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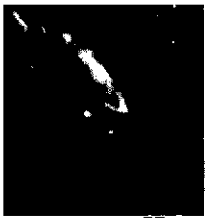

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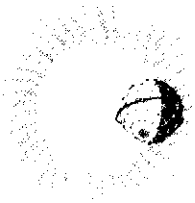
Supplement No. 1 to the January 1974 Report on Active and Planned Spacecraft and Experiments

JULY 1974



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

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NSSDC/WDC-A-R&S 74-12

SUPPLEMENT NO. 1 TO THE JANUARY 1974 REPORT ON ACTIVE AND PLANNED SPACECRAFT AND EXPERIMENTS

Edited by

Richard Horowitz
and
Leo R. Davis
National Space Science Data Center

July 1974

National Space Science Data Center (NSSDC)/
World Data Center A for Rockets and Satellites (WDC-A-R&S)
National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

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PREFACE

This supplement to the Report on Active and Planned Spacecraft and Experiments provides the professional community with information on current as well as planned spacecraft activity in a broad range of scientific disciplines. The document provides brief descriptions for spacecraft and experiments that were not listed in the original report or the content of which has significantly changed from that previously reported due to information recently received. Current data regarding expected launch dates and operation and performance data are presented for all spacecraft and experiments that were active or planned as of March 31, 1974.

We would like to acknowledge the cooperation of the acquisition scientists and others at the National Space Science Data Center (NSSDC) in obtaining information and offering suggestions for this supplement. We are most appreciative of the efforts of the on-site contractor at NSSDC, Programming Methods, Inc. (PMI) Facilities Management Corporation, in preparing this document for publication. Also, the cooperation of the project offices and experimenters in supplying current documentation of their spacecraft and experiments is gratefully acknowledged. We are particularly pleased with the many constructive comments and corrections we have received from interested readers.

NSSDC plans to publish a new cumulative report within 6 months; subsequent plans call for quarterly supplements and an annual cumulative report.

July 1974

Richard Horowitz
Leo R. Davis

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INTRODUCTION

The purpose of this supplement to the Report on Active and Planned Spacecraft and Experiments is to provide updated information and descriptions on the spacecraft and experiments described therein. This includes spacecraft and experiments that have become known to NSSDC since the original report was published or the descriptions of which have changed significantly from that previously reported. In general, the contents, availability, definitions, abbreviations, and acronyms described in the Introduction to the annual report are applicable to this supplement and will not be repeated here.

Several changes have been made to the organization of the report in an effort to simplify its use. Sections 1 and 2 of the original report have been combined to form Section 1 of the supplement. The spacecraft and experiment descriptions in Section 1 of the supplement are now sorted by the spacecraft common name and the principal investigator's last name (instead of by NSSDC ID code). Thus, a particular description can now usually be located without reference to the index. In addition to these changes, the Explorer spacecraft prelaunch generic names will be used as common names (i.e., IMP-H instead of Explorer 47). This, coupled with the new sort order, places prelaunched and launched spacecraft for a given project series in a contiguous sequence. Hopefully, this change will simplify locating descriptions of spacecraft by listing names that are familiar to the user. The location of spacecraft descriptions within the report may still be identified by alternate names using the index in Section 2.1. This cumulative index not only serves as an index to the location of spacecraft and experiment descriptions but also includes other useful information, such as the operational status and data rate, in a convenient and useful format. A set of bar graphs covering electromagnetic radiation is included in Section 2.2.

Several of the changes just noted were suggested by interested readers. We again wish to solicit such suggestions and comments as well as notifications of errors or omissions.

SECTION 1 - SUPPLEMENTARY DESCRIPTIONS OF ACTIVE AND PLANNED SPACECRAFT AND EXPERIMENTS

This section contains descriptions of spacecraft and experiments, both active and planned, that have become known to NSSDC since the original report was published or the descriptions of which have changed significantly from that previously reported.

The descriptions are sorted first by spacecraft common name. Within each spacecraft listing, experiments are ordered by the principal investigator's last name. If the common name, as used by NSSDC, is not known, it can be found by referring to an alternate name found in the index in Section 2.1.

For more detailed information on the contents of the descriptions, the reader is referred to page 1 of the January 1974 report.

NATIONAL SPACE SCIENCE DATA CENTER
ACTIVE AND PLANNED SPACECRAFT AND EXPERIMENTS

**********APOLLO 16 LM/ALSEP **********

SPACECRAFT COMMON NAME- APOLLO 16 LM/ALSEP
ALTERNATE NAMES- ALSEP 16, LEM 16, ROVER 16, 06005, APOLLO 16C
NSSDC ID- 72-031C

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD
DATA ACQUISITION RATE SINCE 04/21/72.

LAUNCH DATE- 04/16/72 SPACECRAFT WEIGHT IN ORBIT- 5040. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- SATURN 5

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OMSF
UNITED STATES NASA-OSS

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

SPACECRAFT BRIEF DESCRIPTION
THE APOLLO 16 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 LUNAR SURFACE AFTER COMPLETION OF THE MANNED PORTION OF THE MISSION. THE LM LANDED IN THE DESCARTES HIGHLAND REGION JUST NORTH OF THE CRATER DOLLAND AT 8 DEG 59 MIN 55 SEC S LATITUDE, AND 15 DEG 31 MIN 12 SEC E LONGITUDE. THE ALSEP WAS DEPLOYED AT THE LANDING SITE. THE LRV WAS USED DURING EXTRA VEHICULAR ACTIVITIES (EVA) TO EXTEND THE RANGE OF MANNED LUNAR EXPLORATION. THE NUCLEAR POWERED ALSEP PACKAGE CONTAINED SEISMIC, MAGNETIC FIELD, HEAT FLOW, LUNAR SOIL COMPOSITION, SOLAR WIND, AND COSMIC-RAY EXPERIMENTS.

**********APOLLO 16 LM/ALSEP, DYAL

EXPERIMENT NAME- LUNAR SURFACE MAGNETOMETER
NSSDC ID- 72-031C-03

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD
DATA ACQUISITION RATE SINCE 08/17/73.

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

PI - P.	DYAL	NASA-ARC	MOFFETT FIELD, CA
OI - C.W.	PARKIN	NASA-ARC	MOFFETT FIELD, CA
OI - C.P.	SONETT	U OF ARIZONA	TUCSON, AZ

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT CONSISTED OF A TRIAXIAL FLUXGATE MAGNETOMETER INTENDED TO MEASURE THE LOCAL MAGNETIC FIELD AT THE SURFACE OF THE MOON. IT WAS INTENDED TO YIELD INFORMATION ON THE MOON'S INTERNAL ELECTRICAL CHARACTERISTICS.

**********CORSA **********

SPACECRAFT COMMON NAME- CORSA
ALTERNATE NAMES- COSMIC RAY SATELLITE
NSSDC ID- CORSA

LAST REPORTED STATE- A PROPOSED MISSION

PLANNED LAUNCH DATE- 1975 SPACECRAFT WEIGHT IN ORBIT- 70. KG

LAUNCH SITE- KAGOSHIMA, JAPAN LAUNCH VEHICLE- M-3S-C

SPONSORING COUNTRY/AGENCY
JAPAN TOKYO U

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 600. KM ALT PERIAPSIS- 350. KM ALT INCLINATION- 30. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - M. ODA U OF TOKYO TOKYO, JAPAN
PS - S. HAYAKAWA NAGOYA U NAGOYA, JAPAN

SPACECRAFT BRIEF DESCRIPTION
THE OBJECTIVES OF THE COSMIC RADIATION SATELLITE, CORSA, ARE TO MAKE MEASUREMENTS OF COSMIC X RAYS AND HEAVY PRIMARY PARTICLES. THESE ARE REDUCED GOALS RELATIVE TO THE ORIGINAL PROGRAM, WHICH WAS THE MEASUREMENT OF COSMIC X RAYS, GAMMA RAYS, ALPHA PARTICLES, AND HEAVY NUCLEI. AN ENGINEERING MODEL OF THE SATELLITE INCORPORATING ALL FOUR EXPERIMENT PACKAGES WAS CONSTRUCTED AND EVALUATED IN 1971-72. ON THE BASIS OF THE STUDY OF THE ENGINEERING MODEL, A DECISION WAS MADE IN 1973 TO CANCEL THE GAMMA-RAY AND ALPHA PARTICLE EXPERIMENT PACKAGES. THE X-RAY DETECTORS ARE TO BE POSITIONED SO THAT THEY MAY VIEW THE SKY IN TWO ORTHOGONAL DIRECTIONS, I.E., PARALLEL AND PERPENDICULAR TO THE SPIN AXIS OF THE SATELLITE. THE OBSERVATIONS WILL COVER THE ENERGY INTERVAL FROM 0.25 KEV TO 60 KEV. THE COSMIC RAY HEAVY PARTICLE TELESCOPE WILL DETERMINE THE NUCLEAR CHARGE OF THE PRIMARIES AND FOR EACH SPECIES GIVE DATA ON THE INTEGRAL ENERGY SPECTRUM OVER THE RANGE FROM 3 TO 6 GEV. CORSA WILL HAVE A CYLINDRICAL SHAPE WITH A DIAMETER OF 85 CM AND A HEIGHT OF APPROXIMATELY 90 CM. THE SPACECRAFT WILL BE SPIN STABILIZED, WITH THE ORIENTATION OF THE AXIS CONTROLLABLE BY COMMAND. A TOTAL ELECTRIC POWER OF APPROXIMATELY 15 WATTS WILL BE PROVIDED BY 6000 SOLAR CELLS MOUNTED ON THE SIDE SURFACE OF THE SATELLITE. A SUN SENSOR AND HORIZON SENSOR WILL BE UTILIZED AS ASPECT-METER. AN ONBOARD CORE MEMORY OF 4000 EIGHT-BIT WORDS IS TO BE USED TO STORE THE DATA DURING THE TIME WHEN THE SATELLITE IS OUT OF RANGE OF GROUND TELEMETRY STATIONS. THE PROPOSED ORBIT IS NEARLY CIRCULAR AT AN ALTITUDE OF ABOUT 500 KM AND WITH AN INCLINATION OF 30 DEGREES.

**********CORSA, HAYAKAWA

EXPERIMENT NAME- COSMIC X-RAY DETECTION (0.25 - 60 KEV)
NSSDC ID- CORSA -01

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - S. HAYAKAWA NAGOYA U NAGOYA, JAPAN

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT WILL BE FOR THE DETECTION OF COSMIC X RAYS. THERE WILL BE TWO SETS OF TWO UNITS OF GAS-FILLED PROPORTIONAL COUNTERS THAT CAN MEASURE VERY-SOFT AND SOFT X RAYS. THESE TWO SETS WILL BE POSITIONED WITHIN THE SATELLITE TO VIEW THE SKY IN TWO ORTHOGONAL DIRECTIONS, PARALLEL AND PERPENDICULAR TO THE SPIN AXIS WHICH WILL BE CONTROLLABLE BY COMMAND. THEREFORE MEASUREMENTS WILL BE ABLE TO BE MADE OF ANY INTERESTING X-RAY

OBJECT ON THE CELESTIAL SPHERE. IN ADDITION, THERE WILL BE ONE SCINTILLATION COUNTER ON THE SATELLITE FOR THE DETECTION OF HARD X RAYS. THE FULL X-RAY INSTRUMENTATION PACKAGE WILL BE ABLE TO DETECT X RAYS OVER THE INTERVAL FROM 0.25 KEV TO 60 KEV, AND WITH A TIME RESOLUTION UP TO 1.3 MSEC.

