NASA TM-72528

NSSDC

74-15b

Data Catalog of Satellite Experiments

Supplement No. 2b to NSSDC 71-20

OCTOBER 1974

Particles and Fields

NATIONAL SPACE SCIENCE DATA CENTER

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION · GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.

NSSDC 74-15b

NATIONAL SPACE SCIENCE DATA CENTER
DATA CATALOG OF SATELLITE EXPERIMENTS

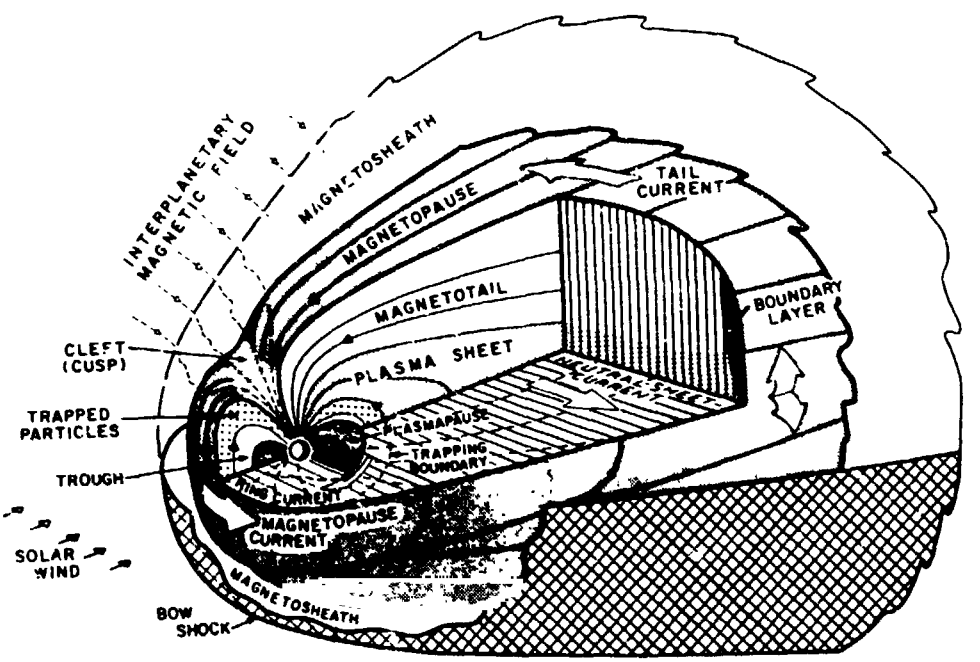
PARTICLES AND FIELDS

SUPPLEMENT NO. 2b to NSSDC 71-20

- - -

Technical Coordinator

Joseph H. King



National Space Science Data Center
Goddard Space Flight Center
National Aeronautics and Space Administration
Greenbelt, Maryland 20771

October 1974

ACKNOWLEDGMENT

Title page illustration taken from
W. J. Heikkila, "Aurora," EOS, 54, 764 (1973).

CONTENTS

*Because of the number of entries in this section, only the spacecraft and experiments are listed here.

CONTENTS (continued)

CONTENTS (continued)

CONTENTS (continued)

INTRODUCTION

Purposes and Organization

The purposes of the Data Catalog of Satellite Experiments are to announce the availability of experimental space science data, to describe these data, and to inform potential users of the policies and procedures associated with the data dissemination services provided by the National Space Science Data Center (NSSDC). The space science experiment data available as of June 1973 are described in the Data Catalog of Satellite Experiments, December 1971 (NSSDC 71-20), and its supplement, October 1973 (NSSDC 73-11).

Beginning with this issue, a new concept for announcing the availability of data at NSSDC has been adopted. This concept is based upon the Selective Dissemination of Information (SDI) principle. Under the NSSDC SDI system, the types of satellite experiment data acquired have been divided into the following eight major discipline categories: Astronomy, Geodesy and Gravimetry, Ionospheric Physics, Meteorology, Particles and Fields, Planetary Atmospheres, Planetology, and Solar Physics. The Data Center definitions of these categories are provided on the inside front cover. (It should be noted that these category definitions reflect the best judgment of the NSSDC staff and are not intended as definitive descriptions of discipline boundaries.) The current issue of the catalog has been published in four volumes. One volume covers the categories of Astronomy and Solar Physics. Another combines the categories of Ionospheric Physics, Meteorology, and Planetary Atmospheres. Particles and Fields constitutes one separate volume, and Planetology, another separate volume. The few experiments which fall under more than one category have been included in each of the relevant discipline volumes. Generally, each volume describes only those data sets and associated spacecraft and experiments not included in the 1971 or 1973 issues of the catalog and are currently suitable for announcement. Additionally, the volumes may contain descriptions of data sets previously announced for which sufficient quantities of new data have been acquired to merit their inclusion.

Cumulative volumes for the discipline categories will be prepared in spring 1975. An index volume will also be prepared at that time that will be sent to all participants in the SDI system. This volume will contain indexes by Spacecraft Name, Investigator Name, Original Experiment Institution and/or Current Experiment Institution, and Phenomenon Measured for all data included in any of the discipline volumes. Also included will be descriptions of spacecraft from which NSSDC has acquired data, as well as descriptions of ephemeris or other special spacecraft-related data sets appropriate for announcement.

Each index will refer to the discipline volumes in which the description of the experiment or its associated data set can be found. The index volume alone may satisfy the needs of many users; in addition, subject volumes in the various categories will be sent automatically to users who have expressed an interest in any category in that volume. Subject volumes will be available to others on special request.

Data Availability, Costs, and Ordering Procedures

The purpose of the National Space Science Data Center (NSSDC) is to provide data and information from space science experiments in support of additional studies beyond those performed by the principal investigators. Therefore, NSSDC will provide data and information upon request to any individual or organization resident in the United States. In addition, the same services are available to scientists outside the United States through the World Data Center A for Rockets and Satellites (WDC-A-R&S). 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 cost, 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. NASA installations, NASA contractors, or NASA grantees
2. Other U.S. Government agencies, their contractors, or their grantees
3. Universities and colleges
4. State and local governments
5. Nonprofit organizations

A user may obtain data in any of the following ways:

1. Letter request
2. Data Request Form (contained at the end of this document)
3. Telephone request
4. On-site visit

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 data requested. A requester should also specify why the data are needed, the subject of his work, the name of the organization with which he is affiliated, and any Government contracts he may have for performing his study. Upon special request, data may be provided in a medium other than that noted in the heading of the data set descriptions. For example, computer printout or microfilmed listings could be produced from magnetic tape data sets. Enlarged paper prints are available from data sets on photographic film and microfilm. The Data Center will provide the requester with an estimate of the response time and cost that will be incurred for such requests, if appropriate.

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 official 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 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.

NSSDC Facilities and Services

NSSDC provides facilities for reproduction of data and for on-site 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 correlative data and information on other correlative data that may be related to a specific request. These correlative data are described in the NSSDC Handbook of Correlative Data, NSSDC 71-05, which is available from the Data Center.

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, and lunar and planetary photographic catalogs and users guides. For additional information on NSSDC and WDC-A-R&S document availability and distribution services, write to the appropriate address identified in the previous section and ask for document NSSDC/WDC-A-R&S 74-10.

Participation

The National Space Science Data Center (NSSDC) invites members of the scientific community to contribute data from satellite experiments. NSSDC 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 arranged.

The Data Center is continually striving to increase the usefulness of the data catalog by improving the data descriptions and including all pertinent information. 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. Anyone wishing to receive a copy of this publication can have his name added to this distribution list by phone or letter request.

Abbreviations and Acronyms

The abbreviations and acronyms used in this volume are listed in the October 1973 supplement (NSSDC 73-11) to the data catalog.

DESCRIPTION OF DATA

General

This section was produced from the computerized NSSDC information system, which provides the Data Center with an efficient means for maintaining up-to-date descriptions of available data and for announcing the acquisition of new data. For each data set* description contained in the information system, descriptions of the experiment and spacecraft from which the data originated are also included as background information. This section is organized by spacecraft common name and within that by the last name of the principal investigator associated with each experiment on that spacecraft. Data set descriptions follow the experiments to which they pertain and are ordered by NSSDC ID code which appears in the upper right-hand corner of the description.

Identification of Spacecraft, Experiments, and Data Sets

In the NSSDC information system, each spacecraft, experiment, and data set is assigned an identification number, the NSSDC ID No., that is based on the launch sequence of the spacecraft. Subsequent to 1962, the NSSDC ID No. for a spacecraft (e.g., 65-042A for Explorer 28) corresponds to the COSPAR (Committee on Space Research) international designation. The Data Center has provided corresponding numbers for satellites that were launched during the years 1957 to 1962. (For example, Explorer 1, which carries COSPAR designation 1958 Alpha 1, was the first spacecraft launched in 1958; therefore, it has been assigned NSSDC ID No. 58-001A.) The experiment and data set ID numbers are based on the spacecraft number. For example, the experiments carried aboard spacecraft 67-031A (ATS 2) are numbered 67-031A-01, 67-031A-02, etc. Data sets derived from experiment 67-031A-01 are designated 67-031A-01A, 67-031A-01B, etc.

*A data set is defined as (1) a body of data that is the result of the reduction or analysis of data from a given experiment or (2) certain supporting information (catalogs, ephemeris, etc.) that is uniquely related to a given experiment or spacecraft. The content, characteristics, form, format, or organization of this body of data is different from that of any other body of data or supporting information associated with the given experiment or spacecraft.

Spacecraft, Experiment, and Data Set Descriptions

Each entry in this section is composed 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. Details on the contents of the three kinds of entries are described in the following paragraphs.

Contents of Spacecraft Entries

The heading for each spacecraft description contains the following information about the spacecraft: launch date, spacecraft weight in orbit, spacecraft 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 also is included and is frequently updated. In some cases the performance and status information reflected in the description may disagree with information found in the heading under "Status of Operation." When there are disagreements, consider the information in the heading as more up to date.

Contents of Experiment Entries

Each experiment entry heading lists the name of the original experiment institution and the name and address of the principal investigator for the experiment. The names and addresses of other investigators associated with the experiment are also listed. The status of operation of the experiment 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, are 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 also is included and is frequently updated. In some cases the performance and status information reflected in the description may disagree with information found in the heading under "Status of Operation." When there are disagreements, consider the information in the heading as more up to date.

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: (1) "as verified by NSSDC" - identifying that portion of the data set for which the period of data coverage has been verified, and (2) "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 either that 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 - is used for data sets that NSSDC does not plan to acquire, and that the experimenter is willing to make available to other scientists, usually in limited amount. 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 - is 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 the data described herein, please refer to page viii in the Introduction.

NATIONAL SPACE SCIENCE DATA CENTER
DATA CATALOG OF SATELLITE EXPERIMENTS
PARTICLES AND FIELDS

SUPPLEMENT NO. 28 TO NSSDC 71-20

**********ALOUETTE 2 **********

SPACECRAFT COMMON NAME- ALOUETTE 2 NSSDC ID 65-098A
ALTERNATE NAMES- ALOUETTE-B, S 278, ISIS-X, 01804

LAUNCH DATE- 11/29/65 SPACECRAFT WEIGHT IN ORBIT- 145. KG

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

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

SPACECRAFT BRIEF DESCRIPTION
ALOUETTE 2 WAS A SMALL 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 ALOULTTE 1, WHICH WAS BELIEVED TO RESULT FROM THERMAL DISTORTION OF THE ANTENNA AND RADIATION PRESSURE. THERE WAS NO TAPE RECORDER, SO THAT DATA ARE AVAILABLE ONLY 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 IN THE SUMMER OF 1973, BUT SPECIAL REQUEST OPERATION HAS OCCURRED OCCASIONALLY SINCE THEN.

**********ALOUETTE 2, MCDIARMID

EXPERIMENT NAME- ENERGETIC PARTICLES DETECTORS NSSDC ID 65-098A-04

ORIGINAL EXPERIMENT INSTITUTION- NATIONAL RSCH COUNCIL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - I.B. MCDIARMID NATIONAL RSCH COUNCIL OTTAWA, ONTARIO, CANADA

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

EXPERIMENT BRIEF DESCRIPTION
THE ALOUETTE 2 COSMIC PARTICLE DETECTION EXPERIMENT WAS COMPOSED OF SEVEN DETECTORS. FOUR OF THESE WERE GEIGER-MUELLER 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- 12/02/65 TO 11/08/67 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 7 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

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 (BLKSIZE 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. 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 IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 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-MEV 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.

**********APOLLO 12 LM/ALSEP **********

SPACECRAFT COMMON NAME- APOLLO 12 LM/ALSEP NSSDC ID 69-099C
ALTERNATE NAMES- 04246. ALSEP 12. LEM 12. APOLLO 12C

LAUNCH DATE- 11/14/69 SPACECRAFT WEIGHT IN ORBIT- 4379. KG

SPACECRAFT STATUS OF OPERATION- PARTIAL

SPACECRAFT BRIEF DESCRIPTION
THE LUNAR MODULE (LM) WAS A TWO-STAGE VEHICLE DESIGNED FOR SPACE OPERATIONS NEAR AND ON THE MOON. THE LM STOOD 7 M HIGH AND WAS 9.4 M WIDE (DIAGONALLY ACROSS THE LANDING GEAR). THE ASCENT AND DESCENT STAGES OF THE LM OPERATED AS A UNIT UNTIL STAGING. WHEN THE ASCENT STAGE FUNCTIONED AS A SINGLE SPACECRAFT FOR RENDEZVOUS AND DOCKING WITH THE COMMAND MODULE (CM). THE ALSEP EXPERIMENTS INCLUDED (1) THE PASSIVE SEISMOGRAPH, WHICH WAS DESIGNED TO MEASURE SEISMIC ACTIVITY AND PHYSICAL PROPERTIES OF THE LUNAR CRUST AND INTERIOR. (2) THE SUPRATHERMAL ION DETECTOR, DESIGNED TO MEASURE THE FLUX COMPOSITION, ENERGY, AND VELOCITY OF LOW-ENERGY POSITIVE IONS. (3) THE COLD CATHODE ION GAUGE, DESIGNED TO MEASURE THE ATMOSPHERE AND ANY VARIATIONS WITH TIME OR SOLAR ACTIVITY SUCH ATMOSPHERE MAY HAVE. (4) THE CHARGED PARTICLE LUNAR ENVIRONMENT EXPERIMENT, DESIGNED TO MEASURE PARTICLE ENERGIES OF SOLAR PROTONS AND ELECTRONS THAT REACH THE LUNAR SURFACE AND TO PROVIDE DATA ON ENERGY DISTRIBUTION OF THESE SOLAR PARTICLES. (5) THE LUNAR SURFACE MAGNETOMETER (LSM), DESIGNED TO MEASURE THE MAGNETIC FIELD AT THE LUNAR SURFACE, AND (6) THE SOLAR WIND SPECTROMETER, WHICH MEASURED THE FLUXES AND SPECTRA OF THE ELECTRONS AND PROTONS THAT EMANATE FROM THE SUN AND REACH THE LUNAR SURFACE.

**********APOLLO 12 LM/ALSEP, FREEMAN

EXPERIMENT NAME- SUPRATHERMAL ION DETECTOR NSSDC ID 69-099C-05

ORIGINAL EXPERIMENT INSTITUTION- RICE U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - J.W. FREEMAN RICE U HOUSTON, TX

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT, WHICH WAS PART OF THE ALSEP PACKAGE, STUDIED THE IONIC ENVIRONMENT OF THE MOON BY DETECTING FREE STREAMING AND THERMALIZED SOLAR WIND IONS AND THOSE IONS WHICH RESULT FROM ULTRAVIOLET IONIZATION OF THE LUNAR ATMOSPHERE. A LOW-ENERGY CURVED PLATE ANALYZER, WITH A VELOCITY FILTER OF CROSSED ELECTRIC AND MAGNETIC FIELDS, DETERMINED THE PARTICLE FLUX IN SELECTED INTERVALS OVER THE RANGE 0.2 TO 48.6 EV PER UNIT CHARGE, WITH SPECIES DISCRIMINATION OF MASSES UP TO 1000 AMU. ANOTHER ANALYZER WITHOUT A VELOCITY FILTER DETECTED HIGHER-ENERGY PARTICLES SUCH AS THOSE FOUND IN SELECTED ENERGY INTERVALS BETWEEN 10 AND 3500 EV. DUE TO ITS ORIENTATION, THIS INSTRUMENT DID NOT OBSERVE SOLAR WIND PARTICLES EXCEPT IN THE SHEATH AND TAIL. HOWEVER, IT DID SEE UPSTREAMING PARTICLES, ETC., FROM THE SHOCK. HIGH-VOLTAGE POWER SUPPLY ARCING CAUSED SOME LOSS OF DATA. AFTER MARCH 18, 1970, THE INSTRUMENT WAS NOT OPERATED WHEN SENSOR TEMPERATURE EXCEEDED 85 DEG C.

DATA SET NAME- PLOTS OF MASS ANALYZER AND TOTAL ION NSSDC ID 69-099C-05A

DATA ON 16-MM MICROFILM. 24 SEC RES DATA

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/14/71 TO 02/01/73 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 22 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THESE EXPERIMENTER-GENERATED MICROFILM REELS CONTAIN PLOTS OF THE TOTAL ION DATA IN 20 CHANNELS FROM 3500 EV/Q TO 10 EV/Q. AND OF THE MASS SPECTROMETER DATA IN SIX ENERGY RANGES FROM 48.6 EV TO 0.2 EV AND IN 20 MASS RANGES FROM 10 TO 1000 AMU PLOTTED AGAINST FRAME NUMBER. (BOTH SPECTRA ARE ON THE SAME PLOT). EACH SET OF SPECTRA REQUIRES 24 SEC TO COMPLETE IN THE NORMAL EXPERIMENT MODE. INTERPRETATION OF THESE PLOTS REQUIRES REFERENCE TO HOUSEKEEPING DATA IN DATA SET 69-099C-05B.

DATA SET NAME- LISTS OF MASS ANALYZER AND TOTAL ION DATA ON 16-MM MICROFILM. 24 SEC RES DATA NSSDC ID 69-099C-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/14/71 TO 02/03/73 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 37 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THESE EXPERIMENTER-GENERATED 16-MM MICROFILM CONTAIN LISTINGS OF THE 20 CHANNEL TOTAL ION SPECTRA FROM 3500 EV/Q TO 10 EV/Q AND THE MASS SPECTROMETER DATA FROM SIX ENERGY RANGES FROM 48.6 EV TO 0.2 EV AND IN 20 MASS RANGES OF 10 TO 1000 AMU LISTED AGAINST FRAME NUMBER AND TIME. ALSO INCLUDED ARE HOUSEKEEPING DATA NEEDED TO INTERPRET THESE LISTINGS AND THE PLOTS IN DATA SET 69-099C-05A. EACH SET OF TOTAL ION SPECTRA AND MASS ANALYZER SPECTRA REQUIRES 24 SEC TO COMPLETE.

**********APOLLO 12 LM/ALSEP. SNYDER

EXPERIMENT NAME- SOLAR WIND SPECTROMETER NSSDC ID 69-099C-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.W.	SNYDER	NASA-JPL	PASADENA, CA
OI - D.R.	CLAY	NASA-JPL	PASADENA, CA
OI - M.M.	NEUGEBAUER	NASA-JPL	PASADENA, CA

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION
THE SOLAR WIND SPECTROMETER WAS PART OF THE APOLLO 12 ALSEP PACKAGE LEFT ON THE LUNAR SURFACE. IT CONSISTED OF SEVEN MODULATED FARADAY CUPS OPENED TOWARD DIFFERENT, BUT SLIGHTLY OVERLAPPING, PORTIONS OF THE LUNAR SKY. THE INSTRUMENT WAS USED TO OBSERVE THE DIRECTIONAL INTENSITIES OF THE ELECTRON (6-1330 EV) AND POSITIVE ION (18-9780 EV) COMPONENTS OF THE SOLAR WIND AND MAGNETOTAIL PLASMA THAT STRIKE THE SURFACE OF THE MOON. THE SOLAR WIND SPECTROMETER OPERATED WELL FROM TURN-ON UNTIL NOVEMBER 5, 1971, WHEN TROUBLE WAS ENCOUNTERED IN TWO OF THE SPECTRAL ENERGY LEVELS.

DATA SET NAME- TWENTY-EIGHT SECOND TIME RESOLUTION PLASMA PARAMETERS ON MAGNETIC TAPE — NSSDC ID 69-099C-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/19/69 TO 02/21/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 10 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE TAPES CONTAIN THE HIGHEST TIME RESOLUTION PLASMA DATA AVAILABLE FROM THIS EXPERIMENT (28 SEC PER SPECTRUM). THE TAPES WERE GENERATED ON A UNIVAC 1108 IN 7-TRACKS, AT 800 BPI, BCD, AND EVEN PARITY. PHYSICAL RECORDS ARE BLOCKED TO 384 WORDS, EACH PHYSICAL RECORD CONTAINING 32 LOGICAL RECORDS OF 12 WORDS EACH, AT 72 BCD CHARACTERS TO EVERY 12 WORDS. CONTAINED IN EACH RECORD ARE -- TIME, PROTON DENSITY, ALPHA-TO-PROTON RATIO, BULK SPEED, ANGLE OF FLOW, MOST PROBABLE THERMAL SPEED, AND VARIOUS HOUSEKEEPING AND FIT PARAMETERS RELATING TO THE RELIABILITY OF THE CALCULATED PLASMA PARAMETERS. THE FIRST RECORD(S) ON EACH TAPE CONTAINS LABELING INFORMATION TO IDENTIFY THE TAPE CONTENTS TO A USER. EACH TAPE CONTAINS ONE FILE.

DATA SET NAME- HOUR AVERAGED PLASMA PARAMETERS ON MAGNETIC TAPE — NSSDC ID 69-099C-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/19/69 TO 02/10/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-SUPPLIED TAPES CONTAIN HOURLY-AVERAGED PLASMA PARAMETERS. THE TAPES ARE IN 7 TRACKS, 800 BPI AND EVEN PARITY, AND WERE WRITTEN IN BCD ON A UNIVAC 1108. EACH SET OF AVERAGES IS IN TWO LOGICAL RECORDS, WITH TWO LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 216 BCD CHARACTERS PER PHYSICAL RECORD. FOUR SETS OF HOURLY AVERAGED PARAMETERS ARE COMPUTED, USING AS INPUT DATA (1) ALL FINE TIME SCALE PARAMETERS (FTSP), (2) ALL FTSP COMPUTED FROM SPECTRA WITH SMALL RMS ERROR ON CURVE FITTING AND THERMAL SPEEDS LESS THAN ONE-HALF THE BULK VELOCITY, (3) ALL FTSP COMPUTED FROM SPECTRA THAT SATISFY THE REQUIREMENTS OF CRITERION 2 AS WELL AS HAVING ONLY ONE FLOW ANGLE THAT CAN BE DIRECTLY MEASURED, AND (4) ALL FTSP COMPUTED FROM SPECTRA THAT SATISFY THE REQUIREMENTS OF CRITERION 2 AS WELL AS HAVING BOTH FLOW ANGLES DIRECTLY MEASURABLE. EACH TAPE CONTAINS ONE FILE. CONTAINED IN EACH OF THE FOUR SETS OF AVERAGES ARE THE PROTON DENSITY, ALPHA-TO-PROTON RATIO, BULK SPEED, ANGLE OF FLOW, NUMBER OF SPECTRA, AND RMS DEVIATIONS OF EACH AVERAGE.

DATA SET NAME- PLOTS OF HOUR AVERAGED PLASMA PARAMETERS — NSSDC ID 69-099C-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/20/69 TO 02/10/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 28 PAGE(S) OF UNBOUND HARDCOPY

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED PLOTS CONTAIN HOURLY AVERAGED PLASMA PARAMETERS AS FUNCTIONS OF TIME, WITH 22 DAYS PER FRAME. CONTAINED IN EACH PLOT ARE THE HOURLY AVERAGED PROTON BULK SPEED, MOST PROBABLE THERMAL SPEED, PROTON DENSITY, AND ANGLE OF FLOW FROM THE HOURLY AVERAGED DATA IN DATA SET 69-099C-02B THAT SATISFIED CRITERION 2, THAT IS, WHICH HAD SMALL RMS ERROR ON CURVE FITTING AND THERMAL SPEEDS LESS THAN ONE-HALF THE BULK SPEED.

**********APOLLO 12 LM/ALSEP, SONETT

EXPERIMENT NAME- LUNAR SURFACE MAGNETOMETER NSSDC ID 69-099C-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.P.	SONETT	NASA-ARC	MOFFETT FIELD, CA
OI - P.	DYAL	NASA-ARC	MOFFETT FIELD, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 04/03/70

EXPERIMENT BRIEF DESCRIPTION

THE LUNAR SURFACE MAGNETOMETER IS PART OF THE ALSEP PACKAGE AND CONSISTS OF THREE FLUXGATE SENSORS LOCATED ON ORTHOGONAL 5-FT BOOMS. THE SENSORS ARE MOUNTED ON GIMBALS ALLOWING THEIR MEASUREMENT AXES TO BE INTERCHANGED FOR PURPOSES OF CALIBRATION AND SITE SURVEY. THE INSTRUMENT WAS DESIGNED TO MEASURE THE MOON'S MAGNETIC FIELD, AND OPERATED IN THE RANGES MINUS TO PLUS 100, 200, OR 400 GAMMAS. IT WAS ALSO EXPECTED TO YIELD INFORMATION ABOUT THE LUNAR GROSS ELECTRICAL DIFFUSIVITY, THE EXISTENCE OF A MOLTEN CORE, THE EARTH MAGNETIC TAIL, AND LOCAL MAGNETIC ANOMALIES. THE INSTRUMENT MEASURED THE MAGNETIC FIELD CONSTANTLY FOR ABOUT THREE WEEKS AFTER DEPLOYMENT, THEN ON THE DAYSIDE CONTINUOUSLY FOR SEVERAL MONTHS, THEN ON THE DAYSIDE VERY INTERMITTENTLY INTO 1972.

DATA SET NAME- 0.3-SEC MAGNETIC VECTORS ON TAPE NSSDC ID 69-099C-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/19/69 TO 04/03/70 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 35 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF EXPERIMENTER-SUPPLIED MAGNETIC TAPES WRITTEN IN 556-BPI, 7-TRACK, DCS BINARY FORMAT ON AN IBM 7040/7094 COMPUTER. LOGICAL AND PHYSICAL RECORDS HAVE 751 AND 460 WORDS, RESPECTIVELY. EACH LOGICAL DATA RECORD CONTAINS THE TIME FOR THE FIRST DATA POINT, AND THE CARTESIAN COMPONENTS OF 500 SUCCESSIVE MAGNETIC FIELD VECTORS. SINCE ONE DATA POINT WAS OBTAINED EVERY 0.3 SEC, EACH LOGICAL RECORD COVERS 2.5 MIN OF DATA. FIELD COMPONENTS ARE GIVEN IN A COORDINATE SYSTEM WITH X RADIALLY OUTWARD FROM THE LOCAL LUNAR SURFACE AND Y AND Z TANGENT TO THE SURFACE AND DIRECTED EASTWARD AND NORTHWARD, RESPECTIVELY. TYPICALLY, EACH TAPE CONTAINS THREE DAYS OF DATA. THE DATA COVER THE PERIOD FROM NOVEMBER 19, 1969, THROUGH APRIL 3, 1970, WITH THE FOLLOWING GAPS -- DECEMBER 12 THROUGH DECEMBER 18, 1969, JANUARY 4 THROUGH JANUARY 17, 1970, FEBRUARY 3 THROUGH FEBRUARY 15, 1970, MARCH 6 THROUGH MARCH 17, 1970.

DATA SET NAME- FILTERED AND DECIMATED MAGNETIC FIELD DATA ON MAGNETIC TAPE NSSDC ID 69-099C-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/28/69 TO 12/03/69 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A SAMPLE 7-TRACK, 556-BPI BCD MAGNETIC TAPE CONTAINING FILTERED AND DECIMATED MAGNETIC FIELD DATA AS SUBMITTED BY THE EXPERIMENTER. THE TAPE CONTAINS A HEADER RECORD AND SUCCESSIVE GROUPS OF THREE PHYSICAL RECORDS WHERE EACH SUCH GROUP CONSTITUTES ONE LOGICAL RECORD. THE 1602-CHARACTER HEADER RECORD INCLUDES THE DEGREE OF DECIMATION AND THE FILTER WEIGHTS USED. THE FIRST PHYSICAL RECORD IN EACH LOGICAL RECORD CONTAINS THE TIME OF THE FIRST SUBSEQUENT VECTOR. THE SECOND AND THIRD PHYSICAL RECORDS EACH CONTAIN 50 MAGNETIC VECTORS (CARTESIAN COMPONENTS IN ALSEP COORDINATES AND FIELD MAGNITUDE). NSSDC WILL HOLD A LIST OF TIMES FOR WHICH THE ORIGINAL DATA WERE SUBJECTED TO FILTERING AND DECIMATION AND WILL ACQUIRE APPROPRIATE TAPES FROM THE EXPERIMENTER AS REQUEST ACTIVITY WARRANTS.

**********APOLLO 14 LM/ALSEP **********

SPACECRAFT COMMON NAME- APOLLO 14 LM/ALSEP NSSDC ID 71-008C
ALTERNATE NAMES- ALSEP 14, LEM 14, 04905, APOLLO 14C

LAUNCH DATE- 01/31/71 SPACECRAFT WEIGHT IN ORBIT- 4857. KG

SPACECRAFT STATUS OF OPERATION- PARTIAL

SPACECRAFT BRIEF DESCRIPTION

THE APOLLO 14 LUNAR MODULE (LM) CONSISTED OF A LUNAR LANDING CRAFT AND AN APOLLO LUNAR SURFACE EXPERIMENT PACKAGE (ALSEP) THAT CONTAINED SCIENTIFIC EXPERIMENTS TO BE LEFT ON THE LUNAR SURFACE AFTER COMPLETION OF THE MANNED PORTION OF THE MISSION. THE LM LANDED IN THE LUNAR HIGHLANDS (3 DEG 39 MIN 1 SEC S LATITUDE, 17 DEG 27 MIN 55 SEC W LONGITUDE). THE NUCLEAR POWERED ALSEP WAS DEPLOYED AT THE LANDING SITE AND INCLUDED EXPERIMENTS TO STUDY THE SEISMIC WAVES, MAGNETIC FIELDS, SOLAR WIND COMPOSITION AND INTERACTION WITH THE MOON, LUNAR ATMOSPHERE, IONIC ENVIRONMENT, HIGH-ENERGY RADIATION DAMAGE TO SOLAR CELLS, LUNAR MOTION, AND THE LUNAR SOIL.

**********APOLLO 14 LM/ALSEP, FREEMAN

EXPERIMENT NAME- SUPRATHERMAL ION DETECTOR NSSDC ID 71-008C-06

ORIGINAL EXPERIMENT INSTITUTION- RICE U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - J.W. FREEMAN RICE U HOUSTON, TX

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THE ALSEP SUPRATHERMAL ION DETECTOR EXPERIMENT MEASURED IONS GENERATED FROM ULTRAVIOLET IONIZATION OF THE LUNAR ATMOSPHERE AND THE FREE-STREAMING SOLAR WIND/LUNAR SURFACE INTERACTION. FROM THE DATA OBTAINED, FLUX, NUMBER DENSITY, VELOCITY, AND ENERGY PER UNIT CHARGE CAN BE DETERMINED. A CURVED PLATE A' LYZER AND AN E-CROSS-B VELOCITY SELECTOR DETECTED IONS WITH NORMAL VELOCITIES FROM 0.4 TO 93.5 KM/SEC AND ENERGIES FROM 0.2 TO 48.6 EV, ENABLING SPECIES DISCRIMINATION OF MASSES UP TO 750 AMU. A SEPARATE CURVED PLATE ANALYZER COUNTED PROTONS IN SELECTED ENERGY INTERVALS FROM 10 TO 3500 EV. DUE TO THE ORIENTATION OF THESE DIRECTIONAL INSTRUMENTS, SOLAR WIND IONS WERE NOT OBSERVED DIRECTLY EXCEPT IN THE TAILWARD SHEATH. HOWEVER, IONS FROM THE BOW SHOCK WERE OBSERVED. ON APRIL 5, 1971 SOME ENGINEERING DATA WERE LOST DUE TO THE PARTIAL FAILURE OF AN ANALOG-TO-DIGITAL CONVERTER. THE EXPERIMENT RETURNED GOOD CONTINUOUS SCIENTIFIC DATA UNTIL OCTOBER 20, 1971 WHEN ARCING IN THE HIGH-VOLTAGE POWER SUPPLY LIMITED OPERATION NEAR LUNAR NOON. AFTER DECEMBER 16, 1971 OPERATION WAS DISCONTINUED WHEN INSTRUMENT TEMPERATURE EXCEEDED 85 DEG C. ALL DATA TAKEN AFTER MARCH 29, 1972 WERE TAKEN IN AN ANOMALOUS STANDBY MODE, AND DATA COVERAGE WAS VERY POOR.

DATA SET NAME- PLOTS OF MASS ANALYZER AND TOTAL ION DATA ON 16-MM MICROFILM, 24 SEC RES DATA — NSSDC ID 71-008C-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/26/72 TO 03/03/73 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 47 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED MICROFILM REELS CONTAIN PLOTS OF THE TOTAL ION DATA IN 20 CHANNELS FROM 3500 EV/Q TO 10 EV/Q AND THE MASS SPECTROMETER DATA IN SIX ENERGY RANGES FROM 48.6 EV TO 0.2 EV AND IN 20 MASS RANGES FROM 6 TO 750 AMU PLOTTED AGAINST FRAME NUMBER. (BOTH SPECTRA ARE ON THE SAME PLOT). EACH SET OF SPECTRA REQUIRES 24 SEC TO COMPLETE IN THE NORMAL EXPERIMENT MODE. INTERPRETATION OF THESE PLOTS REQUIRES REFERENCE TO HOUSEKEEPING DATA IN DATA SET 71-008C-068.

DATA SET NAME- LISTS OF MASS ANALYZER AND TOTAL ION DATA ON 16-MM MICROFILM, 24 SEC RES DATA — NSSDC ID 71-008C-068

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/26/72 TO 02/28/73 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 41 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED 16-MM MICROFILM REELS CONTAIN LISTINGS OF THE 20 CHANNEL TOTAL ION SPECTRA FROM 3500 EV/Q TO 10 EV/Q AND THE MASS SPECTROMETER DATA FROM SIX ENERGY RANGES FROM 48.6 EV TO 0.2 EV AND IN 20 MASS RANGES OF 6 TO 750 AMU LISTED AGAINST FRAME NUMBER AND TIME. EACH SET OF TOTAL ION SPECTRA AND MASS ANALYZER SPECTRA REQUIRES 24 SEC TO COMPLETE. ALSO INCLUDED ARE HOUSEKEEPING DATA NEEDED TO INTERPRET THESE LISTINGS AND THE PLOTS IN DATA SET 71-008C-06A.

**********APOLLO 14 LM/ALSEP, JOHNSON

EXPERIMENT NAME- COLD CATHODE ION GAUGE EXPERIMENT NSSDC ID 71-008C-07

ORIGINAL EXPERIMENT INSTITUTION- U OF TEXAS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI -	F.S. JOHNSON	U OF TEXAS, DALLAS	DALLAS, TX
OI -	D.E. EVANS	NASA-JSC	HOUSTON, TX

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THE ALSEP COLD CATHODE GAUGE EXPERIMENT DETERMINED PRESSURES FROM 1.0E-6 TO 1.0E-12 TORR OF THE AMBIENT LUNAR ATMOSPHERE. THE RESULTS OF THIS EXPERIMENT, COMBINED WITH THOSE OF THE SUPRATHERMAL ION DETECTOR, WERE USED TO MEASURE THE DENSITY AND PRESSURE OF THE LUNAR NEUTRAL ATMOSPHERE. ON APRIL 5, 1971, SOME ENGINEERING DATA WERE LOST DUE TO THE PARTIAL FAILURE OF AN A/D CONVERTER. NOISY AND ERRATIC NIGHT-TIME OPERATION BEGAN IN FEBRUARY 1972, AND CONTINUED UNTIL NOVEMBER 1972 WHEN NIGHT-TIME DATA WERE LOST. OPERATION CONTINUED WITH LITTLE OF NO NIGHT-TIME COVERAGE UNTIL APRIL 15, 1973, WHEN THE EXPERIMENT ANOMALOUSLY WENT INTO STANDBY CONDITION. LITTLE USABLE DATA ARE EXPECTED AFTER APRIL 15, 1973.

