE. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE EXPLORER 25

EXPERIMENTS. THE TAPES ALSO INCLUDE -- TIME (UT), GEOCENTRIC LONGITUDE AND LATITUDE, ALTITUDE, GEOMAGNETIC LATITUDE AND LONGITUDE, INVARIANT LATITUDE, MCILWAIN'S L PARAMETER, SCALAR GEOMAGNETIC FIELD STRENGTH, B/BO, VARIOUS MAGNETIC INDICES, AND DATA QUALITY INDICATORS. THIS SET OF TAPES INCLUDES DATA SETS 64-076B-02A, -03A, -04A, -05A, AND -06A.

VAN ALLEN, INJUN 4

EXPERIMENT NAME- SOLID-STATE DETECTOR

NSSDC ID- 64-076B-04

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 07/19/66

PERSONNEL

PI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA
OI - S.M. KAHMIGIS APPLIED PHYSICS LAB
SILVER SPRING, MD

THIS EXPERIMENT WAS DESIGNED TO DETECT PROTONS AND ALPHA PARTICLES IN THE OUTER ZONE AND IN SOLAR COSMIC-RAY EVENTS AT LOW ALTITUDES AND HIGH LATITUDES. THE EXPERIMENT USED A TOTALLY DEPLETED DIRECTIONAL SILICON SURFACE BARRIER DETECTOR IN THE FORM OF A THIN CIRCULAR DISC. THE DETECTOR WAS LOCATED INSIDE A CONICAL COLLIMATOR WITH FULL VERTEX ANGLE OF 40 DEG AND WAS ORIENTED AT 90 DEG TO THE SATELLITE SYMMETRY AXIS. SEPARATE DETERMINATIONS OF PROTON AND ALPHA PARTICLE FLUXES WERE MADE IN THE ENERGY RANGE 0.52 TO 4 MEV/NUCLEON AND 0.9 TO 1.8 MEV/NUCLEON. THE DETECTOR WAS INSENSITIVE TO ELECTRON FLUXES IN THE RADIATION ZONES. THE DETECTOR ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 4 SEC. AND THE DETECTOR PERFORMED NORMALLY THROUGH JULY 19, 1966.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, P-N COUNTS

NSSDC ID- 64-076B-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 02/13/65 TO 07/19/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 47 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED *8-SEC AVERAGE* FILE FOR EXPLORER 25 (INJUN 4). THESE REDUCED DATA ARE ON FORTY-SEVEN 7-TRACK, IBM 7094, BINARY, ODD PARITY MAGNETIC TAPES WRITTEN AT 800 BPI WITH 400 THREE-CHARACTER WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THERE IS ONE FILE PER TAPE. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE EXPLORER 25 EXPERIMENTS. THE TAPES ALSO INCLUDE -- TIME (UT), GEOCENTRIC LONGITUDE AND LATITUDE, ALTITUDE, GEOMAGNETIC LATITUDE AND LONGITUDE, INVARIANT LATITUDE, MCILWAIN'S L PARAMETER, SCALAR GEOMAGNETIC FIELD STRENGTH, B/BO, VARIOUS MAGNETIC INDICES, AND DATA QUALITY INDICATORS. THIS SET OF TAPES INCLUDES DATA SETS 64-076B-02A, -03A, -04A, -05A, AND -06A.

DATA SET NAME- PROTON COUNT RATE PLOTS ON MICROFILM

NSSDC ID- 64-076B-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/23/64 TO 07/19/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 11 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF COUNT RATE PLOTS (COUNTS/SEC VS UT, MAGNETIC LOCAL TIME, B (GAUSS), MCILWAIN'S L PARAMETER AND INVARIANT LATITUDE) OF PROTONS IN TWO ENERGY CHANNELS, 0.52 TO 4 MEV (PNA) AND 0.90 TO 1.8 MEV (PNB). THE UPPER LIMITS OF THE ENERGY RANGES ARE FOR AXIALLY INCIDENT PROTONS. THE PLOTS ARE CHRONOLOGICALLY ORDERED ON 11 REELS OF 35-MM MICROFILM AND COVER THE TIME INTERVAL FROM NOVEMBER 23, 1964, TO JULY 19, 1966. NOTE THAT FOR SOME TIME INTERVALS THERE IS OVERLAPPING TIME COVERAGE OWING TO THE USE OF TWO SLIGHTLY DIFFERENT PLOT FORMATS.

VAN ALLEN, INJUN 4

EXPERIMENT NAME- CADMIUM SULFIDE DETECTORS

NSSDC ID- 64-076B-05

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 07/19/66

PERSONNEL

PI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA

THIS EXPERIMENT WAS DESIGNED TO MEASURE PRECIPITATING AND TRAPPED PARTICLE FLUXES. FOUR COS-TYPE PARTICLE DETECTORS WERE USED FOR THIS PURPOSE. ONE AT A PITCH ANGLE OF 90 DEG, ONE AT 125 DEG, AND TWO AT 160 DEG (ONE WITH AND ONE WITHOUT A MAGNETIC DEFLECTION WITHIN THE ENTRANCE APERTURE). ORIENTATION IS REFERRED TO THE DIRECTION OF THE LOCAL MAGNETIC FIELD LINE SUCH THAT 0 DEG CORRESPONDS TO A DETECTOR LOOKING DOWNWARD TOWARDS THE EARTH IN THE NORTHERN HEMISPHERE. THE DETECTOR ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 8 SEC. THE DETECTORS WERE TO YIELD TOTAL FLUX MEASUREMENTS FOR ELECTRONS (E.GT. 100 EV) AND PROTONS (E.GT. 100 EV). EXTREMELY HIGH BACKGROUND COUNTING RATES ENCOUNTERED DURING THE FLIGHT HAVE HINDERED ANALYSIS OF THE DATA.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, COS COUNTS

NSSDC ID- 64-076B-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 02/13/65 TO 07/19/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 47 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED *8-SEC AVERAGE* FILE FOR EXPLORER 25 (INJUN 4). THESE REDUCED DATA ARE ON FORTY-SEVEN 7-TRACK, IBM 7094, BINARY, ODD PARITY MAGNETIC TAPES WRITTEN AT 800 BPI WITH 400 THREE-CHARACTER WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THERE IS ONE FILE PER TAPE. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE EXPLORER 25 EXPERIMENTS. THE TAPES ALSO INCLUDE -- TIME (UT), GEOCENTRIC LONGITUDE AND LATITUDE, ALTITUDE, GEOMAGNETIC LATITUDE AND LONGITUDE, INVARIANT LATITUDE, MCILWAIN'S L PARAMETER, SCALAR GEOMAGNETIC FIELD STRENGTH, B/BO, VARIOUS MAGNETIC INDICES, AND DATA QUALITY INDICATORS. THIS SET OF TAPES INCLUDES DATA SETS 64-076B-02A, -03A, -04A, -05A, AND -06A.

VAN ALLEN, INJUN 4

EXPERIMENT NAME- PLASTIC SCINTILLATOR PARTICLE DETECTORS

NSSDC ID- 64-076B-06

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 07/19/66

PERSONNEL

PI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA
OI - J.D. CRAVEN U OF IOWA
IOWA CITY, IA

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIRECTIONAL FLUXES OF ELECTRONS (E.GT. 5 KEV) MIRRORED AT SATELLITE ALTITUDES AND BEING PRECIPITATED INTO THE EARTH'S UPPER ATMOSPHERE. TWO PLASTIC SCINTILLATOR PARTICLE DETECTORS WERE USED. ONE DETECTOR, WHICH MEASURED ELECTRONS WITH PITCH ANGLES ABOUT 90 DEG PLUS OR MINUS 15 DEG, OPERATED NORMALLY UNTIL LATE JANUARY 1965. AN APPARENT INTERMITTENT FAILURE IN THE DETECTOR POWER SUPPLY DECREASED FURTHER OBSERVATIONS TO ONLY BRIEF PERIODS THROUGHOUT THE ACTIVE LIFE OF THE SATELLITE. THE OTHER DETECTOR, WHICH MEASURED ELECTRONS WITH PITCH ANGLES ABOUT 40 DEG PLUS OR MINUS 15 DEG, OPERATED NORMALLY THROUGHOUT THE 20-MONTH LIFE OF THE SATELLITE. ORIENTATION IS REFERRED TO THE DIRECTION OF THE LOCAL MAGNETIC FIELD LINE SUCH THAT ZERO DEG CORRESPONDS TO A DETECTOR LOOKING DOWNWARD TOWARDS THE EARTH IN THE NORTHERN HEMISPHERE. THE DETECTOR ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 8 SEC.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, PLASTIC
SCINTILLATOR COUNTS

NSSDC ID- 64-076B-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 02/13/65 TO 07/19/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 47 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A TIME-ORDERED *8-SEC AVERAGE* FILE FOR EXPLORER 25 (INJUN 4). THESE REDUCED DATA ARE ON FORTY-SEVEN 7-TRACK, 1RM 7094, BINARY, ODD PARITY MAGNETIC TAPES WRITTEN AT 800 BPI WITH 400 THREE-CHARACTER WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THERE IS ONE FILE PER TAPE. THE DATA ON THIS SET OF TAPES CONSIST OF DETECTOR COUNTING RATES FOR THIS EXPERIMENT AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE EXPLORER 25 EXPERIMENTS. THE TAPES ALSO INCLUDE -- TIME (UT), GEOCENTRIC LONGITUDE AND LATITUDE, ALTITUDE, GEOMAGNETIC LATITUDE AND LONGITUDE, INVARIANT LATITUDE, MCILWAIN'S L PARAMETER, SCALAR GEOMAGNETIC FIELD STRENGTH, B/80, VARIOUS MAGNETIC INDICES, AND DATA QUALITY INDICATORS. THIS SET OF TAPES INCLUDES DATA SETS 64-076B-02A, -03A, -04A, -05A, AND -06A.

SAMPLED FOR 221.76 SEC ONCE EVERY 443.52 SEC. THE COUNT ACCUMULATION OF THE GM TUBE SHIELDED WITH STAINLESS STEEL WAS SAMPLED ONCE FOR 0.828 SEC AND ONCE FOR 9.6 SEC EVERY 443.52 SEC. AND THE COUNT ACCUMULATION OF THE BERYLLIUM-SHIELD GM TUBE WAS SAMPLED ONCE FOR 0.828 SEC AND ONCE FOR 9.6 SEC EVERY 887.04 SEC. THE DETECTORS WERE MOUNTED CLOSE TOGETHER WITH THE AXES OF THE GM TUBES PERPENDICULAR TO THE ROLL AXIS OF THE SPACECRAFT AND HENCE TO THE RADIUS VECTOR FROM THE SUN. THE GM TUBES SHIELDED WITH STAINLESS STEEL AND BERYLLIUM HAD OMNIDIRECTIONAL GEOMETRIC FACTORS OF 6.97 AND 6.91 CM SQUARED, RESPECTIVELY. THE EXPERIMENT OPERATED NORMALLY THROUGHOUT THE MISSION.

DATA SET NAME- QUARTER DAY AND DAILY AVERAGED
OMNIDIRECTIONAL FLUXES ON MICROFILM

NSSDC ID- 62-041A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/28/62 TO 12/30/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET, WHICH WAS SUPPLIED BY THE EXPERIMENTER, CONSISTS OF A COMPUTER LISTING ON MICROFILM OF 6-HR AND 24-HR AVERAGED OMNIDIRECTIONAL FLUXES FROM THE ION CHAMBER, STAINLESS STEEL SHIELDED GM TUBE, AND BERYLLIUM SHIELDED GM TUBE IN A TIME-ORDERED FORMAT. THE STAINLESS STEEL GM TUBE FLUXES ARE SEPARATELY CALCULATED BASED ON THE 0.828-SEC ACCUMULATIONS AND ON THE 9.6-SEC ACCUMULATIONS. THIS WAS ALSO DONE FOR THE BERYLLIUM SHIELDED GM TUBE FLUXES. HENCE, THERE ARE FIVE FLUXES CALCULATED FOR A GIVEN 6-HR TIME PERIOD -- FOUR FOR THE GM TUBES AND ONE FOR THE ION CHAMBER. THE FORMAT ALSO INCLUDES TIME AND VARIOUS STATISTICAL PARAMETERS. A DETAILED FORMAT DESCRIPTION PRECEDES THE COMPUTER LISTING OF THESE DATA.

SPACECRAFT COMMON NAME- MARINER 2

ALTERNATE NAMES- 1962 ALPHA RHO 1. P 38
MARINER R-2, 00374

NSSDC ID- 62-041A

LAUNCH DATE- 08/27/62 WEIGHT- 203. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 01/03/63

ORBIT PARAMETERS

ORBIT TYPE- HELIOCENTRIC EPOCH DATE- 08/27/62
ORBIT PERIOD- 292. DAYS INCLINATION- 0. DEG
PERIAPSIS- 0.72 AU RAD APOAPSIS- 1.0 AU RAD

THE MARINER 2 SPACECRAFT WAS THE SECOND OF A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN THE FLYBY, OR NON-LANDING, MODE. MARINER 2 WAS A BACKUP FOR THE MARINER 1 MISSION WHICH FAILED SHORTLY AFTER LAUNCH TO VENUS. THE SPACECRAFT WAS ATTITUDE STABILIZED USING THE SUN AND EARTH AS REFERENCES. THE SPACECRAFT WAS SOLAR POWERED AND CAPABLE OF CONTINUOUS TELEMETRY OPERATION. THE SPACECRAFT OBTAINED DATA ON THE INTERPLANETARY MEDIUM DURING THE FLIGHT TO VENUS AND BEYOND AND OBTAINED PLANETARY DATA DURING THE ENCOUNTER OF VENUS. THE SPACECRAFT PASSED 41,000 KM FROM VENUS ON DECEMBER 14, 1962.

NEUGEBAUER, MARINER 2

EXPERIMENT NAME- SOLAR PLASMA ANALYZER

NSSDC ID- 62-041A-06

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/30/62

PERSONNEL

PI - H.M. NEUGEBAUER NASA-JPL
PASADENA, CA
OI - C.W. SNYDER NASA-JPL
PASADENA, CA

THIS EXPERIMENT WAS DESIGNED TO STUDY THE FLUX AND ENERGY SPECTRUM OF THE POSITIVE ION COMPONENT OF THE SOLAR WIND PLASMA. THE EXPERIMENT CONSISTED OF A CYLINDRICAL ELECTROSTATIC ANALYZER WITH A FARADAY CUP DETECTOR. THIS SYSTEM SEPARATED POSITIVELY CHARGED IONS ACCORDING TO THEIR ENERGY PER UNIT CHARGE. THE ENTRANCE APERTURE WAS 5 SQ CM AND RECTANGULAR. THE APERTURE POINTED TO WITHIN 0.1 DEG OF THE SUN THROUGHOUT THE FLIGHT. THE VOLTAGE ON THE ANALYZER PLATES WAS CHANGED AT INTERVALS OF ABOUT 10 SEC IN AN ASCENDING SEQUENCE OF 10 VALUES FROM 231 V TO 8824 V. A ZERO CURRENT READING AND A CALIBRATION READING WERE THEN TAKEN. THE COMPLETE SEQUENCE OF 12 MEASUREMENTS WAS REPEATED EVERY 3.696 MIN (EVERY 2.016 MIN NEAR VENUS). THE INSTRUMENT FUNCTIONED NORMALLY OVER THE ENTIRE FLIGHT AND PROVIDED DATA ESSENTIALLY CONTINUOUSLY UNTIL DECEMBER 30, 1962.

ANDERSON, MARINER 2

EXPERIMENT NAME- COSMIC-RAY IONIZATION

NSSDC ID- 62-041A-04

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 01/03/63

PERSONNEL

PI - H.R. ANDERSON RICE U
HOUSTON, TX
OI - J.A. VAN ALLEN U OF IOWA
IOWA CITY, IA
OI - V.H. NEHER CALIF INST OF TECH
PASADENA, CA

THE PARTICLE EXPERIMENT WAS DESIGNED TO INVESTIGATE (1) THE DEPENDENCE OF THE INTENSITY OF IONIZING PARTICLES IN SPACE UPON DISTANCE FROM THE SUN, (2) TEMPORAL VARIATIONS OF THE PARTICLES AND THEIR CORRELATION WITH VARIATIONS OF THE MAGNETIC FIELD AND PLASMA FLUX AT THE LOCATION OF THE SPACECRAFT AND WITH SOLAR-TERRRESTRIAL DISTURBANCES, AND (3) THE INTENSITY AND EXTENT OF MAGNETICALLY TRAPPED PARTICLES, IF ANY, AROUND VENUS. THE INSTRUMENTATION CONSISTED OF THREE DETECTORS -- (1) A GAS-FILLED INTEGRATING IONIZATION CHAMBER WITH A WALL OF STAINLESS STEEL, (2) AN OMNIDIRECTIONAL THIN-WALLED CYLINDRICAL GLASS GM TUBE SHIELDED WITH STAINLESS STEEL, AND (3) AN IDENTICAL GLASS GM TUBE SHIELDED WITH BERYLLIUM. THE TWO GM TUBES DIFFERED IN THE EFFICIENCY WITH WHICH THEY DETECTED NONPENETRATING ELECTRONS BY THE BREMSSTRAHLUNG PROCESS. ALL THREE DETECTORS WERE SENSITIVE TO ELECTRONS OF ENERGIES GREATER THAN 500 KEV AND PROTONS OF ENERGIES GREATER THAN 10 MEV. THE IONIZATION CHAMBER WAS

DATA SET NAME- REDUCED ELECTROMETER NUMBERS AND TIME
DATA ON MAGNETIC TAPE

NSSDC ID- 62-041A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/29/62 TO 12/30/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ELECTROMETER OUTPUT NUMBERS (THESE ARE RELATED TO THE MEASURED CURRENT BY A SIMPLE EQUATION) AND TIME FOR EACH ENERGY PER CHARGE STEP. THE DATA ARE CONTAINED ON ONE 7-TRACK, 800-BPI, BINARY MAGNETIC TAPE IN

MARINER 2/MARINER 4

A 7094 DCS FORMAT. A FORTRAN IV PROGRAM THAT READS AND PRINTS OUT THE TAPE IS AVAILABLE. THE DATA SET HAS A 90 PERCENT COVERAGE OF THE TIME PERIOD INDICATED.

DATA SET NAME- UNAVERAGED ANALYZED PLASMA PARAMETERS ON MAGNETIC TAPE

NSSDC ID- 62-041A-06B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/29/62 TO 12/29/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE ANALYZED DATA CONSIST OF TIME, UPPER AND LOWER LIMITS OF TEMPERATURE, UPPER AND LOWER LIMITS OF VELOCITY, DENSITY OF PROTONS, RATIO OF ALPHA PARTICLE DENSITY TO PROTON DENSITY, AND A PARAMETER THAT RATES THE VALIDITY OF THE MODEL USED IN THE ANALYSIS. THE PLASMA PARAMETERS WERE DERIVED BY THE EXPERIMENTER FROM THE REDUCED DATA ON THE BASIS OF A CONNECTED ISOTROPIC MAXWELL-BOLTZMANN VELOCITY DISTRIBUTION. THIS ASSUMPTION WAS APPLIED TO THE PROTON PORTION OF EACH SPECTRUM AND EXTENDED TO THE ALPHA PARTICLE PORTION BY ASSUMING EITHER THAT PROTON AND ALPHA PARTICLE TEMPERATURES OR BULK SPEEDS WERE EQUAL. THE DATA ARE ON ONE 7-TRACK, 556-BPI, BINARY MAGNETIC TAPE. THE 7094 SYSTEM WAS USED IN PREPARING THE TAPE. DATA COVERAGE OVER THE TIME PERIOD INDICATED WAS 90 PERCENT.

DATA SET NAME- ONE-HR AVERAGED PLASMA BULK VELOCITY DATA ON MAGNETIC TAPE

NSSDC ID- 62-041A-06C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/29/62 TO 12/30/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE ANALYZED DATA CONSIST OF 1-HR AVERAGES OF PLASMA BULK SPEED COMPUTED BY THE EXPERIMENTER FROM UNAVERAGED PARAMETERS (DATA SET 62-041A-06B). WHERE UPPER AND LOWER LIMITS OF THE VELOCITY WERE GIVEN, THE UPPER LIMIT WAS USED IN THE CALCULATION. THE DATA ARE CONTAINED IN ONE FILE ON ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE. EACH PHYSICAL RECORD OF 84 CHARACTERS (A CONTROL WORD AND AN 80-CHARACTER CARD IMAGE) CONTAINS THE TIME, BULK SPEED, THE NUMBER OF VALUES USED TO GENERATE THE AVERAGE, AND DAY OF YEAR. DATA COVERAGE IS 90 PERCENT OVER THE TIME PERIOD INDICATED.

DATA SET NAME- THREE-HR AVERAGED PLASMA PARAMETER DATA

NSSDC ID- 62-041A-06D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/29/62 TO 12/29/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE ANALYZED DATA CONSIST OF 3-HR AVERAGES OF UPPER AND LOWER LIMITS OF VELOCITY, UPPER AND LOWER LIMITS OF TEMPERATURE, DENSITY, RATIO OF ALPHA PARTICLE DENSITY TO PROTON DENSITY, AND A HIGH-ENERGY TAIL PARAMETER. ALSO INCLUDED ARE THE NUMBER OF SPECTRA USED IN COMPUTING EACH OF THE AVERAGES AND TIME. THESE DATA WERE COMPUTED BY THE EXPERIMENTER FROM UNAVERAGED PARAMETERS. THE DATA ARE CONTAINED ON ONE FILE OF A 7-TRACK, 556-BPI, BCD MAGNETIC TAPE WITH 84 CHARACTERS (CONTROL WORD AND 80 CHARACTER CARD IMAGE) PER PHYSICAL RECORD. THERE IS A 90 PERCENT DATA COVERAGE OVER THE TIME PERIOD INDICATED. A MICROFILMED LISTING OF THIS TAPE IS ALSO AVAILABLE (62-041A-06E).

SPACECRAFT COMMON NAME- MARINER 4

ALTERNATE NAMES- 00942

NSSDC ID- 64-077A

LAUNCH DATE- 11/28/64

WEIGHT- 262. KG

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 12/20/67

ORBIT PARAMETERS

ORBIT TYPE- HELIOCENTRIC

EPOCH DATE- 07/15/65

ORBIT PERIOD- 567. DAYS

INCLINATION- 0. DEG

PERIAPSIS- 1.1 AU RAD

APDAPSIS- 1.58 AU RAD

MARINER 4 WAS THE FOURTH IN A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN A FLYBY MODE. IT WAS DESIGNED TO CONDUCT CLOSEUP SCIENTIFIC OBSERVATIONS OF THE PLANET MARS AND TO TRANSMIT THESE OBSERVATIONS TO EARTH. OTHER MISSION OBJECTIVES WERE TO PERFORM FIELD AND PARTICLE MEASUREMENTS IN INTERPLANETARY SPACE AND IN THE VICINITY OF MARS AND TO PROVIDE EXPERIENCE IN AND KNOWLEDGE OF THE ENGINEERING CAPABILITIES FOR INTERPLANETARY FLIGHTS OF LONG DURATION. AFTER 7.5 MONTHS OF FLIGHT, THE SPACECRAFT FLEW BY MARS ON JULY 14, 1965, AND RETURNED 21 AND A PORTION PHOTOGRAPHS. THE CLOSEST APPROACH WAS 9846 KM FROM THE MARTIAN SURFACE. THE SPACECRAFT PERFORMED ALL PROGRAMMED ACTIVITIES SUCCESSFULLY AT THE PROPER TIMES AND RETURNED USEFUL DATA FROM LAUNCH UNTIL OCTOBER 1965, WHEN THE DISTANCE FROM EARTH AND ITS ANTENNA ORIENTATION TEMPORARILY HALTED THE SIGNAL ACQUISITION. DATA ACQUISITION RESUMED IN LATE 1967 AND CONTINUED UNTIL DECEMBER 20, 1967.

SIMPSON, MARINER 4

EXPERIMENT NAME- COSMIC-RAY TELESCOPE

NSSDC ID- 64-077A-04

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 10/01/65

PERSONNEL

PI - J.A. SIMPSON U OF CHICAGO

CHICAGO, IL

OI - J.J. O'GALLAGHER U OF MARYLAND

COLLEGE PARK, MD

A SET OF THREE SILICON SURFACE BARRIER DETECTORS WAS USED IN THE FORM OF A OEDX VS RANGE TELESCOPE TO DETERMINE THE FLUX OF PROTONS IN THE ENERGY INTERVALS 15 TO 70 MEV AND 70 TO 170 MEV, ALPHA PARTICLES IN THE ENERGY RANGES 15 TO 70 MEV/NUCLEON AND ABOVE 70 MEV/NUCLEON, AND PROTONS AND ALPHA PARTICLES IN THE ENERGY INTERVAL 1.2 TO 15 MEV/NUCLEON. THE DETECTOR WAS MOUNTED ON THE SPACECRAFT SO AS TO POINT ALWAYS IN THE ANTISOLAR DIRECTION. A 128-CHANNEL PULSE HEIGHT ANALYZER WAS USED TO SAMPLE THE ENERGY LOSS IN THE TOP DETECTOR ELEMENT OF THE TELESCOPE. IT WAS POSSIBLE TO PULSE HEIGHT ANALYZE PROTONS AND ALPHA PARTICLES FROM 15 TO 70 MEV/NUCLEON, PROTONS FROM 70 TO 170 MEV, AND ALPHA PARTICLES WITH ENERGIES ABOVE 70 MEV/NUCLEON. TWO COUNT RATES AND TWO PULSE HEIGHT ANALYSES WERE OBTAINED EVERY 72 OR 18 SEC ACCORDING TO WHETHER THE SPACECRAFT TRANSMISSION RATE WAS 8-1/3 OR 33-1/3 BPS. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH UNTIL OCTOBER 1965, WHEN THE SPACECRAFT WAS TURNED OFF TO CONSERVE POWER. WHEN THE SPACECRAFT WAS TURNED ON AGAIN AT A LATER TIME, THE DETECTOR DID NOT RESPOND. FOR FURTHER DETAILS, SEE O'GALLAGHER, AP.J., VOL 150, P 675, 1967.

DATA SET NAME- COSMIC-RAY TELESCOPE RAW COUNT ACCUMULATIONS ON MAGNETIC TAPE

NSSDC ID- 64-077A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 11/28/64 TO 10/01/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF EDITED, UNCORRECTED, REAL-TIME COUNTING RATE DATA IN A TIME-ORDERED FORMAT. THE DATA ARE ON ONE 7-TRACK BCD MAGNETIC TAPE WRITTEN AT 800 BPI WITH 36 CHARACTERS PER LOGICAL RECORD, 50 LOGICAL RECORDS PER PHYSICAL RECORD, AND ONE FILE PER TAPE. EACH LOGICAL RECORD CONTAINS (1) TIME, (2) DATE, (3) SATELLITE TELEMETRY BIT RATE, (4) CALIBRATION INFORMATION, AND (5) ACCUMULATOR OUTPUTS FROM SEVERAL COINCIDENCE MODES OF THE

COSMIC-RAY TELESCOPE -- D1 NOT D2 (ELECTRONS E.G.T. 200 KEV AND PROTONS AND HEAVIER NUCLEI 1.2 TO 15 MEV/NUCLEON), DID2 NOT D3 (PROTONS AND HELIUM NUCLEI 15 TO 70 MEV/NUCLEON), AND D1D2D3 (PROTONS FROM 70 TO 170 MEV AND HELIUM NUCLEI E.G.T. 70 MEV/NUCLEON). THE DATA COVER ABOUT 90 PERCENT OF THE PERIOD WHEN THE SPACECRAFT WAS ACTIVE.

(72 SEC LONG) OF COUNTING RATE DATA EXISTED IN THAT TIME INTERVAL. EACH GROUP OF SEVEN PHYSICAL RECORDS CONTAINS THE DAY, TIME (UT OF BEGINNING OF ACCUMULATION PERIOD), CORRECTED ACCUMULATED COUNTS AND COUNTING RATES, AND VARIOUS DATA QUALITY INDICATORS. THE D1D2 NOT D3 COINCIDENCE CORRESPONDS TO PROTONS AND ALPHA PARTICLES FROM 15 TO 70 MEV/NUCLEON, AND THE D1D2D3 COINCIDENCE CORRESPONDS TO PROTONS FROM 70 TO 170 MEV AND ALPHA PARTICLES OF ENERGIES GREATER THAN 70 MEV/NUCLEON.

DATA SET NAME- COSMIC-RAY TELESCOPE PULSE HEIGHT
ANALYZER DATA ON MAGNETIC TAPE

NSSDC ID- 64-077A-048

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 11/28/64 TO 10/01/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF EDITED, REAL-TIME, PULSE HEIGHT DATA IN A TIME-ORDERED FORMAT. THE DATA ARE ON ONE 7-TRACK BCD MAGNETIC TAPE WRITTEN AT 800 BPI WITH 48 CHARACTERS PER LOGICAL RECORD, 50 LOGICAL RECORDS PER PHYSICAL RECORD, AND ONE FILE PER TAPE. EACH LOGICAL RECORD CONTAINS (1) TIME, (2) DATE, (3) SATELLITE TELEMETRY BIT RATE, (4) CALIBRATION INFORMATION, AND (5) PULSE HEIGHT ANALYSIS INFORMATION FOR DETECTOR ELEMENT D1 OF THE COSMIC-RAY TELESCOPE. BY NOTING WHETHER THE D3 ELEMENT OF THE TELESCOPE WAS TRIGGERED AT ONE OF TWO DISCRIMINATION LEVELS, PULSE HEIGHT ANALYSIS OF PROTONS AND ALPHA PARTICLES SEPARATELY FROM 15 TO 70 MEV/NUCLEON, PROTONS FROM 70 TO 170 MEV, AND ALPHA PARTICLES WITH ENERGIES E.G.T. 70 MEV/NUCLEON WAS POSSIBLE. THE FIRST COINCIDENCE EVENT BETWEEN D1 AND D2 OCCURRING BETWEEN SUCCESSIVE READOUTS WAS PULSE HEIGHT ANALYZED.

SPACECRAFT COMMON NAME- OGO 1

ALTERNATE NAMES- OGO 1, OGO-A
00879, S 49

NSSDC ID- 64-054A

LAUNCH DATE- 09/05/64

WEIGHT- 487. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/25/69

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPDCH DATE- 09/07/64
ORBIT PERIOD- 3839. MIN	INCLINATION- 31.2 DEG
PERIAPSIS- 281.000 KM ALT	APOAPSIS- 149385. KM ALT

THE PURPOSE OF THE OGO 1 SPACECRAFT, THE FIRST OF A SERIES OF SIX ORBITING GEOPHYSICAL OBSERVATORIES, WAS TO CONDUCT MANY DIVERSIFIED GEOPHYSICAL EXPERIMENTS TO OBTAIN A BETTER UNDERSTANDING OF THE EARTH AS A PLANET AND TO DEVELOP AND OPERATE A STANDARDIZED OBSERVATORY-TYPE SATELLITE. OGO 1 CONSISTED OF A MAIN BODY THAT WAS PARALLELEPIPED IN FORM, TWO SOLAR PANELS, EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP) AND SIX APPENDAGES EP-1 THROUGH EP-6 SUPPORTING THE BOOM EXPERIMENT PACKAGES. ONE FACE OF THE MAIN BODY WAS DESIGNED TO POINT TOWARD THE EARTH (+Z AXIS), AND THE LINE CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS INTENDED TO BE PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS WERE ABLE TO ROTATE ABOUT THE X AXIS, THE OPEP'S WERE MOUNTED ON AND COULD ROTATE ABOUT AN AXIS WHICH WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE MAIN BODY. DUE TO A BOOM DEPLOYMENT FAILURE SHORTLY AFTER ORBITAL INJECTION, THE SPACECRAFT WAS PUT INTO A PERMANENT SPIN MODE OF 5 RPM ABOUT THE Z AXIS. THIS SPIN AXIS REMAINED FIXED WITH A DECLINATION OF ABOUT -10 DEG AND RIGHT ASCENSION OF ABOUT 40 DEG AT LAUNCH. THE INITIAL LOCAL TIME OF APOGEE WAS 2100 HR. OGO 1 CARRIED 20 EXPERIMENTS. TWELVE OF THESE WERE PARTICLE STUDIES AND TWO WERE MAGNETIC FIELD STUDIES. IN ADDITION, THERE WAS ONE EXPERIMENT FOR EACH OF THE FOLLOWING TYPES OF STUDIES -- INTERPLANETARY DUST, VLF, LYMAN-ALPHA, GEGENSCHN. ATMOSPHERIC MASS, AND RADIO ASTRONOMY. REAL-TIME DATA WERE TRANSMITTED AT 1.8 OR 64 KBS DEPENDING ON THE DISTANCE OF THE SPACECRAFT FROM THE EARTH. PLAYBACK DATA WERE TAPE RECORDED AT 1 KBS AND TRANSMITTED AT 64 KBS. TWO WIDEBAND TRANSMITTERS, ONE FEEDING INTO AN OMNIDIRECTIONAL ANTENNA AND THE OTHER FEEDING INTO A DIRECTIONAL ANTENNA, WERE USED TO TRANSMIT DATA. A SPECIAL-PURPOSE TELEMETRY SYSTEM, FEEDING INTO EITHER ANTENNA, WAS ALSO USED TO TRANSMIT WIDEBAND DATA IN REAL TIME ONLY. TRACKING WAS ACCOMPLISHED BY USING RADIO BEACONS AND A RANGE AND RANGE-RATE S-BAND TRANSPONDER. BECAUSE OF THE BOOM DEPLOYMENT FAILURE, THE BEST OPERATING MODE FOR THE DATA HANDLING SYSTEM WAS THE USE OF ONE OF THE WIDEBAND TRANSMITTERS AND THE DIRECTIONAL ANTENNA. ALL DATA RECEIVED FROM THE OMNIDIRECTIONAL ANTENNA WERE NOISY. DURING SEPTEMBER 1964, ACCEPTABLE DATA WERE RECEIVED OVER 70 PERCENT OF THE ORBITAL PATH. BY JUNE 1969, DATA ACQUISITION WAS LIMITED TO 10 PERCENT OF THE ORBITAL PATH. THE SPACECRAFT WAS PLACED IN A STAND-BY STATUS NOVEMBER 25, 1969, AND ALL SUPPORT WAS TERMINATED NOVEMBER 1, 1971. BY APRIL 1970, THE SPACECRAFT PERIGEE HAD INCREASED TO 46,000 KM AND THE INCLINATION HAD INCREASED TO 58.8 DEG.

DATA SET NAME- ONE-HOUR AND 4-HR AVERAGE LOW-ENERGY
COUNTING RATES ON MAGNETIC TAPE

NSSDC ID- 64-077A-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 11/28/64 TO 10/01/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED 1-HR AND 4-HR AVERAGE D1 NOT D2 COINCIDENCE RATES IN A TIME-ORDERED FORMAT ON ONE 7-TRACK BCD MAGNETIC TAPE WRITTEN AT 800 BPI. THE TAPE FORMAT CONSISTS OF 132-CHARACTER PHYSICAL RECORDS, WHERE EVERY FIFTH RECORD CORRESPONDS TO THE 4-HR AVERAGE DATA. THE 1-HR AVERAGE COUNTING RATE RECORDS CONTAIN THE TIME (UT) OF THE BEGINNING OF THE 1-HR INTERVAL OF ACCUMULATION, THE DATE, THE CORRECTED COUNTING RATE AVERAGE, AND VARIOUS DATA QUALITY INDICATORS. THE 4-HR RECORDS CONTAIN THE CORRESPONDING INFORMATION FOR THE 4-HR AVERAGES. THE D1 NOT D2 COSMIC-RAY TELESCOPE COINCIDENCE CORRESPONDED TO ELECTRONS WITH ENERGIES E.G.T. 200 KEV AND PROTONS AND HEAVIER NUCLEI WITH ENERGIES 1.2 TO 15 MEV/NUCLEON.

DATA SET NAME- FOUR-HR AND 24-HR AVERAGE COINCIDENCE
COUNTING RATES ON MAGNETIC TAPE

NSSDC ID- 64-077A-04D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 11/28/64 TO 10/01/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REDUCED 4-HR AND 24-HR AVERAGE D1D2D3 AND D1D2 NOT D3 COSMIC-RAY TELESCOPE COINCIDENCE COUNTING RATES IN A TIME-ORDERED FORMAT. THE DATA ARE ON ONE 7-TRACK BCD MAGNETIC TAPE WRITTEN AT 800 BPI. THE DATA FOR EACH ACCUMULATION PERIOD (4 HR OR 24 HR) ARE FORMATTED IN GROUPS OF SEVEN SUCCESSIVE PHYSICAL RECORDS. ALL DATA FOR A GIVEN DAY OF THE MISSION ARE CONTAINED IN AS MANY GROUPS OF SEVEN PHYSICAL RECORDS AS REQUIRED FOR THE 4-HR AVERAGES AND IN ONE ADDITIONAL GROUP OF SEVEN PHYSICAL RECORDS FOR THE 24-HR ACCUMULATION AND CORRECTED COUNTING RATES. THE 4-HR AVERAGES WERE ACCUMULATED EVERY 4 HR STARTING AT 0000 UT FOR A GIVEN DAY AND WERE COMPILED PROVIDED THAT AT LEAST ONE SATELLITE TELEMETRY FRAME

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS PLOTS

NSSDC ID- 64-054A-00H

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/07/64 TO 06/03/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF 35-MM MICROFILM, FILMED BY NSSDC FROM EXPERIMENTER-GENERATED CALCOMP PLOTS. THE DATA SET CONTAINS TWO-DIMENSIONAL PROJECTIONS OF INDIVIDUAL ORBITS, WITH TIC MARKS FOR TIME, IN A VARIETY OF COORDINATE SYSTEMS. INCLUDED ARE THE DISTANCE FROM THE EARTH-SUN-LINE GEOMAGNETIC DIPOLE PLANE, DISTANCE FROM THE NEUTRAL SHEET, THE ORBIT IN GEOCENTRIC SOLAR MAGNETOSPHERIC COORDINATES, DISTANCE FROM THE EARTH-SUN-LINE ECLIPTIC POLE PLANE, AND THE ORBIT IN

OGO 1

GEOCENTRIC ECLIPTIC COORDINATES. ONE ORBIT IS INCLUDED PER PLOT, AND DISTANCES ARE ALL IN EARTH RADII.

PI - A. KONRADI NASA-JSC
HOUSTON, TX
OI - L.R. DAVIS NASA-GSPC
GREENBELT, MD
OI - R.A. HOFFMAN NASA-GSPC
GREENBELT, MD
OI - J.M. WILLIAMSON NASA-GSPC
GREENBELT, MD

ANDERSON, OGO 1

EXPERIMENT NAME- SOLAR COSMIC RAYS

NSSDC ID- 64-054A-12

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 11/25/69

PERSONNEL

PI - K.A. ANDERSON U OF CALIF. BERKELEY
BERKELEY, CA
OI - G.H. PITT U OF CALIF. BERKELEY
BERKELEY, CA

THIS INSTRUMENTATION CONSISTED OF A CESIUM IODIDE CRYSTAL SURROUNDED BY A PLASTIC ANTICOINCIDENCE SHIELD AND OPTICALLY COUPLED TO A PHOTOMULTIPLIER TUBE. THE SYSTEM ALSO CONTAINED A 32-CHANNEL PULSE HEIGHT ANALYZER. ALTHOUGH THE PRINCIPAL OBJECTIVE OF THIS EXPERIMENT WAS TO MEASURE 3- TO 90-KEV SOLAR PROTONS, THE DETECTOR HAD NO ABILITY TO DISCRIMINATE BETWEEN DIFFERENT KINDS OF PARTICLES. THE SYSTEM WAS MOUNTED IN ONE OF THE TWO SOEP'S AND HAD A 38-DEG ACCEPTANCE CONE ANGLE. INFIGHT CALIBRATION WAS PROVIDED. COUNTS IN GROUPS OF FOUR CHANNELS, ACCUMULATED OVER 31/32 OF THE TELEMETRY FRAME TIME (1.152, 0.144, OR 0.018 SEC), WERE READ OUT DURING SUCCESSIVE TELEMETRY FRAMES. SOME TIME BEFORE THE EXPERIMENT WAS TURNED ON, THE ANTICOINCIDENCE SYSTEM FAILED. THIS RESULTED IN HIGH BACKGROUND RATES DUE TO GALACTIC COSMIC RAYS. - THUS, THE DATA WERE USEFUL FOR STUDIES OF EVENT MORPHOLOGY BUT NOT FOR DETERMINATION OF ABSOLUTE FLUXES. ALTHOUGH THE DETECTOR AXIS WAS INTENDED TO POINT TOWARD THE SUN, A MALFUNCTION IN THE OGO 1 ATTITUDE CONTROL SYSTEM PREVENTED THIS. OTHERWISE, THE EXPERIMENT PERFORMED WELL FROM LAUNCH THROUGH NOVEMBER 25, 1969, WHEN ALL EXPERIMENTS ABOARD OGO 1 WERE TURNED OFF. FOR FURTHER DETAILS, SEE KAHLER ET AL, SOLAR PHYSICS, VOL 2, P 179, 1967.

THE OBJECTIVES OF THIS EXPERIMENT WERE (1) TO STUDY THE TEMPORAL AND SPATIAL VARIATIONS OF THE TRAPPED PARTICLE INTENSITIES, PITCH ANGLE DISTRIBUTIONS, AND ENERGY SPECTRA OF ELECTRONS (10 TO 100 KEV) AND PROTONS (120 TO 4500 KEV), AND (2) TO DETERMINE PARTICLE LIFETIMES, ISOLATE PROCESSES BY WHICH TRAPPED PARTICLES ARE LOST, AND DEFINE THE SOURCES AND ACCELERATING MECHANISMS OF TRAPPED PARTICLES. THE EXPERIMENT, LOCATED IN OPEP 2, CONSISTED OF A FILTER WHEEL, WHEEL STEPPING MOTOR, PHOSPHOR SCINTILLATOR, PHOTOMULTIPLIER TUBE, ELECTROMETER, AND COUNT RATE METER. THE DETECTOR HAD TWO ENTRANCE APERTURES FOR PARTICLES, ONE ALIGNED WITH THE PHOTOTUBE AXIS AND ONE AT 90 DEG TO THIS AXIS. BOTH PROTONS AND ELECTRONS COULD ENTER THE ALIGNED OPENING AND REACH THE PHOSPHOR. ONLY ELECTRONS COULD ENTER THE 90-DEG OPENING, SCATTER OFF A GOLD DISC, AND REACH THE PHOSPHOR. THE COUNTING RATE IN THE ALIGNED OPENING MEASURED PROTON FLUX, AND THE CURRENT THEREIN MEASURED THE TOTAL ENERGY FLUX OF ELECTRONS, PROTONS, ETC. THE CURRENT IN THE 90-DEG OPENING MEASURED THE ELECTRON ENERGY FLUX. DIFFERENT THICKNESS ABSORBERS ON THE WHEEL PROVIDED SPECTRAL INFORMATION. THE EXPERIMENT WORKED UNTIL THE ABSORBER WHEEL STOPPED ON DECEMBER 2, 1964. DATA RECORDED AFTER THIS DATE ARE UNUSABLE.

DATA SET NAME- COMPLETE REDUCED AND ANALYZED
PROTON-ELECTRON DATA ON MAGNETIC TAPE

NSSDC ID- 64-054A-16A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/07/64 TO 11/16/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 4 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF FOUR 9-TRACK BINARY TAPES WRITTEN ON AN IBM 360/75 COMPUTER WITH ODD PARITY AT 800 BPI. THE TAPES, AS SUPPLIED BY THE EXPERIMENTER, CONTAIN ONE FILE AND DO NOT CONTAIN STANDARD OS/360 TAPE LABELS. THE TAPES CONTAIN A COMPLETE SET OF ION-ELECTRON DETECTOR DATA INCLUDING BOTH THE REDUCED DATA AT A 1-KBS RATE AND THE ANALYZED DATA TRANSMITTED AT 8 OR 64 KBS, WHICH, ON THESE TAPES, HAVE BEEN CONDENSED TO AN EQUIVALENT 1-KBS SAMPLING RATE. THE DATA ARE WRITTEN ON THE TAPES IN FIXED BLOCKED RECORDS 5184 BYTES LONG. EACH BLOCKED RECORD CONTAINS EIGHT LOGICAL RECORDS, EACH 648 BYTES LONG. EACH LOGICAL RECORD CONTAINS TIME (UT), THE DETECTOR CURRENTS AND COUNT RATES MEASURED DURING ONE REVOLUTION OF THE ABSORBER WHEEL. A SERIES OF HOUSEKEEPING PARAMETERS, ORBIT AND ATTITUDE PARAMETERS DEFINING THE SATELLITE POSITION IN GEOCENTRIC INERTIAL, GEOMAGNETIC, MAGNETOSPHERIC, AND ECLIPTIC COORDINATES, AND THE DETECTOR ORIENTATION. THE DATA ARE TIME ORDERED, AND DATA OVERLAPS HAVE BEEN REMOVED.

DATA SET NAME- ORIGINAL REDUCED COUNT RATES ON TAPE

NSSDC ID- 64-054A-12A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 09/30/65 TO 05/03/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BINARY TAPE GENERATED BY THE EXPERIMENTER ON AN IBM 360/40 SYSTEM. THE TAPE CONTAINS 35 FILES, EACH CONTAINING A VARIABLE NUMBER OF RECORDS CHOSEN FOR THEIR SOLAR FLARE INFORMATION. THE FIRST 120 CHARACTERS OF EACH FILE IS AN IDENTIFICATION HEADER CONTAINING, AMONG OTHER THINGS, THE FILE AND TAPE NUMBERS OF THE ORIGINAL DATA TAPES, THE RATE AT WHICH THE DATA WERE TELEMETERED, WHETHER THE DATA WERE REAL TIME OR PLAYBACK, AND THE START TIME OF THE DATA IN YEAR, DAY OF THE YEAR, AND SECONDS OF THE DAY. EACH DATA RECORD CONSISTS OF 1044 SIX-BIT CHARACTERS. THE FIRST 12 CHARACTERS CONTAIN SOEP ENVIRONMENT INFORMATION. THE NEXT EIGHT CHARACTERS CONTAIN THE DAY OF THE YEAR AND MILLISECOND OF THE DAY FOR THE FIRST DATA VALUE. THE REMAINING 1024 CHARACTERS CONTAIN 12 ACCUMULATIONS FOR EACH OF THE 32 CHANNELS. FOR TELEMETRY RATES OF 1, 8, AND 64 KBS, EACH RECORD CONTAINS 147.456, 18.432 AND 2.304 SEC OF DATA, RESPECTIVELY. THE FIRST 15 FILES CONTAIN DATA ASSOCIATED WITH THE OCTOBER 4, 1965, SOLAR FLARE. FILES 16 THROUGH 25 CONTAIN DATA ASSOCIATED WITH THE MARCH 24, 1966, SOLAR FLARE. FILES 26 THROUGH 35 CONTAIN DATA ASSOCIATED WITH THE MAY 2, 1966, SOLAR FLARE.

DATA SET NAME- HIGH BIT RATE REDUCED PROTON-ELECTRON
DATA ON MAGNETIC TAPE

NSSDC ID- 64-054A-16B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/07/64 TO 12/02/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 7 REEL(S) OF MAGNETIC TAPE

THIS REDUCED DATA SET CONSISTS OF SEVEN 7-TRACK BINARY TAPES WRITTEN ON AN IBM 360/75 COMPUTER WITH ODD PARITY AT 800 BPI. THE TAPES, AS SUPPLIED BY THE EXPERIMENTER, CONTAIN ONE FILE EACH AND DO NOT CONTAIN STANDARD OS/360 TAPE LABELS. THE TAPES CONTAIN THE ION-ELECTRON DETECTOR DATA TRANSMITTED AT THE 8- OR 64-KBS RATES BUT NONE OF THE 1-KBS RATE DATA. THE DATA ARE WRITTEN ON THE TAPES IN FIXED BLOCKED RECORDS 5664 BYTES LONG. EACH BLOCKED RECORD CONTAINS FOUR LOGICAL RECORDS, EACH 1416 BYTES LONG. EACH LOGICAL RECORD CONTAINS TIME (UT), THE DETECTOR CURRENTS AND COUNT RATES MEASURED DURING 1/2 OR 1/16 REVOLUTION OF THE DETECTOR ABSORBER WHEEL, A SERIES OF HOUSEKEEPING PARAMETERS, ORBIT AND ATTITUDE PARAMETERS DEFINING THE SATELLITE POSITION IN GEOCENTRIC INERTIAL, GEOMAGNETIC, MAGNETOSPHERIC, AND ECLIPTIC COORDINATES, AND THE DETECTOR ORIENTATION. THE DATA ARE TIME ORDERED, AND DATA OVERLAPS HAVE BEEN REMOVED. THE SAME DATA, COMPRESSED TO BE EQUIVALENT TO 1-KBS SAMPLED DATA, ALONG WITH THE DATA RECORDED

KONRADI, OGO 1

EXPERIMENT NAME- TRAPPED RADIATION SCINTILLATION COUNTER

NSSDC ID- 64-054A-16

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 12/02/64

AT 1 KBS, ARE IN DATA SET 64-054A-16A.