**********CORSA, ODA

EXPERIMENT NAME- COSMIC HEAVY PRIMARY PARTICLES
NSSDC ID- CORSA -02

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - M. ODA U OF TOKYO TOKYO, JAPAN

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT IS TO MEASURE COSMIC-RAY HEAVY PRIMARY PARTICLES USING A SOLID-STATE PARTICLE TELESCOPE. THE NUCLEAR CHARGE OF PARTICLE WILL BE RESOLVED IN THE ENERGY RANGE FROM 3 TO 6 GEV.

**********ELMS 1 **********

SPACECRAFT COMMON NAME- ELMS 1
ALTERNATE NAMES- BMS, SESP P73-4, ST 73-4A, P 73-4
NSSDC ID- ELMS 1

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 07/00/75 SPACECRAFT WEIGHT IN ORBIT- 1091. KG

LAUNCH SITE- VANDENBERG AFB, UNITED STATES LAUNCH VEHICLE- ATLAS-BUR2

SPONSORING COUNTRY/AGENCY
UNITED STATES DOD-USAF

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 630. KM ALT PERIAPSIS- 630. KM ALT INCLINATION- 67. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PS - J.V. KENNEDY USAF,SAMSO LOS ANGELES, CA

SPACECRAFT BRIEF DESCRIPTION
THIS SPACECRAFT WILL BE AN INDEPENDENT SELF-SUSTAINING UNIT, CONSISTING OF ONE EXPERIMENT AND ITS SUPPORTING SYSTEMS. THE 960-CU FT. SPACECRAFT WILL OBSERVE EARTH LIMB RADIANCES AND WILL HAVE SUFFICIENT POWER TO OPERATE CONTINUOUSLY OVER ITS PLANNED 20-DAY LIFETIME. SINCE ONLY ABOUT ONE-TENTH OF THE SPACECRAFT WEIGHT AND VOLUME WILL BE ATTRIBUTED TO THE SENSOR, IT APPEARS THAT MUCH OF THE SPACECRAFT WEIGHT AND VOLUME WILL BE OCCUPIED BY THE POWER SUPPLY, SENSOR COOLING SYSTEM, 3-AXIS STABILIZATION SYSTEM, AND TELEMETRY.

**********ELMS 2 **********

SPACECRAFT COMMON NAME- ELMS 2
ALTERNATE NAMES- BMS, SESP P74-3, ST 74-3A, P 74-3
NSSDC ID- ELMS 2

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 10/00/75 SPACECRAFT WEIGHT IN ORBIT- 1091. KG

LAUNCH SITE- VANDENBERG AFB, UNITED STATES LAUNCH VEHICLE- ATLAS-BUR2

SPONSORING COUNTRY/AGENCY
UNITED STATES DOD-USAF

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 630. KM ALT PERIAPSIS- 630. KM ALT INCLINATION- 67. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PS - J.V. KENNEDY USAF,SAMSO LOS ANGELES, CA

SPACECRAFT BRIEF DESCRIPTION
THIS SPACECRAFT WILL BE AN INDEPENDENT SELF-SUSTAINING UNIT, CONSISTING OF ONE EXPERIMENT AND ITS SUPPORTING SYSTEMS. THE 960-CU-FT SPACECRAFT WILL OBSERVE EARTH LIMB RADIANCES AND WILL HAVE SUFFICIENT POWER TO OPERATE CONTINUOUSLY OVER ITS PLANNED 20-DAY LIFETIME. IT APPEARS THAT MUCH OF THE SPACECRAFT WEIGHT AND VOLUME WILL BE OCCUPIED BY THE POWER SUPPLY, SENSOR COOLING SYSTEM, 3-AXIS STABILIZATION SYSTEM, AND TELEMETRY, SINCE ONLY ABOUT ONE-TENTH OF THE SPACECRAFT WEIGHT AND VOLUME IS ATTRIBUTED TO THE SENSOR.

**********GEOS-C **********

SPACECRAFT COMMON NAME- GEOS-C
ALTERNATE NAMES- GEODETIC SATELLITE-C
NSSDC ID- GEOS-C

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- UNSCHED. SPACECRAFT WEIGHT IN ORBIT- 241.0 KG

LAUNCH SITE- VANDENBERG AFB, UNITED STATES LAUNCH VEHICLE- DELTA

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OA

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 103.5 MIN
APOAPSIS- 964. KM ALT PERIAPSIS- 890. KM ALT INCLINATION- 115. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - D.S. DILLER NASA HEADQUARTERS WASHINGTON, DC
PS - J.P. MURPHY NASA HEADQUARTERS WASHINGTON, DC

SPACECRAFT BRIEF DESCRIPTION
THE SPACECRAFT WILL CONSIST OF AN OCTAHEDRON, TOPPED BY A TRUNCATED PYRAMID, WITH A PARABOLIC REFLECTOR FOR A RADAR ALTIMETER ON THE FLAT BOTTOM SIDE. A METAL RIBBON BOOM WITH END MASS WILL EXTEND UPWARD APPROXIMATELY 20 FT FROM THE TOP OF THE PYRAMID. PASSIVE LASER RETROREFLECTOR CUBES WILL BE MOUNTED IN A RING AROUND THE PARABOLIC REFLECTOR WITH THE NORMAL VECTOR FROM EACH CUBE FACING 45 DEG OUTWARD FROM THE EARTH DIRECTION OF THE BOOM AXIS. A TURNSTILE ANTENNA FOR VHF AND UHF FREQUENCIES AND SEPARATE ANTENNAS FOR EARTH-VIEWING 324-MHZ DOPPLER, C-BAND, AND S-BAND TRANSPONDERS WILL BE

MOUNTED SEPARATELY ON FLAT SURFACES NEXT TO THE PARABOLIC REFLECTOR. THE DIMENSION ACROSS THE FLATS OF THE OCTAHEDRON WILL BE 48 IN., AND THE SPACECRAFT WILL BE 43.79 IN. HIGH WITH A TOTAL WEIGHT OF 530 LBS. THE MISSION WILL PROVIDE THE STEPPING STONE BETWEEN THE ONGOING NATIONAL GEODETIC SATELLITE PROGRAM (NGSP) AND THE EMERGING EARTH AND OCEAN PHYSICS APPLICATION PROGRAM. IT WILL PROVIDE DATA TO REFINE THE GEODETIC AND GEOPHYSICAL RESULTS OF THE NGSP AND WILL SERVE AS A TEST FOR NEW SYSTEMS. MISSION OBJECTIVES WILL BE TO PERFORM A SATELLITE ALTIMETRY EXPERIMENT IN ORBIT, TO SUPPORT FURTHER THE CALIBRATION AND POSITION DETERMINATION OF NASA AND OTHER AGENCY C-BAND RADAR SYSTEMS, AND TO PERFORM A SATELLITE-TO-SATELLITE TRACKING EXPERIMENT WITH THE ATS-F SPACECRAFT USING AN S-BAND TRANSPONDER SYSTEM. THIS SYSTEM WILL ALSO BE USED FOR PERIODIC GEOS-C TELEMETRY DATA RELAY THROUGH ATS-F, TO SUPPORT FURTHER THE INTERCOMPARISON OF TRACKING SYSTEMS, TO INVESTIGATE THE SOLID-EARTH DYNAMIC PHENOMENA THROUGH PRECISION LASER TRACKING, TO REFINE FURTHER ORBIT DETERMINATION TECHNIQUES AS WELL AS THE DETERMINATION OF INTERDATUM TIES AND GRAVITY MODELS, AND TO SUPPORT THE CALIBRATION AND POSITION DETERMINATION OF NASA-STDN S-BAND TRACKING SYSTEMS.

**********GEOS-C, JACKSON

EXPERIMENT NAME- C-BAND SYSTEM
NSSDC ID- GEOS-C -03

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - E.B. JACKSON NASA-WS WALLOPS ISLAND, VA

EXPERIMENT BRIEF DESCRIPTION

THE C-BAND TRANSPONDER SUBSYSTEM WILL CONSIST OF TWO TRANSPONDERS, ONE THE GEOS-2 NON-COHERENT TYPE AND THE OTHER A COHERENT C-BAND TRANSPONDER. THE NON-COHERENT TRANSPONDER WILL PROVIDE FOR RANGE AND ANGLE MEASUREMENTS, WHILE THE COHERENT TRANSPONDER WILL PROVIDE FOR BOTH RANGE, RANGE-RATE, AND ANGLE MEASUREMENTS. BOTH TRANSPONDERS WILL RECEIVE SIGNALS AT 5690 MHZ, BUT THE COHERENT TRANSPONDER WILL TRANSMIT AT 5690 MHZ, WHILE THE NON-COHERENT TYPE WILL TRANSMIT AT 5765 MHZ. EACH C-BAND TRANSPONDER WILL TRANSMIT ONE PULSE FOR EACH CODED GROUP OF PULSES TRANSMITTED BY A GROUND TRACKING C-BAND RADAR. THE INTERNAL DELAY BETWEEN THE RECEIVED GROUND TRANSMITTED PULSE CODE AND THE TRANSPONDER TRANSMITTED PULSE WILL BE CAREFULLY CALIBRATED PRIOR TO LAUNCH. EACH TRANSPONDER (WHILE OPERATING SEPARATELY OR SIMULTANEOUSLY) WILL BE CAPABLE OF OPERATING IN EITHER OF TWO MODES, STANDBY OR OVERRIDE. IN STANDBY, THE RECEIVER WILL BECOME OPERATIONAL AFTER APPROXIMATELY 60 SEC OF INTERROGATION OR LONG ENOUGH FOR THE OUTPUT TUBE TO WARM UP, WHILE IN THE OVERRIDE MODE OF OPERATION THE OUTPUT TUBE FILAMENT WILL BE ENERGIZED BY THE EXTERNAL COMMAND AND THE WARM-UP DELAY CIRCUIT BYPASSED AFTER THE TUBE WARMS UP, THUS ALLOWING THE TRANSPONDER TO RESPOND IMMEDIATELY TO INTERROGATION SIGNALS. THIS OVERRIDE MODE WILL BE INCORPORATED TO EASE GROUND COMMAND REQUIREMENTS AND TO CONSERVE SPACECRAFT POWER.