DATA SET NAME- PLOTS OF LUNAR ATMOSPHERE DENSITY MEASURE MENTS VERSUS TIME NSSDC ID 71-008C-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 02/09/71 TO 12/31/73 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED 35-MM MICROFILM REELS CONTAIN PLOTS OF LUNAR ATMOSPHERE DENSITY MEASUREMENTS FROM 1E5 TO 1E11 PARTS/CC ON A LOGARITHMIC SCALE, AND GAUGE TEMPERATURE FROM 0 TO 400 DEG K ON A LINEAR SCALE. QUARTER-MINUTE AVERAGES ARE PLOTTED AGAINST TIME, WITH 15 HOURS OF DATA ON EACH FRAME. ALL TIME VALUES ARE GMT.

**********APOLLO 14 LM/ALSEP, O'BRIEN

EXPERIMENT NAME- CHARGED PARTICLE LUNAR ENVIRONMENT NSSDC ID 71-008C-08

ORIGINAL EXPERIMENT INSTITUTION- RICE U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI -	B.J. O'BRIEN	DEPT OF ENVIRON PROT	PERTH, AUSTRALIA
OI -	D.L. REASONER	RICE U	HOUSTON, TX

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE ENERGY SPECTRA OF LOW-ENERGY CHARGED PARTICLES STRIKING THE LUNAR SURFACE. THE MAIN PART OF THE INSTRUMENTATION CONSISTED OF TWO ELECTROSTATIC ANALYZERS, ONE OF THESE POINTED OWARD LOCAL LUNAR VERTICAL, AND THE OTHER TO A POINT 60 DEG FROM

VERTICAL TOWARD LUNAR WEST. AS A FIRST APPROXIMATION, BOTH DETECTORS COULD BE CONSIDERED TO POINT IN THE ECLIPTIC PLANE. EACH ANALYZER CONSISTED OF A SET OF DIRECTION-DEFINING SLITS, DEFLECTION PLATES, FIVE SMALL-APERTURE C-SHAPED CHANNEL ELECTRON MULTIPLIERS, AND ONE LARGE-APERTURE CHANNEL ELECTRON MULTIPLIER. FOR A GIVEN APPLIED DEFLECTION VOLTAGE, THE FIVE MULTIPLIERS WERE ARRANGED TO COUNT PARTICLES OF ONE POLARITY WITH DIFFERING ENERGIES, WHILE THE LARGE-APERTURE MULTIPLIER MADE A WIDE-BAND MEASUREMENT OF PARTICLES OF THE OPPOSITE POLARITY. DURING EACH 19.2-SEC INTERVAL IN THE AUTOMATIC MODE OF EXPERIMENT OPERATION, DEFLECTION VOLTAGES OF ZERO VOLTS (TWICE) AND PLUS AND MINUS 35, 350, AND 3500 VOLTS WERE APPLIED TO THE DEFLECTION PLATES OF BOTH ANALYZERS FOR 2.4 SEC EACH VOLTAGE. THE LITTLE-USED MANUAL MODE PERMITTED THE CONTINUOUS APPLICATION OF A SINGLE DEFLECTION VOLTAGE, THUS INCREASING TEMPORAL RESOLUTION FOR PARTICLES IN A LIMITED PORTION OF THE SPECTRUM. USEFUL DATA OBTAINED DURING EACH 19.2-SEC INTERVAL (AUTOMATIC MODE) WERE, FOR EACH ANALYZER, 1.2-SEC ACCUMULATED COUNTS OF ELECTRONS IN 18 ENERGY WINDOWS BETWEEN 40 EV AND 20 KEV, AND IONS IN 12 ENERGY WINDOWS BETWEEN 0.17 AND 20 KEV. THE EXPERIMENT WORKED NORMALLY FROM DEPLOYMENT (FEB. 5, 1971) UNTIL APRIL 8, 1971 WHEN THE ANALYZER POINTING AWAY FROM LUNAR VERTICAL FAILED. THE OTHER ANALYZER CONTINUED TO FUNCTION NORMALLY UNTIL JUNE 6, 1971 WHEN A PARTIAL FAILURE OCCURRED. OPERATION OF THIS ANALYZER WAS INTERMITTENT FOR THE REST OF 1971. DURING MOST OF 1972, OPERATION WAS CONTINUOUS DURING LUNAR NIGHT AND INTERMITTENT DURING LUNAR DAY. FROM DECEMBER 1972 TO FEBRUARY 1973 OPERATION WAS CONTINUOUS, AFTER WHICH TIME THE HIGH VOLTAGE PROBLEMS OCCURRED AGAIN.

DATA SET NAME- EXPERIMENT POSITION AND ORIENTATION INFORMATION VS TIME ON TAPE — NSSDC ID 71-008C-08B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 01/01/71 TO 12/31/73 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, MAGNETIC TAPE IN BINARY INTEGER 36-BIT FORMAT, WHICH WAS GENERATED BY THE EXPERIMENTER ON AN SDS 92 COMPUTER. THERE ARE THREE FILES, ONE FOR EACH YEAR -- 1971, 1972, AND 1973. ONE SET OF DATA IS GIVEN FOR EVERY 2 HR IN EACH RECORD. DATA INCLUDE (1) LOOK-DIRECTION INFORMATION FOR EACH EXPERIMENT ANALYZER RELATIVE TO MOON-SUN AND MOON-EARTH LINES AND IN GEOCENTRIC SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, AND (2) INSTRUMENT-LOCATION INFORMATION, RELATIVE TO LOCAL LUNAR MIDNIGHT AND IN GEOCENTRIC SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES.

**********APOLLO 15 LM/ALSEP **********

SPACECRAFT COMMON NAME- APOLLO 15 LM/ALSEP — NSSDC ID 71-063C
ALTERNATE NAMES- APOLLO 15C, ALSEP 15, LEM 15, ROVER 15, 05366

LAUNCH DATE- 07/26/71 SPACECRAFT WEIGHT IN ORBIT- 12700. KG

SPACECRAFT STATUS OF OPERATION- PARTIAL

SPACECRAFT BRIEF DESCRIPTION

THE APOLLO 15 LUNAR MODULE (LM) CONSISTED OF A LUNAR LANDING CRAFT, A LUNAR ROVING VEHICLE (LRV), AND AN APOLLO LUNAR SURFACE EXPERIMENT PACKAGE

(ALSEP) THAT CONTAINED SCIENTIFIC EXPERIMENTS TO BE LEFT ON THE MOON AFTER COMPLETION OF THE MANNED PORTION OF THE MISSION. THE LM LANDED IN THE NORTH CENTRAL PART OF THE MOON (26 DEG 4 MIN 54 SEC N LATITUDE, 3 DEG 39 MIN 30 SEC E LONGITUDE), AT THE FOOT OF THE APENNINE MOUNTAIN RANGE. THE ALSEP WAS DEPLOYED AT THE LANDING SITE. THE LRV WAS USED DURING THE EXTRAVEHICULAR ACTIVITIES (EVA) TO EXTEND THE RANGE OF MANNED LUNAR EXPLORATION. THE NUCLEAR POWERED ALSEP CONTAINED SEISMIC, MAGNETIC FIELDS, LUNAR ATMOSPHERE COMPOSITION, ION COMPOSITION, LUNAR DUST, SOLAR WIND COMPOSITION, HEAT LOSS, AND SOLAR CELL RADIATION DAMAGE EXPERIMENTS.

**********APOLLO 15 LM/ALSEP, DYAL

EXPERIMENT NAME- LUNAR SURFACE MAGNETOMETER NSSDC ID 71-063C-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - P. DYAL NASA-ARC MOFFETT FIELD, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 09/20/72

EXPERIMENT BRIEF DESCRIPTION
THE LUNAR SURFACE MAGNETOMETER WAS DESIGNED TO MEASURE THE MAGNITUDE AND TEMPORAL VARIATIONS OF THE LUNAR SURFACE MAGNETIC FIELD IN ORDER TO DETERMINE THE INTERNAL ELECTRICAL PROPERTIES OF THE MOON. THE DETECTOR PACKAGE CONSISTED OF THREE BOOM-MOUNTED FLUXGATE MAGNETOMETERS CAPABLE OF MEASURING MAGNETIC FIELDS IN THE THREE RANGES OF PLUS TO MINUS 50, 100, OR 200 GAMMAS AS SELECTED BY EARTH COMMAND. THE RESOLUTION WAS 0.5 PERCENT OF FULL SCALE. A FLIP-CALIBRATE SEQUENCE DESIGNED TO DETERMINE THE ABSOLUTE ACCURACY OF THE FLUXGATE SENSORS AND TO DETECT DRIFTS IN ZERO LEVELS WAS PERFORMED AUTOMATICALLY AT 18-HR INTERVALS. AT A TIME SPECIFIED BY THE PRINCIPAL INVESTIGATOR (BUT AFTER THE ASTRONAUTS HAD LEFT THE LUNAR SURFACE), A MAGNETIC FIELD SITE SURVEY WAS PERFORMED BY ROTATING EACH OF THE SENSORS. THE PURPOSE OF THE SURVEY WAS TO LOCATE ANY MAGNETIC INFLUENCES INHERENT IN THE DEPLOYMENT SITE. THE SITE SURVEY WAS PERFORMED ONLY ONCE. THE EXPERIMENT PROVIDED USEFUL DATA UNTIL SEPTEMBER 20 1972, WHEN THE Y-AXIS SENSOR FAILED. DATA FROM THE X- AND Z-AXIS SENSORS WERE TRANSMITTED UNTIL DECEMBER 9, 1973.

DATA SET NAME- 0.3-SEC MAGNETIC VECTORS ON TAPE NSSDC ID 71-063C-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/31/71 TO 09/20/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 138 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION
THIS DATA SET CONSISTS OF EXPERIMENTER-SUPPLIED MAGNETIC TAPES WRITTEN IN 556-PBI, 7-TRACK, DCS BINARY FORMAT ON AN IBM 7040/7094 COMPUTER. LOGICAL AND PHYSICAL RECORDS HAVE 781 AND 460 WORDS RESPECTIVELY. EACH LOGICAL DATA RECORD CONTAINS THE TIME FOR THE FIRST DATA POINT, AND THE CARTESIAN COMPONENTS OF 500 SUCCESSIVE MAGNETIC FIELD VECTORS. SINCE ONE DATA POINT WAS OBTAINED EVERY 0.3 SEC, EACH LOGICAL RECORD COVERS 2.5 MIN OF DATA. FIELD COMPONENTS ARE GIVEN IN A COORDINATE SYSTEM WITH X RADIALLY OUTWARD FROM THE LOCAL LUNAR SURFACE AND Y AND Z TANGENT TO THE SURFACE AND DIRECTED EASTWARD AND NORTHWARD, RESPECTIVELY. TYPICALLY, EACH TAPE

CONTAINS THREE DAYS OF DATA. THE DATA COVER THE PERIOD FROM JULY 31, 1971, TO SEPTEMBER 20, 1972, WITH VIRTUALLY 100 PERCENT COMPLETENESS.

**********APOLLO 15 LM/ALSEP, JOHNSON

EXPERIMENT NAME- COLD CATHODE ION GAUGE EXPERIMENT NSSDC ID 71-063C-07

ORIGINAL EXPERIMENT INSTITUTION- U OF TEXAS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - F.S.	JOHNSON	U OF TEXAS, DALLAS	DALLAS, TX
OI - D.E.	EVANS	NASA-JSC	HOUSTON, TX

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THE ALSEP COLD CATHODE GAUGE EXPERIMENT WAS DESIGNED TO MEASURE THE DENSITY OF NEUTRAL ATOMS AND TO DETERMINE PRESSURES OF THE AMBIENT LUNAR ATMOSPHERE FROM 1.0E-6 TO 1.0E-12 TORR. THE DATA ARE TO COMPLEMENT MEASUREMENTS MADE BY THE ALSEP SUPRATHERMAL ION DETECTOR. THE INSTRUMENT WAS NOT OPERATED FOR PROLONGED PERIODS DURING THE LUNAR DAY BECAUSE OF VOLTAGE RESTRICTIONS PLACED ON THE HIGH-VOLTAGE POWER SUPPLY IN THE SIDE PACKAGE. HOWEVER, SUFFICIENT DAYSIDE OPERATION WAS CARRIED OUT OVER THE INSTRUMENT LIFETIME TO ALLOW CONSTRUCTION OF THE AVERAGE DAYSIDE DENSITY AND PRESSURE PROFILES.

DATA SET NAME- PLOTS OF LUNAR ATMOSPHERE DENSITY MEASUREMENTS VERSUS TIME NSSDC ID 71-063C-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/31/71 TO 12/09/73 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED 35-MM MICROFILM REELS CONTAIN PLOTS OF LUNAR ATMOSPHERE DENSITY MEASUREMENTS FROM 1E5 TO 1E11 PARTS/CC ON A LOGARITHMIC SCALE, AND GAUGE TEMPERATURE FROM 0 TO 400 DEG K ON A LINEAR SCALE. QUARTER-MINUTE AVERAGES ARE PLOTTED AGAINST TIME, WITH 15 HOURS OF DATA ON EACH FRAME. ALL TIME VALUES ARE GMT.

**********APOLLO 15 LM/ALSEP, SNYDER

EXPERIMENT NAME- SOLAR WIND SPECTROMETER NSSDC ID 71-063C-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.W.	SNYDER	NASA-JPL	PASADENA, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED- 06/30/72

EXPERIMENT BRIEF DESCRIPTION

THE SOLAR WIND SPECTROMETER WAS DESIGNED TO MEASURE ENERGIES, DENSITIES, INCIDENCE ANGLES, AND TEMPORAL VARIATIONS OF THE ELECTRON AND PROTON COMPONENTS OF THE SOLAR WIND PLASMA THAT STRIKES THE SURFACE OF THE MOON. SEVEN FARADAY CUP SENSORS MEASURED ELECTRONS IN THE ENERGY RANGE 10 TO 1480 EV AND PROTONS IN THE ENERGY RANGE 50 TO 10,400. THE EXPERIMENT PERFORMED WELL UNTIL NOVEMBER 5, 1971 WHEN INTERMITTENT MODULATION DRIPPING IN PROTON CHANNELS 13 AND 14 OCCURRED. THIS INTERMITTENT, THOUGH SCIENTIFICALLY USABLE, BEHAVIOR CONTINUED UNTIL INSTRUMENT FAILURE ON JUNE 30, 1972.

DATA SET NAME- TWENTY-EIGHT SECOND TIME RESOLUTION PLASMA PARAMETERS ON MAGNETIC TAPE — NSSDC ID 71-063C-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/31/71 TO 12/08/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE TAPES CONTAIN THE HIGHEST TIME RESOLUTION PLASMA DATA AVAILABLE FROM THIS EXPERIMENT (28 SEC PER SPECTRUM). THE TAPES WERE GENERATED ON A UNIVAC 1108 IN 7 TRACKS, AT 800 BPI, BCD, AND EVEN PARITY. PHYSICAL RECORDS ARE BLOCKED TO 384 WORDS, EACH PHYSICAL RECORD CONTAINING 32 LOGICAL RECORDS OF 12 WORDS EACH, AT 72 BCD CHARACTERS TO EVERY 12 WORDS. CONTAINED IN EACH RECORD ARE -- TIME, PROTON DENSITY, ALPHA-TO-PROTON RATIO, BULK SPEED, ANGLE OF FLOW, MOST PROBABLE THERMAL SPEED, AND VARIOUS HOUSEKEEPING AND FIT PARAMETERS RELATING TO THE RELIABILITY OF THE CALCULATED PLASMA PARAMETERS. THE FIRST RECORD(S) ON EACH TAPE CONTAIN LABELING INFORMATION TO IDENTIFY THE TAPE CONTENTS TO A USER. EACH TAPE CONTAINS ONE FILE.

DATA SET NAME- HOUR AVERAGED PLASMA PARAMETERS ON MAGNETIC TAPE — NSSDC ID 71-063C-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/31/71 TO 12/08/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-SUPPLIED TAPES CONTAIN HOURLY AVERAGED PLASMA PARAMETERS. THE TAPES ARE IN 7-TRACK AT 800 BPI AND EVEN PARITY, AND WERE WRITTEN IN BCD ON A UNIVAC 1108. EACH SET OF AVERAGES IS IN TWO LOGICAL RECORDS, WITH TWO LOGICAL RECORDS PER PHYSICAL RECORD. THERE ARE 216 BCD CHARACTERS PER PHYSICAL RECORD. FOUR SETS OF HOURLY AVERAGED PARAMETERS ARE COMPUTED, USING AS INPUT DATA (1) ALL FINE TIME SCALE PARAMETERS (FTSP), (2) ALL FTSP COMPUTED FROM SPECTRA WITH SMALL RMS ERROR ON CURVE FITTING AND THERMAL SPEEDS LESS THAN ONE-HALF THE BULK VELOCITY, (3) ALL FTSP COMPUTED FROM SPECTRA THAT SATISFY THE REQUIREMENTS OF CRITERION 2 AS WELL AS HAVING ONLY ONE FLOW ANGLE THAT CAN BE DIRECTLY MEASURED, AND (4) ALL FTSP COMPUTED FROM SPECTRA THAT SATISFY THE REQUIREMENTS OF CRITERION 2 AS WELL AS HAVING BOTH FLOW ANGLES DIRECTLY MEASUREABLE. EACH TAPE CONTAINS ONE FILE. CONTAINED IN EACH OF THE FOUR SETS OF AVERAGES ARE THE PROTON DENSITY, ALPHA-TO-PROTON RATIO, BULK SPEED, ANGLE OF FLOW, NUMBER OF SPECTRA, AND RMS DEVIATIONS OF EACH AVERAGE.

DATA SET NAME- PLOTS OF HOUR AVERAGED PLASMA PARAMETERS NSSDC ID 71-063C-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/02/71 TO 12/08/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 PAGE(S) OF UNBOUND HARDCOPY

DATA SET BRIEF DESCRIPTION
THESE EXPERIMENTER-GENERATED PLOTS CONTAIN HOURLY AVERAGED PLASMA PARAMETERS AS FUNCTIONS OF TIME, WITH 22 DAYS PER FRAME. CONTAINED IN EACH PLOT ARE THE HOURLY AVERAGED PROTON BULK SPEED, MOST PROBABLE THERMAL SPEED, PROTON DENSITY, AND ANGLE OF FLOW FROM THE HOURLY AVERAGED DATA IN DATA SET 71-063C-04B THAT SATISFIED CRITERION 2, THAT IS WHICH HAD SMALL RMS ERROR ON CURVE FITTING AND THERMAL SPEEDS LESS THAN ONE-HALF THE BULK SPEED.

**********APOLLO 15 SUBSATELLITE **********

SPACECRAFT COMMON NAME- APOLLO 15 SUBSATELLITE NSSDC ID 71-063D
ALTERNATE NAMES- APOLLO 15D, 05377, P + F S

LAUNCH DATE- 08/04/71 SPACECRAFT WEIGHT IN ORBIT- 41. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 01/22/73

EPOCH DATE- 08/04/71 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 119.8 MIN
APOAPSIS- 141.31 KM ALT PERIAPSIS- 102.05 KM ALT INCLINATION- 28.7 DEG

SPACECRAFT BRIEF DESCRIPTION
A SUBSATELLITE OF THE APOLLO 15 MISSION CARRIED EXPERIMENTS DESIGNED TO STUDY INTERPLANETARY MAGNETIC FIELDS AND SOLAR FLARES. THE SUBSATELLITE WAS DEPLOYED FROM THE COMMAND SERVICE MODULE'S SCIENTIFIC INSTRUMENT MODULE BAY WHILE APOLLO 15 WAS IN LUNAR ORBIT. THE SUBSATELLITE SPIN AXIS WAS APPROXIMATELY PERPENDICULAR TO THE ECLIPTIC PLANE. THE SUBSATELLITE SPIN RATE STABILIZED AT ABOUT 12 RPM AFTER BOOM DEPLOYMENT. THE SUBSATELLITE HAD THREE EQUALLY SPACED, FOLDED BOOMS MOUNTED AROUND ITS BASE. THESE BOOMS DEPLOYED AUTOMATICALLY AT LAUNCH TO A LENGTH OF ABOUT 1.5 M. THE SUBSATELLITE PROVIDED ABOUT 6 MONTHS OF DATA COVERAGE BEFORE 2 SUCCESSIVE ELECTRONIC FAILURES IN FEBRUARY 1972 CAUSED THE LOSS OF MOST OF THE DATA CHANNELS. THE SURVIVING DATA CHANNELS WERE MONITORED INTERMITTENTLY UNTIL JUNE 1972 AND THEN MORE OR LESS CONTINUOUSLY UNTIL JANUARY 1973, WHEN GROUND SUPPORT WAS TERMINATED.

**********APOLLO 15 SUBSATELLITE, ANDERSON

EXPERIMENT NAME- LUNAR PARTICLE SHADOWS AND BOUNDARY LAYER NSSDC ID 71-063D-01

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI -	K.A.	ANDERSON	U OF CALIFORNIA, BERK	BERKELEY, CA
OI -	L.M.	CHASE	U OF CALIFORNIA, BERK	BERKELEY, CA
OI -	R.P.	LIN	U OF CALIFORNIA, BERK	BERKELEY, CA
OI -	J.	MCCOY	NASA-JSC	HOUSTON, TX

OI - G. SCHUBERT U OF CALIFORNIA, LA LOS ANGELES, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED- 01/22/73

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT WAS DESIGNED TO STUDY THE FORMATION AND DYNAMICS OF THE EARTH'S MAGNETOSPHERE, THE PHYSICS OF SOLAR FLARES, AND THE INTERACTION OF PLASMAS WITH THE MOON. TWO 2-ELEMENT, SOLID-STATE PARTICLE TELESCOPES (A AND B) AND FOUR SPHERICAL ELECTROSTATIC ANALYZER/CHANNELTRON ELECTRON MULTIPLIER COMBINATIONS WERE USED IN THE EXPERIMENT. TELESCOPE A WAS TO DETECT ELECTRONS OF ENERGIES FROM 20 TO 320 KEV IN FOUR INTERVALS AND PROTONS OF ENERGIES FROM 50 KEV TO 2 MEV IN SIX INTERVALS. TELESCOPE B HAD A FOIL COVERING ITS ENTRANCE AND WAS SENSITIVE TO ELECTRONS FROM 20 TO 320 KEV AND PROTONS FROM 320 KEV TO 2.3 MEV. THE ELECTROSTATIC ANALYZERS WERE USED TO DETECT ELECTRONS IN THE ENERGY INTERVALS 0.53-0.68, 1.75-2.25, 5.8-6.5, AND 13.5-15.0 KEV. SPIN-SECTORED DATA WERE OBTAINED FOR THE 13.5-15.0 KEV MODE.

DATA SET NAME- 10-MIN AND 2-HR AVERAGED PARTICLE COUNT RATES ON MAGNETIC TAPE NSSDC ID 71-063D-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/04/71 TO 02/03/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION
THIS DATA SET CONSISTS OF AVERAGED PROTON AND ELECTRON COUNT RATES ON 7-TRACK BINARY MAGNETIC TAPE, WRITTEN ON A CDC 6600 COMPUTER. THERE IS ONE FILE PER TAPE AND EACH PHYSICAL RECORD CONSISTS OF 276 60-BIT WORDS. THE FIRST 16 WORDS OF A PHYSICAL RECORD GIVE THE ORBIT NUMBER, DATE, AND FRACTIONAL DAY OF THE START OF THE ORBIT FOLLOWED BY ONE ACCUMULATION OVER THE ORBIT (2 HOURS) FROM THE 0.53 TO 0.68 KEV ELECTRON MODE AND 12 SUCCESSIVE 10-MIN AVERAGES FROM THIS MODE. THE NEXT 260 WORDS CONSTITUTE A 13- X 20-WORD ARRAY WHERE THE FIRST COLUMN OF THE ARRAY CONTAINS ORBIT AVERAGES FOR REMAINING MODES AND EACH OF THE NEXT 12 COLUMNS IS A 10-MIN AVERAGE.

**********APOLLO 15 SUBSATELLITE, COLEMAN, JR.

EXPERIMENT NAME- BIAXIAL FLUXGATE MAGNETOMETER NSSDC ID 71-063D-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, LA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - P.J. COLEMAN, JR. U OF CALIFORNIA, LA LOS ANGELES, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED- 02/03/72

EXPERIMENT BRIEF DESCRIPTION
THE PHYSICAL AND ELECTRICAL PROPERTIES OF THE MOON AND THE INTERACTIONS OF THE SOLAR PLASMA WITH THE MOON ARE TO BE DETERMINED USING A BOOM-DEPLOYED BIAXIAL TWO FLUXGATE MAGNETOMETER. ONE SENSOR IS PARALLEL TO THE SPACECRAFT SPIN AXIS AND IS SAMPLED 2 TIMES PER REVOLUTION, AND THE OTHER IS PERPENDICULAR TO THIS AXIS AND IS SAMPLED FIVE TIMES PER

REVOLUTION. A PULSE GENERATOR IS USED TO PROVIDE SPIN PHASE INFORMATION NEEDED FOR VECTOR FIELD CALCULATIONS. THE TWO DYNAMIC RANGES OF EACH SENSOR ARE PLUS OR MINUS 50 GAMMAS AND PLUS OR MINUS 200 GAMMAS. DATA ARE TO BE OBTAINED IN REAL TIME AT A HIGH INFORMATION BIT RATE AND IN A RECORDED MODE WITH THE INFORMATION BIT RATE COMPATIBLE WITH THAT OF THE LUNAR SURFACE MAGNETOMETER. FAILURE OF THE PULSE GENERATOR ON FEBRUARY 3, 1972 TERMINATED THE USEFUL LIFE OF THE EXPERIMENT.

DATA SET NAME- TWENTY-FOUR SEC TIME RESOLUTION BIAXIAL VECTOR MAGNETIC FIELD MEASUREMENTS ON TAPE — NSSDC ID 71-063D-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/19/71 TO 02/03/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 29 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE MAGNETIC TAPES GENERATED BY NASA/JSC FOR THE EXPERIMENTER CONTAIN 24-SEC MAGNETIC FIELD DATA AND ENGINEERING DATA EVERY 192 SEC. THE BASIC CYCLE TIME FOR THE SUB-SATELLITE. THESE DATA ARE ON UNIVAC 1108 7-TRACK MAGNETIC TAPES WRITTEN AT 800 BPI AND ODD PARITY WITH 36-BIT WORDS. CONTAINED IN THE DATA ARE TIME, VARIOUS DATA RELEVANT TO SPACECRAFT POSITION AND HOUSEKEEPING, AND THE TRANSVERSE AND PARALLEL MAGNETIC FIELD MEASUREMENTS, WHICH ALONG WITH THE SUN PULSE INFORMATION YIELD TRIAXIAL MAGNETIC FIELD MEASUREMENTS. THESE DATA ARE BLOCKED WITH 560 WORDS PER PHYSICAL RECORD. TIMES ARE IN MILLISECONDS.

DATA SET NAME- PLOTS OF TRIAXIAL 192 SEC AVG MAGNETIC FIELD DATA ON 16 MM MICROFILM — NSSDC ID 71-063D-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/04/71 TO 02/03/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE 16-MM MICROFILM REELS GENERATED BY NASA/JSC FOR THE EXPERIMENTER CONTAIN TWO TYPES OF PLOTS. THE FIRST OR 'A' PLOTS CONTAIN 192-SEC AVERAGED MAGNETIC X, Y, AND Z COMPONENTS IN SPACECRAFT COORDINATES AND TOTAL FIELD MAGNITUDE PLOTTED AGAINST TIME FOR ONE ORBIT PER FRAME. SPACECRAFT COORDINATES HAVE X AND Y IN THE SPIN PLANE, WITH X ALONG THE PROJECTION OF THE EARTH-SUN LINE. THE Z DIRECTION LIES ALONG THE SPACECRAFT SPIN AXIS, WHICH IS NEARLY PERPENDICULAR TO THE ECLIPTIC PLANE. NO SENSOR DRIFT CORRECTIONS HAVE BEEN APPLIED TO THE Z COMPONENT OF THE DATA PRIOR TO PLOTTING, BUT DRIFTS ARE EXPECTED TO BE WITHIN +0.27 TO -0.87 GAMMA. OFFSET DRIFTS ARE TABULATED IN THE DOCUMENTATION, ALONG WITH INSTRUCTIONS ON HOW TO APPLY THEM. THE SECOND SET, OR 'B' PLOTS CONTAIN ENGINEERING PARAMETERS, SPIN PERIODS, AND DATA FROM THE BERKELEY PARTICLE EXPERIMENT 71-063D-01 FOR THE SHIELDED AND UNSHIELDED DETECTORS.

DATA SET NAME- MICROFILM LISTINGS OF 192 SEC AVG MAGNETIC FIELD VECTORS AND MAGNITUDE — NSSDC ID 71-063D-02C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/04/71 TO 02/03/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THESE REELS OF 16-MM MICROFILM GENERATED AT NASA/JSC FOR THE EXPERIMENTER CONTAIN 192 SEC AVERAGED MAGNETOMETER DATA PRESENTED AS FUNCTIONS OF TIME. THESE DATA LISTINGS CONTAIN X, Y, AND Z VECTOR COMPONENTS IN SPACECRAFT COORDINATES WHERE THE X AND Y AXES LIE IN THE SPACECRAFT SPIN PLANE, WITH X ALONG THE PROJECTION OF THE EARTH-SUN LINE. THE Z AXIS IS ALONG THE SPACECRAFT SPIN AXIS AND IS APPROXIMATELY ALONG THE NORTHWARD NORMAL TO THE ECLIPTIC PLANE. ALSO LISTED ARE MAGNETIC FIELD MAGNITUDE AND THE SHIELDED COUNTS FROM THE BERKELEY EXPERIMENT (01). SPACECRAFT STATE INFORMATION ARE ALSO TABULATED.

**********APOLLO 16 SUBSATELLITE **********

SPACECRAFT COMMON NAME- APOLLO 16 SUBSATELLITE NSSDC ID 72-031D
ALTERNATE NAMES- APOLLO 16D, 06009

LAUNCH DATE- 04/24/72 SPACECRAFT WEIGHT IN ORBIT- 36. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 05/29/72

EPOCH DATE- 04/24/72 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 119.8 MIN
APOAPSIS- 135.90 KM ALT PERIAPSIS- 103.49 KM ALT INCLINATION- 151.28 DEG

SPACECRAFT BRIEF DESCRIPTION
THE SUBSATELLITE OF THE APOLLO 16 MISSION CARRIED EXPERIMENTS DESIGNED TO STUDY INTERPLANETARY MAGNETIC FIELDS AND ENERGETIC SOLAR PARTICLES. THE SUBSATELLITE WAS DEPLOYED FROM THE COMMAND SERVICE MODULE'S SCIENTIFIC INSTRUMENT MODULE (SIM) BAY WHILE APOLLO 16 WAS IN LUNAR ORBIT. THE SUBSATELLITE SPIN AXIS WAS APPROXIMATELY PERPENDICULAR TO THE ECLIPTIC PLANE. ITS SPIN RATE STABILIZED AT ABOUT 12 RPM AFTER BOOM DEPLOYMENT. THE SUBSATELLITE HAD THREE EQUALLY SPACED, FOLDED BOOMS MOUNTED AROUND ITS BASE. THESE BOOMS DEPLOYED AUTOMATICALLY AT LAUNCH TO A LENGTH OF ABOUT 1.5 M. THE SUBSATELLITE PREMATURELY IMPACTED WITH THE MOON ON MAY 29, 1972, AFTER 34 DAYS (425 REVOLUTIONS) IN ORBIT.

**********APOLLO 16 SUBSATELLITE, ANDERSON

EXPERIMENT NAME- LUNAR PARTICLE SHADOWS AND BOUNDARY LAYER NSSDC ID 72-031D-01

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - K.A.	ANDERSON	U OF CALIFORNIA, BERK	BERKELEY, CA
OI - L.M.	CHASE	U OF CALIFORNIA, BERK	BERKELEY, CA
OI - P.J.	COLEMAN, JR.	U OF CALIFORNIA, LA	LOS ANGELES, CA
OI - R.P.	LIN	U OF CALIFORNIA, BERK	BERKELEY, CA
OI - J.	MCCOY	NASA-JSC	HOUSTON, TX
OI - G.	SCHUBERT	U OF CALIFORNIA, LA	LOS ANGELES, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED- 05/29/72

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT WAS DESIGNED TO STUDY THE FORMATION AND DYNAMICS OF THE EARTH'S MAGNETOSPHERE, THE PHYSICS OF SOLAR FLARES, AND THE INTERACTION OF PLASMAS WITH THE MOON. TWO 2-ELEMENT, SOLID-STATE PARTICLE TELESCOPES (A AND B) AND FIVE HEMISPHERICAL ELECTROSTATIC ANALYZER/CHANNELTRON MULTIPLIER COMBINATIONS WERE USED IN THE EXPERIMENT. TELESCOPE A DETECTED ELECTRONS OF ENERGIES FROM 20 TO 300 KEV IN FOUR INTERVALS AND PROTONS OF ENERGIES FROM 40 KEV TO 2 MEV IN SIX INTERVALS. TELESCOPE B HAD A FOIL COVERING ITS ENTRANCE AND, THUS, WAS SENSITIVE TO ELECTRONS FROM 20 TO 300 KEV AND PROTONS FROM 300 KEV TO 2.0 MEV. THE ELECTROSTATIC ANALYZERS WERE USED TO DETECT ELECTRONS IN THE ENERGY INTERVALS 0.53-0.68, 1.9-2.1, 5.9-6.4, 5.8-6.5, AND 13.5-15.0 KEV. SIGNIFICANT DATA WERE ACQUIRED DURING THE BRIEF SPACECRAFT LIFETIME.

DATA SET NAME- 10-MIN AND 2-HR AVERAGED PARTICLE COUNT RATES ON MAGNETIC TAPE
NSSDC ID 72-031D-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 04/25/72 TO 05/29/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION
THIS DATA SET CONSISTS OF AVERAGED PROTON AND ELECTRON COUNT RATES ON 7-TRACK BINARY MAGNETIC TAPE, WRITTEN AT 800 BPI AND GENERATED ON A CDC 6600 COMPUTER. THERE IS ONE FILE PER TAPE AND EACH PHYSICAL RECORD CONSISTS OF 276 60-BIT WORDS. THE FIRST 16 WORDS OF A PHYSICAL RECORD GIVE THE ORBIT NUMBER, DATE, AND FRACTIONAL DAY OF THE START OF THE ORBIT FOLLOWED BY ONE ACCUMULATION OVER THE ORBIT (2 HOURS) FROM THE 0.53 TO 0.68 KEV ELECTRON MODE AND 12 SUCCESSIVE 10-MIN AVERAGES FROM THIS MODE. THE NEXT 260 WORDS CONSTITUTE A 13- X 20-WORD ARRAY WHERE THE FIRST COLUMN OF THE ARRAY CONTAINS ORBIT AVERAGES FOR THE REMAINING MODES AND EACH OF THE NEXT 12 COLUMNS IS A 10-MIN AVERAGE.

**********APOLLO 16 SUBSATELLITE, COLEMAN, JR.

EXPERIMENT NAME- BIAXIAL FLUXGATE MAGNETOMETER
NSSDC ID 72-031D-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, LA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - P.J. COLEMAN, JR. U OF CALIFORNIA, LA LOS ANGELES, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED- 05/29/72

EXPERIMENT BRIEF DESCRIPTION
THE APOLLO 16 LUNAR-ORBITING SUBSATELLITE MAGNETOMETER IS A BOOM-DEPLOYED BIAXIAL FLUXGATE INSTRUMENT. ONE OF ITS AXES WILL LIE ALONG THE SATELLITE SPIN AXIS. THE OTHER WILL BE IN THE SPIN PLANE. A SECTOR GENERATOR WILL PROVIDE THE PHASE INFORMATION NEEDED TO OBTAIN THE DIRECTION OF THE MAGNETIC VECTOR. AS THE SPIN RATE WILL BE 7 TO 14 RPM, THE MAXIMUM FREQUENCY COMPONENT DETECTABLE TRIAXIALLY WILL BE 0.058 TO 0.116 HZ. THE INSTRUMENT WILL OPERATE IN TWO MODES, PLUS OR MINUS 50 GAMMAS AND PLUS OR

MINUS 200 GAMMAS.