WINCKLER, OGO 1

EXPERIMENT NAME- IONIZATION CHAMBER

NSSDC ID- 64-054A-20

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/25/69

PERSONNEL

PI - J.R. WINCKLER U OF MINNESOTA
MINNEAPOLIS, MN
OI - S.R. KANE U OF CALIF, BERKELEY
BERKELEY, CA
OI - R.L. ARNOLDY U OF NEW HAMPSHIRE
DURHAM, NH

SIMPSON, OGO 1

EXPERIMENT NAME- COSMIC-RAY SPECTRA AND FLUXES

NSSDC ID- 64-054A-18

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/25/69

PERSONNEL

PI - J.A. SIMPSON U OF CHICAGO
CHICAGO, IL
OI - C.Y. FAN U OF ARIZONA
TUCSON, AZ

THREE SOLID-STATE PARTICLE TELESCOPES WERE USED TO MEASURE THE INTENSITY AND ENERGY DISTRIBUTION OF COSMIC RAYS. A DE/DX VS E TELESCOPE RESOLVED THE NUCLEAR COMPOSITION OF COSMIC RAYS IN THE ENERGY RANGE FROM 22 TO 103 MEV/NUCLEON (CHARGE RESOLUTION RANGED THROUGH $Z=26$, ENERGY PER NUCLEON INTERVALS APPROXIMATELY PROPORTIONAL TO Z^2/A). A DE/DX VS RANGE TELESCOPE (PROTON-ALPHA TELESCOPE) DETECTED PROTONS AND ALPHA PARTICLES IN THE ENERGY RANGE FROM 1.4 TO 33 MEV/NUCLEON, AND A SINGLE-ELEMENT LOW-ENERGY PROTON TELESCOPE (PEP TELESCOPE) WAS PRIMARILY SENSITIVE TO PROTONS IN THE ENERGY RANGE FROM 1.4 TO 3.7 MEV. THE COMPOSITION AND PROTON-ALPHA TELESCOPES WERE ORIENTED PARALLEL TO THE SPACECRAFT Z AXIS. PULSE HEIGHT INFORMATION WAS OBTAINED FROM THE COMPOSITION TELESCOPE USING ONE 256-CHANNEL AND TWO 412-CHANNEL PULSE HEIGHT ANALYZERS. THIS ALLOWED PULSE HEIGHT ANALYSIS OF PARTICLES IN FOUR ENERGY INTERVALS -- FOR PROTONS 5 TO 11 MEV, 11 TO 22 MEV, 22 TO 103 MEV, AND GREATER THAN 103 MEV. PULSE HEIGHT INFORMATION SENT BACK FROM THE PROTON-ALPHA TELESCOPE ALLOWED PULSE HEIGHT ANALYSIS OF PARTICLES IN TWO ENERGY RANGES, PROTONS 1.4 TO 8.6 MEV AND 8.6 TO 33 MEV. THIS TRANSMISSION USED ONE 256-CHANNEL PULSE HEIGHT ANALYZER WHILE COUNT RATE INFORMATION WAS SENT BACK FROM ALL THREE TELESCOPES. THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.32 SEC TO ABOUT ONE MEASUREMENT PER 147 SEC DEPENDING ON THE COUNTING MODE AND THE TELEMETRY BIT RATE. THE SPACECRAFT UNINTENDED INITIAL SPIN PERIOD ABOUT THE Z AXIS WAS ABOUT 12 SEC. FOR FURTHER DETAILS, SEE COMSTOCK ET AL, AP, J., VOL 146, P 51, 1966.

THIS EXPERIMENT, DESIGNED TO MEASURE THE IONIZATION DUE TO ENERGETIC PARTICLES, CONSISTED OF A 17.75-CM INTEGRATING IONIZATION CHAMBER WITH A RESETTING DRIFT-TYPE ELECTROMETER. THE SYSTEM WAS MOUNTED ON A 1.2-M BOOM EXTENDING FROM THE MAIN BODY OF THE SPACECRAFT ALONG THE Y AXIS. THE CHAMBER RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 0.6 AND 12 MEV, RESPECTIVELY, AND TO 10- TO 50-KEV X RAYS. THE IONIZATION CURRENT WAS MEASURED BY A VACUUM TUBE ELECTROMETER WHOSE OUTPUT, AS A FUNCTION OF TIME, WAS AN AUTOMATICALLY RESETTING SAWTOOTH RAMP VOLTAGE BETWEEN 0 AND 5 V. DATA WERE TELEMETERED IN THREE INDEPENDENT FORMS THROUGH THREE DIGITAL WORDS AND ONE ANALOG WORD, EACH OF WHICH WAS TELEMETERED ONCE EVERY 1.152 SEC WHEN THE OGO SYSTEM WAS OPERATING AT 1 KBS. THE SAMPLING RATE LINEARLY INCREASED WITH THE TELEMETRY RATE. THIS EXPERIMENT PERFORMED WELL FROM LAUNCH THROUGH NOVEMBER 25, 1969, WHEN ALL EXPERIMENTS ABOARD OGO 1 WERE TURNED OFF.

DATA SET NAME- PLOTS OF 1-MIN AVERAGED PULSE RATES VS TIME ON MICROFILM

NSSDC ID- 64-054A-20A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/12/64 TO 06/05/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 1-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE. EACH OF THE 244 FRAMES CONTAINS DATA FOR UP TO ONE THIRD OF AN ORBIT. APPROXIMATELY 30 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 12, 1964, TO JUNE 5, 1967, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- REDUCED COUNT RATE DATA ON MAGNETIC TAPE

NSSDC ID- 64-054A-18A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 09/06/64 TO 11/25/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 35 REEL(S) OF MAGNETIC TAPE

THE DATA SET CONSISTS OF A COPY OF THE ORIGINAL REDUCED DATA ON THIRTY-FIVE 7-TRACK, IBM 7094, BINARY TAPES WRITTEN AT 800 BPI AND CONTAINING COUNT RATES ORDERED BY SOLAR ROTATION NUMBER. THE TAPES DO NOT CONTAIN ORBITAL DATA OR PULSE HEIGHT DATA. EACH TAPE HAS A 24-CHARACTER (SIX BITS/CHARACTER) HEADER RECORD FOLLOWED BY A VARIABLE NUMBER OF FILES. EACH FILE HAS A 144-CHARACTER HEADER RECORD, FOLLOWED BY A VARIABLE NUMBER OF RECORDS THAT HAVE A TOTAL LENGTH OF 3972 CHARACTERS, FOLLOWED BY A FILE TRAILER RECORD (24 CHARACTERS). A MICROFILMED INDEX OF THIS DATA SET IS ALSO AVAILABLE (64-054A-18A).

DATA SET NAME- ORIGINAL REDUCED PULSE RATES ON TAPE

NSSDC ID- 64-054A-20B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/05/64 TO 12/06/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 17 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF SEVENTEEN 7-TRACK BINARY TAPES WRITTEN AT 556 BPI ON AN IBM 7094. EACH TAPE, SUBMITTED BY THE EXPERIMENTER, IS MADE UP OF AN ARBITRARY NUMBER OF RECORDS AND COVERS AN ARBITRARY AMOUNT OF TIME. THE RECORDS ARE OF VARIABLE LENGTH RANGING FROM 21 TO 1000 46-BIT WORDS. THE FIRST 20 WORDS CONSTITUTE A HEADER THAT INDICATES, AMONG OTHER THINGS, THE RATE AT WHICH THE DATA WERE TELEMETERED, THE START AND END TIMES OF THE RECORD, THE NUMBER OF WORDS IN THE RECORD, AND WHETHER OR NOT THE RECORD IS IN EXACT TIME ORDER. EACH SUCCESSIVE SET OF THREE WORDS CONTAINS ONE 10-SEC AVERAGED PULSE RATE. THE FIRST WORD IN THE SET CONTAINS THE START TIME OF THE AVERAGE IN MSEC OF THE DAY. THE SECOND WORD CONTAINS THE ACTUAL DURATION OF THE AVERAGE (WHICH MAY BE SHORTER THAN 10 SEC BECAUSE OF NOISE FILTERING), THE NUMBER OF VOLTAGE RAMP IN THE AVERAGE, AND WHETHER THE AVERAGE IS BASED ON UNFILTERED RAMP, FILTERED RAMP, CLOCK PULSES, OR ANALOG WORDS. THE THIRD WORD GIVES THE AVERAGED PULSE RATE IN NORMALIZED PULSES PER SECOND. ALL THE RECORDS HAVE BEEN ORDERED BY START TIME OF THE RECORD, AND CONSIDERABLE OVERLAP MAY EXIST IN THE TIME COVERED BY CONSECUTIVE RECORDS.

DATA SET NAME- DIGITAL AND ANALOG COUNT RATE PLOTS ON MICROFILM

NSSDC ID- 64-054A-18B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 09/07/64 TO 11/25/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF A STANDARD SET OF DIGITAL AND ANALOG PLOTS (ON ONE ROLL OF 35-MM MICROFILM) OF THE MOST INTERESTING OGO-1 HALF-HOUR AVERAGE RATES USING A CALCOMP PLOTTER. EACH PLOT COVERS ONE SOLAR ROTATION. THESE RATES ARE OBTAINED FROM COINCIDENCES AND ANTICOINCIDENCES OF COUNTERS AS WELL AS SOME STRAIGHT COUNTER RATES.

DATA SET NAME- ATLAS OF 10- TO 50-KEV SOLAR FLARE X RAYS
ON MICROFILM

NSSDC ID- 64-054A-20C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/02/65 TO 05/28/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

AN ION CHAMBER NORMALLY USED FOR PARTICLE MEASUREMENTS ALSO RESPONDED TO BURSTS OF HARD (10 TO 50 KEV) X RAYS THAT OCCURRED DURING SOLAR FLARES. THESE SOLAR X-RAY BURSTS WERE IDENTIFIED AND SEPARATED FROM THE PARTICLE DATA. THE X-RAY DATA ARE ANALYZED DATA ON ONE REEL OF 35-MM MICROFILM AND AF COPIES OF RESEARCH REPORTS CONTAINING PLOTS OF THE EXCESS ION CHAMBER RATE VS TIME. SHORTWAVE FADEOUTS AND SOLAR RADIO BURSTS, WHICH ACCOMPANIED THE SOLAR X-RAY BURSTS, ARE ALSO INDICATED ON THE PLOTS. DATA FROM OGO 3 DATA SET 66-049A-23D ARE ALSO INCLUDED.

DATA SET NAME- PLOTS OF 1-MIN AVERAGED PULSE RATES VS L
ON MICROFILM

NSSDC ID- 64-054A-20D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/07/64 TO 06/04/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM 322 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 1-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A LOGARITHMIC SCALE VS L (IN EARTH RADII). EACH FRAME PRESENTS 2 HR OF PLAYBACK DATA FOR L VALUES BETWEEN 1 AND 8. ALSO PRESENTED ON EACH FRAME ARE THE BEGINNING AND END TIMES AND AN INDICATION OF WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. APPROXIMATELY 65 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 4, 1967, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- TABULATIONS OF HOURLY AVERAGED PULSE
RATES ON MICROFILM

NSSDC ID- 64-054A-20E

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/05/64 TO 12/06/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. THE PULSING RATE OF THE ION CHAMBER, IN NORMALIZED PULSES PER SECOND, IS GIVEN IN FOUR FORMS -- UNFILTERED PULSES, FILTERED PULSES, CLOCK PULSES, AND ANALOG WORD PULSES. EACH OF THE RATES REPRESENTS DATA AVERAGED OVER A PERIOD OF 1 HR. ALSO INCLUDED ARE THE ORIGINAL REEL, FILE, AND RECORD NUMBERS FROM WHICH THESE DATA WERE OBTAINED, AN INDICATION OF WHETHER THE DATA WERE PLAYBACK OR REAL TIME, AND THE RATE AT WHICH THE DATA WERE TELEMETERED. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 60 PERCENT OF THE PERIOD FROM SEPTEMBER 5, 1964, TO DECEMBER 6, 1967.

DATA SET NAME- TABULATIONS OF 1-MIN AVERAGED PULSE
RATES ON MICROFILM

NSSDC ID- 64-054A-20F

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/05/64 TO 12/06/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 4 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF FOUR REELS OF 16-MM MICROFILM THAT WERE GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. THE PULSING RATE OF THE ION CHAMBER, IN NORMALIZED PULSES PER SECOND, IS PRESENTED IN FOUR FORMS -- UNFILTERED PULSES, FILTERED PULSES, CLOCK PULSES, AND ANALOG WORD PULSES. EACH OF THE RATES REPRESENTS DATA AVERAGED OVER A PERIOD OF 1 MIN. ALSO INCLUDED ARE THE ORIGINAL REEL, FILE, AND RECORD NUMBERS FROM WHICH THESE DATA WERE OBTAINED, AN INDICATION OF WHETHER THE DATA WERE PLAYBACK OR REAL TIME, AND THE RATE AT WHICH THESE DATA WERE TELEMETERED. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 60 PERCENT OF THE PERIOD FROM SEPTEMBER 5, 1964, TO DECEMBER 6, 1967.

DATA SET NAME- PLOTS OF 2-MIN AVERAGED PULSE RATES VS
SPACECRAFT RADIAL DISTANCE ON MICROFILM

NSSDC ID- 64-054A-20G

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/07/64 TO 06/04/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM 441 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 (ON A LOGARITHMIC SCALE) VS SPACECRAFT RADIAL DISTANCE R (IN EARTH RADII). EACH FRAME PRESENTS APPROXIMATELY 20 HR OF PLAYBACK DATA FOR R VALUES BETWEEN 1 AND 23. ALSO PRESENTED ON EACH FRAME ARE THE BEGINNING AND END TIMES AND AN INDICATION OF WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. APPROXIMATELY 60 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 4, 1967, ARE REPRESENTED IN THIS DATA SET.

DATA SET NAME- PLOTS OF 2-MIN AVERAGED PULSE
RATES VS TIME ON MICROFILM

NSSDC ID- 64-054A-20H

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/10/64 TO 06/05/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 VS TIME. EACH OF THE 436 FRAMES CONTAINS DATA FROM APPROXIMATELY ONE THIRD OF AN ORBIT. APPROXIMATELY 40 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 10, 1964, TO JUNE 5, 1967, ARE REPRESENTED IN THIS DATA SET. SIMILAR PLOTS ON A LOGARITHMIC SCALE COVERING ABOUT 70 PERCENT OF THE ORBITS FOR THE SAME PERIOD ARE FOUND IN DATA SET 64-054A-20I.

DATA SET NAME- PLOTS OF 1-MIN AVERAGED PULSE RATES VS
TIME (NEAR PERIGEE) ON MICROFILM

NSSDC ID- 64-054A-20J

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/15/64 TO 05/27/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 1-MIN AVERAGES OF THE NUMBER OF NORMALIZED PULSES PER SECOND TIMES 1000 PLOTTED ON A REGION UP TO 2 HR ON EITHER SIDE OF PERIGEE. APPROXIMATELY 50 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 15, 1964, TO MAY 27, 1966, ARE REPRESENTED IN THIS DATA SET.

WINCKLER, OGO 1

EXPERIMENT NAME- ELECTRON SPECTROMETER

NSSDC ID- 64-054A-21

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 11/25/69

PERSONNEL

PI - J.R. WINCKLER U OF MINNESOTA
MINNEAPOLIS, MN
OI - K.A. PFITZER MCDONNELL-DOUGLAS CO
P HUNTINGTON BEACH, CA
OI - R.L. ARNOLDY U OF NEW HAMPSHIRE
DURHAM, NH

THE OBJECTIVE OF THIS EXPERIMENT WAS TO MEASURE THE ELECTRON ENERGY SPECTRUM IN THE RADIATION BELTS FOR THE ENERGY RANGE FROM 50 KEV TO 4 MEV. THE EXPERIMENT CONSISTED OF A FIVE-CHANNEL ELECTRON SPECTROMETER CONTAINING AN ANALYZING ELECTROMAGNET, A PLASTIC SCINTILLATOR CRYSTAL, A PHOTOMULTIPLIER TUBE, AND A PULSE HEIGHT ANALYZER. THE ANALYZING ELECTROMAGNET WAS USED TO DEFINE THE FIVE ENERGY CHANNELS. THE PULSE HEIGHT ANALYZER ACCEPTED ONLY PULSES CORRESPONDING TO THE PARTICULAR ENERGY CHANNEL BEING SAMPLED. IN THIS WAY, THE BACKGROUND DUE TO BREMSSTRAHLUNG AND PENETRATING PARTICLES WAS REDUCED BECAUSE ONLY THOSE BACKGROUND PULSES IN THE NARROW ENERGY BAND BEING ANALYZED WERE COUNTED. THIS SYSTEM WAS MOUNTED IN THE MAIN BODY OF THE SPACECRAFT AND LOOKED OUT IN A DIRECTION 10 DEG OFF THE SPACECRAFT Z AXIS, WITH A 15-DEG ACCEPTANCE CONE. SINCE OGO 1 WAS SPIN STABILIZED (ABOUT ITS Z AXIS) SHORTLY AFTER LAUNCH, THE ACCEPTANCE CONE WAS EFFECTIVELY INCREASED TO 35 DEG. DIRECTIONAL MEASUREMENTS OF ELECTRONS WERE MADE IN FIVE CONTIGUOUS, LOGARITHMICALLY EQUISPACED ENERGY CHANNELS BETWEEN 50 AND 4000 KEV. BACKGROUND PARTICLES WERE COUNTED BY OPERATING THE SPECTROMETER WITHOUT THE ELECTROMAGNET. THE SYSTEM SAMPLED THE FIVE SPECTRAL INTERVALS AND FIVE BACKGROUND INTERVALS EVERY 2.304 SEC WHEN THE OGO 1 SYSTEM WAS OPERATING AT 1 KBS. THE SAMPLING RATE INCREASED LINEARLY WITH THE TELEMETRY BIT RATE. DATA FROM EACH OF THE FIVE CHANNELS WERE TELEMETERED AS ONE DIGITAL WORD. THIS EXPERIMENT PERFORMED WELL FROM LAUNCH THROUGH NOVEMBER 25, 1969 WHEN ALL EXPERIMENTS ABOARD OGO 1 WERE TURNED OFF.

DATA ARE TIME ORDERED AND COVER APPROXIMATELY 70 PERCENT OF THE ORBITS IN THE PERIOD SEPTEMBER 7, 1964, TO JUNE 4, 1967. NO ADDITIONAL EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- ORIGINAL REDUCED COUNT RATES ON TAPE

NSSDC ID- 64-054A-21C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/07/64 TO 12/06/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 11 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ELEVEN 7-TRACK, 556-BPI, IBM 709A. BINARY TAPES GENERATED BY THE EXPERIMENTER. EACH TAPE CONTAINS ONE FILE OF REDUCED DATA. THE FILE IS MADE UP OF AN ARBITRARY NUMBER OF RECORDS AND COVERS AN ARBITRARY AMOUNT OF TIME. THE RECORDS ARE OF VARIABLE LENGTH - 21 TO 1000 48-BIT WORDS. THE FIRST 20 OF THESE WORDS CONSTITUTE A HEADER WHICH INDICATES, AMONG OTHER THINGS, THE RATE AT WHICH THE DATA WERE TELEMETERED, THE START AND END TIMES OF THE RECORD, AND THE NUMBER OF WORDS IN THE RECORD. THE DATA WORDS ARE GROUPED INTO 40-WORD DATA FRAMES WITHIN WHICH DATA FROM EACH OF THE FIVE SPECTROMETER CHANNELS ARE PRESENTED FOUR TIMES AND BACKGROUND COUNTS FROM EACH CHANNEL ARE PRESENTED THREE TIMES. THE REMAINING FIVE WORDS ARE SYNCHRONIZATION WORDS. THE FIRST SIX BITS OF EACH DATA WORD INDICATE THE CHANNEL AND WHETHER THE DATA ARE ANALYSIS OR BACKGROUND COUNTS. THE NEXT 12 BITS CONTAIN THE DATA IN THE FORM OF ACCUMULATED COUNTS. ONLY NONZERO DATA ARE PRESENTED. THE REMAINING 30 BITS CONTAIN THE STARTING TIME OF THE ACCUMULATION CYCLE. THE ACCUMULATED COUNTS MAY BE CONVERTED TO A FLUX VALUE BY USING CONVERSION FACTORS SUPPLIED BY THE EXPERIMENTER. ALL THE RECORDS HAVE BEEN TIME ORDERED ACCORDING TO START TIME OF THE RECORD, SO CONSIDERABLE OVERLAP MAY EXIST IN THE TIME COVERED BY CONSECUTIVE RECORDS.

DATA SET NAME- PLOTS OF 2-MIN AVERAGED COUNT RATES VS TIME (RADIATION BELTS) ON MICROFILM

NSSDC ID- 64-054A-21A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/15/64 TO 05/27/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 2-MIN AVERAGES OF THE LOGARITHM OF THE COUNT RATE VS TIME FOR EACH OF THE FIVE CHANNELS. THE COUNT RATE, WHICH HAS BEEN CORRECTED FOR BACKGROUND, MAY BE CONVERTED TO A FLUX VALUE BY USING A CONVERSION FACTOR SUPPLIED BY THE EXPERIMENTER. EACH OF THE 116 PLOTS PRESENTED CONTAINS APPROXIMATELY 3 HR OF DATA FOR THAT PORTION OF THE ORBIT IN THE VICINITY OF THE RADIATION BELTS. THESE DATA COVER APPROXIMATELY 60 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 15, 1964, TO MAY 27, 1966. NO EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- TABULATION OF 5-MIN AVERAGED COUNT RATES ON MICROFILM

NSSDC ID- 64-054A-21D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 09/07/64 TO 06/05/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 6 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF SIX REELS OF 16-MM MICROFILM THAT WERE GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUPPLIED BY THE EXPERIMENTER. DATA FOR EACH 5-MIN PERIOD FOR EACH OF THE FIVE CHANNELS INCLUDE TOTAL COUNTS, TOTAL BACKGROUND COUNTS, AVERAGE COUNT RATE, AVERAGE BACKGROUND COUNT RATE, AND AVERAGE NET COUNT RATE (AVERAGE COUNT RATE MINUS AVERAGE BACKGROUND COUNT RATE). ALSO INCLUDED ARE THE ORIGINAL REEL, FILE, AND RECORD NUMBERS FROM WHICH THESE DATA WERE OBTAINED, WHETHER THE DATA WERE PLAYBACK OR REAL TIME, AND THE RATE AT WHICH THE DATA WERE TELEMETERED. THESE DATA, WHICH ARE TIME ORDERED, COVER APPROXIMATELY 60 PERCENT OF THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 5, 1967.

DATA SET NAME- PLOTS OF COUNTS VS L ON MICROFILM

NSSDC ID- 64-054A-21E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 09/07/64 TO 06/04/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM 322 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE 15-MIN AVERAGES OF THE BACKGROUND CORRECTED COUNT RATE (PLOTTED ON A LOGARITHMIC SCALE) VS L (IN EARTH RADII) BETWEEN 1 AND 10 FOR EACH OF THE FIVE CHANNELS. ALSO PRESENTED ON EACH FRAME ARE THE BEGINNING AND END TIMES, THE ORBIT NUMBER, AND WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. THE

DATA SET NAME- PLOTS OF COUNTS VS L ON MICROFILM

NSSDC ID- 64-054A-21E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 09/07/64 TO 06/04/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM 322 PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE 2- AND 5-MIN AVERAGES OF THE BACKGROUND CORRECTED COUNT RATE ON A LOGARITHMIC SCALE VS L (IN EARTH RADII) FOR EACH OF THE FIVE CHANNELS. THE 2-MIN AVERAGES ARE PRESENTED ONLY FOR THOSE L VALUES THAT ARE LESS THAN 3, WHILE THE 5-MIN AVERAGES ARE PRESENTED ONLY FOR THOSE L VALUES GREATER THAN 3. ALSO PRESENTED ON EACH FRAME ARE THE BEGINNING AND END TIMES, ORBIT NUMBER, AND WHETHER THE DATA ARE FOR AN INBOUND (APOGEE TO PERIGEE) OR AN OUTBOUND PASS OF THE SPACECRAFT. THESE DATA, WHICH ARE TIME ORDERED, COVER

OGO 1/OGO 2

APPROXIMATELY 75 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 4, 1967. NO ADDITIONAL EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- TABULATIONS OF COUNTS VS TIME AT DISCRETE L VALUES ON MICROFILM

NSSDC ID- 64-054A-21F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 09/15/64 TO 12/05/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. TIME-ORDERED COUNT RATES, CORRECTED FOR BACKGROUND, FROM EACH OF THE FIVE CHANNELS ARE PRESENTED FOR EACH OF 12 DISCRETE L VALUES. THE L VALUES ARE IN THE RANGE 1.3 TO 2.8. ALSO PRESENTED ARE THE DATES AND THE EQUATORIAL PITCH ANGLES. THE COUNT RATES MAY BE CONVERTED TO FLUXES BY USING A CONVERSION FACTOR SUPPLIED BY THE EXPERIMENTER. THESE DATA COVER APPROXIMATELY 30 PERCENT OF THE PERIOD FROM SEPTEMBER 15, 1964, TO DECEMBER 5, 1965.

DATA SET NAME- PLOTS OF 5-MIN AVERAGED COUNT RATES VS TIME ON MICROFILM

NSSDC ID- 64-054A-21G

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/07/64 TO 06/05/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. PRESENTED ARE TIME-ORDERED 5-MIN AVERAGES OF THE LOGARITHM OF THE COUNT RATE VS TIME FOR EACH OF THE FIVE CHANNELS. THE COUNT RATE, WHICH HAS BEEN CORRECTED FOR BACKGROUND, MAY BE CONVERTED TO A FLUX VALUE BY USING A CONVERSION FACTOR SUPPLIED BY THE EXPERIMENTER. EACH OF THE 230 PLOTS PRESENTED CONTAINS DATA FROM APPROXIMATELY ONE THIRD OF AN ORBIT, WITH PERIGEE NEAR THE CENTER OF THE PLOT. THESE DATA COVER APPROXIMATELY 60 PERCENT OF THE ORBITS DURING THE PERIOD FROM SEPTEMBER 7, 1964, TO JUNE 5, 1967. NO EPHEMERIS INFORMATION IS PRESENTED.

DATA SET NAME- PLOTS OF COUNT RATES VS TIME FOR DISCRETE L VALUES ON MICROFILM

NSSDC ID- 64-054A-21H

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/00/64 TO 12/00/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS PRODUCED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER. EACH PAIR OF FRAMES PRESENTS COUNT RATES (ON A LOGARITHMIC SCALE), WHICH HAVE BEEN NORMALIZED TO AN EQUATORIAL PITCH ANGLE OF 90 DEG, VS TIME FOR EACH OF THE FIVE SPECTROMETER CHANNELS. DATA FROM CHANNELS 1, 3, AND 5 ARE PLOTTED ON ONE FRAME, AND DATA FROM CHANNELS 2 AND 4 ARE PLOTTED ON A SECOND FRAME. EACH FRAME PRESENTS DATA FOR A SPECIFIC L VALUE BETWEEN 1.3 AND 2.8. THE TIME PERIOD COVERED BY THESE DATA IS SEPTEMBER 1964 TO DECEMBER 1965, WITH EACH HALF-MONTH PERIOD INDICATED BY A TICK MARK. THESE COUNT RATES CAN BE REDUCED TO FLUX VALUES BY USING CONVERSION FACTORS SUPPLIED BY THE EXPERIMENTER.

DATA SET NAME- REDUCED L-INTERPOLATED COUNT RATES ON MAGNETIC TAPE

NSSDC ID- 64-054A-21I

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/15/64 TO 07/07/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, 18M 7094 BCD TAPE OF EVEN PARITY, GENERATED AT NSSDC AND CONTAINING TWO FILES OF REDUCED OGO 1 DATA AND THEN TWO FILES OF OGO-3 DATA (66-049A-22K). THE FIRST FILE OF THIS SET CONTAINS INNER ZONE ELECTRON DATA FOR THE RANGE $L = 1.3$ TO $L = 2.4$. THE SECOND FILE CONTAINS OUTER ZONE ELECTRON DATA FOR THE RANGE $L = 2.4$ TO $L = 7.0$. EACH FILE IS MADE UP OF AN ARBITRARY NUMBER OF RECORDS, BUT EACH RECORD IS OF A CONSTANT LENGTH OF 84 CHARACTERS. WITHIN EACH FILE THERE ARE FIVE GROUPS OF RECORDS (ONE FOR EACH DATA CHANNEL) IN WHICH THE FOLLOWING SEQUENCE IS REPEATED N TIMES (N = NUMBER OF DISCRETE L-VALUES) -- A HEADER RECORD PRECEDES A STRING OF DATA RECORDS AND IS FOLLOWED BY A TRAILER RECORD.

SPACECRAFT COMMON NAME- OGO 2

ALTERNATE NAMES- OGO-C, POGO 1
S 50, 01620

NSSDC ID- 65-081A

LAUNCH DATE- 10/14/65

WEIGHT- 520. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 02/00/68

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 10/15/65
ORBIT PERIOD- 104. MIN INCLINATION- 87.356 DEG
PERIAPSIS- 414.000 KM ALT APOAPSIS- 1510.00 KM ALT

OGO 2 WAS A LARGE OBSERVATORY INSTRUMENTED WITH 20 EXPERIMENTS DESIGNED TO MAKE SIMULTANEOUS, CORRELATIVE OBSERVATIONS OF AURORA AND AIRGLOW EMISSIONS, ENERGETIC PARTICLES, MAGNETIC FIELD VARIATIONS, IONOSPHERIC PROPERTIES, ETC., ESPECIALLY OVER THE POLAR AREAS. OGO 2 CONSISTED OF A MAIN BODY, GENERALLY PARALLELEPIPED IN FORM, TWO RECTANGULAR SOLAR PANELS, EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). IT ALSO INCLUDED SIX EXPERIMENT PACKAGES (EP) MOUNTED ON BOOMS EXTENDING GENERALLY FORE AND AFT OF THE SPACECRAFT ALONG THE Y AXIS. ANTENNA AND ATTITUDE CONTROL FIXTURES ALSO EXTENDED FROM SEPARATE AND/OR EP BOOMS. THE MAIN BODY WAS ATTITUDE-CONTROLLED BY USE OF HORIZON SCANNERS AND GAS JETS AND WAS DESIGNED TO POINT TOWARD THE EARTH (Z AXIS). THE AXIS CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS DESIGNED TO OSCILLATE IN ORDER TO REMAIN PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS ACTIVATED BY SUN SENSORS COULD ROTATE ABOUT THIS X AXIS IN ORDER TO OBTAIN MAXIMUM RADIATION FOR THE SOLAR CELLS AND CONCURRENTLY ORIENT THE SOEP PROPERLY. THE OPEP'S WERE REORIENTED ON EITHER END OF AN AXIS THAT WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE FORWARD END OF THE MAIN BODY. THESE OPEP SENSORS NORMALLY WERE MAINTAINED LOOKING FORWARD IN THE ORBITAL PLANE OF THE SATELLITE, TO MAINTAIN THIS ORIENTATION, THE OPEP AXIS COULD ROTATE OVER 90 DEG. IN ADDITION, AN ANGULAR DIFFERENCE OF OVER 90 DEG WAS POSSIBLE BETWEEN THE ORIENTATION OF THE UPPER AND LOWER OPEP PACKAGES. THE SOEP CONTAINED FOUR EXPERIMENTS, AND THE OPEP CONTAINED FIVE EXPERIMENTS. NEWTON'S PARTICLE EXPERIMENT FAILED ON LAUNCH, AND KREPLIN'S SOLAR X-RAY EXPERIMENT FAILED SHORTLY THEREAFTER. SOON AFTER ACHIEVING ORBIT, DIFFICULTIES IN MAINTAINING EARTH LOCK WITH HORIZON SCANNERS CAUSED EXHAUSTION OF ATTITUDE CONTROL GAS BY OCTOBER 23, 1965, 10 DAYS AFTER LAUNCH. AT THIS TIME, THE SPACECRAFT ENTERED A SPIN MODE (ABOUT 0.11 RPM) WITH A LARGE CONING ANGLE ABOUT THE PREVIOUSLY VERTICAL AXIS. FIVE EXPERIMENTS BECAME USELESS WHEN THE SATELLITE WENT INTO THIS SPIN MODE. SIX ADDITIONAL EXPERIMENTS WERE DEGRADED BY THIS LOSS OF ATTITUDE CONTROL. BY APRIL 1966, BOTH BATTERIES HAD FAILED, SO SUBSEQUENT OBSERVATIONS WERE LIMITED TO SUNLIT PORTIONS OF THE ORBIT. BY DECEMBER 1966, ONLY EIGHT EXPERIMENTS WERE OPERATIONAL, FIVE OF WHICH WERE NOT DEGRADED BY THE SPIN MODE OPERATION. BY APRIL 1967, THE TAPE RECORDERS HAD MALFUNCTIONED AND ONLY ONE THIRD OF THE RECORDED DATA COULD BE PROCESSED. SPACECRAFT POWER AND PERIODS OF OPERATIONAL SCHEDULING CONFLICTS CREATED SIX LARGE DATA GAPS SO THAT DATA WERE OBSERVED ON A TOTAL OF ABOUT 306 DAYS OF THE TWO-YR 18-DAY TOTAL SPAN OF OBSERVED SATELLITE DATA TO NOVEMBER 1, 1967. THE DATA GAPS WERE -- (A) OCTOBER 24, 1965 TO NOVEMBER 5, 1965, (B) DECEMBER 6, 1965 TO JANUARY 7, 1966, (C) APRIL 9, 1966 TO JUNE 21, 1966, (D) SEPTEMBER 2, 1966 TO NOVEMBER 18, 1966, (E) DECEMBER 27, 1966 TO APRIL 11, 1967, AND (F) MAY 9, 1967 TO SEPTEMBER 19, 1967. THE SPACECRAFT WAS SHUT DOWN ON NOVEMBER 1, 1967 WITH EIGHT EXPERIMENTS STILL OPERATIONAL. IT WAS

REACTIVATED FOR TWO WEEKS IN FEBRUARY 1968 TO OPERATE EXPERIMENT 5 (J. CATN).

ANDERSON, OGO 2

EXPERIMENT NAME- COSMIC-RAY IONIZATION

NSSDC ID- 65-081A-06

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 04/02/66

PERSONNEL

PI - H.R. ANDERSON RICE U
HOUSTON, TX
OI - V.H. NEHER CALIF INST OF TECH
PASADENA, CA

THIS EXPERIMENT WAS DESIGNED TO MEASURE COSMIC-RAY AND SOLAR FLARE PARTICLE INTENSITIES (PROTONS ABOVE 10 MEV, ELECTRONS ABOVE 1.0 MEV) USING AN ION CHAMBER. THE ION CHAMBER WAS MOUNTED AT THE END OF A SPACECRAFT BOOM ABOUT 2.5 M FROM THE MAIN BODY OF THE SPACECRAFT. BECAUSE THE ION CHAMBER HAD OMNIDIRECTIONAL SENSITIVITY, EXCEPT FOR NEGLIGIBLE SHADOWING BY THE SPACECRAFT, THE UNINTENDED SLOW ROLLING OF THE SPACECRAFT DID NOT ADVERSELY AFFECT THE INSTRUMENT. THE EXPERIMENT OPERATED NORMALLY FROM OCTOBER 14, 1965, TO APRIL 2, 1966. A DETAILED DESCRIPTION OF THE INSTRUMENTATION APPEARS IN H. R. ANDERSON ET AL, JGR, VOL 73, P 6285, 1968.

DATA SET NAME- MICROFILM PLOTS OF TOTAL IONIZATION RATES AND SATELLITE ALT VS INVARIANT LAT

NSSDC ID- 65-081A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/14/65 TO 04/02/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MICROFILM

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF PLOTS OF IONIZATION CHAMBER TOTAL IONIZATION RATES (ION PAIRS/SEC-CM CUBED, STP AIR) AND SATELLITE ALTITUDE (KM) VS INVARIANT LATITUDE (-90 TO +90 DEG) ON FIVE REELS OF 35-MM MICROFILM. THE CORRESPONDING MCILWAIN L PARAMETER, GEOGRAPHIC LONGITUDE, AND LOCAL TIME OF THE SATELLITE ARE INDICATED ALONG THE INVARIANT LATITUDE AXIS. THE ORBIT NUMBER AND DAY NUMBER APPEAR AT THE TOP OF EACH PLOT ALONG WITH THE UT OF THE FIRST POINT PLOTTED ON THE GRAPH AND AN INSTRUMENT-SENSITIVITY MODE INDICATOR (H FOR HIGH, L FOR LOW). THE ALTITUDE PLOTS ARE GENERATED USING THE X SYMBOL, AND THE IONIZATION PLOTS ARE GENERATED USING DOTS. THE DIRECTION OF THE SPACECRAFT IN ITS ORBIT IS INDICATED IN THE LOWER LEFT MARGIN FOR A GIVEN PLOT. E.G., 'N-S' MEANS THE SPACECRAFT WAS TRAVELING FROM THE NORTHERN HEMISPHERE TOWARD THE SOUTHERN HEMISPHERE. TIME COVERAGE WAS LESS THAN 50 PERCENT FROM INSTRUMENT TURNON (OCTOBER 14, 1965) UNTIL THE INSTRUMENT CEASED OPERATING (APRIL 2, 1966). FURTHER DESCRIPTION OF THE EXPERIMENT AND THIS DATA SET, INCLUDING A DETAILED TIME COVERAGE CHART FOR THE ENTIRE LIFETIME OF THE EXPERIMENT, APPEAR ON THE MICROFILM ALONG WITH THE DATA.

SIMPSON, OGO 2

EXPERIMENT NAME- LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT

NSSDC ID- 65-081A-07

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/01/67

PERSONNEL

PI - J.A. SIMPSON U OF CHICAGO
CHICAGO, IL
OI - E.C. STONE CALIF INST OF TECH
PASADENA, CA
OI - C.Y. FAN U OF ARIZONA
TUCSON, AZ

TWO SOLID-STATE PARTICLE TELESCOPES WERE USED TO STUDY LOW-ENERGY COSMIC-RAY PROTONS AND ALPHA PARTICLES. ONE OF THESE DETECTORS WAS A THREE-ELEMENT RANGE TELESCOPE ('VERTICAL') THAT WAS CAPABLE OF IDENTIFYING PROTONS AND ALPHA

PARTICLES (1.22 TO 39.2 MEV/NUCLEON) AND ELECTRONS (E.GT. 400 KEV). THE OTHER DETECTOR WAS A ONE-ELEMENT TELESCOPE ('HORIZONTAL') SENSITIVE TO PROTONS AND ALPHA PARTICLES IN THE ENERGY RANGE FROM 0.72 TO ABOUT 11 MEV/NUCLEON. THE VERTICAL TELESCOPE AXIS OF SYMMETRY WAS PARALLEL TO THE SPACECRAFT Z AXIS, WHICH LATER UNINTENTIONALLY BECAME THE SPIN AXIS. THE HORIZONTAL TELESCOPE SYMMETRY AXIS WAS NEARLY PARALLEL TO THE SPACECRAFT Y AXIS (PERPENDICULAR TO THE Z AXIS). PULSE HEIGHT INFORMATION WAS SENT BACK FROM THE VERTICAL TELESCOPE ALLOWING PULSE HEIGHT ANALYSES OF PROTONS, ALPHA PARTICLES, AND ELECTRONS USING A 256-CHANNEL PULSE HEIGHT ANALYZER. COUNT RATE INFORMATION WAS SENT BACK FROM BOTH TELESCOPES. THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.02 SEC TO ABOUT ONE MEASUREMENT PER 0.3 SEC DEPENDING ON THE COUNTING MODE AND THE TELEMETRY BIT RATE. THE UNINTENDED SPIN PERIOD OF THE SPACECRAFT 10 DAYS AFTER LAUNCH WAS ABOUT 10 MIN. THE EXPERIMENT WAS PERFORMING NORMALLY AT THE TIME THE SPACECRAFT SYSTEMS WERE DEACTIVATED (NOVEMBER 1, 1967). HOWEVER, THE SPINNING OF THE SPACECRAFT CAUSED DIFFICULTY IN INTERPRETING THE DATA AFTER OCTOBER 23, 1965.

DATA SET NAME- REDUCED COSMIC-RAY COUNT RATE AND ORBITAL DATA MERGED ON MAGNETIC TAPE

NSSDC ID- 65-081A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/14/65 TO 11/03/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 22 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY COUNT RATE DATA MERGED WITH ORBITAL DATA ON ABOUT 1400 MAGNETIC 'ABSTRACT' TAPES. NSSDC HOLDS COPIES OF 22 TAPES CORRESPONDING TO THE TIME PERIOD BEFORE THE SPACECRAFT WENT INTO A SPIN MODE. ALTHOUGH DATA IN THE TIME INTERVAL AFTER OCTOBER 23 ARE MORE DIFFICULT TO INTERPRET, THEY ARE AVAILABLE FROM THE EXPERIMENTER THROUGH NSSDC. THE MAJORITY OF THE DATA, INCLUDING THAT HELD AT NSSDC, ARE RECORDED ON 7-TRACK TAPES WRITTEN AT 800 BPI USING AN IBM 7094 COMPUTER, AND SOME OF THE DATA ARE RECORDED ON 9-TRACK TAPES WRITTEN AT 800 BPI USING AN IBM 360/75 COMPUTER. ALL OF THE DATA ARE IN BINARY FORMAT. THE DATA ON THE 7-TRACK TAPES ARE FORMATTED AS FOLLOWS--EACH TAPE HAS A 20-WORD FILE HEADER RECORD FOLLOWED BY A VARIABLE NUMBER OF PHYSICAL RECORDS (EACH HAVING A SIX-WORD RECORD HEADER). THERE ARE A VARIABLE NUMBER OF LOGICAL RECORDS PER PHYSICAL RECORD, SINCE THE 52-WORD ORBITAL DATA LOGICAL RECORD WAS INSERTED INTO THE STREAM OF FOUR-WORD COUNT RATE DATA LOGICAL RECORDS ONCE EVERY MINUTE IN GENERATING THIS SET OF 'ABSTRACT' TAPES. THIS INSERTION DID NOT NECESSARILY OCCUR AT THE BEGINNING OR END OF A GIVEN PHYSICAL RECORD. EACH FILE CONTAINS ABOUT 5 MIN OF DATA. THE DATA ON THE 9-TRACK TAPES ARE FORMATTED IN A SIMILAR MANNER EXCEPT THAT THE ORBITAL DATA LOGICAL RECORD LENGTH IS 98 WORDS. THE TAPES CONTAIN ALL EXPERIMENT COUNTING RATES, TIME (UT), TELESCOPE TEMPERATURES, LATITUDE, LONGITUDE, HEIGHT, SUN-EARTH-SATELLITE ANGLE, GEOMAGNETIC COORDINATES, AND VARIOUS DATA QUALITY FLAGS. THE DATA WITHIN A FILE ARE ALWAYS MONOTONICALLY INCREASING IN TIME. HOWEVER, THE SET OF FILES COMPRISING A DATA TAPE ARE NOT NECESSARILY TIME ORDERED. REDUNDANCIES IN THE DATA HAVE BEEN DELETED.

DATA SET NAME- COUNT RATE PLOTS (R VS ENERGY LOSS) AND ORBITAL DATA ON MICROFILM

NSSDC ID- 65-081A-07B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 10/14/65 TO 12/13/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 6 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF SIX 35-MM MICROFILM REELS OF REDUCED DATA IN THE FORM OF COUNT RATE (BOTH SINGLE AND COINCIDENCE RATES) PLOTS. EACH PLOT COVERS ONE OGO 2 ORBIT AND CONTAINS SEVERAL DIFFERENT COUNTING RATES AS WELL AS SATELLITE ORBIT DATA, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND EITHER SINGLE LOCAL TIME OR MAGNETIC LOCAL TIME. THROUGHOUT THE MICROFILM, THE RELEVANT SCALES ARE INCLUDED APPROXIMATELY EVERY 100 FRAMES. EACH PLOT CONTAINS THE FOLLOWING COINCIDENCE COUNT RATES FROM THE VERTICAL TELESCOPE -- V3 (PROTON AND ALPHA PARTICLE ENERGIES GREATER THAN 39.2 MEV/NUCLEON OR ELECTRON ENERGIES GREATER THAN 1 MEV), V1 NOT V3 (CORRESPONDS TO PROTON AND ALPHA PARTICLE ENERGIES FROM 1.22 TO 39.2 MEV/NUCLEON OR ELECTRONS FROM 0.4 TO 1 MEV), AND V2 NOT V3 AND V1V2 NOT V3 (BOTH OF WHICH CORRESPOND TO PROTON AND ALPHA PARTICLE ENERGIES FROM 9.32 TO 39.2 MEV/NUCLEON AND ONLY THE FORMER TO ELECTRON

OGO 2/OSO 1

ENERGIES FROM 0.7 TO 1 MEV). THE ONE HORIZONTAL TELESCOPE COUNTING RATE IN THE FORMAT CORRESPONDS TO A PROTON AND ALPHA PARTICLE ENERGY THRESHOLD OF 720 KEV/NUCLEON. THE V3 COUNT RATE PLOTTED IS AN AVERAGE RATE OBTAINED OVER FIVE READOUTS WHEREAS THE OTHER THREE RATES, AS CALCULATED FOR THESE PLOTS, HAVE A NOMINAL ACCUMULATION TIME OF 15 SEC. THE DATA SET PROVIDES A COMPACT SAMPLE OF THE DATA FROM THIS EXPERIMENT. SINCE OGO 2 TUMBLER, THE USER OF THESE DATA SHOULD CONSULT "OGO-C ORIENTATION STUDY," BY P.E. DIMOFAKIS (CAL TECH SPACE RADIATION LAB. INTERNAL REPORT NO. 9) FOR HELP IN OBTAINING THE CORRECT ATTITUDE OF THE INSTRUMENT.

WEBBER, OGO 2

EXPERIMENT NAME- GALACTIC AND SOLAR COSMIC RAY

NSSDC ID- 65-081A-08

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 10/24/65

PERSONNEL

PI - W.R. WEBBER U OF NEW HAMPSHIRE
DURHAM, NH

THIS COSMIC-RAY TELESCOPE EXPERIMENT WAS DESIGNED TO MEASURE THE DIFFERENTIAL ENERGY SPECTRA OF PROTONS, HELIUM NUCLEI, AND HEAVIER NUCLEI UP TO $Z = 10$, WITHIN THE ENERGY RANGE OF 50 TO 2000 MEV PER NUCLEON. THE TELESCOPE HAD A MAXIMUM SAMPLING RATE OF ONE COUNT PER 288 MSEC. THE TELESCOPE CONSISTED OF TWO DETECTORS, A SCINTILLATOR WITH ITS ASSOCIATED PHOTOMULTIPLIER (PM) TUBE, AND A SCINTILLATOR AND A CERENKOV ELEMENT SANDWICH WITH BOTH ELEMENTS OPTICALLY COUPLED TO THE SAME PM TUBE. A 70-NSEC COINCIDENCE CIRCUIT COUPLED THE TWO DETECTORS TO FORM THE TELESCOPE. PULSES FROM EACH DETECTOR WERE PULSE HEIGHT ANALYZED. SAMPLE PULSE HEIGHTS, THE COINCIDENCE COUNT RATE, AND THE COUNT RATE OF THE FIRST DETECTOR WERE TELEMETERED. THE NOISE LEVELS OF THE SPACECRAFT INCREASED TO SUFFICIENT AMPLITUDE TO RENDER THE SINGLES RATE DATA UNUSABLE EXCEPT DURING ECLIPSE PERIODS. ALL THE USEFUL DATA FROM THIS EXPERIMENT WERE OBTAINED BETWEEN OCTOBER 15 AND OCTOBER 24, 1965, AND ABOUT 17 PERCENT OF THE DATA OBTAINED DURING THIS PERIOD CONTAIN USEFUL INFORMATION.