**********GEOS-C, MINOTT

EXPERIMENT NAME- LASER CUBE SYSTEM
NSSDC ID- GEOS-C -04

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - P. MINOTT NASA-GSFC GREENBELT, MD

EXPERIMENT BRIEF DESCRIPTION

LASER CORNER REFLECTORS, COMPOSED OF 270 (MINIMUM) 35-MM CUBES, WILL BE UTILIZED IN CONJUNCTION WITH GROUND-BASED LASER SYSTEMS TO OBTAIN PRECISE SATELLITE TRACKING INFORMATION. THE APPLIED PHYSICS LABORATORY WILL BE RESPONSIBLE FOR PROVIDING THE NECESSARY LASER CUBE REFLECTOR PANELS. THE CUBES WILL BE CONFIGURED ON THE LATERAL SURFACE OF A CONIC FRUSTUM, WITH THE LATERAL SURFACE OF THE FRUSTUM ADJOINING THE BOTTOM, EARTH-ORIENTED SURFACE OF THE SPACECRAFT AT A 45-DEG ANGLE. THE BASE OF THE FRUSTUM WILL MEASURE APPROXIMATELY 0.9 METERS IN DIAM. WHEN ILLUMINATED BY A LASER LIGHT PULSE FROM THE GROUND, EACH RETROREFLECTOR CUBE IN THE ARRAY WILL REFLECT THE LIGHT RAY BACK TO A SPECIAL TELESCOPE RECEIVER ON THE GROUND. THE REFLECTED LIGHT WILL BE PICKED UP BY THE TELESCOPE AND THE OPTICAL IMPULSES CONVERTED TO AN ELECTRICAL SIGNAL. A DIGITAL COUNTER WILL RECORD THE TIME AT WHICH THE BEAM OF LIGHT IS RETURNED TO THE GROUND. THE TOTAL TRAVEL TIME OF THE LIGHT PULSES, FROM GROUND TO SATELLITE AND BACK TO THE GROUND, WILL MEASURE THE DISTANCE TO THE SATELLITE AND THUS FORM THE BASIS OF THE SATELLITE OPTICAL LASER SYSTEM. THE FOLLOWING OBSERVATIONAL SYSTEMS WILL BE UTILIZED IN ACQUIRING THE NECESSARY DATA -- NASA/WI LASER RANGING SYSTEMS, SAO LASER RANGING SYSTEMS, GSASER RANGING SYSTEMS, AND OTHER NATIONAL AND INTERNATIONAL LASER STATIONS AS DETERMINED.

**********GEOS-C, STANLEY

EXPERIMENT NAME- RADAR ALTIMETER SYSTEM
NSSDC ID- GEOS-C -01

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - H.R. STANLEY NASA-WS WALLOPS ISLAND, VA

EXPERIMENT BRIEF DESCRIPTION

THE RADAR ALTIMETER EXPERIMENT WILL BE THE HIGHEST PRIORITY EXPERIMENT ABOARD GEOS-C. ITS PURPOSES WILL BE TO DETERMINE THE FEASIBILITY AND UTILITY OF A SPACE-BORNE RADAR ALTIMETER TO MAP THE TOPOGRAPHY OF THE OCEAN SURFACE WITH AN ABSOLUTE ACCURACY WITHIN 5 METERS, AND WITH A RELATIVE ACCURACY OF 1 TO 2 METERS, TO DETERMINE THE FEASIBILITY OF MEASURING THE DEFLECTION OF THE VERTICAL AT SEA, TO DETERMINE THE FEASIBILITY OF MEASURING WAVE HEIGHT, AND TO CONTRIBUTE TO THE TECHNOLOGY LEADING TO A FUTURE OPERATIONAL ALTIMETER-SATELLITE SYSTEM WITH A 10-CM MEASUREMENT CAPABILITY. TO MEET THE OBJECTIVES OF THE EXPERIMENT, THE ALTIMETER WILL HAVE TWO DISTINCT DATA GATHERING MODES - A LONG-PULSE ALTIMETRY DATA MODE AND A SHORT-PULSE MODE. IT IS INTENDED THAT THE PERFORMANCE CAPABILITIES AND OPERATING CHARACTERISTICS OF THE ALTIMETER MAY DIFFER FOR THE TWO MODES. BOTH MODES WILL OPERATE ON A 13.9-GHZ FREQUENCY, BOTH WILL USE A PARABOLIC ANTENNA, BOTH WILL HAVE A MAXIMUM RANGE ACQUISITION TIME OF 6 SEC, AND BOTH WILL HAVE AN ALTITUDE GRANULARITY OF PLUS OR MINUS 0.2 METERS. DIFFERING CHARACTERISTICS WILL BE -- (1) ALTITUDE DATA RATE FOR LONG PULSE WILL BE 2 READING/SEC AND FOR SHORT PULSE 6 READING/SEC, AND (2) INPUT POWER FOR LONG PULSE WILL BE 50 W, FOR SHORT PULSE 100 W. THE GEOS-C RADAR ALTIMETER WILL HAVE SEVERAL FEATURES IN COMMON WITH THE ALTIMETER USED ON THE SKYLAB SATELLITE, BUT WILL HAVE ADVANTAGES OVER THE SKYLAB ALTIMETER BECAUSE OF ITS IMPROVED ACCURACY AND ABILITY TO OPERATE OVER EXTENDED AREAS FOR GREATER PERIODS OF TIME, THEREBY PROVIDING THE CAPABILITY TO EXAMINE THE EARTH OVER LONGER ARCS AND OBSERVE EXTENSIVE OCEAN AREAS.

**********GEOS-C, STECKEL

EXPERIMENT NAME- S-BAND TRANSPONDER SYSTEM
NSSDC ID- GEOS-C -02

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - J.H. STECKEL NASA-GSFC GREENBELT, MD

EXPERIMENT BRIEF DESCRIPTION
THE S-BAND TRANSPONDER SUBSYSTEM WILL BE USED TO PROVIDE METRIC TRACKING DATA (RANGE, RANGE-RATE). IT WILL NOT HAVE THE CAPABILITY OF RECEIVING COMMANDS, BUT IT WILL HAVE THE CAPABILITY OF TRANSMITTING TELEMETRY DATA. THE TRANSPONDER WILL BE UTILIZED IN THE FOLLOWING THREE PRIMARY MODES -- (1) SATELLITE-TO-SATELLITE TRACKING (SST) FROM THE ROSMAN OR EUROPEAN ATS GROUND STATIONS THROUGH ATS-F TO GEOS-C AND BACK, (2) DIRECT USB (DOPPLER ONLY) GROUND STATION TRACKING OF GEOS-C, AFTER THE USB GROUND STATIONS ARE MODIFIED, AND (3) DIRECT GRARR GROUND STATION TRACKING OF GEOS-C. THE TRANSPONDER SUBSYSTEM WILL CONSIST OF A SINGLE-CHANNEL TRANSPONDER, A POWER AMPLIFIER, AA DIPLEXER, AND AN EARTH-VIEWING AND ATS-VIEWING ANTENNA SYSTEM. THE ANTENNAS WILL BE SELECTABLE BY GROUND COMMAND. THE EARTH-VIEWING ANTENNA FOR DIRECT TRACKING WITH THE USB AND GRARR GROUND STATIONS WILL HAVE APPROXIMATELY HEMISPHERICAL COVERAGE AND A MINIMUM OF 0-DB GAIN WITHIN 60 DEG OF THE SPACECRAFT Z-AXIS. THE ANTENNA SYSTEM FOR SST WILL CONSIST OF AN IN-TRACK ARRAY WHICH WILL PROVIDE A 3-DB GAIN IN THE DIRECTION OF ATS FOR GEOS ASCENDING AND DESCENDING NODE PASSES, WHICH WILL CROSS THE EQUATOR WITHIN PLUS OR MINUS 26 DEGREES OF THE ATS SUB-SATELLITE POINT. IN THE SST MODE OF OPERATION, THE INTERROGATION SIGNAL WILL FIRST BE TRANSMITTED AT C-BAND BY THE ATS GROUND STATION TO THE ATS-F SPACECRAFT. ATS SPACECRAFT INSTRUMENTATION WILL COHERENTLY ALTER THE SIGNAL, MAKING IT COMPATIBLE WITH THE INPUT FREQUENCY (2069.1125 MHZ) OF THE S-BAND TRANSPONDER ON GEOS-C, AND TRANSMIT THE SIGNAL TO GEOS-C. GEOS-C THEN, AFTER TRANSLATING THE RECEIVED SIGNAL WILL RETRANSMIT IT TO ATS-F AS IF ATS-F WERE ANOTHER GROUND STATION. ATS-F WILL THEN RETRANSMIT THE SIGNAL TO THE ATS GROUND STATION AT C-BAND. RANGE SUM AND RANGE-RATE SUM WILL BE OBTAINED BY COMPARING THE INTERROGATION AND RESPONSE SIGNALS. THE S-BAND SYSTEM ON GEOS-C WILL ALSO BE TRACKED BY THE USB AND GRARR STDN STATIONS. CARRIER FREQUENCIES (2069.1125 MHZ UP, AND 2247 MHZ DOWN) WILL BE IDENTICAL TO THOSE OF THE SST MODE. COHERENT GRARR TRACKING WILL BE ACCOMPLISHED VIA STANDARD GRARR RANGING SIDE TONES. USB TRACKING WILL CONSIST ONLY OF COHERENT-CARRIER DOPPLER TRACKING. THE S-BAND TRANSPONDER WILL BE A SINGLE-CHANNEL TRANSPONDER, AND THEREFORE SIMULTANEOUS OPERATION WILL NOT BE POSSIBLE.

**********GEOS-C, UNKNOWN

EXPERIMENT NAME- US NAVY DOPPLER SYSTEM
NSSDC ID- GEOS-C -05

LAST REPORTED STATE- PRELAUNCH

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

EXPERIMENT BRIEF DESCRIPTION
THE DOPPLER TECHNIQUE OF TIMING AND MEASURING THE FREQUENCY SHIFT OF RADIO TRANSMISSIONS FROM A MOVING SPACECRAFT WILL BE USED TO OBTAIN DATA

WHICH WILL FURTHER ESTABLISH THE STRUCTURE OF THE EARTH'S GRAVITATIONAL FIELD THROUGH THE COMPARISON OF NEW WITH ESTABLISHED GEODETIC MEASUREMENTS. TWO TRANSMITTERS WILL BE OPERATED AT FREQUENCIES OF 162 AND 324 MHZ. THE DUAL FREQUENCIES WILL BE COHERENTLY RELATED AND UTILIZED IN CONJUNCTION WITH GROUND DOPPLER RECEIVING STATIONS TO OBTAIN PRECISION SATELLITE RANGE-RATE DATA. THE DUAL FREQUENCIES WILL BE GENERATED BY A HIGHLY STABLE OSCILLATOR DRIVING TWO FREQUENCY MULTIPLIERS. BOTH FREQUENCIES WILL BE USED SIMULTANEOUSLY TO PROVIDE COMPARISON DATA OF THE EFFECT OF THE IONOSPHERE ON THE SIGNALS, WHICH WILL THEN BE USED TO CORRECT THE DATA FOR THIS ERROR SOURCE. THIRTEEN OR MORE FIXED GROUND RECEIVING STATIONS OPERATED BY THE U.S. NAVY DOPPLER TRACKING NETWORK (TRANET) AND 12 PORTABLE GEOCEIVERS OPERATED BY THE U.S. ARMY, U.S. NAVY, AND U.S. AIR FORCE - ALL UNDER THE DIRECTION OF THE DEFENSE MAPPING AGENCY (DMA) - ARE EXPECTED TO BE IN OPERATION. OBSERVATIONS MADE FROM THREE OR MORE KNOWN STATIONS WILL ALLOW DEDUCTION OF ORBITAL PARAMETERS. RANGE-RATE DATA FROM EITHER THE FIXED STATIONS OR THE GEOCEIVERS IS ESTIMATED TO BE ACCURATE WITHIN 0.5 CM/SEC. DATA FROM THE SYSTEM WILL BE RECORDED ON PAPER TAPE, THEN REPRODUCED ON MAGNETIC TAPE FOR FURTHER PROCESSING.