DATA SET NAME- TWENTY-FOUR SEC TIME RESOLUTION BIAXIAL VECTOR MAGNETIC FIELD MEASUREMENTS ON TAPE NSSDC ID 72-031D-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 04/25/72 TO 05/29/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 9 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE MAGNETIC TAPES GENERATED BY NASA/JSC FOR THE EXPERIMENTER CONTAIN 24-SEC MAGNETIC FIELD DATA AND ENGINEERING DATA EVERY 192 SEC. THE BASIC CYCLE TIME FOR THE SUB-SATELLITE. THESE DATA ARE WRITTEN ON 800 BPI, ODD PARITY, 36-BIT WORD UNIVAC 1108, 7-TRACK MAGNETIC TAPES. CONTAINED IN THE DATA ARE TIME, VARIOUS DATA RELEVANT TO SPACECRAFT POSITION AND HOUSEKEEPING, AND THE TRANSVERSE AND PARALLEL MAGNETIC FIELD MEASUREMENTS WHICH ALONG WITH THE SUN PULSE INFORMATION YIELD TRIAXIAL MAGNETIC FIELD MEASUREMENTS. THESE DATA ARE BLOCKED WITH 560 WORDS PER PHYSICAL RECORD. TIMES ARE IN MILLISECONDS.

**********ATS 1 **********

SPACECRAFT COMMON NAME- ATS 1 NSSDC ID 66-110A
ALTERNATE NAMES- ATS-B, 02608

LAUNCH DATE- 12/07/66 SPACECRAFT WEIGHT IN ORBIT- 352. KG

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 12/07/66 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 1466. MIN
APOAPSIS- 36887.0 KM ALT PERIAPSIS- 35852.0 KM ALT INCLINATION- 0.23 DEG

SPACECRAFT BRIEF DESCRIPTION

ATS 1 (APPLICATIONS TECHNOLOGY SATELLITE) WAS DESIGNED AND LAUNCHED FOR THE PURPOSE OF (1) TESTING NEW CONCEPTS IN SPACECRAFT DESIGN, PROPULSION, AND STABILIZATION, (2) COLLECTING HIGH-QUALITY CLOUDCOVER PICTURES AND RELAYING PROCESSED METEOROLOGICAL DATA VIA AN EARTH-SYNCHRONOUS SATELLITE, (3) PROVIDING IN SITU MEASUREMENTS OF THE AEROSPACE ENVIRONMENT, AND (4) TESTING IMPROVED COMMUNICATION SYSTEMS. THE SPIN-STABILIZED SPACECRAFT WAS CYLINDRICALLY SHAPED AND MEASURED 135 CM LONG AND 142 CM IN DIAMETER. THE PRIMARY STRUCTURAL MEMBERS WERE A HONEYCOMBED EQUIPMENT SHELF AND THRUST TUBE. SUPPORT RODS EXTENDED RADIALLY OUTWARD FROM THE THRUST TUBE AND WERE AFFIXED TO SOLAR PANELS THAT FORMED THE OUTER WALLS OF THE SPACECRAFT. EQUIPMENT COMPONENTS AND PAYLOAD WERE MOUNTED IN THE ANNULAR SPACE BETWEEN THE THRUST TUBE AND SOLAR PANELS. IN ADDITION TO SOLAR PANELS, THE SPACECRAFT WAS EQUIPPED WITH TWO RECHARGEABLE NICKEL-CADMIUM BATTERIES TO PROVIDE ELECTRICAL POWER. EIGHT 150-CM-LONG VHF EXPERIMENT WHIP ANTENNAS WERE MOUNTED AROUND THE AFT END OF THE SPACECRAFT, WHILE EIGHT TELEMETRY AND COMMAND ANTENNAS WERE PLACED ON THE FORWARD END. SPACECRAFT GUIDANCE AND ORBITAL CORRECTIONS WERE ACCOMPLISHED BY 2.3-KG HYDROGEN PEROXIDE AND HYDRAZINE THRUSTERS, WHICH WERE ACTIVATED BY GROUND COMMAND. THE SATELLITE WAS INITIALLY PLACED AT 151.16 DEG W LONGITUDE OVER THE PACIFIC OCEAN IN A GEOSTATIONARY EQUATORIAL ORBIT. IN GENERAL, MOST OF THE EXPERIMENTS WERE SUCCESSFUL. AS OF JULY 1974 VERY LIMITED AND INTERMITTENT DATA ACQUISITION WAS BEING EXECUTED BY NOAA, BOULDER.

**********ATS 1, COLEMAN, JR.

EXPERIMENT NAME- BIAXIAL FLUXGATE MAGNETOMETER NSSDC ID 66-110A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, LA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - P.J. COLEMAN, JR. U OF CALIFORNIA, LA LOS ANGELES, CA

EXPERIMENT STATUS OF OPERATION- PARTIAL
05/31/70

EXPERIMENT BRIEF DESCRIPTION
THIS BIAXIAL FLUXGATE MAGNETOMETER MEASURED VECTOR MAGNETIC FIELDS AT SYNCHRONOUS ALTITUDE. ONE SENSOR WAS MOUNTED IN THE SPIN PLANE OF THE SPACECRAFT AND ONE ALONG THE SPIN AXIS. USING THE ONBOARD SUN SENSOR, TRIAXIAL VECTOR MEASUREMENTS WERE DEDUCED. AS THE SENSOR WAS MOUNTED ON ONLY A 15-CM BOOM, IT HAS SUFFERED FROM SERIOUS SPACECRAFT INTERFERENCE. THOUGH MEASUREMENT PRECISION WAS ABOUT 0.5 GAMMA, INTERFERENCE FIELDS WERE OF THE ORDER OF THE AMBIENT FIELDS. PROCEDURES FOR OFFSET CORRECTIONS HAVE BEEN DEVELOPED AND IMPLEMENTED FOR ABOUT 95 PERCENT OF THE INTERFERENCE SOURCES TO A 15-SEC TIME RESOLUTION. ALSO SPECTRAL ANALYSES OF WAVE MODES PRESENT WERE POSSIBLE TO A 0.32-SEC TIME RESOLUTION. THUS DC FIELDS WERE OBTAINABLE FROM THIS DATA UP TO 15-SEC TIME RESOLUTION, AND WAVE DATA UP TO 1.5 HZ. CERTAIN NONMACHINE CORRECTABLE OFFSETS STILL PLAGUE REDUCED DATA FROM THIS EXPERIMENT, BUT THESE ARE IDENTIFIABLE AND HAND CORRECTABLE. THE ONBOARD SUN SENSOR FAILED NOVEMBER 2, 1969. HOWEVER, THE SUN CAUSED A NOISE MODULATION OF THE SPINNING SPACECRAFT SO THAT EVEN AFTER THIS TIME, WITH SOME EFFORT, VECTOR DATA WERE EXTRACTABLE FROM THE TELEMETERED DATA. DATA COVERAGE WAS ABOUT 90 PERCENT THROUGH AUGUST 1968. DURING AUGUST 1968 TO NOVEMBER 1969, COVERAGE DROPPED TO 40 PERCENT. DATA WERE RECORDED BY NOAA, BOULDER, STARTING IN OCTOBER 1970. COVERAGE WAS ABOUT 80 PERCENT.

DATA SET NAME- 2.5-MIN AVG VECTOR MAGNETOMETER DATA FROM NSSDC ID 66-110A-02B
SYNCHRONOUS ALTITUDE ON FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/17/67 TO 12/29/68 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THESE 16-MM REELS OF MICROFILM MADE AT NSSDC FROM CALCOMP PLOTS GENERATED AT UCLA ARE OF 2.5 MIN AVERAGED MACHINE-CORRECTED REDUCED MAGNETOMETER DATA PRESENTED IN THE UCLA V-D-H COORDINATE SYSTEM WHERE (1) THE H AXIS IS ANTIPARALLEL TO THE EARTH'S MAGNETIC DIPOLE AXIS, (2) THE V AXIS IS RADIALLY OUTWARD IN THE MAGNETIC EQUATORIAL PLANE, AND (3) THE D AXIS IS AZIMUTHALLY EASTWARD. PLOTTED AGAINST COMMON TIME ARE THE 3 MAGNETIC FIELD CARTESIAN COMPONENTS AND AN INDICATOR OF THE SATELLITE STATE VECTOR, WHICH IS USEFUL IN IDENTIFYING OFFSET CHANGES THAT ARE NOT CORRECTED BY MACHINE IN THE PLOTTED DATA.

DATA SET NAME- 15-SEC AVG VECTOR MAGNETOMETER DATA FROM NSSDC ID 66-110A-02D
SYNCHRONOUS ALTITUDE ON FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/10/66 TO 12/29/68 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THESE 35-MM MICROFILM WERE MADE AT NSSDC FROM CALCOMP PLOTS GENERATED AT UCLA OF 15-SEC AVERAGED MACHINE CORRECTED REDUCED MAGNETOMETER DATA PRESENTED IN THE UCLA V-D-H COORDINATE SYSTEM. THE H AXIS IS ANTIPARALLEL TO THE EARTH'S MAGNETIC DIPOLE AXIS. THE V AXIS IS RADIALLY OUTWARD IN THE MAGNETIC EQUATORIAL PLANE AND THE D AXIS IS AZIMUTHALLY EASTWARD. PLOTTED AGAINST COMMON TIME ARE THE THREE MAGNETIC FIELD CARTESIAN COMPONENTS AND AN INDICATOR OF THE SATELLITE STATE VECTOR, WHICH IS USEFUL IN IDENTIFYING OFFSET CHANGES THAT COULD NOT BE CORRECTED BY MACHINE IN THE PLOTTED DATA.

DATA SET NAME- SPACECRAFT AND EXPERIMENT COMMAND LOG AS A MULTI-DIMENSIONAL VECTOR ON TAPE NSSDC ID 66-110A-02G

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/07/66 TO 12/31/68 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION
THIS MAGNETIC TAPE GENERATED BY THE EXPERIMENTER CONTAINS THREE FILES, REPRESENTING OPERATION IN 1966, 1967, AND 1968. THE 9-TRACK ODD PARITY 800-BPI TAPE HAS EBCDIC LOGICAL RECORDS OF 133 BYTES BLOCKED TO 7182 BYTES PER PHYSICAL RECORD. THE DATA CONTAINED ARE THE LISTINGS OF THE OCTAL COMMANDS SENT TO THE ATS SATELLITE FROM DECEMBER 7, 1966 TO DECEMBER 31, 1968. THESE COMMAND LOGS WERE REQUIRED TO MAKE THE MACHINE CORRECTIONS APPLIED TO THE MAGNETOMETER DATA FROM THIS SPACECRAFT.

**********EPE-D **********

SPACECRAFT COMMON NAME- EPE-D NSSDC ID 64-086A
ALTERNATE NAMES- EXPLORER 26, S 3C, C0963

LAUNCH DATE- 12/21/64 SPACECRAFT WEIGHT IN ORBIT- 101. KG

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

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

SPACECRAFT BRIEF DESCRIPTION
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 TELEMETER 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 TELEMETER 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 TELEMETER 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.

**********EPE-D, CAHILL, JR.

EXPERIMENT NAME- FLUXGATE MAGNETOMETERS NSSDC ID 64-086A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - L.J. CAHILL, JR. U OF MINNESOTA MINNEAPOLIS, MN

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED-

EXPERIMENT BRIEF DESCRIPTION
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- 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 IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
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 CAIN, 1962), (2) THE ANGLE (ALPHA) BETWEEN THE MEASURED VECTOR AND THE SPACECRAFT SPIN AXIS, AND (3) THE FIELD AZIMUTHAL ANGLE (PSI) 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.

**********GRS-A **********

SPACECRAFT COMMON NAME- GRS-A NSSDC ID 69-097A
ALTERNATE NAMES- PL-694D. AZUR.GERMAN RESEARCH SAT. GRS-A1. 04221

LAUNCH DATE- 11/08/69 SPACECRAFT WEIGHT IN ORBIT- 70.7 KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 07/01/70

EPOCH DATE- 01/19/70 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 121.8 MIN
APOAPSIS- 3139.00 KM ALT PERIAPSIS- 385.000 KM ALT INCLINATION- 102.976 DEG

SPACECRAFT BRIEF DESCRIPTION
THE MAGNETICALLY ALIGNED SPACECRAFT GRS-A, LAUNCHED INTO A NEAR-POLAR ORBIT IN NOVEMBER OF 1969, WAS A PRODUCT OF A JOINT EFFORT BY NASA-GSFC AND THE GERMAN BUNDESMINISTERIUM FUR WISSENSCHAFTLICHE FORSCHUNG (BMWF) AND HAD AS ITS PRIMARY PURPOSE THE ACQUISITION OF TERRESTRIAL RADIATION BELT DATA. SPECIFICALLY, THE SCIENTIFIC MISSION OF THE SPACECRAFT WAS AS FOLLOWS - 1) TO SCAN THE ENERGY SPECTRA OF INNER ZONE PROTONS AND ELECTRONS, 2) TO MEASURE THE FLUXES OF ELECTRONS OF ENERGY GREATER THAN 40 KEV THAT ARE PARALLEL, ANTIPARALLEL, AND PERPENDICULAR TO THE MAGNETIC LINES OF FORCE OVER THE AURORAL ZONE AND TO MEASURE ASSOCIATED OPTICAL EMISSION, AND 3) TO RECORD SOLAR PROTONS ON ALERT. AFTER ABOUT 24 HOURS IN ORBIT, A COMMAND SYSTEM INSTABILITY DEVELOPED AND PERSISTED INTERMITTENTLY THROUGHOUT THE FLIGHT. THE TAPE RECORDER FAILED ON DECEMBER 8, 1969. PRIOR TO THIS FAILURE, THE GERMAN PROJECT OFFICE ESTIMATED 85-90 PERCENT OF THE EXPECTED DATA HAD BEEN OBTAINED. ALL EXPERIMENTS WERE OPERATING NORMALLY UNTIL THE SPACECRAFT TELEMETRY SYSTEM MALFUNCTIONED IN EARLY JULY 1970.

**********GRS-A, HOVESTADT

EXPERIMENT NAME- PROTON-ALPHA TELESCOPE NSSDC ID 69-097A-02

ORIGINAL EXPERIMENT INSTITUTION- M.PLANCK INST.GARCHING

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - D.K. HOVESTADT M.PLANCK INST.GARCHING GARCHING, WEST GERMANY

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED- 06/26/70

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT CONSISTED OF TWO IDENTICAL PROTON-ALPHA PARTICLE TELESCOPES. ONE ORIENTED PERPENDICULAR AND ONE ORIENTED AT 45 DEG WITH RESPECT TO THE LOCAL MAGNETIC FIELD VECTOR. IN THE NORTHERN HEMISPHERE, THE 45 DEG TELESCOPE POINTED UPWARDS. THE TELESCOPES WERE TO DETECT PROTONS AND ALPHA PARTICLES IN THE EARTH'S TRAPPING REGION. THE EXPERIMENT WAS ALSO USED IN CONJUNCTION WITH 69-097A-04 (PROTON-ELECTRON DETECTORS) TO PROVIDE PITCH ANGLE DISTRIBUTIONS FOR PROTONS ABOVE 20 MEV. EACH TELESCOPE IS COMPOSED OF SEVEN FULLY DEPLETED SILICON SURFACE BARRIER DETECTORS (D1 THROUGH D7) SURROUNDED BY A PLASTIC ANTICOINCIDENCE SCINTILLATOR (D8) AND A HEAVY SHIELDING (PROTON THRESHOLD ENERGY OF 75 MEV). THE SEVEN ENERGY CHANNELS FOR WHICH DATA WERE OBTAINED ARE AS FOLLOWS -- 1.5 TO 2.7 MEV PROTONS (D12NOTD38), 6 TO 19 MEV ALPHA PARTICLES (D12NOTD48), 2.7 TO 5.2 MEV PROTONS (D23NOTD48), 5.2 TO 10.4 MEV PROTONS (D34NOTD58), 10.4 TO 22 MEV PROTONS (D45NOTD68), 22 TO 49 MEV PROTONS (D56NOTD78), AND 49 TO 104 MEV PROTONS (D67NOTD8). THE PERPENDICULAR AND 45 DEG TELESCOPES HAD GEOMETRIC FACTORS OF 0.0560 CM SQ STER AND 0.0595 CM SQ STER, RESPECTIVELY. THE ACCEPTANCE CONE OF BOTH TELESCOPES WAS 31 DEG FULL ANGLE. THE EXPERIMENT PERFORMED NORMALLY THROUGHOUT THE MISSION.

DATA SET NAME- PROTON, ALPHA PARTICLE AND ELECTRON COUNT RATES ON MAGNETIC TAPE NSSDC ID 69-097A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/16/69 TO 03/15/70 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 14 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUPPLIED BY THE EXPERIMENTER AND CONSISTS OF A MASTER FILE OF PARTICLE COUNT RATE (COUNTS/9.875 SEC) DATA FROM EXPERIMENTS 69-097A-02 AND -04 WITH A PORTION OF THE DATA FROM 69-097A-03 (CORRESPONDING TO LOW INVARIANT LATITUDES). THE DATA ARE IN CHRONOLOGICAL ORDER ON 9-TRACK MAGNETIC TAPE WRITTEN AT 800 BPI WITH TWO FILES PER TAPE. EACH TAPE BEGINS WITH A TAPE IDENTIFICATION RECORD CONTAINING 81 WORDS FOLLOWED BY AN END-OF-FILE MARK. THE TAPE IDENTIFICATION RECORD IS FOLLOWED BY A VARIABLE NUMBER OF PHYSICAL RECORDS. EACH PASS OR ORBIT REVOLUTION OF THE SATELLITE IS NOTED IN THE PASS HEADER PHYSICAL RECORD WHICH IS FOLLOWED BY THE NORMAL DATA PHYSICAL RECORDS. EACH OF THESE RECORDS, PASS AS WELL AS DATA RECORD, CONTAINS 81 WORDS. IN ADDITION TO THE PASS NUMBER, THE PASS HEADER RECORD CONTAINS THE TIME (YEAR, DAY, SECOND OF THE BEGINNING AND CLOSE OF THE PASS), STATION NAME, AND MAGNETIC ACTIVITY INDEX (KP). EACH DATA RECORD CONTAINS THE TIME (UT, YEAR, DAY, MILLISECONDS), LOCAL TIME, MAGNETIC LOCAL TIME, ORBIT NUMBER, GEOGRAPHIC LATITUDE, LONGITUDE, ALTITUDE, RIGHT ASCENSION, DECLINATION, MAGNETIC LATITUDE, LONGITUDE, B, L INVARIANT LATITUDE, RE (EARTH RADII), ANGLE BETWEEN THE SATELLITE AXIS AND MAGNETIC FIELD, AZIMUTH WITH RESPECT TO MAGNETIC FIELD, ASPECT SOLAR ANGLE, AZIMUTH WITH RESPECT TO THE SUN, THE THREE SPACECRAFT SPIN AXIS COMPONENTS, 3 LOCAL MAGNETIC FIELD (X, Y, Z) COMPONENTS AND VARIOUS HOUSEKEEPING PARAMETERS, AS WELL AS THE PROTON, ELECTRON, AND ALPHA PARTICLE COUNT RATES FROM THE THREE EXPERIMENTS.

**********GRS-A, HOVESTADT

EXPERIMENT NAME- PROTON-ELECTRON DETECTOR NSSDC ID 69-097A-04

ORIGINAL EXPERIMENT INSTITUTION- M.PLANCK INST.GARCHING

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - D.K. HOVESTADT M.PLANCK INST.GARCHING GARCHING, WEST GERMANY

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED- 06/28/70

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF TWO OMNIDIRECTIONAL PROTON/ELECTRON DETECTORS COMPOSED OF CUBICAL LITHIUM-DRIFTED SILICON ELEMENTS, HEAVILY SHIELDED ON ONE SIDE AND COVERED BY A HEMISPHERICAL SHIELD OVER A 2-PI STER SOLID ANGLE ON THE OTHER SIDE. THE DETECTORS WERE USED TO MEASURE TRAPPED AND SOLAR PROTONS AND ELECTRONS, AND THE EXPERIMENT WAS ALSO USED IN CONJUNCTION WITH 69-097A-02 (PROTON/ALPHA PARTICLE TELESCOPES) TO PROVIDE PITCH ANGLE DISTRIBUTIONS FOR PROTONS ABOVE .0 MEV. ONE OF THE DETECTORS WAS SENSITIVE TO ELECTRONS WITH E .GT. 1.5 MEV (GEOMETRIC FACTOR WAS ENERGY DEPENDENT) AND PROTONS WITH E .GT. 20 MEV (GEOMETRIC FACTOR WAS 0.027 CM SQ) IN ONE ELECTRICAL THRESHOLD MODE AND SENSITIVE ONLY TO PROTONS FROM 20 TO 45 MEV (GEOMETRIC FACTOR WAS 0.0195 CM SQ) IN THE OTHER MODE. SIMILARLY, THE

OTHER DETECTOR WAS SENSITIVE TO ELECTRONS WITH E .GT. 4 MEV (GEOMETRIC FACTOR WAS ENERGY DEPENDENT) AND PROTONS WITH E .GT. 40 MEV (GEOMETRIC FACTOR WAS 0.047 CM SQ) IN ONE ELECTRICAL THRESHOLD MODE AND SENSITIVE ONLY TO PROTONS FROM 40 TO 72 MEV (GEOMETRIC FACTOR WAS 0.034 CM SQ) IN THE OTHER MODE. THE EXPERIMENT PERFORMED NORMALLY THROUGHOUT THE MISSION.

DATA SET NAME- PROTON AND ELECTRON COUNT RATES ON MAGNETIC TAPE — NSSDC ID 69-097A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/16/69 TO 03/15/70 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 14 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUPPLIED BY THE EXPERIMENTER AND CONSISTS OF A MASTER FILE OF PARTICLE COUNT RATE (COUNTS/9.875 SEC) DATA FROM EXPERIMENTS 69-097A-02 AND -04 WITH A PORTION OF THE DATA FROM 69-097A-03 (CORRESPONDING TO LOW INVARIANT LATITUDES). THE DATA ARE IN CHRONOLOGICAL ORDER ON 9-TRACK MAGNETIC TAPE WRITTEN AT 800 BPI WITH TWO FILES PER TAPE. EACH TAPE BEGINS WITH A TAPE IDENTIFICATION RECORD CONTAINING 81 WORDS FOLLOWED BY AN END-OF-FILE MARK. THE TAPE IDENTIFICATION RECORD IS FOLLOWED BY A VARIABLE NUMBER OF PHYSICAL RECORDS. EACH PASS OR ORBIT REVOLUTION OF THE SATELLITE IS NOTED IN THE PASS HEADER PHYSICAL RECORD WHICH IS FOLLOWED BY THE NORMAL DATA PHYSICAL RECORDS. EACH OF THESE RECORDS, PASS AS WELL AS DATA RECORDS, CONTAINS 81 WORDS. IN ADDITION TO THE PASS NUMBER, THE PASS HEADER RECORD CONTAINS THE TIME (YEAR, DAY, SECOND OF THE BEGINNING AND CLOSE OF THE PASS), STATION NAME, AND MAGNETIC ACTIVITY INDEX (KP). EACH DATA RECORD CONTAINS THE TIME (UT, YEAR, DAY, MILLISECONDS), LOCAL TIME, MAGNETIC LOCAL TIME, ORBIT NUMBER, GEOGRAPHIC LATITUDE, LONGITUDE, ALTITUDE, RIGHT ASCENSION, DECLINATION, MAGNETIC LATITUDE, LONGITUDE, B, L, INVARIANT LATITUDE, RE (EARTH RADII), ANGLE BETWEEN THE SATELLITE AXIS AND MAGNETIC FIELD, AZIMUTH WITH RESPECT TO MAGNETIC FIELD, ASPECT SOLAR ANGLE, AZIMUTH WITH RESPECT TO THE SUN, THE THREE SPACECRAFT SPIN AXIS COMPONENTS, THREE LOCAL MAGNETIC FIELD (X, Y, Z) COMPONENTS AND VARIOUS HOUSEKEEPING PARAMETERS, AS WELL AS THE PROTON, ELECTRON, AND ALPHA PARTICLE COUNT RATES FROM THE THREE EXPERIMENTS.

**********GRS-A, MORITZ

EXPERIMENT NAME- PROTON TELESCOPE — NSSDC ID 69-097A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF KIEL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI -	J. MORITZ	U OF KIEL	KIEL, W. GERMANY

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 06/28/70

EXPERIMENT BRIEF DESCRIPTION

TWO SOLID-STATE DEVICES WERE USED IN CONJUNCTION WITH FOUR PULSE HEIGHT DISCRIMINATORS TO DETECT TRAPPED AND SOLAR PROTONS USING COINCIDENCE TECHNIQUES. THE DETECTOR HAD SIX ENERGY CHANNELS - PROTONS FROM 0.025 TO 1.65, 0.25 TO 12.5, 0.5 TO 1.65, 1.0 TO 1.65, AND 1.65 TO 13.5 MEV, AND ALPHA PARTICLES FROM 2.0 TO 6.4 MEV. ELECTRONS WERE ELIMINATED FROM THE INCIDENT BEAM BY USING A BROOM MAGNET. THE ACCEPTANCE CONE WAS 20.4 DEG FULL

ANGLE. THE EXPERIMENT WORKED NORMALLY UNTIL THE SPACECRAFT TELEMETRY SYSTEM MALFUNCTIONED IN EARLY JULY 1970.

DATA SET NAME- PLOTS OF PROTON AND ALPHA PARTICLE COUNT RATES AND FLUXES ON MICROFILM NSSDC ID 69-097A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/08/69 TO 06/28/70 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 12-HR-AVERAGED PROTON AND ALPHA PARTICLE COUNT RATES (COUNTS/10 SEC) AND FLUXES VS. TIME ON 16 MM MICROFILM. THE PLOTS ARE ORDERED BY INVARIANT LATITUDE, AND EACH PLOT INCLUDES A FOUR-DEG INCREMENT IN INVARIANT LATITUDE FOR ONE ENERGY CHANNEL. THE DATA SET COVERS INVARIANT LATITUDES FROM -25 DEG TO -89 DEG AND +25 DEG TO +89 DEG, AND WAS GENERATED AT NSSDC USING THE MAGNETIC TAPE DATA SET 69-097A-03A. THERE ARE FIVE ENERGY CHANNELS FOR EACH FOUR-DEG INTERVAL OF INVARIANT LATITUDE -- FOR PROTONS, 0.25 TO 0.50 MEV, 0.50 TO 1.00 MEV, 1.00 TO 1.65 MEV AND 1.65 TO 13.5 MEV, AND FOR ALPHA PARTICLES, 2.00 TO 6.40 MEV. DOTTED LINES ARE USED IN THE TRACES TO INDICATE GAPS IN THE DATA COVERAGE. EACH PLOT IN THE DATA SET COVERS THE ENTIRE PERIOD FOR WHICH THE SPACECRAFT WAS OPERATIONAL.

**********HEOS 1**********

SPACECRAFT COMMON NAME- HEOS 1 NSSDC ID 68-109A
ALTERNATE NAMES- HEOS-A1, HEOS-A, 03595

LAUNCH DATE- 12/05/68 SPACECRAFT WEIGHT IN ORBIT- 237. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 05/00/72

EPOCH DATE- 12/24/68 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 89.34 MIN
APOAPSIS- 290.000 KM ALT PERIAPSIS- 205.000 KM ALT INCLINATION- 65.41 DEG

SPACECRAFT BRIEF DESCRIPTION

HEOS 1 WAS AN EARTH ORBITING, SPIN-STABILIZED SATELLITE THAT WAS LAUNCHED BY THE EUROPEAN SPACE RESEARCH ORGANIZATION. IT WAS BASICALLY CYLINDRICAL WITH AN AXIAL BOOM SUPPORTING THE ANTENNA AND THE MAGNETOMETERS. THE SPIN AXIS ATTITUDE AND SPIN RATE WERE CHANGED BY ONBOARD JETS. THE SPACECRAFT OBJECTIVES WERE TO STUDY THE INTERPLANETARY MAGNETIC FIELDS, COSMIC RAYS, THE SOLAR WIND, AND THE MAGNETOSHEATH. THE SATELLITE OPERATED SUCCESSFULLY FOR MORE THAN TWO YEARS, HOWEVER, ONLY INTERMITTENT COVERAGE HAS BEEN AVAILABLE SINCE MAY 1972 WHEN A LOSS OF CORRELATION BETWEEN THE SPACECRAFT TIME REFERENCE AND ATTITUDE INFORMATION OCCURRED. THE SPACECRAFT REENTERED THE EARTH'S ATMOSPHERE DURING JUNE 1973.

**********HEOS 1, ELLIOTT

EXPERIMENT NAME- INTERPLANETARY MAGNETIC FIELDS NSSDC ID 68-109A-02

ORIGINAL EXPERIMENT INSTITUTION- IMPERIAL COLLEGE

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - H.	ELLIOTT	IMPERIAL COLLEGE	LONDON, ENGLAND
OI -	HEDGECOCK	IMPERIAL COLLEGE	LONDON, ENGLAND

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 05/00/72

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE MAGNETIC FIELDS IN THE RANGE PLUS TO MINUS 64 GAMMAS WITH AN ACCURACY OF 0.5 GAMMA USING A BOOM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER. THE HEOS-A1 SPACECRAFT WAS LAUNCHED INTO A HIGHLY ECCENTRIC ORBIT SO THAT THE MAGNETOMETER MEASURED MAGNETIC FIELDS WITHIN THE MAGNETOSPHERE, AND THE TRANSITION AND INTERPLANETARY REGIONS. WHEN OPERATED IN A SELECTED MODE, THE MAGNETOMETER RECORDED DATA AT A HIGH RATE TO OBTAIN HIGH RESOLUTION WHEN THE SATELLITE WAS PASSING THROUGH THE SHOCK FRONT, MAGNETOPAUSE, OR OTHER "IRREGULARITY." THE DATA WERE STORED ON BOARD AND LATER TRANSMITTED AT A LOWER RATE. THE EXPERIMENT WAS TURNED ON DECEMBER 11, 1968, AND OPERATED NORMALLY UNTIL MAY 1972, AFTER WHICH ONLY INTERMITTENT DATA WAS OBTAINED.

DATA SET NAME- HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD VECTORS ON MAGNETIC TAPE — NSSDC ID 68-109A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/11/68 TO 12/31/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF EXPERIMENTER-SUPPLIED 800 BPI, 8CC MAGNETIC TAPE CONTAINING HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD DATA DETERMINED FROM THE HEOS 1 AND HEOS 2 MAGNETOMETERS OVER THE PERIOD DECEMBER 1968 THROUGH DECEMBER 1972. DATA ARE GIVEN IN TERMS OF CARTESIAN COMPONENTS IN GEOCENTRIC SOLAR ECLIPTIC COORDINATES, FIELD MAGNITUDE, AND FIELD LATITUDE AND LONGITUDE ANGLES IN THE SAME COORDINATES. RMS DEVIATIONS ARE GIVEN FOR THE LAST THREE PARAMETERS, AS IS THE NUMBER OF POINTS CONTRIBUTING TO EACH HOURLY AVERAGE. ALL HOURLY AVERAGED PARAMETERS WERE COMPUTED AS AVERAGES OVER FINER TIME SCALE VALUES OF THE SAME PARAMETERS. NO DATA ARE AVAILABLE FOR THE MAY TO AUGUST PERIOD OF 1969, 1970, AND 1971 DUE TO HEOS 1 ORBIT CHARACTERISTICS. THE FIELD MAGNITUDE AND DIRECTION DATA HAVE ALSO BEEN PLOTTED, AND ARE FOUND IN DATA SETS 68-109A-02B AND 72-008A-01B.

DATA SET NAME- HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD VECTORS ON MICROFILM — NSSDC ID 68-109A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/11/68 TO 01/11/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A REEL OF 35-MM MICROFILM PROVIDED BY THE EXPERIMENTER. EACH FRAME CONTAINS HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD MAGNITUDE AND DIRECTION (THETA AND PHI IN SOLAR ECLIPTIC COORDINATES) FOR A 27-DAY PERIOD. THESE DATA ARE TAKEN FROM TAPE DATA SETS 68-109A-02A

AND 72-005A-01A.

**********HEOS 2 **********

SPACECRAFT COMMON NAME- HEOS 2 NSSDC ID 72-005A
ALTERNATE NAMES- HEOS-A2, 05814

LAUNCH DATE- 01/31/72 SPACECRAFT WEIGHT IN ORBIT- 350. KG

SPACECRAFT STATUS OF OPERATION- NORMAL

EPOCH DATE- 01/31/72 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 7835. MIN
APOAPSIS- 248161. KM ALT PERIAPSIS- 439.000 KM ALT INCLINATION- 90.17 DEG

SPACECRAFT BRIEF DESCRIPTION
HEOS 2 WAS A SPIN-STABILIZED SPACECRAFT WITH A HIGHLY ECCENTRIC ORBIT WHOSE APOGEE OCCURRED AT HIGH LATITUDE. ITS PRIMARY SCIENTIFIC MISSION WAS THE INVESTIGATION OF INTERPLANETARY SPACE AND THE HIGH-LATITUDE MAGNETOSPHERE AND ITS BOUNDARY IN THE REGION AROUND THE NORTHERN NEUTRAL POINT. HEOS 2 PROVIDED NEW DATA ON THE SOURCES AND ACCELERATION MECHANISMS OF PARTICLES WHICH ARE FOUND IN THE TRAPPED RADIATION BELTS AND IN THE POLAR PRECIPITATION REGIONS AND AURORAL ZONES. IT MONITORED SOLAR ACTIVITY AND COSMIC RADIATION. THE SATELLITE CARRIED A MAGNETOMETER AND PARTICLE DETECTORS WHICH COVERED A BROAD RANGE FROM THERMAL TO COSMIC-RAY ENERGIES. THE SATELLITE HAD THREE ANTENNAS TO STUDY EXTREME LOW FREQUENCY (ELF) WAVES AND CARRIED A SENSITIVE MICROMETEORITE DETECTOR.

**********HEOS 2, ELLIOTT

EXPERIMENT NAME- FLUXGATE MAGNETOMETER NSSDC ID 72-005A-01

ORIGINAL EXPERIMENT INSTITUTION- IMPERIAL COLLEGE

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - M. ELLIOTT IMPERIAL COLLEGE LONDON, ENGLAND

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION
A THREE-AXIS FLUXGATE MAGNETOMETER WAS USED TO MEASURE MAGNETIC FIELDS OF UP TO PLUS OR MINUS 16 GAMMAS WITH A DIGITAL RESOLUTION OF 0.125 GAMMA AND FROM 16 TO 150 GAMMAS WITH A 1-GAMMA RESOLUTION. CONTINUOUS FIELD SAMPLING OCCURRED AT A RATE OF ONE VECTOR PER 32 SEC. FASTER ADDITIONAL RATES ARE AVAILABLE IN A LIMITED DUTY CYCLE WHEN CORE BUFFER STORAGE IS USED. RMS NOISE MEASUREMENTS FOR ONE FIELD COMPONENT IN A FREQUENCY BAND FROM 1 TO 5 HZ WERE ALSO MADE. THE INSTRUMENT WAS SIMILAR TO THAT USED FOR EXPERIMENT 68-109A-02 CARRIED ON HEOS-A1.

DATA SET NAME- HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD VECTORS ON MAGNETIC TAPE NSSDC ID 72-005A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 01/31/72 TO 12/31/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION
THIS DATA SET CONSISTS OF EXPERIMENTER-SUPPLIED 800 BPI, BCD MAGNETIC TAPE CONTAINING HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD DATA DETERMINED FROM THE HEOS 1 AND HEOS 2 MAGNETOMETERS OVER THE PERIOD DECEMBER 1968 THROUGH DECEMBER 1972. DATA ARE GIVEN IN TERMS OF CARTESIAN COMPONENTS IN GEOCENTRIC SOLAR ECLIPTIC COORDINATES, FIELD MAGNITUDE, AND FIELD LATITUDE AND LONGITUDE ANGLES IN THE SAME COORDINATES. RMS DEVIATIONS ARE GIVEN FOR THE LAST THREE PARAMETERS, AS IS THE NUMBER OF POINTS CONTRIBUTING TO EACH HOURLY AVERAGE. ALL HOURLY AVERAGED PARAMETERS WERE COMPUTED AS AVERAGES OVER FINER TIME SCALE VALUES OF THE SAME PARAMETERS. NO DATA ARE AVAILABLE FOR THE MAY TO AUGUST PERIOD OF 1969, 1970, AND 1971 DUE TO HEOS 1 ORBIT CHARACTERISTICS. THE FIELD MAGNITUDE AND DIRECTION DATA HAVE ALSO BEEN PLOTTED AND ARE FOUND IN DATA SETS 68-109A-02B AND 72-005A-01B.