DATA SET NAME- REDUCED PARTICLE COUNT RATES

NSSDC ID- 65-081A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/15/65 TO 10/24/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE REDUCED PARTICLE COUNT RATE DATA ARE CONTAINED ON ONE EXPERIMENTER GENERATED 7-TRACK, 556-BPI, BINARY MAGNETIC TAPE WRITTEN ON THE CDC 1604 COMPUTER. THE DATA ON THE TAPE ARE ORDERED BY THE ORBIT PASS, AS INDICATED BY THE MAXIMUM VALUE OF THE MCILWAIN L PARAMETER. THE DATA CONSIST OF 37-SEC AVERAGED TELESCOPE RATES AND 18-SEC AVERAGED SINGLES RATES. THESE DATA COMPRISE ALL THE USEFUL INFORMATION OBTAINED FROM THE COSMIC-RAY EXPERIMENT. THE TAPE CONTAINS NINE-BIT-WORD TELESCOPE RATES, NINE-BIT-WORD SINGLES RATES, UT, ALTITUDE, LATITUDE, LONGITUDE, MCILWAIN L, AND MAGNETIC FIELD. PLOTS OF THE COUNT RATES ARE ALSO AVAILABLE ON ONE REEL OF MICROFILM (65-081A-08B).

SPACECRAFT COMMON NAME- OSO 1

ALTERNATE NAMES- 1962 ZETA 1, S 16
OSO-A, 00255

NSSDC ID- 62-006A

LAUNCH DATE- 03/07/62 WEIGHT- 208. XG

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 05/00/64

ORBIT PARAMETERS

ORBIT TYPE- GECENTRIC EPOCH DATE- 03/07/62
ORBIT PERIOD- 96.15 MIN INCLINATION- 32.851 DEG
PERIAPSIS- 343.000 KM ALT APOAPSIS- 370.000 KM ALT

THE OBJECTIVES OF THE OSO SATELLITE SERIES WERE TO

PERFORM SOLAR PHYSICS EXPERIMENTS ABOVE THE ATMOSPHERE DURING A COMPLETE SOLAR CYCLE AND TO MAP THE CELESTIAL SPHERE FOR DIRECTION AND INTENSITY OF UV LIGHT, X RAYS, AND GAMMA RADIATION. THE OSO 1 PLATFORM CONSISTED OF A SAIL SECTION, WHICH POINTED TWO EXPERIMENTS CONTINUOUSLY TOWARD THE SUN, AND A WHEEL SECTION, WHICH SPUN ABOUT AN AXIS PERPENDICULAR TO THE POINTING DIRECTION OF THE SAIL AND CARRIED SEVEN EXPERIMENTS. ATTITUDE ADJUSTMENT WAS PERFORMED BY GAS JETS. DATA WERE SIMULTANEOUSLY RECORDED ON TAPE AND TRANSMITTED BY FM/FM TELEMETRY. A COMMAND SYSTEM PROVIDED FOR 10 GROUND-BASED COMMANDS. THE SPACECRAFT PERFORMED NORMALLY UNTIL THE SECOND ONBOARD TAPE RECORDER FAILED MAY 15, 1962. THE SPACECRAFT PROVIDED REAL-TIME DATA UNTIL MAY 1964, WHEN ITS POWER CELLS FAILED.

HESS, OSO 1

EXPERIMENT NAME- BF-3 PROPORTIONAL COUNTER NEUTRON DETECTOR

NSSDC ID- 62-006A-10

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 05/15/62

PERSONNEL

PI - W.N. HESS NOAA-ERL
BOULDER, CO

THE DETECTOR WAS COMPRISED OF A PAIR OF MODERATED BF-3 PROPORTIONAL COUNTERS WITH ONE ENRICHED IN BORON 10 AND ONE DEPLETED IN BORON 10. THE EPOXY MODERATOR WAS ABOUT 3.8 CM THICK. THE EFFICIENCY OF THE COUNTER FOR DETECTING NEUTRONS WAS ROUGHLY 2 COUNTS PER NEUTRON PER CM SQUARED AND WAS ESSENTIALLY INDEPENDENT OF ENERGY IN THE RANGE 10 KEV TO 10 MEV. THE DETECTOR WORKED WELL, BUT THE DATA ARE NOT ESPECIALLY USEFUL FOR PRODUCING INFORMATION ABOUT THE TERRESTRIAL NEUTRON FLUX BECAUSE OF THE SIGNIFICANT NUMBER OF LOCALLY PRODUCED NEUTRONS. THE INSTRUMENTATION IS NOT VERY WELL DOCUMENTED.

DATA SET NAME- COUNT RATE PLOTS ON MICROFILM

NSSDC ID- 62-006A-10A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 03/07/62 TO 07/14/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 21 REEL(S) OF MICROFILM

THIS REDUCED DATA SET CONSISTS OF 21 REELS OF 35-MM MICROFILMED PLOTS RECEIVED FROM THE EXPERIMENTER. THE GRAPHS INCLUDE ONE-ORBIT PLOTS OF ENRICHED AND DEPLETED COUNTER RATES VS UT, AND OF ENRICHED COUNTER RATES (1) VS L DURING DAY, (2) VS L DURING NIGHT, AND (3) VS ANGLE OF SUN ELEVATION. THERE ARE APPROXIMATELY TWO MEASUREMENTS PER MINUTE. THE MICROFILM ALSO INCLUDES GRAPHS OF PROTONS AND ELECTRONS FOR DATA SET 62-006A-11C AND PLOTS OF GM TIME VS SATELLITE ALTITUDE, LATITUDE, AND LONGITUDE.

SCHRADER, OSO 1

EXPERIMENT NAME- PROTON ELECTRON ANALYZER

NSSDC ID- 62-006A-11

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 07/14/63

PERSONNEL

PI - C.D. SCHRADER LAWRENCE BERKELEY LA
BERKELEY, CA
OI - J.A. WAGGONER LAWRENCE LIVERMORE L
B LIVERMORE, CA

THIS EXPERIMENT WAS DESIGNED TO DETERMINE THE TIME AND POSITION VARIATIONS OF THE DIRECTIONAL FLUXES OF PROTONS WITH ENERGIES ABOVE 2 MEV AND ELECTRONS WITH ENERGIES ABOVE 60 KEV IN THE REGION BELOW THE VAN ALLEN BELTS. THE EXPERIMENT, MOUNTED IN THE WHEEL SECTION OF THE SPACECRAFT, CONSISTED OF A STILBENE SCINTILLATOR CRYSTAL MOUNTED ON AN RCA CT151 RUGGEDIZED PHOTOMULTIPLIER TUBE. IN THIS TYPE SCINTILLATOR, PROTONS AND ELECTRONS PRODUCE FLUORESCENT PULSES OF DISTINCTLY DIFFERENT DECAY TIMES THEREBY ALLOWING THE TWO PARTICLES TO BE COUNTED SEPARATELY. THE EXPERIMENT PERFORMED WELL INITIALLY

AND TRANSMITTED USEFUL DATA UNTIL JULY 14, 1963.

DATA SET NAME- TIME-ORDERED PROTON AND ELECTRON COUNT RATES ON TAPE

NSSDC ID- 62-006A-11B

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 03/07/62 TO 05/15/62
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 4 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF FOUR 7-TRACK, 556-BPI, BCD TAPES THAT WERE GENERATED AT THE LAWRENCE RADIATION LABORATORY BY TIME ORDERING THE 11 TAPES IN DATA SET 62-006A-11A. THE TAPES CONTAIN ONE FILE PER ORBIT WITH A VARIABLE NUMBER OF PHYSICAL RECORDS PER FILE. EACH PHYSICAL RECORD IS MADE UP OF FORTY 40-CHARACTER LOGICAL RECORDS. THE 80-CHARACTER RECORDS ARE THE CARD IMAGES THAT WERE USED TO GENERATE SOME OF THE PROTON AND ELECTRON PLOTS FOUND IN DATA SET 62-006A-11C. THE DATA ARE IN THE FORM OF ELECTRON AND PROTON COUNT RATES (6.4 SEC AVERAGES) AS FUNCTIONS OF UT, B, AND L. THERE IS NO NEUTRON DATA FROM THE LRL NEUTRON DETECTOR ON THESE TAPES. EPHEMERIS INFORMATION IS PRESENTED IN THE FORM OF LATITUDE, LONGITUDE, AND ALTITUDE VS UT. THESE TAPES CONTAIN DATA FROM APPROXIMATELY 75 PERCENT OF THE ORBITS BETWEEN MARCH 7, 1962, AND MAY 15, 1962 (ORBITS 1 THROUGH 1039).

DATA SET NAME- PLOTS OF PROTON AND ELECTRON COUNT RATES ON MICROFILM

NSSDC ID- 62-006A-11C

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 03/07/62 TO 07/14/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 21 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF 21 REELS OF 35-MM MICROFILM SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS DATA FROM APPROXIMATELY ONE ORBIT. ELECTRON AND PROTON COUNT RATES, IN THE FORM OF 6.4-SEC AVERAGES, ARE PLOTTED AGAINST UT, B, L, INVARIANT LATITUDE, AND THE DIFFERENCE BETWEEN THE SPACECRAFT SPIN AXIS AND THE GEOMAGNETIC FIELD. EACH FRAME IS IDENTIFIED BY DATE AND ORBIT NUMBER. EPHEMERIS INFORMATION IS PRESENTED IN THE FORM OF PLOTS OF LATITUDE, LONGITUDE, AND ALTITUDE VS UT. THE DATA ARE TIME ORDERED AND COVER APPROXIMATELY 50 PERCENT OF THE PERIOD FROM MARCH 7, 1962, TO JULY 6, 1962 (ORBITS 1 THROUGH 1802) AND APPROXIMATELY 10 PERCENT OF THE PERIOD FROM JULY 6, 1962, TO JULY 14, 1963 (ORBITS 1803 THROUGH 7419). ALSO PRESENTED ARE DATA FROM THE UNIVERSITY OF CALIFORNIA NEUTRON DETECTOR.

SPACECRAFT COMMON NAME- OV1- 2

ALTERNATE NAMES- SATAR, 01613
ORBITING VEHICLE 1-2

NSSDC ID- 65-078A

LAUNCH DATE- 10/05/65 WEIGHT- 85. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 04/00/67

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 10/06/65
ORBIT PERIOD- 125.6 MIN INCLINATION- 144.3 DEG
PERIAPSIS- 403.000 KM ALT APOAPSIS- 3462.00 KM ALT

THIS SPACECRAFT CARRIED INSTRUMENTATION FOR THE STUDY OF ENERGETIC PARTICLE FLUXES AND SPECTRA AND THE RESULTING DOSE RATES. A MAJOR OBJECTIVE OF THE EXPERIMENT PACKAGE WAS TO OBTAIN DATA WITH WHICH TO CHECK APPROXIMATIONS MADE IN THEORETICAL DOSE CALCULATIONS. THE SPACECRAFT HAD A SLOWLY VARYING TUMBLE PERIOD OF TENS OF SECONDS. SPACECRAFT PERFORMANCE INITIALLY WAS NORMAL. HOWEVER, THE ONBOARD CLOCK AND THE TAPE RECORDER FAILED ON DECEMBER 1, 1965, AND ON JANUARY 13, 1966, RESPECTIVELY. LIMITED REAL-TIME OPERATIONS WERE CARRIED OUT UNTIL TOTAL SPACECRAFT FAILURE IN APRIL 1967.

FARLEY, OV1- 2

EXPERIMENT NAME- ELECTRON AND PROTON DETECTORS

NSSDC ID- 65-078A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 12/01/65

PERSONNEL
PI - T.A. FARLEY U OF CALIF. LA
LOS ANGELES, CA

DIRECTIONAL FLUXES OF ELECTRONS WERE MEASURED BY A CSI SCINTILLATOR ATTACHED TO AN RCA 4439 PHOTOMULTIPLIER TUBE. A PLASTIC ANTICOINCIDENCE SCINTILLATOR SURROUNDED THIS DETECTOR. THE ANODE OUTPUT YIELDED COUNT RATES OF ELECTRONS ABOVE 560 KEV. EIGHT-CHANNEL PULSE HEIGHT ANALYSIS WAS APPLIED TO THE LAST DYNODE PULSE FOR EACH APPROPRIATE INCIDENT PARTICLE. A DYNODE OUTPUT GAIN LOSS SHIFTED THE MEASURABLE ELECTRON ENERGIES UPWARD SO THAT ONLY THE LOWEST FIVE CHANNELS YIELDED USEFUL INFORMATION. THE ELECTRON ENERGY RANGE 1.2 TO 4.7 MEV WAS COVERED BY THESE FIVE CHANNELS. ALL LOCAL PITCH ANGLES WERE SAMPLED DURING EACH SPACECRAFT SPIN PERIOD. EXCEPT FOR THE DYNODE GAIN LOSS, THE DETECTOR WORKED WELL FROM LAUNCH UNTIL DECEMBER 1, 1965, WHEN THE ONBOARD CLOCK MALFUNCTIONED. TWO PLASTIC SCINTILLATORS MEASURED THE DIRECTIONAL FLUXES OF PROTONS WITH ALL LOCAL PITCH ANGLES AND IN THE ENERGY INTERVALS 10 TO 23 MEV AND 22 TO 50 MEV. THE DETECTORS FUNCTIONED NORMALLY OVER THE 18-MONTH PERIOD OF DATA TRANSMISSION ALTHOUGH DATA AND EPHEMERIS ARE AVAILABLE ONLY BETWEEN OCTOBER 5, 1965, AND DECEMBER 1, 1965. THE EXPERIMENT PACKAGE ALSO CONTAINED A FOUR-CHANNEL PROTON SPECTRUM ANALYZER THAT PRODUCED NO USEFUL INFORMATION. A COMPLETE DATA SAMPLING SEQUENCE REQUIRED 2 SEC. THIS SEQUENCE INCLUDED FOUR READINGS EACH OF THE FLUXES OF ELECTRONS ABOVE 560 KEV AND OF PROTONS BETWEEN 10 AND 23 MEV AND BETWEEN 22 AND 50 MEV AND ONE READING OF EACH ELECTRON AND PROTON PULSE HEIGHT ANALYSIS CHANNEL. THE DATA WERE TRANSMITTED OVER TELEMETRY CHANNELS 15 AND 16 (ELECTRON AND PROTON DATA, EACH TYPE IN BOTH CHANNELS).

DATA SET NAME- REDUCED PROTON AND ELECTRON COUNT RATES AND PULSE HEIGHT DATA ON TAPE

NSSDC ID- 65-078A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 10/05/65 TO 12/01/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 79 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF TWO SUBSETS OF 7-TRACK, 556-BPI, BCD MAGNETIC TAPE GENERATED BY THE EXPERIMENTER. REDUCED DATA FOR CHANNELS 15 AND 16 ARE RECORDED ON 44 AND 35 TAPES, RESPECTIVELY. EACH SUBSET IS NEARLY COMPLETELY TIME ORDERED. TAKEN TOGETHER, THE TAPES CONTAIN ELECTRON AND PROTON COUNT RATES (FOUR FOR EACH DETECTOR) AND ELECTRON AND PROTON SPECTROMETER OUTPUTS FOR EACH 2-SEC INTERVAL. DOSIMETRY AND X-RAY INFORMATION FROM OTHER EXPERIMENTS IS ALSO FOUND ON THE TAPES. NO EPHEMERIS INFORMATION IS INCLUDED, BUT THIS IS AVAILABLE AS DATA SET 65-078A-000. TIME COVERAGE RUNS FROM OCTOBER 5, 1965, TO DECEMBER 1, 1965, WITH ABOUT 25 PERCENT COMPLETENESS. A NEW SET OF TAPES, ON WHICH CHANNEL 15 AND 16 DATA AND EPHEMERIS DATA HAVE BEEN MERGED, IS AVAILABLE AS DATA SET 65-078A-02C.

DATA SET NAME- L-ORDERED PERPENDICULAR AND OMNIDIRECTIONAL ELECTRON FLUX ON MICROFILM

NSSDC ID- 65-078A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 10/05/65 TO 11/00/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF A COMPUTER LISTING ON A SINGLE REEL OF 16-MM MICROFILM. THE LISTING INCLUDES THE PERPENDICULAR AND OMNIDIRECTIONAL FLUXES OF ELECTRONS GREATER THAN 560 KEV VS COMPUTED MAGNETIC FIELD MAGNITUDE AT ABOUT 12 DISCRETE L VALUES BETWEEN 1.18 AND 1.75. THE FLUX VALUES ARE THOSE DERIVED BY THE EXPERIMENTER USING THE APPROPRIATE DATA FROM DATA SET 65-078A-02A. FILL DATA (EXTRAPOLATIONS TO EQUATOR) AND UNRELIABLE DATA (PERPENDICULAR FLUXES BELOW 50,000 PER CM SQ-STER-SEC) ARE CLEARLY INDICATED.

OV1-2/P 14/PIONEER 1

DATA SET NAME- REDUCED PARTICLE DATA MERGED WITH
EPHEMERIS DATA ON TAPE

NSSDC ID- 65-078A-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 10/05/65 TO 12/01/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 3 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF THREE 7-TRACK, 800-BPI, IBM 7094. BINARY MAGNETIC TAPES GENERATED AT NSSDC. EACH PHYSICAL RECORD CONTAINS THIRTY 32-WORD LOGICAL RECORDS. FROM THE TAPES OF CHANNELS 15 AND 16 (DATA SET 65-078A-02A). THE GOOD DATA VALUES FROM THE UCLA PARTICLE DETECTORS WERE TAKEN FOR CORRESPONDING 2-SEC TELEMETRY SEQUENCES AND WERE MERGED WITH EPHEMERIS DATA FROM DATA SET 65-078A-00D. THUS, EACH LOGICAL RECORD OF 65-078A-02C CONTAINS TIME, FOUR SUCCESSIVE COUNT RATES FOR ELECTRONS ABOVE 560 KEV AND FOR PROTONS BETWEEN 10 AND 23 MEV AND 22 AND 50 MEV, ONE COUNT RATE FOR EACH OF THE FIVE ELECTRON PULSE HEIGHT ANALYSIS CHANNELS, SPACECRAFT LATITUDE, LONGITUDE, AND ALTITUDE, AND COMPUTED VALUES OF MAGNETIC FIELD (TOTAL MAGNITUDE AND COMPONENTS), L VALUE, AND INVARIANT LATITUDE.

DATA SET NAME- PROTON FLUX LISTING ON MICROFILM

NSSDC ID- 65-078A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 11/01/65 TO 11/30/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF AN EXPERIMENTER SUPPLIED LISTING OF PERPENDICULAR AND OMNIDIRECTIONAL FLUXES OF 10- TO 23-MEV AND 22- TO 50-MEV PROTONS AND OF POWER LAW SPECTRAL PARAMETERS FOR BOTH TYPES OF FLUXES. THE DATA ARE LISTED VS θ AND VS EQUATORIAL PITCH ANGLE (EQUIVALENT) FOR 13 DISCRETE L VALUES BETWEEN 1.2 AND 2.1. THESE DATA ARE CONTAINED ON ONE REEL OF 16-MM MICROFILM THAT ALSO CONTAINS DATA SET 65-078A-02B.

SPACECRAFT COMMON NAME- P 14

ALTERNATE NAMES- EXPLORER 10, 1961 KAPPA 1
0009B

NSSDC ID- 61-010A

LAUNCH DATE- 03/25/61 WEIGHT- 79. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 03/27/61

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPOCH DATE- 03/25/61
ORBIT PERIOD- 5013. MIN	INCLINATION- 31. DEG
PERIAPSIS- 0.00000 KM ALT	APOAPSIS- 290622. KM ALT

EXPLORER 10 WAS A CYLINDRICAL, BATTERY-POWERED SPACECRAFT INSTRUMENTED WITH TWO FLUXGATE MAGNETOMETERS AND ONE RUBIDIUM VAPOR MAGNETOMETER EXTENDING FROM THE MAIN SPACECRAFT BODY. THE SATELLITE OBJECTIVE WAS TO INVESTIGATE THE MAGNETIC FIELDS AND PLASMA AS THE PROBE PASSED THROUGH THE EARTH'S MAGNETOSPHERE AND INTO CISLUNAR SPACE. THE SATELLITE WAS LAUNCHED INTO A HIGHLY ELLIPTICAL ORBIT. IT WAS SPIN STABILIZED WITH A SPIN PERIOD OF 0.548 SEC, THE DIRECTION OF ITS SPIN VECTOR WAS 71 DEG RIGHT ASCENSION AND MINUS 15 DEG DECLINATION. THE ONLY USEFUL DATA WERE TRANSMITTED REAL TIME FOR 52 HR ON THE ASCENDING PORTION OF THE FIRST ORBIT. THE DISTANCE FROM THE EARTH WHEN THE LAST BIT OF USEFUL INFORMATION WAS TRANSMITTED WAS 42.3 EARTH RADII, AND THE LOCAL TIME AT THIS POINT WAS 2200 HR. ALL TRANSMISSION CEASED SEVERAL HOURS LATER.

BRIDGE, P 14

EXPERIMENT NAME- PLASMA PROBE

NSSDC ID- 61-010A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 03/27/61

PERSONNEL

PI - H.S. BRIDGE	MASS INST OF TECH CAMBRIDGE, MA
OI - F. SCHERB	U OF WISCONSIN MADISON, WI
OI - B. ROSSI	MASS INST OF TECH CAMBRIDGE, MA

THIS EXPERIMENT CONSISTED OF A FARADAY CUP WITH FOUR GRIDS AND A COLLECTOR DESIGNED TO PROVIDE DATA ON THE DENSITY OF THE SOLAR PLASMA AND THE MAGNITUDE AND DIRECTION OF ITS BULK MOTION. PROTONS WERE MEASURED IN THE FOLLOWING ENERGY RANGES -- 0 TO 5, 0 TO 20, 0 TO 80, 0 TO 250, 0 TO 800, AND 0 TO 2300 EV. THE EXPERIMENT WAS MOUNTED ON THE SPACECRAFT SO THAT THE SYMMETRY AXIS OF THE PLASMA PROBE WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. THE FARADAY CUP HAD ITS MAXIMUM RESPONSE TO PARTICLES INCIDENT AT 0 DEG TO ITS SYMMETRY AXIS. THE RESPONSE FELL OFF RAPIDLY UNTIL THE INSTRUMENT HAD A ZERO RESPONSE TO PARTICLES COMING IN AT 63 DEG AND GREATER TO ITS NORMAL. THE EFFECTIVE AREA OF COLLECTION FOR NORMAL INCIDENCE WAS 28 SQ CM. THE INSTRUMENT HAD TWO OUTPUTS, A DC COMPONENT RELATED TO PHOTOELECTRIC EFFECTS AND THE PLASMA FLUX AND AN AC COMPONENT RELATED ONLY TO THE PLASMA FLUX. DURING EACH TELEMETRY SEQUENCE OF 148 SEC, 5 SEC WERE USED BY THE PLASMA PROBE. THESE 5-SEC INTERVALS, SUBCOMMUTATED BY AN INTERVAL PROGRAM, WERE USED TO TRANSMIT SEQUENTIALLY A MARKER SIGNAL, THE DC OUTPUT OF THE INSTRUMENT, AND THE AC OUTPUT OF THE EXPERIMENT AT ONE OF THE SIX MODULATING VOLTAGES. THUS, A COMPLETE PLASMA PROBE SEQUENCE, CONSISTING OF EIGHT TELEMETRY CYCLES, LASTED 19 MIN. 44 SEC. NO INFIGHT CALIBRATION WAS PROVIDED, AND NO ONBOARD PROCESSING WAS DONE. BECAUSE OF THE LIMITED LIFETIME OF THE SPACECRAFT BATTERY, ONLY 52 HR OF DATA WERE ACQUIRED.

DATA SET NAME- REDUCED PLASMA DATA PLOTS ON MICROFILM

NSSDC ID- 61-010A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/25/61 TO 03/27/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 3 REEL(S) OF MICROFILM

THESE REDUCED PLASMA DATA SUPPLIED BY THE EXPERIMENTER ARE AVAILABLE AS PLOTS ON THREE REELS OF 35-MM MICROFILM. THE ORDINATE ON EACH PLOT IS THE NUMBER OF THE 'TOOTH' IN WHICH THE TELEMETRY SIGNAL LAY. (THE PLASMA TELEMETRY SIGNAL CONSISTED OF A FREQUENCY SHIFT WITH A MAXIMUM RANGE OF 2000 CPS. THE DATA WERE ANALYZED WITH A 1000-TOOTH COMB FILTER, THE TEETH BEING SEPARATED BY 2 CPS. A ZERO LEVEL MUST BE DECIDED UPON AND THE NUMBER MULTIPLIED BY 2. IN ORDER TO OBTAIN THE FREQUENCY SHIFT. A CALIBRATION CURVE IS AVAILABLE TO CONVERT FROM FREQUENCY SHIFT TO CURRENT INPUT TO THE AMPLIFIER.) THERE ARE TWO PLOTS FOR EVERY 5-SEC SEGMENT OF THE PLASMA DATA. EACH PLOT IS 2 SEC LONG, AND TOGETHER, THE PLOTS REPRESENT THE BEST CONTINUOUS 4 SEC OF DATA OF THE 5-SEC SEGMENT. BEGINNING TRANSIENTS AND NOISE ARE OMITTED WHERE POSSIBLE. THERE ARE ABOUT 200 CURRENT SAMPLES ON EACH 2-SEC PLOT. AT THE BOTTOM OF EACH PLOT, ALONG WITH THE PLOT NUMBER, IS THE DATE, HOUR, MINUTE, AND SECOND OF THE FIRST POINT PLOTTED IN GRAPH 1 OF THE SET, I.E., GRAPH 2 STARTS AT 2 SEC AFTER THE TIME PRINTED. A LABEL IS INCLUDED TO INDICATE THE ENERGY LEVEL AT WHICH THE DATA WERE TAKEN. THE VERTICAL LINES ON EACH GRAPH MARK THE CLOSEST APPROACH OF THE PLASMA PROBE CUP NORMAL TO THE VEHICLE-SUN LINE. THIS APPROACH WAS DETERMINED BY USING THE OPTICAL ASPECT SENSOR AND THE SATELLITE SPIN PERIOD. THERE IS A 90 PERCENT COVERAGE FOR THE TIME PERIOD INDICATED.

SPACECRAFT COMMON NAME- PIONEER 1

ALTERNATE NAMES- 1958 ETA 1, ABLE 1
00110

NSSDC ID- 58-007A

LAUNCH DATE- 10/11/58 WEIGHT- 34. KG

PIONEER 1/PIONEER 5

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/13/58

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 10/11/58
ORBIT PERIOD- 2584. MIN INCLINATION- DEG
PERIAPSIS- 0.00000 KM ALT APOAPSIS- 121091. KM ALT

PIONEER 1, THE SECOND AND MOST SUCCESSFUL OF THREE PROJECT ABLÉ SPACE PROBES, WAS INTENDED TO STUDY THE IONIZING RADIATION, COSMIC RAYS, MAGNETIC FIELDS, AND MICROMETEORITES IN THE VICINITY OF THE EARTH AND IN LUNAR ORBIT. IT CARRIED A TV SCANNER TO PHOTOGRAPH THE MOON'S SURFACE. IT WAS A BATTERY-POWERED SPACECRAFT WITH A MAGNETIC DIPOLE FOR TV TRANSMISSION AND AN ELECTRIC DIPOLE FOR OTHER TELEMETRY TRANSMISSION AND DOPPLER INFORMATION. DUE TO A LAUNCH VEHICLE MALFUNCTION, THE CYLINDRICAL SPACECRAFT ATTAINED ONLY A BALLISTIC TRAJECTORY WITH A LOCAL TIME OF APOGEE AROUND 1300 HR. THE SPACECRAFT WAS SPIN STABILIZED AT 1.8 RPS, AND THE SPIN AXIS DIRECTION WAS APPROXIMATELY PERPENDICULAR TO THE GEOMAGNETIC MERIDIAN PLANES OF THE TRAJECTORY. THE REAL-TIME TRANSMISSION WAS OBTAINED FOR ABOUT 75 PERCENT OF THE FLIGHT, BUT THE PERCENTAGE OF DATA RECORDED FOR EACH EXPERIMENT WAS VARIABLE, EXCEPT FOR THE FIRST HOUR OF FLIGHT. THE SIGNAL TO NOISE RATIO WAS GOOD. THE SPACECRAFT REENTERED THE EARTH'S ATMOSPHERE ON OCTOBER 13, 1958, AT 0400 UT, AFTER RETURNING A SMALL QUANTITY OF USEFUL SCIENTIFIC INFORMATION.

SONETT, PIONEER 1

EXPERIMENT NAME- ION CHAMBER

NSSDC ID- 58-007A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 10/13/58

PERSONNEL
PI - C.P. SONETT U OF ARIZONA
TUCSON, AZ
OI - P.J. COLEMAN, JR. U OF CALIF, LA
LOS ANGELES, CA
OI - A. ROSEN TRW SYSTEMS GROUP
REDDWOOD BEACH, CA

THE ION CHAMBER EXPERIMENT WAS DESIGNED TO STUDY THE HIGH FLUX RADIATION SURROUNDING THE EARTH. THE INSTRUMENT WAS AN ALUMINUM-WALLED, CYLINDRICALLY SHAPED VESSEL WITH A VOLUME OF 43 CUBIC CM FILLED WITH SPECTROSCOPICALLY PURE ARGON. IT WAS MOUNTED JUST INSIDE THE CYLINDRICAL WALL OF THE SATELLITE. THE MINIMUM AREAL DENSITY THAT A PARTICLE TRAVERSED BEFORE REACHING THE SENSITIVE VOLUME OF THE CHAMBER WAS 0.45 GM/SQ CM. THE MAXIMUM WAS 20 GM/SQ CM. THE CURRENT FROM THE ION CHAMBER WAS MEASURED BY A DC ELECTROMETER AMPLIFIER WITH A RANGE OF 0.5 ROENTGENS/HR TO 127 ROENTGENS/HR. THE DUTY CYCLE OF THE INSTRUMENT CONSISTED OF 180 SEC OF IONIZATION CHAMBER OUTPUT FOLLOWED BY 20 SEC OF CALIBRATION VOLTAGE. THE CHAMBER WAS CAPABLE OF RESPONDING TO PRIMARY COSMIC RAYS AND ALSO TO THE SECONDARY MESONS, PROTONS, BETA PARTICLES, AND GAMMA RAYS THAT MAY RESULT FROM THE INTERACTION OF THE PRIMARY PARTICLES WITH THE WALLS OF THE CHAMBER AND THE MATERIAL SURROUNDING THE ION CHAMBER. THE SECONDARIES COULD INCREASE THE IONIZATION A FACTOR OF 50. ELECTRONS MUST HAVE AN ENERGY GREATER THAN 1 MEV, PROTONS GREATER THAN 5 MEV, AND ALPHAS GREATER THAN 200 MEV IN ORDER TO PENETRATE THE WALLS OF THE CHAMBER. IT WAS DISCOVERED THAT THE ION CHAMBER HAD LEAKED AND THAT THE PRESSURE DURING FLIGHT WAS 1.58 ATMOSPHERES. CONSIDERATION OF ALL OTHER ERRORS RESULTED IN A STANDARD DEVIATION AS GREAT AS 50 PERCENT FOR SOME DATA POINTS. MOST OF THE DATA WERE TRANSMITTED FROM 1000 TO 1800 UT ON OCTOBER 11, 1958, AND FROM 0800 TO 2100 UT ON OCTOBER 12, 1958. SEE ROSEN ET AL, JGR, VOL 64, P 709, 1959, FOR FURTHER DETAILS AND FOR RESULTANT DATA.

DATA SET NAME- SANBORN OSCILLOGRAMS ON MICROFILM

NSSDC ID- 58-007A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 10/11/58 TO 10/13/58
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

THESE RAW DATA CONSIST OF THE SANBORN OSCILLOGRAMS RECORDED FOR THE ENTIRE FLIGHT OF PIONEER 1. THEY WERE MADE FROM THE ANALOG MAGNETIC TAPES THAT WERE RECORDED AT THE MANCHESTER, HAWAII, AND SINGAPORE GROUND STATIONS. THE OSCILLOGRAMS ARE PLOTS OF FREQUENCY VS TIME FOR EACH TELEMETRY CHANNEL AND ARE AVAILABLE ON TWO REELS OF 35-MM MICROFILM ORDERED BY STATION AND TIME. ALSO AVAILABLE ARE THE

CALIBRATION CURVES THAT PERMIT RECOVERY OF THE RADIATION LEVELS OBSERVED FROM THE OSCILLOGRAMS. THE ION CHAMBER CHANNEL (NUMBER 1) HAD 95 PERCENT COVERAGE FROM 1000 TO 1800 UT ON OCTOBER 11, 1958, 5 PERCENT COVERAGE FOR 1800 UT ON OCTOBER 11, 1958, TO 0800 UT ON OCTOBER 12, 1958, 95 PERCENT COVERAGE FROM 0800 TO 2200 UT ON OCTOBER 12, 1958, AND 5 PERCENT COVERAGE FROM 2200 UT ON OCTOBER 12, 1958, TO 0400 UT ON OCTOBER 13, 1958.

SPACECRAFT COMMON NAME- PIONEER 5

ALTERNATE NAMES- 1960 ALPHA 1, 00027

NSSDC ID- 60-001A

LAUNCH DATE- 03/11/60 WEIGHT- 43. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 04/30/60

ORBIT PARAMETERS
ORBIT TYPE- HELIOCENTRIC EPOCH DATE- 03/11/60
ORBIT PERIOD- 311.6 DAYS INCLINATION- 3.35 DEG
PERIAPSIS- 0.7061 AU RAD APOAPSIS- 0.9931 AU RAD

PIONEER 5 (1960 ALPHA 1) WAS A SPIN-STABILIZED SPACE PROBE USED TO INVESTIGATE INTERPLANETARY SPACE BETWEEN THE ORBITS OF EARTH AND VENUS. THE SPACECRAFT MEASURED MAGNETIC FIELD PHENOMENA, SOLAR FLARE PARTICLES, AND IONIZATION IN THE INTERPLANETARY REGION. THE DIGITAL DATA WERE TRANSMITTED AT 1, 8, AND 64 BPS, DEPENDING ON THE DISTANCE OF THE SPACECRAFT FROM THE EARTH AND THE SIZE OF THE RECEIVING ANTENNA. WEIGHT LIMITATIONS ON THE SOLAR CELLS PREVENTED CONTINUOUS OPERATION OF THE TELEMETRY TRANSMITTERS. ABOUT FOUR OPERATIONS OF 25-MIN DURATION WERE SCHEDULED PER DAY WITH OCCASIONAL INCREASES DURING TIMES OF SPECIAL INTEREST. A TOTAL OF 136.9 HR OF OPERATION WAS COMPLETED, AND OVER 3 MILLION BINARY BITS OF DATA WERE RECEIVED. THE MAJOR PORTION OF THE DATA WAS RECEIVED AT THE MANCHESTER AND HAWAII TRACKING STATIONS BECAUSE THEIR ANTENNAS PROVIDED GRID RECEPTION. PIONEER 5 PERFORMED NORMALLY UNTIL APRIL 30, 1960, AFTER WHICH TELEMETRY TRANSMISSION BECAME TOO INFREQUENT FOR ANY SIGNIFICANT ADDITION TO THE DATA. THE SPACECRAFT ESTABLISHED A COMMUNICATIONS LINK WITH THE EARTH FROM A RECORD DISTANCE OF 22.5 MILLION MILES ON JUNE 26, 1960, WHICH WAS THE LAST DAY OF TRANSMISSION.

SIMPSON, PIONEER 5

EXPERIMENT NAME- PROPORTIONAL COUNTER TELESCOPE

NSSDC ID- 60-001A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/16/60

PERSONNEL
PI - J.A. SIMPSON U OF CHICAGO
CHICAGO, IL
OI - C.Y. FAN U OF ARIZONA
TUCSON, AZ
OI - P. MEYER U OF CHICAGO
CHICAGO, IL

A TRIPLE COINCIDENCE OMNIDIRECTIONAL PROPORTIONAL COUNTER TELESCOPE WAS USED TO OBSERVE TERRESTRIAL TRAPPED RADIATION AND SOLAR PARTICLES (PROTONS E.G.T. 75 MEV, ELECTRONS E.G.T. 13 MEV). MEASUREMENTS WERE OBTAINED FOR ABOUT 2 MONTHS DURING WHICH A WEEK OF QUIESCENT MAGNETIC FIELD CONDITIONS FOLLOWED BY TWO GEOMAGNETIC STORMS CLOSELY SPACED IN TIME OCCURRED. THE DATE OF TRANSMISSION OF THE LAST USEFUL INFORMATION WAS MAY 16, 1960.

DATA SET NAME- SINGLE AND TRIPLE COINCIDENCE COUNT RATES VS TIME ON MICROFILM

NSSDC ID- 60-001A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 03/11/60 TO 05/10/60
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THE DATA CONSIST OF 10 GRAPHICAL PLOTS OF TRIPLE COINCIDENCE COUNTING RATES AND SINGLE COUNTING RATES PLOTTED

PIONEER 5/PIONEER 6

VS TIME. THE DATA COVER THE PERIOD MARCH 11, 1960, TO MAY 10, 1960. ALSO INCLUDED ARE TABLES OF TRIPLE COINCIDENCE COUNTING RATES (APRIL 2, 1960, TO MAY 4, 1960). THE DATA ARE TIME ORDERED ON ONE REEL OF 35-MM MICROFILM.

DATA SET NAME- TABLES OF SINGLE AND TRIPLE COINCIDENCE COUNTS (TIME ORDERED) ON MICROFILM

NSSDC ID- 60-001A-018

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 03/11/60 TO 05/16/60
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF TABLES OF RAW SINGLE AND TRIPLE COINCIDENCE COUNTS FROM THE PROPORTIONAL COUNTER TELESCOPE. THE COUNTS ARE IN A TIME-ORDERED FORMAT COVERING THE TIME INTERVAL FROM MARCH 11, 1960, TO MAY 16, 1960. THE DATA ARE ON FIVE REELS OF 35-MM MICROFILM. ALSO INCLUDED IN THE COMPUTER-PRODUCED TABLES ARE MICROMETEORITE MEASUREMENTS, GEIGER COUNTER AND ION CHAMBER COUNTS, AND SEARCH COIL MAGNETOMETER DATA.

WINCKLER, PIONEER 5

EXPERIMENT NAME- ION CHAMBER AND GM TUBE

NSSDC ID- 60-001A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 04/29/60

PERSONNEL

PI - J.R. WINCKLER	U OF MINNESOTA MINNEAPOLIS, MN
OI - R.L. ARNDLOY	U OF NEW HAMPSHIRE DURHAM, NH
OI - R.A. HOFFMAN	NASA-GSFC GREENBELT, MD

THIS EXPERIMENT CONSISTED OF A NEHER-TYPE INTEGRATING IONIZATION CHAMBER AND AN ANTON 302 GEIGER COUNTER. THE GEIGER COUNTER WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS. DUE TO THE COMPLEX, NONUNIFORM SHIELDING OF THE DETECTORS, THE ION CHAMBER RESPONDED QUASI-OMNIDIRECTIONALLY TO PROTONS GREATER THAN ABOUT 25 MEV WHILE THE GEIGER COUNTER RESPONDED QUASI-OMNIDIRECTIONALLY TO PROTONS GREATER THAN ABOUT 35 MEV. ENERGY THRESHOLDS FOR QUASI-OMNIDIRECTIONAL RESPONSES TO ELECTRONS WERE APPROXIMATELY 1.6 AND 2.9 MEV FOR THE ION CHAMBER AND GEIGER COUNTER, RESPECTIVELY. COUNTS FROM THE GEIGER COUNTER AND PULSES FROM THE ION CHAMBER WERE ACCUMULATED IN SEPARATE REGISTERS AND TELEMETERED BY BOTH ANALOG AND DIGITAL SYSTEMS. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH MAY 17, 1960. TELEMETRY NOISE LIMITED THE TIMESPAN OF USEFUL DATA TO THE PERIOD FROM LAUNCH THROUGH APRIL 29, 1960.

DATA SET NAME- TABULATIONS OF COUNT AND PULSE RATES VS TIME ON MICROFILM

NSSDC ID- 60-001A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/11/60 TO 04/29/60
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS GENERATED FROM TABULATIONS SUBMITTED BY THE EXPERIMENTER. GM TUBE DATA INCLUDE THE VALUE OF THE GM TUBE REGISTER, THE CHANGE IN THIS REGISTER BETWEEN TWO SUCCESSIVE DATA TRANSMISSIONS, A CALCULATED COUNTING RATE, AND A COUNTING RATE CORRECTED FOR THE DEAD TIME OF THE REGISTER. DATA FROM THE ION CHAMBER INCLUDE THE VALUE OF THE ION CHAMBER REGISTER, THE CHANGE IN THIS REGISTER BETWEEN TWO SUCCESSIVE DATA TRANSMISSIONS, A CALCULATED PULSE RATE, AND NORMALIZED AND DEAD-TIME CORRECTED PULSE RATES. THE DATE, THE ON AND OFF TIMES IN UT OF THE TRANSMISSION, AND THE RECEIVING STATION ARE GIVEN FOR EACH DATA VALUE. THESE DATA, WHICH ARE TIME ORDERED AND CONTAIN NO EPHEMERIS INFORMATION, COVER APPROXIMATELY 20 PERCENT OF THE PERIOD FROM MARCH 11, 1960, TO APRIL 29, 1960.

DATA SET NAME- COMPUTER LISTING OF COUNT AND PULSE RATES VS TIME ON MICROFILM

NSSDC ID- 60-001A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/11/60 TO 05/17/60
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF TWO REELS OF 35-MM MICROFILM THAT WERE GENERATED FROM COMPUTER PRINTOUT SUBMITTED BY THE EXPERIMENTER. VALUES IN THE GM AND ION CHAMBER REGISTERS ARE GIVEN. THE EPHEMERIS INFORMATION PRESENTED INCLUDES THE SPACECRAFT RADIAL DISTANCE FROM THE EARTH AND FROM THE SUN, PERPENDICULAR DISTANCE TO THE ECLIPTIC PLANE, AND RIGHT ASCENSION AND DECLINATION. THE DATE, THE ON AND OFF TIMES (UT) OF THE TRANSMISSION, AND THE RECEIVING STATION ARE GIVEN FOR EACH DATA VALUE. INVENTORIES OF THE DATA RECEIVED FROM EACH STATION IMMEDIATELY PRECEDE THE DATA LISTING FROM EACH STATION. THESE DATA, WHICH ARE TIME ORDERED FOR EACH STATION, COVER APPROXIMATELY 20 PERCENT OF THE PERIOD FROM MARCH 11, 1960, TO MAY 17, 1960. DATA FOR THAT PORTION OF THE PERIOD AFTER APRIL 27, 1960, ARE NOISY, AND HAVE NOT BEEN INCLUDED IN THE MICROFILM.

SPACECRAFT COMMON NAME- PIONEER 6

ALTERNATE NAMES- PIONEER-A, 01841

NSSDC ID- 65-105A

LAUNCH DATE- 12/16/65

WEIGHT- 146. KG

STATUS OF OPERATION- PARTIAL

ORBIT PARAMETERS

ORBIT TYPE- HELIOCENTRIC	EPOCH DATE- 12/16/65
ORBIT PERIOD- 311.3 DAYS	INCLINATION- .1639 DEG
PERIAPSIS- .8143 AU RAD	APOAPSIS- .936 AU RAD

PIONEER 6 WAS THE FIRST IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, AND SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS ON A CONTINUING BASIS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE. ITS EXPERIMENTS STUDIED THE POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, AND THE INTERPLANETARY MAGNETIC FIELD. ITS MAIN ANTENNA WAS A HIGH-GAIN DIRECTIONAL ANTENNA. THE SPACECRAFT WAS SPIN-STABILIZED AT ABOUT 60 RPM, AND THE SPIN AXIS WAS PERPENDICULAR TO THE ECLIPTIC PLANE AND POINTED TOWARD THE SOUTH ECLIPTIC POLE. BY GROUND COMMAND, ONE OF FIVE BIT RATES, ONE OF FOUR DATA FORMATS, AND ONE OF FOUR OPERATING MODES COULD BE SELECTED. THE FIVE BIT RATES WERE 512, 256, 64, 16, AND 8 BPS. THREE OF THE FOUR DATA FORMATS CONTAINED PRIMARILY SCIENTIFIC DATA AND CONSISTED OF THIRTY-TWO 7-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS FOR USE AT THE TWO HIGHEST BIT RATES. ANOTHER WAS FOR USE AT THE THREE LOWEST BIT RATES. THE THIRD CONTAINED DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT CONTAINED MAINLY ENGINEERING DATA. THE FOUR OPERATING MODES WERE REAL TIME, TELEMETRY STORE, DUTY CYCLE STORE, AND MEMORY READOUT. IN THE REAL-TIME MODE, DATA WERE SAMPLED AND TRANSMITTED DIRECTLY (WITHOUT STORAGE) AS SPECIFIED BY THE DATA FORMAT AND BIT RATE SELECTED. IN THE TELEMETRY STORE MODE, DATA WERE STORED AND TRANSMITTED SIMULTANEOUSLY IN THE FORMAT AND AT THE BIT RATE SELECTED. IN THE DUTY CYCLE STORE MODE, A SINGLE FRAME OF SCIENTIFIC DATA WAS COLLECTED AND STORED AT A RATE OF 512 BPS. THE TIME INTERVAL BETWEEN THE COLLECTION AND STORAGE OF SUCCESSIVE FRAMES COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS UP TO 19 HR, AS LIMITED BY THE BIT STORAGE CAPACITY. IN THE MEMORY READOUT MODE, DATA WERE READ OUT AT WHATEVER BIT RATE WAS APPROPRIATE TO THE SATELLITE DISTANCE FROM THE EARTH. THE BIT RATE WAS 512 BPS FROM DECEMBER 16, 1965, TO FEBRUARY 28, 1966, 256 BPS FROM MARCH 1, 1966, TO MARCH 17, 1966, 64 BPS FROM MARCH 18, 1966, TO APRIL 13, 1966, AND 16 OR 8 BPS FOR ALL SUBSEQUENT PERIODS. THE REAL-TIME TRANSMISSION MODE WAS USED PREDOMINANTLY THROUGHOUT THE FLIGHT WHEN TRACKING STATIONS WERE AVAILABLE. BETWEEN TRACKING PERIODS, THE DUTY CYCLE STORE MODE WAS GENERALLY USED. DATA COVERAGE AMOUNTED TO ALMOST 100 PERCENT FOR THE FIRST 23 WEEKS AFTER LAUNCH. THEN THE COVERAGE DROPPED TO BETWEEN 10 AND 20 PERCENT UNTIL NOVEMBER, 1969 AT WHICH TIME THE DATA COVERAGE ROSE TO BETWEEN 20 AND 60 PERCENT. THERE HAS BEEN ALMOST NO TRACKING SINCE JULY, 1972. A LEAK IN THE ATTITUDE GAS SYSTEM PREVENTED FURTHER ATTITUDE CORRECTIONS FOLLOWING AN ADJUSTMENT MADE ON JUNE 9, 1966. HOWEVER, THE SENSORS THAT DETERMINED THE SPIN AXIS DIRECTION CONTINUED TO WORK AND INDICATED THAT THE SPIN AXIS DIRECTION REMAINED CLOSE TO NOMINAL DURING THE MAJOR PERIODS OF DATA ACQUISITION.