**********GMS **********

SPACECRAFT COMMON NAME- GMS
ALTERNATE NAMES- GEOSTATION.METEOROL SAT.
NSSDC ID- GMS

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 12/00/76 SPACECRAFT WEIGHT IN ORBIT- 250. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- THOR-DELTA

SPONSORING COUNTRY/AGENCY
JAPAN NASDA
JAPAN JMA

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 1440. MIN
APOAPSIS- 36000. KM ALT PERIAPSIS- 36000. KM ALT INCLINATION- 0.0 DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - UNKNOWN NASDA TOKYO, JAPAN
PS - UNKNOWN JMA TOKYO,JAPAN

SPACECRAFT BRIEF DESCRIPTION
THE GEOSTATIONARY METEOROLOGICAL SATELLITE (GMS) WILL SERVE AS PART OF JAPAN'S CONTRIBUTION TO GARP (GLOBAL ATMOSPHERIC RESEARCH PROJECT). THE SPIN-STABILIZED SPACECRAFT WILL BE EQUIPPED WITH A VISUAL-INFRARED SENSOR TO PROVIDE NEAR-CONTINUOUS OBSERVATIONS OF VARIOUS WEATHER FEATURES. AS PART OF GARP, THE SATELLITE WILL HELP SUPPLY DATA REQUIRED FOR GLOBAL DATA SETS, TO BE USED IN IMPROVEMENT OF MACHINE WEATHER FORECASTS. IN GENERAL, THE SPACECRAFT DESIGN, INSTRUMENTATION, AND OPERATION WILL BE SIMILAR TO SMS/GOES.

**********HCMM **********

SPACECRAFT COMMON NAME- HCMM
ALTERNATE NAMES- SATS, APPLICATIONS EXP MISSION, SMALL APPLICATIONS TECH, HEAT
NSSDC ID- AEM-A

LAST REPORTED STATE- A PROPOSED MISSION

PLANNED LAUNCH DATE- 03/00/77 SPACECRAFT WEIGHT IN ORBIT- 117. KG

LAUNCH SITE- VANDENBERG AFB, UNITED STATES LAUNCH VEHICLE- SCOUT-F

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OA

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 1440. MIN
APOAPSIS- 600. KM ALT PERIAPSIS- 600. KM ALT INCLINATION- DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - P.G. MARCOTTE NASA-GSFC GREENBELT, MD
PS - W.A. HOVIS NASA-GSFC GREENBELT, MD

SPACECRAFT BRIEF DESCRIPTION
THE OBJECTIVE OF THE HEAT CAPACITY MAPPING MISSION (HCMM) SPACECRAFT WILL BE TO PROVIDE COMPREHENSIVE, ACCURATE, HIGH SPATIAL RESOLUTION THERMAL SURVEYS OF THE SURFACE OF THE EARTH. THE SPACECRAFT WILL BE SPIN STABILIZED AT A RATE OF 14 RPS. THE HCMM CIRCULAR SUN-SYNCHRONOUS ORBIT WILL BE CHOSEN TO ALLOW THE SPACECRAFT TO SENSE SURFACE TEMPERATURE NEAR THE MAXIMUM AND MINUMUM OF THE DIURNAL CYCLE. THE ORBIT WILL HAVE AN ASCENDING DAYLIGHT MODE WITH NOMINAL EQUATORIAL CROSSING TIME OF 2 PM, AND WILL PROVIDE A ONE-THIRTY PM TO TWO-THIRTY AM CROSSING TIME OVER MIDDLE NORTHERN LATITUDES. THE ORBIT WILL ALSO ALLOW FOR REFLECTANCE MEASUREMENTS DURING DAYLIGHT PASSES.

**********HCMM, HOVIS

EXPERIMENT NAME- HEAT CAPACITY MISSION RADIOMETER
NSSDC ID- AEM-A -01

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - W.A. HOVIS NASA-GSFC GREENBELT, MD

EXPERIMENT BRIEF DESCRIPTION
THE OBJECTIVES OF THE HEAT CAPACITY MAPPING RADIOMETER (HCMR) WILL BE AS FOLLOWS -- (1) TO PRODUCE THERMAL MAPS AT THE OPTIMUM TIMES FOR MAKING THERMAL INERTIA STUDIES FOR DISCRIMINATION OF ROCK TYPES AND MINERAL RESOURCES LOCATION, (2) TO MEASURE PLANT CANOPY TEMPERATURES AT FREQUENT INTERVALS TO DETERMINE THE TRANSPIRATION OF WATER AND PLANT LIFE, (3) TO MEASURE SOIL MOISTURE EFFECTS BY OBSERVING THE TEMPERATURE CYCLE OF SOILS, (4) TO MAP THERMAL EFFLUENTS, BOTH NATURAL AND MAN-MADE, (5) TO INVESTIGATE THE FEASIBILITY OF GEOTHERMAL SOURCE LOCATION BY REMOTE SENSING, AND (6) TO PROVIDE FREQUENT COVERAGE OF SNOW FIELDS FOR WATER RUNOFF PREDICTION. THE HCMR WILL TRANSMIT ANALOG DATA IN REAL TIME TO SELECTED RECEIVING STATIONS. IT IS DESIGNED TO PROVIDE ACCURATE, HIGH SPATIAL RESOLUTION THERMAL MAPS OF THE SURFACE OF THE EARTH AT AN OPTIMUM TIME TO DETERMINATION OF THERMAL INERTIA. THE HIGH THERMAL RESOLUTION DATA WILL ALSO BE USED TO MAP THERMAL GRADIENTS IN BODIES OF WATER. THE RADIOMETER TO BE USED WILL BE SIMILAR TO THE HIGH-RESOLUTION SURFACE COMPOSITION MAPPING RADIOMETER (HRSCMR) OF NIMBUS 5 (72-097A). THE HCMR WILL HAVE A SMALL INSTANTANEOUS GEOMETRIC FIELD OF VIEW (LESS THAN 1 X 1 MILLIRADIANS), HIGH RADIOMETRIC ACCURACY, AND A WIDE ENOUGH SWATH COVERAGE ON THE GROUND SO THAT SELECTED AREAS ARE COVERED WITHIN THE 12-HR PERIOD CORRESPONDING TO THE MAXIMUM AND MINIMUM OF

TEMPERATURE OBSERVED. THE INSTRUMENT WILL OPERATE IN TWO CHANNELS, 10.5 TO 12.5 MICROMETERS (IR) AND 0.8 TO 1.1 MICROMETERS (VISIBLE). THE LATTER CHANNEL WILL BE MATCHED TO THE ERTS-1 (72-058A) BAND 4. THE INSTRUMENT IS TO UTILIZE A RADIATION COOLER TO COOL THE TWO HE-CD-TE DETECTORS TO 100 DEG K. THE EXPERIMENT WILL INCLUDE AN ANALOG MULTIPLEXER THAT WILL ACCEPT THE ANALOG OUTPUT OF EACH DETECTOR AND MULTIPLEX THEM IN A FORM SUITABLE FOR TRANSMISSION BY THE SPACECRAFT S-BAND TRANSMITTER.

**********HEAO-A **********

SPACECRAFT COMMON NAME- HEAO-A
ALTERNATE NAMES-
NSSDC ID- HEAO-A

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 1HALF 77 SPACECRAFT WEIGHT IN ORBIT- 1090. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- ATLAS-CENT

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-CSS

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 410. KM ALT PERIAPSIS- 410. KM ALT INCLINATION- 22.5 DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - F.A.	SPEER	NASA HEADQUARTERS	WASHINGTON, DC
PS - F.B.	MC DONALD	NASA-GSFC	GREENBELT, MD

SPACECRAFT BRIEF DESCRIPTION
THE OBJECTIVE OF THE HIGH-ENERGY ASTRONOMY OBSERVATORIES WILL BE TO CONDUCT COORDINATE RESEARCH INTO X-RAY AND GAMMA-RAY ASTRONOMY AND COSMIC-RAY ASTROPHYSICS. THE HEAO SPACECRAFT WILL BE DESIGNED TO CARRY THE LARGE AND HEAVY SCIENTIFIC INSTRUMENTATION REQUIRED TO CONDUCT OBSERVATIONS AT THE VERY-HIGH-ENERGY AND LOW-FLUX LEVELS OF THESE PHENOMENA. THE PRIME OBJECTIVE OF THIS MISSION WILL BE TO CONDUCT AN X-RAY SKY SURVEY.

**********HEAO-A, BOLDT

EXPERIMENT NAME- COSMIC X-RAY EXPERIMENT
NSSDC ID- HEAO-A -02

LAST REPORTED STATE- PRELAUNCH

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

PI - E.A.	BOLDT	NASA-GSFC	GREENBELT, MD
OI - G.P.	GARMIRE	CAL TECH	PASADENA, CA
OI - C.S.	BOWYER	U CALIFORNIA, BERK	BERKELEY, CA
OI - R.	CRUDDANCE	U CALIFORNIA, BERK	BERKELEY, CA
OI - G.B.	FIELD	SAO	CAMBRIDGE, MA
OI - M.L.	LAMPTON	U CALIFORNIA, BERK	BERKELEY, CA
OI - J.I.	SILK	U OF CALIFORNIA, BERK	BERKELEY, CA
OI - S.S.	HOLT	NASA-GSFC	GREENBELT, MD
OI - P.J.	SERLEMITSOS	NASA-GSFC	GREENBELT, MD
OI - G.R.	RIEGLER	BENDIX CORP	ANN ARBOR, MI

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL BE USED TO MAP THE X-RAY SKY IN THE RANGE FROM 0.2 TO 60 KEV, EMPHASIZING BRIGHTNESS DISTRIBUTION OF THE DIFFUSE BACKGROUND, CORRELATION OF GALACTIC RADIO EMISSION AND X-RAY EMISSION FROM COSMIC RAY ELECTRONS, AND RELATIVE EMISSION AND ABSORPTION BY INTERSTELLAR MATTER. SIX THIN-WINDOW PROPORTIONAL COUNTERS COVERING THE RANGES FROM 0.2 TO 4 KEV, 1.5 TO 15 KEV, AND 3 TO 60 KEV, AND COLLIMATED TO FIELDS OF VIEW OF 1.5 X 3 DEG, 3 X 3 DEG, OR 3 X 6 DEG, WILL BE USED. THE TOTAL DETECTOR AREA WILL BE 1.32 M SQ.