DATA SET NAME- HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD VECTORS ON MICROFILM NSSDC ID 72-005A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 01/31/72 TO 12/31/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THIS DATA SET CONSISTS OF 35-MM MICROFILM PROVIDED BY THE EXPERIMENTER. EACH FRAME CONTAINS HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD MAGNITUDE AND DIRECTION (THETA AND PHI IN SOLAR ECLIPTIC COORDINATES) FOR A 27-DAY PERIOD. THESE DATA ARE TAKEN FROM TAPE DATA SETS 68-109A-02A AND 72-005A-01A.

**********INP-D **********

SPACECRAFT COMMON NAME- IMP-D NSSDC ID 66-058A
ALTERNATE NAMES- EXPLORER 33, AIMP 1, 02258, ANCHORED IMP 1

LAUNCH DATE- 07/01/66 SPACECRAFT WEIGHT IN ORBIT- 212. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 09/15/71

EPOCH DATE- 07/08/66 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 23148. MIN
APOAPSIS- 494230. KM ALT PERIAPSIS- 30532.0 KM ALT INCLINATION- 29.0 DEG

SPACECRAFT BRIEF DESCRIPTION
EXPLORER 33 WAS A SPIN-STABILIZED (SPIN AXIS PARALLEL TO THE ECLIPTIC PLANE, SPIN PERIOD VARYING BETWEEN 2.2 AND 3.6 SEC) SPACECRAFT INSTRUMENTED FOR STUDIES OF INTERPLANETARY PLASMA, ENERGETIC CHARGED PARTICLES (ELECTRONS, PROTONS, AND ALPHAS), MAGNETIC FIELDS, AND SOLAR X RAYS AT LUNAR DISTANCES. THE SPACECRAFT FAILED TO ACHIEVE LUNAR ORBIT BUT DID ACHIEVE MISSION OBJECTIVES. THE INITIAL APOGEE OCCURRED AT ABOUT 1600 HR LOCAL TIME. OVER THE FIRST 3-YR PERIOD, PERIGEE VARIED BETWEEN 6 AND 44 EARTH RADII GEOCENTRIC, APOGEE VARIED BETWEEN 70 AND 135 EARTH RADII, AND THE INCLINATION WITH RESPECT TO THE EQUATOR OF THE EARTH VARIED BETWEEN 7 AND 60 DEG. PERIODS OF PRINCIPAL DATA COVERAGE (ESSENTIALLY 100 PERCENT) ARE JULY 1, 1966 (LAUNCH) TO JANUARY 14, 1970, FEBRUARY 21, 1970 TO MARCH 6, 1970, JULY 31, 1970 TO SEPTEMBER 14, 1970, JANUARY 15, 1971 TO FEBRUARY 28, 1971,

MARCH 23, 1971 TO MAY 31, 1971, AND AUGUST 23, 1971, TO SEPTEMBER 15, 1971. NO DATA WERE OBTAINED AFTER SEPTEMBER 21, 1971.

**********IMP-D, SONETT

EXPERIMENT NAME- AMES MAGNETIC FIELDS NSSDC ID 66-058A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.P.	SONETT	NASA-ARC	MOFFETT FIELD, CA
OI - J.H.	WOLFE	NASA-ARC	MOFFETT FIELD, CA
OI - R.W.	SILVA	NASA-ARC	MOFFETT FIELD, CA
OI - W.J.	KERWIN	NASA-ARC	MOFFETT FIELD, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 05/31/71

EXPERIMENT BRIEF DESCRIPTION

THE AMES MAGNETOMETER EXPERIMENT CONSISTED OF A BOOM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER AND AN ELECTRONICS PACKAGE. THE SENSORS WERE ORTHOGONALLY MOUNTED WITH ONE SENSOR ORIENTED ALONG THE SPIN AXIS OF THE SPACECRAFT. A MOTOR INTERCHANGED A SENSOR IN THE SPIN PLANE WITH THE SENSOR ALONG THE SPIN AXIS EVERY 24 HR, ALLOWING INFLIGHT CALIBRATION. THE INSTRUMENT PACKAGE INCLUDED A CIRCUIT FOR SPIN-DEMODULATING THE OUTPUTS FROM THE SENSORS IN THE SPIN PLANE. THE NOISE THRESHOLD WAS ABOUT 0.2 GAMMA. THE INSTRUMENT HAD THREE RANGES COVERING PLUS OR MINUS 20, 60, AND 200 GAMMAS FULL SCALE FOR EACH VECTOR COMPONENT. THE DIGITIZATION ACCURACY FOR EACH RANGE WAS 1 PERCENT OF THE ENTIRE RANGE COVERED. THE MAGNETIC FIELD VECTOR WAS MEASURED INSTANTANEOUSLY, AND THE INSTRUMENT RANGE WAS CHANGED AFTER EACH MEASUREMENT. A PERIOD OF 2.05 SEC ELAPSED BETWEEN ADJACENT MEASUREMENTS AND 6.14 SEC BETWEEN MEASUREMENTS USING THE SAME RANGE. THE INSTRUMENT WORKED WELL DURING ALL PERIODS OF SPACECRAFT TRACKING.

DATA SET NAME- AVERAGED MAGNETIC FIELD VECTOR PLOTS ON MICROFILM NSSDC ID 66-058A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 07/01/66 TO 09/13/70 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE MAGNETIC FIELD VECTOR PLOTS ARE CONTAINED ON TWO REELS OF 16-MM AND TWO REELS OF 35-MM MICROFILM. THESE REELS CONTAIN PLOTTED 81.8-SEC SCALAR AVERAGES IN EITHER SOLAR MAGNETOSPHERIC OR SOLAR EQUATORIAL COORDINATES (Z AXIS NORTHWARD IN A PLANE CONTAINING THE SOLAR DIRECTION AND THE SOLAR SPIN AXIS) OF THE MAGNITUDE, THE LONGITUDE, AND THE LATITUDE OF THE MAGNETIC FIELD B. GENERALLY, DATA ARE PLOTTED IN SOLAR MAGNETOSPHERIC COORDINATES FOR TIMES WHEN THE SPACECRAFT WAS INSIDE THE MAGNETOSPHERE OR GEOMAGNETIC TAIL, AND IN SOLAR EQUATORIAL COORDINATES WHEN THE SPACECRAFT WAS OUTSIDE THESE REGIONS. ABOUT 4 HR OF DATA ARE PLOTTED ON EACH FRAME. SEQUENCE NUMBER, TIME, AND THE COORDINATE SYSTEM USED ARE INDICATED ON EACH PLOT. DRIFTS IN ZERO LEVELS OF THE SENSORS HAVE BEEN CORRECTED BY THE EXPERIMENTER. DATA ARE AVAILABLE OVER THE TIME PERIOD SPECIFIED WITH 95 PERCENT COVERAGE.

**********IMP-F **********

SPACECRAFT COMMON NAME- IMP-F NSSDC ID 67-051A
ALTERNATE NAMES- EXPLORER 34, IMP 4, 02817

LAUNCH DATE- 05/24/67 SPACECRAFT WEIGHT IN ORBIT- 163. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 05/03/69

EPOCH DATE- 05/24/67 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 6846. MIN
APOAPSIS- 214383. KM ALT PERIAPSIS- 242.000 KM ALT INCLINATION- 67.17 DEG

SPACECRAFT BRIEF DESCRIPTION
THIS SPACECRAFT WAS PLACED INTO A HIGH-INCLINATION, HIGHLY ECCENTRIC EARTH ORBIT. THE APOGEE POINT WAS LOCATED NEAR THE ECLIPTIC PLANE AND HAD AN INITIAL LOCAL TIME OF ABOUT 1900 HR. THE SPACECRAFT WAS SPIN-STABILIZED AND HAD AN INITIAL SPIN PERIOD OF 2.6 SEC. THE SPIN VECTOR WAS APPROXIMATELY PERPENDICULAR TO THE ECLIPTIC PLANE. LIKE THE EARLIER IMP'S, THIS SPACECRAFT WAS INSTRUMENTED TO STUDY INTERPLANETARY MAGNETIC FIELDS, ENERGETIC PARTICLES, AND PLASMA. USEFUL DATA WERE ACQUIRED UNTIL JUST BEFORE SPACECRAFT REENTRY, WHICH OCCURRED ON MAY 3, 1969.

**********IMP-F, MCDONALD

EXPERIMENT NAME- LOW ENERGY COSMIC RAYS (DE/DX VS E) NSSDC ID 67-051A-09

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - F.B.	MCDONALD	NASA-GSFC	GREENBELT, MD
OI - G.H.	LUDWIG	NOAA	SUITLAND, MD

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 05/03/69

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT USED A DE/DX E TELESCOPE WITH ONE THIN AND TWO THICK SURFACE BARRIER, SOLID-STATE DETECTORS AND AN ANTICOINCIDENCE PLASTIC SCINTILLATOR COUNTER. THE TWO THICK DETECTORS ACTED TOGETHER AS ONE DETECTOR. THE TELESCOPE AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. COUNTS OF PARTICLES PENETRATING THE THIN DETECTOR AND STOPPING IN A THICK DETECTOR WERE ACCUMULATED FOR TWO 4.48-SEC INTERVALS EVERY 2.73 MIN. THE RELATIVE CONTRIBUTIONS TO THE COUNT RATE OF PROTONS AND ALPHA PARTICLES WITH ENERGIES BETWEEN 4.2 AND 19.1 MEV/NUCLEON AND ENERGY SPECTRAL INFORMATION WERE DETERMINED BY 1024-CHANNEL PULSE HEIGHT ANALYSIS, WHICH WAS PERFORMED SIMULTANEOUSLY ON THE OUTPUT OF THE SOLID-STATE DETECTORS EIGHT TIMES EVERY 2.73 MIN. PROTONS STOPPING IN THE THIN DETECTOR (AND PARTICLES PENETRATING IT) WERE MEASURED BY PASSING THE OUTPUT SIGNAL THROUGH AN EIGHT-LEVEL ENERGY THRESHOLD DISCRIMINATOR. THE EIGHT CORRESPONDING PROTON ENERGIES RAN FROM 1.1 TO ABOUT 4 MEV. DATA FROM ANY ONE LEVEL WERE TRANSMITTED ONCE EVERY 2.73 MIN. THE ANTICOINCIDENCE SCINTILLATOR FAILED IN MARCH 1968. THIS RESULTED IN SOMEWHAT HIGHER BACKGROUND COUNT RATES, WHICH RENDERED ISOTOPIC (BUT NOT CHARGE) SEPARATION MORE DIFFICULT. EXCEPT AS ALREADY NOTED, THE EXPERIMENT PERFORMED WELL FROM LAUNCH UNTIL MAY 3, 1969 (SPACECRAFT REENTRY DATE).

DATA SET NAME- MICROFILM OF CATALOG OF SOLAR COSMIC RAY EVENTS (VAN HOLLEBEKE ET AL. X-661-74-27) NSSDC ID 67-051A-09A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/25/67 TO 05/02/69 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A MICROFILMED VERSION OF THE DOCUMENT "A CATALOG OF SOLAR COSMIC RAY EVENTS - IMPS 4 AND 5 (MAY 1967 - DECEMBER 1972)," BY M. A. VANHOLLEBEKE, J. R. WANG, AND F. B. MCDONALD (GSFC X-661-74-27, JANUARY 1974). THE CATALOG CONTAINS PLOTS FOR ABOUT 185 EVENTS, WITH AN "EVENT" DEFINED AS AN INCREASE IN THE 20- TO 80-MEV PROTON FLUX WHICH EXCEEDS 0.0001 PROTONS/(CM SQ SEC STER MEV) AND LASTS FOR MORE THAN 5 HRS. THE MINIMUM INCREASE OVER THIS ENERGY RANGE CORRESPONDS TO ABOUT 5 PERCENT OF THE TOTAL GALACTIC COSMIC-RAY FLUX AT 1 AU. THE DATA ARE PRESENTED AS HOURLY-AVERAGED FLUXES (10 DAYS PER PAGE) FOR THREE PROTON ENERGY INTERVALS (0.9 TO 1.6, 6 TO 20, AND 20 TO 80 MEV) AND FOR ONE ELECTRON INTERVAL (0.5 TO 1.1 MEV). ELECTRON ONSET TIMES ARE SPECIFIED WITH INDICATED UNCERTAINTIES BETWEEN 3 AND 30 MIN. PROTON ONSET TIMES ARE SPECIFIED FOR EVENTS WITH NO DISCERNIBLE ELECTRON INCREASES. DATA GAPS ASSOCIATED WITH PERIGEE PASSES AND OCCASIONAL SATURATION PERIODS ARE CLEARLY MARKED.

**********IMP-F, MCDONALD

EXPERIMENT NAME- COSMIC RAYS (DE/DX VS E) NSSDC ID 67-051A-10

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - F.B.	MCDONALD	NASA-GSFC	GREENBELT, MD
OI - G.H.	LUDWIG	NOAA	SUITLAND, MD

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 05/03/69

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT USED A DE/DX, E TELESCOPE WITH THIN AND THICK CSI SCINTILLATORS (ONE EACH) AND AN ANTICOINCIDENCE PLASTIC SCINTILLATION COUNTER. THE TELESCOPE AXIS WAS PARALLEL TO THE SPACECRAFT SPIN AXIS. COUNTS OF PARTICLES PENETRATING THE THIN CSI SCINTILLATOR AND STOPPING IN THE THICK CSI SCINTILLATOR WERE ACCUMULATED FOR A 4.48-SEC INTERVAL TWICE EVERY 2.73 MIN. THE RELATIVE CONTRIBUTION TO THE COUNT RATE OF VARIOUS SPECIES (ELECTRONS BETWEEN 2.7 AND 21.5 MEV, NUCLEI WITH CHARGE 1 AND 2, ATOMIC MASS 1, 2, 3, AND 4, AND ENERGY BETWEEN 18.7 AND 81.6 MEV/NUCLEON) AND ENERGY SPECTRAL INFORMATION WERE DETERMINED BY 1024-CHANNEL PULSE HEIGHT ANALYSIS PERFORMED SIMULTANEOUSLY ON THE OUTPUT OF BOTH CSI SCINTILLATORS 16 TIMES EVERY 2.73 MIN. COUNTS OF ELECTRONS BETWEEN 0.3 AND 0.9 MEV STOPPING IN THE THIN SCINTILLATOR WERE ALSO OBTAINED ONCE EACH 2.73 MIN. EXCEPT AS NOTED ABOVE, THE EXPERIMENT PERFORMED WELL FROM LAUNCH TO MAY 3, 1969 (SPACECRAFT REENTRY DATE).

DATA SET NAME- MICROFILM OF CATALOG OF SOLAR COSMIC RAY EVENTS (VAN HOLLEBEKE ET AL. X-661-74-27) NSSDC ID 67-051A-10A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/25/67 TO 05/02/69 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A MICROFILMED VERSION OF THE DOCUMENT "A CATALOG OF SOLAR COSMIC RAY EVENTS - IMPS 4 AND 5 (MAY 1967 - DECEMBER 1972)," BY M. A. VANHOLLEBEKE, J. R. WANG, AND F. B. MCDONALD (GSFC X-661-74-27, JANUARY 1974). THE CATALOG CONTAINS PLOTS FOR ABOUT 185 EVENTS, WITH AN "EVENT" DEFINED AS AN INCREASE IN THE 20- TO 80-MEV PROTON FLUX WHICH EXCEEDS 0.0001 PROTONS/(CM SQ SEC STER MEV) AND LASTS FOR MORE THAN 5 HRS. THE MINIMUM INCREASE OVER THIS ENERGY RANGE CORRESPONDS TO ABOUT 5 PERCENT OF THE TOTAL GALACTIC COSMIC-RAY FLUX AT 1 AU. THE DATA ARE PRESENTED AS HOURLY-AVERAGED FLUXES (10 DAYS PER PAGE) FOR THREE PROTON ENERGY INTERVALS (0.9 TO 1.6, 6 TO 20, AND 20 TO 80 MEV) AND FOR ONE ELECTRON INTERVAL (0.5 TO 1.1 MEV). ELECTRON ONSET TIMES ARE SPECIFIED WITH INDICATED UNCERTAINTIES BETWEEN 3 AND 30 MIN. PROTON ONSET TIMES ARE SPECIFIED FOR EVENTS WITH NO DISCERNIBLE ELECTRON INCREASES. DATA GAPS ASSOCIATED WITH PERIGEE PASSES AND OCCASIONAL SATURATION PERIODS ARE CLEARLY MARKED.

**********IMP-F, NESS

EXPERIMENT NAME- TRIAXIAL FLUXGATE MAGNETOMETER NSSDC ID 67-051A-11

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - N.F.	NESS	NASA-GSFC	GREENBELT, MD
OI - D.H.	FAIRFIELD	NASA-GSFC	GREENBELT, MD

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 05/03/69

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT USED A TRIAXIAL FLUXGATE MAGNETOMETER. EACH SENSOR HAD DUAL RANGES OF MINUS TO PLUS 32 GAMMAS AND 128 GAMMAS AND DIGITIZATION ERRORS OF MINUS TO PLUS 0.16 AND 0.64 GAMMA, RESPECTIVELY. THE OPERATING RANGE COULD BE CHANGED BY GROUND COMMAND. THE SENSOR PARALLEL TO THE SPIN AXIS WAS ON A 1.8-M BOOM AND WAS FLIPPED EVERY 3.9 DAYS TO CHECK THE ZERO LEVEL. THE OTHER TWO SENSORS WERE ON A SEPARATE BOOM. VECTOR MEASUREMENTS WERE RETURNED EACH 2.56 SEC. AN ONBOARD AUTOCORRELATION COMPUTER WAS INCLUDED. AUTOCORRELATION DATA BASED ON 240 SAMPLINGS WERE RETURNED ON ALTERNATE COMPONENTS EACH 20.45 SEC. THE EXPERIMENT WORKED WELL THROUGHOUT THE LIFE OF THE SPACECRAFT. HOWEVER, FAILURE OF THE SPACECRAFT OPTICAL ASPECT SYSTEM ON MARCH 4, 1969, RENDERED IMPOSSIBLE THE DETERMINATION OF THE MAGNETIC FIELD DIRECTION OVER THE LAST 2 MONTHS OF DATA ACQUISITION.

DATA SET NAME- 2.5-SEC MULTICOORDINATE MAGNETIC VECTORS ON TAPE NSSDC ID 67-051A-11D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/24/67 TO 02/10/69 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 136 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF EXPERIMENTER-SUPPLIED, 9-TRACK, 800-BPI IBM 360 BINARY MAGNETIC TAPES. EACH TAPE CONTAINS DATA TAKEN DURING ONE SPACECRAFT ORBIT (4.3 DAYS). EACH PHYSICAL RECORD CONTAINS A 4-BYTE CONTROL WORD AND 16 LOGICAL RECORDS. EACH LOGICAL RECORD CONTAINS A 4-BYTE CONTROL WORD AND 307 FOUR-BYTE DATA WORDS FOR ONE TELEMETRY SEQUENCE (20.48 SEC). DATA FOUND IN EACH LOGICAL RECORD INCLUDE TIME, SPACECRAFT POSITION (RADIAL DISTANCE, GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE, AND SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC X, Y, AND Z), AND MAGNETIC FIELD DATA AS MEASURED BY EACH OF THE THREE SENSORS (EIGHT TIMES), AND AS CONVERTED TO NONROTATING PAYLOAD, SOLAR ECLIPTIC, AND SOLAR MAGNETOSPHERIC COORDINATES. FOR EACH OF THE THREE LATTER COORDINATE SYSTEMS, INDIVIDUALLY MEASURED MAGNETIC VECTORS (2.5-SEC RESOLUTION) AND SEQUENCE-AVERAGED VECTORS (20-SEC RESOLUTION) ARE GIVEN IN TERMS OF BOTH CARTESIAN COMPONENTS (WITH STANDARD DEVIATIONS FOR THE AVERAGES) AND MAGNITUDE, POLAR, AND AZIMUTHAL ANGLES. THE DATA COVERAGE IS COMPLETE BETWEEN MAY 24, 1967, AND FEBRUARY 10, 1969, EXCEPT FOR THE FOLLOWING 1968 GAPS - JANUARY 1-4, JANUARY 26-FEBRUARY 3, MAY 9-18, MAY 22-26, APRIL 13-17, OCTOBER 24-29, AND DECEMBER 7-11. THE EXPERIMENTER HAS GENERATED A SET OF TAPES WITH THE 20-SEC AVERAGED DATA AND NO 2.5-SEC VECTORS. THIS SET OF TAPES, WITH TEN ORBITS OF DATA PER TAPE, IS ALSO HELD AT NSSDC, AND IS DATA SET 67-051A-11A.

**********IMP-F, VAN ALLEN

EXPERIMENT NAME- LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA) NSSDC ID 67-051A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

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

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 05/03/69

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO SEPARATELY MEASURE LOW-ENERGY ELECTRON AND PROTON INTENSITIES INSIDE THE MAGNETOSPHERE AND IN THE INTERPLANETARY REGION. THE INSTRUMENTATION SYSTEM CONSISTED OF A CURVED PLATE, CYLINDRICAL ELECTROSTATIC ANALYZER (LEPEDEA - LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER) AND BENDIX CONTINUOUS CHANNEL MULTIPLIER (CHANNELTRON) ARRAY, AND, IN ADDITION, AN ANTON 213 GM TUBE DESIGNED TO SURVEY THE INTENSITIES OF ELECTRONS WITH ENERGIES E.GT.40 KEV IN THE OUTER MAGNETOSPHERE. THE ELECTROSTATIC ANALYZER WAS CAPABLE OF MEASURING THE ANGULAR DISTRIBUTIONS AND DIFFERENTIAL ENERGY SPECTRA OF PROTON (25 EV TO 47 KEV) AND ELECTRON (33 EV TO 57 KEV) INTENSITIES, SEPARATELY, WITHIN 15 CONTIGUOUS ENERGY INTERVALS. THE ANALYZER ACCUMULATORS WERE READ OUT FOUR TIMES EVERY 20.48 SEC. EACH ACCUMULATION WAS ABOUT 480 MSEC LONG (SPACECRAFT SPIN PERIOD WAS INITIALLY 2.6 SEC). A COMPLETE SCAN OF THE SPECTRUM FOR FOUR DIRECTIONS IN A PLANE PERPENDICULAR TO THE SPACECRAFT SPIN AXIS REQUIRED 307.2 SEC FOR EACH ENERGY INTERVAL. THE DETECTOR RESPONSE FOR FOUR APPROXIMATELY 60-DEG SEGMENTS OF THE ANGULAR DISTRIBUTION WERE SLAVED TO THE SPACECRAFT TELEMETRY SYSTEM. THE VIEWING DIRECTION OF THE SEGMENTS WAS CALCULATED FROM THE SPACECRAFT OPTICAL ASPECT INFORMATION. THE INSTRUMENTS

PERFORMED NORMALLY FROM LAUNCH UNTIL THE SATELLITE DECAYED ON MAY 3, 1969.

DATA SET NAME- LEPEDEA COUNT RATES AND FLUXES ON BCD MAGNETIC TAPE NSSDC ID 67-051A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/26/67 TO 06/17/68 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 35 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 7-TRACK, 800-BPI BCD MAGNETIC TAPES SUBMITTED BY THE EXPERIMENTER. EACH TAPE CONTAINS ABOUT 12 DAYS OF ALL THE LEPEDEA DATA. EACH RECORD CONTAINS DATA FOR ONE FULL LEPEDEA CYCLE (5.8 MIN). THESE DATA CONSIST OF COUNT RATES FOR PROTONS AND ELECTRONS FOR EACH OF 15 ENERGY WINDOWS, FOR EACH OF FOUR ANGULAR SECTORS. THE DATA ALSO CONTAIN ENERGY BANDPASS FLUXES AND INTEGRAL FLUXES FOR EACH SECTOR, ENERGY WINDOW, AND SPECIES. SECTORED GM TUBE COUNT RATES AND BACKGROUND LEPEDEA COUNT RATES ARE ALSO GIVEN. SUPPORTING DATA FOUND IN EACH RECORD INCLUDE LEPEDEA LOOK DIRECTION INFORMATION AND SPACECRAFT EPHEMERIS INFORMATION. LOOK DIRECTION INFORMATION CONSISTS OF RIGHT ASCENSION AND DECLINATION GIVEN IN SOLAR MAGNETOSPHERIC, SOLAR ECLIPTIC, AND GEOCENTRIC EQUATORIAL INERTIAL COORDINATE SYSTEMS. THE ANGLE BETWEEN THE MAGNETIC VECTOR AND THE FIELD OF VIEW IS ALSO GIVEN. SPACECRAFT EPHEMERIS INFORMATION INCLUDES GEOCENTRIC LATITUDE, LONGITUDE, AND RADIAL DISTANCE, B,L, AND RELATED VARIABLES, CARTESIAN COORDINATES, RIGHT ASCENSION, AND DECLINATION IN SOLAR MAGNETOSPHERIC, SOLAR ECLIPTIC, AND CELESTIAL INERTIAL COORDINATE SYSTEMS, AND GEOCENTRIC AND GEOMAGNETIC LOCAL TIMES. FURTHER DATA RELATE TO SPACECRAFT SPIN RATE AND DIRECTION, SUN DIRECTION, HOUSEKEEPING PARAMETERS, ETC. THE DATA PRESENTLY COVER THE FIRST YEAR OF THE IMP 4 MISSION. IT IS ANTICIPATED THAT DATA FOR THE SECOND AND FINAL YEAR OF THE IMP 4 MISSION WILL BE SUBMITTED TO NSSDC.

**********IMP-G **********

SPACECRAFT COMMON NAME- IMP-G NSSDC ID 69-053A
ALTERNATE NAMES- PL-691K, IMP 5, EXPLORER 41, 03990

LAUNCH DATE- 06/21/69 SPACECRAFT WEIGHT IN ORBIT- 175. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 12/23/72

EPOCH DATE- 06/21/69 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 4843. MIN
APOAPSIS- 176434. KM ALT PERIAPSIS- 378.000 KM ALT INCLINATION- 86.78 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 41 (IMP-G) WAS A SPIN-STABILIZED SPACECRAFT PLACED INTO A HIGH-INCLINATION, HIGHLY ELLIPTIC ORBIT TO MEASURE ENERGETIC PARTICLES, MAGNETIC FIELDS, AND PLASMA IN CISLUNAR SPACE. THE LINE OF APSIDES AND THE SATELLITE SPIN VECTOR WERE WITHIN A FEW DEGREES OF BEING IN AND NORMAL TO, RESPECTIVELY, THE ECLIPTIC PLANE. INITIAL LOCAL TIME OF APOGEE WAS ABOUT 1300 HR. INITIAL SATELLITE SPIN RATE WAS 27.5 RPM. THE BASIC TELEMETRY SEQUENCE WAS 20.48 SEC. THE SPACECRAFT FUNCTIONED VERY WELL FROM LAUNCH UNTIL IT DECAYED FROM ORBIT ON DECEMBER 23, 1972. DATA TRANSMISSION WAS NEARLY 100 PERCENT FOR THE SPACECRAFT LIFE EXCEPT FOR THE INTERVAL NOVEMBER 15, 1971, TO FEBRUARY 1, 1972, WHEN DATA ACQUISITION WAS LIMITED TO THE

VICINITY OF THE MAGNETOTAIL NEUTRAL SHEET.

**********IMP-G. ANDERSON

EXPERIMENT NAME- ION CHAMBER NSSDC ID 69-053A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI -	K.A.	ANDERSON	U OF CALIFORNIA, BERK	BERKELEY, CA
OI -	G.H.	PITT	U OF CALIFORNIA, BERK	BERKELEY, CA
OI -	R.P.	LIN	U OF CALIFORNIA, BERK	BERKELEY, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED- 12/23/72

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE ENERGETIC CHARGED PARTICLE POPULATIONS IN AND BEYOND THE EARTH'S OUTER MAGNETOSPHERE AND THE DYNAMIC PROCESSES THAT INFLUENCE THESE POPULATIONS. THE INSTRUMENTATION CONSISTED OF A 4-IN-DIAM NEHER-TYPE INTEGRATING IONIZATION CHAMBER AND THREE PAIRS OF GM TUBES. THE IONIZATION CHAMBER RESPONDED OMNIDIRECTIONALLY TO ELECTRONS ABOVE 700 KEV, PROTONS ABOVE 12 MEV, AND X RAYS ABOVE 20 KEV. THE MEMBERS OF ONE PAIR OF GM TUBES (LND 7041 WITH ALUMINUM FOIL), WHICH RESPONDED TO ELECTRONS ABOVE 80 KEV AND PROTONS ABOVE 1.5 MEV, HAD 70-DEG FULL-WIDTH ACCEPTANCE CONES, ONE TUBE, WHICH WAS NORMAL TO THE SPACECRAFT SPIN AXIS, HAD A GEOMETRIC FACTOR OF 0.86 CM SQ STER, AND ALSO RESPONDED TO X RAYS FROM 1 TO 20 KEV (0.1 PERCENT EFFICIENCY). THE OTHER GM TUBE WAS ALIGNED ALONG THE SPIN AXIS AND HAD A GEOMETRIC FACTOR OF 0.75 CM SQ STER. THE SECOND PAIR OF GM TUBES (LND 7041), WHICH RESPONDED TO ELECTRONS ABOVE 45 KEV SCATTERED FROM GOLD FOILS, HAD FULL WIDTH ACCEPTANCE CONES OF 70 DEG. ONE TUBE WAS ORIENTED 90 DEG TO THE SPIN AXIS WITH A GEOMETRIC FACTOR OF 0.065 CM SQ STER. THE OTHER TUBE WAS ALIGNED ALONG THE SPIN AXIS AND HAD A GEOMETRIC FACTOR OF 0.063 CM SQ STER. ONE MEMBER OF THE THIRD SET OF GM TUBES (LND 7041 THICK WINDOW), WHICH RESPONDED TO ELECTRONS ABOVE 120 KEV, PROTONS ABOVE 2.3 MEV, AND X RAYS FROM 3 TO 20 KEV (0.1 PERCENT EFFICIENCY), HAD A FULL-WIDTH ACCEPTANCE CONE OF 70 DEG, A GEOMETRIC FACTOR OF 1.03 CM SQ STER AND WAS ORIENTED AT 90 DEG TO THE SPIN AXIS. THE OTHER MEMBER OF THE THIRD SET OF GM TUBES (LND 705), WHICH RESPONDED TO ELECTRONS ABOVE 18 KEV AND PROTONS AVOVE 250 KEV, HAD A 40-DEG FULL-WIDTH ACCEPTANCE CONE, A GEOMETRIC FACTOR OF 0.027 CM SQ STER AND WAS ALIGNED ALONG THE SPIN AXIS. PULSES FROM THE IONIZATION CHAMBER AND COUNTS FROM EACH OF THE GM TUBES WERE ACCUMULATED FOR 9.92 SEC AND READ OUT FOUR TIMES EACH 40.96 SEC. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH UNTIL THE SPACECRAFT DECAYED FROM ORBIT ON DECEMBER 23, 1972, EXCEPT THAT THE IONIZATION CHAMBER OPERATED INTERMITTENTLY THROUGHOUT THE MISSION.

DATA SET NAME- ELECTRON AND PROTON COUNT RATES ON MICROFILM NSSDC ID 69-053A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 06/21/69 TO 08/31/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PLOTS OF PROTON AND ELECTRON DEAD-TIME CORRECTED, SCALED, 36-SEC AVERAGED COUNT RATES, IN CHRONOLOGICAL ORDER, ON 35-MM MICROFILM. THE PLOTS CONTAIN PROTON AND ELECTRON DATA FROM THE ION CHAMBER AND ALL SIX GM TUBES. EACH PLOT COVERS A 24-HR PERIOD AND GIVES THE DISTANCE OF THE SPACECRAFT FROM THE EARTH AND THE MAGNETOSPHERIC LATITUDE AND ECLIPTIC LONGITUDE OF THE SPACECRAFT DISPLAYED ALONG THE HORIZONTAL AXIS. THE DATES OF OBSERVATION AND ORBIT NUMBER ARE GIVEN AT THE BOTTOM OF EACH PLOT, AND THE DAY NUMBER IS GIVEN AT THE TOP OF EACH PLOT. FURTHER DOCUMENTATION ON DETECTOR CHARACTERISTICS IS PROVIDED AT THE BEGINNING OF EACH REEL OF MICROFILM. THE TIME COVERAGE IS NEAR 90 PERCENT, EXCEPT FOR THE PERIOD FROM NOVEMBER 16, 1971, TO JANUARY 31, 1972, WHERE NO DATA ARE AVAILABLE.

**********IMP-G, MCDONALD

EXPERIMENT NAME- LOW-ENERGY PROTON AND ALPHA DETECTOR NSSDC ID 69-053A-09

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - F.B.	MCDONALD	NASA-GSFC	GREENBELT, MD
OI - G.H.	LUDWIG	NOAA	SUITLAND, MD

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 12/23/72

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT USED A DE/DX, E TELESCOPE WITH ONE THIN AND TWO THICK SURFACE BARRIER SOLID-STATE DETECTORS AND AN ANTICOINCIDENCE PLASTIC SCINTILLATOR COUNTER. THE THICK DETECTORS ACTED TOGETHER AS ONE DETECTOR. THE TELESCOPE AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. COUNTS OF PARTICLES PENETRATING THE THIN DETECTOR AND STOPPING IN A THICK DETECTOR WERE ACCUMULATED FOR A 4.48-SEC INTERVAL ONCE EACH 2.73 MIN FOR EACH OF TWO COUNTING MODES. (COUNTING MODES ARE DEFINED WITH RESPECT TO THE ENERGY DEPOSITED IN THE THIN DE/DX DETECTOR. GOOD SEPARATION OF PROTONS AND ALPHA PARTICLES WAS ACHIEVED BY THIS MODE DISTINCTION.) THE RELATIVE CONTRIBUTION TO EACH COUNT RATE OF PROTONS AND ALPHA PARTICLES WITH ENERGIES BETWEEN 4.2 AND 19.1 MEV/NUCLEON AND ENERGY SPECTRAL INFORMATION WERE DETERMINED BY 1024-CHANNEL PULSE HEIGHT ANALYSIS PERFORMED SIMULTANEOUSLY ON THE OUTPUT OF THE SOLID-STATE DETECTORS FOUR TIMES EVERY 2.73 MIN FOR EACH OF THE TWO THRESHOLD MODES. PROTONS STOPPING IN THE THIN DETECTOR (AND PARTICLES PENETRATING IT) WERE MEASURED BY PASSING THE OUTPUT SIGNAL THROUGH AN EIGHT-LEVEL ENERGY THRESHOLD DISCRIMINATOR. THE EIGHT CORRESPONDING PROTON ENERGIES RAN FROM 0.6 TO ABOUT 4 MEV. DATA FROM ANY ONE LEVEL WERE TRANSMITTED ONCE EVERY 2.73 MIN. THERE WERE ALSO TWO SOLID-STATE DETECTORS THAT LOOKED ALONG THE SPACECRAFT SPIN AXIS AND THAT WERE IDENTICAL EXCEPT FOR DIFFERING COVERING FOIL THICKNESSES. BOTH RESPONDED TO ELECTRONS IN THE 80- TO 200-KEV RANGE. ONE RESPONDED TO PROTONS BETWEEN 83 KEV AND 2 MEV AND THE OTHER TO PROTONS BETWEEN 200 KEV AND 2 MEV. SPECTRAL INFORMATION WAS GATHERED BY SUBJECTING THE OUTPUT SIGNALS FROM EACH DETECTOR TO EIGHT-LEVEL ENERGY THRESHOLD DISCRIMINATION. DATA FROM EACH OF THE EIGHT LEVELS AND EACH OF THE TWO DETECTORS WERE TRANSMITTED ONCE EACH 5.46 MIN, EXCEPT FOR A 2-WEEK PERIOD IN MARCH 1970 WHEN THE TELESCOPE DATA WERE NOISY, ALL THE DETECTORS FUNCTIONED NORMALLY FROM LAUNCH TO SPACECRAFT REENTRY.