DATA SET NAME- COMPRESSED EPHEMERIS DATA ON MAGNETIC TAPE

NSSDC ID- 65-105A-00F

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/16/65 TO 05/16/72
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET WHICH CONTAINS COMPLETE TRAJECTORY INFORMATION WAS GENERATED AT NSSDC BY TAKING THE MOST ACCURATE INFORMATION FROM EACH EPHEMERIS TAPE PROVIDED BY JPL (DATA SET 65-105A-00E) AND ELIMINATING OVERLAP. THE DATA SET CONSISTS OF ONE 7-TRACK, IBM 7094, 800-BPI, BINARY MAGNETIC TAPE. EACH LOGICAL RECORD CONTAINS 89 WORDS, AND EACH PHYSICAL RECORD CONTAINS 20 LOGICAL RECORDS. THE FOLLOWING INFORMATION IS AVAILABLE IN INTERVALS OF ONE DAY (EXCEPT FOR PERIODS WHEN THE SPACECRAFT IS CLOSE TO THE EARTH, WHEN THE INTERVAL MAY BE SHORTER) -- (1) DATE, (2) TIME, (3) DISTANCE FROM THE EARTH TO THE PROBE, (4) DISTANCE FROM THE EARTH TO THE SUN, (5) DISTANCE FROM THE EARTH TO THE MOON, (6) DISTANCE FROM THE SUN TO THE PROBE, (7) GEOCENTRIC RIGHT ASCENSION AND DECLINATION OF PROBE, SUN, AND MOON, (8) GEOCENTRIC LATITUDE, LONGITUDE, AND ALTITUDE ABOVE THE EARTH, (9) EARTH-SUN-PROBE ANGLE, (10) EARTH-PROBE-SUN ANGLE, (11) SUN-PROBE-NEAR LIMB OF EARTH ANGLE (SUN-PROBE-EARTH ANGLE MINUS THE ANGULAR SEMI-DIAMETER OF THE EARTH WHERE THE ANGULAR SEMI-DIAMETER WOULD BE THE PROBE-CENTERED ANGLE BETWEEN EARTH LIMB AND CENTER OF EARTH), (12) MOON-EARTH-PROBE ANGLE, (13) MOON-PROBE-SUN ANGLE, (14) EARTH-PROBE-MOON ANGLE, (15) CANOPUS-PROBE-EARTH ANGLE, (16) CANOPUS-PROBE-SUN ANGLE, (17) ANGLE MADE BY THE SUN TO PROBE VECTOR AND THE ECLIPTIC PLANE OF DATE, (18) X, Y, Z COMPONENTS OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM (SUN-CENTERED SYSTEM, X AXIS IS ALONG THE SUN-TO-EARTH VECTOR, Z AXIS IS TOWARD ECLIPTIC NORTH POLE), (19) LONGITUDE OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM, (20) X, Y, Z COMPONENTS OF SPACECRAFT IN GEOCENTRIC, SELENOCENTRIC, HELIOCENTRIC VENUS-CENTERED, MARS-CENTERED, SATURN-CENTERED, AND JUPITER-CENTERED INERTIAL COORDINATE (X POINTS TO VERNAL EQUINOX, Z POINTS ALONG THE NORTH POLE VECTOR WITH THE REFERENCE PLANE BEING THE EARTH'S TRUE EQUATOR OF DATE), (21) MAGNITUDE OF THE VELOCITY VECTOR AND X, Y, Z COMPONENTS OF THE VELOCITY VECTOR IN GEOCENTRIC INERTIAL COORDINATES, (22) GEOCENTRIC INERTIAL PATH ANGLE (ANGLE MADE BY PROBE VELOCITY VECTOR AND PLANE NORMAL TO EARTH-TO-PROBE VECTOR), (23) GEOCENTRIC INERTIAL AZIMUTH ANGLE (ANGLE BETWEEN THE PLANE DEFINED BY THE EARTH-TO-PROBE VECTOR AND THE GEOCENTRIC INERTIAL VELOCITY VECTOR), (24) HELIOCENTRIC INERTIAL VELOCITY, (25) HELIOCENTRIC INERTIAL PATH ANGLE (ANGLE MADE BY THE HELIOCENTRIC VELOCITY VECTOR AND THE PLANE NORMAL TO THE SUN-TO-PROBE VECTOR), (26) CELESTIAL LONGITUDE OF PROBE (ANGULAR DISTANCE MEASURED COUNTERCLOCKWISE ALONG THE ECLIPTIC PLANE OF DATE FROM THE VERNAL EQUINOX TO THE PROJECTION OF THE SUN-PROBE VECTOR ON A PLANE AS VIEWED FROM THE ECLIPTIC NORTH POLE), (27) CELESTIAL LONGITUDE OF EARTH, (28) CELESTIAL LATITUDE OF EARTH, AND (29) VARIOUS CLOCK ANGLES AND HINGE AND SWIVEL ANGLES WHICH ARE DESCRIBED IN THE DOCUMENTATION.

BRIDGE, PIONEER 6

EXPERIMENT NAME- SOLAR WIND PLASMA FARADAY CUP

NSSDC ID- 65-105A-02

STATUS OF OPERATION- PARTIAL

PERSONNEL

PI - H.S.	BRIDGE	MASS INST OF TECH CAMBRIDGE, MA
OI - A.J.	LAZARUS	MASS INST OF TECH CAMBRIDGE, MA
OI - F.	SCHERR	U OF WISCONSIN MADISON, WI

A MULTIGRID FARADAY CUP WITH TWO SEMICIRCULAR, COPLANAR COLLECTORS WAS USED TO STUDY SOLAR WIND IONS AND ELECTRONS. THE INSTRUMENT HAD 14 CONTIGUOUS, ENERGY-PER-CHARGE (E/Q) CHANNELS BETWEEN 75 AND 9485 V FOR POSITIVE IONS AND FOUR ENERGY-PER-CHARGE CHANNELS BETWEEN 90 AND 1580 V FOR ELECTRONS. THE INSTRUMENT VIEW AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS AND PARALLEL TO THE ECLIPTIC PLANE. THE LINE SEPARATING THE TWO COLLECTORS LAY IN THE ECLIPTIC PLANE, ENABLING A ROUGH DETERMINATION OF SOLAR WIND BULK FLOW PERPENDICULAR TO THE ECLIPTIC PLANE. DURING EVERY SECOND SPACECRAFT ROTATION AND AT ONE VOLTAGE LEVEL, THE SUM OF THE CURRENTS FROM THE COLLECTORS WAS OBTAINED IN 28 CONTIGUOUS 11.25-DEG ANGULAR SECTORS (FROM -45 DEG TO 270 DEG, WITH 0 DEG BEING THE SPACECRAFT-SUN LINE). THE EIGHT MEASUREMENTS ABOUT THE SUN-EARTH LINE (-45 DEG TO +45 DEG) WERE TELEMETERED, BUT ONLY THE LARGEST MEASUREMENT IN EACH SUCCEEDING 45-DEG INTERVAL (45 DEG TO 270 DEG) WAS TELEMETERED. IN ADDITION, DURING THIS ROTATION, THE CURRENT FROM ONE OF THE COLLECTORS WAS MEASURED IN ALL TWENTY-EIGHT 11.25-DEG SECTORS, AND THE

LARGEST WAS IDENTIFIED AND TELEMETERED (BOTH MAGNITUDE AND SECTOR). A COMPLETE SET OF POSITIVE ION MEASUREMENTS AND ONE ENERGY CHANNEL OF ELECTRON MEASUREMENTS WERE COMPLETED EVERY 32 SEC. THE TIME BETWEEN EACH 32-SEC GROUP OF MEASUREMENTS VARIED WITH THE BIT RATE. FOR A MORE COMPLETE DESCRIPTION, SEE J. GEOPHYS. RES., VOL 71, 3787-3791, AUGUST 1966.

DATA SET NAME- PLOTS OF HOURLY AVERAGED SOLAR WIND PLASMA PARAMETERS ON MICROFILM

NSSDC ID- 65-105A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/16/65 TO 04/03/69
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THESE FIRST GENERATION ANALYZED DATA CONSIST OF TIME-ORDERED PLOTS OF 1-HR AVERAGES OF SOLAR WIND POSITIVE ION BULK SPEED (KM/SEC), DENSITY (NO./CUBIC CM), AND TEMPERATURE (IN 10,000 DEG K). INDIVIDUAL PLOTS CONTINUE FOR ONE SOLAR ROTATION (27 DAYS) AND ARE AVAILABLE ON ONE REEL OF 35-MM MICROFILM. DATA PLOTS FROM THE MIT EXPERIMENT ON PIONEER 7 (DATA SET 66-075A-02A) APPEAR ON THIS SAME REEL OF MICROFILM. THE PLASMA PARAMETERS WERE DERIVED BY THE EXPERIMENTER ON THE ASSUMPTION OF AN ISOTROPIC MAXWELLIAN DISTRIBUTION FUNCTION. DATA ARE AVAILABLE FROM DECEMBER 18, 1965, TO MAY 1966, WITH 95 PERCENT COVERAGE, AND FROM JUNE 1966 TO APRIL 3, 1969, WITH 20 PERCENT COVERAGE.

DATA SET NAME- 1-HR AVG SOLAR WIND DATA FROM THE EXPERIMENTS ON PIONEER 6 AND PIONEER 7

NSSDC ID- 65-105A-02C

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 12/16/65 TO 05/18/71
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 BOOK(S) OR BOUND VOLUME(S)

THE CONTENTS OF THIS NSSDC/MIT PUBLICATION WERE CREATED AT THE CENTER FOR SPACE RESEARCH, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MA. THE PUBLICATION CONTAINS A DESCRIPTION OF THE INSTRUMENT, A DESCRIPTION OF THE DATA TAKING AND ANALYSIS PROCEDURES, 27 ONE-DAY PLOTS OF 1 HR AVERAGES OF PLASMA PARAMETERS (DENSITY, TEMPERATURE, BULK SPEED, POLAR AND AZIMUTHAL ANGLES OF FLOW WITH RESPECT TO THE ECLIPTIC), AND DATA AND TRAJECTORY INFORMATION IN BOTH TABULAR AND PLOTTED FORM. THE DOCUMENT IS ON 8-1/2- BY 11-INCH PAPER, IS 1-1/2-INCH THICK, AND HAS HOLES PUNCHED IN THE MARGINS FOR INSERTION INTO A STANDARD THREE-HOLE BINDER. PIONEER 7 DATA (66-075A-02C) ARE ALSO INCLUDED IN THIS DOCUMENT.

DATA SET NAME- HOURLY AVERAGED PLASMA PARAMETERS ON BCD 7-TRACK MAGNETIC TAPE

NSSDC ID- 65-105A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/16/65 TO 05/09/71
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS MAGNETIC TAPE CONTAINS 1-HR AVERAGES OF NINE PARAMETERS FROM THE MIT SOLAR WIND EXPERIMENT. THE PARAMETERS ARE SOLAR WIND BULK SPEED, DENSITY, MOST PROBABLE THERMAL SPEED, FLUX, RATIO OF THERMAL SPEED TO BULK SPEED, TWO FLOW ANGLES, VELOCITY COMPONENT IN THE ECLIPTIC PERPENDICULAR TO THE RADIAL DIRECTION, AND VELOCITY COMPONENT PERPENDICULAR TO THE ECLIPTIC. EACH RECORD CONTAINS TIME AND THE AVERAGES, STANDARD DEVIATIONS, AND NUMBER OF POINTS IN THE AVERAGE FOR EACH PARAMETER. THE TAPE IS A 7-TRACK, 800-BPI, BCD TAPE CREATED ON AN IBM 360. THERE ARE TEN 286-CHARACTER LOGICAL RECORDS BLOCKED PER PHYSICAL RECORD.

PIONEER 6

ESHLEMAN, PIONEER 6

EXPERIMENT NAME- TWO-FREQUENCY BEACON RECEIVER

NSSDC ID- 65-105A-04

STATUS OF OPERATION- NORMAL

PERSONNEL

PI - V.R. ESHLEMAN STANFORD U
STANFORD, CA
OI - T.A. CROFT STANFORD U
STANFORD, CA
OI - R.L. LEADABRAND STANFORD RES INST
MENLO PARK, CA
OI - O.K. GARRIOTT STANFORD U
STANFORD, CA
OI - A.M. PETERSON STANFORD U
STANFORD, CA

BOTH 423.3-MHZ AND ITS 2/17 SUBHARMONIC 49.8-MHZ SIGNALS WERE TRANSMITTED FROM A 46-M STEERABLE PARABOLIC ANTENNA AT STANFORD UNIVERSITY TO THE TWO-FREQUENCY RADIO RECEIVER ON THE SPACECRAFT. THE HIGH-FREQUENCY SIGNAL SERVED AS A REFERENCE SIGNAL SINCE ITS PROPAGATION TIME WAS NOT APPRECIABLY LENGTHENED BY ELECTRONS ALONG THE PATH. THE LOW-FREQUENCY SIGNAL WAS DELAYED IN PROPORTION TO THE TOTAL ELECTRON CONTENT IN THE PROPAGATION PATH. ON THE SPACECRAFT, A PHASE-LOCKED RECEIVER COUNTED THE BEAT FREQUENCY ZERO CROSSINGS OF THE RECEIVED SIGNALS TO OBTAIN MEASUREMENTS OF PHASE-PATH DIFFERENCES. DIFFERENTIAL DELAY OF THE GROUP VELOCITY WAS ALSO OBSERVED, AND THESE VALUES WERE TELEMETERED TO THE GROUND STATION. FROM CALCULATED TOTAL ELECTRON CONTENT VALUES, THE IONOSPHERIC EFFECT (UP TO A SELECTED ALTITUDE OBTAINED FROM OTHER EXPERIMENTAL TECHNIQUES) COULD BE SUBTRACTED TO PRODUCE DATA DESCRIBING THE INTERPLANETARY ELECTRON CONTENT OF THE SOLAR WIND AND ITS VARIATIONS. FOR SIMILAR EXPERIMENTS COVERING OTHER TIME PERIODS SEE 68-100A-03, 67-123A-03, 66-075A-04, AND 67-060A-02. A MORE DETAILED DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN JOURNAL OF GEOPHYSICAL RESEARCH, VOL. 71, P. 3325-3327, AND IN RADIO SCIENCE, VOL. 6, P. 55-63.

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON CONTENT DATA ON MAGNETIC TAPE

NSSDC ID- 65-105A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/16/65 TO 07/11/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF DIGITIZED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY OF SIGNALS FROM EARTH TO THE SPACECRAFT. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE 556-BPI, 7-TRACK, 600 MAGNETIC TAPE GENERATED AT NSSDC FROM PUNCHED CARDS SUPPLIED BY THE EXPERIMENTER. THE TAPE ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 7 (66-075A-04A), 8 (67-123A-03A), AND 9 (68-100A-03A), AND MARINER 5 (67-060A-02A).

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON CONTENT DATA ON MICROFILM

NSSDC ID- 65-105A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/16/65 TO 07/11/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF DIGITIZED AND PLOTTED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY OF SIGNALS FROM EARTH TO THE SPACECRAFT. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE REEL OF 35-MM

MICROFILM GENERATED AT NSSDC FROM DATA SUPPLIED BY THE EXPERIMENTER. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEER 7 (66-075A-04B), 8 (67-123A-03B), 9 (68-100A-03B), AND MARINER 5 (67-060A-02B) AND SOLAR WIND ELECTRON DENSITY PLOTS FROM PIONEERS 6 (65-105A-04E), 7 (66-075A-04E), 8 (67-123A-03D), AND 9 (68-100A-03D).

FAN, PIONEER 6

EXPERIMENT NAME- COSMIC-RAY TELESCOPE

NSSDC ID- 65-105A-03

STATUS OF OPERATION- NORMAL

PERSONNEL

PI - C.Y. FAN U OF ARIZONA
TUCSON, AZ
OI - J.A. SIMPSON U OF CHICAGO
CHICAGO, IL
OI - J.E. LAHPORT U OF CHICAGO
CHICAGO, IL

THIS EXPERIMENT USED A CHARGED PARTICLE TELESCOPE COMPOSED OF FOUR SILICON SOLID-STATE DETECTORS TO STUDY THE ANISOTROPY AND FLUCTUATIONS OF SOLAR PROTONS AND ALPHA PARTICLES. THE PROTON ENERGY RANGES SAMPLED WERE 0.6 TO 13.9 MEV, 13.9 TO 73.2 MEV, 73.2 TO 175 MEV, AND E.G.T. 175 MEV (CORRESPONDING TO DETECTOR COINCIDENCES D1N0T02N0T04, D1D2N0T03N0T04, D1D2D3N0T04, AND NOTD102D3N0T04). THE ALPHA PARTICLE ENERGY RANGES SAMPLED WERE 2.4 TO 55.6 MEV, 55.6 TO 293 MEV, AND E.G.T. 293 MEV (CORRESPONDING TO THE FIRST THREE DETECTOR COINCIDENCES GIVEN ABOVE). THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.4 SEC TO ABOUT ONE MEASUREMENT PER 28 SEC DEPENDING ON THE TELEMETRY BIT RATE. THE DETECTOR WAS MOUNTED SO THAT IT MADE A 360-DEG SCAN IN THE ECLIPTIC PLANE ABOUT ONCE PER SECOND. PULSE HEIGHT ANALYSIS OF DETECTOR D1 OUTPUT (128 CHANNEL) AND D3 OUTPUT (32 CHANNEL) WAS ACCOMPLISHED FOR THE LAST EVENT PRIOR TO EACH TELEMETRY READOUT FOR THE EXPERIMENT. THE D3 DETECTOR FAILED ON OCTOBER 22, 1967. THE D4 DETECTOR PERFORMED INTERMITTENTLY UP TO LATE 1969. FOR FURTHER DETAILS, SEE FAN ET AL, JGR, VOL 73, P 1555, 1968.

DATA SET NAME- REDUCED COUNT RATE AND PULSE HEIGHT ANALYZER DATA ON MAGNETIC TAPE

NSSDC ID- 65-105A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 12/16/65 TO 12/30/70
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 10 REEL(S) OF MAGNETIC TAPE

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF PROTON AND ALPHA PARTICLE COUNT AND PULSE HEIGHT ANALYZER ACCUMULATOR READINGS IN A TIME-ORDERED FORMAT ON 7-TRACK, BINARY, IBM-COMPATIBLE MAGNETIC TAPES WRITTEN AT 800 EPI. THE TIME RESOLUTION FOR THE COUNT ACCUMULATOR DATA RANGED FROM ABOUT ONE MEASUREMENT PER 0.4 TO 28 SEC DEPENDING ON THE SPACECRAFT TELEMETRY RATE. EACH PHYSICAL RECORD CONSISTS OF 500 LOGICAL RECORDS OF 12 BYTES EACH. THE LOGICAL RECORDS ARE OF TWO TYPES - HEADER RECORDS AND DATA RECORDS. A GIVEN HEADER RECORD IS FOLLOWED BY FROM 1 TO 64 DATA RECORDS OF THE SAME SPACECRAFT SUBCOM SEQUENCE. EACH TAPE TERMINATES WITH AN EOD FLAG IN THE LAST GOOD DATA RECORD. EACH HEADER RECORD INCLUDES VARIOUS SPACECRAFT PARAMETERS, SPIN RATE, TELEMETRY BIT RATE, AND OTHER HOUSEKEEPING PARAMETERS. EACH DATA RECORD INCLUDES TIME, PULSE HEIGHT ANALYZER OUTPUT (D1 AND D3 ELEMENTS OF THE COSMIC-RAY TELESCOPE), FOUR TELESCOPE COINCIDENCE COUNT RATES, AND DATA QUALITY INFORMATION. THE DATA ARE UNCORRECTED BUT HAVE BEEN EDITED TO THE EXTENT THAT DOUBTFUL INFORMATION HAS BEEN FLAGGED AND UNUSABLE DATA DELETED.

DATA SET NAME- COUNT RATE PLOTS AND TRAJECTORY PLOT ON MICROFILM

NSSDC ID- 65-105A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

PIONEER 6

TIME PERIOD COVERED- 12/16/65 TO 12/26/68
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THE DATA SET IS CONTAINED ON 16-MM MICROFILM AND INCLUDES (1) A PLOT OF THE PIONEER 6 TRAJECTORY IN HELIOCENTRIC SOLAR ECLIPTIC COORDINATES COVERING THE TIME INTERVAL FROM DAY 350 OF 1965 (DECEMBER 16, 1965) TO DAY 70 OF 1970 (MARCH 11, 1970) AND (2) COUNT RATE PLOTS (COUNTS/SEC VS DAY NUMBER) PRODUCED ON A CALCOMP PLOTTER FOR 27-DAY INTERVALS FOR THE TELESCOPE COINCIDENCE COMBINATIONS THAT CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.6 TO 13.9 MEV, 13.9 TO 73.2 MEV, 73.2 TO 175 MEV, AND E.G.T. 175 MEV. THE COUNT RATE DATA, WHICH ARE A COMPOSITE OF REAL-TIME DATA AND DUTY-CYCLE-STORAGE DATA, COVER THE TIME INTERVAL FROM DECEMBER 16, 1965, TO DECEMBER 26, 1968.

MCCRACKEN, PIONEER 6

EXPERIMENT NAME- COSMIC-RAY ANISOTROPY

NSSDC ID- 65-105A-05

STATUS OF OPERATION- PARTIAL

PERSONNEL

PI - K.G. MCCracken	U OF ADELAIDE
	ADELAIDE, AUSTRALIA
OI - W.C. BARTLEY	NATL ACADEMY OF SCI
	WASHINGTON, DC
OI - R.U. RAO	PHYSICAL RESEARCH LAB
	AHMADABAD, INDIA

THIS EXPERIMENT WAS DESIGNED PRIMARILY TO MEASURE THE DIRECTIONAL CHARACTERISTICS OF GALACTIC AND SOLAR COSMIC-RAY FLUXES. THE PARTICLE DETECTOR WAS A CSI (TL) SCINTILLATOR CRYSTAL THAT WAS SET INTO AN ANTICOINCIDENCE PLASTIC SCINTILLATOR COLLIMATOR CUP. SEPARATE PHOTOMULTIPLIER TUBES VIEWED THE TWO SCINTILLATORS. PULSES FROM THE CSI CRYSTAL UNACCOMPANIED BY PULSES FROM THE PLASTIC SCINTILLATOR WERE SORTED BY A THREE-WINDOW PULSE HEIGHT ANALYZER. THE WINDOWS CORRESPONDING TO ENERGY DEPOSITIONS OF 7.4 TO 44.0, 44.0 TO 77.1, AND 123.8 TO 303.8 MEV. COUNTS IN THE TWO LOWER ENERGY WINDOWS WERE DUE MAINLY TO PROTONS WITH THE WINDOW ENERGIES, WHILE ONLY PARTICLES OF Z GREATER THAN OR EQUAL TO 2 CONTRIBUTED TO THE HIGHEST ENERGY WINDOW COUNT RATE. (PROTONS ABOVE 90 MEV GAVE ANTICOINCIDENCE PULSES.) FOR EACH ENERGY WINDOW, COUNTS WERE SEPARATELY ACCUMULATED IN EACH OF FOUR ANGULAR SECTORS AS THE SPACECRAFT SPUN. EACH ANGULAR SECTOR WAS NORMALLY 89.5 DEG IN WIDTH, WITH THE SUN IN THE MIDDLE OF ONE SECTOR. HOWEVER, WHEN LARGE FLUXES WERE ENCOUNTERED, EACH ANGULAR SECTOR WAS REDUCED TO 11.2 DEG, WITH THE SUN NEAR THE MIDPOINT BETWEEN TWO SECTORS. A SPIN-INTEGRATED (ISOTROPIC) MODE, IN WHICH ALL PARTICLES DEPOSITING 7.4 MEV IN THE CSI CRYSTAL (NO ANTICOINCIDENCE REQUIREMENT) WERE COUNTED, WAS ALSO USED. ACCUMULATION TIMES FOR EACH OF THE 12 DIRECTIONAL MODES AND FOR THE OMNIDIRECTIONAL MODE VARIED BETWEEN 14 SEC AND 112 SEC (SPACECRAFT SPIN PERIOD WAS ABOUT 1 SEC) DEPENDING ON THE TELEMETRY BIT RATE. SEE THE SPACECRAFT BRIEF DESCRIPTION (65-105A) FOR INFORMATION ON PERCENT TIME COVERAGE VS TIME. SEE BARTLEY ET AL., REV. SCI. INSTRUM., 38, PAGE 266, 1967, FOR A MORE DETAILED EXPERIMENT DESCRIPTION.

DATA SET NAME- COUNT RATE LISTINGS ON MICROFILM

NSSDC ID- 65-105A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/16/65 TO 02/06/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF A MICROFILMED COPY, GENERATED AT NSSDC, OF A HARDCOPY DATA LISTING SUPPLIED BY THE EXPERIMENTER. EACH FRAME CONSISTS OF DATA FOR 1 DAY. DATA PRESENTED INCLUDE HOURLY AVERAGED COUNT RATES FOR EACH OF FOUR ANGULAR SECTORS AND EACH OF THREE ENERGY WINDOWS. FOR THE OMNIDIRECTIONAL INTEGRAL-ENERGY MODE, AND FOR THE ESTIMATED GALACTIC COMPONENT OF THIS MODE, HOURLY AVERAGED, OMNIDIRECTIONAL (I.E., SUMMED OVER SECTOR COUNTS), ENERGY-WINDOW COUNT RATES ARE PRESENTED, AS ARE MEASURES OF THE AMOUNT OF FINER TIME SCALE DATA CONTRIBUTING TO EACH HOURLY AVERAGE. DAILY AVERAGES OF ALL THE COUNT RATES ARE GIVEN, AND 3-, 6-, AND 12-HR AVERAGES ARE GIVEN FOR THE LOWEST ENERGY WINDOW OMNIDIRECTIONAL MODE, FOR THE INTEGRAL-ENERGY OMNIDIRECTIONAL MODE, AND FOR THE ESTIMATED GALACTIC COMPONENT OF THIS MODE. DAILY MEASURES OF TEMPORAL PERCENT COVERAGES ARE ALSO GIVEN WITH CONSIDERABLE VARIATION (FROM 0 TO 100) IN THE PERCENTAGES. DAYS FOR WHICH NO DATA EXIST ARE NOT GIVEN IN THE

MICROFILM. THE DATA ARE CONTAINED ON ONE REEL OF 35-MM MICROFILM THAT ALSO CONTAINS DATA SET 65-105A-05B.

DATA SET NAME- COUNT RATE PLOTS ON MICROFILM

NSSDC ID- 65-105A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/16/65 TO 01/25/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONSISTS OF A MICROFILMED COPY, GENERATED AT NSSDC, OF HARDCOPY COUNT RATE PLOTS SUPPLIED BY THE EXPERIMENTER. EACH FRAME CONSISTS OF DATA FOR 7 DAYS. HOURLY AVERAGED COUNT RATES FOR THE OMNIDIRECTIONAL INTEGRAL-ENERGY AND ENERGY-WINDOW MODES ARE PRESENTED, AS ARE RELATIVE COUNT RATES FROM THE DEEP RIVER NEUTRON MONITOR. THE DECREASING PERCENT COVERAGE WITH TIME IS READILY APPARENT. THIS DATA SET IS CONTAINED ON ONE REEL OF 35-MM MICROFILM THAT ALSO CONTAINS DATA SET 65-105A-05A.

WOLFE, PIONEER 6

EXPERIMENT NAME- ELECTROSTATIC ANALYZER

NSSDC ID- 65-105A-06

STATUS OF OPERATION- OPERATIONAL OFF
DATE LAST USABLE DATA RECORDED- 07/30/72

PERSONNEL

PI - J.H. WOLFE	NASA-ARC
	HOFFETT FIELD, CA

A QUADRISPHERICAL ELECTROSTATIC ANALYZER WITH EIGHT CONTIGUOUS CURRENT COLLECTORS WAS USED TO STUDY THE DIRECTIONAL INTENSITY OF ELECTRONS AND POSITIVE IONS IN THE SOLAR WIND. IONS WERE DETECTED IN 16 LOGARITHMICALLY EQUISPACED ENERGY-PER-CHARGE (E/Q) STEPS FROM 200 TO 10,000 V. THERE WAS AN ELECTRON MODE OF OPERATION IN WHICH ELECTRONS WERE MEASURED IN EIGHT LOGARITHMICALLY EQUISPACED E/Q STEPS RANGING FROM 1 TO 500 V. THE EIGHT COLLECTORS MEASURED PARTICLES INCIDENT FROM EIGHT DIFFERENT CONTIGUOUS ANGULAR INTERVALS RELATIVE TO THE SPACECRAFT EQUATORIAL PLANE (SAME AS THE ECLIPTIC PLANE). THERE WERE FOUR 15-DEG INTERVALS, TWO 20-DEG INTERVALS, AND TWO 30-DEG INTERVALS. AS THE SPACECRAFT WAS SPINNING, FLUXES WERE MEASURED IN 15 AZIMUTHAL ANGULAR SECTORS. EIGHT OF THESE SECTORS WERE 5-5/8 DEG WIDE, WERE CONTIGUOUS, AND BRACKETED THE SOLAR DIRECTION. THE REMAINING SEVEN SECTORS WERE 45 DEG WIDE. THREE DIFFERENT MODES OF DATA COLLECTION WERE USED. AT THE HIGHEST BIT RATE (512 BPS), THE FULL SCAN MODE WAS ALTERNATED WITH THE MAXIMUM FLUX MODE AT EACH E/Q STEP. IN THE FULL SCAN MODE, THE MAXIMUM FLUX OBSERVED IN EACH OF THE 15 AZIMUTHAL SECTORS AS THE SPACECRAFT ROTATED WAS RECORDED FOR A GIVEN SINGLE COLLECTOR AT A GIVEN E/Q STEP. DURING 24 SUCCESSIVE OPERATIONS OF THE FULL SCAN MODE (48 SPACECRAFT REVOLUTIONS), THE 16 ION E/Q STEPS AND EIGHT ELECTRON E/Q STEPS WERE EXERCISED FOR A GIVEN COLLECTOR. DURING EIGHT SUCCESSIVE SUCH PERIODS, EACH OF THE EIGHT COLLECTORS WAS EXERCISED. THE FULL CYCLE OF FULL SCAN MODE DATA REQUIRED 400 SPACECRAFT REVOLUTIONS (ABOUT 400 SEC). SUCH CYCLES WERE REPEATED WITHOUT INTERRUPTION AT THE HIGH BIT RATE. IN THE MAXIMUM FLUX MODE, FOR THE E/Q STEP USED IN THE PRECEDING REVOLUTION OF FULL SCAN MODE OPERATION, ALL COLLECTORS WERE OBSERVED FOR ONE REVOLUTION, AND THE MAXIMUM FLUX OBSERVED WAS REPORTED ALONG WITH THE NUMBER OF THE COLLECTOR THAT OBSERVED IT AND THE ANGULAR DIRECTION (2-13/16-DEG RESOLUTION) OF THE OBSERVATION. AT THE NEXT HIGHEST BIT RATE (256 BPS), THE SHORT SCAN MODE WAS ALTERNATED EVERY SPACECRAFT REVOLUTION WITH THE MAXIMUM FLUX MODE. THE SHORT SCAN MODE WAS THE SAME AS THE FULL SCAN MODE EXCEPT THAT ONLY THE PEAK FLUX IN EACH OF THE EIGHT 5-5/8-DEG-WIDE AZIMUTHAL SECTORS WAS RECORDED. THUS, THIS CYCLE ALSO TOOK 400 SPACECRAFT REVOLUTIONS. AT THE LOW BIT RATES (64, 16, AND 8 BPS), THE MAXIMUM FLUX MODE ALONE WAS USED. THUS, NO AZIMUTHAL DISTRIBUTIONS WERE MEASURED. AT THE LOW BIT RATES, IT TOOK 32 SEC FOR A COMPLETE SET OF ION MEASUREMENTS AND 16 SEC FOR A COMPLETE SET OF ELECTRON MEASUREMENTS. AT 64 BPS, THE ION AND ELECTRON MEASUREMENTS WERE TAKEN AND TELEMETERED EVERY 84 SEC. AT 16 BPS, THEY WERE TAKEN AND TELEMETERED EVERY 336 SEC. AT 8 BPS, THEY WERE TAKEN AND TELEMETERED EVERY 672 SEC.

PIONEER 6/RELAY 1

DATA SET NAME- PLOTS OF ANALYZED PLASMA PARAMETERS ON MICROFILM

NSSDC ID- 65-105A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/16/65 TO 11/12/72
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 22 REEL(S) OF MICROFILM

THESE ANALYZED DATA WERE SUPPLIED BY THE EXPERIMENTER AND CONSIST OF TIME-ORDERED PLOTS OF THE FOLLOWING SOLAR WIND PARAMETERS -- (1) PROTON NUMBER DENSITY (PROTONS/CUBIC CM), (2) AZIMUTH (SOLAR ECLIPTIC LONGITUDE) OF THE PEAK PARTICLE FLUX FOR IONS (DEG), (3) BULK VELOCITY (KM/SEC), (4) POLAR ANGLE (SOLAR ECLIPTIC LATITUDE) OF THE PEAK PARTICLE FLUX (DEG), (5) PROTON TEMPERATURE AND HELIUM TEMPERATURE (DEG), (6) HELIUM/HYDROGEN RATIO (NUMBER OF HELIUM IONS/CUBIC CM/NUMBER OF PROTONS/CUBIC CM), (7) ELECTRON TEMPERATURE (DEG K), AND (8) TWO INDICATORS OF THE ANISOTROPY IN THE SOLAR PLASMA ION TEMPERATURE DISTRIBUTION. THE EXPERIMENTER GIVES THE FOLLOWING INDICATORS OF ACCURACY -- (1) BULK VELOCITY, GOOD TO 10 PERCENT, (2) DIRECTION, GOOD TO A FEW DEGREES, AND (3) TEMPERATURE AND DENSITY, COULD BE OFF BY AS MUCH AS 200 PERCENT. THE PLASMA PARAMETERS WERE DERIVED BY THE EXPERIMENTER BASED ON THE ASSUMPTION OF AN ISOTROPIC MAXWELLIAN DISTRIBUTION FUNCTION (IN THE FRAME MOVING WITH THE BULK SOLAR WIND VELOCITY). DATA ARE AVAILABLE FROM DECEMBER 16, 1965, TO FEBRUARY 1966 WITH A 95 PERCENT COVERAGE, FROM MARCH 1966 TO MAY 1966 WITH A 50 PERCENT COVERAGE, FROM JUNE 1966 TO OCTOBER 27, 1966, WITH A 10 PERCENT COVERAGE, AND AFTER OCTOBER 1966 WITH VERY LIMITED COVERAGE.

DATA SET NAME- PUBLISHED PRELIMINARY SOLAR WIND PARAMETERS

NSSDC ID- 65-105A-06B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 12/16/65 TO 08/17/74
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 70 BOOK(S) OR BOUND VOLUME(S)

THIS DATA SET CONSISTS OF PRELIMINARY SOLAR WIND PARAMETERS PRESENTED IN THE MONTHLY PUBLICATION 'SOLAR-GEOPHYSICAL DATA' ISSUED BY THE NOAA-ENVIRONMENTAL RESEARCH LABORATORIES. THESE PARAMETERS ARE DETERMINED BY MEASUREMENTS ON THE PIONEER 6 AND 7 SPACE PROBES. THE INFORMATION GIVEN CONSISTS OF DATE, TIME, SPACECRAFT, PASS NUMBER, BULK VELOCITY, AND COROTATION DELAY TIME. THE BULK VELOCITY IS ACCURATE TO 10 PERCENT. THE COROTATION DELAY TIME IS THE NUMBER OF DAYS BETWEEN THE OBSERVATION AT THE SPACECRAFT AND THE SUBSEQUENT OBSERVATION AT THE EARTH OF THE COROTATING INTERPLANETARY MAGNETIC FLUX TUBE (ASSUMING THAT THE SOLAR WIND SPEED REPORTED REMAINS CONSTANT). TYPICALLY, THERE IS ONE VELOCITY VALUE GIVEN FOR EACH SATELLITE PER DAY. ON ABOUT 30 PERCENT OF THE DAYS, NO DATA ARE GIVEN. THERE IS A 1-MONTH LAG BETWEEN THE TIME THE DATA ARE ACQUIRED AND THE TIME THE DATA ARE PUBLISHED.

DATA SET NAME- HOURLY AVERAGED PLASMA PARAMETERS

NSSDC ID- 65-105A-06C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/18/65 TO 03/04/66
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MAGNETIC TAPE

THESE ANALYZED DATA WERE SUPPLIED BY THE EXPERIMENTER AND CONSIST OF TIME-ORDERED HOURLY AVERAGES OF THE FOLLOWING SOLAR WIND PARAMETERS - THE ALPHA/PROTON NUMBER DENSITY RATIO, THE PROTON NUMBER DENSITY, THE ALPHA PARTICLE TEMPERATURE (DEG K), THE PROTON TEMPERATURE (DEG K), THE BULK VELOCITY (KM/SEC), THE AZIMUTHAL ANGLE (SOLAR ECLIPTIC LONGITUDE) OF THE PEAK PARTICLE FLUX (DEG), AND THE POLAR ANGLE (SOLAR ECLIPTIC LATITUDE) OF THE PEAK PARTICLE FLUX (DEG). THE ABOVE PLASMA PARAMETERS ARE GOOD TO 10 PERCENT. THE DATA WERE DERIVED BY THE EXPERIMENTER BASED ON THE ASSUMPTION OF AN ISOTROPIC MAXWELLIAN DISTRIBUTION FUNCTION (IN THE FRAME MOVING WITH THE BULK SOLAR WIND VELOCITY). THE DATA ARE CONTAINED ON TWO 9-TRACK, IBM 360, BINARY MAGNETIC TAPES WRITTEN AT A DENSITY OF 800 OPI. THEY WERE WRITTEN WITH VARIABLE LENGTH UNBLOCKED RECORDS. THE DATA CONSIST OF ALL THE

HIGH BIT RATE DATA AND HAVE A 90 PERCENT COVERAGE OVER THE PERIOD INDICATED. A MICROFILMED COMPUTER PRINTOUT OF THESE TAPES IS AVAILABLE AT NSSDC AS 65-105A-06D.

SPACECRAFT COMMON NAME- RELAY 1

ALTERNATE NAMES- 1962 BETA URSILON 1, A 15
00503, RELAY A

NSSDC ID- 62-068A

LAUNCH DATE- 12/13/62 WEIGHT- 170. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 02/10/65

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPOCH DATE- 12/13/62
ORBIT PERIOD- 185.1 MIN	INCLINATION- 47.48 DEG
PERIAPSIS- 1232.00 KM ALT	APOAPSIS- 8439.00 KM ALT

RELAY 1 WAS PRINCIPALLY A COMMUNICATIONS SATELLITE. INCLUDED IN ITS PAYLOAD WERE RADIATION EXPERIMENTS DESIGNED TO MAP THE EARTH'S RADIATION BELTS. THE SPIN-STABILIZED SPACECRAFT HAD AN INITIAL SPIN RATE OF 167.3 RPM AND AN INITIAL SPIN AXIS ORIENTATION WITH A DECLINATION OF -66.3 DEG AND A RIGHT ASCENSION OF -56 DEG. SHORTLY AFTER LAUNCH, TWO BASIC PROBLEMS EVOLVED. ONE WAS THE SATELLITE'S RESPONSE TO SPURIOUS COMMANDS, AND THE OTHER WAS THE LEAKAGE OF A HIGH-POWER REGULATOR. THIS LEAKAGE CAUSED THE FIRST 2 WEEKS OF SATELLITE OPERATION TO BE USELESS. AFTER THIS PERIOD, SATELLITE OPERATION RETURNED TO NORMAL. THE SATELLITE CARRIED ONE TRANSMITTER FOR TRACKING AND ONE FOR TELEMETRY. THE TELEMETRY SYSTEM WAS PCM AT 1152 BPS. EACH 128 WORDS PER TELEMETRY FRAME (OF 1 SEC) USED 113 WORDS FOR THE PARTICLE EXPERIMENT. THE LEAKAGE PROBLEM CAUSED THE SPACECRAFT TO REVERT TO A LOW VOLTAGE STATE EARLY IN 1965. SPORADIC TRANSMISSION OCCURRED UNTIL FEBRUARY 10, 1965, AFTER WHICH NO USABLE SCIENTIFIC DATA WERE OBTAINED.

BROWN, RELAY 1

EXPERIMENT NAME- SOLID-STATE ION CHAMBER ELECTRON AND PROTON DETECTOR

NSSDC ID- 62-068A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 02/10/65

PERSONNEL

PI - W.L. BROWN BELL TELEPHONE LAB
MURRAY HILL, NJ

TWO SILICON PHOSPHOROUS-DIFFUSED DIODES WERE USED AS SMALL SOLID-STATE IONIZATION CHAMBERS TO MAP THE EARTH'S RADIATION ENVIRONMENT. COUNTS WERE ACCUMULATED ONLY WHEN THE DETECTORS LOOKED WITHIN 10 DEG OF THE LOCAL MAGNETIC FIELD. THE DIODE USED TO DETECT PROTONS WAS MOUNTED BEHIND A 25-DEG HALF-ANGLE APERTURE COLLIMATOR WITH AN ENTRANCE APERTURE OF 2-MM DIAMETER. THE OUTER SHIELD WAS SUFFICIENTLY MASSIVE TO EXCLUDE PROTONS LESS THAN 80 MEV AND ELECTRONS LESS THAN 10 MEV. MAGNETS SURROUNDING THE DIODE EFFECTIVELY EXCLUDED ELECTRONS LESS THAN 300 KEV. THE DETECTOR RESPONDED TO PROTONS FROM 1.8 MEV TO 18 MEV AND DISCRIMINATED BETWEEN 1.8-, 3.2-, AND 4.7-MEV PROTONS. ALTHOUGH THE INSTRUMENT WAS DESIGNED TO OPERATE AT THREE DIFFERENT BIAS MODES (120, 20, AND 5 V), ONLY THE HIGHEST RETURNED USEFUL PROTON DATA. THE OTHER TWO MODES SERVED TO DETECT ELECTRON CONTAMINATION OF THE COUNTING RATE. THE ELECTRON DETECTOR, SIMILAR TO THE PROTON DETECTOR, HAD A COLLIMATOR WITH A HALF-ANGLE OF 10 DEG. APERTURE DIAMETER OF 2 MM, AND SUFFICIENT SHIELDING TO EXCLUDE PROTONS LESS THAN 60 MEV AND ELECTRONS LESS THAN 60 MEV. (NO MAGNETIC SHIELD WAS USED ON THE ELECTRON DETECTOR.) THE DETECTION SCHEME EMPLOYED PULSE HEIGHT ANALYSES TO DISCRIMINATE BETWEEN 0.2- TO 0.35-, 0.35- TO 0.55-, 0.55- TO 0.75-, AND 0.75- TO 1-MEV ELECTRONS. THE BASIC MEASUREMENT SEQUENCE REQUIRED 12 SEC. COUNTS FROM EACH DETECTOR WERE ACCUMULATED FOR 10 SEC. SAMPLES WERE TELEMETRED EVERY SEC DURING THE ACCUMULATION TIME. THE REGISTERS WERE FROZEN, AND ONE REDUNDANT READING (THE 10TH) WAS TELEMETRED. FOR PROTONS, THIS PROCEDURE WAS CARRIED OUT THREE TIMES FOR EACH BIAS MODE, INTERSPACED BY A 12-SEC ALLOWANCE FOR BIAS CHANGE. THE ENTIRE SEQUENCE OF THREE MODES REQUIRED 144 SEC. FOR ELECTRONS, THE SEQUENCE WAS REPEATED EVERY 12 SEC., THE DETECTORS RETURNED DATA THROUGHOUT THE SPACECRAFT'S USEFUL LIFETIME.

DATA SET NAME- REDUCED L-ORDERED ELECTRON AND PROTON
DATA ON MAGNETIC TAPE

NSSDC ID- 62-068A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/13/62 TO 03/31/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 2 REEL(S) OF MAGNETIC TAPE

THESE REDUCED DATA, GENERATED AT BELL TELEPHONE LABS FROM ORIGINAL DATA, ARE CONTAINED ON TWO 7-TRACK, 800-BPI, IBM 709A, BESYS MAGNETIC TAPES WITH A 167-WORD BLOCK SIZE, EACH WORD CONTAINING 36 BITS. THE TWO TAPES CONTAIN L-ORDERED ELECTRON DATA AND L-ORDERED PROTON DATA, RESPECTIVELY. THERE ARE 62 FILES DIVIDING THE DATA INTO L INTERVALS FROM 1 TO 7. EACH RECORD ON A TAPE IS HEADED BY THE MAXIMUM AND MINIMUM L VALUE FOR THE FILE AND THE TIME PERIODS INCLUDED IN THE FILE. THE REST OF THE FILE CONTAINS THE MCILWAIN L PARAMETER, MAGNETIC FIELD, LOG B/80, AND DETECTOR COUNTS, ON THE ELECTRON TAPE. PARTICLES GREATER THAN 1 MEV, BETWEEN 0.20 AND 0.35 MEV, BETWEEN 0.35 AND 0.55 MEV, BETWEEN 0.55 AND 0.75 MEV, AND BETWEEN 0.75 AND 1.00 MEV TAPE GIVEN IN UNITS OF COUNTS PER SECOND. ON THE PROTON TAPE, COUNTS PER SECOND FOR THE 100-, 22-, AND 5-V BIASES FOR THE PROTON DETECTOR AND PULSE HEIGHT ANALYSES YIELDING SPECTRAL INFORMATION FOR PROTONS BETWEEN 1.8 AND 3.2 MEV, BETWEEN 3.2 AND 4.7 MEV, AND GREATER THAN 4.7 MEV ARE GIVEN.

MCILWAIN, RELAY 1

EXPERIMENT NAME- PROTON-ELECTRON DETECTORS

NSSDC ID- 62-068A-03

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 02/10/65

PERSONNEL

PI - C.E. MCILWAIN U OF CALIF. SAN DIEG
SAN DIEGO, CA
OI - R.W. FILLIUS U OF CALIF. SAN DIEG
SAN DIEGO, CA

INSTRUMENTATION FOR THIS EXPERIMENT CONSISTED OF AN ENSEMBLE OF PARTICLE DETECTORS, AN OMNIDIRECTIONAL PLASTIC SCINTILLATOR, DETECTOR A, MEASURED THE SUM OF COUNTS DUE TO PROTONS ABOVE 34 MEV AND ELECTRONS ABOVE 3.7 MEV, USING MAGNETOMETER GATING. THE REMAINING DETECTORS (B, C, D) AND ASSOCIATED ELECTRONIC DISCRIMINATION CIRCUITRY MEASURED FLUXES OF APPROXIMATELY LOCALLY MIRRORING PARTICLES. A SOLID-STATE SURFACE BARRIER DETECTOR (B) MEASURED PROTONS IN THE NESTED INTERVALS 1.1 TO 14 MEV, 1.6 TO 7.1 MEV, AND 2.25 TO 4.7 MEV. A TWO-ELEMENT SOLID-STATE TELESCOPE (C) MEASURED PROTONS IN THE ENERGY INTERVALS 18.2 TO 25 MEV, 25 TO 35 MEV, AND 35 TO 63 MEV. A PLASTIC SCINTILLATOR (D) MEASURED IN FOUR DISCRIMINATION STATES THE SUMS OF PROTONS WITH ENERGIES ABOVE 5.2 MEV AND ELECTRONS WITH ENERGIES ABOVE 0.30, 0.45, 0.62, AND 0.82 MEV, RESPECTIVELY. BACKGROUND COUNTS WERE ACCUMULATED BY THESE DETECTORS WHEN THEIR AXIS WAS NOT PERPENDICULAR (TO WITHIN 10 DEG) TO THE LOCAL MAGNETIC FIELD. DETECTOR A CUMULATIVE COUNTS WERE TELEMETERED EVERY SECOND. DETECTORS B, C, AND D DIRECTIONAL FLUX DATA WERE TRANSMITTED AS FOLLOWS DURING SUCCESSIVE 12-SEC INTERVALS EVERY 40 SEC. COUNTS FROM THE VARIOUS DISCRIMINATION STATES OF A GIVEN DETECTOR WERE EACH TELEMETERED ONCE PER SECOND WHILE ACCUMULATING FOR 10 SEC. (SPACECRAFT SPIN PERIOD WAS APPROXIMATELY 0.37 SEC.) TWO REDUNDANT READOUTS FOLLOWED THE CESSATION OF COUNTING. MOST USEFUL DATA WERE TELEMETERED BETWEEN LAUNCH AND OCTOBER 20, 1964, WITH A SMALL AMOUNT OF ADDITIONAL DATA TELEMETERED PRIOR TO THE SPACECRAFT QUIET DATE OF FEBRUARY 10, 1965. DETECTOR B PROVIDED NO USEFUL DATA AFTER MAY 10, 1963.