**********HEAO-A, FRIEDMAN

EXPERIMENT NAME- LARGE AREA COSMIC X-RAY SURVEY
NSSDC ID- HEAO-A -01

LAST REPORTED STATE- PRELAUNCH

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

PI -	H.D.	FRIEDMAN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI -	T.A.	CHUBB	NAVAL RESEARCH LAB	WASHINGTON, DC
OI -	E.T.	BYRAM	NAVAL RESEARCH LAB	WASHINGTON, DC
OI -	G.G.	FRITZ	NAVAL RESEARCH LAB	WASHINGTON, DC
OI -	J.F.	MEEKINS	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL MAP THE X-RAY SKY FROM 0.15 TO 20 KEV WITH HIGH SENSITIVITY AND MODERATE ANGULAR AND ENERGY RESOLUTION TO LOCATE X-RAY SOURCES WITH SUFFICIENT ACCURACY AND TO DETERMINE THE NATURE AND EXTENT OF BOTH GALACTIC AND EXTRAGALACTIC SOURCES. SIX PROPORTIONAL COUNTER MODULES WILL BE USED, WITH COLLIMATIONS OF 1 X 4 DEG, 1 X 0.5 DEG, OR 2 X 8 DEG, DEPENDING UPON THE MODULE.

**********HEAO-A, GURSKY

EXPERIMENT NAME- X-RAY SCANNING MODULATION COLLIMATOR
NSSDC ID- HEAO-A -03

LAST REPORTED STATE- PRELAUNCH

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

PI -	H.	GURSKY	HARVARD COLLEGE OBS	CAMBRIDGE, MA
OI -	H.	BRADT	MIT	CAMBRIDGE, MA
OI -	G.W.	CLARK	MIT	CAMBRIDGE, MA
OI -	W.H.G.	LEWIN	MIT	CAMBRIDGE, MA
OI -	S.	RAPPAPORT	MIT	CAMBRIDGE, MA
OI -	G.	SPADA	MIT	CAMBRIDGE, MA
OI -	R.	DOXSEY	MIT	CAMBRIDGE, MA
OI -	R.	GIACCONI	HARVARD COLLEGE OBS	CAMBRIDGE, MA
OI -	P.	GORENSTEIN	HARVARD COLLEGE OBS	CAMBRIDGE, MA
OI -	E.M.	KELLOGG	HARVARD COLLEGE OBS	CAMBRIDGE, MA
OI -	H.	TANENBAUM	HARVARD COLLEGE OBS	CAMBRIDGE, MA
OI -	D.	SCHWARTZ	AS+E	CAMBRIDGE, MA

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVES OF THIS EXPERIMENT WILL BE (1) TO DETERMINE THE CELESTIAL POSITIONS OF COSMIC X-RAY SOURCES TO A PRECISION OF ABOUT 5 ARC-SEC, (2) TO DETERMINE THE ANGULAR SIZE OF COSMIC X-RAY SOURCES TO A PRECISION OF ABOUT 5 TO 10 ARC-SEC IN THE ENERGY RANGE FROM 1.0 TO 15 KEV, AND (3) TO STUDY THE STRUCTURE OF THE X-RAY EMISSION TO A PRECISION OF 10

ARC-SEC IN THE ENERGY RANGE FROM 1.0 TO 15 KEV. THE EXPERIMENT WILL CONSIST OF TWO INDEPENDENT MODULATION COLLIMATOR BANKS TO SCAN THE CELESTIAL SPHERE IN THE Y-DIRECTION. EACH BANK WILL HAVE A SERIES OF FOUR WIRE GRIDS, WHICH WILL FORM A SERIES OF TRIANGULAR ACCEPTANCE PATTERNS. THE FWHM OF THE TRIANGULAR RESOLUTION ELEMENTS WILL BE 30 ARC-SEC FOR ONE COLLIMATOR BANK AND 120 ARC-SEC FOR THE OTHER. IN ADDITION, EACH BANK WILL HAVE AN EGG-CRATE COLLIMATOR TO LIMIT THE VIEW TO 4-DEG X 8-DEG FWHM. THERE WILL BE FOUR SEALED PROPORTIONAL COUNTERS ASSOCIATED WITH EACH BANK. THE COUNTERS WILL HAVE 25-MICRON BERYLLIUM WINDOWS AND WILL BE FILLED WITH A MIXTURE OF 90-PERCENT ARGON AND 10-PERCENT CARBON DIOXIDE TO A PRESSURE SLIGHTLY GREATER THAN 1 ATM.

**********HEAO-A, PETERSON

EXPERIMENT NAME- LOW-ENERGY GAMMA-RAY SKY SURVEY
NSSDC ID- HEAO-A -04

LAST REPORTED STATE- PRELAUNCH

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

PI - L.E.	PETERSON	U OF CALIFORNIA, SD	SAN DIEGO, CA
OI - W.H.G.	LEWIN	MIT	CAMBRIDGE, MA
OI - R.M.	PELLING	U OF CALIFORNIA, SD	LA JOLLA, CA
OI - J.L.	MATTESON	U OF CALIFORNIA, SD	LA JOLLA, CA
OI - A.	SCHEEPMAKER	U OF CALIFORNIA, SD	LA JOLLA, CA
OI - H.	BRADT	MIT	CAMBRIDGE, MA
OI - G.W.	CLARK	MIT	CAMBRIDGE, MA
OI - S.	RAPPAPORT	MIT	CAMBRIDGE, MA

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS EXPERIMENT WILL BE TO SEARCH THE CELESTIAL SPHERE FOR PHENOMENA IN THE ENERGY RANGE FROM 0.01 TO 10 MEV. THE SEARCH WILL BE ORIENTED TO THE GATHERING OF DATA WITHIN TWO DISTINCT ENERGY BANDS - 10 TO 200 KEV, AND 0.1 TO 10 MEV. WITHIN THE 10- TO 200-KEV REGION, EMPHASIS WILL BE PLACED ON THE FOLLOWING TYPE OF STUDIES. DETERMINATIONS WILL BE MADE OF THE INTENSITY AND SPECTRA OF POINT X-RAY SOURCES, AT A SENSITIVITY OF 7E-4 PHOTONS/CM SQ/SEC. STUDIES WILL BE MADE TO FIX THE POSITIONS OF STRONG SOURCES (1.6E-2 PHOTONS/CM SQ/SEC OR MORE) TO 0.1 DEGREE, AND TO ABOUT 1 DEG FOR THRESHOLD SOURCES. SEARCHES WILL BE MADE FOR TRANSIENT SOURCES. ALL PERIODIC AND NON-PERIODIC TIME VARIATIONS IN ANY SOURCE ENCOMPASSED BY THIS INVESTIGATION WILL BE AT A TIME RESOLUTION OF APPROXIMATELY 50 MICRO-SECONDS. WORK IN THE 0.1- TO 10-MEV RANGE WILL ADDRESS THREE FUNDAMENTAL STUDIES -- (1) MEASUREMENT OF THE SPECTRUM AND ISOTROPY OF THE DIFFUSE AND THE GALACTIC GAMMA RAYS, (2) MEASUREMENT OF THE SPECTRUM AND TIME VARIATIONS OF STRONG GALACTIC AND EXTRAGALACTIC POINT SOURCES AND, (3) DETERMINATION OF VARIOUS BACKGROUND COMPONENTS AND PRODUCTION EFFECTS NEEDED TO INTERPRET THE ABOVE DATA, AND TO PROVIDE INFORMATION FOR FUTURE MISSIONS SUCH AS THE SHUTTLE. THE EXPERIMENTAL PACKAGE WILL CONTAIN SEVEN PHOSWICH DETECTORS, SHIELDED BY ACTIVE COLLIMATOR ANTICOINCIDENCE CRYSTALS, TO RECORD THE ENERGETIC PHOTONS IN THE ENERGY RANGE FROM 0.01 TO 10 MEV. ONE DETECTOR WILL BE COLLIMATED WITH A 2-DEG SLOT COLLIMATOR TO GIVE HIGH ANGULAR RESOLUTION AT THE LOW ENERGIES. ITS FIELD OF VIEW WILL BE 2 BY 20 DEG. THE OTHER DETECTORS WILL HAVE A FIELD OF VIEW OF 20 BY 40 DEG. A CESIUM IODIDE BLOCKING CRYSTAL WILL BE POSITIONED OVER THE APERTURE OF A DETECTOR TO RECORD THE BACKGROUND EVENTS IN THE DETECTOR.

**********HEAO-B **********

SPACECRAFT COMMON NAME- HEAO-B
ALTERNATE NAMES-
NSSDC ID- HEAO-B

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 2HALF 78 SPACECRAFT WEIGHT IN ORBIT- 1270. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- ATLAS-CENT

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 435. KM ALT PERIAPSIS- 435. KM ALT INCLINATION- 22.5 DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - F.A. SPEER NASA HEADQUARTERS WASHINGTON, DC
PS - S.S. HOLT NASA-GSFC GREENBELT, MD

SPACECRAFT BRIEF DESCRIPTION
THE OBJECTIVE OF THE HIGH-ENERGY ASTRONOMY OBSERVATORIES WILL BE TO CONDUCT COORDINATED RESEARCH INTO X-RAY AND GAMMA-RAY ASTRONOMY AND COSMIC-RAY ASTROPHYSICS. THE HEAO SPACECRAFT WILL BE DESIGNED TO CARRY THE LARGE AND HEAVY SCIENTIFIC INSTRUMENTATION REQUIRED TO CONDUCT OBSERVATIONS AT THE VERY-HIGH-ENERGY AND LOW-FLUX LEVELS OF THESE PHENOMENA. THIS MISSION WILL UTILIZE A POINTED X-RAY TELESCOPE.

**********HEAO-B, BOLDT

EXPERIMENT NAME- SOLID-STATE X-RAY DETECTOR
NSSDC ID- HEAO-B -05

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - E. BOLDT NASA-GSFC GREENBELT, MD

EXPERIMENT BRIEF DESCRIPTION
THIS INSTRUMENT WILL BE A COOLED SOLID-STATE SPECTROMETER AND WILL BE USED TO DETECT WEAK SOURCES AND WEAK SPECTRAL FEATURES OVER A BROAD BAND OF ENERGIES BY EMPLOYING A NONDISPERSIVE SPECTRAL TECHNIQUE. A LITHIUM-DRIFTED SOLID-STATE DETECTOR WILL BE OPERATED AT A TEMPERATURE OF 120 DEG K. THE PRIMARY DETECTOR WILL BE 6 MM IN DIAMETER AND WILL BE SURROUNDED BY TWO VETO GUARD COUNTERS. A TWO-STAGE SOLID CRYOGEN REFRIGERATOR WILL BE USED TO COOL THE DETECTOR. SPECTRAL MEASUREMENTS WILL BE MADE BETWEEN 0.5 AND 4 KEV, WITH A RESOLUTION FROM 120 TO 150 EV, FWHM AND AN EFFICIENCY GREATER THAN 0.9.