DATA SET NAME- MICROFILM OF CATALOG OF SOLAR COSMIC RAY EVENTS (VAN HOLLEBEKE ET AL, X-661-74-27) NSSDC ID 69-053A-09A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/09/69 TO 11/29/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A MICROFILMED VERSION OF THE DOCUMENT "A CATALOG OF SOLAR COSMIC RAY EVENTS - IMPS 4 AND 5 (MAY 1967 - DECEMBER 1972)." BY M. A. VANHOLLEBEKE, J. R. WANG, AND F. B. MCDONALD (GSFC X-661-74-27, JANUARY 1974). THE CATALOG CONTAINS PLOTS FOR ABOUT 185 EVENTS, WITH AN 'EVENT' DEFINED AS AN INCREASE IN THE 20- TO 80-MEV PROTON FLUX WHICH EXCEEDS 0.0001 PROTONS/(CM SQ SEC STER MEV) AND LASTS FOR MORE THAN 5 HRS. THE MINIMUM INCREASE OVER THIS ENERGY RANGE CORRESPONDS TO ABOUT 5 PERCENT OF THE TOTAL GALACTIC COSMIC-RAY FLUX AT 1 AU. THE DATA ARE PRESENTED AS HOURLY-AVERAGED FLUXES (10 DAYS PER PAGE) FOR THREE PROTON ENERGY INTERVALS (0.9 TO 1.6, 6 TO 20, AND 20 TO 80 MEV) AND FOR ONE ELECTRON INTERVAL (0.5 TO 1.1 MEV). ELECTRON ONSET TIMES ARE SPECIFIED WITH INDICATED UNCERTAINTIES BETWEEN 3 AND 30 MIN. PROTON ONSET TIMES ARE SPECIFIED FOR EVENTS WITH NO DISCERNIBLE ELECTRON INCREASES. DATA GAPS ASSOCIATED WITH PERIGEE PASSES AND OCCASIONAL SATURATION PERIODS ARE CLEARLY MARKED.

**********IMP-G, MCDONALD

EXPERIMENT NAME- COSMIC-RAY ENERGY VS ENERGY LOSS NSSDC ID 69-053A-10

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - F.B.	MCDONALD	NASA-GSFC	GREENBELT, MD
OI - G.H.	LUDWIG	NOAA	SUITLAND, MD

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 12/23/72

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT USED A DE/DX, E TELESCOPE WITH THIN AND THICK CSI SCINTILLATORS (ONE EACH) AND AN ANTICOINCIDENCE PLASTIC SCINTILLATION COUNTER. THE TELESCOPE AXIS WAS PARALLEL TO THE SPACECRAFT SPIN AXIS. COUNTS OF PARTICLES PENETRATING THE THIN CSI SCINTILLATOR AND STOPPING IN THE THICK CSI SCINTILLATOR WERE ACCUMULATED FOR TWO 4.48-SEC INTERVALS EACH 2.73 MIN. THE RELATIVE CONTRIBUTION TO THE COUNT RATE OF VARIOUS SPECIES (ELECTRONS BETWEEN 2.7 AND 21.5 MEV, NUCLEI WITH CHARGE 1 AND 2, ATOMIC MASS=1, 2, 3, AND 4, AND ENERGY BETWEEN 16.7 AND 81.6 MEV/NUCLEON) AND ENERGY SPECTRAL INFORMATION WERE DETERMINED BY 1024-CHANNEL PULSE HEIGHT ANALYSIS PERFORMED SIMULTANEOUSLY ON THE OUTPUT OF BOTH CSI SCINTILLATORS 16 TIMES EVERY 2.73 MIN. IN ADDITION, COUNTS OF ELECTRONS BETWEEN 0.3 AND 0.9 MEV STOPPING IN THE THIN SCINTILLATOR WERE ALSO OBTAINED ONCE EACH 2.73 MIN. THE EXPERIMENT FUNCTIONED WELL OVER THE SPACECRAFT LIFETIME.

DATA SET NAME- MICROFILM OF CATALOG OF SOLAR COSMIC RAY EVENTS (VAN HOLLEBEKE ET AL, X-661-74-27) NSSDC ID 69-053A-10A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 09/09/69 TO 11/29/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A MICROFILMED VERSION OF THE DOCUMENT "A CATALOG OF SOLAR COSMIC RAY EVENTS - IMPS 4 AND 5 (MAY 1967 - DECEMBER 1972)," BY M. A. VANHOLLEBEKE, J. R. WANG, AND F. B. MCDONALD (GSFC X-661-74-27, JANUARY 1974). THE CATALOG CONTAINS PLOTS FOR ABOUT 185 EVENTS, WITH AN "EVENT" DEFINED AS AN INCREASE IN THE 20- TO 80-MEV PROTON FLUX WHICH EXCEEDS 0.0001 PROTONS/(CM SQ SEC STER MEV) AND LASTS FOR MORE THAN 5 HRS. THE MINIMUM INCREASE OVER THIS ENERGY RANGE CORRESPONDS TO ABOUT 5 PERCENT OF THE TOTAL GALACTIC COSMIC-RAY FLUX AT 1 AU. THE DATA ARE PRESENTED AS HOURLY-AVERAGED FLUXES (10 DAYS PER PAGE) FOR THREE PROTON ENERGY INTERVALS (0.9 TO 1.6, 6 TO 20, AND 20 TO 80 MEV) AND FOR ONE ELECTRON INTERVAL (0.5 TO 1.1 MEV). ELECTRON ONSET TIMES ARE SPECIFIED WITH INDICATED UNCERTAINTIES BETWEEN 3 AND 30 MIN. PROTON ONSET TIMES ARE SPECIFIED FOR EVENTS WITH NO DISCERNIBLE ELECTRON INCREASES. DATA GAPS ASSOCIATED WITH PERIGEE PASSES AND OCCASIONAL SATURATION PERIODS ARE CLEARLY MARKED.

**********IMP-I **********

SPACECRAFT COMMON NAME- IMP-I NSSDC ID 71-019A
ALTERNATE NAMES- EXPLORER 43, IMP 6, 05043

LAUNCH DATE- 03/13/71 SPACECRAFT WEIGHT IN ORBIT- 635. KG

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 03/17/71 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 5956. MIN
APOAPSIS- 204577. KM ALT PERIAPSIS- 353.000 KM ALT INCLINATION- 28.80 DEG

SPACECRAFT BRIEF DESCRIPTION

IMP-I CONTINUED THE STUDY, BEGUN BY EARLIER IMPS, OF THE INTERPLANETARY AND OUTER MAGNETOSPHERIC REGIONS BY MEASURING ENERGETIC PARTICLES, PLASMA, AND ELECTRIC AND MAGNETIC FIELDS. A RADIO ASTRONOMY EXPERIMENT WAS ALSO INCLUDED IN THE SPACECRAFT PAYLOAD. THE 16-SIDED SPACECRAFT WAS 182.12 CM HIGH BY 135.64 CM IN DIAMETER. THE SPACECRAFT SPIN AXIS WAS NORMAL TO THE ECLIPTIC PLANE, AND ITS SPIN RATE WAS 5 RPM. THE INITIAL APOGEE POINT LAY NEAR THE EARTH-SUN LINE. THE SOLAR-CELL AND CHEMICAL-BATTERY-POWERED SPACECRAFT CARRIED TWO TRANSMITTERS. ONE CONTINUOUSLY TRANSMITTED PCM ENCODER DATA AT A 1600-BPS INFORMATION BIT RATE. THE SECOND TRANSMITTER WAS USED FOR TRANSMISSION OF VLF DATA AND FOR RANGING INFORMATION. THREE ORTHOGONAL PAIRS OF DIPOLE ANTENNAS WERE USED FOR THE ELECTRIC FIELDS EXPERIMENTS, AND ONE OF THESE PAIRS WAS ALSO USED FOR THE RADIO ASTRONOMY EXPERIMENT. THE MEMBERS OF THE ANTENNA PAIR ALONG THE SPACECRAFT SPIN AXIS EXTENDED 2.9 M. THE MEMBERS OF THE PAIR USED IN BOTH THE ELECTRIC FIELD AND RADIO ASTRONOMY EXPERIMENTS EXTENDED 45.5 M, AND THE MEMBERS OF THE THIRD PAIR WERE SLIGHTLY UNBALANCED, EXTENDING 24.4 AND 27.6 M, RESPECTIVELY. ALL FOUR ELEMENTS PERPENDICULAR TO THE SPIN AXIS WERE TO HAVE EXTENDED 45.5 M. THE SPACECRAFT WAS EXPECTED TO REENTER THE EARTH'S ATMOSPHERE OCTOBER 2, 1974, AFTER A HIGHLY SUCCESSFUL MISSION.

**********IMP-I, BOSTROM

EXPERIMENT NAME- MONITORING OF SOLAR PROTONS NSSDC ID 71-019A-07

ORIGINAL EXPERIMENT INSTITUTION- APPLIED PHYSICS LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.O.	BOSTROM	APPLIED PHYSICS LAB	SILVER SPRING, MD
OI - D.J.	WILLIAMS	NOAA-[illegible]L	BOULDER, CO
OI - D.S.	BEALL	APPLIED PHYSICS LAB	SILVER SPRING MD

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THE SOLAR PROTON MONITORING EXPERIMENT CONSISTED OF FIVE SEPARATE DETECTORS EACH USING ONE OR MORE SOLID-STATE DETECTOR ELEMENTS. THREE DETECTORS, EACH WITH A 2-PI STER FIELD OF VIEW AND A 5.12-SEC ACCUMULATION TIME, MEASURED PROTONS WITH ENERGIES GREATER THAN 10, 30, AND 60 MEV. RESULTANT HOURLY AVERAGED FLUXES ARE BEING PUBLISHED ON A RAPID BASIS IN SOLAR-GEOPHYSICAL DATA. THE FOURTH DETECTOR, A TWO-ELEMENT TELESCOPE, MEASURED DIRECTIONAL FLUXES OF PROTONS IN THE ENERGY INTERVALS FROM 0.2 TO 0.5, 0.5 TO 2.0, AND 2.0 TO 7.5 MEV AND DIRECTIONAL FLUXES OF ALPHA PARTICLES IN THE ENERGY INTERVAL FROM 8 TO 20 MEV. THE FIFTH DETECTOR MEASURED DIRECTIONAL FLUXES OF ELECTRONS ABOVE 10 KEV. FOR THE LAST TWO DETECTORS, COUNTS WERE OBTAINED IN 45-DEG SECTORS AS THE SPACECRAFT SPUN. ONBOARD CALIBRATION CAPABILITY FOR THE FIRST FOUR DETECTORS WAS INCLUDED.

DATA SET NAME- COUNT RATES ON ARCHIVE TAPES NSSDC ID 71-019A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/14/71 TO 06/03/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 20 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 9-TRACK, 800-BPI, IBM/360 BINARY MAGNETIC TAPES PROVIDED BY THE EXPERIMENTER. EACH TAPE CONTAINS DATA FOR ONE SPACECRAFT ORBIT OF ABOUT 4.1 DAYS. THE FIRST OF THE TWO PHYSICAL FILES ON EACH TAPE CONTAINS FINE TIME-SCALE DATA AND THE SECOND FILE CONTAINS HOURLY AVERAGED DATA. IN THE FIRST FILE EACH PHYSICAL RECORD CONTAINS TEN 2094-BYTE LOGICAL RECORDS. EACH LOGICAL RECORD MAY BE AN IDENTIFICATION RECORD CONTAINING DATA MANAGEMENT INFORMATION OR MAY BE A DATA RECORD. EACH DATA RECORD CONTAINS ALL THE COUNT RATE DATA OBTAINED DURING ONE 81.92-SEC SEQUENCE (EIGHT RATES EACH FOR PROTONS ABOVE 10,30, AND 60 MEV AND FOR PROTONS IN THE INTERVALS 0.21-0.53, 0.53-2.2, AND 2.2-7.5 MEV AND ONE RATE FOR EACH OF THE EIGHT 45-DEG SECTORS FOR PROTONS IN THE INTERVALS 0.21-0.53 AND 0.53-2.2 MEV, FOR 2-2-20 MEV ALPHA PARTICLES, AND FOR ELECTRONS ABOVE 10 KEV), UNCERTAINTIES ASSOCIATED WITH EACH RATE, DATA QUALITY FLAGS, HOUSEKEEPING DATA, AND EPHEMERIS INFORMATION. EPHEMERIS INFORMATION INCLUDES GEOCENTRIC LATITUDE, LONGITUDE, RADIAL DISTANCE, SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC CARTESIAN COORDINATES, B, L, SUN-EARTH-SPACECRAFT ANGLE, SPIN PERIOD AND DIRECTION, SUN-SPACECRAFT-SPIN AXIS DIRECTION ANGLE, AND OTHER PARAMETERS. IN THE SECOND FILE OF THE TAPE EACH PHYSICAL RECORD CONTAINS TWENTY 174-BYTE LOGICAL RECORDS. EACH OF THESE LOGICAL RECORDS CONTAINS HOURLY AVERAGED VALUES FOR ALL THE COUNT RATES, AND ALL OF THE EPHEMERIS PARAMETERS INDICATED PREVIOUSLY. THESE TAPES ARE BEING RECEIVED AT NSSDC ON A CONTINUING BASIS.

**********IMP-I, NESS

EXPERIMENT NAME- MEASUREMENT OF MAGNETIC FIELDS NSSDC ID 71-019A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - N.F.	NESS	NASA-GSFC	GREENBELT, MD
CI - J.B.	SEEK	NASA-GSFC	GREENBELT, MD
OI - D.H.	FAIRFIELD	NASA-GSFC	GREENBELT, MD

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE ACCURATELY THE VECTOR MAGNETIC FIELD IN THE INTERPLANETARY MEDIUM AND IN THE EARTH'S MAGNETOSPHERE, MAGNETOTAIL, AND MAGNETOSHEATH. THE DETECTOR WAS A BOOM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER WITH FOUR RANGES -- MINUS TO PLUS 16, 48, 144, AND 432 GAMMAS, RESPECTIVELY. CORRESPONDING SENSITIVITIES WERE PLUS OR MINUS 0.06, 0.19, 0.56, AND 1.69 GAMMAS, RESPECTIVELY. AUTOMATIC RANGE SELECTION CAPABILITY WAS INCLUDED. A FLIPPING MECHANISM PERMITTED INFLIGHT CALIBRATION OF THE THREE SENSOR ZERO LEVELS. THE VECTOR SAMPLING RATE WAS 12.5 SAMPLES PER SECOND.

DATA SET NAME- 15 SEC AVERAGED MAGNETIC FIELD VECTORS ON MICROFILM NSSDC ID 71-019A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/13/71 TO 03/30/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 16-MM MICROFILM WHICH WAS SUBMITTED BY THE EXPERIMENTER AND WHICH CONTAINS 6 HRS OF 15.36-SEC AVERAGED VECTOR MAGNETIC-FIELD DATA PLOTS PER FRAME (3 HRS ACROSS THE FRAME, TWICE). THE DATA CONSIST OF FIELD MAGNITUDES (DETERMINED AS AVERAGES OVER INDIVIDUAL MAGNITUDES) AND FIELD LATITUDE AND LONGITUDE ANGLES IN SOLAR ECLIPTIC COORDINATES. DOTS ARE USED FOR FIELD MAGNITUDES BETWEEN 0 AND 25 GAMMAS, A'S AND B'S FOR MAGNITUDES BETWEEN 25 AND 50, AND 50 AND 75 GAMMAS, RESPECTIVELY. LISTED EACH HOUR ARE SPACECRAFT POSITION IN SOLAR ECLIPTIC COORDINATES (CARTESIAN COMPONENTS, RADIAL DISTANCE, LATITUDE AND LONGITUDE ANGLES, DISTANCE FROM X AXIS) AND THE GEOMAGNETIC LATITUDE OF THE SUN.

**********IMP-I, SIMPSON

EXPERIMENT NAME- NUCLEAR COMPOSITION OF COSMIC AND SOLAR PARTICLE RADIATIONS NSSDC ID 71-019A-09

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.A.	SIMPSON	U OF CHICAGO	CHICAGO, IL
OI - M.	GARCIA-MUNOZ	U OF CHICAGO	CHICAGO, IL
OI - S.	VERMA	U OF CHICAGO	CHICAGO, IL
OI - J.	HSIEH	U OF CHICAGO	CHICAGO, IL
OI - G.M.	MASON	U OF CHICAGO	CHICAGO, IL

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT WAS DESIGNED TO MEASURE THE ENERGY SPECTRA OF NUCLEI OVER A WIDE DYNAMIC RANGE OF FLUXES (AT LEAST 100,000). EMPHASIS WAS PLACED ON HIGH CHARGE RESOLUTION EXTENDING FROM Z = 1 TO Z = 30, AND HIGH ISOTOPIC RESOLUTION FOR P, HE, AND LI. THE EXPERIMENT WAS ALSO DESIGNED TO MEASURE ELECTRONS OF ENERGIES GREATER THAN 2 MEV. THE INSTRUMENTATION INCLUDED TWO PARTICLE TELESCOPES (THE COMPOSITION TELESCOPE WAS COMPOSED OF FOUR SOLID-STATE DETECTORS AND A CERENKOV COUNTER, AND THE LOW-ENERGY TELESCOPE WAS COMPOSED OF FIVE SOLID-STATE AND TWO SCINTILLATION DETECTORS). BOTH TELESCOPES WERE TO BE CALIBRATED PERIODICALLY IN FLIGHT BY PROGRAMMED PULSE GENERATORS. THE OUTPUTS OF SENSORS D1, D2, AND D5 OF THE LOW-ENERGY TELESCOPE WERE PULSE HEIGHT ANALYZED USING TWO 256-CHANNEL ANALYZERS. SENSORS D1 AND D5 SHARED ONE ANALYZER, I.E., WHEN AN EVENT HAD SUFFICIENT ENERGY TO TRIGGER D5, THE ANALYZER WAS AUTOMATICALLY SWITCHED FROM D1 TO D5. DATA ON NUCLEI UP TO ABOUT Z = 30 WERE OBTAINABLE FROM ABOUT 0.5 TO ABOUT 800 MEV/NUCLEON. THE ELECTRON CURRENT DETECTOR (ECD) AND THE FISSION CELL CARRIED OUT MEASUREMENTS IN THE EARTH'S RADIATION BELTS. THE ECD DETECTED EXTREMELY HIGH INTENSITIES (GREATER THAN 1,000,000 PARTICLES/CM SQ-SEC) OF ELECTRONS OF ENERGIES GREATER THAN 2 MEV BY MEASURING THE CURRENT GENERATED IN A SOLID-STATE DETECTOR BY THE IONIZATION LOSS OF LARGE NUMBERS OF ELECTRONS. THE FISSION CELL WAS DESIGNED TO DETECT PROTON FLUXES (ENERGIES GREATER THAN 50 MEV) BY SANDWICHING A THIN FOIL OF TH232 BETWEEN TWO SOLID-STATE DETECTORS WHICH RESPONDED ONLY TO LARGE PULSES LEFT BY SLOW MOVING FRAGMENTS FROM PROTON-INDUCED FISSION OF THE THORIUM. THE COMPOSITION TELESCOPE FAILED WITHIN A DAY AFTER LAUNCH DURING THE PRE-SPINUP PERIOD OF THE SPACECRAFT, APPARENTLY DUE TO CONTINUOUS DIRECT EXPOSURE TO THE SUN. THE D6 DETECTOR OF THE LOW-ENERGY TELESCOPE WAS NOISY IN AUGUST, 1971.

DATA SET NAME- PROTON AND HIGHER Z COUNT RATES ON MAGNETIC TAPE — NSSDC ID 71-019A-09A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/13/71 TO 01/06/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 18 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUBMITTED BY THE EXPERIMENTER, WAS GENERATED ON 7-TRACK, BINARY, ODD-PARITY MAGNETIC TAPES WRITTEN AT 800 BPI USING AN XDS 930 COMPUTER. IT CONSISTS OF TIME-ORDERED, REDUCED PARTICLE COUNT RATES AND PULSE HEIGHT ANALYSIS FROM THE LOW-ENERGY TELESCOPE, PLUS THE ANTICOINCIDENCE RATE FROM THE COMPOSITION TELESCOPE AND FISSION CELL COUNT RATE. EACH TAPE CONTAINS FOUR SEPARATE FILES CORRESPONDING, RESPECTIVELY, TO FOUR ORBITS OF DATA. EACH FILE IS FOLLOWED BY AN END-OF-FILE MARK, AND A DOUBLE END-OF-FILE MARK FOLLOWS THE LAST ORBIT ON A TAPE. EACH FILE CONSISTS OF A VARIABLE NUMBER OF 2400-CHARACTER PHYSICAL RECORDS, AND EACH PHYSICAL RECORD CONTAINS THREE 800-CHARACTER LOGICAL RECORDS, EACH OF WHICH CONTAINS ONE ALBUM OF DATA. ONE ALBUM CORRESPONDS TO 81.92 SEC AT THE 1600-BPS RATE. THE THREE ALBUMS IN A PHYSICAL RECORD ARE NOT NECESSARILY ADJACENT IN TIME, AND INDIVIDUAL ALBUMS MAY BE EMPTY. EACH NONEMPTY ALBUM CONTAINS 16 SETS OF DATA SAMPLINGS (5.12 SEC AVERAGE AT 1600 BPS) EACH 48 CHARACTERS IN LENGTH, INCLUDING THE LOW-ENERGY TELESCOPE PARTICLE COINCIDENCE COUNT RATES AND OUTPUT FROM THE TWO 256-CHANNEL PULSE HEIGHT ANALYZERS. THE FISSION CELL COUNT RATE, THE COMPOSITION TELESCOPE D6 ANTICOINCIDENCE COUNT RATE, OPTICAL ASPECT DATA, AND VARIOUS DATA QUALITY FLAGS. AT THE BEGINNING OF EACH ALBUM IS GIVEN THE TIME (UT TENTHS OF SEC OF DAY), DAY, YEAR, SELECTED INSTRUMENT

TEMPERATURES, ORBIT NUMBER, AND CALIBRATION INFORMATION.

DATA SET NAME- 5-MIN AVERAGED PROTON AND HIGHER Z COUNT RATES ON MAGNETIC TAPE — NSSDC ID 71-019A-09B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/13/71 TO 04/01/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUBMITTED BY THE EXPERIMENTER AND CONSISTS OF TIME-ORDERED, REDUCED 5.45-MIN PARTICLE COUNT ACCUMULATIONS FROM THE LOW-ENERGY TELESCOPE, FISSION CELL, AND ELECTRON CURRENT DETECTOR ON 7-TRACK, BINARY (ODD PARITY), MAGNETIC TAPES WRITTEN AT 800 BPI USING AN XDS-930 COMPUTER. EACH FULL TAPE CONTAINS DATA FOR 100 ORBITS. EACH ORBIT OF DATA IS TERMINATED BY AN END-OF-FILE MARK WITH A DOUBLE END-OF-FILE MARK AFTER THE LAST ORBIT ON THE TAPE. EACH FILE CONTAINS A VARIABLE NUMBER OF 1760-CHARACTER PHYSICAL RECORDS, WITH EACH PHYSICAL RECORD CONSISTING OF 20 LOGICAL RECORDS 88 CHARACTERS IN LENGTH. IF DATA ARE LACKING FOR SOME ORBIT, THAT ORBIT IS FLAGGED BY A DOUBLE END-OF-FILE MARK. SO, MULTIPLE END-OF-FILE MARKS MAY BE ENCOUNTERED WITHIN A TAPE. EACH LOGICAL RECORD INCLUDES, IN ADDITION TO THE SEVEN TELESCOPE ACCUMULATIONS (D1 THROUGH D7), THE FISSION CELL AND ELECTRON CURRENT DETECTOR ACCUMULATIONS, THE TIME (UT), ORBIT NUMBER, YEAR, DAY, DATA QUALITY FLAGS, AND VARIOUS HOUSEKEEPING AND CALIBRATION PARAMETERS.

**********MARINER 4 **********

SPACECRAFT COMMON NAME- MARINER 4 — NSSDC ID 64-077A
ALTERNATE NAMES- 00942

LAUNCH DATE- 11/28/64 SPACECRAFT WEIGHT IN ORBIT- 262. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 12/20/67

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

SPACECRAFT BRIEF DESCRIPTION

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 7.6 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.

**********MARINER 4, SMITH

EXPERIMENT NAME- HELIUM MAGNETOMETER NSSDC ID 64-077A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - E.J. SMITH NASA-JPL PASADENA, CA

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

EXPERIMENT BRIEF DESCRIPTION
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.

DATA SET NAME- 2.8-MIN AVG MAGNETIC FIELD MEASUREMENTS NSSDC ID 64-077A-02C
PLOTTED 1 DAY PER 35-MM MICROFILM FRAME

AVAILABILITY OF DATA SET- DATA AT NSSDC

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

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
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.

DATA SET NAME- 4.2-SEC MAGNETIC FIELD MEASUREMENTS NSSDC ID 64-077A-02D
PLOTTED 1 HR PER 35-MM MICROFILM FRAME

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/29/64 TO 01/03/65 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THIS EXPERIMENTER-GENERATED MICROFILM CONTAINS CARTESIAN COMPONENTS OF MAGNETIC FIELD AND FIELD MAGNITUDE PLOTTED AS A FUNCTION OF TIME. AVERAGES OVER 4.2 SEC ARE PLOTTED TO A SCALE OF 1 HR PER 35 MM FRAME. THE DATA ARE PRESENTED IN SOLAR ECLIPTIC COORDINATES. TIME COVERAGE IS NEARLY CONTINUOUS FOR THE INTERVAL INCLUDED.

DATA SET NAME- 16.8-SEC MAGNETIC FIELD MEASUREMENTS NSSDC ID 64-077A-02E
PLOTTED 3 HR PER 35-MM MICROFILM FRAME

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 01/03/65 TO 10/01/65 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THIS EXPERIMENTER-GENERATED MICROFILM CONTAINS CARTESIAN COMPONENTS OF MAGNETIC FIELD AND FIELD MAGNITUDE PLOTTED AS A FUNCTION OF TIME. AVERAGES OF 16.8 SEC ARE PLOTTED TO A SCALE OF 3 HR PER 35MM FRAME. THE DATA ARE PRESENTED IN SOLAR ECLIPTIC COORDINATES. TIME COVERAGE IS NEARLY CONTINUOUS FOR THE INTERVAL INCLUDED.

**********MARINER 5 **********

SPACECRAFT COMMON NAME- MARINER 5 NSSDC ID 67-060A
ALTERNATE NAMES- VENUS, MARINER VENUS 67, 02845

LAUNCH DATE- 06/14/67 SPACECRAFT WEIGHT IN ORBIT- 245. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 11/21/67

EPOCH DATE- 06/14/67 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 292. DAYS
APOAPSIS- 1.0 AU RAD PERIAPSIS- .72 AU RAD INCLINATION- 0. DEG

SPACECRAFT BRIEF DESCRIPTION
THE MARINER 5 SPACECRAFT WAS THE FIFTH IN A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN THE FLYBY MODE. MARINER 5 WAS A REFURBISHED BACKUP SPACECRAFT FOR THE MARINER 4 MISSION AND WAS CONVERTED FROM A MARS MISSION TO A VENUS MISSION. THE SPACECRAFT WAS FULLY ATTITUDE STABILIZED, USING THE SUN AND THE STAR CANOPUS AS REFERENCES. A CENTRAL COMPUTER AND SEQUENCER SUBSYSTEM SUPPLIED TIMING SEQUENCES AND COMPUTING SERVICES FOR OTHER SPACECRAFT SUBSYSTEMS. THE SPACECRAFT PASSED 4000 KM FROM VENUS ON OCTOBER 19, 1967. THE SPACECRAFT INSTRUMENTS MEASURED BOTH INTERPLANETARY AND VENUSIAN MAGNETIC FIELDS, CHARGED PARTICLES, AND PLASMAS, AS WELL AS THE RADIO REFRACTIVITY AND UV EMISSIONS OF THE VENUSIAN ATMOSPHERE. THE MISSION WAS TERMED A SUCCESS.

**********MARINER 5, SMITH

EXPERIMENT NAME- TRIAXIAL LOW FIELD HELIUM MAGNETOMETER NSSDC ID 67-060A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - E.J. SMITH NASA-JPL PASADENA, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 11/21/67

EXPERIMENT BRIEF DESCRIPTION

FOR THIS EXPERIMENT A LOW-FIELD HELIUM MAGNETOMETER WAS USED TO OBTAIN TRIAXIAL MEASUREMENTS OF INTERPLANETARY AND VENUSIAN MAGNETIC FIELDS. ITS OPERATION DEPENDED ON THE VARIATION IN ABSORPTIVITY OF EXCITED HELIUM TO CIRCULARLY POLARIZED INFRARED LIGHT WITH APPLIED FIELD. SWEPT HELMHOLTZ COILS NULLED THE AMBIENT FIELD BY USE OF FEEDBACK CIRCUITS. MOUNTED ON A 1.5-M BOOM, THE INSTRUMENT'S DYNAMIC RANGE WAS PLUS OR MINUS 204 GAMMAS PER AXIS, WITH A MEASUREMENT PRECISION DETERMINED BY TELEMETRY CONSTRAINTS OF PLUS OR MINUS 0.2 GAMMA. OFFSET FIELDS WERE CORRECTABLE TO WITHIN 0.25 GAMMA PER COMPONENT. THE EXPERIMENT OPERATED IN A HIGH (LOW) BIT-RATE MODE OF 3 VECTOR SAMPLES SPACED 1/7, 2/7, AND 4/7 OF THE SEQUENCE EVERY 12.6 (50.4) SEC. THUS THE NYQUIST FREQUENCIES WERE ABOUT 0.12 AND 0.03 HZ RESPECTIVELY. HIGH-RATE DATA WERE OBTAINED FROM JUNE 14 TO JULY 24, 1967, AND FOR 4 HOURS ON OCTOBER 25, 1967. LOW BIT-RATE DATA WERE OBTAINED FOR THE REMAINDER OF THE EXPERIMENT'S USEFUL LIFETIME. QUALITY OF DATA WAS HIGH EXCEPT DURING SEPTEMBER 23 TO OCTOBER 1, 1967, WHEN TELEMETERED DATA WERE OF POOR QUALITY. DURING THAT PERIOD DATA VALUES WERE UNCERTAIN BY AN INTEGRAL MULTIPLE OF 128.

DATA SET NAME- TRIAXIAL MAGNETIC FIELD MEASUREMENTS FOR THE MARINER ENCOUNTER WITH VENUS NSSDC ID 67-060A-05D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 10/19/67 TO 10/19/67 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS TAPE GENERATED FROM CARDS PROVIDED BY THE EXPERIMENTER CONTAINS APPROXIMATELY 46.8-SEC AVERAGES OF THE MAGNETIC FIELD MAGNITUDE AND VECTOR COMPONENTS IN SPACECRAFT COORDINATES. SINCE MARINER 5 WAS THREE-AXIS STABILIZED, THESE COMPONENTS REPRESENT THE FIELD COMPONENTS ALONG THE SPACECRAFT SUN LINE, IN THE DIRECTION OF MOTION ABOUT THE SUN, AND NORMAL TO THE ECLIPTIC PLANE. ALSO CONTAINED ON EACH CARD ARE THE STANDARD DEVIATIONS FOR EACH OF THE AVERAGES. DATA IN THIS DATA SET COMPLEMENT THE DATA ON MAGNETIC TAPE (05A) AND CONTAINS ONLY THE DATA RELEVANT TO THE VENUS PLANETARY ENCOUNTER.

**********OGO 1 **********

SPACECRAFT COMMON NAME- OGO 1 NSSDC ID 64-054A
ALTERNATE NAMES- EOGO 1, OGO-A, 00879, S 49

LAUNCH DATE- 09/05/64 SPACECRAFT WEIGHT IN ORBIT- 487. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 11/25/69

EPOCH DATE- 09/07/64 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 3839. MIN
APOAPSIS- 149385. KM ALT PERIAPSIS- 281.000 KM ALT INCLINATION- 31.2 DEG

SPACECRAFT BRIEF DESCRIPTION

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), AND TWO

ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). 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.

**********OGO 1, WINCKLER

EXPERIMENT NAME- ELECTRON SPECTROMETER NSSDC ID 64-054A-21

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.R.	WINCKLER	U OF MINNESOTA	MINNEAPOLIS, MN
OI - K.A.	PFITZER	MCDONNELL-DOUGLAS	HUNTINGTON BEACH, CA
OI - R.L.	ARNOLDY	U OF NEW HAMPSHIRE	DURHAM, NH

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 11/25/69

EXPERIMENT BRIEF DESCRIPTION

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 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 IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 7-TRACK, 556-BPI, IBM 7094 BCD TAPE OF EVEN PARITY, GENERATED AT NSSDC AND CONTAINING TWO FILES OF REDUCED DATA. THE FIRST FILE OF THIS SET CONTAINS OGO 1 INNER ZONE ELECTRON DATA FOR THE RANGE L = 1.3 TO L = 2.4. THE SECOND FILE CONTAINS OGO 1 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. ALL DATA ORIGINATED FROM DATA SET 64-054A-21F. FOR STORAGE CONVENIENCE, THIS AND ANOTHER DATA SET (66-049A-22K) ARE STORED ON THE SAME TAPE. THIS DATA SET (-21I) OCCUPIES FILES 1 AND 2 ON THAT TAPE.

**********OGO 3 **********

SPACECRAFT COMMON NAME- OGO 3 — NSSDC ID 66-049A
ALTERNATE NAMES- OGO-B, EOGO 3, 02195, S 49A

LAUNCH DATE- 06/07/66 SPACECRAFT WEIGHT IN ORBIT- 515. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 12/01/69

EPOCH DATE- 06/19/66 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 2915. MIN
APOAPSIS- 128511. KM ALT PERIAPSIS- 319.000 KM ALT INCLINATION- 31.4 DEG

SPACECRAFT BRIEF DESCRIPTION

THE PURPOSE OF THE OGO 3 SPACECRAFT, THE THIRD 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. OGO 3 CONSISTED OF A MAIN BODY THAT WAS PARALLELEPIPED IN FORM, TWO SOLAR PANELS, EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). ONE FACE OF THE MAIN BODY WAS DESIGNED TO BE EARTH POINTING (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 FAILURE IN THE ATTITUDE CONTROL SUBSYSTEM ON JULY 23, 1966, THE SPACECRAFT WAS PUT INTO A PERMANENT SPIN MODE ABOUT THE Z AXIS. BOTH THE ORIENTATION OF THE SPIN AXIS AND THE SPIN PERIOD WERE VARIABLE. THE LATTER USUALLY IN THE RANGE 90

SEC TO 125 SEC. AT LAUNCH. THE LOCAL TIME OF APOGEE WAS 2300 HR. OGO 3 CARRIED 21 EXPERIMENTS. THIRTEEN OF THESE WERE PARTICLE STUDIES, AND TWO WERE MAGNETIC FIELD STUDIES. IN ADDITION, THERE WAS ONE EACH OF THE FOLLOWING TYPES OF EXPERIMENTS — INTERPLANETARY DUST, VLF, LYMAN-ALPHA, GEGENSCHEIN, ATMOSPHERIC COMPOSITION, AND RADIO ASTRONOMY. REAL-TIME DATA WERE TRANSMITTED AT 1, 8, OR 64 KBS DEPENDING ON THE DISTANCE FROM THE SPACECRAFT TO 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.