DATA SET NAME- FORTRAN PROTON FLUX PROGRAM

NSSDC ID- 62-068A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 01/01/63 TO 07/01/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 3000 PUNCHED CARD(S)

THIS DATA SET CONSISTS OF A FORTRAN (IV OR 63) PROGRAM GENERATED BY THE EXPERIMENTER TO COMPUTE PROTON FLUXES AT AN ARBITRARY POINT IN B, L SPACE APPROPRIATE TO EITHER JANUARY 1, 1963 (SIX ENERGY INTERVAL MODES) OR JULY 1, 1963 (TWO ENERGY

THRESHOLD MODES). INPUT TO THE PROGRAM CONSISTS OF SERIES OF COEFFICIENTS OBTAINED FROM LEAST SQUARES FITS OF THE TIME AND B DEPENDENCES OF THE FLUXES OF MIRRORING PROTONS IN EACH OF THE EIGHT ENERGY MODES AT DISCRETE L VALUES BETWEEN 1.2 AND 2.2. CARD DECKS FOR BOTH THE COEFFICIENTS AND THE PROGRAM ITSELF ARE AVAILABLE.

DATA SET NAME- L-SORTED 10-SEC AVERAGED COUNT RATES ON
MAGNETIC TAPE

NSSDC ID- 62-068A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/14/62 TO 10/20/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF A SINGLE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE GENERATED BY THE EXPERIMENTER ON A CDC 3600. EACH PHYSICAL RECORD CONTAINS 10 LOGICAL RECORDS OF 27 WORDS (216 CHARACTERS) EACH. TEN-SEC AVERAGED COUNT RATES INTERPOLATED TO DISCRETE L VALUES BETWEEN 1.15 AND 8.20 ARE PRESENTED. DATA FOR ALL DISCRIMINATION STATES AND BACKGROUND MODES FOR ALL DETECTORS ARE PRESENTED AND ARE ORDERED FIRST ON L AND THEN ON B. SPACECRAFT POSITION, ORIENTATION, AND OBSERVATION TIME ARE INCLUDED IN EACH LOGICAL RECORD.

DATA SET NAME- TEN-SEC AVERAGED TIME-ORDERED COUNT
RATES ON MAGNETIC TAPE

NSSDC ID- 62-068A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/14/62 TO 10/20/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 3 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF THREE 7-TRACK, 556-BPI, IBM 709A, BCD MAGNETIC TAPES GENERATED AT NSSDC. THIS DATA SET REPRESENTS A TIME-ORDERED VERSION OF DATA SET 62-068A-03D, EXCEPT THAT THE 1-SEC CUMULATIVE COUNTS OF 03D HAVE NOT BEEN TRANSCRIBED TO DATA SET 03C. EACH PHYSICAL RECORD CONSISTS OF TEN 144-CHARACTER LOGICAL RECORDS. SUCCESSIVE LOGICAL RECORDS CONTAIN DATA TAKEN DURING SUCCESSIVE 12-SEC INTERVALS. THUS, EACH LOGICAL RECORD CONTAINS THE 10-SEC AVERAGED COUNT RATES FOR DETECTOR A AND FOR ALL THE DISCRIMINATION STATES (INCLUDING BACKGROUND COUNTING MODES) OF ONE OF THE OTHER THREE DETECTORS. EPHEMERIS INFORMATION, INCLUDING B AND L, IS INCLUDED IN EACH LOGICAL RECORD. SOME BTL DATA (62-068A-02) ARE ALSO FOUND ON THESE TAPES. TIME COVERAGE EXTENDS FROM LAUNCH TO OCTOBER 20, 1964.

DATA SET NAME- ONE- AND 10-SEC COUNT RATES ON MAGNETIC
TAPE

NSSDC ID- 62-068A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/14/62 TO 10/20/64
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- .5 REEL(S) OF MAGNETIC TAPE

THIS DATA SET CONSISTS OF FIVE UNBLOCKED 7-TRACK, 556-BPI, BCD MAGNETIC TAPES GENERATED BY THE EXPERIMENTER. EACH 624-CHARACTER LOGICAL RECORD CONTAINS DATA TAKEN BY DETECTOR A AND BY ONE OF THE OTHER THREE DETECTORS DURING ONE 12-SEC INTERVAL. FOR DETECTOR A AND FOR ALL THE DISCRIMINATION STATES (INCLUDING BACKGROUND COUNTING MODES) OF THE OTHER DETECTORS, THE TEN 1-SEC CUMULATIVE COUNTS AND THE ONE 10-SEC AVERAGE COUNTING RATE ARE GIVEN. EPHEMERIS INFORMATION, INCLUDING B AND L, IS INCLUDED IN EACH LOGICAL RECORD. SOME BELL LABS DATA (62-068A-02) ARE ALSO FOUND ON THESE TAPES. TIME COVERAGE EXTENDS FROM LAUNCH TO OCTOBER 20, 1964, BUT THE DATA ARE NOT COMPLETELY CHRONOLOGICALLY ORDERED.

RELAY 1/RELAY 2/S 15

DATA SET NAME- PLOTS OF LOW-ENERGY PROTON COUNT RATES
VS B AT DISCRETE L VALUES ON MICROFILM

NSSDC ID- 62-068A-03E

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/14/62 TO 05/10/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONTAINS, ON ONE REEL OF 35-MM MICROFILM, COPIES OF EXPERIMENTER SUPPLIED PLOTS. EACH PLOT EXHIBITS DETECTOR B PROTON COUNT RATES VS B (MODEL MAGNETIC FIELD MAGNITUDE) AT DISCRETE L VALUES (L BETWEEN 1.5 AND 4.2) IN ONE OF THREE ENERGY INTERVALS (1.1 TO 14, 1.6 TO 7.1, OR 2.25 TO 4.7 MEV). THE COUNT RATES HAVE BEEN CORRECTED FOR TEMPERATURE AND RADIATION DAMAGE EFFECTS AND ARE BASED ON DATA GATHERED BETWEEN LAUNCH AND MAY 10, 1963.

DATA SET NAME- PLOTS OF HIGH-ENERGY PROTON COUNT RATES
VS B AT DISCRETE L VALUES ON MICROFILM

NSSDC ID- 62-068A-03F

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/14/62 TO 09/22/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THIS DATA SET CONTAINS, ON ONE REEL OF 35-MM MICROFILM, COPIES OF EXPERIMENTER SUPPLIED PLOTS. EACH PLOT EXHIBITS DETECTOR C PROTON COUNT RATES VS B AT DISCRETE L VALUES (L BETWEEN 1.3 AND 3.0) IN ONE OF THREE ENERGY INTERVALS (18.2 TO 25, 25 TO 35, OR 35 TO 63 MEV). THE COUNT RATES HAVE BEEN CORRECTED FOR TEMPERATURE EFFECTS (NO RADIATION DAMAGE CORRECTION NECESSARY) AND ARE BASED ON DATA GATHERED BETWEEN LAUNCH AND SEPTEMBER 22, 1963.

SPACECRAFT COMMON NAME- RELAY 2

ALTERNATE NAMES- A 16, 00737
RELAY B

NSSDC ID- 64-003A

LAUNCH DATE- 01/21/64 WEIGHT- 184. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/31/68

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPOCH DATE- 01/22/64
ORBIT PERIOD- 194.7 MIN	INCLINATION- 46.316 DEG
PERIAPSIS- 2091.00 KM ALT	AP0APSIS- 7411.00 KM ALT

RELAY 2, ALTHOUGH PRINCIPALLY A COMMUNICATIONS SATELLITE, CARRIED PARTICLE EXPERIMENTS DESIGNED TO MAP THE TRAPPED RADIATION BELT. THE SPIN AXIS ORIENTATION HAD A RIGHT ASCENSION OF ABOUT 130 DEG AND AN INCLINATION OF ABOUT -60 DEG. ACCURATE SPIN AXIS ORIENTATION INFORMATION IS NOT AVAILABLE. THE INITIAL SPIN RATE WAS ABOUT 173 RPM. RELAY 2, PHYSICALLY SIMILAR TO RELAY 1, HAD ON BOARD TWO TRANSMITTERS, ONE OF WHICH WAS USED FOR PCM TELEMETRY (THE SEQUENCE REQUIRING ABOUT 1 SEC). DESIGN CHANGES IN THIS TRANSMITTER IMPROVED ITS PERFORMANCE TO THE POINT WHERE SATELLITE RESPONSE TO SPURIOUS COMMANDS WAS ESSENTIALLY ELIMINATED. ONE OF THE TWO ONBOARD TRANSDUCERS OPERATED NORMALLY UNTIL NOVEMBER 20, 1966. FROM THAT TIME UNTIL ITS FAILURE ON JANUARY 20, 1967, IT REQUIRED A LONGER TIME THAN NORMAL TO COME ON. THE OTHER TRANSDUCER CONTINUED TO OPERATE UNTIL JUNE 9, 1967, WHEN IT TOO FAILED TO OPERATE NORMALLY. SOME DATA WERE RECORDED THROUGH 1969. HOWEVER, AFTER AUGUST 31, 1968, THESE TAPES WERE NOT PROCESSED AND THE DATA WERE NOT ARCHIVED.

BROWN, RELAY 2

EXPERIMENT NAME- SOLID-STATE ION CHAMBER ELECTRON AND
PROTON DETECTOR

NSSDC ID- 64-003A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 08/31/68

PERSONNEL

PI - W.L. BROWN BELL TELEPHONE LAB
MURRAY HILL, NJ

TWO SILICON PHOSPHOROUS-DIFFUSED DIODES WERE USED AS SMALL SOLID-STATE IONIZATION CHAMBERS TO MAP THE EARTH'S RADIATION ENVIRONMENT. COUNTS WERE ACCUMULATED ONLY WHEN DETECTORS LOOKED WITHIN 10 DEG OF THE LOCAL MAGNETIC FIELD. THE DIODE USED TO DETECT PROTONS WAS MOUNTED BEHIND A 25-DEG HALF-ANGLE APERTURE COLLIMATOR WITH AN ENTRANCE APERTURE OF 2-MM DIAMETER. THE OUTER SHIELD WAS SUFFICIENTLY MASSIVE TO EXCLUDE PROTONS LESS THAN 80 MEV AND ELECTRONS LESS THAN 10 MEV. MAGNETS SURROUNDING THE DIODE EFFECTIVELY EXCLUDED ELECTRONS LESS THAN 300 KEV. THE DETECTOR RESPONDED TO PROTONS FROM 1.8 MEV TO 18 MEV AND DISCRIMINATED BETWEEN 1.97-, 3.60-, AND 5.00-MEV PROTONS. ALTHOUGH THE INSTRUMENT WAS DESIGNED TO OPERATE AT THREE DIFFERENT BIAS MODES (120, 20, AND 5 V), ONLY THE HIGHEST RETURNED USEFUL PROTON DATA. THE REMAINING TWO SERVED TO DETECT ELECTRON CONTAMINATION OF THE COUNTING RATE. THE ELECTRON DETECTOR, SIMILAR TO THE PROTON DETECTOR, HAD A COLLIMATOR WITH A HALF-ANGLE OF 10 DEG, APERTURE DIAMETER OF 2 MM, AND SUFFICIENT SHIELDING TO EXCLUDE PROTONS LESS THAN 60 MEV AND ELECTRONS LESS THAN 60 MEV. (NO MAGNETIC SHIELD WAS USED ON THE ELECTRON DETECTOR.) THE DETECTION SCHEME EMPLOYED PULSE HEIGHT ANALYSES TO DISCRIMINATE BETWEEN 0.223- TO 0.403-, 0.403- TO 0.580-, 0.580- TO 0.775-, AND 0.775- TO 1.120-MEV ELECTRONS. THE BASIC MEASUREMENT SEQUENCE REQUIRED 12 SEC. COUNTS FROM EACH DETECTOR WERE ACCUMULATED FOR 10 SEC. SAMPLES WERE TELEMETERED EVERY SECOND DURING THE ACCUMULATION TIME. THE REGISTERS WERE FROZEN, AND ONE REDUNDANT READING (THE 10TH) WAS TELEMETERED. FOR PROTONS, THIS PROCEDURE WAS CARRIED OUT THREE TIMES FOR EACH BIAS MODE, INTERSPACED BY A 12-SEC ALLOWANCE FOR BIAS CHANGE. THE ENTIRE SEQUENCE OF THREE MODES REQUIRED 144 SEC. FOR ELECTRONS, THE SEQUENCE WAS REPEATED EVERY 12 SEC. THE DETECTORS RETURNED DATA THROUGHOUT THE SPACECRAFT'S USEFUL LIFETIME. HOWEVER, DATA ACQUIRED AFTER AUGUST 31, 1968, WERE NOT PROCESSED, AND ANY STORED DATA REMAINING WERE NOT RETAINED.

DATA SET NAME- REDUCED L-ORDERED ELECTRON AND PROTON
DATA ON MAGNETIC TAPE

NSSDC ID- 64-003A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 01/21/64 TO 12/31/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 6 REEL(S) OF MAGNETIC TAPE

THESE REDUCED DATA, GENERATED AT BELL TELEPHONE LABORATORIES FROM ORIGINAL DATA, ARE CONTAINED ON TWO ELECTRON L TAPES AND FOUR PROTON L TAPES. THE 7-TRACK TAPES, WHICH WERE RECORDED AT 800 BPI ON THE IBM 7094 BESYS, HAVE A 167-WORD BLOCK SIZE. EACH WORD CONTAINS 36 BITS. EACH RECORD ON THE TAPES IS HEADED WITH THE MAXIMUM AND MINIMUM L VALUES FOR THE FILE AND THE TIME PERIODS INCLUDED IN THE FILE. THE REST OF THE FILE CONTAINS THE MCILWAIN L PARAMETER, MAGNETIC FIELD, LOG B/B0, AND DETECTOR COUNTS IN UNITS OF COUNTS PER SECOND IN EACH DISCRIMINATION STATE FOR THE ELECTRON TAPES AND IN UNITS OF COUNTS PER SECOND FOR EACH BIAS MODE FOR THE PROTON TAPES. THERE ARE 62 FILES, DIVIDING DATA INTO L INTERVALS FROM 1 TO 7.

SPACECRAFT COMMON NAME- S 15

ALTERNATE NAMES- 1961 NU 1, EXPLORER 11
00107

NSSDC ID- 61-013A

LAUNCH DATE- 4/27/61 WEIGHT- 37. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/17/61

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPOCH DATE- 04/27/61
ORBIT PERIOD- 108.1 MIN	INCLINATION- 28.9 DEG
PERIAPSIS- 486.000 KM ALT	AP0APSIS- 1786.00 KM ALT

EXPLORER 11 WAS LAUNCHED FOR THE PURPOSE OF MAPPING THE SOURCES OF HIGH-ENERGY GAMMA RAYS. THE SATELLITE WAS A SPIN-STABILIZED OCTAGONAL ALUMINUM BOX (30.5 BY 30.5 BY 58.5 CM) ON A CYLINDER (15.2 CM IN DIAMETER AND 52.2 CM LONG). TELEMETRY WAS PROVIDED ONLY IN REAL TIME BY TWO PCM TRANSMITTERS. SINCE THE ONBOARD TAPE RECORDER FAILED AT LAUNCH.

GARMIRE, S 15

EXPERIMENT NAME- CRYSTAL SANDWICH/CERENKOV COUNTER

NSSDC ID- 61-013A-02

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 11/12/61

PERSONNEL

PI - G.P. GARMIRE CALIF INST OF TECH
PASADENA, CA

THIS TELESCOPE WAS USED TO DETERMINE THE INTENSITY AND PITCH-ANGLE DISTRIBUTION OF GEOMAGNETICALLY TRAPPED PROTONS. (IT WAS ALSO USED TO DETECT HIGH-ENERGY GAMMA RAYS IN ANOTHER EXPERIMENT CARRIED ON EXPLORER 11.) THE TELESCOPE CONSISTED OF AN ANTICINCIDENCE PLASTIC SHIELD, LAYERS OF NAI AND GSI CRYSTALS, AND A CYLINDRICAL LUCITE CERENKOV DETECTOR. WHEN THE ANTICINCIDENCE REQUIREMENT OF THE PLASTIC SCINTILLATOR SHIELD WAS REMOVED, CHARGED PARTICLE INFORMATION WAS RECORDED BY ALL THREE COUNTERS. IN ADDITION, CHARGED PARTICLE COINCIDENCES BETWEEN THE CRYSTAL SANDWICH AND CERENKOV DETECTORS WERE RECORDED. IN THIS MODE, DIRECTIONAL INFORMATION WAS OBTAINED. THE GEOMETRICAL FACTOR OF THE TELESCOPE WAS ABOUT 4.3 SQ CM STER. THE LOOK DIRECTION OF THE TELESCOPE WAS IDENTICAL TO THE SYMMETRY AXIS OF THE SPACECRAFT. FOR A BEAM INCIDENT PARALLEL TO THE LOOK DIRECTION OF THE TELESCOPE, THE DETECTION EFFICIENCY FELL TO ZERO AT 15 DEG FROM THIS DIRECTION. THE ENERGY THRESHOLDS FOR EACH DETECTOR WERE AS FOLLOWS -- (1) SCINTILLATION PLASTIC (UPPER PORTION), ELECTRONS - 350 KEV, PROTONS - 3.5 MEV, (2) SCINTILLATION PLASTIC (LOWER PORTION), ELECTRONS - 400 KEV, PROTONS - 35 MEV, (3) CRYSTAL SANDWICH, ELECTRONS - 400 KEV, PROTONS - 75 MEV, AND (4) CERENKOV, ELECTRONS - 15 MEV, PROTONS - 350 MEV. THE ACCUMULATION TIME FOR THE CHARGED PARTICLE DATA WAS APPROXIMATELY 30 SEC. A SINGLE SCALING CIRCUIT IN EXPLORER 11 PERMITTED ONE CHANNEL AT A TIME TO BE MONITORED. DURING THE 7 MONTHS IN WHICH THE INSTRUMENT WAS TURNED ON AND WORKING IN ORBIT, ONLY 141 HR (3 PERCENT) WERE CONSIDERED USEFUL OBSERVING TIME. DURING THIS TIME, THE TELESCOPE WAS MONITORED FOR GAMMA RAYS AND CHARGED PARTICLES.

DATA SET NAME- DETECTOR COUNT RATES ON MAGNETIC TAPE

NSSDC ID- 61-013A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 04/28/61 TO 11/12/61
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE REDUCED DATA ARE AVAILABLE ON ONE 7-TRACK, 8CD, CARD IMAGE MAGNETIC TAPE WRITTEN ON AN IBM 7094 AT A DENSITY OF 556 BPI. THIS TAPE WAS GENERATED AT NSSDC FROM PUNCHED CARDS SUPPLIED BY THE EXPERIMENTER. THE FOLLOWING ITEMS ARE CONTAINED ON THE TAPE -- CHANNEL (DETECTOR), LATITUDE, LONGITUDE, ALTITUDE, B. L. B/BO, TIME, AND UNCALIBRATED COUNT RATE. THERE IS LESS THAN A 5 PERCENT DATA COVERAGE FOR THE TIME PERIOD INDICATED.

SPACECRAFT COMMON NAME- TELSTAR 1

ALTERNATE NAMES- 1962 ALPHA EPSILON 1, A 40
00340

NSSDC ID- 62-029A

LAUNCH DATE- 07/10/62 WEIGHT- 171. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 02/21/63

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPOCH DATE- 02/27/63
ORBIT PERIOD- 157.7 MIN	INCLINATION- 44.78 DEG
PERIAPSIS- 954.000 KM ALT	APDAPSIS- 5636.00 KM ALT

TELSTAR 1, PRIMARILY A COMMUNICATIONS SATELLITE, CARRIED AN EXPERIMENT DESIGNED TO MEASURE THE ENERGETIC PROTON AND ELECTRON DISTRIBUTION IN THE VAN ALLEN BELTS. THE SPACECRAFT SPIN RATE VARIED ACCORDING TO $R = 178.2 \text{ EXP } (-T/333)$ RPM WHERE T WAS IN DAYS FROM LAUNCH. THE SPIN AXIS ORIGINAL ORIENTATION WAS RIGHT ASCENSION 81.96 DEG AND DECLINATION -65.87 DEG. IT VARIED SLOWLY OVER THE LIFETIME OF THE SPACECRAFT. FOR EXAMPLE, ON NOVEMBER 9, 1962, THE RIGHT ASCENSION WAS 94.05 DEG, AND THE DECLINATION WAS -51.91 DEG. SCIENTIFIC INFORMATION WAS TRANSMITTED BY THE SPACECRAFT BEACON, WHICH

WAS ONE OF TWO ONBOARD TRANSMITTERS, VIA A PGM/FM/AM ENCODER. THE TELEMETRY SEQUENCE REQUIRED ABOUT 1 MIN. THE SPACECRAFT OPERATED NORMALLY FROM LAUNCH UNTIL NOVEMBER 1962, WHEN THE COMMAND CHANNEL BEGAN TO BEHAVE ERRATICALLY. THE SATELLITE WAS TURNED ON CONTINUOUSLY TO CIRCUMVENT THIS PROBLEM. ON NOVEMBER 23, 1962, THE COMMAND CHANNEL CEASED TO RESPOND. ON DECEMBER 20, THE SATELLITE WAS SUCCESSFULLY REACTIVATED, AND INTERMITTENT DATA WERE OBTAINED UNTIL FEBRUARY 21, 1963, WHEN THE TRANSMITTER FAILED.

BROWN, TELSTAR 1

EXPERIMENT NAME- PROTON AND ELECTRON RADIATION

NSSDC ID- 62-029A-01

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 02/21/63

PERSONNEL

PI - W.L. BROWN BELL TELEPHONE LAB
MURRAY HILL, NJ

THREE P-N JUNCTION SOLID-STATE DIODES SEPARATELY MEASURED PROTONS (1) DIRECTIONALLY IN NINE RANGES FROM 2.4 TO 25 MEV WITH AN APERTURE OF 25 DEG HALF ANGLE, (2) OMNIDIRECTIONALLY FROM 26 TO 34 MEV, AND (3) OMNIDIRECTIONALLY GREATER THAN 50 MEV. A FOURTH P-N JUNCTION DIODE MEASURED ELECTRONS WITH FOUR RANGES (180 TO 280, 285 TO 440, 390 TO 615, AND 635 TO 990 KEV) WITH AN APERTURE OF 20 DEG HALF ANGLE. EACH DIRECTIONAL PROTON ENERGY CHANNEL WAS SAMPLED ONCE EVERY 3 MIN, EACH OF THE TWO OMNIDIRECTIONAL PROTON DETECTORS WAS SAMPLED ONCE PER MIN, AND EACH OF THE FOUR ELECTRON ENERGY CHANNELS WAS SAMPLED ONCE EVERY 2 MIN. ACCUMULATION TIMES EXCEEDED THE SPACECRAFT SPIN PERIOD. THE INSTRUMENTS OPERATED THROUGHOUT THE LIFETIME OF THE SPACECRAFT.

DATA SET NAME- REDUCED ELECTRON AND PROTON DATA ON
MAGNETIC TAPE

NSSDC ID- 62-029A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/10/62 TO 02/21/63
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 5 REEL(S) OF MAGNETIC TAPE

THIS REDUCED DATA SET GENERATED AT BELL TELEPHONE LABS CONTAINS 800-BPI, 7-TRACK, 8CD, IBM 7094, ODD PARITY MAGNETIC TAPES FROM THE STL EXPERIMENT. EACH FILE ON THESE TAPES CONTAINS A 8CD HEADER RECORD. THE REST OF THE TAPE IS BINARY. THE LOGICAL RECORD LENGTH IS 54 (36-BIT) WORDS. EACH RECORD CONTAINS EPHEMERIS AND TIME INFORMATION, MAGNETIC FIELD, MCILWAIN L, AND SATELLITE STATE DATA SUCH AS SKIN TEMPERATURE, DETECTOR TEMPERATURE, ETC. ALSO PRESENTED ARE COUNTS FROM THE ELECTRON DETECTOR IN EACH BIAS MODE, WITH INTERPOLATED VALUES OF B. L. AND GAMMA, AND COUNTS FROM THE TWO PROTON DETECTORS IN EACH BIAS MODE WITH CORRESPONDING VALUES OF B. L. AND GAMMA, WHERE GAMMA IS THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND MODEL MAGNETIC FIELD DIRECTION. THE DATA ARE TIME ORDERED.

SPACECRAFT COMMON NAME- TELSTAR 2

ALTERNATE NAMES- A 41, 00573

NSSDC ID- 63-013A

LAUNCH DATE- 05/07/63 WEIGHT- 176. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/16/65

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC	EPOCH DATE- 05/07/63
ORBIT PERIOD- 225.1 MIN	INCLINATION- 42.73 DEG
PERIAPSIS- 974.000 KM ALT	APDAPSIS- 10803.0 KM ALT

TELSTAR 2, PRIMARILY A COMMUNICATIONS SATELLITE, CARRIED AN EXPERIMENT DESIGNED TO MEASURE THE ENERGETIC PROTON AND ELECTRON DISTRIBUTION IN THE VAN ALLEN BELTS. THE SPACECRAFT SPIN AXIS SHORTLY AFTER LAUNCH WAS ABOUT 80 DEG TO THE ECLIPTIC PLANE. THE INITIAL SPIN RATE WAS 180 RPM, AND IT VARIED SLOWLY OVER THE LIFE OF THE SPACECRAFT. TELSTAR 2 WAS

TELSTAR 2/VELA 3A

ESSENTIALLY IDENTICAL TO THE TELSTAR 1 SATELLITE. IT EMPLOYED TWO TRANSMITTERS, AND DATA WERE TELEMETERED VIA A PCM/FM/AM ENCODER. THE TELEMETRY SEQUENCE REQUIRED ABOUT 1 MIN. TELSTAR 2 DIFFERED FROM TELSTAR 1 BY EMPLOYING PROVISIONS FOR SCIENTIFIC INFORMATION TO BE TRANSMITTED IN REAL TIME VIA THE MICROWAVE TELEMETRY SYSTEM SO THAT TELEMETRY COULD BE OBTAINED AFTER THE 2-YR TIMER HAD TURNED OFF THE VHF BEACON. ON MAY 16, 1965, AT 1403 UT, DURING THE SATELLITE'S 4736 ORBIT, THE VHF TRANSMITTER WAS TURNED OFF. ALL SYSTEMS OPERATED NORMALLY UNTIL THAT TIME. AFTER THAT TIME, A VERY LIMITED AMOUNT OF SCIENTIFIC INFORMATION WAS GATHERED AT ANDOVER, MAINE.

RADIAL DISTANCE OF ABOUT 17 EARTH RADII AND SPACED 180 DEG APART. THE SATELLITES WERE SPIN STABILIZED AT ABOUT 2 RPS AND HAD THEIR SPIN AXES INCLINED AT ABOUT 60 DEG TO THE ECLIPTIC. DATA ACQUISITION WAS MAINLY REAL TIME AND AVERAGED 25 PERCENT (1 OUT OF EVERY 4 HR) COVERAGE PER DAY. DATA COVERAGE WAS INCREASED FOR SPECIAL EVENTS. THE SATELLITE OPERATED WELL DURING THE PERIOD OF MAJOR DATA COVERAGE - FROM LAUNCH UNTIL THE APRIL 1967 LAUNCH OF THE VELA 4 SATELLITES. AFTER THIS TIME, DATA ACQUISITION FROM THE VELA 3 SATELLITES BECAME INCREASINGLY SPORADIC.

BROWN, TELSTAR 2

EXPERIMENT NAME- PROTON AND ELECTRON RADIATION

NSSDC ID- 63-013A-01

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 05/16/65

PERSONNEL

PI - W.L. BROWN BELL TELEPHONE LAB ;
MURRAY HILL, NJ

THREE P-N JUNCTION SOLID-STATE DIODES SEPARATELY MEASURED PROTONS (1) DIRECTIONALLY IN NINE RANGES FROM 2 TO 30 MEV WITH AN APERTURE OF 25-DEG HALF ANGLE, (2) OMNIDIRECTIONALLY FROM 18 TO 28 MEV, AND (3) OMNIDIRECTIONALLY GREATER THAN 50 MEV. A FOURTH P-N JUNCTION DIODE MEASURED ELECTRONS WITH FOUR THRESHOLD RANGES (GREATER THAN 750, 900, 1200, AND 1400 KEV) WITH AN APERTURE OF 20-DEG HALF ANGLE. EACH DIRECTIONAL PROTON ENERGY CHANNEL WAS SAMPLED ONCE EVERY 3 MIN. EACH OF THE TWO OMNIDIRECTIONAL PROTON DETECTORS WAS SAMPLED ONCE PER MINUTE, AND EACH OF THE ELECTRON ENERGY CHANNELS WAS SAMPLED ONCE EVERY 2 MIN. ACCUMULATION TIMES EXCEEDED THE SPACECRAFT SPIN PERIOD. THE EXPERIMENT OPERATED THROUGHOUT THE SPACECRAFT LIFE.

DATA SET NAME- REDUCED ELECTRON AND PROTON DATA ON MAGNETIC TAPE

NSSDC ID- 63-013A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/07/63 TO 05/07/65
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 8 REEL(S) OF MAGNETIC TAPE

THESE REDUCED DATA, GENERATED AT BELL TELEPHONE LABORATORIES, ARE ON EIGHT BESYS 800-BPI, 7-TRACK, BCD, IBM 7094, ODD PARITY MAGNETIC TAPES FROM THE BTL EXPERIMENT. THE RECORD LENGTH IS 64 BINARY WORDS. EACH RECORD CONTAINS (1) EPHEMERIS AND TIME INFORMATION, (2) MAGNETIC FIELD DATA, (3) MCILWAIN L, AND (4) SATELLITE STATE DATA SUCH AS SKIN TEMPERATURE, DETECTOR TEMPERATURE, ETC. ALSO PRESENTED ARE (1) COUNTS FROM THE ELECTRON DETECTOR IN EACH BIAS MODE, WITH B, L, AND GAMMA VALUES (WHERE GAMMA IS THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND THE MODEL MAGNETIC FIELD DIRECTION) INTERPOLATED TO THE TIME WHEN THE MEASUREMENT WAS MADE, AND (2) COUNTS FROM THE TWO PROTON DETECTORS IN EACH BIAS MODE, WITH SIMILAR B, L, AND GAMMA VALUES. THE DATA ARE TIME ORDERED.

SPACECRAFT COMMON NAME- VELA 3A

ALTERNATE NAMES- VELA 3 (USAF), VELA 5 (TRW)
01458

NSSDC ID- 65-058A

LAUNCH DATE- 07/20/65 WEIGHT- 180. KG

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 05/00/70

ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC EPOCH DATE- 07/20/65
ORBIT PERIOD- 5140. MIN INCLINATION- 35.27 DEG
PERIAPSIS- 88524.0 KM ALT APOAPSIS- 96238. KM ALT

VELA 3A WAS ONE OF TWO POLYHEDRAL SATELLITES COMPRISING THE THIRD IN A SERIES OF SIX VELA LAUNCHES. THE ORBITS OF THE TWO SATELLITES ON EACH LAUNCH WERE BASICALLY CIRCULAR AT A

NAME, VELA 3A

EXPERIMENT NAME- ELECTROSTATIC ANALYZER AND GM TUBES

NSSDC ID- 65-058A-04

STATUS OF OPERATION- INOPERABLE

DATE LAST USABLE DATA RECORDED- 05/21/70

PERSONNEL

PI - S.J. BAHE LOS ALAMOS SCI LAB
LOS ALAMOS, NM

THIS EXPERIMENT CONSISTED OF TWO GEIGER COUNTERS AND A HEMISPHERICAL ELECTROSTATIC ANALYZER. THE INSTRUMENTS WERE DESIGNED TO STUDY THE INTENSITY ENERGY SPECTRUM AND ANGULAR DISTRIBUTIONS OF SOLAR WIND AND MAGNETOSPHERIC PARTICLES. THE GEIGER COUNTERS MEASURED ELECTRONS WITH ENERGIES GREATER THAN 45 KEV. PARTICLES WERE ACCEPTED FROM A CONE OF 35 DEG HALF-ANGLE. ONE COUNTER WAS MOUNTED SO THAT THE AXIS OF THE ACCEPTANCE CONE WAS PERPENDICULAR TO THE SPIN AXIS. THE OTHER COUNTER HAD THE FIELD OF VIEW SHIFTED 60 DEG RELATIVE TO THE FIRST. THE COUNTERS WERE OPERATED ONLY IN REAL TIME (I.E., ONLY 25 PERCENT OF THE TIME), AND A MEASUREMENT WAS TAKEN ONCE EACH SECOND. THE ELECTROSTATIC ANALYZER WAS MOUNTED ON THE SPACECRAFT EQUATORIAL PLANE AND HAD A FIELD OF VIEW OF ABOUT 5 DEG IN SPACECRAFT LONGITUDE AND ABOUT 90 DEG IN SPACECRAFT LATITUDE. IN THE REAL-TIME MODE, THE ELECTROSTATIC ANALYZER MEASURED THE ION OR ELECTRON (POLARITY WAS SELECTED BY GROUND COMMAND) FLUX IN 64 LOGARITHMICALLY SPACED ENERGY PER CHARGE CHANNELS COVERING THE RANGE 0.2 TO 18 KEV. A COMPLETE 64-POINT ENERGY SPECTRUM WAS TAKEN CENTERED ON EACH OF THE FOLLOWING DIRECTIONS IN THE SPACECRAFT EQUATORIAL PLANE AND RELATIVE TO THE SPACECRAFT SUN LINE -- -11, -5, 1, 7, 14, 89, 190, AND 291 DEG (MINUS SIGNS INDICATE ANGLES TO THE LEFT (EAST) OF THE SUN). THIS SET OF ANGLES COULD BE ROTATED (BY GROUND COMMAND) BY +30 DEG FOR VELA 3A AND -30 DEG FOR VELA 3B. IN THE REAL-TIME MODE, A COMPLETE SET OF MEASUREMENTS (64-POINT SPECTRA IN EACH OF EIGHT DIRECTIONS) WAS TAKEN EVERY 256 SEC AND REPEATED CONTINUOUSLY. IN THE STORE MODE, THE ANALYZER TOOK A 16-POINT ENERGY SPECTRUM AT THE ANGLES 1 AND 190 DEG EVERY 512 SEC. THE INSTRUMENTS WORKED WELL OVER THE PERIOD OF MAJOR COVERAGE OF THE SPACECRAFT.

DATA SET NAME- THREE-HOUR AVERAGES OF SOLAR WIND PARAMETERS ON MICROFILM

NSSDC ID- 65-058A-04B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 07/26/65 TO 12/06/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THESE DATA WERE SUPPLIED BY THE EXPERIMENTER AS A PUBLISHED DOCUMENT. A COMPILATION OF VELA 3 SOLAR WIND OBSERVATIONS 1965 TO 1967, LOS ALAMOS SCIENTIFIC LABORATORY, LA-4536, VOL. 1, OCT. 1970, BY S. J. BAHE, M. E. FELTHAUSER, A. J. HUNDHAUSEN, I. B. STRONG, J. R. ASBRIDGE, H. E. GILBERT, D. M. SMITH, AND S. J. SYDORAK. THE DOCUMENT WAS MICROFILMED BY NSSDC AND IS CONTAINED ON ONE 35-MM REEL. THE DATA CONSIST OF 3-HR AVERAGES OF THE SOLAR WIND PROTON DENSITY, FLOW SPEED, FLOW DIRECTION, AND PROTON TEMPERATURE. THESE PARAMETERS WERE DERIVED BY LEAST SQUARES TECHNIQUES ASSUMING BI-MAXWELLIAN DISTRIBUTION FUNCTIONS. THE DATA ARE DISPLAYED BOTH AS PLOTS AND AS LISTINGS. THERE IS A NEARLY UNIFORM 25 PERCENT COVERAGE OVER THE TIME PERIOD INDICATED.

DATA SET NAME- THREE-HOUR AVERAGES OF SOLAR WIND PARAMETERS ON TAPE

NSSDC ID- 65-058A-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/26/65 TO 12/06/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE DATA WERE SUPPLIED BY DR. PAUL FOUGERE OF THE AIR FORCE CAMBRIDGE RESEARCH LABORATORIES AND CONSIST OF A CARD IMAGE MAGNETIC TAPE VERSION OF DATA SET 65-058A-04B. THE ONE-FILE TAPE IS 8CD, HAS 7 TRACKS, HAS A DENSITY OF 556 BPI, AND WAS MADE ON AN IBM 7094. DATA FOR DATA SET 65-058B-04C (VELA 3B) ARE ALSO ON THIS TAPE.

SPACECRAFT COMMON NAME- VELA 3B

ALTERNATE NAMES- VELA 3 (USAF), VELA 6 (TRW)
01459

NSSDC ID- 65-058B

LAUNCH DATE- 07/20/65 WEIGHT- 150. KG

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/00/70

ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC EPOCH DATE- 07/20/65
ORBIT PERIOD- 6726. MIN INCLINATION- 34.99 DEG
PERIAPSIS- 101859. KM ALT APDAPIS- 121453. KM ALT

VELA 3B WAS ONE OF TWO POLYHEDRAL SATELLITES COMPRISING THE THIRD IN A SERIES OF SIX VELA LAUNCHES. THE ORBITS OF THE TWO SATELLITES ON EACH LAUNCH WERE BASICALLY CIRCULAR AT A RADIAL DISTANCE OF ABOUT 17 EARTH RADII AND SPACED 180 DEG APART. THE SATELLITES WERE SPIN STABILIZED AT ABOUT 2 RPS AND HAD THEIR SPIN AXES INCLINED AT ABOUT 60 DEG TO THE ECLIPTIC. DATA ACQUISITION WAS MAINLY PEAK TIME AND AVERAGED 25 PERCENT (1 OUT OF EVERY 4 HR) COVERAGE PER DAY. DATA COVERAGE WAS INCREASED FOR SPECIAL EVENTS. THE SATELLITE OPERATED WELL DURING THE PERIOD OF MAJOR DATA COVERAGE - FROM LAUNCH UNTIL THE APRIL 1967 LAUNCH OF THE VELA 4 SATELLITES. AFTER THIS TIME, DATA ACQUISITION FROM THE VELA 3 SATELLITES BECAME INCREASINGLY SPORADIC.

BAME, VELA 3B

EXPERIMENT NAME- ELECTROSTATIC ANALYZER AND GM TUBES

NSSDC ID- 65-058B-04

STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE DATA RECORDED- 05/21/70

PERSONNEL
PI - S.J. BAME LOS ALAMOS SCI LAB
LOS ALAMOS, NM

THIS EXPERIMENT CONSISTED OF TWO GEIGER COUNTERS AND A HEMISPHERICAL ELECTROSTATIC ANALYZER. THE INSTRUMENTS WERE DESIGNED TO STUDY THE INTENSITY ENERGY SPECTRUM AND ANGULAR DISTRIBUTIONS OF SOLAR WIND AND MAGNETOSPHERIC PARTICLES. THE GEIGER COUNTERS MEASURED ELECTRONS WITH ENERGIES GREATER THAN 45 KEV. PARTICLES WERE ACCEPTED FROM A CONE OF 35 DEG HALF-ANGLE. ONE COUNTER WAS MOUNTED SO THAT THE AXIS OF THE ACCEPTANCE CONE WAS PERPENDICULAR TO THE SPIN AXIS. THE OTHER COUNTER HAD THE FIELD OF VIEW SHIFTED 60 DEG RELATIVE TO THE FIRST. THE COUNTERS WERE OPERATED ONLY IN REAL TIME (I.E., ONLY 25 PERCENT OF THE TIME), AND A MEASUREMENT WAS TAKEN ONCE EACH SECOND. THE ELECTROSTATIC ANALYZER WAS MOUNTED ON THE SPACECRAFT EQUATORIAL PLANE AND HAD A FIELD OF VIEW OF ABOUT 5 DEG IN SPACECRAFT LONGITUDE AND ABOUT 90 DEG IN SPACECRAFT LATITUDE. IN THE REAL-TIME MODE, THE ELECTROSTATIC ANALYZER MEASURED THE ION OR ELECTRON (POLARITY WAS SELECTED BY GROUND COMMAND) FLUX IN 64 LOGARITHMICALLY SPACED ENERGY PER CHARGE CHANNELS COVERING THE RANGE 0.2 TO 18 KEV. A COMPLETE 64-POINT ENERGY SPECTRUM WAS TAKEN CENTERED ON EACH OF THE FOLLOWING DIRECTIONS IN THE SPACECRAFT EQUATORIAL PLANE AND RELATIVE TO THE SPACECRAFT SUN-LINE -- -11, -5, 1, 7, 14, 89, 190, AND 291 DEG (MINUS SIGNS INDICATE ANGLES TO THE LEFT (EAST) OF THE SUN). THIS SET OF ANGLES COULD BE ROTATED (BY GROUND COMMAND) BY +30 DEG FOR VELA 3A AND -30 FOR VELA 3B. IN THE REAL-TIME MODE, A COMPLETE SET OF MEASUREMENTS (64-POINT SPECTRA IN EACH OF EIGHT DIRECTIONS) WAS TAKEN EVERY 256 SEC AND REPEATED CONTINUOUSLY. IN THE STORE MODE, THE ANALYZER TOOK A 16-POINT ENERGY SPECTRUM AT THE ANGLES 1 AND 190 DEG EVERY 512 SEC. THE INSTRUMENTS WORKED WELL OVER THE PERIOD OF MAJOR COVERAGE OF THE SPACECRAFT.

DATA SET NAME- THREE-HOUR AVERAGES OF SOLAR WIND PARAMETERS ON MICROFILM

NSSDC ID- 65-058B-04A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 07/26/65 TO 12/06/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MICROFILM

THESE DATA WERE SUPPLIED BY THE EXPERIMENTER AS A PUBLISHED DOCUMENT. "A COMPILATION OF VELA 3 SOLAR WIND OBSERVATIONS 1965 TO 1967," LOS ALAMOS SCIENTIFIC LABORATORY, LA-4536, VOL. 1, OCT. 1970, BY S. J. BAME, H. E. FELTHAUSER, A. J. MUNDHAUSEN, I. B. STRONG, J. R. ASBRIDGE, H. E. GILBERT, D. M. SMITH, AND S. J. SYDORIAK. THE DOCUMENT WAS MICROFILMED BY NSSDC AND IS CONTAINED ON ONE 35-MM REEL. THE DATA CONSIST OF 3-HR AVERAGES OF SOLAR WIND PROTON DENSITY, FLOW SPEED, FLOW DIRECTION, AND PROTON TEMPERATURE. THESE PARAMETERS WERE DERIVED BY LEAST SQUARES TECHNIQUES ASSUMING BI-MAXWELLIAN DISTRIBUTION FUNCTIONS. THE DATA ARE DISPLAYED BOTH AS PLOTS AND AS LISTINGS. THERE IS A NEARLY UNIFORM 25 PERCENT COVERAGE OVER THE TIME PERIOD INDICATED.

DATA SET NAME- THREE-HOUR AVERAGES OF SOLAR WIND PARAMETERS ON TAPE

NSSDC ID- 65-058B-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/26/65 TO 12/06/67
(AS VERIFIED BY NSSDC)

QUANTITY OF DATA- 1 REEL(S) OF MAGNETIC TAPE

THESE DATA WERE SUPPLIED BY DR. PAUL FOUGERE OF THE AIR FORCE CAMBRIDGE RESEARCH LABORATORIES AND CONSIST OF A CARD IMAGE MAGNETIC TAPE VERSION OF DATA SET 65-058B-04A. THIS TAPE WAS MADE ON AN IBM 7094. THE TAPE WAS WRITTEN IN 8CD AT A DENSITY OF 556 BPI. THE TAPE HAS ONE FILE AND 7 TRACKS. DATA FOR DATA SET 65-058A-04C (VELA 3A) ARE ALSO ON THIS TAPE.

ORIGINAL PAGE IS
OF POOR QUALITY



Spacecraft Name Index

4. INDEXES

This section comprises six different indexes that contain additional information and cross-referencing items to assist the user find specific information he may require.

4.1 SPACECRAFT NAME INDEX

This index contains information on spacecraft, experiments, and data sets and is ordered by spacecraft name, principal investigator's name, and data set ID. The ordering is the same as in the body of the report (section 3) except that particles- and fields-related information has not been separated and spacecraft alternate names have been interspersed with common names. For a given data set, this index enables a reader to readily determine data form, quantity, and time period covered.

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	O'BRIEN - PROTON SPECTROMETER MASTER FILE ON MAGNETIC TAPE, P-N COUNTS	*	62-067B-03B	*	*01/01/63 - 05/15/63*	*	1 M/FILM	*	49*
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		*	64-076B-06	*	*	*	*	*	52*
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		*	62-041A-06A	*	*08/29/62 - 12/30/62*	*	1 TAPE(S)	*	53*
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		*	64-077A-04C	*	*11/28/64 - 10/01/65*	*	1 TAPE(S)	*	55*
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Phenomenon Ordered Bar Graphs



Electric and Magnetic Field Data

4.5 PHENOMENON ORDERED BAR GRAPHS

- Group 1: Charged Particles — Near Earth
- Group 2: Charged Particles — Magnetosphere
- Group 3: Charged Particles — Interplanetary
- Group 4: Magnetic Fields — Magnetosphere, Magnetotail
- Group 5: Magnetic Fields — Interplanetary

The time periods covered by charged particle and magnetic field data sets appearing in this catalog are indexed by means of a series of bar graphs generated from the NSSDC automated file. The plots allow the space-phenomenon-oriented user to easily identify the data available for a given time interval. Each plot is for a single type and location of observation.

4.5.1 CHARGED PARTICLE PLOTS

For charged particle plots, a bar is drawn at the appropriate threshold energy and with a length corresponding to the data time coverage. The caption for a given bar shows the spacecraft name, the principal investigator's name (the first eight characters), the energy threshold in FORTRAN E format, and the species measured. The code used for species identification is: A = alpha particle, E = electron, P = proton, and Z = other. Note that the threshold energy scale may be distorted to accommodate the information presented.

Users of this section should be aware that these plots represent an incomplete presentation of information coded into keyword strings; these keyword strings are, by themselves, incomplete codifications of information available as brief descriptions in the main body (section 3) of this catalog. The degree of species, spectral, and angular resolution for the modes identified in the bar plots are specified in the brief descriptions. The keyword strings and descriptions contain identification of hydrogen and helium isotopes, $Z \geq 3$ species, and positrons, all of which are grouped under "other" in the bar plots. Some descriptions may identify more modes for a given experiment than there are bars in these plots. This is because the automated system cannot accept more than 10 keyword strings for a given experiment. Modes have been identified (within this constraint) for a given species with energy thresholds separated by no more than 1 decade (for experiments spanning several decades above 1 keV).