**********HEAO-B, CLARK

EXPERIMENT NAME- A CURVED-CRYSTAL BRAGG X-RAY SPECTROMETER
NSSDC ID- HEAO-B -03

LAST REPORTED STATE- PRELAUNCH

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

PI - G.W. CLARK MIT CAMBRIDGE, MA

EXPERIMENT BRIEF DESCRIPTION
THE OBJECTIVE OF THIS EXPERIMENT WILL BE TO SEARCH FOR X-RAY SPECTRAL LINE EMISSIONS ARISING FROM THE SELECTED CELESTIAL OBJECTS. THE SEARCH WILL BE LIMITED TO THE ENERGY LEVEL FROM 0.1 TO 3 KEV. THE INSTRUMENT WILL BE A CURVED-CRYSTAL BRAGG SPECTROMETER USING SIX CRYSTALS. THE SELECTION OF SPECIFIC CRYSTALS WILL BE MADE FROM AMONG PET, ADP, BERYL RAP, LEAD LAURATE, AND LEAD STEARATE. THE SPECTROGRAPH RESOLUTION WILL DEPEND ON THE FINAL SELECTION OF CRYSTALS. RAP AND ADP WOULD GIVE RESOLUTIONS IN LAMBDA/DELTA-LAMBDA OF GREATER THAN 2500. LEAD STEARATE AND LAURATE WOULD GIVE RESOLUTIONS OF APPROXIMATELY 100. THE X-RAY LINES WILL BE DETECTED BY A THIN-WINDOW POSITION-SENSITIVE PROPORTIONAL COUNTER.

**********HEAO-B, GIACCONI

EXPERIMENT NAME- MONITOR PROPORTIONAL COUNTER
NSSDC ID- HEAO-B -01

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - R. GIACCONI HARVARD COLLEGE OBS CAMBRIDGE, MA

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT WILL UTILIZE A MONITOR COUNTER AS A SUPPORT INSTRUMENT FOR CALIBRATION AND NORMALIZATION OF THE FOCAL PLANE INSTRUMENTATION. IT WILL BE USED TO (1) NORMALIZE INTENSITY FLUCTUATIONS DURING SPECTROMETER OBSERVATIONS, (2) OBSERVE THE CONTINUUM DURING SPECTRAL LINE OBSERVATIONS, AND (3) CALIBRATE CERTAIN INSTRUMENTS IN FLIGHT.

**********HEAO-B, GIACCONI

EXPERIMENT NAME- HIGH RESOLUTION IMAGER
NSSDC ID- HEAO-B -02

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - R. GIACCONI HARVARD COLLEGE OBS CAMBRIDGE, MA

EXPERIMENT BRIEF DESCRIPTION
THE OBJECTIVES OF THIS EXPERIMENT WILL BE TO (1) DETECT AND ACCURATELY LOCATE X-RAY SOURCES IN THE ENERGY RANGE FROM 0.2 TO 4 KEV, (2) STUDY THE STRUCTURE OF OBJECTS LARGER THAN 2 ARC-SEC, AND (3) MEASURE THE INTENSITY AND TEMPORAL CHARACTERISTICS OF INDIVIDUAL POINT SOURCES.

**********HEAO-B, GURSKY

EXPERIMENT NAME- IMAGING PROPORTIONAL COUNTER
NSSDC ID- HEAO-B -04

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - H. GURSKY HARVARD COLLEGE OBS CAMBRIDGE, MA

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVES OF THIS EXPERIMENT WILL BE -- (1) TO SURVEY X-RAY SOURCES OF AN EXTENDED NATURE IN THE ENERGY RANGE FROM 0.1 TO 4 KEV, WHERE RESOLUTION OF 1 ARC-MIN WILL BE SUFFICIENT, (2) TO STUDY THE ANGULAR STRUCTURE OF EXTENDED SOURCES, (3) TO SURVEY FOR WEAK SOURCES, AND (4) TO LOCATE OBJECTS WITH POORLY KNOWN POSITIONS.

**********HEAO-C **********

SPACECRAFT COMMON NAME- HEAO-C
ALTERNATE NAMES-
NSSDC ID- HEAO-C

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 2HALF 79 SPACECRAFT WEIGHT IN ORBIT- 1090. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- ATLAS-CENT

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 480. KM ALT PERIAPSIS- 480. KM ALT INCLINATION- 50. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - F.A.	SPEER	NASA-MSFC	HUNTSVILLE, AL
PS - T.A.	PARNELL	NASA-MSFC	HUNTSVILLE, AL

SPACECRAFT BRIEF DESCRIPTION
THE OBJECTIVE OF THE HIGH-ENERGY ASTRONOMY OBSERVATORIES WILL BE TO CONDUCT COORDINATED RESEARCH INTO X-RAY AND GAMMA-RAY ASTRONOMY AND COSMIC-RAY ASTROPHYSICS. THE HEAO SPACECRAFT WILL BE DESIGNED TO CARRY LARGE AND HEAVY SCIENTIFIC INSTRUMENTATION REQUIRED TO CONDUCT OBSERVATIONS AT THE VERY-HIGH-ENERGY AND LOW-FLUX LEVELS OF THESE PHENOMENA. THIS MISSION WILL EMPHASIZE GAMMA-RAY ASTRONOMY AND COSMIC-RAY ASTROPHYSICS.

**********HEAO-C, ISRAEL

EXPERIMENT NAME- HEAVY NUCLEII EXPERIMENT
NSSDC ID- HEAO-C -03

LAST REPORTED STATE- PRELAUNCH

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

PI - M.H.	ISRAEL	WASHINGTON U	ST. LOUIS, MO
PI - E.C.	STONE	CAL TECH	PASADENA, CA
PI - C.J.	WADDINGTON	U OF MINNESOTA	MINNEAPOLIS, MI
OI - W.R.	BINNS	MCDONNELL DOUGLAS	ST. LOUIS, MO
OI - J.	KLARMANN	WASHINGTON U	ST. LOUIS, MO
OI - R.E.	VOGT	CAL TECH	PASADENA, CA

EXPERIMENT BRIEF DESCRIPTION
THE PURPOSE OF THIS EXPERIMENT WILL BE TO MEASURE THE CHARGE SPECTRUM OF COSMIC-RAY NUCLEI OVER THE NUCLEAR CHARGE RANGE FROM 17 TO 120 IN THE ENERGY INTERVAL 0.3-TO 10-GEV/NUCLEON TO CHARACTERIZE COSMIC RAY SOURCES, PROCESSES OF SYNTHETICS, AND PROPAGATION MODES. THE DETECTOR WILL CONSIST OF A DOUBLE-ENDED INSTRUMENT OF UPPER AND LOWER HODOSCOPES AND THREE DUAL-GAP ION CHAMBERS. THE TWO ENDS WILL BE SEPARATED BY A CERENKOV

RADIATOR. THE GEOMETRICAL FACTOR WILL BE A 4 SQ-M STER. THE ION CHAMBERS CAN RESOLVE CHARGE TO 0.24-CHARGE UNITS AT LOW ENERGY AND 0.39-CHARGE UNITS AT HIGH ENERGY AND HIGH Z. THE CERENKOV COUNTER CAN RESOLVE 0.3-TO 0.4-CHARGE UNITS.

**********HEAO-C, JACOBSON

EXPERIMENT NAME- GAMMA RAY LINE SPECTROMETER
NSSDC ID- HEAO-C -01

LAST REPORTED STATE- PRELAUNCH

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

PI - A.S.	JACOBSON	NASA-JPL	PASADENA, CA
OI - J.R.	ARNOLD	U OF CALIFORNIA, SD	LA JOLLA, CA
OI - A.E.	METZGER	NASA-JPL	PASADENA, CA
OI - L.E.	PETERSON	U OF CALIFORNIA, SD	LA JOLLA, CA

EXPERIMENT BRIEF DESCRIPTION

THE BASIC GOALS OF THIS EXPERIMENT WILL BE TO SEARCH FOR GAMMA-RAY LINE EMISSIONS ARISING FROM A VARIETY OF SOURCE PHENOMENA. PARTICULAR EMPHASIS WILL BE PLACED ON FINDING LINE EMISSIONS FROM NUCLEOSYNTHESIS PROCESSES IN SUPERNOVAE, AND FROM POSITRON-ELECTRON ANNIHILATION AND NUCLEAR REACTIONS IN LOW-ENERGY COSMIC RAYS. IN ADDITION, CAREFUL STUDY WILL BE MADE OF THE SPECTRA AND TIME VARIATIONS OF KNOWN HARD X-RAY SOURCES. THE EXPERIMENT WILL BE CAPABLE OF MEASURING GAMMA-RAY LINES FALLING WITHIN THE ENERGY INTERVAL FROM 0.06 TO 10 MEV, AND WITH AN ENERGY RESOLUTION BETTER THAN 2.5 KEV AT 1.33 MEV AT A LINE SENSITIVITY FROM 1E-4 TO 1E-5 PHOTONS/CM SQ/SEC, DEPENDING ON THE ENERGY. THE EXPERIMENTAL PACKAGE WILL CONTAIN FOUR COOLED DRIFTED GERMANIUM DETECTORS SHIELDED BY CESIUM IODIDE. THE KEY EXPERIMENTAL PARAMETERS WILL BE -- (1) GEOMETRY FACTOR OF 11.1 SQ-CM STER, (2) A FIELD OF VIEW OF 27 DEG FWHM AND, (3) A TIME RESOLUTION OF LESS THAN 0.1 MSEC FOR THE GERMANIUM DETECTOR AND 10 SEC FOR THE CESIUM IODIDE DETECTOR.

**********HEAO-C, KOCH

EXPERIMENT NAME- ISOTOPIC COMPOSITION OF COSMIC RAYS
NSSDC ID- HEAO-C -04

LAST REPORTED STATE- PRELAUNCH

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

PI - L.	KOCH	CEN	SACLAY, FRANCE
PI - B.	PETERS	DANISH INST SPACE RSCH	LYNGBY, DENMARK
OI - J.P.	MEYER	CEN	SACLAY, FRANCE
OI - D.	ROUSSEL	CEN	SACLAY, FRANCE
OI - A.	SOUTOUL	CEN	SACLAY, FRANCE
OI - M.	CASSE	CEN	SACLAY, FRANCE
OI - P.	MESTREAU	CEN	SACLAY, FRANCE
OI - N.	LUND	DANISH INST SPACE RSCH	LYNGBY, DENMARK
OI - K.	OMO	DANISH INST SPACE RSCH	LYNGBY, DENMARK
OI - O.	CORYDON-PETERSON	DANISH INST SPACE RSCH	LYNGBY, DENMARK

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL MEASURE THE RELATIVE COMPOSITION OF THE ISOTOPES OF THE PRIMARY COSMIC RAYS BETWEEN BERYLLIUM AND IRON (Z FROM 4 TO 26) AND THE ELEMENTAL ABUNDANCES UP TO TIN (Z=50). CERENKOV COUNTERS AND HODOSCOPES WILL BE COUPLED WITH THE EARTH'S MAGNETIC FIELD TO BE USED AS A

SPECTROMETER. THEY WILL DETERMINE CHARGE AND MASS OF COSMIC RAYS TO A PRECISION OF 10 PERCENT FOR THE MOST ABUNDANT ELEMENTS OVER THE MOMENTUM RANGE FROM 2 TO 25 GEV/C.