**********OGO 3, HEPPNER

EXPERIMENT NAME- MAGNETIC SURVEY USING TWO MAGNETOMETERS NSSDC ID 66-049A-11

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.P.	HEPPNER	NASA-GSFC	GREENBELT, MD
OI - B.G.	LEDLEY	NASA-GSFC	GREENBELT, MD
OI - R.M.	CAMPBELL	NASA-GSFC	GREENBELT, MD
OI - T.L.	SKILLMAN	NASA-GSFC	GREENBELT, MD
OI - M.	SUGIURA	NASA-GSFC	GREENBELT, MD

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 12/01/69

EXPERIMENT BRIEF DESCRIPTION

THE PRIMARY OBJECTIVE OF THIS EXPERIMENT WAS TO STUDY THE GEOMAGNETIC FIELD AND ITS INTERACTIONS WITH THE ENVIRONMENT. THE DETECTOR SYSTEM CONSISTED OF A BOOM-MOUNTED, TRIAXIAL, DUAL RANGE, FLUXGATE MAGNETOMETER AND TWO BOOM-MOUNTED, DUAL-CELL, OPTICALLY PUMPED, SELF-OSCILLATING RUBIDIUM VAPOR MAGNETOMETERS. THE TRIAXIAL FLUXGATE MAGNETOMETER PROVIDED SIMULTANEOUS MEASUREMENTS OF THE THREE MAGNETIC FIELD VECTOR COMPONENTS IN TWO DIFFERENT RANGES, PLUS OR MINUS 30 GAMMAS AND PLUS OR MINUS 300 GAMMAS. THE SAMPLING RATES, WHICH WERE DEPENDENT ON TELEMETRY BIT RATE, FOR THE 30-GAMMA RANGE WERE 1.7, 14, AND 110 SAMPLES PER SEC PER AXIS. THE SAMPLING RATES FOR THE 300-GAMMA RANGE WERE 0.85, 7, AND 55 SAMPLES PER SEC PER AXIS. THE ACCURACY FOR THE FLUXGATE WAS PLUS OR MINUS 2 GAMMAS IN FIELD INTENSITIES UP TO 30 GAMMAS AND REACHED A MAXIMUM OF 10 GAMMAS IN FIELD INTENSITIES OF 300 GAMMAS (CHECKED BY MEANS OF INFLIGHT COMPARISON WITH THE RUBIDIUM MAGNETOMETER). THE FLUXGATE AND RUBIDIUM SENSORS RETURNED NOMINAL DATA UNTIL ABOUT JULY 23, 1966 WHEN THE SPACECRAFT ATTITUDE CONTROL SYSTEM FAILED, CAUSING SPACECRAFT SPIN-UP. FLUXGATE DATA TAKEN AFTER THIS DATE ARE OF POOR-TO-USELESS QUALITY DUE TO THE DIFFICULTY IN DESPINNING THESE DATA. THE VECTOR DATA FROM THE RUBIDIUM INSTRUMENT SUFFER FROM THIS SAME PROBLEM. HOWEVER, THE FIELD MAGNITUDES OBTAINED BY THE RUBIDIUM MAGNETOMETERS REMAIN USEFUL, WITH ABOUT 50 PERCENT DATA COVERAGE FROM JULY 1966 TO AUGUST 1968. THE RUBIDIUM VAPOR MAGNETOMETERS PROVIDED SCALAR MEASUREMENTS OF THE MAGNETIC FIELD MAGNITUDE. HOWEVER, A TRIAXIAL COIL SYSTEM WAS BUILT INTO THE SPHERE SURROUNDING THE RUBIDIUM MAGNETOMETERS TO ALLOW VECTOR MEASUREMENTS. ON COMMAND EVERY 300 SEC, EACH COIL APPLIED A PLUS 10-GAMMA FIELD AND THEN A MINUS 10-GAMMA FIELD TO THE RUBIDIUM MAGNETOMETERS. RESULTANT CHANGES IN THE SCALAR FIELD BEING MEASURED MADE IT POSSIBLE TO COMPUTE THE FIELD DIRECTION. THIS VALUE WAS USED TO MONITOR THE OUTPUT OF THE FLUXGATE MAGNETOMETER AS A CHECK ON ZERO DRIFTS. THE RUBIDIUM VAPOR MAGNETOMETERS HAD AN ACCURACY OF PLUS OR MINUS 0.1 GAMMA. FOR RELATIVE CHANGES IN FIELD MAGNITUDE ITS

ABSOLUTE ACCURACY FOR HIGH FIELDS, INCLUDING ERRORS DUE TO SPACECRAFT OFFSETS, WAS WITHIN 2 GAMMAS. THE INSTRUMENT WAS NOT RELIABLE FOR SMALL FIELDS (ABOUT 10 GAMMAS). THE RUBIDIUM VAPOR MAGNETOMETER SYSTEM HAD TWO OUTPUTS. THE FIRST OUTPUT PHASE MODULATED THE 40-KHZ SUBCARRIER ON THE OGO 3 SPECIAL PURPOSE TRANSMITTER. THE RANGE OF THIS OUTPUT WAS FROM 5 TO 85.7 GAMMAS. THE SECOND OUTPUT DIRECTLY MODULATED THE OGO SPECIAL PURPOSE TRANSMITTER. THE RANGE OF THIS OUTPUT WAS FROM 42.8 TO 14,000 GAMMAS. THE SAMPLING RATE OF THE SPECIAL PURPOSE TELEMETRY DATA WAS ARBITRARY. USUALLY A RATE OF 6.94 SAMPLES PER SEC WAS USED IN GROUND DATA PROCESSING. THE RUBIDIUM MAGNETOMETERS OPERATED WELL THROUGHOUT THE MISSION.

DATA SET NAME- MICROFILM LISTINGS OF 30 SEC AVG MAGNETIC FIELD MEASUREMENTS IN SEVERAL COORDINATES NSSDC ID 66-049A-11B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 06/09/66 TO 07/21/66 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED MICROFILM CONTAIN LISTINGS OF 30-SEC AVERAGED MAGNETIC FIELD MAGNITUDE AND CARTESIAN COMPONENTS IN SPACECRAFT AND IN TOPOGRAPHIC COORDINATES, A MODEL REFERENCE FIELD, THE DIFFERENCE FIELD (MEASURED MINUS MODEL), AND FIELD MAGNITUDE AND COMPONENTS IN SOLAR GEOMAGNETIC, SOLAR MAGNETOSPHERIC, AND SOLAR ECLIPTIC COORDINATE SYSTEMS. FIELD DIRECTION ANGLES ARE ALSO GIVEN FOR ECLIPTIC COORDINATES. THE DATA IN THE LISTINGS HAVE NOT BEEN CORRECTED FOR SPACECRAFT OFFSET, AND THE OFFSET HAS BEEN DETERMINED TO BE ABOUT 2 GAMMAS BY GROUND MEASUREMENT, AND LATER CONFIRMED WHEN THE SPACECRAFT BEGAN ITS SPIN-STABILIZED MODE OF OPERATION. THESE DATA ARE FOR THE INTERVAL JUNE 9 TO JULY 21, 1966, WHEN THE SPACECRAFT WAS IN THREE-AXIS STABILIZED MODE OF OPERATION. BAD DATA HAVE BEEN REMOVED FROM THIS DATA SET.

**********OGO 5 **********

SPACECRAFT COMMON NAME- OGO 5 NSSDC ID 68-014A
ALTERNATE NAMES- OGO-E, EGO 5, EOGO 5, 03138, S 59

LAUNCH DATE- 03/04/68 SPACECRAFT WEIGHT IN ORBIT- 611. KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 07/13/72

EPOCH DATE- 03/04/68 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 3796. MIN
APOAPSIS- 148228. KM ALT PERIAPSIS- 232.000 KM ALT INCLINATION- 31.1 DEG

SPACECRAFT BRIEF DESCRIPTION

THE PURPOSE OF THE OGO 5 SPACECRAFT, THE FIFTH 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 SPACECRAFT. OGO 5 CONSISTED OF A MAIN BODY THAT WAS PARALLELEPIPED IN FORM, TWO SOLAR PANELS, EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). ONE FACE OF THE MAIN BODY WAS EARTH-POINTING (Z AXIS), AND THE LINE CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS 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 THAT WAS PARALLEL TO THE Z AXIS AND THAT WAS ATTACHED TO THE MAIN BODY. AT LAUNCH, THE INITIAL LOCAL TIME OF APOGEE WAS 0944 HR. OGO 5 CARRIED 25 EXPERIMENTS. SEVENTEEN OF THESE WERE PARTICLE STUDIES, AND TWO WERE MAGNETIC FIELD STUDIES. IN ADDITION, THERE WAS ONE EACH OF THE FOLLOWING TYPES OF EXPERIMENTS -- RADIO ASTRONOMY, UV SPECTRUM, LYMAN-ALPHA, SOLAR X-RAY, PLASMA WAVES, AND ELECTRIC FIELD. REAL-TIME DATA WERE TRANSMITTED AT 1, 8, AND 64 KBS DEPENDING ON THE DISTANCE FROM THE SPACECRAFT TO THE EARTH. PLAYBACK DATA WERE TAPE RECORDED AT 1 KBS AND TRANSMITTED AT 64 KBS. TWO WIDE-BAND 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 WIDE-BAND DATA IN REAL TIME ONLY. TRACKING WAS ACCOMPLISHED BY USING RADIO BEACONS AND A RANGE AND RANGE-RATE S-BAND TRANSPONDER. THE SPACECRAFT ATTITUDE CONTROL FAILED ON AUGUST 6, 1971, AFTER 41 MONTHS OF NORMAL OPERATION. THE SPACECRAFT WAS PUT IN A LOW-POWER MODE ON SEPTEMBER 27, 1971. THE PLAYBACK MODE BECAME INOPERABLE ON AUGUST 26, 1971, AND THE SPACECRAFT WAS PUT IN AN OPERATIONAL OFF MODE ON OCTOBER 8, 1971. THREE EXPERIMENTS WERE REACTIVATED FOR THE PERIOD FROM JUNE 1 TO JULY 13, 1972 (68-014A-09, 68-014A-22, AND 68-014A-27).

**********OGO 5, ANDERSON

EXPERIMENT NAME- ENERGETIC RADIATIONS FROM SOLAR FLARES NSSDC ID 68-014A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - K.A.	ANDERSON	U OF CALIFORNIA, BERK	BEREKLEY, CA
OI - S.R.	KANE	U OF CALIFORNIA, BERK	BERKELEY, CA
OI - H.	MARK	NASA-ARC	MOFFETT FIELD, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 10/08/71

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO STUDY THE TIME OF THE SPECTRUM OF ENERGETIC X RAYS, PROTONS, ALPHA PARTICLES, AND ELECTRONS EMITTED BY THE SUN IN ASSOCIATION WITH SOLAR FLARES. THE EXPERIMENT USED THREE SEPARATE DETECTING SYSTEMS. FIRST, AN OMNIDIRECTIONAL SODIUM IODIDE (THALLIUM) SCINTILLATION COUNTER MEASURED SOLAR X RAYS IN EIGHT ENERGY CHANNELS FROM 9.6 TO 19.2, 19.2 TO 32, 32 TO 48, 48 TO 64, 64 TO 80, 80 TO 104, 104 TO 128, AND GREATER THAN 128 KEV, WHICH DATA WERE SAMPLED FOR 1.152 SEC ONCE EVERY 2.304 SEC. SECOND, A PARTICLE TELESCOPE COMPOSED OF SEVEN SOLID-STATE DETECTORS -- D1, D2, D3, D4, D5, D6, D7, AND AN ANTICOINCIDENCE SHIELD -- MEASURED PROTONS IN THE SIX ENERGY CHANNELS FROM 7 TO 20, 20 TO 45, 45 TO 80, 80 TO 130, 130 TO 200, AND GREATER THAN 200 MEV. THESE CHANNELS HAD A NONSEPARABLE ALPHA PARTICLE COMPONENT. THE LOWEST ENERGY CHANNEL WAS SAMPLED ONCE EVERY 147 SEC, WHILE ALL OTHER CHANNELS WERE SAMPLED ONCE EVERY 9.216 SEC. THE THIRD SYSTEM CONSISTED OF A DIRECTIONAL GEIGER-MUELLER TUBE MAGNETIC SPECTROMETER THAT MEASURED ELECTRONS IN TWO CHANNELS, 22 TO 27 AND 50 TO 90 KEV. THESE DATA WERE SAMPLED ONCE EVERY 147 SEC. IN ORDER TO REDUCE THE POSSIBLE CONTRIBUTION OF MAGNETOSPHERIC RADIATION TO THE BACKGROUND COUNTING RATES OF THE DETECTORS, THE EXPERIMENT ONLY OPERATED AT SPACECRAFT ALTITUDES ABOVE 80,000 KM, I.E., ABOUT 48 HR OR 67 PERCENT OF EACH ORBIT. THE X RAY DETECTOR OPERATED SATISFACTORILY THROUGHOUT THE MISSION. THE D7 DETECTOR ELEMENT IN THE PROTON ALPHA TELESCOPE WAS FOUND TO BE VERY NOISY JUST PRIOR TO LAUNCH. IT WAS THEREFORE DISABLED ELECTRONICALLY, HENCE NO DATA WERE AVAILABLE FOR PROTONS OR ALPHA PARTICLES ABOVE 200 MEV NUCLEON. THE REST OF THIS TELESCOPE PERFORMED NORMALLY THROUGHOUT THE MISSION. THE ELECTRON SPECTROMETER PERFORMED NORMALLY FROM LAUNCH UNTIL SEPTEMBER 23,

1969, WHEN THE 22 TO 27 KEV CHANNEL BECAME ERRATIC AND LATER STOPPED COUNTING COMPLETELY. THE OTHER ELECTRON CHANNEL PERFORMED NORMALLY THROUGHOUT THE MISSION.

DATA SET NAME- PROTON AND ALPHA PARTICLE COUNT RATES ON MAGNETIC TAPE — NSSDC ID 68-014A-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/08/68 TO 11/17/69 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUBMITTED BY THE EXPERIMENTER ON 7-TRACK MAGNETIC TAPES WRITTEN AT 556 BPI IN A BCD CARD IMAGE FORMAT. EACH CARD IMAGE INCLUDES THE DAY OF YEAR, TIME (SEC. UT), AND AVERAGED COUNT RATES (147-SEC AVERAGE FOR THE PROTON AND ALPHA PARTICLE CHANNEL 7-20 MEV/NUC AND 9.216-SEC AVERAGES FOR THE OTHER FIVE PROTON AND ALPHA PARTICLE CHANNELS 20 TO 45, 45 TO 80, 80 TO 130, 130 TO 200 AND E. GT. 200 MEV/NUC). DATA COVERAGE WAS LIMITED TO SPACECRAFT ALTITUDES GREATER THAN 80,000 KM. I.E., ABOUT 67 PERCENT OF EACH ORBIT.

**********OGO 5, CROOK

EXPERIMENT NAME- PLASMA WAVE DETECTOR — NSSDC ID 68-014A-24

ORIGINAL EXPERIMENT INSTITUTION- TRW SYSTEMS GROUP

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - G.M.	CROOK	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - F.L.	SCARF	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - R.W.	FREDERICKS	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - I.M.	GREEN	TRW SYSTEMS GROUP	REDONDO BEACH, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 10/08/71

EXPERIMENT BRIEF DESCRIPTION

THE PLASMA WAVE DETECTOR INCLUDED FIVE ELECTRIC DIPOLES AND THREE ORTHOGONAL SEARCH-COIL MAGNETOMETERS MOUNTED ON A 6.7-M BOOM. THE THREE 0.5-M ORTHOGONAL ELECTRIC DIPOLES WERE NORMAL TO THE PLANES OF THE MAGNETOMETERS. EACH OF THE ORTHOGONAL COMPONENTS OF THE DIPOLE AND MAGNETOMETER WAS SAMPLED SIMULTANEOUSLY FOR 9.2 SEC THROUGH 15-PERCENT BANDPASS FILTERS IN THE FOLLOWING SEQUENCE -- 0.56, 1.3, 3.0, 7.35, 14.5, 30.0, AND 70.0 KHZ FOR EACH DIPOLE CONCURRENT WITH 0.56, 0.56, 0.56, 0.56, 70.0, 70.0, AND 70.0 KHZ FOR EACH MAGNETOMETER. REPEAT TIME FOR THIS SEQUENCE WAS 3.26 MIN. ONBOARD AUTOCORRELATION WAS PERFORMED BETWEEN EACH ELECTRIC FIELD AND MAGNETIC FIELD MEASUREMENT. THE REMAINING TWO BOOM-MOUNTED DIPOLES WERE COLINEAR, DIFFERING ONLY IN LENGTH. EACH DIPOLE WAS MONITORED THROUGH A 200-HZ 10-PERCENT FILTER FOR 2 SEC ONCE EVERY 9.2 SEC. IN ADDITION TO THE DIGITAL DATA, 1- TO 22-KHZ ELECTRIC FIELD DATA TAKEN FROM ONE MAIN DIPOLE AND YIELDING POWER SPECTRUM INFORMATION FOR THAT AXIS WERE CONTINUOUSLY MONITORED BY A SPECIAL PURPOSE ANALOG TELEMETRY SYSTEM. THRESHOLD SENSITIVITY OF THESE MEASUREMENTS WAS TELEMETERED WITH THE DIGITAL DATA. INTENSE EMISSIONS BELOW 1 KHZ AND ABOVE 22 KHZ MAY STILL BE DETECTABLE. THE EXPERIMENT OPERATED NORMALLY, BUT MUCH OF THE DATA RETURNED AFTER APRIL 1968 WERE OF POOR QUALITY DUE TO A TRANSMITTER FAILURE.

DATA SET NAME- 0-10 KHZ SPECTRA OF MAGNETOSPHERIC AND PLASMASPHERIC BOUNDARIES ON MICROFILM — NSSDC ID 68-014A-24E

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/14/68 TO 05/12/69 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 14 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THESE DATA ARE SIMILAR TO THE DATA CONTAINED IN 68-014A-24A BUT INCLUDE ONLY DATA FROM SELECTED MAGNETOPAUSE-TO-PLASMAPAUSE CROSSINGS (CONTAINING INTERESTING FEATURES IN THE 0-TO-10-KHZ BANDWIDTH). THEY ARE SONOGRAMS, WITH TIME AS ONE AXIS AND FREQUENCY AS THE OTHER. THE INTENSITY OF THE PATTERN INDICATES THE RELATIVE POWER IN AN EMISSION. THESE EXPERIMENTER-GENERATED DATA ARE PLOTTED ON 35-MM MICROFILM.

**********OGO 5, MEYER

EXPERIMENT NAME- COSMIC RAY ELECTRONS — NSSDC ID 68-014A-09

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - P.	MEYER	U OF CHICAGO	CHICAGO, IL
OI - C.Y.	FAN	U OF ARIZONA	TUCSON, AZ
OI - J.J.	L'HEUREUX	U OF ARIZONA	TUCSON, AZ

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED- 07/14/72

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT MEASURED THE FLUX AND ENERGY SPECTRUM OF ELECTRONS WITH ENERGIES BETWEEN 15 AND 45 MEV, AND FLUX AND ENERGY SPECTRUM OF PROTONS WITH ENERGIES BETWEEN 143 AND 169 MEV, AND BELOW 16 BEV. THE DETECTOR USED WAS A PARTICLE TELESCOPE COMPOSED OF A SCINTILLATION COUNTER, A GAS CERENKOV COUNTER, A SOLIC STATE DETECTOR, AND A CESIUM IODIDE SCINTILLATION COUNTER SURROUNDED BY TWO PLASTIC SCINTILLATORS. THE EXPERIMENT WAS TURNED ON ONLY WHEN THE SATELLITE'S MCILWAIN PARAMETER, L, WAS GREATER THAN 12. THE EXPERIMENT WAS FULLY OPERATIONAL WHEN THE SPACECRAFT WAS PUT IN AN OPERATIONAL OFF MODE ON OCTOBER 8, 1971. THE EXPERIMENT WAS REACTIVATED FROM JUNE 1 TO JULY 13, 1972.

DATA SET NAME- PARTICLE ACCUMULATIONS AND PULSE HEIGHT ANALYSIS ON MAGNETIC TAPE — NSSDC ID 68-014A-09B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/05/68 TO 07/14/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 109 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION
THIS DATA SET WAS SUBMITTED BY THE EXPERIMENTER AND CONSISTS OF PRESCALED ONE-MINUTE CHARGED PARTICLE ACCUMULATIONS AND PULSE HEIGHT

ANALYSIS. THE DATA ARE ON 7-TRACK, BINARY MAGNETIC TAPES, WRITTEN AT 800 BPI USING AN XDS 930 COMPUTER. THERE ARE, IN GENERAL, FIVE FILES OF DATA PER TAPE WITH AN END-OF-FILE MARK AT THE END OF EACH, AND A DOUBLE END-OF-FILE MARK AT THE END OF THE LAST FILE ON A TAPE. EACH FILE CONTAINS ONE ORBIT OF DATA. THERE ARE A VARIABLE NUMBER OF PHYSICAL RECORDS PER FILE, BUT EACH PHYSICAL RECORD WILL ALWAYS BE A MULTIPLE OF 15 WORDS (60 CHARACTERS) AND LESS THAN OR EQUAL TO 1200 WORDS TOTAL. A PHYSICAL RECORD CONTAINS TIME (UT), THE INDIVIDUAL TELESCOPE DETECTOR ACCUMULATIONS D0, D1, D2, D3, A1, AND A2, COINCIDENCE MODES D0123NOTA1NOTA2, D0123A2NOTA1, AND D023NOTA1, PULSE HEIGHT ANALYSIS OF D2 OUTPUT (7 CHANNELS) AND D3 OUTPUT (8 CHANNELS) FOR CERTAIN COINCIDENCE MODES, VARIOUS DATA QUALITY FLAGS, TELEMETRY BIT RATE (1, 8, OR 64 KBPS), AND SEVERAL HOUSEKEEPING PARAMETERS. ALL TELEMETRY FRAMES WITH OVERLAP OR ERRONEOUS TIME INFORMATION HAVE BEEN DELETED. THE TIME COVERAGE IS ABOUT 80 PERCENT FOR SPACECRAFT ALTITUDE ABOVE 80,000 KM.

**********OGO 5, SIMPSON

EXPERIMENT NAME- LOW-ENERGY HEAVY COSMIC-RAY PARTICLES (HIGH-Z LOW-E EXPERIMENT) NSSDC ID 8-014A-27

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - J.A. SIMPSON U OF CHICAGO CHICAGO, IL

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST EXPERIMENT DATA RECORDED- 07/13/72

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO DETECT PARTICLES IN THE ENERGY RANGE 2 TO 50 MEV/NUCLEON AND TO ACCOMPLISH THE FOLLOWING -- (1) EXAMINE THE SHAPE OF THE DIFFERENTIAL ENERGY SPECTRUM, (2) EXTEND THE MEASUREMENT OF RELATIVE ABUNDANCE OF THE ELEMENTS UP THROUGH IRON, (3) SEARCH FOR NUCLEI OF VERY HIGH CHARGE (Z EQUALS 5 TO 50), AND (4) EXTEND OBSERVATIONS OF VERY HEAVY NUCLEI FROM SOLAR FLARES TO 2 MEV/NUCLEON. THE DETECTOR (A SOLID-STATE, WINDOWLESS, LITHIUM-DRIFTED DEVICE SURROUNDED BY AN ANTICOINCIDENCE CUP) WAS USED IN CONJUNCTION WITH A 500-CHANNEL AND A 1000-CHANNEL ANALYZER. THE EXPERIMENT WAS CONSIDERED 'OPERATIONAL' AND TRANSMITTING DATA WHEN THE SPACECRAFT WAS TURNED OFF IN OCTOBER 1971. THE EXPERIMENT WAS REACTIVATED BETWEEN JUNE 1 AND JULY 13, 1972.

DATA SET NAME- COUNT RATE PLOTS ON MICROFILM NSSDC ID 68-014A-27B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/05/68 TO 07/13/72 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF COUNT RATE PLOTS, IN CHRONOLOGICAL ORDER, ON 35-MM MICROFILM. THE PLOTS ARE DIVIDED INTO THREE GROUPS BY PARTICLE TELESCOPE COINCIDENCE MODE -- (1) D1LNOTD3 (MOST ABUNDANT SPECIES ARE 0.6- TO 6.0-MEV PROTONS), (2) D1HD2NOTD3 (MOST ABUNDANT SPECIES ARE 6.0- TO 14-MEV/NUCLEON ALPHA PARTICLES), AND (3) D1HNOTD2NOTD3 (MOST ABUNDANT SPECIES ARE 2.0- TO 6.5-MEV/NUCLEON ALPHA PARTICLES). EACH PLOT COVERS ONE SOLAR ROTATION (27 DAYS). TWO AVERAGING PERIODS WERE USED IN GENERATING THE PLOTS, 1/2 AND 3 1/2 HRS. THE DISTINCTION IS OBVIOUS WHEN LOOKING AT THE

PLOTS. THE MAXIMUM TELEMETRY BIT RATE (1. 8. OR 64 KILOBITS/SEC) DURING THE AVERAGING INTERVAL IS ALSO DISPLAYED. THE RATES APPEAR TO SATURATE FOR LARGER SOLAR EVENTS. THE TIME COVERAGE FOR THE PERIOD COVERED BY THE DATA SET IS 90 PERCENT OR BETTER.

**********OGO 5, SMITH

EXPERIMENT NAME- TRIAXIAL SEARCH-COIL MAGNETOMETER NSSDC ID 68-014A-16

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

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

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 10/08/71

EXPERIMENT BRIEF DESCRIPTION

THE UCLA-JPL SEARCH COIL MAGNETOMETER SAMPLED AMBIENT FIELD FLUCTUATIONS FROM 0.01 TO 1000 HZ IN TWO MODES. THE TRIAXIAL SEARCH COILS MOUNTED AT THE END OF A 6.1-M BOOM PROVIDED TRIAXIAL WAVEFORM DATA IN THREE BANDS, FROM 0.03 TO 0.1 HZ, 0.1 TO 0.3 HZ, AND 0.3 HZ TO CUTOFF, WHICH DEPENDED ON SAMPLING RATE I-- FOR BIT RATES OF 1, 8, OR 64 KBS, THE CUTOFF WAS 0.2, 7, OR 55 HZ, RESPECTIVELY. SIGNALS FROM THE TRIAXIAL SEARCH COILS WERE ALSO SAMPLED BY SEVEN COMB FILTERS WITH CENTER FREQUENCIES OF 10, 22, 47, 100, 216, 467, AND 1000 HZ. THE TIME REQUIRED FOR A COMPLETE TRIAXIAL SPECTRUM ANALYSIS (21 DATA VALUES) WAS 8.06, 1.01, OR 0.126 SEC. ALSO DEPENDING ON THE SATELLITE BIT RATE, INTERFERENCE OCCURRED BETWEEN THE SEVEN-CHANNEL SPECTRUM ANALYZER AND THE BROADBAND CHANNELS, SERIOUSLY DEGRADING THE BROADBAND SIGNALS THROUGHOUT THE OPERATIONAL LIFE OF THE EXPERIMENT. THE EXPERIMENT OPERATED ADEQUATELY THROUGHOUT THE MISSION.

DATA SET NAME- 2.5-MIN-AVG SEARCH-COIL MAGNETOMETER NSSDC ID 68-014A-16A
NOISE AMPLITUDES,0.03 TO 1000 HZ ON FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/07/68 TO 03/07/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED COMPRESSED DATA PLOTS ON MICROFILM OF VARIOUS SIZES SUMMARIZE THE INSTRUMENT RESPONSE TO BOTH AMBIENT AND INSTRUMENTAL EFFECTS, CONTAINING 36-SEC AVERAGES. THE PLOTTED MAGNETOMETER DATA ARE READABLE TO ABOUT 1.5-MIN TIME RESOLUTION. EACH ORBIT IS REPRESENTED BY A PAIR OF PLOTS. THE FIRST CONTAINING COMPRESSED PHYSICAL DATA, AND THE SECOND THE INFORMATION THAT MAY AFFECT THE EXPERIMENT -- SUCH AS INSTRUMENT GAIN, BANDWIDTH INFORMATION, SAMPLE OUTPUT FROM THE E-FIELD EXPERIMENT (68-014A-24), SAMPLE OUTPUT FROM THE FLUXGATE MAGNETOMETER EXPERIMENT (68-014A-14), AND SAMPLES OF THE SPACECRAFT STATUS. THE PHYSICAL DATA CONSIST OF THE SEVEN MAGNITUDES (AVERAGED OVER THREE COMPONENTS) FROM THE SEVEN-CHANNEL TRIAXIAL SPECTRUM ANALYZER, THE DATA QUALITY INDICATOR, AND THE THREE SETS OF TRIAXIAL WAVEFORM DATA REPRESENTING MAGNETIC SIGNALS FROM 0.03 TO 0.1 HZ, 0.1 TO 0.3 HZ, AND 0.3 HZ TO EXPERIMENT CUTOFF. THESE PLOTS WERE USEFUL IN IDENTIFYING THE INTERPLANETARY REGION, BOW SHOCK, MAGNETOPAUSE, PLASMA AND PLASMASPHERE, ETC, WHICH THE SPACECRAFT COULD BE

SAMPLING AT ANY PARTICULAR TIME.

DATA SET NAME- SEARCH COIL MAGNETOMETER SUMMARY TAPES. NSSDC ID 68-014A-16B
36.9-SEC TIME RESOLUTION

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/07/68 TO 01/01/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 45 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-SUPPLIED DIGITAL TAPES REPRESENT SUMMARIES OF ABOUT 2000 FINE-TIME SCALE DATA TAPES, WHICH THE EXPERIMENTER CURRENTLY HOLDS. THESE TAPES ARE 9-TRACK MULTIPLE-FILE EBCDIC CODED DIGITAL MAGNETIC TAPES PRODUCED ON AN IBM 360/91 COMPUTER, RECORDED AT 800 BPI. THEY HAVE 420 CHARACTERS PER RECORD AND ABOUT 1500 RECORDS PER FILE, WHICH REPRESENTS ONE SPACECRAFT ORBIT OR ABOUT 2.7 DAYS. THESE DATA ARE TIME ORDERED EXCEPT FOR OCCASIONAL OVERLAPPING DATA AT THE END OF A FILE. AN INDEX TO THE FILES ON EACH TAPE IS PROVIDED IN DATA SET 68-014A-16C. EACH DATA RECORD CONTAINS 36.9-SEC AVERAGED VALUES FOR TRIAXIAL SPECTRUM ANALYZER OUTPUTS AT 10, 22, 47, 100, 216, 467, AND 1000 HZ (21 VALUES). TRIAXIAL BROADBAND DATA FROM 0.03 TO 0.1 HZ, 0.1 TO 0.3 HZ, AND 0.3 HZ TO INSTRUMENT NYQUIST FREQUENCY, WHICH IS DETERMINED BY BIT RATE (9 VALUES). ALIASING DOES NOT OCCUR EXCEPT DURING THE TAPE RECORDER PLAYBACK MODE. HOWEVER THIS QUESTION OF ALIASING IS ACADEMIC FOR THE OGO 5 INSTRUMENTS OPERATING IN THE WAVEFORM MODE, AS INTERFERENCE OCCURS BETWEEN THE SEVEN SPECTRUM ANALYZER CHANNELS AND THESE THREE BROADBAND MODES, SERIOUSLY DEGRADING THE BROADBAND CHANNELS. ALSO ON THE TAPES IS A DATA QUALITY INDICATOR.

DATA SET NAME- FREQUENCY TIME SPECTROGRAMS FOR THE 0-1000 HZ ANALOG SEARCH COIL MAGNETOMETER NSSDC ID 68-014A-16D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/06/68 TO 10/27/68 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 27 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED SPECTROGRAMS ARE ON 35-MM MICROFILM. THEY CONTAIN 0- TO 1000-HZ SEARCH COIL SIGNAL AMPLITUDES PLOTTED AS FUNCTIONS OF FREQUENCY (ON A LINEAR SCALE) AND OF TIME. THE STRENGTH OF THE SIGNAL IS INDICATED BY THE DENSITY OF THE IMAGE ON THE FILM. THE STRONGER SIGNALS GIVE DENSER IMAGES ON THE MICROFILM. THE FREQUENCY RESOLUTION OF THESE PLOTS IS ABOUT 5 HZ. THE TIME RESOLUTION IS APPROXIMATELY 0.5 SEC. EACH SEGMENT OF DATA IS ABOUT 10 MINUTES LONG, AND HAS A START TIME INDICATED AT THE BEGINNING OF THE RUN. TIME IS INDICATED BY TICK MARKS OR DOTS AT THE BOTTOM OF THE FILM. TIME SHOWN IN DOT REPRESENTATION LAGS ACTUAL TIME BY APPROXIMATELY SIX SECONDS. THE DATA WERE GENERATED FROM THE SPECIAL-PURPOSE ANALOG TELEMETRY LINK ABOARD OGO 5, SO THAT DATA COVERAGE AVAILABLE WAS LIMITED BY THE TRACKING ACQUISITION FROM THAT PORTION OF TELEMETERED SIGNAL.

DATA SET NAME- MICROFILM LISTINGS OF SEARCH 37 SEC AVG NSSDC ID 68-014A-16E

DATA WITH AMPLIFIER GAIN INCLUDED

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/06/68 TO 04/25/68 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE NSSDC GENERATED 16-MM MICROFILM CONTAIN DATA INCLUDED IN DATA SET 68-014A-16B. HOWEVER, ONLY A SUBSET OF 68-014A-16B HAS BEEN PROCESSED TO DATE. THEY ARE LISTINGS BY TIME AND TRIAXIAL SPECTRUM CHANNEL OF THE 36.8-SEC AVERAGES OF THE SEARCH COIL DIGITAL WAVE FORMS AND 7-CHANNEL SPECTRUM ANALYSES. THE AMPLIFIER GAIN HAS BEEN INCLUDED SO THAT THE DATA REPRESENT SIGNAL AMPLITUDES ON A COMMON SCALE. GAIN WORDS HAVE NOT BEEN INCLUDED IN THE PLOTS IN 68-014A-16A OR EXPLICITLY IN THE AMPLITUDES GIVEN IN 68-014A-16B. ALTHOUGH IT IS CONTAINED IN THE SPACECRAFT STATUS WORD IN THAT DATA. DUE TO A SEVERE INTERFERENCE PROBLEM BETWEEN THE 7 TRIAXIAL DIGITAL CHANNELS AND THE WAVEFORM CHANNELS, A CHANGE IN THE DIGITAL CHANNELS IS REFLECTED IN THE WAVEFORM CHANNELS. FOR THIS REASON, THE WAVEFORM CHANNELS HAVE BEEN FLAGGED BY MINUS SIGNS WHENEVER THERE IS SIGNIFICANT ACTIVITY IN THE DIGITAL CHANNELS. THE CRITERIA FOR SIGNIFICANT ACTIVITY WAS OBTAINED THROUGH A JOINT NSSDC-EXPERIMENTER EFFORT. DIGITAL WAVEFORM DATA FLAGGED WITH MINUS SIGNS SHOULD BE VIEWED WITH MORE CAUTION THAN UNFLAGGED WAVEFORM DATA.