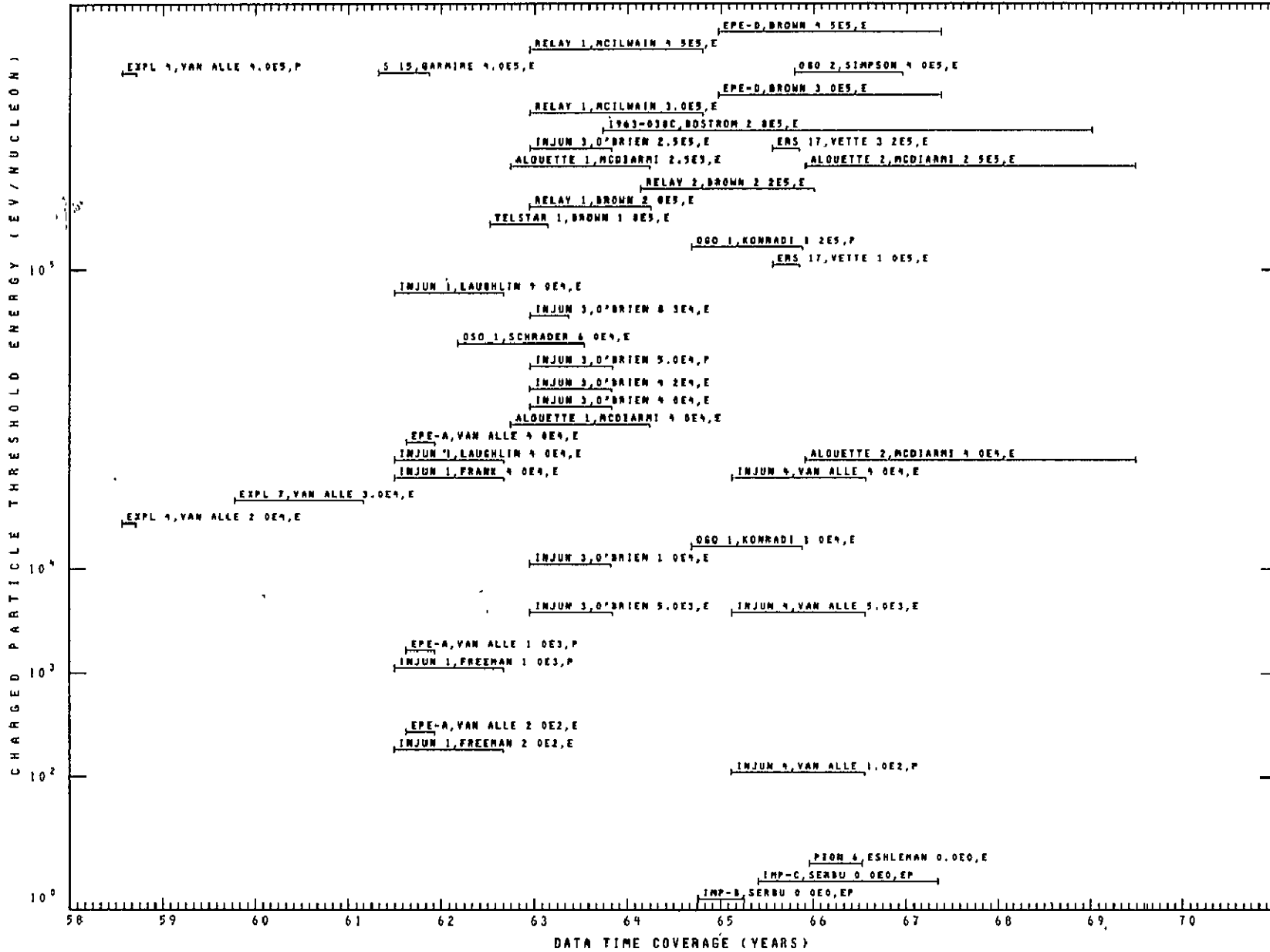
4.5.2 MAGNETIC FIELD PLOTS

These plots indicate (for a given time) the magnetic field data available for magnetospheric (including magnetotail) or interplanetary studies. Spacecraft and investigators are identified in the caption for each bar; the bars are ordered by spacecraft name. VLF experiments in which magnetic fields are separately measured are also shown in these plots. Due to the paucity of electric field data, no electric field plots have been generated.

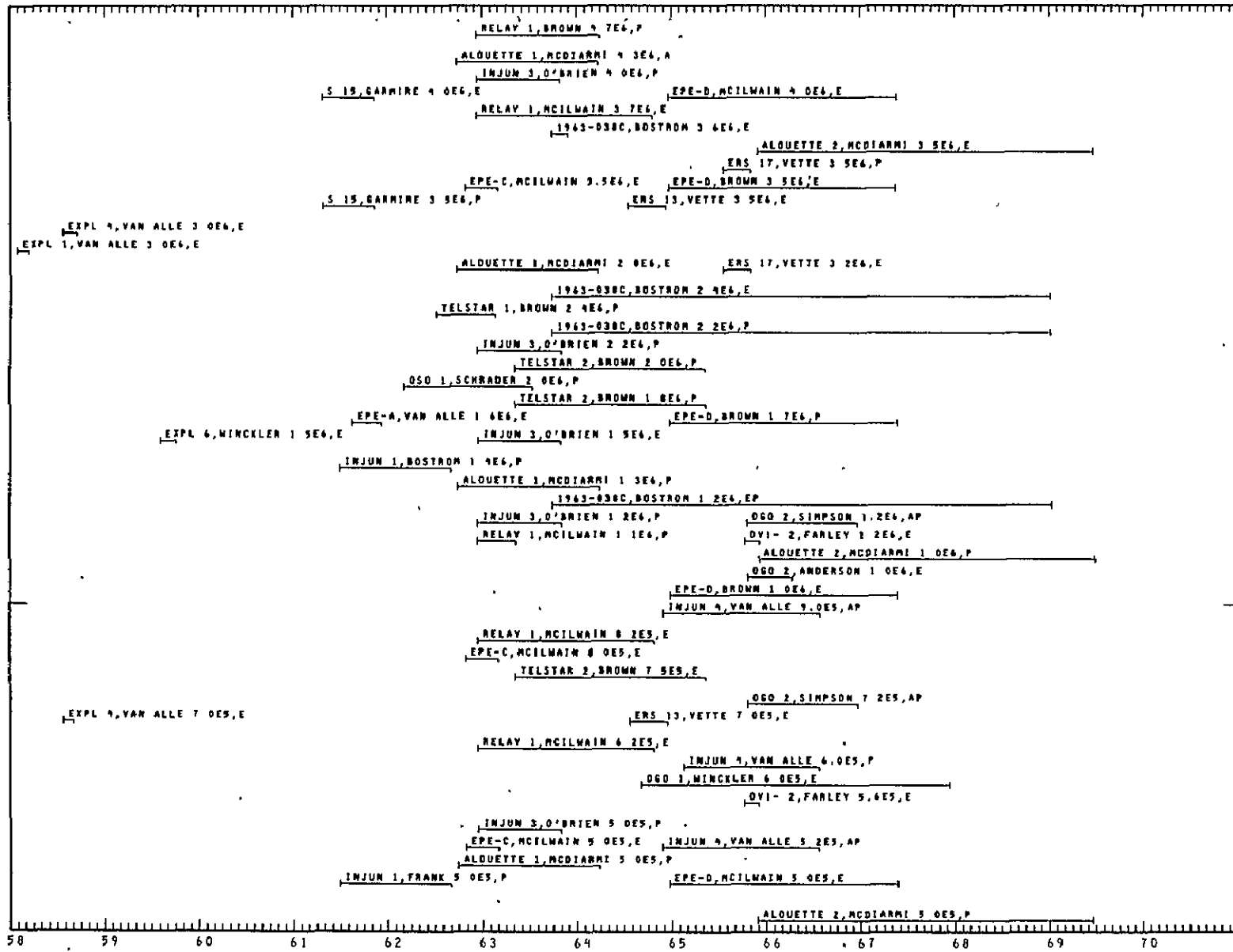
C-2

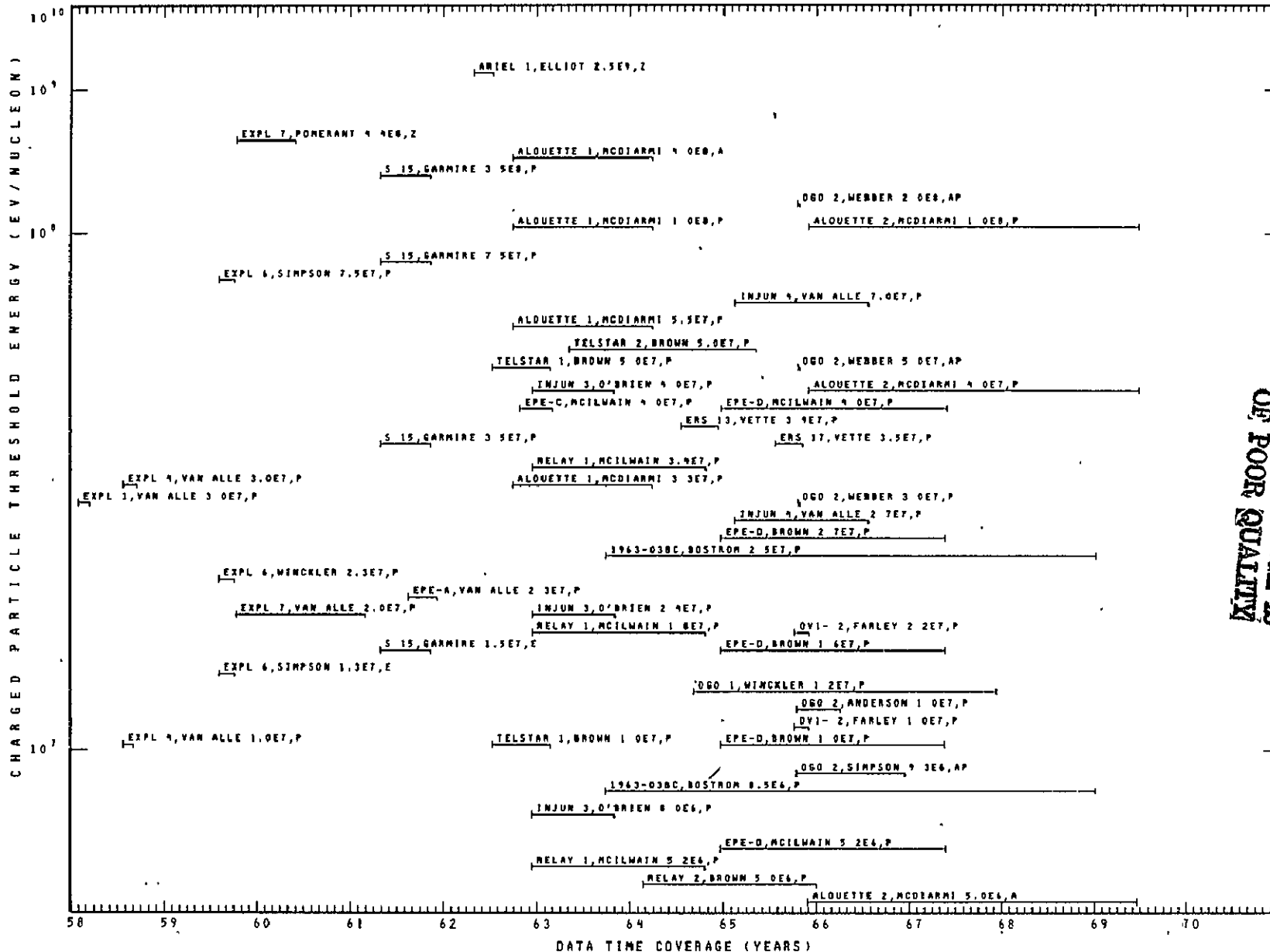
CHARGED PARTICLES - NEAR EARTH (45 TO 3000 KM ALTITUDE)

NSSDC, GREENBELT MD



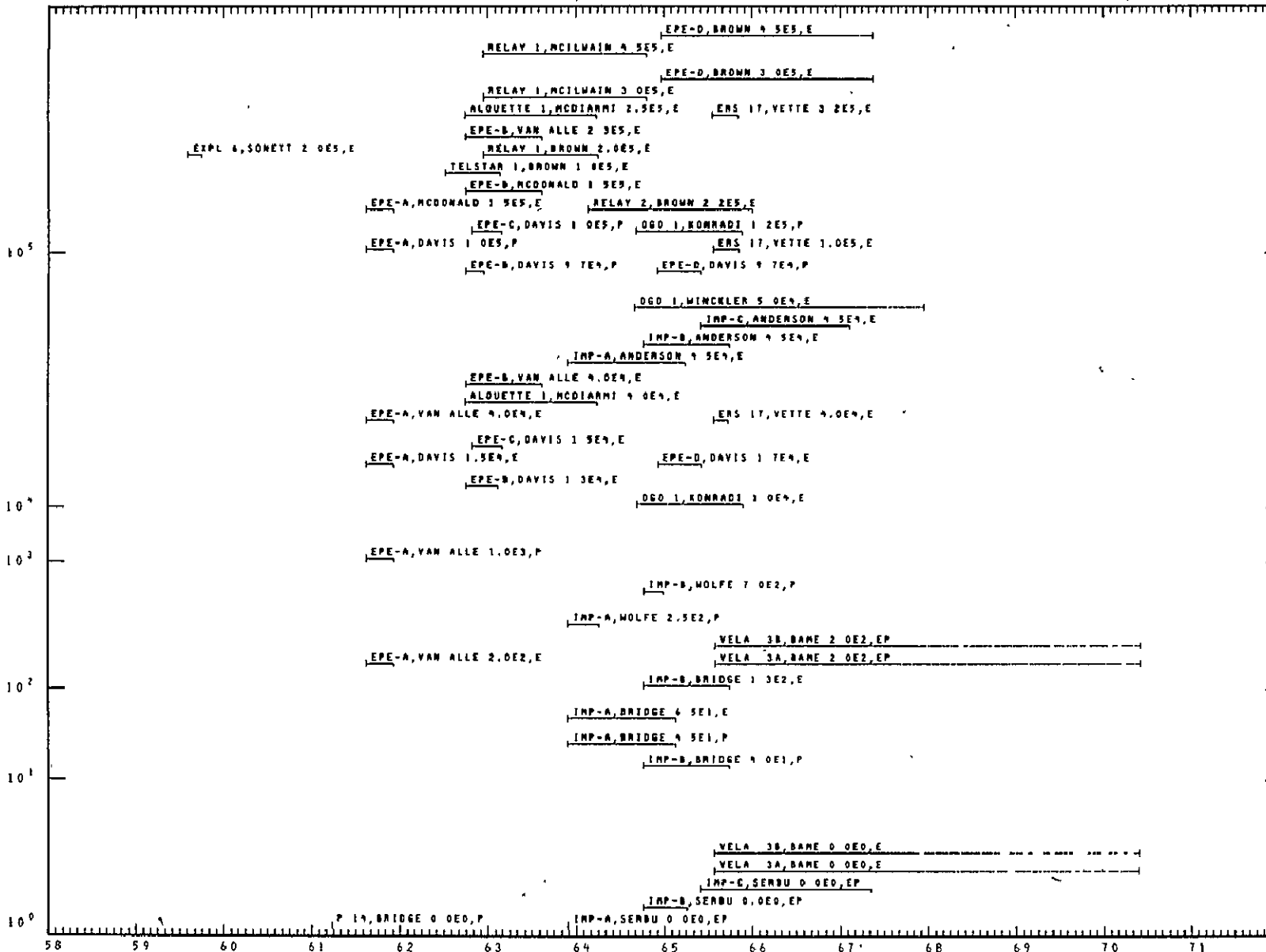
CHARGED PARTICLE THRESHOLD ENERGY (EV/NUCLEON)





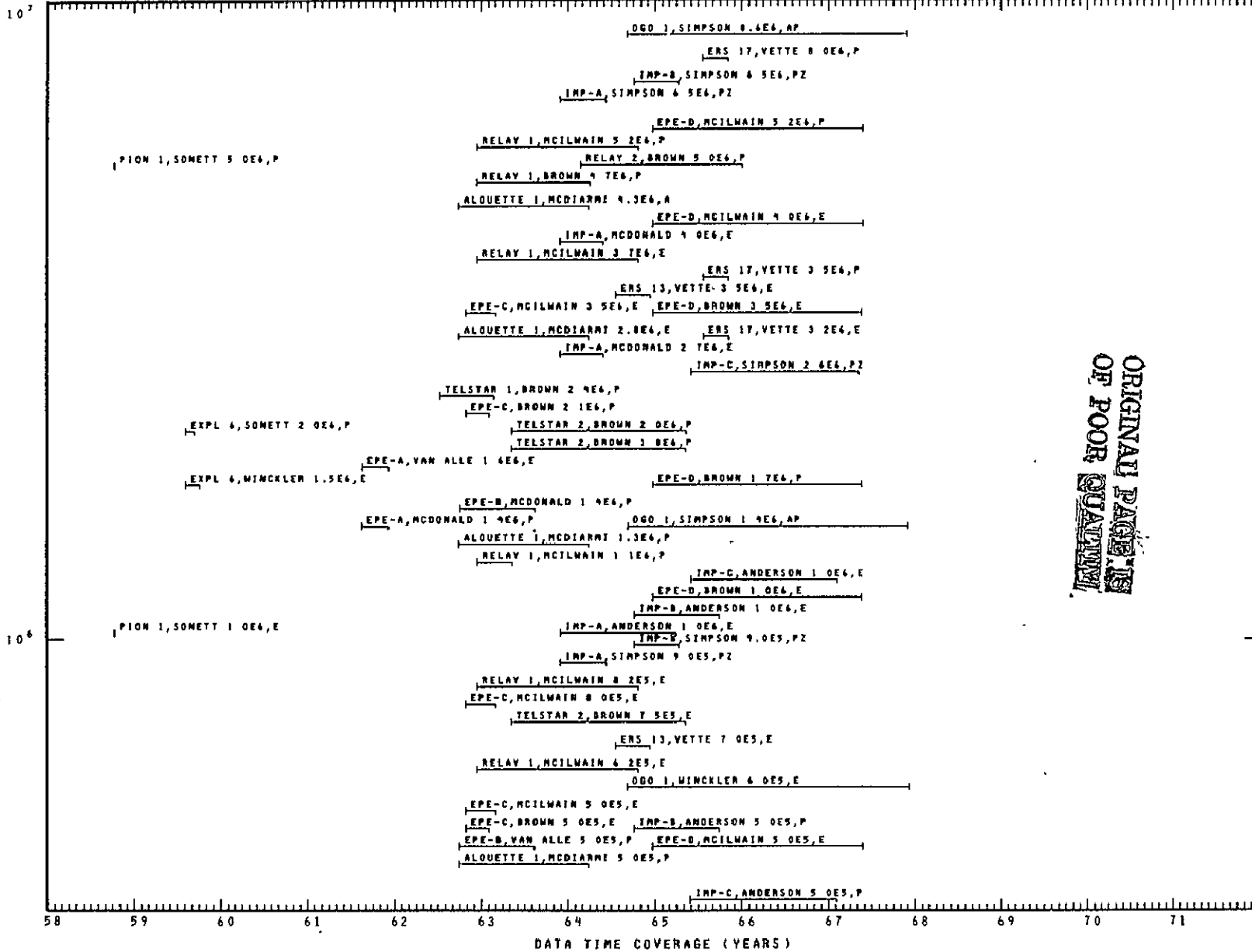
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CHARGED PARTICLE THRESHOLD ENERGY (EV/NUCLEON)

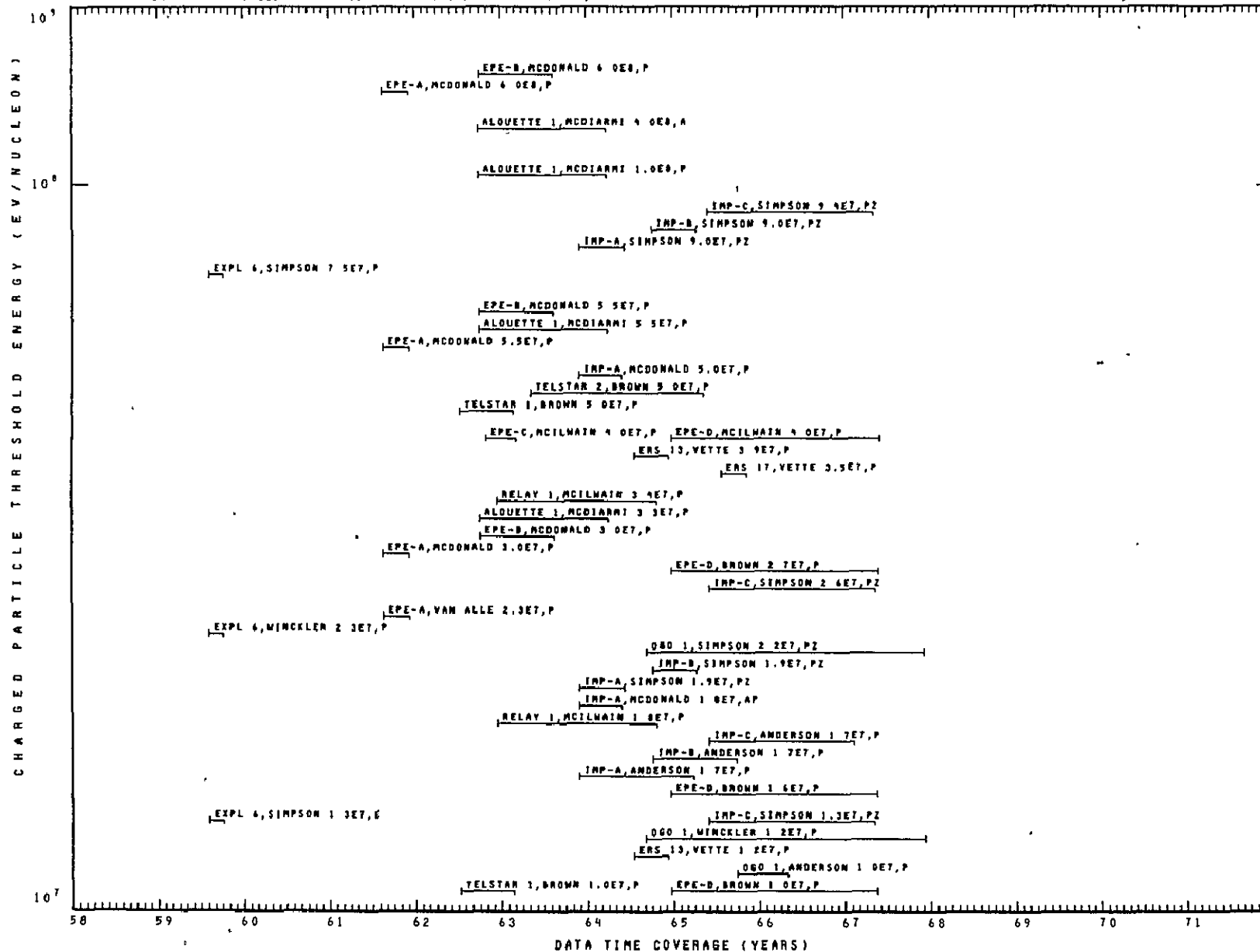


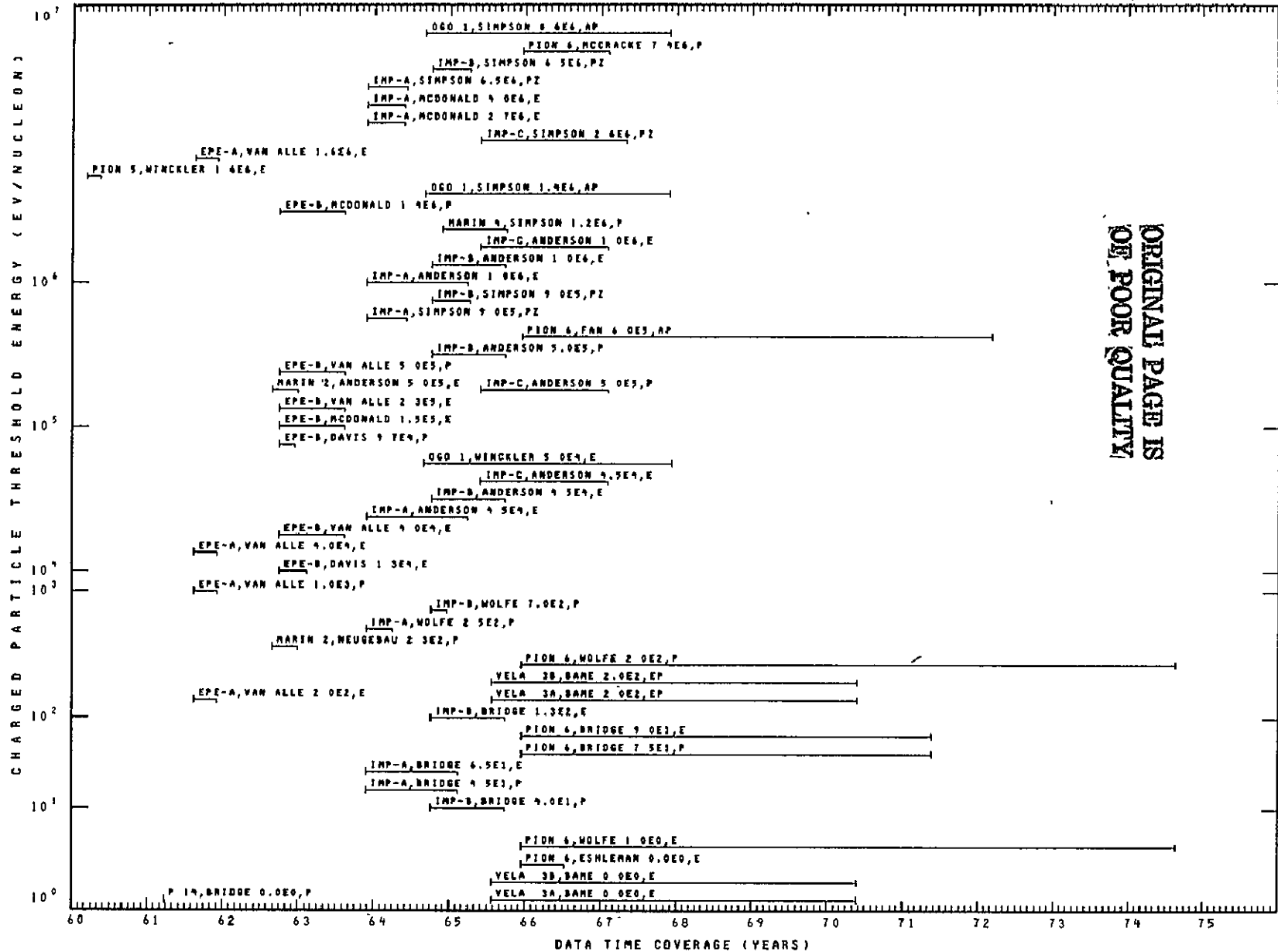
DATA TIME COVERAGE (YEARS)

CHARGED PARTICLE THRESHOLD ENERGY (EV/NUCLEON)

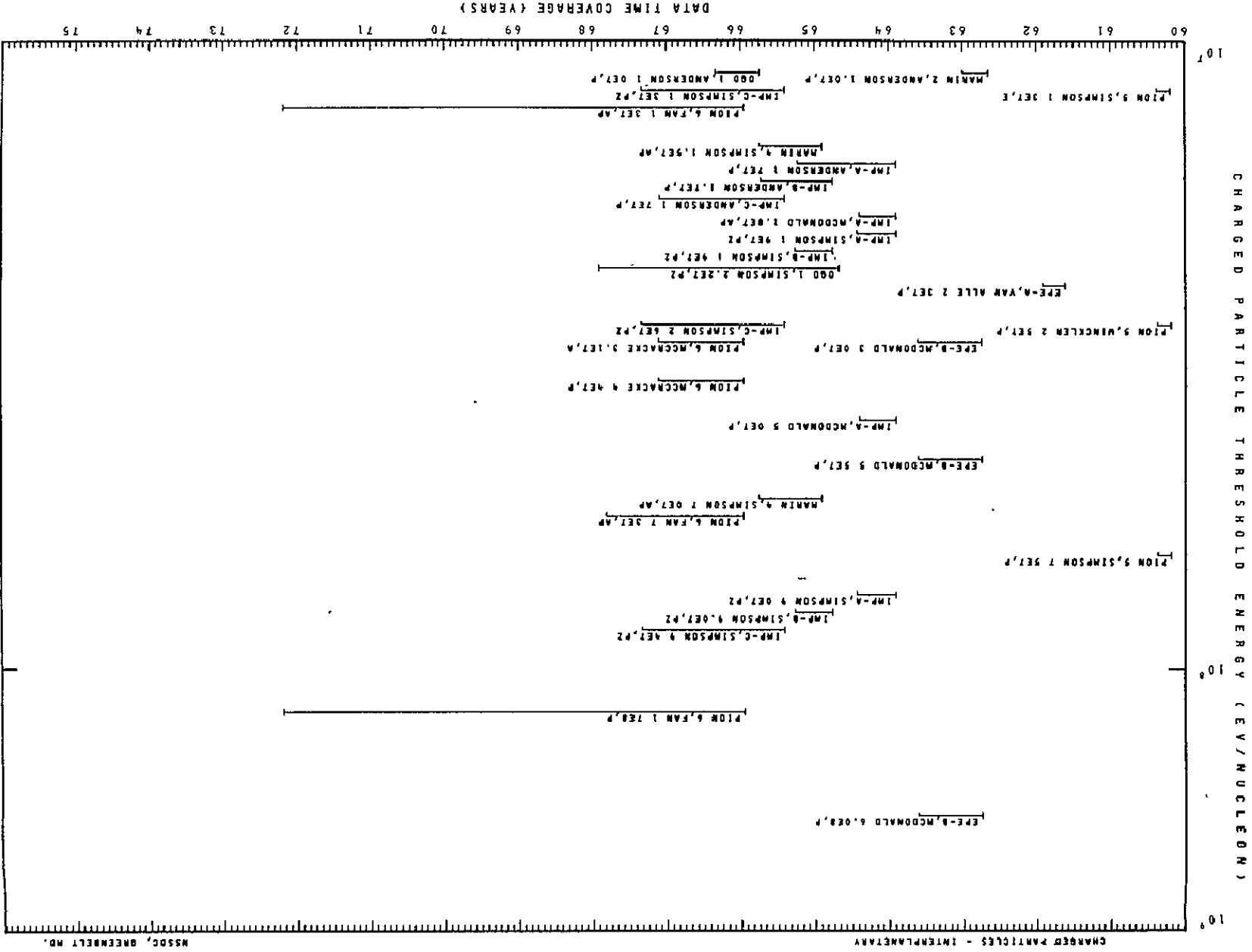


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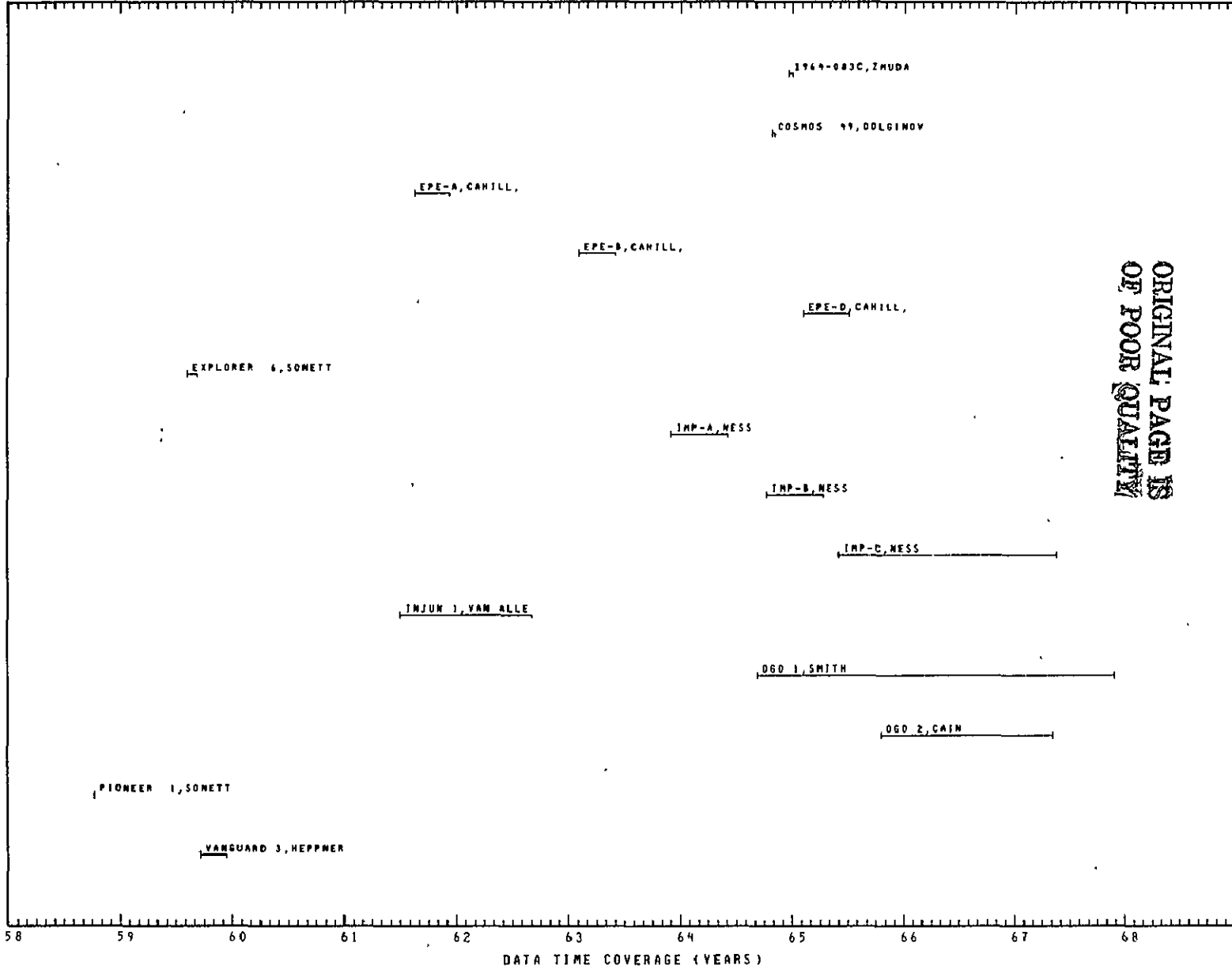




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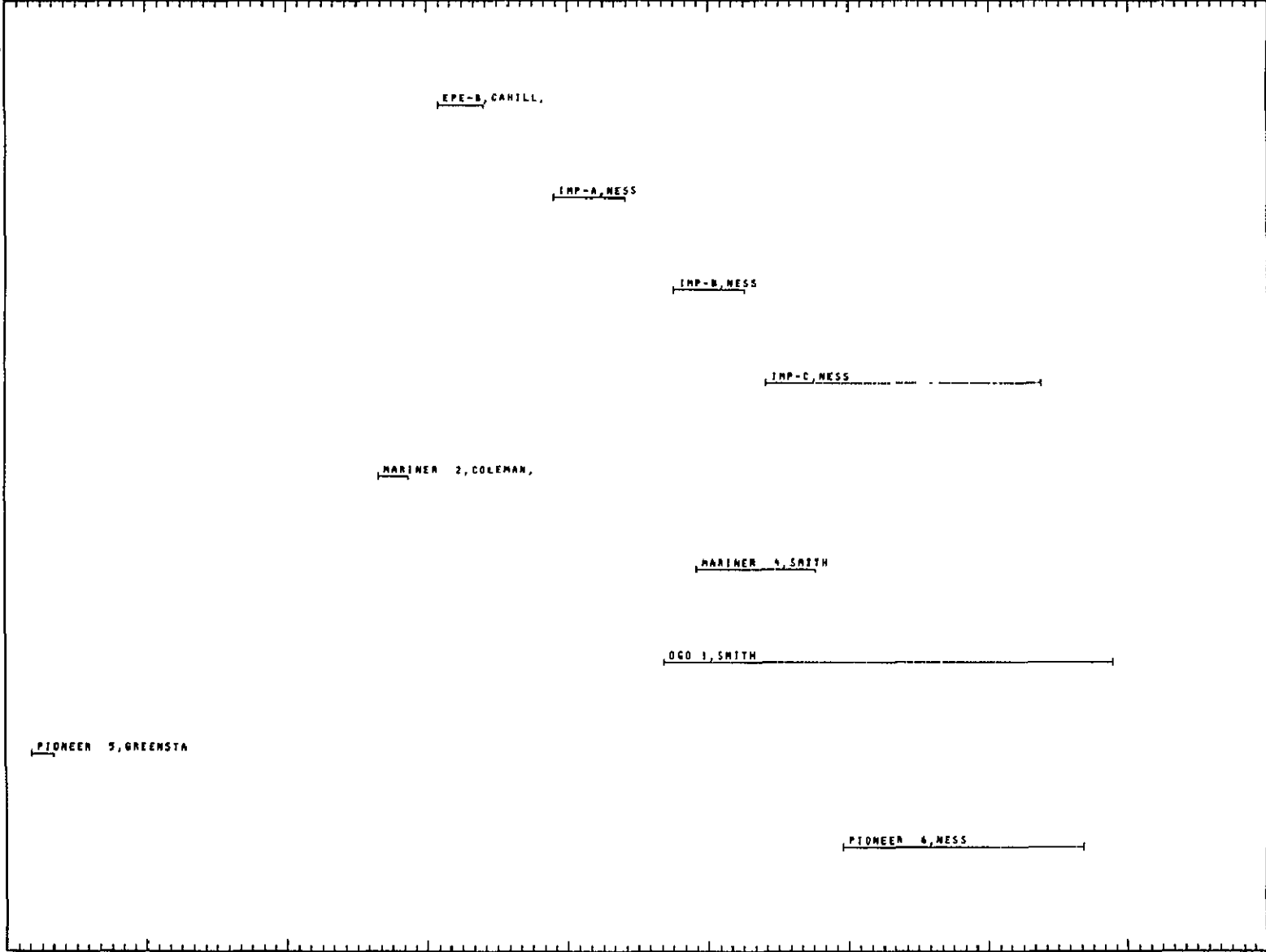


EXPERIMENT (ALPHABETICAL ORDER BY SATELLITE COMMON NAME)



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EXPERIMENT (ALPHABETICAL ORDER BY SATELLITE COMMON NAME)



EPE-B, CAHILL,

IMP-A, NESS

IMP-B, NESS

IMP-C, NESS

MARINER 2, COLEMAN,

MARINER 4, SAITH

OGO 1, SMITH

PIONEER 5, GREENSTA

PIONEER 4, NESS

DATA TIME COVERAGE (YEARS)



Phenomenon Measured Index

4.6 PHENOMENON MEASURED INDEX

The following outline is used for listing experiments according to the phenomenon measured:

1. Field Measurements
 - 1.1 Electric Field Measurements
 - 1.2 Magnetic Field Measurements
2. Charged Particle Measurements
 - 2.1 Sensing Electrons
 - 2.1.1 Electrons of Thermal Energies (≤ 1 keV)
 - 2.1.2 Electrons of Energies Greater than Thermal (> 1 keV)
 - 2.2 Sensing Protons or Hydrogen Ions
 - 2.3 Sensing Helium Nuclei
 - 2.4 Sensing Other Particle Species

The information contained under each major heading in the outline is uniquely sorted. For field measurements, there are three sorts: first by minimum frequency observable, next by maximum frequency observable, and last by NSSDC ID code. For dc field measurements, the minimum frequency observable is zero (shown as 0.00E-39) and the maximum frequency observable is usually the Nyquist frequency. Charged particle measurements are sorted by particle energy threshold, then by NSSDC ID code.

This index presents information in tabular form, with a variety of column headings. The headings that are common to each item in the outline are:

- Spacecraft Common Name
- NSSDC Experiment ID Code
- Principal Investigator Name
- NSSDC Experiment Title
- Region of Observation
- Time Span of Data (available from NSSDC)
- Pertinent Report Page Number (where the complete experiment entry is located)

The remaining column headings are self-explanatory except for (1) Planet, (2) Region, and (3) RES. Brief explanations of these column headings are:

(1) Planet: The planets are indicated in numerical order from the Sun. The Sun is designated as zero (0); numbers 1 through 9 indicate Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto, respectively. Letter M indicates the Earth's Moon.

(2) Region: Locations not covered or inadequately covered under "Planet" are identified alphabetically by:

- A = < 65 km altitude
- B = > 65 km altitude; < 3000 km, Lat $< 65^\circ$
- C = > 65 km altitude; < 3000 km, Lat 65° to 90°
- D = Magnetospheric; $L < 2 R_E$ (but not B or C)
- E = Magnetospheric; $2 R_E < L < 6 R_E$
- F = Magnetospheric; $6 R_E < L < 10 R_E$
- G = Magnetospheric; $L > R_E$
- H = Interplanetary Space
- I = Celestial

(3) RES: This column indicates species resolution for charged particle measurements:

- R = Resolved
- P = Partially resolved
- N = Unresolved
- U = Unknown resolution

A given species is considered resolved when a flux is associated with that species with a probability of erroneous flux-species association of less than 10 percent. A species is considered unresolved if the probability of erroneous association is greater than 40 percent.

SATELLITE NAME DESCRIPTIVE EXPERIMENT TITLE	EXPERIMENT ID EXPERIMENT TITLE	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC		RANGE OF MIN VALUE (F OR E) MAX MAX VALUE (LANBDA) MIN	MEASUREMENTS REGION	PLANET ABCDEFGHI/012345H 6789 PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY			

1. FIELD MEASUREMENTS

1.1 ELECTRIC FIELD MEASUREMENTS

P 11-A5	(64-045B-06)	SCARF					
VLF ELECTRIC FIELD DETECTOR.....			08/15/64	TO 09/13/64	1.700E 03 TO 1.450E 04 HZ	COEF	18

1.2 MAGNETIC FIELD MEASUREMENTS

MARINER 2	(62-041A-03)	COLEMAN, JR.					
FLUXGATE MAGNETOMETER.....			08/29/62	TO 11/15/62	0.000E-39 TO 1.200E-02 HZ	H	14
IMP-A	(63-046A-02)	NESS					
FLUXGATE MAGNETOMETER.....			11/27/63	TO 05/30/64	0.000E-39 TO 1.250E-02 HZ	FGH	11
IMP-B	(64-060A-02)	NESS					
FLUXGATE MAGNETOMETER.....			10/04/64	TO 04/05/65	0.000E-39 TO 1.250E-02 HZ	FGH	12
IMP-C	(65-042A-02)	NESS					
FLUXGATE MAGNETOMETER.....			05/29/65	TO 05/11/67	0.000E-39 TO 1.250E-02 HZ	FGH	12
MARINER 4	(64-077A-02)	SMITH					
HELIUM MAGNETOMETER.....			11/28/64	TO 10/01/65	0.000E-39 TO 1.330E-02 HZ	H	14
COSMOS 49	(64-069A-01)	DOLGINOV					
PROTON PRECESSIONAL MAGNETOMETERS.....			10/24/64	TO 11/03/64	0.000E-39 TO 1.700E-02 HZ	B	7
MARINER 2	(62-041A-03)	COLEMAN, JR.					
FLUXGATE MAGNETOMETER.....			08/29/62	TO 11/15/62	0.000E-39 TO 2.500E-02 HZ		2 14
OGO 1	(64-054A-01)	SMITH					
TRIAXIAL SEARCH-COIL MAGNETOMETER.....			09/05/64	TO 11/17/67	0.000E-39 TO 4.170E-02 HZ	B DEFGH	15
VANGUARD 3	(59-077A-01)	HEPPNER					
PROTON PRECESSIONAL MAGNETOMETER.....			09/18/59	TO 12/11/59	0.000E-39 TO 5.000E-02 HZ	B	20
INJUN 1	(61-015B-05)	VAN ALLEN					
FLUXGATE MAGNETOMETER.....			06/30/61	TO 08/31/62	0.000E-39 TO 5.000E-01 HZ	B	13
PIONEER 6	(65-105A-01)	NESS					
UNIAXIAL FLUXGATE MAGNETOMETER.....			12/17/65	TO 09/05/67	0.000E-39 TO 5.000E-01 HZ	H	20
1964-083C	(64-083C-01)	ZHUDA					
RUBIDIUM VAPOR MAGNETOMETER.....			12/17/64	TO 06/26/65	0.000E-39 TO 7.500E-01 HZ	B	7
EXPLORER 6	(59-004A-04)	SONETT					
SEARCH-COIL MAGNETOMETER.....			08/08/59	TO 09/10/59	0.000E-39 TO 1.000E 00 HZ	DEF	10
PIONEER 5	(60-001A-02)	GREENSTADT					
SEARCH-COIL MAGNETOMETER.....			03/11/60	TO 05/06/60	0.000E-39 TO 1.000E 00 HZ	H	19
OGO 2	(65-081A-05)	CAIN					
RUBIDIUM VAPOR MAGNETOMETER.....			10/14/65	TO 10/02/67	0.000E-39 TO 1.000E 00 HZ	C	17
EPE-A	(61-020A-02)	CAHILL, JR.					
FLUXGATE MAGNETOMETERS.....			08/16/61	TO 12/05/61	0.000E-39 TO 1.500E 00 HZ	EFG	8
EPE-B	(62-051A-02)	CAHILL, JR.					
FLUXGATE MAGNETOMETERS.....			01/01/63	TO 05/30/63	0.000E-39 TO 1.500E 00 HZ	EF GH	9
EPE-D	(64-086A-03)	CAHILL, JR.					
FLUXGATE MAGNETOMETERS.....			02/01/65	TO 06/30/65	0.000E-39 TO 1.500E 00 HZ	E	9
PIONEER 1	(58-007A-02)	SONETT					
SINGLE AXIS SEARCH-COIL MAGNETOMETER.....			10/11/58	TO 10/11/58	0.000E-39 TO 2.500E 01 HZ	DEF	18
OGO 1	(64-054A-01)	SMITH					
TRIAXIAL SEARCH-COIL MAGNETOMETER.....			09/05/64	TO 11/17/67	1.000E 01 TO 1.000E 03 HZ	B DEFGH	15

2. CHARGED PARTICLE MEASUREMENTS

2.1 SENSING ELECTRONS

2.1.1 ELECTRONS OF THERMAL ENERGIES (LESS THAN OR EQUAL TO 1 KEV)

PIONEER 6	(65-105A-04)	ESHELMAN					
TWO-FREQUENCY BEACON RECEIVER.....			12/16/65	TO 07/11/66	R THERMAL ENERGIES	B H O	68
IMP-A	(63-046A-01)	SERBU					
RETARDING POTENTIAL ANALYZER.....			11/27/63	TO 11/27/63	R THERMAL ENERGIES	DE	40
IMP-B	(64-060A-01)	SERBU					
RETARDING POTENTIAL ANALYZER.....			10/04/64	TO 04/05/65	P THERMAL ENERGIES	B E	43
IMP-C	(65-042A-01)	SERBU					
RETARDING POTENTIAL ANALYZER.....			05/29/65	TO 05/05/67	P THERMAL ENERGIES	B DE	45
VELA 3A	(65-058A-04)	BANE					
ELECTROSTATIC ANALYZER AND GM TUBES.....			07/26/65	TO 05/21/70	R THERMAL ENERGIES	GH	74
VELA 3B	(65-058B-04)	BANE					
ELECTROSTATIC ANALYZER AND GM TUBES.....			07/26/65	TO 05/21/70	R THERMAL ENERGIES	GH	75
PIONEER 6	(65-105A-05)	WOLFE					
ELECTROSTATIC ANALYZER.....			12/16/65	TO 08/17/74	R 1.000E 00 TO 5.000E 02 EV	H	69
IMP-A	(63-046A-07)	BRIDGE					
FARADAY CUP.....			11/27/63	TO 01/13/65	R 6.500E 01 TO 2.100E 02 EV	DEF H	39
PIONEER 6	(65-105A-02)	BRIDGE					
SOLAR WIND PLASMA FARADAY CUP.....			12/16/65	TO 05/18/71	R 9.000E 01 TO 1.580E 03 EV	H	67
IMP-B	(64-060A-07)	BRIDGE					
FARADAY CUP.....			10/04/64	TO 09/24/65	R 1.300E 02 TO 2.650E 02 EV	DEF H	43
VELA 3B	(65-058B-04)	BANE					
ELECTROSTATIC ANALYZER AND GM TUBES.....			07/26/65	TO 05/21/70	R 2.000E 02 TO 1.800E 04 EV	GH	75
INJUN 1	(61-015B-02)	FREEMAN					
CADMIUM SULFIDE DETECTOR.....			06/30/61	TO 08/31/62	N 2.000E 02 TO 5.000E 05 EV	B	47
VELA 3A	(65-058A-04)	BANE					
ELECTROSTATIC ANALYZER AND GM TUBES.....			07/26/65	TO 05/21/70	R 2.000E 02 TO 1.800E 04 EV	GH	74
EPE-A	(61-020A-03)	VAN ALLEN					
CHARGED PARTICLES.....			08/16/61	TO 12/06/61	N 2.000E 02 TO 5.000E 05 EV	B DEF H	26