**********HEAO-C. MEYER

EXPERIMENT NAME- PRIMARY COSMIC RAY ELECTRONS
NSSDC ID- HEAO-C -05

LAST REPORTED STATE- PRELAUNCH

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

PI - P.	MEYER	U OF CHICAGO	CHICAGO, IL
OI - J.E.	LAMPORT	U OF CHICAGO	CHICAGO, IL
OI - D.	MULLER	U OF CHICAGO	CHICAGO, IL

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT IS DESIGNED TO DETERMINE THE COSMIC-RAY ELECTRON SPECTRUM FROM 5 TO 1,000 GEV TO GAIN INFORMATION ON THE ENERGY DENSITY OF MAGNETIC AND PHOTON FIELDS IN INTERSTELLAR SPACE. THE DISTANCE TO THE ELECTRON SOURCE, AND THE TIME SINCE THE PRODUCTION OF THE ELECTRONS. A DOUBLE ENDED TELESCOPE USING A TUNGSTEN-SCINTILLATOR SANDWICH WILL BE USED. THE ARRANGEMENT WILL BE DOUBLE-ENDED AND HAVE A GEOMETRIC FACTOR OF 900 SQ-CM STER. AND AN ENERGY RESOLUTION OF 25 PERCENT. COMPOSITION STUDIES OF CARBON, NITROGEN, OXYGEN, IRON, AND MANGANESE ABOVE 3000 GEV/NUC WILL ALSO BE PERFORMED.

**********INTERCOSMOS 10 **********

SPACECRAFT COMMON NAME- INTERCOSMOS 10
ALTERNATE NAMES- 6911
NSSDC ID- 73-082A

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT AN UNKNOWN DATA ACQUISITION RATE SINCE 10/30/73.

LAUNCH DATE- 10/30/73 SPACECRAFT WEIGHT IN ORBIT- 550. KG

LAUNCH SITE- LAUNCH VEHICLE- UNDISC

SPONSORING COUNTRY/AGENCY
U.S.S.R. UNKNOWN

INITIAL ORBIT PARAMETERS
EPOCH DATE- 10/31/73 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 102. MIN
APOAPSIS- 1477. KM ALT PERIAPSIS- 265. KM ALT INCLINATION- 74. DEG

RECENT ORBIT PARAMETERS
EPOCH DATE- 10/31/73 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 102. MIN
APOAPSIS- 1477. KM ALT PERIAPSIS- 265. KM ALT INCLINATION- 74. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM -	UNKNOWN	UNKNOWN
PS -	UNKNOWN	UNKNOWN

SPACECRAFT BRIEF DESCRIPTION
THE MAIN SCIENTIFIC OBJECTIVE OF THIS SATELLITE WAS TO STUDY MAGNETOSPHERE-IONOSPHERE COUPLING. THE SPIN RATE OF THE SATELLITE WAS LESS THAN OR EQUAL TO ONE REVOLUTION EVERY FIVE MINUTES. DATA WERE TRANSMITTED

BOTH IN REAL TIME AND IN TAPE-RECORDER MODE. THE SCIENTIFIC EXPERIMENTS ON BOARD THE SATELLITE INCLUDED MEASUREMENTS OF ELECTRIC AND MAGNETIC FIELD FLUCTUATIONS, OF LOW-ENERGY PARTICLE FLUXES, OF PLASMA CONCENTRATION AND TEMPERATURE, AND OF VLF EMISSIONS.

**********INTERCOSMOS 10, UNKNOWN

EXPERIMENT NAME- MAGNETIC FIELD MEASUREMENT
NSSDC ID- 73-082A-01

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT AN UNKNOWN DATA ACQUISITION RATE SINCE 10/30/73.

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

EXPERIMENT BRIEF DESCRIPTION
A THREE-COMPONENT FLUX-GATE MAGNETOMETER WITH A FIELD-ALIGNED SERVO SYSTEM WAS USED FOR MEASURING THREE COMPONENTS OF VARIATIONS OF THE EARTH'S MAGNETIC FIELD INDUCTION VECTOR DELTA B. THE DYNAMIC RANGE OF THE MEASUREMENTS WAS 600 GAMMAS.

**********INTERCOSMOS 10, UNKNOWN

EXPERIMENT NAME- ELECTRIC FIELD MEASUREMENT
NSSDC ID- 73-082A-02

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT AN UNKNOWN DATA ACQUISITION RATE SINCE 10/30/73.

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

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT MEASURED ELECTRIC FIELD FLUCTUATIONS USING A DOUBLE-PROBE TECHNIQUE AND OPERATING IN THE FREQUENCY RANGE FROM 0.03 TO 70 HZ.

**********INTERCOSMOS 10, UNKNOWN

EXPERIMENT NAME- LOW-ENERGY PARTICLES
NSSDC ID- 73-082A-03

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT AN UNKNOWN DATA ACQUISITION RATE SINCE 10/30/73.

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

EXPERIMENT BRIEF DESCRIPTION
AN ELECTRON AND PROTON SPECTROMETER WAS FLOWN TO MEASURE LOW-ENERGY PARTICLES IN THE ENERGY RANGES FROM 0.5 TO 5.0 KEV AND 0.05 TO 20 KEV. THE WHOLE RANGE WAS DIVIDED INTO 32 SUBRANGES. THE ENERGY RESOLUTION WAS APPROXIMATELY 5 PERCENT.

**********INTERCOSMOS 10, UNKNOWN

EXPERIMENT NAME- VLF EMISSIONS
NSSDC ID- 73-082A-04

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT AN UNKNOWN
DATA ACQUISITION RATE SINCE 10/30/73.

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

EXPERIMENT BRIEF DESCRIPTION
THE FREQUENCY RANGE OF THE BROADBAND CHANNEL WAS FROM 22 TO 22,000 HZ. THE DYNAMIC RANGE WAS 80 DECIBELS.

**********INTERCOSMOS 10, UNKNOWN

EXPERIMENT NAME- ELECTRON CONCENTRATION AND TEMPERATURE
NSSDC ID- 73-082A-05

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT AN UNKNOWN
DATA ACQUISITION RATE SINCE 10/30/73.

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

EXPERIMENT BRIEF DESCRIPTION
A LANGMUIR PROBE WAS USED TO MEASURE ELECTRON CONCENTRATION AND TEMPERATURE.

**********ISEE-A **********

SPACECRAFT COMMON NAME- ISEE-A
ALTERNATE NAMES- IMP-K, IME-M, MOTHER
NSSDC ID- MOTHER

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 2HALF 77 SPACECRAFT WEIGHT IN ORBIT- 270. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- DELTA

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS
INTERNATIONAL ESRO

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 131000. KM ALT PERIAPSIS- 500. KM ALT INCLINATION- 28. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - J.J. MADDEN NASA-GSFC GREENBELT, MD
PS - J.H. TRAINOR NASA-GSFC GREENBELT, MD
PS - K. OGILVIE NASA-GSFC GREENBELT, MD

SPACECRAFT BRIEF DESCRIPTION

THE EXPLORER CLASS MOTHER SPACECRAFT WILL BE PART OF THE MOTHER/DAUGHTER/HELIOCENTRIC MISSION. THE PURPOSES OF THE MISSION WILL BE -- (1) TO INVESTIGATE SOLAR/TERRESTRIAL RELATIONSHIPS AT THE OUTERMOST BOUNDARIES OF THE EARTH'S MAGNETOSPHERE, (2) TO EXAMINE IN DETAIL THE STRUCTURE OF THE SOLAR WIND NEAR THE EARTH AND THE SHOCK WAVE THAT FORMS THE INTERFACE BETWEEN THE SOLAR WIND AND EARTH, AND (3) TO CONTINUE THE INVESTIGATION OF COSMIC RAYS AND SOLAR FLARES IN THE INTERPLANETARY REGION NEAR 1 AU. THE MISSION WILL THUS EXTEND THE INVESTIGATIONS OF PREVIOUS IMP SPACECRAFT. THE MOTHER/DAUGHTER PORTION OF THE MISSION WILL CONSIST OF TWO SPACECRAFT WITH A STATION-KEEPING CAPABILITY IN A HIGHLY ECCENTRIC EARTH ORBIT WITH APOGEE FROM 18 TO 23 EARTH RADII. THE SPACECRAFT WILL MAINTAIN A SMALL SEPARATION DISTANCE, AND WILL MAKE SIMULTANEOUS COORDINATED MEASUREMENTS TO PERMIT SEPARATION OF SPATIAL FROM TEMPORAL IRREGULARITIES IN THE NEAR-EARTH SOLAR WIND, THE BOW SHOCK, AND INSIDE THE MAGNETOSPHERE.

**********ISEE-A, HARVEY

EXPERIMENT NAME- ACTIVE PLASMA EXPERIMENT
NSSDC ID- MOTHER -08

LAST REPORTED STATE- PRELAUNCH

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

PI - C.C.	HARVEY	PARIS OBSERVATORY	MEUDON, FRANCE
OI - M.	PETIT	CNET	PARIS, FRANCE
OI - J.R.	MCAFEE	NOAA	BOULDER, CO
OI - D.	JONES	EUR SPACE TECH CENTER	NOORDWIJK, THE NETHERLANDS
OI - J.M.	ETCHETO	CNET	PARIS, FRANCE
OI - R.J.L.	GRARD	EUR SPACE TECH CENTER	NOORDWIJK, THE NETHERLANDS
OI - R.	GENDRIN	CNET	PARIS, FRANCE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL MEASURE THE PLASMA ELECTRON DENSITY NEAR THE MOTHER SATELLITE AND ALSO THE TOTAL ELECTRON CONTENT BETWEEN THE MOTHER AND DAUGHTER SPACECRAFT. THE EXPERIMENT WILL CONSIST OF TWO DISTINCT PARTS -- (1) THE MOTHER SPACECRAFT WILL CARRY AN EXPERIMENT TO DETECT RESONANCES OF THE AMBIENT PLASMA. AFTER AN ANTENNA HAS BEEN MOMENTARILY EXCITED AT ONE OF THE CHARACTERISTIC FREQUENCIES OF THE PLASMA IN WHICH IT IS IMMERSED, A PRONOUNCED 'RINGING' WILL BE OBSERVED. THESE RESONANCES OCCUR AT THE PLASMA FREQUENCY, THE UPPER HYBRID RESONANCE, THE CYCLOTRON FREQUENCY AND ITS HARMONICS, AND THE MEASUREMENT OF THEIR FREQUENCIES WILL PERMIT THE DETERMINATION OF SEVERAL PLASMA PARAMETERS, INCLUDING THE ELECTRON DENSITY. IN THIS EXPERIMENT, THE TRANSMITTER WILL BE DESIGNED TO STEP THROUGH A NUMBER OF SUB-BANDS, COVERING THE CHARACTERISTIC RESONANCE FREQUENCIES OF THE PLASMA, AND (2) THE INTEGRATED DENSITY BETWEEN THE MOTHER AND THE DAUGHTER WILL BE OBTAINED FROM A SECOND EXPERIMENT WHICH WILL MEASURE THE PHASE DELAY INTRODUCED BY THE AMBIENT PLASMA, ONTO A WAVE OF FREQUENCY ABOUT 1 MHZ TRANSMITTED FROM THE MOTHER AND RECEIVED ON THE DAUGHTER (EXPERIMENT 6). THE PHASE WILL BE COMPARED AGAINST A PHASE-COHERENT SIGNAL TRANSMITTED FROM THE MOTHER TO THE DAUGHTER BY MODULATION ONTO A CARRIER OF FREQUENCY HIGH ENOUGH TO BE UNAFFECTED BY THE AMBIENT PLASMA.