**********OGO 5, SNYDER

EXPERIMENT NAME- PLASMA SPECTROMETER NSSDC ID 68-014A-17

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.W.	SNYDER	NASA-JPL	PASADENA, CA
OI - M.M.	NEUGEBAUER	NASA-JPL	PASADENA, CA
OI - J.L.	LAWRENCE, JR.	NASA-JPL	PASADENA, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 10/08/71

EXPERIMENT BRIEF DESCRIPTION

TWO PAIRS OF DETECTORS, ONE MOUNTED ON A SOLAR PANEL ALWAYS FACING THE SUN AND ONE MOUNTED ON THE SPACECRAFT BODY ALWAYS FACING RADIALLY AWAY FROM THE EARTH, WERE USED TO MEASURE THE AMBIENT PLASMA IN THE VICINITY OF THE SPACECRAFT. POSITIVE IONS AND ELECTRONS COULD BE MEASURED BY THE 120-DEG CURVED PLATE ANALYZERS, WITH A 5-DEG CONIC FIELD OF VIEW IN 128 E/Q CHANNELS LOGARITHMICALLY EQUISPACED FROM 2.54 TO 16,900 VOLTS. POSITIVE IONS WERE ALSO MEASURED BY FARADAY CUPS WITH A 20-DEG FIELD OF VIEW IN ONE E/Q CHANNEL FROM 100 VOLTS TO 11,000 VOLTS. EACH PAIR OF FARADAY CUP ELECTROSTATIC ANALYZER COMBINATIONS WAS CAPABLE OF MAKING TWO PLASMA FLUX AND ANGLE OF FLOW MEASUREMENTS, AND ONE PROTON DENSITY, ALPHA PARTICLE DENSITY, BULK SPEED, AND TEMPERATURE MEASUREMENT ABOUT EVERY 10 SEC AT 8 BPS. DURING ALMOST ALL THE TIME THE SPACECRAFT WAS IN THE SOLAR WIND, ONLY THE SOLAR-PANEL-MOUNTED SENSOR PAIR WAS ABLE TO MAKE THE USUAL SOLAR WIND PLASMA PARAMETER MEASUREMENTS. THIS SENSOR PAIR WAS CAPABLE OF BEING OPERATED IN THREE DIFFERENT MEASUREMENT MODES FOR POSITIVE IONS AND FOR ELECTRONS. HOWEVER, THE ONE USED MOST OFTEN WAS FOR POSITIVE IONS AND WAS CAPABLE OF THE TIME RESOLUTION DESCRIBED ABOVE. ELECTRONS WERE MEASURED ONLY OCCASIONALLY. THE ELECTROSTATIC ANALYZERS SUFFERED DATA DEGRADATION FROM SENSITIVITY SCALE SWITCHING WHICH CAUSED THE LOSS OF FROM 1 TO 8 ENERGY

CHANNELS AND FROM PHOTOELECTRONS LEAKING INTO THE DETECTOR THROUGH A SLIT IN THE ELECTRONICS-DETECTION ASSEMBLY. WHICH RESULTED IN DEGRADATION OF UP TO 20 CHANNELS. CENTERED ABOUT 348 VOLTS. CORRESPONDING TO SOLAR WIND VELOCITIES FROM 320 TO 400 KM/SEC. SCALE-SWITCHING TRANSIENTS AFFECTED THE ALPHA DATA MOST OFTEN. PHOTOELECTRON CONTAMINATION AFFECTED THE LOCATION OF THE PROTON PEAK FLUX MOST OFTEN. DUE TO THESE EFFECTS. ERRORS APPEARED IN THE CALCULATED PARAMETERS OF TEMPERATURE. BULK SPEED. AND DENSITY. BUT NOT ANGLE FLOW AND PLASMA FLUX. PLASMA PARAMETERS WERE CALCULATED BY DOING AN ITERATIVE CALCULATION INVOLVING CORRECTION OF THE FARADAY CUP DENSITY AND ANGLE BY THE PROTON BULK SPEED. AND CORRECTION OF THE CURVED-PLATE-DETERMINED BULK SPEED BY THE FARADAY-CUP-DETERMINED ANGLE OF FLOW. PLASMA PARAMETERS PRODUCED BY PRODUCTION PROCESSING FROM THIS INSTRUMENT WERE GENERATED BY DOING A CONVECTED ISOTROPIC BOLTZMANN FIT TO THE DATA POINTS USING HERMITE POLYNOMIALS. RESULTS AGREE FAVORABLY WITH LEAST-SQUARE-FITTED CALCULATIONS. IT SHOULD BE ADDED THAT THE SOURCES OF ERROR DISCUSSED HERE WERE OBSERVED IN SOLAR WIND MEASUREMENTS. THIS IS BECAUSE TO DATE (1/74). SOLAR WIND ION DATA HAS BEEN BULK-PRODUCTION PROCESSED. IT IS ANTICIPATED THAT THIS PROBLEM EXISTS IN OTHER DATA. BUT TREATMENT OF THE PROBLEM WOULD PROBABLY BE LESS STRAIGHTFORWARD.

DATA SET NAME- PLOTS OF HOUR AVERAGED PROTON BULK SPEED. NSSDC ID 68-014A-17A
27-DAYS PER FRAME

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/05/68 TO 04/30/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 26 PAGE(S) OF UNBOUND HARDCOPY

DATA SET BRIEF DESCRIPTION
THESE DATA ARE EXPERIMENTER-GENERATED PLOTS OF THE PROTON BULK SPEED PRESENTED AGAINST TIME. WITH 27 DAYS OF DATA AND ONE SOLAR ROTATION ON ONE FRAME.

DATA SET NAME- HOUR AVERAGED PLASMA PARAMETERS ON MAGNETIC TAPE NSSDC ID 68-014A-17B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/05/68 TO 04/30/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION
THIS 7-TRACK BCD MAGNETIC TAPE CONTAINS 80-CHARACTER CARD IMAGES. ONE CARD PER RECORD. OF EXPERIMENTER-GENERATED HOURLY AVERAGED INTERPLANETARY PLASMA PARAMETERS. THE DATA MAY BE SUPPLIED TO A REQUESTER EITHER ON ONE MAGNETIC TAPE (PREFERABLE TO NSSDC) OR ON ABOUT ONE-AND ONE-HALF BOXES OF PUNCHED CARDS. CONTAINED IN EACH RECORD IS THE TIME. NUMBER OF POINTS IN EACH AVERAGE. PROTON BULK SPEED. TEMPERATURE. DENSITY. AND DIRECTION OF PLASMA FLOW. ALSO INCLUDED ARE THE HOURLY AVERAGED RATIO OF THE ALPHA PARTICLE VELOCITY TO THE PROTON VELOCITY. THE ALPHA TEMPERATURE TO PROTON TEMPERATURE. AND THE ALPHA DENSITY TO PROTON DENSITY.

DATA SET NAME- LISTING OF HIGH TIME RESOLUTION NSSDC ID 68-014A-17C

INTERPLANETARY PLASMA PARAMETERS ON FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/08/68 TO 04/30/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED 16-MM MICROFILM CONTAIN SOME OF THE PLASMA PARAMETERS FOR EACH SET OF MEASUREMENTS ON DATA SET 68-014A-17D. THEY REPRESENT THE HIGHEST TIME RESOLUTION DATA AVAILABLE FROM THE BULK PROCESSING PROGRAM USED TO REDUCE THE INTERPLANETARY DATA FROM THIS EXPERIMENT. CONTAINED IN EACH RECORD ARE TIME, DIRECTION OF PLASMA FLOW, BULK SPEED, TEMPERATURE, ION DENSITY (FOR PROTONS, AND ALPHAS WHEN AVAILABLE), AND SOME FIT PARAMETERS WHICH INDICATE RELIABILITY OF EACH MEASUREMENT. TIME GAPS EXIST IN THESE DATA WHENEVER THE FLOW DIRECTION OF THE AMBIENT PLASMA WAS DIVERTED OUT OF THE ENTRANCE APERTURE SO AS TO PRECLUDE DATA PROCESSING, SUCH AS IN THE EARTH'S MAGNETOSHEATH, AND WHEN ERRORS INTRODUCED BY THE ANOMALOUS PHOTO DIP IN THE PROTON SPECTRA PREVENTED ADEQUATE CORRECTION OF THE DATA TO OBTAIN RELIABLE PLASMA PARAMETERS.

DATA SET NAME- HIGH TIME RESOLUTION PLASMA DATA AND PLASMA PARAMETERS ON MAGNETIC TAPE — NSSDC ID 68-014A-17D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/05/68 TO 04/30/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 11 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED MAGNETIC TAPES CONTAIN HIGH RESOLUTION ION PLASMA SPECTRA AND PARAMETERS CALCULATED FROM THESE SPECTRA. THE EXPERIMENTER-SUPPLIED DATA WERE ON 7-TRACK, ODD PARITY, BINARY, 800-BPI MAGNETIC TAPES, GENERATED ON A UNIVAC 1108 COMPUTER. THERE IS ONE FILE PER TAPE. PHYSICAL RECORD SIZE IS 50 WORDS, WITH ONE LOGICAL RECORD OF UP TO 50 WORDS PER PHYSICAL RECORD. CONTAINED IN EACH RECORD ARE TIME, SOME HOUSEKEEPING PARAMETERS, DIRECTION OF PLASMA FLOW, PROTON OR ALPHA DENSITY, BULK SPEED, ION DENSITY, SOME GOODNESS-OF-FIT PARAMETERS, AND THE PLASMA SPECTRUM USED TO DETERMINE THE PREVIOUS PARAMETERS. TIME GAPS EXIST IN THESE DATA WHENEVER THE FLOW DIRECTION OF THE AMBIENT PLASMA WAS DIVERTED OUT OF THE ENTRANCE APERTURE SO AS TO PRECLUDE DATA PROCESSING, SUCH AS IN THE EARTH'S MAGNETOSHEATH, AND WHEN ERRORS INTRODUCED BY THE ANOMALOUS PHOTO DIP IN THE PROTON SPECTRA PREVENTED ADEQUATE CORRECTION OF THE DATA TO OBTAIN RELIABLE PLASMA PARAMETERS.

DATA SET NAME- HIGH TIME RESOLUTION PLOTS OF SOME PLASMA PARAMETERS ON FILM — NSSDC ID 68-014A-17E

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/05/68 TO 04/30/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED 35-MM MICROFILM CONTAIN PLOTS OF THE FOLLOWING HIGH-TIME RESOLUTION PLASMA PARAMETERS AS FUNCTIONS OF TIME, 3 HOURS PER FRAME -- PROTON BULK SPEED PROTON TEMPERATURE, ION DENSITY, PLASMA DIRECTION OF FLOW, ALPHA TO PROTON/DENSITY RATIO, AND ALPHA TO PROTON TEMPERATURE RATIO. THEY CONTAIN DATA ALSO AVAILABLE IN LISTINGS IN DATA SET 68-014A-17C AND ON MAGNETIC TAPE IN 68-014A-17D.

DATA SET NAME- LISTING OF HOURLY AVERAGED INTERPLANETARY PLASMA PARAMETERS NSSDC ID 68-014A-17F

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/05/68 TO 04/30/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 56 PAGE(S) OF UNBOUND HARDCOPY

DATA SET BRIEF DESCRIPTION

THESE DATA ARE LISTINGS OF THE EXPERIMENTER-GENERATED INTERPLANETARY HOURLY AVERAGED PLASMA PARAMETERS CONTAINED IN 68-014A-17B. DATA INCLUDED ARE THE NUMBER OF POINTS IN EACH AVERAGE, PROTON BULK SPEED, TEMPERATURE, DENSITY, DIRECTION OF PLASMA FLOW, TOTAL ION DENSITY, RATIO OF ALPHA TO PROTON VELOCITY, ALPHA TO PROTON TEMPERATURE, AND ALPHA TO PROTON DENSITY.

**********OGO 5, WEST, JR.

EXPERIMENT NAME- ELECTRON AND PROTON SPECTROMETER NSSDC ID 68-014A-06

ORIGINAL EXPERIMENT INSTITUTION- LAWRENCE LIVERMORE LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - H.I.	WEST, JR.	LAWRENCE LIVERMORE LAB	LIVERMORE, CA
OI - R.G.	D'ARCY, JR.	BARTOL RESEARCH FOUND	SWATHMORE, PA
OI - L.	MANN	LAWRENCE RADIATION LAB	LIVERMORE, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 09/00/71

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE SPECTRA, FLUXES, AND DIRECTIONAL PROPERTIES OF ELECTRONS, PROTONS, AND ALPHA PARTICLES. ELECTRONS WERE SENSED BY SOLID-STATE DETECTORS FOUND WITHIN EACH OF TWO PERMANENT MAGNET SPECTROMETERS. THESE SPECTROMETERS MEASURED ELECTRONS IN NARROW ENERGY WINDOWS CENTERED AT 79, 158, 266, 479, 822, 1530, AND 2820 KEV. PROTONS IN SIX CONTIGUOUS ENERGY INTERVALS (AT 0.23, 0.57, 1.35, 5.6, 14, AND 43 MEV), ALPHA PARTICLES IN THREE CONTIGUOUS INTERVALS (AT 5.9, 22.7, AND 56.4 MEV), AND ELECTRONS ABOVE 4 MEV WERE SEPARATELY MEASURED BY A FOUR-SENSOR SOLID-STATE TELESCOPE. THIS TELESCOPE WAS PHYSICALLY LOCATED INSIDE THE LARGER OF THE TWO ELECTRON SPECTROMETER MAGNETS AND IN LINE WITH THE SPECTROMETER ENTRANCE APERTURE. PROTONS BETWEEN 100 AND 150 KEV WERE ALSO MEASURED BY A SINGLE SOLID-STATE DETECTOR ADJACENT TO THE TELESCOPE. THE INSTRUMENTS WERE MOUNTED ON OPEP 2 AND HAD THEIR APERTURES LOOKING PERPENDICULAR TO THE RADIUS VECTOR FROM THE EARTH. OPEP 2 WAS ROTATED BACK AND FORTH ABOUT THIS RADIUS VECTOR THROUGH 230 DEG AT 3 DEG/SEC, THUS PERMITTING THE DETERMINATION OF PARTICLE DIRECTIONAL DISTRIBUTIONS. FOR A GIVEN SPECIES-ENERGY CHANNEL, DETECTOR ACCUMULATIONS WERE TELEMETERED ONCE EACH 4, 8, OR 16 MAIN FRAMES (ONE MAIN FRAME = 1.152, 0.144, OR 0.018 SEC FOR TELEMETRY RATES OF 1, 8, OR 64 KBS) DEPENDING ON THE CHANNEL. THE EXPERIMENT WORKED NORMALLY AS LONG AS DATA WERE TELEMETERED FROM OGO 5.

THUS. NEARLY 100 PERCENT COVERAGE WAS OBTAINED BETWEEN MARCH 1968 AND AUGUST 1971.

DATA SET NAME- 2 HOUR COUNT RATE PLOTS ON MICROFILM NSSDC ID 68-014A-06B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/12/68 TO 11/06/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 62 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUBMITTED BY THE EXPERIMENTER, CONSISTS OF MICROFILMED PLOTS OF 4.6-SEC AVERAGED COUNT RATES FOR ALL THE COUNTING MODES OF THIS EXPERIMENT. EACH FRAME CONTAINS APPROXIMATELY 2 HR OF DATA FOR ONE MODE (PRINCIPAL AND BACKGROUND DETECTOR COUNT RATES). VALUES OF RADIAL DISTANCE, MCILWAIN L, MAGNETIC LATITUDE, AND SOLAR ECLIPTIC AND SOLAR MAGNETIC LATITUDE AND LONGITUDE OF THE SPACECRAFT ARE LISTED AT 12-MIN INTERVALS ON EACH OF THE DATA FRAMES. NO EFFORT WAS MADE TO SELECT PARTICLES WITH SPECIFIC PITCH ANGLES, WHICH LEADS TO SOME SCATTER IN THE DATA. PLOTS OF DETECTOR APERTURE DIRECTION ANGLE VS TIME ARE PROVIDED IN EACH SET OF PLOTS COVERING A GIVEN 2-HR PERIOD. LISTINGS OF 10-MIN AVERAGED COUNT RATES FOR EACH OF THE COUNTING MODES ARE ALSO GIVEN FOR 2-HR BLOCKS. THESE COUNT RATES INVOLVE AVERAGES OVER ALL PITCH ANGLES ENCOUNTERED DURING THE 10-MIN AVERAGING INTERVAL. THE EXPERIMENTER HAS SUPPLIED DATA IN THIS FORMAT FOR ALL OF 1968 AFTER LAUNCH AND FOR REPRESENTATIVE PORTIONS OF 1969, 1970, AND 1971. EMPHASIS IS ON MAGNETOSPHERIC DATA, WITH EXTRA-MAGNETOSPHERIC DATA BEING GIVEN ONLY FOR INTERESTING PERIODS.

DATA SET NAME- PARTICLE COUNT RATE, EPHEMERIS, AND MAGNETIC FIELD DATA ON MAGNETIC TAPES NSSDC ID 68-014A-06C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 05/23/68 TO 05/01/69 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 35 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS EXPERIMENTER-SUPPLIED DATA SET CONSISTS OF 7-TRACK, 800-BPI, CDC 6600 BINARY MAGNETIC TAPES. EACH TAPE CONTAINS UP TO 2,000 RECORDS OF 724 60-BIT WORDS EACH. SEVERAL OF THESE COMPUTER WORDS CONTAIN MORE THAN ONE LOGICAL WORD. THERE ARE ABOUT 4 DAYS OF DATA ON EACH TAPE. EACH RECORD CONTAINS DATA TAKEN FROM (1) THE ATTITUDE-ORBIT TAPES SUPPLIED BY GSFC TO THE EXPERIMENTER, (2) THE EXPERIMENTER'S PARTICLE DETECTOR DATA TAPES, AND (3) MAGNETOMETER DATA TAPES PROVIDED TO H. WEST BY P. COLEMAN AND C. RUSSELL AT UCLA. ATTITUDE-ORBIT DATA INCLUDE TIME, SPACECRAFT RADIAL DISTANCE, MCILWAIN L PARAMETER, B, MAGNETIC LATITUDE, POLAR AND AZIMUTHAL ANGLES IN GEOCENTRIC SOLAR ECLIPTIC AND MAGNETOSPHERIC COORDINATES, AND CARTESIAN GEOCENTRIC EQUATORIAL INERTIAL (GEI) COORDINATES. CARTESIAN GEI COORDINATES OF THE SUN AND CARTESIAN GEI COMPONENTS OF THE MODEL MAGNETIC VECTOR ARE ALSO GIVEN. THE PARTICLE DATA IN A GIVEN RECORD CONSIST OF INDIVIDUAL ACCUMULATOR READINGS OR THEIR AVERAGES, AS OBTAINED OVER 2.5 MIN (AT A TELEMETRY BIT RATE OF 1 KBS) OR 1.25 MIN (AT TELEMETRY BIT RATES OF 8 AND 64 KBS). THERE ARE 32 SUCCESSIVE VALUES FOR EACH OF THE MAIN ELECTRON AND PROTON MODES. OVER THE 2.5- OR 1.25-MIN INTERVAL WITH SMALLER NUMBERS FOR OTHER MODES. DEAD TIME CORRECTIONS HAVE NOT BEEN MADE, AND ARE SELDOM NEEDED. THE MAGNETOMETER DATA CONSIST OF CARTESIAN MAGNETIC FIELD COMPONENTS

(IN GEOCENTRIC SOLAR MAGNETOSPHERIC COORDINATES) AT 128 EQUISPACED TIME POINTS WITHIN THE 2.5- OR 1.25-MIN INTERVAL COVERED BY THE RECORD. THESE VALUES ARE OBTAINED BY VECTOR INTERPOLATION OF 4.608-SEC-AVERAGED UCLA MAGNETOMETER DATA. BECAUSE OF UNCORRECTED TEMPERATURE-RELATED EFFECTS OF (TYPICALLY 5 GAMMAS), THESE VALUES SHOULD BE TREATED WITH GREAT CAUTION IN REGIONS OF LOW MAGNETIC FIELDS. INFORMATION ON INSTRUMENT LOOK DIRECTION AS A FUNCTION OF TIME WITHIN INDIVIDUAL RECORDS IS ALSO GIVEN. THE INITIAL DATA SUBMISSION CONSISTED OF 35 TAPES COVERING THE TIME PERIODS FROM MAY 23 TO JUNE 5, 1968, AUG. 4 TO OCT. 2, 1968, AND APRIL 10 TO MAY 1, 1969. ADDITIONAL TAPES WILL BE ADDED TO THIS DATA SET AS THEY BECOME AVAILABLE.

DATA SET NAME- CORRECTED ELECTRON FLUXES ON BCD TAPE NSSDC ID 68-014A-06D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/04/68 TO 01/01/69 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION
THIS DATA SET CONSISTS OF 7-TRACK, 800-BPI, BCD MAGNETIC TAPE CONTAINING CARD IMAGES OF PUNCHED CARDS SUBMITTED BY THE EXPERIMENTER. THE DATA SET CONTAINS INNER-ZONE (L BETWEEN 1.3 AND 2.4) PERPENDICULAR FLUXES OF ELECTRONS OF 79, 158, 266, 479, AND 822 KEV, SORTED BY L VALUE AND TAKEN OVER THE INTERVAL FROM MARCH 1968 TO JANUARY 1969. EACH CARD IMAGE CONTAINS L VALUE, TIME, MAGNETIC LATITUDE, B/B-ZERO, AND DIRECTIONAL DIFFERENTIAL FLUXES AT THE ENERGIES INDICATED ABOVE.

**********OGO 6 **********

SPACECRAFT COMMON NAME- OGO 6 NSSDC ID 69-051A
ALTERNATE NAMES- PL-6910, OGO-F, S 60, POGO 3, 03986

LAUNCH DATE- 06/05/69 SPACECRAFT WEIGHT IN ORBIT- 632.0 KG

SPACECRAFT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE SPACECRAFT DATA RECORDED- 03/00/72

EPOCH DATE- 06/05/69 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 100. MIN
APOAPSIS- 1098.00 KM ALT PERIAPSIS- 396.000 KM ALT INCLINATION- 81.998 DEG

SPACECRAFT BRIEF DESCRIPTION
OGO 6 WAS A LARGE OBSERVATORY INSTRUMENTED WITH 26 EXPERIMENTS DESIGNED TO STUDY THE VARIOUS INTERRELATIONSHIPS BETWEEN, AND LATITUDINAL DISTRIBUTIONS OF, HIGH-ALTITUDE ATMOSPHERIC PARAMETERS DURING A PERIOD OF INCREASED SOLAR ACTIVITY. THE MAIN BODY OF THE SPACECRAFT WAS ATTITUDE CONTROLLED BY MEANS OF HORIZON SCANNERS AND GAS JETS SO THAT ITS ORIENTATION WAS MAINTAINED CONSTANT WITH RESPECT TO THE EARTH AND THE SUN. THE SOLAR PANELS ROTATED ON A HORIZONTAL AXIS EXTENDING TRANSVERSELY THROUGH THE MAIN BODY OF THE SPACECRAFT. THE ROTATION OF THE PANELS WAS ACTIVATED BY SUN SENSORS SO THAT THE PANELS RECEIVED MAXIMUM SUNLIGHT. SEVEN EXPERIMENTS WERE MOUNTED ON THE SOLAR PANELS (THE SOPEP PACKAGE). AN ADDITIONAL AXIS, ORIENTED VERTICALLY ACROSS THE FRONT OF THE MAIN BODY, CARRIED SEVEN EXPERIMENTS (THE OPEP PACKAGE). NOMINALLY, THESE SENSORS OBSERVED IN A FORWARD DIRECTION IN THE ORBITAL PLANE OF THE SATELLITE. THE SENSORS COULD BE ROTATED MORE THAN 90 DEG RELATIVE TO THE NOMINAL OBSERVING POSITION AND MORE THAN 90 DEG BETWEEN THE UPPER AND LOWER OPEP GROUPS MOUNTED ON EITHER END OF THIS AXIS. ON JUNE 22, 1969, THE SPACECRAFT POTENTIAL DROPPED

SIGNIFICANTLY DURING SUNLIGHT OPERATION AND REMAINED SO DURING SUBSEQUENT SUNLIGHT OPERATION. THIS UNEXPLAINED SHIFT AFFECTED SEVEN EXPERIMENTS WHICH MADE MEASUREMENTS DEPENDENT UPON KNOWLEDGE OF THE SPACECRAFT PLASMA SHEATH. DURING OCTOBER 1969, A STRING OF SOLAR CELLS FAILED, BUT THE ONLY EFFECT OF THE DECREASED POWER WAS TO CAUSE TWO EXPERIMENTS TO CHANGE THEIR MODE OF OPERATION. ALSO DURING OCTOBER 1969, A COMBINATION OF MANUAL AND AUTOMATIC ATTITUDE CONTROL WAS INITIATED, WHICH EXTENDED THE CONTROL GAS LIFETIME OF THE ATTITUDE CONTROL SYSTEM. IN AUGUST 1970, TAPE RECORDER (TR) NO. 1 OPERATION DEGRADED SO THAT ALL RECORDED DATA WERE SUBSEQUENTLY TAKEN WITH TR NO. 2. BY SEPTEMBER 1970, POWER AND EQUIPMENT DEGRADATION LEFT 14 EXPERIMENTS OPERATING NORMALLY, THREE PARTIALLY, AND NINE OFF. FROM OCTOBER 14, 1970, TR NO. 2 WAS USED ONLY ON WEDNESDAYS (WORLD DAYS) TO CONSERVE POWER AND EXTEND TR OPERATION. IN JUNE 1971 THE NUMBER OF "ON" EXPERIMENTS DECREASED FROM 13 TO 7, AND ON JUNE 28, 1971, THE SPACECRAFT WAS PLACED IN A SPIN-STABILIZED MODE ABOUT THE YAW (Z) AXIS AND TURNED OFF DUE TO DIFFICULTIES WITH SPACECRAFT POWER. OGO 6 WAS TURNED ON AGAIN FROM OCTOBER 10, 1971, THROUGH MARCH 1972, FOR OPERATION OF EXPERIMENT 25 BY RADIO RESEARCH LABORATORY, JAPAN.

**********OGO 6, SMITH

EXPERIMENT NAME- TRIAXIAL SEARCH COIL MAGNETOMETER NSSDC ID 69-051A-22

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

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

EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF
DATE LAST EXPERIMENT DATA RECORDED- 06/28/71

EXPERIMENT BRIEF DESCRIPTION

THE UCLA-JPL SEARCH COIL MAGNETOMETER SAMPLED AMBIENT FIELD FLUCTUATIONS FROM 0.01 TO 1000 HZ IN TWO MODES. THE TRIAXIAL SEARCH COILS MOUNTED AT THE END OF A 6.1-M BOOM PROVIDED TRIAXIAL WAVEFORM DATA IN THREE BANDS, FROM 0.03 TO 0.1 HZ, 0.1 TO 0.3 HZ, AND 0.3 HZ TO CUTOFF, WHICH DEPENDED ON SAMPLING RATE AND GAIN MODE IN THE FOLLOWING WAY -- FOR BIT RATES OF 0.16 OR 64 KBS, THE CUTOFF WAS 0.7, 14, OR 55 HZ, FOR DUAL GAIN MODE AND 14, 28, AND 111 HZ FOR SINGLE GAIN MODE, RESPECTIVELY. SIGNALS FROM THE TRIAXIAL SEARCH COILS WERE ALSO SAMPLED BY SEVEN COMB FILTERS WITH CENTER FREQUENCIES OF 10, 22, 47, 100, 216, 550 AND 1000 HZ. THE TIME REQUIRED FOR A COMPLETE TRIAXIAL SPECTRUM ANALYSIS (21 DATA VALUES) WAS 1.01, 0.504 OR 0.126 SEC. ALSO DEPENDING ON THE SATELLITE BIT RATE. INTERFERENCE OCCURRED BETWEEN THE SEVEN-CHANNEL SPECTRUM ANALYZER AND THE BROADBAND CHANNELS, SERIOUSLY DEGRADING THE BROADBAND SIGNALS THROUGHOUT THE OPERATIONAL LIFE OF THE EXPERIMENT. THE EXPERIMENT OPERATED ADEQUATELY THROUGHOUT THE MISSION.

DATA SET NAME- 0.03- TO 1000-HZ SEARCH COIL MAGNETOMETER NSSDC ID 69-051A-22A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 06/10/69 TO 10/13/70 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-GENERATED COMPRESSED DATA PLOTS ON 16-MM MICROFILM SUMMARIZE THE INSTRUMENT RESPONSE TO BOTH AMBIENT AND INSTRUMENTAL EFFECTS. CONTAINING 36-SEC AVERAGES, THE PLOTTED MAGNETOMETER DATA ARE READABLE TO ABOUT 1.5-MIN TIME RESOLUTION. EACH ORBIT IS REPRESENTED BY A PAIR OF PLOTS, THE FIRST CONTAINING COMPRESSED PHYSICAL DATA, AND THE SECOND THE INFORMATION THAT MAY AFFECT THE EXPERIMENT -SUCH AS INSTRUMENT GAIN, BANDWIDTH INFORMATION, AND SAMPLES OF THE SPACECRAFT STATUS. THE PHYSICAL DATA CONSIST OF THE SEVEN MAGNITUDES (AVERAGED OVER THREE COMPONENTS) FROM THE SEVEN-CHANNEL (10 TO 1000 HZ) TRIAXIAL SPECTRUM ANALYZER, THE DATA QUALITY INDICATOR, AND THE THREE SETS OF TRIAXIAL WAVEFORM DATA REPRESENTING MAGNETIC SIGNALS FROM 0.03 TO 0.1 HZ, 0.1 TO 0.3 HZ, AND 0.3 HZ TO EXPERIMENT CUTOFF, WHICH WAS ADJUSTED WITH TELEMETRY RATE AS FOLLOWS-AT 1-, 8-, OR 64-KBS, CUTOFF WAS 0.9, 7, OR 55 HZ. THESE PLOTS ARE USEFUL IN IDENTIFYING THE PLASMAPAUSE, ETC.

**********OGO 6, STONE

EXPERIMENT NAME- COSMIC-RAY STUDY NSSDC ID 69-051A-20

ORIGINAL EXPERIMENT INSTITUTION- CAL TECH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - E.C.	STONE	CAL TECH	PASADENA, CA
OI - R.E.	VOGT	CAL TECH	PASADENA, CA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 06/28/71

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE ENERGY SPECTRA AND CHEMICAL COMPOSITION OF COSMIC-RAY PARTICLES OF BOTH SOLAR AND GALACTIC ORIGIN OVER SELECTED ENERGY INTERVALS USING THREE CHARGED PARTICLE TELESCOPES. FIRST A RANGE TELESCOPE WAS USED, COMPOSED OF SEVEN SOLID-STATE DETECTORS, D1 THROUGH D7, AND AN ANTICOINCIDENCE SHIELD DETECTOR, D8, WITH THRESHOLD ENERGIES FOR PROTONS AND ALPHA PARTICLES OF 1.0, 3.3, 18.5, 46.6, 156, 235, 315, AND 1 MEV/NUCLEON, RESPECTIVELY. THE OUTPUT OF EACH OF THE EIGHT DETECTORS WAS MONITORED SEPARATELY IN ADDITION TO THE COINCIDENCE MODES D1NOTD8, D12NOTD8, AND D2NOTD8 (THIS MODE COULD BE CHANGED BACK AND FORTH ON COMMAND TO D23NOTD8). THE TELESCOPE GEOMETRIC FACTOR VARIED AS A FUNCTION OF PARTICLE RANGE FROM 1.5 TO 0.19 CM SQ STER. SECOND, A CERENKOV TELESCOPE, COMPOSED OF TWO THIN SOLID-STATE DETECTORS, D1* AND D2*, A CERENKOV DETECTOR, D3*, AND AN ANTICOINCIDENCE CUP, D4*, TRIGGERED ONLY ON PARTICLES WITH Z FROM 1 THROUGH 12 WITH ENERGIES NO LESS THAN 400 MEV/NUCLEON. HOWEVER, IN ADDITION TO THIS COINCIDENCE (D1*D2*D3*NOTD4*), THE INDIVIDUAL DETECTOR RATES D1*, D2*, D3*, AND D4* WERE ALSO MONITORED FOR USE IN DELETING ACCIDENTAL COINCIDENCES FROM THE D1*D2*D3*NOTD4* MODE. THE TELESCOPE GEOMETRIC FACTOR WAS 2.8 CM SQ STER. THIRD, A FLARE TELESCOPE COMPOSED OF TWO SOLID-STATE DETECTORS, D5* AND D6*, WITH RESPECTIVE THRESHOLD ENERGIES FOR PROTONS AND ALPHA PARTICLES OF 3.3 AND 8.5 MEV/NUCLEON WAS USED. THE OUTPUT FROM EACH DETECTOR WAS MONITORED AS WELL AS THE COINCIDENCE MODE D5* AND D6*. THE TELESCOPE GEOMETRIC FACTOR WAS 0.02 CM SQ STER. THREE 256-CHANNEL PULSE HEIGHT ANALYZERS WERE USED TO ANALYZE THE OUTPUT OF D1, D2, D3 OF THE RANGE TELESCOPE OR D1*, D2*, D3* OF THE CERENKOV TELESCOPE, OR D5*, D6* (FOR D5* D6* EVENTS ONLY) OF THE FLARE TELESCOPE ONCE PER COUNTING RATE ACCUMULATION PERIOD. IN GENERAL, THE ACCUMULATION PERIOD RANGED FROM 0.02 TO 3.4 SEC DEPENDING ON THE SPACECRAFT TELEMETRY BIT RATE. THERE EXISTED A PRIORITY AS TO WHICH TELESCOPE OUTPUT WOULD BE ANALYZED FOR A GIVEN ACCUMULATION INTERVAL. ASIDE FROM THE D6 RANGE TELESCOPE DETECTOR

BEING NOISY FOR THE FIRST TWO MONTHS AFTER LAUNCH. THE EXPERIMENT PERFORMED NORMALLY THROUGHOUT THE MISSION. THE DATA TIME COVERAGE WAS NEAR 100 PERCENT UNTIL AUGUST 1970, AFTER WHICH THE COVERAGE DROPPED DUE TO THE MALFUNCTION OF THE SPACECRAFT TAPE RECORDER.

DATA SET NAME- PARTICLE COUNT RATES AND PULSE HEIGHT ANALYSIS ON MAGNETIC TAPE — NSSDC ID 69-051A-20A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 06/07/69 TO 05/25/70 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 345 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUBMITTED BY THE EXPERIMENTER, CONSISTS OF PARTICLE COUNT RATES AND PULSE HEIGHT ANALYZER DATA ON 9-TRACK, BINARY MAGNETIC TAPES WRITTEN AT 800 BPI ON AN IBM 360 COMPUTER. THERE IS ONE FILE PER TAPE AND A VARIABLE NUMBER OF PHYSICAL RECORDS (MAXIMUM LENGTH -- 3678 BYTES), EACH CONSISTING OF A VARIABLE NUMBER OF LOGICAL RECORDS OF FOUR TYPES. FIRST, THERE IS ONE 'A' RECORD FOR EACH FRAME OF DATA, EACH 10 BYTES IN LENGTH, CONTAINING DATA QUALITY INFORMATION, AND THE D8 AND D4* COUNT RATES. THIS RECORD ALSO CONTAINS THE D1 NOT D8, D2 NOT D8, AND D23 NOT D8 COINCIDENCE COUNT RATES (JOINTLY COMMUTATED ON A MODULUS 3 BASIS), THE D5* COUNT RATE, CERENKOV TELESCOPE RATE (WHOSE IDENTITY IS DETERMINED BY CHECKING THE COMMAND STATUS MODE IN THE C RECORD), AND A SUBCOMMUTATED RATE (THESE THREE FIELDS ARE ALSO JOINTLY COMMUTATED ON A MODULUS 3 BASIS). THE SUBCOMMUTATED RATE HAS 16 POSITIONS AS FOLLOWS -D1, D2, D3, D4, D5, D6, D7, D8 OF THE RANGE TELESCOPE, D1*, D2*, D3*, D4* OF THE CERENKOV TELESCOPE, D6* OF THE FLARE TELESCOPE, D12 NOT 8, OF THE RANGE TELESCOPE, AND SYNC WORD INFORMATION. SECOND, THERE IS ONE B RECORD FOR EVERY FRAME CONTAINING A NEW EVENT, EACH 5 BYTES IN LENGTH AND IMMEDIATELY PRECEDING THE A RECORD TO WHICH IT CORRESPONDS. THIS RECORD MAY CONTAIN PULSE HEIGHT ANALYSIS OF ONE EVENT FROM D1, D2*, D3*, OR FROM D1, D2, D3, OR FROM D2, D3, OR FROM D5*, D6*, OR IT MAY CONTAIN FLARE TELESCOPE RATE INFORMATION DEPENDING ON THE TYPE OF EVENT REGISTERED. A CODE IN THIS RECORD IDENTIFIES WHICH ONE OF THE ABOVE FIVE POSSIBILITIES IS CONTAINED IN THE RECORD. THIRD, THERE IS ONE C RECORD FOR EVERY SPACECRAFT TELEMETRY SUBCOM SEQUENCE. EACH OF THESE RECORDS IS 30 BYTES IN LENGTH AND CONTAINS THE DAY AND TIME (UT) REFERENCES FOR THE A AND B RECORDS FOLLOWING THEM CORRESPONDING TO THE FIRST FRAME OF THE SUBCOM SEQUENCE. THE C RECORDS ALSO CONTAIN THE BIT RATE FOR THE CURRENT ACQUISITION. FOURTH, THE D RECORD OCCURS ONCE PER MIN. THESE RECORDS ARE 556 BYTES IN LENGTH AND CONTAIN THE ORBIT ALTITUDE DATA IN DOUBLE PRECISION FLOATING POINT FORMAT. THE D RECORDS ARE INSERTED WHENEVER APPROPRIATE TO MAINTAIN THE TIME ORDER. EACH TAPE CONTAINS NO MORE THAN ONE DAY OF DATA. IN SOME CASES MORE THAN ONE TAPE WAS NEEDED TO COVER A 24-HR PERIOD. DATA QUALITY FLAGS ARE USED IN THE FORMAT TO POINT OUT PARITY ERRORS AND ACCUMULATOR OVERFLOWS. THE TIME COVERAGE WAS ESSENTIALLY 100 PERCENT THROUGH JULY 1970, AFTER WHICH THE COVERAGE DROPPED BECAUSE OF A MALFUNCTION OF THE SPACECRAFT TAPE RECORDER.