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC R RANGE OF		MEASUREMENTS (F OR E) MAX (LAMBDA) MIN	REGION ABCDEFHI	PLANET 0123456 6789	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY				
2.1-2 ELECTRONS OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)								
INJUN 4 PLASTIC SCINTILLATOR PARTICLE DETECTORS	(64-0768-06)	VAN ALLEN	02/13/65	TO 07/19/66	R 5.000E 03 TO INFINITY	EV C		52
INJUN 3 DC SCINTILLATOR	(62-0678-05)	O'BRIEN	12/14/62	TO 10/31/63	N 5.000E 03 TO INFINITY	EV BC		50
INJUN 3 ELECTRON MULTIPLIER	(62-0678-06)	O'BRIEN	12/14/62	TO 10/25/63	R 1.000E 04 TO INFINITY	EV BC		50
OGO 1 TRAPPED RADIATION SCINTILLATION COUNTER	(64-054A-16)	KONRADI	09/07/64	TO 11/16/65	R 1.000E 04 TO 1.000E 05	EV B DEFG		56
EPE-B PROTON-ELECTRON SCINTILLATION COUNTER	(62-051A-05)	DAVIS	10/02/62	TO 08/10/63	R 1.300E 04 TO 1.000E 05	EV EFGH		27
EPE-A PROTON-ELECTRON SCINTILLATION COUNTER	(61-020A-05)	DAVIS	08/16/61	TO 12/06/61	R 1.500E 04 TO 1.000E 05	EV EFG		26
EPE-C PROTON-ELECTRON SCINTILLATION COUNTER	(62-059A-05)	DAVIS	10/28/62	TO 01/27/63	R 1.500E 04 TO 1.000E 05	EV E		29
EPE-D PROTON-ELECTRON SCINTILLATION COUNTER	(64-086A-04)	DAVIS	12/00/64	TO 06/00/65	R 1.700E 04 TO 1.000E 05	EV E		31
EXPLORER 4 CHARGED PARTICLE DETECTOR	(58-005A-01)	VAN ALLEN	07/26/58	TO 09/19/58	N 2.000E 04 TO INFINITY	EV B		34
EXPLORER 7 TRAPPED RADIATION AND SOLAR PROTONS	(59-009A-04)	VAN ALLEN	10/13/59	TO 02/28/61	N 3.000E 04 TO INFINITY	EV B		37
INJUN 1 ELECTRON DIFFERENTIAL ENERGY SPECTROMETER	(61-015B-03)	LAUGHLIN	06/30/61	TO 08/31/62	R 4.000E 04 TO 5.000E 04	EV B		48
INJUN 3 GEIGER TUBE DETECTORS	(62-0678-01)	O'BRIEN	12/14/62	TO 10/28/63	N 4.000E 04 TO INFINITY	EV BC		48
ERS 17 X-RAY DETECTORS	(65-058C-02)	VETTE	07/20/65	TO 09/15/65	R 4.000E 04 TO INFINITY	EV EF		33
INJUN 1 GM COUNTER	(61-015B-01)	FRANK	06/29/61	TO 08/31/62	N 4.000E 04 TO INFINITY	EV B		47
EPE-B TRAPPED PARTICLE RADIATION	(62-051A-03)	VAN ALLEN	10/02/62	TO 08/11/63	P 4.000E 04 TO INFINITY	EV DEF H		28
INJUN 4 GEIGER-MUELLER COUNTER	(64-0768-03)	VAN ALLEN	02/13/65	TO 07/19/66	N 4.000E 04 TO INFINITY	EV BC		51
EPE-A CHARGED PARTICLES	(61-020A-03)	VAN ALLEN	08/16/61	TO 12/06/61	R 4.000E 04 TO 1.000E 05	EV B DEF H		26
ALOUETTE 2 ENERGETIC PARTICLES DETECTORS	(65-098A-04)	MCDIARMID	11/29/65	TO 06/18/69	R 4.000E 04 TO INFINITY	EV BC		24
ALOUETTE 1 ENERGETIC PARTICLES DETECTORS	(62-049A-02)	MCDIARMID	09/29/62	TO 03/26/64	R 4.000E 04 TO INFINITY	EV CDEF		24
INJUN 3 MAGNETIC DIFFERENTIAL ELECTRON SPECTROMETER	(62-0678-03)	O'BRIEN	12/14/62	TO 10/28/63	N 8.300E 04 TO 9.800E 04	EV BC		49
IMP-A ION CHAMBER AND GM COUNTERS	(63-046A-05)	ANDERSON	11/27/63	TO 03/26/65	R 4.500E 04 TO INFINITY	EV EFGH		38
IMP-B ION CHAMBER AND GM COUNTERS	(64-060A-05)	ANDERSON	10/04/64	TO 09/23/65	R 4.500E 04 TO INFINITY	EV EFGH		42
IMP-C ION CHAMBER AND GM COUNTERS	(65-042A-05)	ANDERSON	05/29/65	TO 01/03/67	R 4.500E 04 TO INFINITY	EV H		45
OGO 1 ELECTRON SPECTROMETER	(64-054A-21)	WINCKLER	09/00/64	TO 12/06/67	R 5.000E 04 TO 4.000E 06	EV DEF H		59
OSD 1 PROTON ELECTRON ANALYZER	(62-006A-11)	SCHRADER	03/07/62	TO 07/14/63	R 6.000E 04 TO INFINITY	EV B		62
INJUN 3 MAGNETIC DIFFERENTIAL ELECTRON SPECTROMETER	(62-0678-03)	O'BRIEN	12/14/62	TO 10/28/63	N 8.300E 04 TO 9.800E 04	EV BC		49
INJUN 1 ELECTRON DIFFERENTIAL ENERGY SPECTROMETER	(61-015B-03)	LAUGHLIN	06/30/61	TO 08/31/62	R 9.000E 04 TO 1.000E 05	EV B		48
ERS 17 CHARGED PARTICLE DETECTORS	(65-058C-01)	VETTE	07/20/65	TO 11/03/65	R 1.000E 05 TO INFINITY	EV B DEF		32
EPE-A COSMIC RAYS	(61-020A-04)	MCDONALD	08/16/61	TO 12/06/61	P 1.500E 05 TO INFINITY	EV EFG		26
EPE-B COSMIC RAYS	(62-051A-04)	MCDONALD	10/02/62	TO 08/11/63	R 1.500E 05 TO INFINITY	EV EFGH		28
TELSTAR 1 PROTON AND ELECTRON RADIATION	(62-029A-01)	BROWN	07/10/62	TO 02/21/63	R 1.800E 05 TO 9.900E 05	EV B DE		73
EXPLORER 6 SCINTILLATION COUNTER	(59-004A-02)	SONETT	08/07/59	TO 10/02/59	P 2.000E 05 TO INFINITY	EV DEF		35
RELAY 1 SOLID-STATE ION CHAMBER ELECTRON AND PROTON DETECTOR	(62-068A-02)	BROWN	12/13/62	TO 03/31/64	R 2.000E 05 TO 1.000E 06	EV B DE		70
RELAY 2 SOLID-STATE ION CHAMBER ELECTRON AND PROTON DETECTOR	(64-003A-02)	BROWN	01/21/64	TO 12/31/65	R 2.230E 05 TO 1.120E 06	EV B DE		72
EPE-B TRAPPED PARTICLE RADIATION	(62-051A-03)	VAN ALLEN	10/02/62	TO 08/11/63	P 2.300E 05 TO INFINITY	EV DEF H		28
INJUN 3 GEIGER TUBE DETECTORS	(62-0678-01)	O'BRIEN	12/14/62	TO 10/28/63	N 2.500E 05 TO INFINITY	EV BC		48
ALOUETTE 2 ENERGETIC PARTICLES DETECTORS	(65-098A-04)	MCDIARMID	11/29/65	TO 06/18/69	R 2.500E 05 TO INFINITY	EV BC		24
ALOUETTE 1 ENERGETIC PARTICLES DETECTORS	(62-049A-02)	MCDIARMID	09/29/62	TO 03/26/64	R 2.500E 05 TO INFINITY	EV CDEF		24
1963-038C ENERGETIC ELECTRON AND PROTON DETECTORS	(63-038C-01)	BOSTROM	09/28/63	TO 12/31/68	R 2.800E 05 TO INFINITY	EV C		23
EPE-D SOLID-STATE ELECTRON DETECTOR	(64-086A-01)	BROWN	12/21/64	TO 05/15/67	P 3.000E 05 TO 4.500E 05	EV B DE		30
RELAY 1 PROTON-ELECTRON DETECTORS	(62-068A-03)	MCILWAIN	12/14/62	TO 10/20/64	R 3.000E 05 TO INFINITY	EV B DE		71
ERS 17 CHARGED PARTICLE DETECTORS	(65-058C-01)	VETTE	07/20/65	TO 11/03/65	R 3.200E 05 TO INFINITY	EV B DE		32
S 15 CRYSTAL SANDWICH/CERENKOV COUNTER	(61-013A-02)	GARMIRE	04/28/61	TO 11/12/61	R 4.000E 05 TO 4.000E 06	EV B		73
OGO 2 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT	(65-081A-07)	SIMPSON	10/14/65	TO 12/13/66	R 4.000E 05 TO INFINITY	EV C		61
EPE-D SOLID-STATE ELECTRON DETECTOR	(64-086A-01)	BROWN	12/21/64	TO 05/15/67	P 4.500E 05 TO INFINITY	EV B DE		30
RELAY 1 PROTON-ELECTRON DETECTORS	(62-068A-03)	MCILWAIN	12/14/62	TO 10/20/64	R 4.500E 05 TO INFINITY	EV B DE		71
MARINER 2 COSMIC-RAY IONIZATION	(62-041A-04)	ANDERSON	08/28/62	TO 12/30/62	N 5.000E 05 TO INFINITY	EV H	2	53

LIMITING DATES OF -
DATA AT NSSDC R RANGE OF MEASUREMENTS REGION PLANET
EARLIEST LATEST E MIN VALUE (F OR E) MAX ABCDEFGHI/012345H
MM/DD/YY MM/DD/YY S MAX VALUE (LAMBDA) MIN 6789 PAGE

2.1-2 ELECTRONS OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)

SATELLITE NAME	EXPERIMENT ID	EXPERIMENTER	EARLIEST	LATEST	E MIN	VALUE	(F OR E)	MAX	REGION	PLANET	PAGE
DESCRIPTIVE EXPERIMENT TITLE			MM/DD/YY	MM/DD/YY	S	MAX VALUE	(LAMBDA)	MIN			
EPE-C	(62-059A-01)	BROWN									
ELECTRON AND PROTON SOLID-STATE DETECTORS.....			10/27/62	TO 01/01/63	R	5.000E	05	TO 2.900E	06	EV	DE 29
EPE-D	(64-086A-02)	MCILWAIN									
OMNIDIRECTIONAL AND UNIDIRECTIONAL ELECTRON AND PROTON FLUXES.....			12/21/64	TO 05/21/67	R	5.000E	05	TO INFINITY		EV	B DEF 31
EPE-C	(62-059A-02)	MCILWAIN									
DIRECTIONAL AND OMNIDIRECTIONAL ENERGETIC PROTONS AND ELECTRONS.....			10/27/62	TO 01/30/63	R	5.000E	05	TO INFINITY		EV	B DE 30
OVI- 2	(65-078A-02)	FARLEY									
ELECTRON AND PROTON DETECTORS.....			10/05/65	TO 12/01/65	R	5.600E	05	TO INFINITY		EV	B 63
OGD 1	(64-054A-20)	WINCKLER									
IONIZATION CHAMBER.....			09/05/64	TO 12/06/67	N	6.000E	05	TO INFINITY		EV	B OEF6 57
RELAY 1	(62-068A-03)	MCILWAIN									
PROTON-ELECTRON DETECTORS.....			12/14/62	TO 10/20/64	R	6.200E	05	TO INFINITY		EV	B DE 71
ERS 13	(64-040C-01)	VETTE									
CHARGED PARTICLE DETECTORS.....			07/17/64	TO 12/08/64	R	7.000E	05	TO INFINITY		EV	B DE 32
EXPLORER 4	(58-005A-01)	VAN ALLEN									
CHARGED PARTICLE DETECTOR.....			07/26/58	TO 09/19/58	N	7.000E	05	TO INFINITY		EV	B 34
TELSTAR 2	(63-013A-01)	BROWN									
PROTON AND ELECTRON RADIATION.....			05/07/63	TO 05/07/65	R	7.500E	05	TO 1.400E	06	EV	B DE 74
EPE-C	(62-059A-02)	MCILWAIN									
DIRECTIONAL AND OMNIDIRECTIONAL ENERGETIC PROTONS AND ELECTRONS.....			10/27/62	TO 01/30/63	R	8.000E	05	TO INFINITY		EV	B DE 30
RELAY 1	(62-068A-03)	MCILWAIN									
PROTON-ELECTRON DETECTORS.....			12/14/62	TO 10/20/64	R	8.200E	05	TO INFINITY		EV	B DE 71
PIONFER 1	(58-007A-01)	SONETT									
ION CHAMBER.....			10/11/58	TO 10/13/58	N	1.000E	06	TO INFINITY		EV	DE 65
IMP-A	(63-046A-05)	ANDERSON									
ION CHAMBER AND GM COUNTERS.....			11/27/63	TO 03/26/65	N	1.000E	06	TO INFINITY		EV	EF6H 38
IMP-B	(64-060A-05)	ANDERSON									
ION CHAMBER AND GM COUNTERS.....			10/04/64	TO 09/23/65	N	1.000E	06	TO INFINITY		EV	EF6H 42
EPE-D	(64-086A-01)	BROWN									
SOLID-STATE ELECTRON DETECTOR.....			12/21/64	TO 05/15/67	P	1.000E	06	TO 3.500E	06	EV	B DE 30
IMP-C	(65-042A-05)	ANDERSON									
ION CHAMBER AND GM COUNTERS.....			05/29/65	TO 01/03/67	N	1.000E	06	TO INFINITY		EV	H 45
OGD 2	(65-081A-06)	ANDERSON									
COSMIC-RAY IONIZATION.....			10/14/65	TO 04/02/66	N	1.000E	06	TO INFINITY		EV	C 61
OVI- 2	(65-078A-02)	FARLEY									
ELECTRON AND PROTON DETECTORS.....			10/05/65	TO 12/01/65	R	1.200E	06	TO 4.700E	06	EV	B 63
1963-038C	(63-038C-01)	BOSTROM									
ENERGETIC ELECTRON AND PROTON DETECTORS.....			09/28/63	TO 12/31/68	R	1.200E	06	TO INFINITY		EV	C 23
INJUN 3	(62-067B-04)	O'BRIEN									
INTEGRAL MAGNETIC ELECTRON SPECTROMETER.....			12/14/62	TO 10/25/63	R	1.500E	06	TO INFINITY		EV	BC 50
EXPLORER 6	(59-004A-03)	WINCKLER									
ION CHAMBER AND GM COUNTER.....			08/07/59	TO 10/06/59	N	1.500E	06	TO INFINITY		EV	B DEF 36
PIONEER 5	(60-001A-03)	WINCKLER									
ION CHAMBER AND GM TUBE.....			03/11/60	TO 05/17/60	N	1.600E	06	TO INFINITY		EV	H 66
EPE-A	(61-020A-03)	VAN ALLEN									
CHARGED PARTICLES.....			08/16/61	TO 12/06/61	N	1.600E	06	TO INFINITY		EV	B DEF H 26
1963-038C	(63-038C-01)	BOSTROM									
ENERGETIC ELECTRON AND PROTON DETECTORS.....			09/28/63	TO 12/31/68	R	2.400E	06	TO INFINITY		EV	C 23
IMP-A	(63-046A-04)	MCDONALD									
COSMIC RAYS.....			11/27/63	TO 05/26/64	R	2.700E	06	TO 2.100E	07	EV	FGH 40
ALQUETTE 1	(62-049A-02)	MCDIARMID									
ENERGETIC PARTICLES DETECTORS.....			09/29/62	TO 03/26/64	R	2.800E	06	TO INFINITY		EV	COEF 24
EXPLORER 1	(58-001A-01)	VAN ALLEN									
COSMIC-RAY DETECTOR.....			02/01/58	TO 03/15/58	N	3.000E	06	TO INFINITY		EV	B 34
EXPLORER 4	(58-005A-01)	VAN ALLEN									
CHARGED PARTICLE DETECTOR.....			07/26/58	TO 09/19/58	N	3.000E	06	TO INFINITY		EV	B 34
ERS 17	(65-058C-01)	VETTE									
CHARGED PARTICLE DETECTORS.....			07/20/65	TO 11/03/65	P	3.200E	06	TO 7.500E	06	EV	B DE 32
EPE-C	(62-059A-02)	MCILWAIN									
DIRECTIONAL AND OMNIDIRECTIONAL ENERGETIC PROTONS AND ELECTRONS.....			10/27/62	TO 01/30/63	R	3.500E	06	TO INFINITY		EV	B DE 30
ERS 13	(64-040C-01)	VETTE									
CHARGED PARTICLE DETECTORS.....			07/17/64	TO 12/08/64	R	3.500E	06	TO INFINITY		EV	B DE 32
ALQUETTE 2	(65-098A-04)	MCDIARMID									
ENERGETIC PARTICLES DETECTORS.....			11/29/65	TO 06/18/69	R	3.500E	06	TO INFINITY		EV	BC 24
EPE-D	(64-086A-01)	BROWN									
SOLID-STATE ELECTRON DETECTOR.....			12/21/64	TO 05/15/67	P	3.500E	06	TO INFINITY		EV	B DE 30
1963-038C	(63-038C-01)	BOSTROM									
ENERGETIC ELECTRON AND PROTON DETECTORS.....			09/28/63	TO 12/31/68	R	3.600E	06	TO INFINITY		EV	C 23
RELAY 1	(62-068A-03)	MCILWAIN									
PROTON-ELECTRON DETECTORS.....			12/14/62	TO 10/20/64	N	3.700E	06	TO INFINITY		EV	B DE 71
IMP-A	(63-046A-04)	MCDONALD									
COSMIC RAYS.....			11/27/63	TO 05/26/64	N	4.000E	06	TO INFINITY		EV	FGH 40
EPE-D	(64-086A-02)	MCILWAIN									
OMNIDIRECTIONAL AND UNIDIRECTIONAL ELECTRON AND PROTON FLUXES.....			12/21/64	TO 05/21/67	R	4.000E	06	TO INFINITY		EV	B DEF 31
S 15	(61-013A-02)	GARMIRE									
CRYSTAL SANDWICH/CERENKOV COUNTER.....			04/28/61	TO 11/12/61	R	4.000E	06	TO 1.500E	07	EV	B 73
EXPLORER 6	(59-004A-01)	SIMPSON									
PROPORTIONAL COUNTER TELESCOPE.....			08/07/59	TO 10/06/59	N	1.300E	07	TO INFINITY		EV	B DEF 35
PIONEER 5	(60-001A-01)	SIMPSON									
PROPORTIONAL COUNTER TELESCOPE.....			03/11/60	TO 05/16/60	N	1.300E	07	TO INFINITY		EV	H 65
S 15	(61-013A-02)	GARMIRE									
CRYSTAL SANDWICH/CERENKOV COUNTER.....			04/28/61	TO 11/12/61	R	1.500E	07	TO INFINITY		EV	B 73


**ORIGINAL PAGE IS
OF POOR QUALITY**

SATELLITE NAME DESCRIPTIVE EXPERIMENT TITLE	EXPERIMENT ID EXPERIMENT TITLE	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC R RANGE OF		MEASUREMENTS REGION (F OR E) MAX ABCDEFGHI / 0 123456 6789	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY			
2.2 SENSING PROTONS OR HYDROGEN IONS							
P 14 PLASMA PROBE.....	(61-010A-02)	BRIDGE	03/25/61	TO 03/27/61	R THERMAL ENERGIES	EFGH	64
IMP-A RETARDING POTENTIAL ANALYZER.....	(63-046A-01)	SERBU	11/27/63	TO 11/27/63	R THERMAL ENERGIES	DE	40
IMP-B RETARDING POTENTIAL ANALYZER.....	(64-060A-01)	SERBU	10/04/64	TO 04/05/65	P THERMAL ENERGIES	B DE	43
IMP-C RETARDING POTENTIAL ANALYZER.....	(65-042A-01)	SERBU	05/29/65	TO 05/05/67	P THERMAL ENERGIES	B DE	45
IMP-B FARADAY CUP.....	(64-060A-07)	BRIDGE	10/04/64	TO 09/24/65	R 4.000E 01 TO 5.400E 03 EV	DEF H	43
IMP-A FARADAY CUP.....	(63-046A-07)	BRIDGE	11/27/63	TO 01/13/65	R 4.500E 01 TO 5.400E 03 EV	DEF H	39
PIONEER 6 SOLAR WIND PLASMA FARADAY CUP.....	(65-105A-02)	BRIDGE	12/16/65	TO 05/18/71	R 7.500E 01 TO 9.485E 03 EV	H	67
INJUN 4 CADMIUM SULFIDE DETECTORS.....	(64-076B-05)	VAN ALLEN	02/13/65	TO 07/19/66	N 1.000E 02 TO INFINITY EV	BC	52
VELA 3A ELECTROSTATIC ANALYZER AND GM TUBES.....	(65-058A-04)	BAME	07/26/65	TO 05/21/70	R 2.000E 02 TO 1.800E 04 EV	GH	74
PIONEER 6 ELECTROSTATIC ANALYZER.....	(65-105A-06)	WOLFE	12/16/65	TO 08/17/74	R 2.000E 02 TO 1.000E 04 EV	H	69
VELA 3B ELECTROSTATIC ANALYZER AND GM TUBES.....	(65-058B-04)	BAME	07/26/65	TO 05/21/70	R 2.000E 02 TO 1.800E 04 EV	GH	75
MARINER 2 SOLAR PLASMA ANALYZER.....	(62-041A-06)	NEUGEBAUER	08/29/62	TO 12/30/62	R 2.310E 02 TO 8.824E 03 EV	H	53
IMP-A SOLAR WIND PROTONS.....	(63-046A-06)	WOLFE	11/27/63	TO 04/03/64	R 2.500E 02 TO 1.600E 04 EV	GH	41
IMP-B SOLAR WIND PROTONS.....	(64-050A-06)	WOLFE	10/05/64	TO 12/23/64	R 7.000E 02 TO 8.000E 03 EV	H	44
INJUN 1 CADMIUM SULFIDE DETECTOR.....	(61-015B-02)	FREEMAN	06/30/61	TO 08/31/62	N 1.000E 03 TO 1.000E 07 EV	B	47
EPE-A CHARGED PARTICLES.....	(61-020A-03)	VAN ALLEN	08/16/61	TO 12/06/61	N 1.000E 03 TO 1.000E 07 EV	B DEF H	26
INJUN 3 DC SCINTILLATOR.....	(62-067B-05)	O'BRIEN	12/14/62	TO 10/31/63	N 5.000E 04 TO INFINITY EV	BC	50
EPE-B PROTON-ELECTRON SCINTILLATION DETECTOR.....	(62-051A-05)	DAVIS	10/02/62	TO 08/10/63	R 9.700E 04 TO 1.000E 07 EV	EFGH	27
EPE-D PROTON-ELECTRON SCINTILLATION DETECTOR.....	(64-086A-04)	DAVIS	12/00/64	TO 06/00/65	R 9.700E 04 TO 1.000E 07 EV	E	31
EPE-A PROTON-ELECTRON SCINTILLATION DETECTOR.....	(61-020A-05)	DAVIS	08/16/61	TO 12/06/61	R 1.000E 05 TO 1.000E 07 EV	EFG	26
EPE-C PROTON-ELECTRON SCINTILLATION DETECTOR.....	(62-059A-05)	DAVIS	10/28/62	TO 01/27/63	R 1.050E 05 TO 1.000E 07 EV	E	29
OGO 1 TRAPPED RADIATION SCINTILLATION COUNTER.....	(64-054A-16)	KONRADI	09/07/64	TO 11/16/65	R 1.200E 05 TO 4.500E 06 EV	B DEFG	56
EXPLORER 4 CHARGED PARTICLE DETECTOR.....	(58-005A-01)	VAN ALLEN	07/26/58	TO 09/19/58	N 4.000E 05 TO INFINITY EV	B	34
INJUN 1 GM COUNTER.....	(61-015B-01)	FRANK	06/29/61	TO 08/31/62	N 5.000E 05 TO INFINITY EV	B	47
EPE-B TRAPPED PARTICLE RADIATION.....	(62-051A-03)	VAN ALLEN	10/02/62	TO 08/11/63	P 5.000E 05 TO INFINITY EV	DEF H	28
ALOUETTE 2 ENERGETIC PARTICLES DETECTORS.....	(65-098A-04)	MCDIARMID	11/29/65	TO 06/18/69	R 5.000E 05 TO INFINITY EV	BC	24
INJUN 3 GEIGER TUBE DETECTORS.....	(62-067B-01)	O'BRIEN	12/14/62	TO 10/28/63	N 5.000E 05 TO INFINITY EV	BC	48
ALOUETTE 1 ENERGETIC PARTICLES DETECTORS.....	(62-049A-02)	MCDIARMID	09/29/62	TO 03/26/64	R 5.000E 05 TO INFINITY EV	CDEF	24
IMP-B ION CHAMBER AND GM COUNTERS.....	(64-060A-05)	ANDERSON	10/04/64	TO 09/23/65	N 5.000E 05 TO INFINITY EV	EFGH	42
IMP-C ION CHAMBER AND GM COUNTERS.....	(65-042A-05)	ANDERSON	05/29/65	TO 01/03/67	N 5.000E 05 TO INFINITY EV	H	45
INJUN 4 SOLID-STATE DETECTOR.....	(64-076B-04)	VAN ALLEN	11/23/64	TO 07/19/66	R 5.200E 05 TO 4.000E 06 EV	BC	52
INJUN 4 GEIGER-MUELLER COUNTER.....	(64-076B-03)	VAN ALLEN	02/13/65	TO 07/19/66	N 6.000E 05 TO INFINITY EV	BC	51
PIONEER 6 COSMIC-RAY TELESCOPE.....	(65-105A-03)	FAN	12/16/65	TO 03/03/72	R 6.000E 05 TO 1.390E 07 EV	H	68
OGO 2 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(65-081A-07)	SIMPSON	10/14/65	TO 12/13/66	N 7.200E 05 TO 1.100E 07 EV	C	61
IMP-A COSMIC-RAY RANGE VS ENERGY LOSS.....	(63-046A-03)	SIMPSON	11/27/63	TO 06/07/64	R 9.000E 05 TO 6.500E 06 EV	GH	41
IMP-B COSMIC-RAY RANGE VS ENERGY LOSS.....	(64-060A-03)	SIMPSON	10/04/64	TO 04/07/65	R 9.000E 05 TO 6.500E 06 EV	GH	43
INJUN 4 SOLID-STATE DETECTOR.....	(64-076B-04)	VAN ALLEN	11/23/64	TO 07/19/66	R 9.000E 05 TO 1.800E 06 EV	BC	52
ALOUETTE 2 ENERGETIC PARTICLES DETECTORS.....	(65-098A-04)	MCDIARMID	11/29/65	TO 06/18/69	R 1.000E 06 TO 8.000E 06 EV	BC	24
RELAY 1 PROTON-ELECTRON DETECTORS.....	(62-068A-03)	MCILWAIN	12/14/62	TO 10/20/64	R 1.100E 06 TO 1.400E 07 EV	B DE	71
INJUN 3 PROTON SPECTROMETER.....	(62-067B-07)	O'BRIEN	12/14/62	TO 10/31/63	R 1.200E 06 TO 2.200E 06 EV	BC	51
1963-038C ENERGETIC ELECTRON AND PROTON DETECTORS.....	(63-038C-01)	BOSTROM	09/28/63	TO 12/31/68	R 1.200E 06 TO 2.200E 06 EV	C	23
MARINER 4 COSMIC-RAY TELESCOPE.....	(64-077A-04)	SIMPSON	11/28/64	TO 10/01/65	P 1.200E 06 TO 1.500E 07 EV	H	54
OGO 2 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(65-081A-07)	SIMPSON	10/14/65	TO 12/13/66	R 1.220E 06 TO 9.300E 06 EV	C	61
ALOUETTE 1 ENERGETIC PARTICLES DETECTORS.....	(62-049A-02)	MCDIARMID	09/29/62	TO 03/26/64	R 1.300E 06 TO 7.000E 06 EV	CDEF	24
INJUN 1 SOLID-STATE PROTON DETECTOR.....	(61-015B-06)	BOSTROM	06/30/61	TO 08/31/62	R 1.400E 06 TO 1.700E 07 EV	B	47
EPE-A COSMIC RAYS.....	(61-020A-04)	MCDONALD	08/16/61	TO 12/06/61	R 1.400E 06 TO 2.200E 07 EV	EFG	26
OGO 1 COSMIC-RAY SPECTRA AND FLUXES.....	(64-054A-18)	SIMPSON	09/06/64	TO 11/25/67	R 1.400E 06 TO 8.600E 06 EV	DEFGH	57
EPE-B COSMIC RAYS.....	(62-051A-04)	MCDONALD	10/02/62	TO 08/11/63	R 1.400E 06 TO 2.200E 07 EV	EFGH	28
EPE-D SOLID-STATE ELECTRON DETECTOR.....	(64-086A-01)	BROWN	12/21/64	TO 05/15/67	P 1.700E 06 TO 1.600E 07 EV	B DE	30
TELSTAR 2 PROTON AND ELECTRON RADIATION.....	(63-013A-01)	BROWN	05/07/63	TO 05/07/65	R 1.800E 06 TO 2.800E 07 EV	B DE	74
OSO 1 PROTON ELECTRON ANALYZER.....	(62-006A-11)	SCHRADER	03/07/62	TO 07/14/63	R 2.000E 06 TO INFINITY EV	B	62

SATELLITE NAME DESCRIPTIVE	EXPERIMENT ID EXPERIMENT TITLE	EXPERIMENTER	LIMITING DATES OF		RANGE OF MEASUREMENTS (F OR E)	REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY				
2.2 SENSING PROTONS OR HYDROGEN IONS								
EXPLORER 6 SCINTILLATION COUNTER.....	(59-004A-02)	SONETT	08/07/59	TO 10/02/59	N 2.000E 06 TO INFINITY	EV DEF		35
TELSTAR 2 PROTON AND ELECTRON RADIATION.....	(63-013A-01)	BROWN	05/07/63	TO 05/07/65	R 2.000E 06 TO 3.000E 07	EV B DE		74
EPE-C ELECTRON AND PROTON SOLID-STATE DETECTORS.....	(62-059A-01)	BROWN	10/27/62	TO 01/01/63	R 2.100E 06 TO 2.200E 07	EV DE		29
INJUN 3 PROTON SPECTROMETER.....	(62-067B-07)	O'BRIEN	12/14/62	TO 10/31/63	R 2.200E 06 TO 8.000E 06	EV BC		51
1963-038C ENERGETIC ELECTRON AND PROTON DETECTORS.....	(63-038C-01)	BOSTROM	09/28/63	TO 12/31/68	R 2.200E 06 TO 8.500E 06	EV C		23
TELSTAR 1 PROTON AND ELECTRON RADIATION.....	(62-029A-01)	BROWN	07/10/62	TO 02/21/63	R 2.400E 06 TO 1.000E 07	EV B DE		73
IMP-C COSMIC-RAY RANGE VS ENERGY LOSS.....	(65-042A-03)	SIMPSON	05/29/65	TO 05/02/67	R 2.600E 06 TO 1.330E 07	EV H		46
S 15 CRYSTAL SANDWICH/CERENKOV COUNTER.....	(61-013A-02)	GARMIRE	04/28/61	TO 11/12/61	R 3.500E 06 TO 3.500E 07	EV B		73
ERS 17 CHARGED PARTICLE DETECTORS.....	(65-058C-01)	VETTE	07/20/65	TO 11/03/65	P 3.500E 05 TO 2.700E 07	EV B DEF		32
INJUN 3 GEIGER TUBE DETECTORS.....	(62-067B-01)	O'BRIEN	12/14/62	TO 10/28/63	N 4.000E 06 TO INFINITY	EV BC		48
RELAY 1 SOLID-STATE ION CHAMBER ELECTRON AND PROTON DETECTOR.....	(62-068A-02)	BROWN	12/13/62	TO 03/31/64	P 4.700E 06 TO 1.800E 07	EV B DE		70
PIONEER 1 ION CHAMBER.....	(58-007A-01)	SONETT	10/11/58	TO 10/13/58	N 5.000E 06 TO INFINITY	EV DE		65
RELAY 2 SOLID-STATE ION CHAMBER ELECTRON AND PROTON DETECTOR.....	(64-003A-02)	BROWN	01/21/64	TO 12/31/65	P 5.000E 06 TO 1.800E 07	EV B DE		72
EPE-D OMNIDIRECTIONAL AND UNIDIRECTIONAL ELECTRON AND PROTON FLUXES.....	(64-086A-02)	MCILWAIN	12/21/64	TO 05/21/67	R 5.200E 06 TO INFINITY	EV B DEF		31
RELAY 1 PROTON-ELECTRON DETECTORS.....	(62-068A-03)	MCILWAIN	12/14/62	TO 10/20/64	N 5.200E 06 TO INFINITY	EV B DE		71
IMP-A COSMIC-RAY RANGE VS ENERGY LOSS.....	(63-046A-03)	SIMPSON	11/27/63	TO 06/07/64	R 6.500E 06 TO 1.900E 07	EV GH		41
IMP-B COSMIC-RAY RANGE VS ENERGY LOSS.....	(64-060A-03)	SIMPSON	10/04/64	TO 04/07/65	R 6.500E 06 TO 1.900E 07	EV GH		43
PIONEER 6 COSMIC-RAY ANISOTROPY.....	(65-105A-05)	MCCRACKEN	12/16/65	TO 02/06/67	P 7.400E 06 TO INFINITY	EV H		69
INJUN 3 PROTON SPECTROMETER.....	(62-067B-07)	O'BRIEN	12/14/62	TO 10/31/63	R 8.000E 06 TO 2.400E 07	EV BC		51
ERS 17 CHARGED PARTICLE DETECTORS.....	(65-058C-01)	VETTE	07/20/65	TO 11/03/65	R 8.000E 06 TO 2.100E 07	EV DE		32
1963-038C ENERGETIC ELECTRON AND PROTON DETECTORS.....	(63-038C-01)	BOSTROM	09/28/63	TO 12/31/68	R 8.500E 06 TO 2.500E 07	EV C		23
OGD 1 COSMIC-RAY SPECTRA AND FLUXES.....	(64-054A-10)	SIMPSON	09/06/64	TO 11/25/67	R 8.600E 06 TO 3.300E 07	EV DEFGH		57
OGD 2 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(65-081A-07)	SIMPSON	10/14/65	TO 12/13/66	R 9.300E 06 TO 3.920E 07	EV C		61
EXPLORER 4 CHARGED PARTICLE DETECTOR.....	(58-005A-01)	VAN ALLEN	07/26/58	TO 09/19/58	N 1.000E 07 TO INFINITY	EV B		34
OGD 2 COSMIC-RAY IONIZATION.....	(65-081A-06)	ANDERSON	10/14/65	TO 04/02/66	N 1.000E 07 TO INFINITY	EV C		61
MARINER 2 COSMIC-RAY IONIZATION.....	(62-041A-04)	ANDERSON	08/28/62	TO 12/30/62	N 1.000E 07 TO INFINITY	EV H	2	53
OGD 1 SOLAR COSMIC RAYS.....	(64-054A-12)	ANDERSON	09/30/65	TO 05/03/66	R 1.000E 07 TO 9.000E 07	EV DEFGH		56
OVI- 2 ELECTRON AND PROTON DETECTORS.....	(65-078A-02)	FARLEY	10/05/65	TO 12/01/65	R 1.000E 07 TO 2.300E 07	EV B		63
TELSTAR 1 PROTON AND ELECTRON RADIATION.....	(62-029A-01)	BROWN	07/10/62	TO 02/21/63	R 1.000E 07 TO 2.500E 07	EV B DE		73
EPE-D SOLID-STATE ELECTRON DETECTOR.....	(64-086A-01)	BROWN	12/21/64	TO 05/15/67	P 1.000E 07 TO 2.700E 07	EV B DE		30
ERS 13 CHARGED PARTICLE DETECTORS.....	(64-040C-01)	VETTE	07/17/64	TO 12/08/64	R 1.200E 07 TO 2.300E 07	EV DE		32
OGD 1 IONIZATION CHAMBER.....	(64-054A-20)	WINKLER	09/05/64	TO 12/06/67	N 1.200E 07 TO INFINITY	EV B DEFG		57
IMP-C COSMIC-RAY RANGE VS ENERGY LOSS.....	(65-042A-03)	SIMPSON	05/29/65	TO 05/02/67	R 1.330E 07 TO 2.600E 07	EV H		46
PIONEER 6 COSMIC-RAY TELESCOPE.....	(65-105A-03)	FAN	12/16/65	TO 03/03/72	R 1.390E 07 TO 7.320E 07	EV H		68
MARINER 4 COSMIC-RAY TELESCOPE.....	(64-077A-04)	SIMPSON	11/28/64	TO 10/01/65	R 1.500E 07 TO 7.000E 07	EV H		54
EPE-D SOLID-STATE ELECTRON DETECTOR.....	(64-086A-01)	BROWN	12/21/64	TO 05/15/67	P 1.600E 07 TO INFINITY	EV B DE		30
IMP-A ION CHAMBER AND GM COUNTERS.....	(63-046A-05)	ANDERSON	11/27/63	TO 03/26/65	N 1.700E 07 TO 1.701E 08	EV EFGH		38
IMP-B ION CHAMBER AND GM COUNTERS.....	(64-060A-05)	ANDERSON	10/04/64	TO 09/23/65	N 1.700E 07 TO INFINITY	EV EFGH		42
IMP-C ION CHAMBER AND GM COUNTERS.....	(65-042A-05)	ANDERSON	05/29/65	TO 01/03/67	N 1.700E 07 TO INFINITY	EV H		45
RELAY 1 PROTON-ELECTRON DETECTORS.....	(62-068A-03)	MCILWAIN	12/14/62	TO 10/20/64	R 1.820E 07 TO 6.300E 07	EV B DE		71
IMP-A COSMIC RAYS.....	(63-046A-04)	MCDONALD	11/27/63	TO 05/26/64	R 1.870E 07 TO 8.160E 07	EV FGH		40
IMP-A COSMIC-RAY RANGE VS ENERGY LOSS.....	(63-046A-03)	SIMPSON	11/27/63	TO 06/07/64	R 1.900E 07 TO 9.000E 07	EV GH		41
IMP-B COSMIC-RAY RANGE VS ENERGY LOSS.....	(64-060A-03)	SIMPSON	10/04/64	TO 04/07/65	R 1.900E 07 TO 9.000E 07	EV GH		43
EXPLORER 7 TRAPPED RADIATION AND SOLAR PROTONS.....	(59-009A-04)	VAN ALLEN	10/13/59	TO 02/28/61	N 2.000E 07 TO INFINITY	EV B		37
OGD 1 COSMIC-RAY SPECTRA AND FLUXES.....	(64-054A-10)	SIMPSON	09/06/64	TO 11/25/67	R 2.200E 07 TO 1.030E 08	EV DEFGH		57
OVI- 2 ELECTRON AND PROTON DETECTORS.....	(65-078A-02)	FARLEY	10/05/65	TO 12/01/65	R 2.200E 07 TO 5.000E 07	EV B		63
EPE-A CHARGED PARTICLES.....	(61-020A-03)	VAN ALLEN	08/16/61	TO 12/06/61	N 2.300E 07 TO INFINITY	EV B DEF H		26
EXPLORER 6 ION CHAMBER AND GM COUNTER.....	(59-004A-03)	WINKLER	08/07/59	TO 10/06/59	N 2.360E 07 TO INFINITY	EV B DEF		36
INJUN 3 PROTON SPECTROMETER.....	(62-067B-07)	O'BRIEN	12/14/62	TO 10/31/63	R 2.400E 07 TO 1.000E 08	EV BC		51
PIONEER 5 COSMIC-RAY TELESCOPE.....	(60-001A-03)	WINKLER						

SATELLITE NAME DESCRIPTIVE EXPERIMENT TITLE	EXPERIMENT ID EXPERIMENT TITLE	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC RANGE OF MEASUREMENTS			REGION	PLANET
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE S MAX VALUE (LAMBDA)		
2.3 SENSING HELIUM NUCLEI							
INJUN 4	(64-076B-04)	VAN ALLEN					
SOLID-STATE DETECTOR.....			11/23/64	TO 07/19/66	R 5.200E 05 TO 4.000E 06 EV	BC	52
PIONEER 6	(65-105A-03)	FAN					
COSMIC-RAY TELESCOPE.....			12/16/65	TO 03/03/72	R 6.000E 05 TO 1.390E 07 EV	H	68
OGO 2	(65-081A-07)	SIMPSON					
LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....			10/14/65	TO 12/13/66	N 7.200E 05 TO 1.100E 07 EV	C	61
INJUN 4	(64-076B-04)	VAN ALLEN					
SOLID-STATE DETECTOR.....			11/23/64	TO 07/19/66	R 9.000E 05 TO 1.800E 06 EV	BC	52
OGO 2	(65-081A-07)	SIMPSON					
LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....			10/14/65	TO 12/13/66	R 1.220E 06 TO 9.300E 06 EV	C	61
OGO 1	(64-054A-18)	SIMPSON					
COSMIC-RAY SPECTRA AND FLUXES.....			09/06/64	TO 11/25/67	R 1.400E 06 TO 8.600E 06 EV	DEFGH	57
ALOUETTE 1	(62-049A-02)	MCDIARMID					
ENERGETIC PARTICLES DETECTORS.....			09/29/62	TO 03/26/64	R 4.300E 06 TO 2.800E 07 EV	CDEF	24
ALOUETTE 2	(65-098A-04)	MCDIARMID					
ENERGETIC PARTICLES DETECTORS.....			11/29/65	TO 06/18/69	R 5.000E 06 TO 2.400E 07 EV	BC	24
OGO 1	(64-054A-18)	SIMPSON					
COSMIC-RAY SPECTRA AND FLUXES.....			09/06/64	TO 11/25/67	R 8.600E 06 TO 3.300E 07 EV	DEFGH	57
OGO 2	(65-081A-07)	SIMPSON					
LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....			10/14/65	TO 12/13/66	R 9.300E 06 TO 3.920E 07 EV	C	61
PIONEER 6	(65-105A-03)	FAN					
COSMIC-RAY TELESCOPE.....			12/16/65	TO 03/03/72	R 1.390E 07 TO 7.320E 07 EV	H	68
MARINER 4	(64-077A-04)	SIMPSON					
COSMIC-RAY TELESCOPE.....			11/28/64	TO 10/01/65	R 1.500E 07 TO 7.000E 07 EV	H	54
IMP-A	(63-046A-04)	MCDONALD					
COSMIC RAYS.....			11/27/63	TO 05/26/64	R 1.870E 07 TO 8.160E 07 EV	FGH	40
PIONEER 6	(65-105A-05)	MCCRACKEN					
COSMIC-RAY ANISOTROPY.....			12/16/65	TO 02/06/67	P 3.100E 07 TO 7.600E 07 EV	H	69
OGO 2	(65-081A-08)	WEBBER					
GALACTIC AND SOLAR COSMIC RAY.....			10/15/65	TO 10/24/65	R 5.000E 07 TO 2.000E 08 EV	C	62
MARINER 4	(64-077A-04)	SIMPSON					
COSMIC-RAY TELESCOPE.....			11/28/64	TO 10/01/65	R 7.000E 07 TO INFINITY EV	H	54
PIONEER 6	(65-105A-03)	FAN					
COSMIC-RAY TELESCOPE.....			12/16/65	TO 03/03/72	R 7.320E 07 TO INFINITY EV	H	68
OGO 2	(65-081A-08)	WEBBER					
GALACTIC AND SOLAR COSMIC RAY.....			10/15/65	TO 10/24/65	R 2.000E 08 TO 2.000E 09 EV	C	62
ALOUETTE 1	(62-049A-02)	MCDIARMID					
ENERGETIC PARTICLES DETECTORS.....			09/29/62	TO 03/26/64	R 4.000E 08 TO INFINITY EV	CDEF	24
2.4 SENSING OTHER PARTICLE SPECIES							
IMP-A	(63-046A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			11/27/63	TO 06/07/64	R 9.000E 05 TO 6.500E 06 EV	GH	41
IMP-B	(64-060A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			10/04/64	TO 04/07/65	R 9.000E 05 TO 6.500E 06 EV	GH	43
IMP-C	(65-042A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			05/29/65	TO 05/02/67	R 2.600E 06 TO 1.330E 07 EV	H	46
IMP-A	(63-046A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			11/27/63	TO 06/07/64	R 6.500E 06 TO 1.900E 07 EV	GH	41
IMP-B	(64-060A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			10/04/64	TO 04/07/65	R 6.500E 06 TO 1.900E 07 EV	GH	43
IMP-C	(65-042A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			05/29/65	TO 05/02/67	R 1.330E 07 TO 2.600E 07 EV	H	46
IMP-B	(64-060A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			10/04/64	TO 04/07/65	R 1.900E 07 TO 9.000E 07 EV	GH	43
IMP-A	(63-046A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			11/27/63	TO 06/07/64	R 1.900E 07 TO 9.000E 07 EV	GH	41
OGO 1	(64-054A-18)	SIMPSON					
COSMIC-RAY SPECTRA AND FLUXES.....			09/06/64	TO 11/25/67	R 2.200E 07 TO 1.030E 08 EV	DEFGH	57
IMP-C	(65-042A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			05/29/65	TO 05/02/67	R 2.600E 07 TO 9.400E 07 EV	H	46
IMP-A	(63-046A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			11/27/63	TO 06/07/64	R 9.000E 07 TO 1.900E 08 EV	GH	41
IMP-B	(64-060A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			10/04/64	TO 04/07/65	R 9.000E 07 TO 1.900E 08 EV	GH	43
IMP-C	(65-042A-03)	SIMPSON					
COSMIC-RAY RANGE VS ENERGY LOSS.....			05/29/65	TO 05/02/67	R 9.400E 07 TO 1.900E 08 EV	H	46
EXPLORER 7	(59-099A-03)	PONERANTZ					
HEAVY PRIMARY COSMIC RAYS.....			10/13/59	TO 05/31/60	N 4.400E 08 TO 7.500E 09 EV	B	37
ARIEL 1	(62-015A-03)	ELLIOT					
COSMIC-RAY DETECTOR.....			04/27/62	TO 07/12/62	U 2.500E 09 TO 1.600E 10 EV	B	25

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Supporting Data Descriptions

5. SUPPORTING DATA DESCRIPTIONS

This section of the catalog contains descriptions of space environment models and codes that are distributed by NSSDC. These are discussed under three major headings: Geomagnetism, Magnetopause and Bow Shock Positions, and Magnetospherically Trapped Particles.

5.1 GEOMAGNETISM

5.1.1 GEOMAGNETIC FIELD MODELS

Except where noted, the following models consist of coefficients (derived allowing for the oblateness of the Earth) and the first time derivatives of these coefficients.

5.1.1.1 Jensen-Cain — This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the Jensen-Cain geomagnetic field model. The coefficients are for epoch 1960.0 and based on data gathered between 1945 and 1962. There are 48 nonzero coefficients extending up to $n = m = 6$. No time derivatives of the coefficients are included. The oblateness of the Earth has not been considered in the determination of the coefficients. The accuracy of this model is poor compared to that of other more recent models, and its use is not recommended where accuracy is important. A discussion of this field model can be found in *J. Geophys. Res.*, 67, 3586, 1962.

5.1.1.2 GSFC (9/65) — This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the GSFC (9/65) geomagnetic field model. The coefficients are for epoch 1960.0 and based on data gathered between 1945 and 1964. There are 99 nonzero coefficients extending up to $n = m = 9$. A discussion of this field model can be found in *J. Geophys. Res.*, 71, 346, 1966.