DATA SET NAME- PARTICLE COUNT RATES AND EPHEMERIS PLOTS ON MICROFILM — NSSDC ID 69-051A-20B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 06/07/69 TO 01/27/70 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 37 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUBMITTED BY THE EXPERIMENTER ON 35 MM MICROFILM AND EACH PAIR OF PLOTS CONSISTS OF PARTICLE COINCIDENCE COUNT RATES (FROM THE RANGE, FLARE, AND CERENKOV TELESCOPES), SATELLITE ALTITUDE, AND B,L COORDINATES GRAPHED AS A FUNCTION OF FOUR PARAMETERS -- TIME (UT), MAGNETIC LOCAL TIME, INVARIANT LATITUDE AND ORBITAL DATA RECORD NUMBER ON CIT ABSTRACT TAPE (DREC). THE COINCIDENCE COUNT RATES PLOTTED INCLUDE (WITH PROTON ENERGY THRESHOLD) -- (1) RANGE TELESCOPE - D1NOTD8 (1 MEV), D12NOTD8 AND D2NOTD8 (3.3 MEV), D23NOTD8 AND D3 (16.5 MEV), D4 (46.6 MEV), D5 (156 MEV), D6 (235 MEV), D7 (315 MEV), AD8 (ANALOG RATEMETER), (2) FLARE TELESCOPE - D5* (3.3 MEV), D6* (16.5 MEV), D5*6* (FLR, 18.5 MEV), AND AD4* (ANALOG RATEMETER), (3) CERENKOV TELESCOPE - D1* (ABOUT 1 MEV), D2* (ABOUT 3 MEV), D3* (400 MEV), AND D1*2*3*NOTD4* (CER, 400 MEV). A LIMITED NUMBER OF PULSE HEIGHT ANALYZER PLOTS CORRESPONDING TO EARLY PORTIONS OF THE MISSION ARE ALSO INCLUDED. THE DAY NUMBER, MONTH, DAY, YEAR, AND SATELLITE ORBIT NUMBER (REV) APPEAR AT THE BOTTOM OF EACH PLOT. THE TIME COVERAGE IS 90 PERCENT OR MORE THROUGH JANUARY 1970.

**********PIONEER 6 **********

SPACECRAFT COMMON NAME- PIONEER 6 NSSDC ID 65-105A
ALTERNATE NAMES- PIONEER-A, 01841

LAUNCH DATE- 12/16/65 SPACECRAFT WEIGHT IN ORBIT- 146. KG

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 12/16/65 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 311.3 DAYS
APOAPSIS- .936 AU RAD PERIAPSIS- .8143 AU RAD INCLINATION- .1639 DEG

SPACECRAFT BRIEF DESCRIPTION

PIONEER 6 WAS THE FIRST IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, AND SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A CONTINUING BASIS. 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. THE SPACECRAFT SPIN RATE HAS REMAINED CLOSE TO NOMINAL AS OF JULY 1971. 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.

**********PIONEER 6, BRIDGE

EXPERIMENT NAME- SOLAR WIND PLASMA FARADAY CUP NSSDC ID 65-105A-02

ORIGINAL EXPERIMENT INSTITUTION- MIT

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - H.S.	BRIDGE	MIT	CAMBRIDGE, MA
OI - A.J.	LAZARUS	MIT	CAMBRIDGE, MA
OI - F.	SCHERB	MIT	CAMBRIDGE, MA

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

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., 71, 3787-3791, AUGUST 1966.

DATA SET NAME- SOLAR WIND DATA FROM THE EXPERIMENTS ON PIONEER 6 AND PIONEER 7, 1 HR AVG BOOK 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 IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION
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 IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION
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 7 **********

SPACECRAFT COMMON NAME- PIONEER 7 NSSDC ID 66-075A
ALTERNATE NAMES- PIONEER-B, 02398

LAUNCH DATE- 08/17/66 SPACECRAFT WEIGHT IN ORBIT- 138. KG

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 08/17/66 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 402.9 DAYS
APOAPSIS- 1.1250 AU RAD PERIAPSIS- 1.0100 AU RAD INCLINATION- .09767 DEG

SPACECRAFT BRIEF DESCRIPTION
PIONEER 7 WAS THE SECOND IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, AND SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A CONTINUING BASIS. THE SPACECRAFT CARRIED EXPERIMENTS TO STUDY 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 APPROXIMATELY 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 32 SEVEN-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS USED FOR THE TWO HIGHEST BIT RATES. ANOTHER WAS USED FOR 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 (1) REAL TIME, (2) TELEMETRY STORE, (3) DUTY CYCLE STORE, AND (4) 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 PERIOD BETWEEN WHICH SUCCESSIVE FRAMES WERE COLLECTED AND STORED COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS UP TO 15 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 FOR THE MAJORITY OF THE DATA WAS 512 BPS FROM AUGUST 17, 1966, TO OCTOBER 23, 1966, 256 BPS FROM OCTOBER 25, 1966, TO NOVEMBER 6, 1966, 64 BPS FROM NOVEMBER 9, 1966, TO DECEMBER 16, 1965, 16 BPS FROM DECEMBER 16, 1966, TO MAY 15, 1967, AND 8 BPS FROM MAY 15, 1967, AND THEREAFTER. HIGHER BIT RATES WERE POSSIBLE WHEN THE SPACECRAFT WAS BEING TRACKED BY THE 64-M ANTENNA, BUT THE DATA COVERAGE AT THESE TIMES WAS LOW. BY FEBRUARY 1968, ALL REAL-TIME DATA WERE BEING RECEIVED AT 8 BPS. DATA COVERAGE AVERAGED BETWEEN 50 AND 100 PERCENT COVERAGE FOR THE FIRST 30 WEEKS AFTER LAUNCH. THE DATA COVERAGE THEN FELL TO BETWEEN 20 AND 30 PERCENT UNTIL SEPTEMBER 1968. AFTER THIS TIME, IT DROPPED TO BETWEEN 0 AND 20 PERCENT THROUGH JULY 1971. REAL-TIME TRANSMISSION WAS GENERALLY USED WHEN TRACKING STATIONS WERE AVAILABLE. OTHERWISE, THE CUT. CYCLE STORE MODE WAS USED. SOMETIME BETWEEN FEBRUARY 9, 1969, AND FEBRUARY 16, 1969, THE SUN SENSOR THAT GENERATED THE SPACECRAFT SUN PULSES FOR ONBOARD SECTORING OF EXPERIMENTS FAILED. HOWEVER, THE REMAINING SUN SENSORS CONTINUED TO FUNCTION, THUS PERMITTING DETERMINATION OF THE SPIN AXIS DIRECTION UNTIL ABOUT JANUARY 1972.

**********PIONEER 7, BRIDGE

EXPERIMENT NAME- SOLAR WIND PLASMA FARADAY CUP NSSDC ID 66-075A-02

ORIGINAL EXPERIMENT INSTITUTION- MIT

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - H.S. BRIDGE MIT CAMBRIDGE, MA

EXPERIMENT STATUS OF OPERATION- INOPERABLE
DATE LAST USABLE EXPERIMENT DATA RECORDED- 11/00/72

EXPERIMENT BRIEF DESCRIPTION

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 CHANNELS BETWEEN 75 AND 9485 V FOR POSITIVE IONS AND FOUR ENERGY-PER-CHARGE CHANNELS BETWEEN 125 AND 1600 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 ELECTRON MEASUREMENT WERE COMPLETED EVERY 32 SEC. THE TIME BETWEEN EACH 32-SEC GROUP OF MEASUREMENTS VARIED WITH THE BIT RATE. THE EXPERIMENT WORKED WELL FROM LAUNCH UNTIL IT BECAME INOPERABLE IN NOVEMBER 1972. FOR MORE COMPLETE INFORMATION, SEE J. GEOPHYS. RES., 71, 3787-3791, AUGUST 1966.

DATA SET NAME- SOLAR WIND DATA FROM THE EXPERIMENTS ON PIONEER 6 AND PIONEER 7, 1 HR AVG BOOK — NSSDC ID 66-075A-02C

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

TIME PERIOD COVERED- 08/18/66 TO 12/02/68 (AS VERIFIED BY NSSDC)

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

DATA SET BRIEF DESCRIPTION

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 6 DATA (65-105A-02C) ARE ALSO INCLUDED IN THIS DOCUMENT.

DATA SET NAME- HOURLY AVERAGED PLASMA PARAMETERS ON BCD 7-TRACK MAGNETIC TAPE — NSSDC ID 66-075A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 08/19/66 TO 11/29/68 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

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 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 8 **********

SPACECRAFT COMMON NAME- PIONEER 8 NSSDC ID 67-123A
ALTERNATE NAMES- PIONEER-C, 03066

LAUNCH DATE- 12/13/67 SPACECRAFT WEIGHT IN ORBIT- 146. KG

SPACECRAFT STATUS ON OPERATION- PARTIAL

EPOCH DATE- 12/13/67 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 366.6 DAYS
APOAPSIS- 1.0880 AU RAD PERIAPSIS- .9852 AU RAD INCLINATION- .0578 DEG

SPACECRAFT BRIEF DESCRIPTION

PIONEER 8 WAS THE THIRD IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, SOLAR CELL, AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A CONTINUING BASIS. THE SPACECRAFT CARRIED EXPERIMENTS TO STUDY THE POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, THE INTERPLANETARY MAGNETIC FIELD, COSMIC DUST, AND ELECTRIC FIELDS. 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 WERE USED PRIMARILY FOR SCIENTIFIC DATA AND CONSISTED OF THIRTY-TWO 7-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS USED AT THE TWO HIGHEST BIT RATES, ANOTHER WAS USED AT THE THREE LOWEST BIT RATES. THE THIRD WAS USED FOR DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT WAS USED MAINLY FOR ENGINEERING DATA. THE FOUR OPERATING MODES WERE (1) REAL TIME, (2) TELEMETRY STORE, (3) DUTY CYCLE STORE, AND (4) 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 FOR THE MAJORITY OF THE DATA WAS 512 BPS FROM DECEMBER 13, 1967 TO MARCH 20, 1968, 256 BPS FROM MARCH 20, 1968 TO MAY 6, 1968, 64 BPS FROM MAY 6, 1968 TO AUGUST 29, 1968, AND 16 OR 8 BPS THEREAFTER. HIGHER BIT RATES WERE USED WHEN THE SPACECRAFT WAS TRACKED BY THE 64-M ANTENNA, BUT THE DATA COVERAGE BY THIS ANTENNA WAS LOW. DATA COVERAGE AVERAGED CLOSE TO 100 PERCENT FOR THE FIRST YEAR AFTER LAUNCH. AFTER THAT, THE DATA COVERAGE AVERAGED BETWEEN 50 AND 80 PERCENT UNTIL NOVEMBER 1970 WHEN COVERAGE DROPPED TO BETWEEN 50 AND 0 PERCENT. ALMOST NO DATA HAVE BEEN ACQUIRED SINCE MAY, 1971. DURING A REORIENTATION MANEUVER IN MARCH 1968, ONE OF THE FOUR SUN SENSORS (WHICH WAS CONNECTED TO THE ATTITUDE GAS SYSTEM USED TO KEEP THE SPIN AXIS POINTED) WAS FOUND TO BE INOPERATIVE. IT WAS NOTED AT THIS TIME THAT THE SPACECRAFT ATTITUDE WAS OFF 4 DEG. ANOTHER ORIENTATION WAS ATTEMPTED IN JUNE 1968, AND IT WAS FOUND THAT THREE OF THE FOUR ATTITUDE SUN SENSORS WERE INOPERATIVE.

**********PIONEER 8, ESMLEMAN

EXPERIMENT NAME- TWO-FREQUENCY BEACON RECEIVER NSSDC ID 67-123A-03

ORIGINAL EXPERIMENT INSTITUTION- STANFORD U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - V.R.	ESHLEMAN	STANFORD U	STANFORD, CA
OI - T.A.	CROFT	STANFORD U	STANFORD, CA
OI - H.T.	HOWARD	SRI	MENLO PARK, CA
OI - R.L.	LEADABRAND	SRI	MENLO PARK, CA
OI - R.A.	LONG	SRI	MENLO PARK, CA
OI - A.M.	PETERSON	STANFORD U	STANFORD, CA
OI - F.L.	SCARF	TRW	REDONDO BEACH, CA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

BOTH 423.3-MHZ AND ITS 2/17 SUBHARMONIC 49.8-MHZ SIGNALS WERE TRANSMITTED FROM A 4.6-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 DELAYED. 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, 66-075A-04, 65-105A-04, AND 67-060A-02. A MORE DETAILED DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN JOURNAL OF GEOPHYSICAL RESEARCH, VOL 17, PP 3325-3327, AND IN RADIO SCIENCE, VOL 6, PP 55-63.

DATA SET NAME- DIGITAL VALUES OF SOLAR WIND ELECTRON DENSITY VS TIME NORMALIZED TO 1 AU ON TAPE — NSSDC ID 67-123A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/19/67 TO 03/07/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE DATA WERE PREPARED FROM THE ORIGINAL ANALOG RECORDS BY THE EXPERIMENTER'S STAFF. THE PRIMARY DATA CONSIST OF HOURLY VALUES OF NORMALIZED ELECTRON NUMBER DENSITY IN THE SOLAR WIND. TO OBTAIN THESE DATA, THE IONOSPHERIC TOTAL CONTENT WAS REMOVED FROM THE OBSERVED TOTAL CONTENT VALUES, AND THE TOTAL CONTENT PATH LENGTH WAS USED TO CONVERT TOTAL CONTENT TO DENSITY. THE RESULTING VALUES WERE THEN NORMALIZED TO 1 AU ASSUMING DENSITY TO BE PROPORTIONAL TO THE INVERSE SQUARE OF THE DISTANCE OF THE SATELLITE FROM THE SUN. VALUES RESULTING FROM INTERPOLATION ARE FLAGGED. NO INTERPOLATED VALUES WERE RECORDED WHEN DATA GAPS EXCEEDED 4 DAYS. THIS DATA SET IS ON 800-BPI, 7-TRACK, ODD PARITY, BINARY MAGNETIC TAPE CREATED ON A XEROX SIGMA 5 COMPUTER. AUXILIARY DATA ON THE TAPE INCLUDE UT AND CARRINGTON ROTATION NUMBER. DATA ARE AVAILABLE FOR ABOUT 12 HR PER DAY WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 6 (65-105A-04D), 7 (66-075A-04), 8 (68-100A-03C), AND MARINER 5 (67-060A-02C) ALSO APPEAR ON THIS TAPE.

**********PIONEER 8, MCCRACKEN

EXPERIMENT NAME- COSMIC-RAY ANISOTROPY NSSDC ID 67-123A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF TEXAS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - K.G.	MCCRACKEN	U OF ADELAIDE	ADELAIDE, AUSTRALIA
OI - U.R.	RAO	INDIAN SCIEN SAT PROJ	INDIA
OI - W.C.	BARTLEY	U OF TEXAS	DALLAS, TX

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A CSI SCINTILLATOR AND THREE SOLID-STATE TELESCOPES. THE CSI SCINTILLATOR WAS COLLIMATED BY AN ANTICOINCIDENCE PLASTIC SCINTILLATOR AND HAD A CONICAL APERTURE WITH A 38.2-DEG HALF-ANGLE. THE SCINTILLATOR LOOK DIRECTION WAS CENTERED IN THE ECLIPTIC PLANE. THREE SOLID-STATE DETECTORS WERE ORIENTED IN A FAN ARRANGEMENT WITH RESPECT TO A FOURTH SOLID-STATE DETECTOR, SUCH THAT EACH OF THE FIRST THREE DETECTORS FORMED A TELESCOPE WITH THE FOURTH DETECTOR. EACH OF THE THREE TELESCOPES THUS FORMED HAD AN ACCEPTANCE CONE OF 23-DEG HALF-ANGLE. THE MEAN VIEWING DIRECTIONS OF THE TELESCOPES WERE IN THE ECLIPTIC PLANE AND 48 DEG ABOVE AND BELOW THAT PLANE, RESPECTIVELY. TWO CONCURRENT MODES OF COUNTING WERE EMPLOYED. IN THE FIRST MODE, COUNTS WERE ACCUMULATED IN EIGHT SEPARATE 45-DEG INTERVALS DURING THE SPACECRAFT SPIN, WHILE, IN THE SECOND, SPIN-INTEGRATED COUNTS WERE ACQUIRED. IN THE FIRST MODE, THE SCINTILLATOR SEPARATELY MEASURED PARTICLES WITH ENERGIES IN THE RANGES 7.4 TO 21.5 MEV/NUCLEON AND 19.7 TO 63.0 MEV/NUCLEON (NO SPECIES DISCRIMINATION) WHILE EACH SOLID-STATE TELESCOPE SEPARATELY MEASURED PROTONS IN THE ENERGY RANGES 3.3 TO 3.6 MEV AND 3.6 TO 6.7 MEV. IN THE SECOND MODE, THE SCINTILLATOR SEPARATELY MEASURED PARTICLES IN SIX CONTIGUOUS ENERGY INTERVALS BETWEEN 4.5 AND 40 MEV/NUCLEON (INTERVAL LOWER LIMITS AT 4.5, 7.0, 9.6, 13, 21, AND 28 MEV/NUCLEON), WHILE EACH OF THE SOLID-STATE TELESCOPES SEPARATELY MEASURED PROTONS IN THE ENERGY RANGES 1 TO 8, 1 TO 5, 1 TO 3, AND 4 TO 6 MEV AND ALPHA PARTICLES IN THE ENERGY RANGE 4 TO 8 MEV. DURING EACH 244-BIT MAIN TELEMETRY FRAME, TWO FIRST-MODE 9-BIT ACCUMULATORS AND ONE SECOND-MODE 9-BIT ACCUMULATOR WERE READ OUT. INFLIGHT CALIBRATION OF THE SCINTILLATOR AND OF SOME OF THE ELECTRONICS WAS PERFORMED DAILY. SEE BUKATA ET AL. IEEE TRANS. NUC. SCI., NS-17, 18-24, 1970, FOR A MORE DETAILED EXPERIMENT DESCRIPTION.

DATA SET NAME- 7.5-MIN AND 1-HR COUNT RATES FOR ALL MODES ON MAGNETIC TAPE NSSDC ID 67-123A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/13/67 TO 03/31/69 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF EXPERIMENTER-SUPPLIED 9-TRACK MAGNETIC TAPES, WRITTEN IN EBCDIC AT 800 CPI ON AN IBM 370/155. EACH TAPE CONTAINS 80 DAYS OF DATA, AND EACH LOGICAL AND PHYSICAL RECORD CONTAINS ONE HOUR OF DATA. EACH DATA RECORD CONTAINS TIME AND COUNTS AT 7.5-MIN INTERVALS AND FOR THE FULL HOUR FOR EACH ISOTROPIC AND ANISOTROPIC MODE. THE TIME COVERAGE OF THE TAPES MIRRORS THE PERIODS DURING WHICH THE SPACECRAFT WAS BEING TRACKED (NEARLY 100 PERCENT UNTIL OCTOBER 1968, AND THEN BETWEEN 60

AND 90 PERCENT THROUGH MARCH 1969). DATA FOR TIMES AFTER MARCH 1969 ARE FOUND IN MICROFILM DATA SET 67-123A-05B. THE EXPERIMENTER ALSO PROVIDED A PROGRAM TO GENERATE LISTINGS SUCH AS THOSE FOUND IN DATA SET 67-123A-05B FROM THE TAPES OF THIS DATA SET 67-123A-05A.

DATA SET NAME- 7.5 MINUTE AND 1 HOUR COUNT RATES, ALL MODES, ON MICROFILM NSSDC ID 67-123A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 03/21/69 TO 12/31/70 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THIS DATA SET CONSISTS OF 16-MM MICROFILM GENERATED AT NSSDC FROM EXPERIMENTER-SUPPLIED COMPUTER PRINTOUT. EACH FRAME CONTAINS DATA MATRICES FOR 1 HR. COUNTS ACCUMULATED DURING INDICATED NUMBERS OF SPACECRAFT REVOLUTIONS FOR 7.5-MIN INTERVALS AND FOR FULL HOURS ARE GIVEN FOR ALL ISOTROPIC AND ANISOTROPIC COUNTING MODES. DATA COVERAGE BEGINS AT THE TIME THE COVERAGE IN TAPE DATA SET 67-123A-05A ENDS. THE DATA COVERAGE FOR THE LATER TIME PERIOD COVERED BY THIS MICROFILM DATA SET RUNS BETWEEN 50 AND 75 PERCENT PER WEEK.

**********PIONEER 8, WEBBER

EXPERIMENT NAME- COSMIC-RAY GRADIENT DETECTOR NSSDC ID 67-123A-06

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - W.R. WEBBER U OF NEW HAMPSHIRE DURHAM, NH

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT UTILIZED A TELESCOPE COMPRISED OF FIVE SOLID-STATE SENSORS, A CERENKOV DETECTOR, AND AN ANTICOINCIDENCE SHIELD. THE TELESCOPE AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. AS DETERMINED BY TWO COINCIDENCE MODES AND ELECTRONIC DISCRIMINATION OF SENSOR OUTPUT PULSES, PARTICLES MEASURED WERE ELECTRONS IN THREE CONTIGUOUS ENERGY INTERVALS BETWEEN 0.34 AND 8.4 MEV, PROTONS IN SIX CONTIGUOUS ENERGY INTERVALS BETWEEN 3.49 AND 64.3 MEV (ONE OF FIVE COUNT RATES WAS DUE TO THE SUM OF COUNTS IN TWO NONCONTIGUOUS ENERGY INTERVALS), AND ALPHA PARTICLES IN FOUR CONTIGUOUS ENERGY INTERVALS BETWEEN 6.64 AND 64.1 MEV/NUCLEON (ONE OF THREE COUNT RATES WAS DUE TO THE SUM OF COUNTS IN TWO NONCONTIGUOUS ENERGY INTERVALS). A THIRD COINCIDENCE MODE MEASURED THE SUM OF COUNTS DUE TO ELECTRONS ABOVE 0.6 MEV AND NUCLEI ABOVE 14 MEV/NUCLEON. A FOURTH COINCIDENCE MODE MEASURED THE SUM OF NUCLEI ABOVE 42 MEV/NUCLEON AND ELECTRONS ABOVE 5.1 MEV. SPACECRAFT SPIN-INTEGRATED DIRECTIONAL FLUXES WERE MEASURED IN THE VARIOUS MODES. ACCUMULATION TIMES AND READOUT INTERVALS WERE DEPENDENT ON THE TELEMETRY BIT RATE AND WERE TYPICALLY IN TENS OF SECONDS. IN ALL CASES, THEY WERE LONGER THAN THE SPACECRAFT SPIN PERIOD. THE EXPERIMENT FUNCTIONED WELL FROM LAUNCH THROUGH JANUARY 1973, ALTHOUGH, AT LOW TELEMETRY BIT RATES, ACCUMULATOR SATURATION RENDERED SOME COUNTING MODES TO BE OF NO VALUE. FOR FURTHER DETAILS, SEE J. GEOPHYS RES, VOL 76, P 1605, 1971.

DATA SET NAME- DAILY AVERAGED COUNT RATE LISTINGS ON MICROFILM — NSSDC ID 67-123A-06D

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/13/67 TO 11/05/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THIS DATA SET CONSISTS OF 16-MM MICROFILM GENERATED AT NSSDC FROM EXPERIMENTER-SUPPLIED COMPUTER PRINTOUT. DAILY AVERAGED COUNT RATES AND STANDARD ERRORS (LESS THAN 1 PERCENT OF COUNT RATE) ARE LISTED FOR BOTH PIONEERS 8 AND 9 FOR MODES T1+2 AND T5. MODE T1+2 CORRESPONDS TO ELECTRONS ABOVE 8.4 MEV AND NUCLEI ABOVE 64 MEV/N ON PIONEER 8 AND TO ELECTRONS ABOVE 5.1 MEV AND NUCLEI ABOVE 42 MEV/N ON PIONEER 9. MODE T5 CORRESPONDS TO ELECTRONS ABOVE 0.3 MEV AND NUCLEI ABOVE 14 MEV/N ON PIONEERS 8 AND 9. DATA GAPS NEAR THE END OF THE TIME PERIOD COVERED REFLECT DECREASING SPACECRAFT TRACKING.

DATA SET NAME- DAILY AVERAGED COUNT RATE PLOTS ON MICROFILM — NSSDC ID 67-123A-06E

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 12/13/67 TO 11/06/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION
THIS DATA SET CONSISTS OF 35-MM MICROFILM GENERATED AT NSSDC FROM EXPERIMENTER-SUPPLIED HARDCOPY PLOTS. DAILY AVERAGED COUNT RATES FOR MODES T1+2 AND T5 ARE PLOTTED WITH ONE YEAR OF DATA PER FRAME. PIONEER 8 AND 9 DATA FRAMES ARE INTERSPERSED. FOR EACH SPACECRAFT, MODE, AND YEAR, THERE ARE TWO PLOTS. ONE OF THESE HAS A LINEAR COUNT RATE SCALE AND THE OTHER HAS A LOGARITHMIC COUNT RATE SCALE. DATA GAPS WHICH REFLECT THE LACK OF SPACECRAFT TRACKING BECOME INCREASINGLY ABUNDANT NEAR THE END OF THE TIME PERIOD OF COVERAGE.

**********PIONEER 9 **********

SPACECRAFT COMMON NAME- PIONEER 9 — NSSDC ID 68-100A
ALTERNATE NAMES- PIONEER-D, PL-684K, 03533

LAUNCH DATE- 11/08/68 SPACECRAFT WEIGHT IN ORBIT- 147. KG

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 11/08/68 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 297.6 DAYS
APOAPSIS- 0.9905 AU RAD PERIAPSIS- 0.7542 AU RAD INCLINATION- .086539 DEG

SPACECRAFT BRIEF DESCRIPTION
PIONEER 9 WAS THE FOURTH IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, AND SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A CONTINUING BASIS. THE SPACECRAFT CARRIED EXPERIMENTS TO STUDY

THE POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND. THE INTERPLANETARY ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT). SOLAR AND GALACTIC COSMIC RAYS. THE INTERPLANETARY MAGNETIC FIELD. COSMIC DUST, AND ELECTRIC FIELDS. ALSO, A NEW CODING PROCESS WAS IMPLEMENTED FOR PIONEER 9. 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 USED AT THE TWO HIGHEST BIT RATES, ANOTHER WAS USED AT THE THREE LOWEST BIT RATES, AND 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 PERIOD BETWEEN WHICH SUCCESSIVE FRAMES WERE COLLECTED AND STORED COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS OF UP TO 15 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 FOR THE MAJORITY OF THE DATA WAS 512 BPS FROM NOVEMBER 8, 1968, TO JANUARY 15, 1969, 256 BPS FROM JANUARY 16, 1969, TO JANUARY 29, 1969, 64 BPS FROM JANUARY 30, 1969 TO MARCH 27, 1969, AND 16 OR 8 BPS THEREAFTER. HIGHER BIT RATES WERE USED WHEN THE SPACECRAFT WAS TRACKED BY THE 64-M ANTENNA, BUT THE DATA COVERAGE BY THIS ANTENNA WAS LOW. THE DATA COVERAGE AVERAGED CLOSE TO 100 PERCENT FOR THE FIRST 29 WEEKS AFTER LAUNCH. AFTER THIS, DATA COVERAGE DROPPED TO CLOSE TO 50 PERCENT UNTIL DECEMBER 1969, AND IT VARIED BETWEEN 10 AND 30 PERCENT THROUGH JULY 1971. ALMOST NO DATA WERE ACQUIRED BETWEEN JULY 1971 AND JUNE 1972. FOR THE NEXT 10 MONTHS COVERAGE WAS TYPICALLY BETWEEN 10 AND 30 PERCENT, WITH 100 PERCENT COVERAGE FOR THE MAJOR SOLAR ACTIVE PERIOD OF AUGUST 1972. FROM APRIL 1973 THROUGH FEBRUARY 1974 PERCENT COVERAGE AVERAGED 5 PERCENT.

**********PIONEER 9, MCCRACKEN

EXPERIMENT NAME- COSMIC-RAY ANISOTROPY NSSDC ID 68-100A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF TEXAS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - K.G.	MCCRACKEN	U OF ADELAIDE	ADELAIDE, AUSTRALIA
OI - U.R.	RAO	U OF TEXAS	DALLAS, TX
OI - W.C.	BARTLEY	U OF TEXAS	DALLAS, TX

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A CSI SCINTILLATOR AND THREE SOLID-STATE TELESCOPES. THE CSI SCINTILLATOR WAS COLLIMATED BY AN ANTICOINCIDENCE PLASTIC SCINTILLATOR AND HAD A CONICAL APERTURE WITH A 38.2-DEG HALF-ANGLE. THE SCINTILLATOR LOOK DIRECTION WAS CENTERED IN THE ECLIPTIC PLANE. THREE SOLID-STATE DETECTORS WERE ORIENTED IN A FAN ARRANGEMENT WITH RESPECT TO A FOURTH SOLID-STATE DETECTOR SUCH THAT EACH OF THE FIRST THREE DETECTORS FORMED A TELESCOPE WITH THE FOURTH DETECTOR. EACH OF THE THREE TELESCOPES THUS FORMED HAD AN ACCEPTANCE CONE OF 23-DEG HALF-ANGLE. THE MEAN VIEWING

DIRECTIONS OF THE TELESCOPES WERE IN THE ECLIPTIC PLANE AND 48 DEG ABOVE AND BELOW THAT PLANE, RESPECTIVELY. TWO CONCURRENT MODES OF COUNTING WERE EMPLOYED. IN THE FIRST MODE, COUNTS WERE ACCUMULATED IN EIGHT SEPARATE 45-DEG INTERVALS DURING THE SPACECRAFT SPIN, WHILE, IN THE SECOND, SPIN-INTEGRATED COUNTS WERE ACQUIRED. IN THE FIRST MODE, THE SCINTILLATOR SEPARATELY MEASURED PARTICLES WITH ENERGIES IN THE RANGES 7.4 TO 21.5 MEV/NUCLEON AND 19.7 TO 63.0 MEV/NUCLEON (NO SPECIES DISCRIMINATION) WHILE EACH SOLID-STATE TELESCOPE SEPARATELY MEASURED PROTONS IN THE ENERGY RANGES 3.3 TO 3.6 MEV AND 3.6 TO 6.7 MEV. IN THE SECOND MODE, THE SCINTILLATOR SEPARATELY MEASURED PARTICLES IN SIX CONTIGUOUS ENERGY INTERVALS BETWEEN 4.5 AND 40 MEV/NUCLEON (INTERVAL LOWER LIMITS AT 4.5, 7.0, 9.6, 13, 21, AND 28 MEV/NUCLEON), WHILE EACH OF THE SOLID-STATE TELESCOPES SEPARATELY MEASURED PROTONS IN THE ENERGY RANGES 1 TO 8, 1 TO 5, 1 TO 3, AND 4 TO 6 MEV AND ALPHA PARTICLES IN THE ENERGY RANGE 4 TO 8 MEV. DURING EACH 224-BIT MAIN TELEMETRY FRAME, TWO FIRST-MODE 9-BIT ACCUMULATORS AND ONE SECOND-MODE 9-BIT ACCUMULATOR WERE READ OUT. INFLIGHT CALIBRATION OF THE SCINTILLATOR AND OF SOME OF THE ELECTRONICS WAS PERFORMED DAILY. SEE BUKATA ET AL., IEEE TRANS. NUC. SCI., NS-17, PP. 18-24, 1970, FOR A MORE DETAILED EXPERIMENT DESCRIPTION.

DATA SET NAME- 7.5-MIN AND 1-HR COUNT RATES ON MICROFILM — NSSDC ID 68-100A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 11/08/68 TO 09/25/70 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REELS OF 16-MM MICROFILM, GENERATED AT NSSDC FROM EXPERIMENTER-SUPPLIED COMPUTER PRINTOUT. EACH FRAME CONTAINS DATA MATRICES FOR ONE HOUR. COUNTS ACCUMULATED DURING INDICATED NUMBERS OF SPACECRAFT REVOLUTIONS FOR 7.5-MIN INTERVALS AND FOR ONE-HOUR INTERVALS ARE GIVEN FOR ALL ISOTROPIC AND ANISOTROPIC COUNTING MODES. TWO YEARS OF DATA ARE CONTAINED IN THE DATA SET, WITH THE COVERAGE VERY LOW IN THE LATER PART, DUE TO GREATLY DECREASED SPACECRAFT TRACKING.

**********PIONEER 9, WEBBER

EXPERIMENT NAME- COSMIC-RAY TELESCOPE — NSSDC ID 68-100A-06

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - W.R. WEBBER — U OF NEW HAMPSHIRE — DURHAM, NH

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT UTILIZED A TELESCOPE COMPRISED OF FIVE SOLID-STATE SENSORS, A CERENKOV DETECTOR, AND AN ANTICOINCIDENCE SHIELD. THE TELESCOPE AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS, AS DETERMINED BY TWO COINCIDENCE MODES AND ELECTRONIC DISCRIMINATION OF SENSOR OUTPUT PULSES. PARTICLES MEASURED WERE ELECTRONS IN THREE CONTIGUOUS ENERGY INTERVALS BETWEEN 0.31 AND 5.1 MEV, PROTONS IN FIVE CONTIGUOUS ENERGY INTERVALS BETWEEN 2.2 AND 42 MEV, AND ALPHA PARTICLES IN THOSE CONTIGUOUS ENERGY INTERVALS BETWEEN 5.8 AND 42 MEV/NUCLEON. A THIRD COINCIDENCE MODE MEASURED

THE SUM OF COUNTS DUE TO ELECTRONS ABOVE 0.6 MEV AND NUCLEI ABOVE 14 MEV/NUCLEON. A FOURTH COINCIDENCE MODE MEASURED THE SUM OF NUCLEI ABOVE 42 MEV/NUCLEON AND ELECTRONS ABOVE 5.1 MEV. SPACECRAFT SPIN-INTEGRATED DIRECTIONAL FLUXES WERE MEASURED IN THE VARIOUS MODES. ACCUMULATION TIMES AND READOUT INTERVALS WERE DEPENDENT ON THE TELEMETRY BIT RATE AND WERE TYPICALLY IN TENS OF SECONDS. IN ALL CASES, THEY WERE LONGER THAN THE SPACECRAFT SPIN PERIOD. AT THE PRESENT LOW TELEMETRY BIT RATES, THE DATA ARE RATHER SPARSE.

DATA SET NAME- DAILY AVERAGED COUNT RATE LISTINGS ON MICROFILM — NSSDC ID 68-100A-06B

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/08/68 TO 09/04/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 16-MM MICROFILM GENERATED AT NSSDC FROM EXPERIMENTER-SUPPLIED COMPUTER PRINTOUT. DAILY AVERAGED COUNT RATES AND STANDARD ERRORS (LESS THAN 1 PERCENT OF COUNT RATE), ARE LISTED FOR BOTH PIONEERS 8 AND 9 FOR MODES T1+2 AND T5. MODE T1+2 CORRESPONDS TO ELECTRONS ABOUT 8.4 MEV AND NUCLEI ABOVE 64 MEV/N ON PIONEER 8 AND TO ELECTRONS ABOVE 5.1 MEV AND NUCLEI ABOVE 42 MEV/N ON PIONEER 9. MODE T5 CORRESPONDS TO ELECTRONS ABOVE 0.6 MEV AND NUCLEI ABOVE 14 MEV/N ON PIONEERS 8 AND 9. DATA GAPS NEAR THE END OF THE TIME PERIOD COVERED REFLECT DECREASING SPACECRAFT TRACKING.

DATA SET NAME- DAILY AVERAGED COUNT RATE PLOTS ON MICROFILM — NSSDC ID 68-100A-06C

AVAILABILITY OF DATA SET- DATA AT NSSDC

TIME PERIOD COVERED- 11/08/68 TO 09/04/71 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 35-MM MICROFILM GENERATED AT NSSDC FROM EXPERIMENTER-SUPPLIED HARDCOPY PLOTS. DAILY AVERAGED COUNT RATES FOR MODES T1+2 AND T5 ARE PLOTTED WITH 1 YEAR OF DATA PER FRAME. PIONEER 8 AND 9 DATA FRAMES ARE INTERSPERSED. FOR EACH SPACECRAFT, MODE, AND YEAR, THERE ARE TWO PLOTS. ONE OF THESE HAS A LINEAR COUNT-RATE SCALE AND THE OTHER HAS A LOGARITHMIC COUNT-RATE SCALE. DATA GAPS WHICH REFLECT THE LACK OF SPACECRAFT TRACKING BECOME INCREASINGLY ABUNDANT NEAR THE END OF THE TIME PERIOD OF COVERAGE.