5.1.1.3 GSFC (12/66) — This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the GSFC (12/66) geomagnetic field model. The coefficients are for epoch 1960.0 and based on data gathered between 1900 and 1966. There are 120 nonzero coefficients extending up to $n = m = 10$. First and second time derivatives of the coefficients are included. A discussion of this field model can be found in *J. Geomag. Geoelec.*, 19, 335, 1967.

5.1.1.4 IGRF 1965.0 (geographic) — This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the IGRF (International Geomagnetic Reference Field) model. The coefficients are for epoch 1965.0. There are 80 nonzero coefficients extending up to $n = m = 8$. A discussion of this field model can be found in *J. Geophys. Res.*, 74, 4407, 1969.

5.1.1.5 IGRF 1965.0 (geomagnetic) — This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion (in geomagnetic dipole coordinates) for the IGRF model. The coefficients are for epoch 1965.0. There are 80 nonzero coefficients extending up to $n = m = 8$. A discussion of this field model can be found in *J. Geophys. Res.*, 75, 4372, 1970.

5.1.1.6 POGO (3/68) — This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the POGO (3/68) geomagnetic field model. The coefficients are for epoch 1960.0 and based on POGO satellite data. There are 99 nonzero coefficients extending up to $n = m = 9$.

5.1.1.7 POGO (10/68) — This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the POGO (10/68) geomagnetic field model. The coefficients are for epoch 1960.0 and based on POGO satellite data. There are 143 nonzero coefficients extending up to $n = m = 11$.

5.1.1.8 POGO (8/69) — This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the POGO (8/69) geomagnetic field model. The coefficients are for epoch 1960.0 and based on POGO satellite data gathered between 1965.7 and 1968.4. There are 120 nonzero coefficients extending up to $n = m = 10$. A discussion of this field model can be found in *J. Geophys. Res.*, 75, 4360, 1970.

5.1.1.9 POGO (8/71) — This data set is a card deck that contains the coefficients associated with the Schmidt-normalized Legendre polynomials in the potential expansion for the POGO (8/71) geomagnetic field model. The coefficients are for epoch 1960.0 and based

on POGO satellite data collected during the period December 1965 to March 1970. Data were selected to include only periods with $K_p \leq 1$ and when no disturbances were present. There are 120 nonzero coefficients extending up to $n = m = 10$. A discussion of this model can be found in *J. Geophys. Res.*, 79, 2363, 1974.

5.1.2 GEOMAGNETIC FIELD COMPUTATIONAL CODES .

5.1.2.1 FIELDG — The FIELDG package, generated principally by Dr. J. C. Cain of GSFC, consists of a set of independently usable subroutines to compute the geomagnetic field vector at any specified spatial point, given any of several available spherical harmonic expansions of the Earth's internal-source field. Subroutine FIELDG initializes constants, reads coefficients, and executes transformations between input and output geodetic coordinates and internally used geocentric coordinates. The number of coefficients used in the computation is an input parameter to FIELD. Subroutine FIELD, which may be called FIELDG, computes the geomagnetic field vector (in geocentric spherical polar components that are transformed to local geodetic Cartesian components by FIELDG) and its magnitude for a specified spatial point and time. There are two versions of FIELD: one executes faster, and the other requires less storage. Subroutine CONVRT can be used to convert Gauss-normalized coefficients to Schmidt-normalized coefficients, the former being used internally for computations. Coefficient card decks for the GSFC (12/66), IGRF 1965.0, and POGO (8/69) geomagnetic field models are sent with the FIELDG package to requesters; the full package consists of 542 cards. The subroutines in the FIELDG package are written in FORTRAN IV and available in IBM 7094 and 360 compatible card decks.

5.1.2.2 IGRF/SPHRC — The IGRF/SPHRC subroutine package, generated principally by Dr. J. C. Cain of GSFC, provides the capability of evaluating the IGRF 1965.0 geomagnetic field with a high degree of efficiency. Subroutine IGRF initializes coefficients and executes transformations between input and output geodetic coordinates and internally used geocentric coordinates. The number of coefficients used can be varied, if needed, to speed up calculations. The field is calculated in SPHRC, called by IGRF, in geocentric coordinates. The subroutines in the IGRF/SPHRC package are written in FORTRAN IV and available in IBM 360 compatible card decks.

5.1.2.3 TSFORM AND DIPFLD — TSFORM and DIPFLD subroutines, generated by Dr. G. D. Mead of GSFC, can be used to meet the requirements of those

investigators performing studies in which the use of geomagnetic dipole coordinates is convenient. Subroutine TSFORM effects transformations between geographic and geomagnetic dipole coordinates for either positions or vector components. Subroutine DIPFLD computes the vector magnetic field at any spatial point, specified in geomagnetic dipole coordinates, using coefficients for the IGRF 1965.0 geomagnetic field model appropriate to those coordinates (see *J. Geophys. Res.*, 75, 4372, 1970). NSSDC has a deck of these coefficients. Used as a package, these subroutines accept an input position given in geographic or geomagnetic coordinates and return vector magnetic field components in geographic or geomagnetic coordinates. NSSDC has a FORTRAN IV, IBM 7094 code deck available for distribution.

5.1.2.4 MDTILT — The MDTILT FORTRAN package, generated by Dr. W. P. Olson of McDonnell-Douglas Corporation, can be used to compute (in solar magnetospheric coordinates) magnetospheric vector magnetic fields separately resulting from magnetopause and magnetotail current systems. The analysis allows for variable incident solar wind pressure and an arbitrary tilt angle of the geomagnetic dipole axis with respect to the incident solar wind. Legendre polynomial expansions are used, with the two coefficients (one for each source current system) for a given n and m expanded as separate power series in the arbitrary tilt angle. The analysis is recommended for geocentric distances out to about 7 Earth radii. The MDTILT package consists of a brief main routine and a series of subroutines in which the actual computations are done. Although the package was initially generated to run on a CDC 6600, it is readily adaptable to other machines because of the use of basic FORTRAN.

5.1.2.5 INVAR — The INVAR package, generated by Prof. C. E. McIlwain of the University of California at San Diego, can be used to compute values of B and L at any desired spatial point (specified in geocentric spherical polar coordinates) with a specified accuracy to some limit. Any one of several spherical harmonic expansions of the Earth's internal-source geomagnetic field can be used. Subroutine INVAR controls the overall execution of the program. Subroutine NEWMAG (replacing the earlier subroutine MAGNET) computes the magnetic field vector at a specified spatial point. This subroutine is called extensively by subroutines START and LINES. For a specified spatial point, subroutine START finds two additional spatial points on the same field line, and subroutine LINES finds additional points on that field line. These points extend essentially from the point of interest to its conjugate point. The input accuracy parameter controls the number of points (up to a maximum of 200). Sub-

routine INTEG determines the value of the integral invariant, I , for the specified point of interest by numerically integrating at the points chosen by START and LINES. Finally, subroutine CARMEL computes the shell parameter, L , from the integral invariant, I , and from B . NSSDC has available for distribution FORTRAN IV, IBM 7094 and 360 compatible code decks for this package. Using an IBM 7094, computation time for one value of L is several hundred milliseconds. For a discussion of B and L , see *J. Geophys. Res.*, 66, 3681, 1961.

5.1.2.6 ALLMAG — The ALLMAG package, generated by Mr. E. G. Stassinopoulos of NSSDC and Dr. G. D. Mead of GSFC, condenses seven selected internal-source geomagnetic field models into one operational assembly, thus permitting successive selection of models and/or time periods during execution of a single program. Spatial points of interest may be input and output in geocentric or geodetic coordinates; field components may be output in geocentric or local geodetic Cartesian components. There are two versions of the field computation routine ALLMAG: one executes three times faster than the other. The package also includes a subroutine, LINTRA, for field-line tracing and calculation of conjugate intersect. A modified version of McIlwain's INVAR routine, called INVARA, is also available for computing the shell parameter, L . ALLMAG is available in packages compatible with octal and hexadecimal machines. These FORTRAN IV programs have been successfully executed on UNIVAC 1108, CDC 6600, and IBM 360 machines. Alternate programs ONEMAG and DEKMAG are available for users who require a program using less computer core.

5.1.2.7 SHELL — SHELL is a FORTRAN package generated principally by Dr. G. Kluge of ESRO/ESOC. The package accepts as input the geocentric Cartesian coordinates or geodetic spherical polar coordinates of a spatial point of interest. It also accepts the coefficients (derived allowing for the Earth's oblateness) for any one of several internal-source geomagnetic field models. The magnetic field vector (in geocentric Cartesian components from subroutine FELDC or in geodetic local Cartesian components from subroutine FELDG), the field magnitude, B , and the shell parameter, L , (from subroutine SHELLC or subroutine SHELLG, where the two differ in input coordinates) can be computed. The SHELL package differs from McIlwain's INVAR package in that internal computations are executed in a coordinate system in which two of the independent variables are constants along dipole field lines. The very limited variation in field magnitude along slightly nondipolar, transformed field lines leads to a very limited number of

calls from SHELLC or SHELLG to the field code in the computation of the integral invariant, I (from which L can be obtained using McIlwain's CARMEL subroutine). On an IBM 360/75, using an H-level compiler with OPT = 2, a call to SHELLG typically requires 46 milliseconds while a call to INVAR typically requires 70 milliseconds. IBM 7094 and 360 compatible FORTRAN card decks for the SHELL package are available from NSSDC.

5.1.2.8 INTEL — INTEL is a FORTRAN package generated principally by Dr. G. Kluge of ESRO/ESOC. The package requires an input of geocentric Cartesian coordinates or geodetic spherical polar coordinates of a spatial point of interest. It also requires a table of shell parameter, L , values previously evaluated for a discrete set of spatial points, using a specific geomagnetic field model. The package contains the subroutines FELDC and FELDG that compute the magnetic field vector components in geocentric Cartesian coordinates or geodetic local Cartesian components, respectively. The subroutines INTELC and INTELG, which differ in input coordinates, compute L at the point of interest by interpolating among L values from the input table. On an IBM 360/75, using an H-level compiler with OPT = 2, a call to INTELG (which in turn calls FELDG to return both B and L) typically requires 12 milliseconds while calls to SHELLG and INVAR require 46 milliseconds and 70 milliseconds, respectively. IBM 7094 and 360 FORTRAN card decks for the INTEL package are available for distribution from NSSDC. However, only input L tables based on the IGRF 1965.0, GSFC (12/66), and POGO (10/68) models are available from NSSDC.

5.1.2.9 LINTRA — A geomagnetic field-line tracing and conjugate-intersect calculation routine, LINTRA, generated by Mr. E. G. Stassinopoulos of NSSDC, can be used to compute values of a field line passing through any given point on or above the Earth's surface to its conjugate intersect or the intersect with a specified altitude level. LINTRA can use any one of several internal source geomagnetic field models. The program was designed with the intention of following the path of a line of force that starts from a selected position and moves in a direction that leads toward the opposite geomagnetic hemisphere. For origins lying above sea level, the tracing direction can be reversed to obtain the intersects in either hemisphere. The geocentric coordinates of the intersects, with the field strength and the field vector components at these locations, are calculated by LINTRA. The method used in these calculations is described in the NASA-GSFC document *Computer Codes for Geomagnetic Field Line Tracing and Conjugate Intersect Program*, X-642-68-429, November 1968. The LINTRA code was written in FORTRAN IV, and the card decks are available for use

on an IBM 360/91. A version of LINTRA is also included in the ALLMAG package.

5.1.2.10 EFM — Code EFM acts as a driving routine for the model routines that evaluate the Mead-Fairfield Magnetospheric models. EFM allows input in solar magnetospheric, geomagnetic, or geographic coordinates.

Three interrelated subroutines are available in deck form that give the magnetospheric field corresponding to the four models of Mead and Fairfield. The models represent least-squares fits to 12,616 measurements of the vector field in the outer magnetosphere (from 4.5 to 17 Earth radii), averaged over half-Earth-radii intervals, taken from 451 orbits of four IMP satellites between 1966 and 1972. The four models fit subsets of the data sorted according to the Kp value at the time each measurement was made: the super-quiet model (MF73SQ, Kp = 0 or 0+); the quiet model (MF73Q, Kp < 2); the disturbed model (MF73D, Kp ≥ 2); and the super-disturbed model (MF73SD, Kp ≥ 3). Deck #1 (DBXYZ) gives (for any of the four models) the three Cartesian components of the external field (ΔB_x , ΔB_y , and ΔB_z) as a function of the three solar magnetic Cartesian coordinates (z axis along the magnetic dipole) and of the tilt angle, T (i.e., the geomagnetic latitude of the subsolar point). Deck #2 (MF73) gives as functions of solar magnetic coordinates and tilt angle: three geomagnetic spherical components (B_r , B_θ , B_ϕ) of the total field, including the dipole; $\Delta B = B_{\text{total}} - B_{\text{dipole}}$; the inclination, I; and the dipole declination, D (see Mead and Cahill, *J. Geophys. Res.*, 72, 2737, 1967). Deck #3 (TOTFLD) gives the three geographic spherical components of the total field, including the IGRF model of the internal field as determined by DIPFLD, as a function of geographic latitude and longitude, geocentric distance, day of year, and universal time (UT). From the input quantities, this program calculates the solar magnetic coordinates and tilt angle which are needed to determine the external model field. For further discussion of the models, see *J. Geophys. Res.*, 80, 523, 1975.

5.1.3 GEOMAGNETIC INDICES — DST

Provisional hourly averages of the equatorial Dst indices are distributed on a monthly basis by NSSDC. These values are generated at GSFC by Dr. M. Sugiura. These data are available as hardcopy, including both a list of hourly averages and a plot of finer scale points. The Dst index provides an indirect measure of magnetospheric

ring currents and is especially useful during geomagnetic storms. At each of several low latitude, nonequatorial stations, the irregular variation contribution, D, of the horizontal component of the geomagnetic field is determined. Dst is then the global average, over contributing stations, of D. For a more-detailed discussion of the significance of Dst, see Sugiura, *Ann. IGY*, 35, 9, 1964.

5.2 MAGNETOPOUSE AND BOW SHOCK POSITIONS

This data set consists of a card deck containing magnetopause or bow shock positions as observed between 1963 and 1968 using the GSFC magnetic field experiments carried on board the first six IMP/AIMP spacecraft. The deck was provided to NSSDC by Dr. D. Fairfield of GSFC. There are 463 magnetopause position cards and 388 bow shock position cards. Each of these subsets is ordered by solar ecliptic longitude. Each card identifies the spacecraft, orbit number, time (to an accuracy of minutes), magnetopause or bow shock indicator, exact or average position indicator ("average" of multiple crossings), solar ecliptic Cartesian coordinates of the crossing point, radial distance and solar ecliptic longitude of the crossing point, distances of the crossing point from the solar ecliptic x and z axes, crossing position as rotated to the ecliptic plane in the original meridian plan (x and y given with z = 0), and values of the immediately preceding position rotated by 4 degrees to allow for solar wind aberration.

5.3 MAGNETOSPHERICALLY TRAPPED PARTICLES

A series of model environments of geomagnetically trapped electrons and protons has been generated by Dr. J. I. Vette of GSFC and several coworkers. Each model environment is the synthesis of data obtained by several spacecraft. Earlier models contain the electron or proton fluxes above a given energy, E_1 , and the spectral parameters to be used in determining fluxes above other energies within the specified range of validity of the model. Both the fluxes and spectral parameters are given over wide ranges in B and L space. The newer electron models, AE-4 and AE-5, give fluxes above several selected energies. The following model electron environments are currently available.

Environment Name	E ₁ (MeV)	Energy Range (MeV)	Spatial Range	Temporal Range of Data Base	Epoch
AE-1	0.5	> 0.3	1.2 < L < 3.0	1962 - 1963	7/63
AE 2*	0.5	0.04 - 7	1.2 < L < 6.2	1962 - 1964	8/64
E68	0.5	0.04 - 7	1.2 < L < 6.2	1962 - 1964	1968
AE 3	-	0.01 - 5	L = 6.6	1959 - 1965	1964/1968
AE-4**	-	0.04 - 5	3.0 < L < 11	1959 - 1968	1964/1967
AE 5*	-	0.04 - 4	1.2 < L < 2.8	1964 - 1967	1967
AE 5** (Sol Min)	-	0.04 - 4	1.2 < L < 2.8	1964 - 1967	1975
*Supersedes AE-1 **Supersedes AE 2 and E68 *Supersedes E68 **Supersedes AE 2					

The following model proton environments are currently available.

Environment Name	E ₁ (MeV)	Energy Range (MeV)	Spatial Range	Temporal Range of Data Base
AP1	34	30 - 50	1.2 < L < 2.8	1958 - 1963
AP2	15	15 - 30	1.2 < L < 3.0	1958 - 1963
AP3	50	> 50	1.2 < L < 2.8	1958 - 1963
AP4	4	4 - 15	1.2 < L < 4.2	1962 - 1963
AP5	0.4	0.1 - 4	1.2 < L < 6.6	1961 - 1965
AP6*	4	4 - 30	1.2 < L < 4.0	1962 - 1965
AP7**	50	> 50	1.15 < L < 3.0	1961 - 1965
*Supersedes AP2 and AP4 **Supersedes AP3				

A new trapped proton environment is currently being generated at NSSDC. This will supersede all previous proton models.

5.3.1 MODEL

Code MODEL is a FORTRAN routine that enables the user to access any of the models available in block data form from NSSDC (AE-4/AE-5 electron models or a smoothed proton model).

MODEL retrieves a flux value as a function of B, L, and E for the arrays of B, L, and E that are input. The output consists of a table of flux versus B for the values in the energy and L arrays. Current models contain omnidirectional integral particle flux. MODEL tables contain both integral and differential fluxes.

5.3.2 ORP

The Orbital Radiation Package is a FORTRAN routine designed to calculate the average geomagnetically

trapped radiation accumulated by an Earth-orbiting vehicle. ORP requires an input tape containing the B and L coordinates at each point along the trajectory to be evaluated. Codes for the calculation of the orbit and the B and L values of trajectory points can be supplied by NSSDC. ORP uses a block data interpolation technique compatible with the new electron models but incompatible with AE-1, AE-2, and AE-3. A proton model BLOCKDATA deck compatible with ORP, as well as the AE-4/AE-5 decks for solar maximum or solar minimum, are available. When executed on an IBM 360 computer, ORP requires a region of 160K bytes of core. ORP can produce any of the following optional outputs: the flux encountered at each point in the orbit, the flux encountered in each of 45 bands, the integrated energy spectrum, the flux accumulated in each of eight intensity ranges, a peak flux per orbit table, and tables of energy spectra for standard circular orbits as either listings or tape.

5.3.3 UNIFLUX

The unified orbital flux integration and analysis system is a package of FORTRAN routines designed to calculate the average geomagnetically trapped radiation accumulated by an Earth-orbiting vehicle. UNIFLUX requires an input tape containing time, latitude, longitude, altitude, and B and L coordinates at each point along the trajectory to be evaluated. Time intervals must be integral numbers of minutes and must be the same between all successive points. A package generating the required input is available at NSSDC. UNIFLUX uses the block data interpolation technique that is applicable to AE-4, AE-5, and a proton deck based on the most recent proton models. When executed on an IBM 360 computer, UNIFLUX requires a region of 250K bytes of core. In addition to a listing of the flux encountered at each point, the codes produce tables giving the flux accumulated in 36 bands of L for nine energies, a spectral distribution and exposure index table, peak flux per orbit table, exposure analysis summary table, the time account breakdown table, and a table of physical perigees (for elliptical orbits). In addition, plots containing a time and flux histogram, peak flux encountered in each orbit, world map projection of orbits, and a B and L trace of the orbits are produced.



Appendix: Abbreviations and Acronyms

APPENDIX: ABBREVIATIONS AND ACRONYMS

A	angstrom	APT	automatic picture transmission
ABMA	Army Ballistic Missile Agency	A/R	acquisition/reference
ACAD	Academy	ARC	Ames Research Center (NASA)
ACIC	Aeronautical Chart and Information Center (now Defense Mapping Agency Aerospace Center)	ARC-MIN	arc-minute
ACS	attitude control system	ARC-SEC	arc-second
AD	Dual Air Density Explorer (satellite, NASA)	ARDC	Air Research and Development Command (now AFSC)
A/D	analog to digital	ARPA	Advanced Research Projects Agency
AE	Atmosphere Explorer (satellite, NASA)	ARSP	Aerospace Research Support Program (USAF)
AEC	Atomic Energy Commission	AS+E	American Science & Engineering, Inc.
AEROPROPUL	aeropropulsion	ASOS	antimony-sulfide oxy-sulfide
AEROSAT	Aeronautical Satellite (NASA-ESRO)	ASTP	Apollo-Soyuz Test Project (USSR-NASA)
AEROSP	aerospace	ASTROPHYS	astrophysics
AFB	Air Force Base	AT	atomic
AFCRL	Air Force Cambridge Research Laboratories	ATCOS	Atmospheric Composition Satellite (NASA)
AFO	Announcements of Flight Opportunities	ATDA	Alternate Target Docking Adapter
AFSC	Air Force Systems Command	ATM	Apollo Telescope Mount
AGC	automatic gain control	ATMOS	atmosphere; atmospheric
AGCY	agency	ATS	Applications Technology Satellite (NASA)
AIMP	Anchored Interplanetary Monitoring Plat- form (satellite, NASA)	AT+T	American Telephone & Telegraph Corp.
ALOSYN	Alouette topside sounder synoptic (data)	AU	astronomical unit
ALPO	Apollo Lunar Polar Orbiter (satellite, NASA); Association of Lunar and Planetary Observers	AUST	Australia
ALSEP	Apollo Lunar Surface Experiments Package (NASA)	AVCS	advanced vidicon camera system
ALT	altitude	AVG	average
AM	amplitude modulation	AVHRR	advanced very high resolution radiometer
AMP	ampere	AWRE	Atomic Weapons Research Establishment (Australia)
AMPS	Atmosphere, Magnetosphere, and Plasmas in Space (satellite, NASA)	BCD	binary coded decimal
AMS	Army Map Service (now Defense Mapping Agency Topographic Center)	BE	Beacon Explorer (satellite, NASA); beryl- lium
AMSAT	Radio Amateur Satellite Corporation	BESYS	Bell System
AMU	atomic mass unit; astronaut maneuvering unit	BEV	billion electron volts
ANIK	Canadian Telecommunications Satellite; also referred to as TELESAT	BIC	barium iodide cloud
ANNA	Army, Navy, NASA, Air Force (geodetic satellite)	BIOS	Biological Satellite (NASA)
ANS	Astronomical Netherlands Satellite (Nether- lands-NASA)	BPI	bits per inch
AOSO	Advanced Orbiting Solar Observatory	BPS	bits per second
AP	magnetic activity index A_p	BTL	Bell Telephone Laboratories
APL	Applied Physics Laboratory of Johns Hopkins University	BUV	backscatter ultraviolet
APPL	application	BV	billion volts
		B/W	black and white
		BWF	Bundesminister für Wissenschaftliche For- schung (Fed Rep of Germany)
		CAL	calorie
		CAL TECH	California Institute of Technology
		CALSPHERE	calibration sphere

CAN	Canada	DEF	defense
CAS	Cooperative Applications Satellite (France-NASA)	DEG	degree
CAV	composite analog video	DENPA	Density Phenomena (satellite, Japan)
CBTT	calibrated brightness temperature tape	DEV	development
CC	cubic centimeter	DFVLR	Deutsche Forschungs-und Versuchsanstalt für Luft-und Raumfahrt; English translation, Research Laboratory for Aeronautics and Astronautics, Fed Rep of Germany
CDA	command and data acquisition (station)	DIAL/MIKA	Diamant Allemande/Mini Kapsel (satellite, Fed Rep of Germany-France)
CDC	Control Data Corporation	DIAL/WIKA	Diamant Allemande/Wissenschaftliche Kapsel (satellite, Fed Rep of Germany-France)
CDS	cadmium sulfide	DIAM	diameter
CENS	Centre d'Etudes Nucleaires de Saclay (France)	DIAPO	Diapason (satellite, France)
CHEM	chemical	DIT	Drexel Institute of Technology
CM	command module; centimeter	DMAAC	Defense Mapping Agency Aerospace Center
CMD	command	DMATC	Defense Mapping Agency Topographic Center
CNES	Centre National d'Etudes Spatiales (France)	DME	Direct Measurements Explorer (satellite, NASA)
CNET	Centre National d'Etudes des Telecommunications (France)	DMSP	Defense Military Satellite Program (DOD)
CNRS	Centre National de la Recherche Scientifique (France)	DOD	Department of Defense
COMM	commission	DODGE	Department of Defense Gravity Experiment (satellite, DOD)
COMSAT	Communications Satellite Corporation	DRID	direct readout image dissector (camera system)
CONIE	Comision Nacional de Investigacion del Espacio (Spain)	DRIR	direct readout infrared radiometer
CORSA	Cosmic-Ray Satellite (Japan)	DRTE	Defence Research Telecommunications Establishment (now CRC)
COS	Cosmic-Ray Satellite (ESRO); cosmic	DSAP	Defense System Applications Program (DOD)
COSPAR	Committee on Space Research	DSCS	Defense Satellite Communications System (DOD)
COUNC	council	DSIR	Department of Science and Industrial Research (England)
CPS	cycles per second	DSN	Deep Space Network
CPU	central processing unit	DV	digital video
CRC	Communications Research Centre (Canada)	DYN	dynamic
CRPL	Central Radio Propagation Laboratories (formerly ITSA or part of ESSA; now NOAA/ERL)	E	energy
CRREL	Gold Region Research & Engineering Laboratories	EASEP	Early Apollo Scientific Experiment Package
CRS	Commission for Space Research (Italy)	ECA	electric-field component antenna
CRT	cathode ray tube	ECR	electric-field component receiver
CSI	cesium iodide	ECS	Experimental Communications Satellite (NASA)
CSM	command service module	EDS	Environmental Data Service (NOAA)
CTR	center	EGO	Eccentric (Orbiting) Geophysical Observatory (satellite, NASA)
CTS	Canadian Telecommunications Satellite	EGRS	Engineers Satellite (DOD)
CZCS	coastal zone ocean color scanner	EIRP	effective isotropic radiative power
DAC	data acquisition camera	EL	electric (data camera carried on Apollo)
DADE	Dual Air Density Explorer (satellite, NASA)	ELDO	European Launch Development Organization (ESRO)
DAN	Danish		
DAPP	Defense Acquisition and Processing Program (DOD)		
DAS	data automation subsystem		
DASA	Defense Atomic Support Agency		
DATS	Despun Antenna Test Satellite (DOD)		
DB	decibel		
DCP	data collection platform		
DCS	direct couple system; data collection system		

ELEC	electric	FPR	flat plate radiometer
ELECTR	electronics	FR	French Research (satellite, France)
ELMS	Earth Limb Measurement Satellite (NASA-USAF)	FRC	Flight Research Center (NASA)
EME	environmental measurement experiment	FSC	FLEETSATCOM (satellite, USN-USAF)
EMR	Electromechanical Research (Company, England)	FSK	frequency shift key
ENVIRON	environment; environmental	FWHM	full width at half maximum
EOF	end of file	FWS	filter wedge spectrometer
EOGO	Eccentric Orbiting Geophysical Observatory (satellite, NASA)	GARP	Global Atmospheric Research Program
EOS	Earth Observation Satellite (NASA)	GCA	Geophysics Corporation of America
EPE	Energetic Particle Explorer (satellite, NASA)	GE	General Electric (Company)
E/Q	energy per-unit charge	.GE.	greater than or equal to
ERB	Earth radiation budget (experiment)	GEMS	Geostationary European Meteorological Satellite (ESRO)
ERDC	Earth Resources Data Center	GEOPHYS	geophysical
ERGS	Earth Geodetic Satellite (USAF)	GEOS	Geodetic Earth-Orbiting Satellite (NASA); Geostationary Earth-Orbiting Satellite (ESRO)
ERL	Environmental Research Laboratory (NOAA)	GES FUR	Gesellschaft für Weltraumforschung (Center for Space Research, Fed Rep of Germany)
EROS	Earth Resources Observation System	WELTRAUM-FORSCH	
ERS	Environmental Research Satellite (USAF)	G.E.T.	ground elapsed time
ERT	extended range telescope	GEV	gigaelectron volt
ERTS	Earth Resources Technology Satellite (NASA)	GGSE	gravity gradient stabilization experiment
ESGEO	ESRO Geostationary Earth-Orbiting (satellite)	GHZ	gigahertz
ESMR	electrically scanning microwave radiometer	GISS	Goddard Institute for Space Studies (NASA)
ESOC	European Space Operations Centre (ESRO)	GM	Geiger-Mueller; gram
ESRO	European Space Research Organization	GMS	Geostationary Meteorological Satellite (Japan)
ESSA	Environmental Science Services Administration (now NOAA)	GMT	Greenwich mean time
ESTABL	establishment.	GOES	Geosynchronous Operational Environmental Satellite (NASA-NOAA; also called SMS)
ESTEC	European Space Technology Center (ESRO)	GP	Gravitational Redshift Space Probe (NASA)
ETR	Eastern Test Range (also referred to as Cape Canaveral)	GRAVR	Gravitational Redshift Space Probe (NASA)
ETS	Engineering Test Satellite	GRE	ground reconstruction equipment; ground reconstruction electronics
EUV	extreme ultraviolet	GREB	Galactic Radiation Experiment Background (satellite, USN)
EV	electron volt	GRI	Groupe de Recherche Ionospherique (France)
EVA	extravehicular activity	GROC	Netherlands Committee for Geophysics and Space Research
EVM	Earth viewing (equipment) module	GRS	German Research Satellite (NASA-Fed Rep of Germany)
EXOS	Exospheric Satellite (Japan)	GSD	Grid Sphere Drag (satellite, DOD)
EXOSAT	European X-ray Observation Satellite (ESRO)	GSE	geocentric solar ecliptic (coordinate system)
EXTRATERR	extraterrestrial	GSFC	Goddard Space Flight Center (NASA)
FARO	Flare-Activated Radiobiological Observatory (satellite, DOD)	GSM	geocentric solar magnetospheric (coordinate system)
FED	Federal	.GT.	greater than
FLT-SAT	Fleet Satellite (USN)	GUGMS	Glavnoye Upravleniye Gidrometeorologicheskoi Sluzhby (Main Administration of the Hydrometeorological Service, USSR)
FM	frequency modulation		
FMRT	final meteorological radiation tape		
FOUND	foundation		
FOV	field of view		

GV	gigavolt	INTA	Instituto Nacional de Técnica Aeroespacial (Spain); the National Institute of Aerospace Science
GVHRR	geosynchronous very high resolution radiometer	INTASAT	satellite (INTA, Spain)
		INTELSAT	International Telecommunications Satellite (NASA-COMSAT)
HAO	High Altitude Observatory	ION COMP	Ionospheric Composition (satellite — see DIAPO)
HCMM	Heat Capacity Map Mission (satellite, NASA)	IPA	Institute for Physics of the Atmosphere (SAS)
HCMR	Heat Capacity Mapping Radiometer	IQSY	International Quiet Sun Year
HCO	Harvard College Observatory	IR	infrared
HDRSS	high data rate storage system	IRBM	intermediate range ballistic missile
HE	helium	IRIG	Inter-Range Instrumentation Group
HEAO	High-Energy Astrophysical Observatory (NASA)	IRIS	infrared-interferometer spectrometer; International Radiation Investigation Satellite (NASA-ESRO)
HEOS	High-Eccentricity Earth-Orbiting Satellite (ESRO)	IRLS	interrogation, recording, and location system
HEPAT	high-energy proton alpha telescope	IRR	infrared radiometry
HET	health, education, telecommunications (experiment)	IRTRN	infrared transmission
HETS	high-energy telescope system	ISAS	Institute of Space & Aeronautical Science (Japan)
HFE	heat-flow experiment, heat-flow electronics	ISEE	International Sun-Earth Explorer (satellite, NASA-ESRO)
HR	high resolution; hour	ISIS	International Satellite for Ionospheric Studies (NASA-Canada)
HRIR	high-resolution infrared radiometer	ISRO	Indian Space Research Organization
HRIRS	high-resolution infrared radiometer sounder	ISS	Ionospheric Sounding Satellite (Japan)
H.S.	high school	ITCZ	intertropical convergence zone
HYDROMET	hydrometeorological	ITOS	Improved TIROS Operational Satellite (NOAA)
HZ	hertz (cycles per second)	ITPR	infrared temperature profile radiometer
		ITR	incremental tape recorder
IAP	Institute of Atmospheric Physics (USSR)	ITSA	Institute for Telecommunication of Sciences and Aeronomy, (formerly a subdivision of ESSA; now NOAA-ERL)
IBM	International Business Machines (Corp.)	IU	instrument unit
ICBM	intercontinental ballistic missile	IUE	International Ultraviolet Explorer (satellite, NASA-UK-ESRO)
ICSU	International Council of Scientific Unions	IZMIRAN	Institute of Terrestrial Magnetism and Aeronomy of the Academy of Sciences (USSR)
ID	identification		
IDC	image dissector camera	JGR	Journal of Geophysical Research
IDCS	image dissector camera system	JHU	Johns Hopkins University
IDCSP	Initial (or Interim) Defense Communication Satellite Program (or Project) (DOD)	JPL	Jet Propulsion Laboratory (NASA)
IDSCS	Initial Defense Satellite Communication System (DOD)	JSC	Johnson Space Center (NASA)
IDT	instrument definition team		
IE	Ionospheric Explorer (satellite, NASA-NBS)	KBS	kilobits per second
IFOV	instrument field of view	KEV	kiloelectron volt
IGRF	International Geomagnetic Reference Field	KG	kilogram
IGY	International Geophysical Year	KHZ	kilohertz
IME	International Magnetospheric Explorer (satellite, NASA-ESRO)	KM	kilometer
IMP	Interplanetary Monitoring Platform (satellite, NASA)	KP	magnetic activity index K_p
IMS	International Magnetospheric Study		
INDASAT	Indian Scientific Satellite (ISRO-USSR)		
INOP	inoperable		
INSAT	Indian National Satellite (ISRO-USSR)		
INST	institute		

KPNO	Kitt Peak National Observatory	MEV	million electron volts
KSC	Kennedy Space Center (NASA)	MG	milligram
LA	Los Angeles	MHZ	megahertz
LAB	laboratory	MIDAS	Missile Defense Alarm System (USAF)
LACATE	lower atmosphere composition and temperature	MIN	minute
LAGEOS	Laser Geodetic Earth-Orbiting Satellite (NASA)	MIT	Massachusetts Institute of Technology
LARC	Langley Research Center (NASA)	MJS	Mariner Jupiter/Saturn (spacecraft, NASA)
LAS	Large Astronomical Satellite (ESRO)	MM	millimeter
LASL	Los Alamos Scientific Laboratory	MMW	millimeter wave
LCS	Lincoln Calibration Sphere	MOL	Manned Orbiting Laboratory (satellite, DOD)
.LE.	less than or equal to	M-P	minus to plus
LEM	lunar excursion module	MPI	Max-Planck-Institut (Fed Rep of Germany)
LEPAT	low-energy proton alpha telescope	MR	medium resolution
LEPEDEA	low-energy proton and electron differential energy analyzer	MRIR	medium-resolution infrared radiometer
LERC	Lewis Research Center (NASA)	MS	microsecond
LES	Lincoln Experimental Satellite (DOD)	MSC	Manned Spacecraft Center (now Johnson Space Center)
LETS	low-energy telescope system	MSEC	millisecond
LL	Lincoln Laboratory (MIT)	MSFC	Marshall Space Flight Center (NASA)
LM	lunar module	MSN	mission
LMD	Laboratory of Meteorological Dynamics	MSS	Magnetic Storm Satellite (NASA-AFCRL); multispectral scanner
LOFTI	Low-Frequency Trans-Ionospheric (satellite, USN-NRL)	MSSCC	multicolor spin-scan cloudcover camera
LOGACS	Low-G Accelerometer Calibration System (USAF)	MTS	Meteoroid Technology Satellite (NASA)
LPSP	Laboratoire de Physique Stellaire et Planetaire (CNRS)	MUSE	monitor of ultraviolet solar energy
LRIR	limb radiance inversion radiometer; low-resolution infrared radiometer	MW	milliwatt
LRL	Lunar Receiving Laboratory (JSC)	NA	not applicable; Nora Alice (satellite, DOD)
LRV	lunar roving vehicle	NACE	neutral atmosphere composition experiment
LST	Large Space Telescope (satellite, NASA)	NADUC	Nimbus/ATS Data Utilization Center
.LT.	less than	NASA	National Aeronautics and Space Administration (Washington, D.C., Headquarters)
LTV	Ling-Temco-Vought (Company)	NASC	National Aeronautics and Space Council
M	meter, milli- (prefix)	NASDA	National Space Development Agency (Japan)
MA	Mercury Atlas	NATL	national
MAPS	measurement of air pollution from satellite	NATO	North Atlantic Treaty Organization
MARENTS	Modified Advanced Research Environmental Test Satellite (USAF)	NB	narrow band
MAS	Ministry of Aviation Supply (UK)	NBS	National Bureau of Standards
MASC	magnetic attitude spin coil	NCAR	National Center for Atmospheric Research
MASS	Massachusetts	NCC	National Climatic Center (NOAA)
MATER	material	NDRE	Norwegian Defence Research Establishment
MB	millibar	NEMS	Nimbus-E microwave spectrometer; Near-Earth Magnetospheric Satellite (ESRO)
MC	megacycle	NESC	National Environmental Satellite Center (now NESS)
MCA	Magnetic-field component antenna	NESS	National Environmental Satellite Service (NOAA)
MCR	Magnetic-field component receiver	NGSP	National Geodetic Satellite Program
MED	medicine; medical	NHC	National Hurricane Center
METEC	Meteoroid Technology (satellite, NASA)	NIH	National Institutes of Health
METEOSAT	Meteorological Satellite (ESRO)	NMC	National Meteorological Center
		NMRT	Nimbus meteorological radiation tape

NNN	no national name	OT	Operational TIROS (satellite, NASA)
NNSS	Navy Navigational Satellite System	OTDA	Office of Tracking and Data Acquisition (NASA)
NOAA	National Oceanic and Atmospheric Administration (formerly ESSA)	OV	Orbiting Vehicle (satellite, USAF)
NOMSS	National Operational Meteorological Satellite System	PAC	Packaged Attitude Control (satellite, NASA)
NORAD	North American Air Defense Command	PAET	Planetary Atmosphere Experiment Test
NORW	Norwegian	PAGEOS	Passive Geodetic Earth-Orbiting Satellite (NASA)
NOS	National Ocean Survey (NOAA)	PAM	pulse amplitude modulation
NOTS	Naval Ordnance Test Station	PCM	pulse coded modulation
N-P	negative to positive	PE	Planetary Explorer
NRC	National Research Council	PEP	platform electronic package
NRL	Naval Research Laboratory	PFM	pulse frequency modulation
NSA	National Security Agency	PHASR	Personnel Hazards Associated with Space Radiation (satellite, USAF)
NSF	National Science Foundation	PHYS	physics
NSSDC	National Space Science Data Center	PI	principal investigator
NUCL	nuclear	PIXEL	picture element
NWL	Naval Weapons Laboratory	PL	prelaunch
NWRC	National Weather Records Center (now NCC)	PLAGE	Position, Location and Aircraft Communication Experiment
OA	Office of Applications (NASA)	PM	pulse modulation; photomultiplier
OAQ	Orbiting Astronomical Observatory (satellite, NASA)	PMR	pressure modulation radiometer, Pacific Missile Range
OAR	Office of Aerospace Research (USAF-AFSC)	PMT	photomultiplier tube
OART	Office of Advanced Research and Technology (NASA)	P-N	positive-negative (junction)
OAST	Office of Aeronautics and Space Technology (NASA)	POD	proton omnidirectional detector
OBS	observatory	POGO	Polar Orbiting Geophysical Observatory (satellite, NASA)
OCC	OPLC Command Center	PPS	pulses per second
OFO	Orbiting Frog Otolith (NASA experimental spacecraft)	PROT	protection
OGO	Orbiting Geophysical Observatory (satellite, NASA)	PS	pressure sensor
OI	other investigator	PSE	passive seismograph experiment
OMNI	low-resolution omnidirectional radiometer (on Explorer 7)	PTL	Photographic Technology Laboratory (JSC)
OMSF	Office of Manned Space Flight (NASA)	QOMAC	quarter-orbit magnetic attitude control (system)
ONR	Office of Naval Research	RA	Ranger (spacecraft, NASA)
OPEP	orbital-plane experiment package	RAD	radium; radiation
OPLC	Omega position and location experiment	RADCAT	Radar Calibration Target (satellite, ARPA)
OP OFF	operational off	RADQSE	Radiation Dosimeter (satellite, DOD)
ORBIS	Orbiting Radio Beacon Ionospheric Satellite (NASA)	RAE	Radio Astronomy Explorer (satellite, NASA)
ORS	Octahedral Research Satellite (NASA); Orbiting Research Satellite (DOD)	RAM	random access memory (system)
OSCAR	Orbiting Satellite Carrying Amateur Radio	RBV	return beam vidicon (camera)
OSD	Orbiting Solar Observatory (satellite, NASA)	RC	resistance capacitor
OSS	Office of Space Science (NASA)	RCA	Radio Corporation of America
OSSA	Office of Space Science and Applications (NASA; now two separate offices)	R+D	research and development
		REP	republic
		RES	research
		REXS	Radio Exploration Satellite (Japan)
		RF	radio frequency

RM	Radiation Meteoroid (satellite, NASA); Radiometric Measurement (satellite, DOD)	SIM	scientific instrument module
RMS	root mean square; Radiation Meteoroid Satellite (NASA); Radiometric Measurement Satellite (DOD)	SIRS	satellite infrared spectrometer; System for Information Retrieval and Storage (NSSDC)
RPA	retarding potential analyzer	SM	San Marco (satellite, NASA-Italy)
RPM	revolutions per minute	SMMR	scanning multispectral microwave radiometer
RPS	revolutions per second	SMS	Synchronous Meteorological Satellite (NASA)
RRL	Radio Research Laboratories (Japan)	SNAP	systems for nuclear auxiliary power
RSRS	Radio and Space Research Station (England)	SOEP	solar-oriented experiment package
RTD	Research Technology Division (USAF)	SOLRAD	Solar Radiation (satellite, NASA-DOD)
RTG	radioisotope thermoelectric generator	SPADES	Solar Perturbation and Atmospheric Density Measurement Satellite (DOD)
RTTS	real-time transmission system	SPHINX	Space Plasma High Voltage Interactive Experiment (satellite, NASA)
SAM	stratospheric aerosol measurement	SPM	solar proton monitor
SAMOS	Satellite Mission Observation System (satellite, USAF)	SR	Solar Radiation (satellite, NASA); scanning radiometer; sounding rocket
SAMS	stratospheric and mesospheric sounder	SRATS	Solar Radiation and Thermospheric Satellite (Japan)
SAMSO	Space and Missile Systems Organization (USAF)	SRC	Space Research Council, Science Research Council
SAO	Smithsonian Astrophysical Observatory	SRI	Stanford Research Institute
SAPPSAC	spacecraft attitude precision pointing and slewing adaptive control (experiment)	SRT	supporting research and technology
SAS	Small Astronomy Satellite (NASA); Soviet Academy of Sciences	SSCC	spin-scan cloudcover camera
SATAR	Satellite for Aerospace Research (NASA)	SSD	Space Science Division (JPL)
SATELL	satellite	SSS	Small Scientific Satellite (NASA)
SATS	Satellite Antenna Test System (NASA)	SST	satellite-to-satellite tracking
SBRC	Santa Barbara Research Center	STADAN	Spacecraft Tracking and Data Acquisition Network (now STDN)
SCAMS	scanning microwave spectrometer	STARAD	Starfish Radiation (satellite, NASA)
SCEL	Signal Corps Engineering Laboratories	STD	standard
SCH	school	STDN	Spaceflight Tracking and Data Network (NASA)
SCI	science	STER	steradian
SCMR	surface composition mapping radiometer	STL	Space Technology Laboratories (now TRW Systems Group)
SCORE	Signal Communication by Orbiting Relay Equipment (satellite, DOD)	STN	station
SCR	selective chopper radiometer	STP	Solar Terrestrial Probe (satellite, NASA); Solar Terrestrial Physics
SD	San Diego	STRATOS	stratosphere
SE	Solar Explorer (satellite, NASA)	STUD	studies
SEASAT	Ocean Dynamic Satellite (NASA)	SUI	State University of Iowa (now University of Iowa)
SEC	second; secondary electron conduction (vidicon tube)	SURCAL	Surveillance Calibration (satellite, DOD)
SECOR	Sequential Collation of Range (satellite, USAF)	SVC	service
SEM	space environment monitor	SW	southwest
SERT	Spinning Satellite for Electric Rocket Test (NASA)	SWRF	Sine Wave Response Filter (program)
SESP	Space Experiment Support Program	SYNCOM	Synchronous Communication (satellite, NASA)
SESPO	Space Environmental Support Project Office	SYST	system
SHS	Soviet Hydrometeorological Service	TAC	Technology Application Center
SIBS	Salk Institute for Biological Studies	TACOMSAT	Tactical Communications Satellite (DOD)
SIDS	Space Investigations Documentation System (NASA)		

TATS	Test and Training Satellite (NASA)	U	university
TATSACOM	Tactical Satellite Communications (program, DOD)	UCLA	University of California at Los Angeles
TD	Thor-Delta (satellite, ESRO); launch vehicle (NASA-USAF)	UHF	ultrahigh frequency
TDP	Tracking Data Processor (program)	UK	United Kingdom
T+DR	tracking & data relay	US	United States
TDRSS	tracking and data relay satellite system	USA	United States Army; United States of America
TEC	telemetry and command; transearth coast; total electron content	USAF	United States Air Force
TECH	technical; technology	USN	United States Navy
TED	total energy detector	USSR	Union of Soviet Socialist Republics
TEI	transearth injection	UT	universal time
TELESAT	satellite, Canada (also referred to as ANIK)	UV	ultraviolet
TEMP	temporal; temperature	UVNO	ultraviolet nitric-oxide experiment
TET	telescope and electron telescope	UVS	ultraviolet spectrometer
TETR	Test and Training (satellite, NASA)	V	volt
THIR	temperature-humidity infrared radiometer	VAR	variation
THORAD-AGE	Thor Augmented Delta Agena (launch vehicle)	VHF	very high frequency
TIMATION	Time Location System (USN)	VHRR	very high resolution radiometer
TIP	Tracking Impact Prediction (satellite, DOD)	VISSR	visible infrared spin-scan radiometer
TIROS	Television and Infrared Observation Satellite (NASA)	VLF	very low frequency
TL	team leader	VTPR	vertical temperature profile radiometer
TLI	translunar injection	W	watt
TM	team member	WBVTR	wideband video tape recorder
TOMS	total ozone mapping system	WDC	World Data Center
TOPO	topographic	WDC-A-R&S	World Data Center A for Rockets and Satellites
TOPS	Thermal Noise Optical Optimization Communication System (NASA)	WEFAX	weather facsimile
TOPSI	topside (sounder) (satellite, NASA)	WEP	Wisconsin Experiment Package
TOS	TIROS Operational Satellite (or System) (NASA)	WFC	Wallops Flight Center (NASA)
TOVS	TIROS operational vertical sounder	WGSPR	Working Group for Space Physics Research
TR	tape recorder	WMO	World Meteorological Organization
TRAAC	Transit Research and Attitude Control (satellite, USN)	WPM	words per minute
TRANET	Doppler Tracking Network (USN)	WRESAT	Weapons Research Establishment Satellite (Australia)
TRANSP	transportation	WS	Wallops Station (NASA; now Wallops Flight Center)
TRS	Tetrahedral Research Satellite (USAF)	WSMR	White Sands Missile Range
TRW	Thompson, Ramo, Wooldridge, Inc.	WTR	Western Test Range (also referred to as Vandenberg AFB)
TTS	Test and Training Satellite (NASA) (also called TATS, TETR)	WWW	World Weather Watch
TWERLE	tropical wind energy conversion and reference level experiment	Z	atomic number

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Particle Data

Spacecraft Name Index

NSSDC ID Index

Original Experiment Institution Index

Investigator Name Index

Phenomenon Ordered Bar Graphs

Phenomenon Measured Index

Supporting Data Descriptions

Appendix: Abbreviations and Acronyms