**********ISEE-A, MOZER

EXPERIMENT NAME- DC TO 12-HZ ELECTRIC FIELD PROBE
NSSDC ID- MOTHER -06

LAST REPORTED STATE- PRELAUNCH

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

PI -	F.S.	MOZER	U OF CALIFORNIA, BERK	BERKELEY, CA
OI -	M.C.	KELLEY	U OF CALIFORNIA, BERK	BERKELEY, CA
OI -	C.G.	FALTHAMMER	RIT	SWEDEN
OI -	K.	KNOTT	EUR SPACE TECH CENTER	NOORDWIJK, THE NETHERLANDS
OI -	A.	PETERSEN	EUR SPACE TECH CENTER	NOORDWIJK, THE NETHERLANDS
OI -	U.V.	FAHLESON	ROYAL INST TECH	STOCKHOLM, SWEDEN

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVE OF THIS EXPERIMENT WILL BE TO STUDY THE QUASI-STATIC ELECTRIC FIELD IN THE PLASMASPHERE, MAGNETOSPHERE, MAGNETOSHEATH, AND SOLAR WIND. THE 4-IN.-DIAM SPHERES WILL BE MOUNTED AT THE END OF A 30-M BOOM IN THE SATELLITE SPIN PLANE. TO ATTEMPT TO OVERCOME THE SPACECRAFT SHEATH (A POTENTIAL PROBLEM WHICH PLAGUES MOST ELECTRIC FIELD DETECTORS), AN ELECTRON GUN IS INCLUDED ON THE SPACECRAFT BODY. THE INSTRUMENT IS TO BE SENSITIVE TO FIELDS FROM THRESHOLD TO 5 MV/M IN THE FREQUENCY BAND OF 0 TO 12 HZ.

**********ISEE-B **********

SPACECRAFT COMMON NAME- ISEE-B
ALTERNATE NAMES- IMP-K PRIME, IME-D, DAUGHTER
NSSDC ID- DAUGHTR

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 2HALF 77 SPACECRAFT WEIGHT IN ORBIT- 120. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- DELTA

SPONSORING COUNTRY/AGENCY

UNITED STATES	NASA-OSS
INTERNATIONAL	ESRO

PLANNED ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 131000. KM ALT PERIAPSIS- 500. KM ALT INCLINATION- 28. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM -	A.	HAWKYARD	EUR SPACE TECH CENTER	NOORDWIJK, THE NETHERLANDS
PS -	D.E.	PAGE	EUR SPACE TECH CENTER	NOORDWIJK, THE NETHERLANDS

SPACECRAFT BRIEF DESCRIPTION

THE EXPLORER CLASS DAUGHTER SPACECRAFT IS PART OF THE MOTHER/DAUGHTER/HELIOCENTRIC MISSION. THE PURPOSES OF THE MISSION WILL BE -- (1) TO INVESTIGATE SOLAR-TERRESTRIAL RELATIONSHIPS AT THE OUTERMOST BOUNDARIES OF THE EARTH'S MAGNETOSPHERE, (2) TO EXAMINE IN DETAIL THE STRUCTURE OF THE SOLAR WIND NEAR EARTH AND THE SHOCK WAVE THAT FORMS THE INTERFACE BETWEEN THE SOLAR WIND AND EARTH, AND (3) TO CONTINUE THE INVESTIGATION OF COSMIC RAYS AND SOLAR FLARES IN THE INTERPLANETARY REGION NEAR 1 AU. THE MISSION WILL THUS EXTEND THE INVESTIGATIONS OF PREVIOUS IMP SPACECRAFT. THE MOTHER/DAUGHTER PORTION OF THE MISSION WILL CONSIST OF TWO SPACECRAFT WITH A STATION-KEEPING CAPABILITY IN A HIGHLY ECCENTRIC EARTH ORBIT WITH APOGEE FROM 18 TO 23 EARTH RADII. THE SPACECRAFT WILL MAINTAIN A SMALL SEPARATION DISTANCE, AND WILL MAKE SIMULTANEOUS COORDINATED MEASUREMENTS TO PERMIT SEPARATION OF SPATIAL FROM TEMPORAL IRREGULARITIES IN THE NEAR-EARTH SOLAR WIND, THE BOW SHOCK, AND INSIDE THE MAGNETOSPHERE.

**********ISEE-B, HARVEY

EXPERIMENT NAME- RADIO PROPAGATION RECEIVER
NSSDC ID- DAUGHTR-06

LAST REPORTED STATE- PRELAUNCH

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

PI - C.C.	HARVEY	PARIS OBSERVATORY	MEUDON, FRANCE
OI - R.	GENDRIN	CNET	PARIS, FRANCE
OI - J.R.	MCAFEE	NOAA	BOULDER, CO
OI - M.	PETIT	CNET	PARIS, FRANCE
OI - D.	JONES	EUR SPACE TECH CENTER	NOORDWIJK, THE NETHERLANDS
OI - J.M.	ETCHETO	CNET	PARIS, FRANCE
OI - R.J.L.	GRARD	EUR SPACE TECH CENTER	NOORDWIJK, THE NETHERLANDS

EXPERIMENT BRIEF DESCRIPTION
THE TOTAL ELECTRON CONTENT BETWEEN THE MOTHER AND DAUGHTER WILL BE OBTAINED BY MEASURING THE PHASE DELAY INTRODUCED BY THE AMBIENT PLASMA ONTO A WAVE OF FREQUENCY ABOUT 1 MHZ, TRANSMITTED FROM THE MOTHER (EXPERIMENT 8) AND RECEIVED ON THE DAUGHTER. THE PHASE WILL BE COMPARED AGAINST A PHASE-COHERENT SIGNAL TRANSMITTED FROM THE MOTHER TO THE DAUGHTER BY MODULATION ONTO A CARRIER OF FREQUENCY HIGH ENOUGH TO BE UNAFFECTED BY THE AMBIENT PLASMA.

**********IUE **********

SPACECRAFT COMMON NAME- IUE
ALTERNATE NAMES- INT ULTRAVIOLET EXPL, SAS-D
NSSDC ID- SAS-D

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 2HALF 76 SPACECRAFT WEIGHT IN ORBIT- 669. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- DELTA

SPONSORING COUNTRY/AGENCY

UNITED STATES	NASA-OSS
INTERNATIONAL	ESRO
	SRC

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 1440. MIN
APOAPSIS- 38000. KM ALT PERIAPSIS- 38000. KM ALT INCLINATION- 28.9 DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - G.W.	LONGANECKER	NASA-GSFC	GREENBELT, MD
PS - C.E.	FICHTEL	NASA-GSFC	GREENBELT, MD
PS - A.	BOGGESS III	NASA-GSFC	GREENBELT, MD
PS - A.B.	UNDERHILL	NASA-GSFC	GREENBELT, MD

SPACECRAFT BRIEF DESCRIPTION
THE INTERNATIONAL ULTRAVIOLET EXPLORER (IUE, FORMERLY SAS-D) SATELLITE IS AN APPROVED MISSION FOR THE CONSTRUCTION OF A SPACE-BORNE ULTRAVIOLET ASTRONOMICAL OBSERVATORY TO BE USED AS AANINTERNATIONAL FACILITY. THE IUE IS TO CONTAIN A 45-CM TELESCOPE USED SOLELY FOR SPECTROSCOPY IN THE WAVELENGTH RANGE OF 1100 TO 3300 A. THE PLANNING, CONSTRUCTION, AND ULTIMATE OPERATION

OF THE IUE IS THE RESULT OF A CO-OPERATIVE INTERNATIONAL EFFORT. THE SATELLITE AND OPTICAL INSTRUMENTATION ARE TO BE PROVIDED BY THE GODDARD SPACE FLIGHT CENTER (GSFC). THE TELEVISION CAMERAS TO BE USED AS DETECTORS WILL BE PROVIDED BY THE UNITED KINGDOM SPACE RESEARCH COUNCIL (UKSRC). THE EUROPEAN SPACE RESEARCH ORGANIZATION (ESRO) IS TO SUPPLY SOLAR PADDLES FOR THE SATELLITE AND WILL CONSTRUCT A EUROPEAN CONTROL CENTER. AFTER LAUNCH, TWO-THIRDS OF THE OBSERVING TIME WILL BE DIRECTED FROM A CONTROL CENTER AT GSFC, AND ONE-THIRD OF THE TIME THE SATELLITE WILL BE OPERATED FROM THE EUROPEAN CONTROL CENTER NEAR MADRID. GUEST OBSERVERS WILL SUBMIT THEIR PROGRAMS FOR REVIEW AND EVALUATION TO EITHER NASA, UKSRC, OR ESRO AS THEY ARE RESIDENTS OF THE UNITED STATES, UNITED KINGDOM, OR ESRO COUNTRIES. SCIENTISTS NOT COVERED BY THESE CONDITIONS WILL SUBMIT THEIR PROJECT PLANS TO ANY ONE OF THESE NATIONAL AGENCIES. TO ACHIEVE THE OBJECTIVE THAT THE IUE BE AN EFFECTIVE GUEST ASTRONOMICAL OBSERVATORY IT WILL BE LAUNCHED INTO A SYNCHRONOUS ORBIT. THE CHOICE OF A SYNCHRONOUS ORBIT IS MADE TO TRANSFORM THE PROBLEMS AND TECHNIQUES OF TELESCOPE OPERATION INTO A SET SIMILAR TO THOSE FOR GROUND OBSERVATORIES, WHICH ARE ALREADY FAMILIAR TO EVERY OBSERVING ASTRONOMER. THE 45-CM RITCHEY-CHRETIEN F/15 TELESCOPE WILL FEED A SPECTROGRAPH PACKAGE. THE SPECTROGRAPH PACKAGE, USING SEC VIDICON CAMERAS AS DETECTORS, WILL COVER THE SPECTRAL RANGE FROM 1100 TO 3300 A. IT WILL OPERATE IN EITHER A HIGH-RESOLUTION OR A LOW-RESOLUTION MODE, WITH RESOLUTIONS OF APPROXIMATELY 0.2 AND 6 A, RESPECTIVELY. THE SEC VIDICONS CAN INTEGRATE THE SIGNAL FOR UP TO 1 HR. THIS INTEGRATION TIME WILL LIMIT DETECTION IN THE HIGH- AND LOW-RESOLUTION MODES TO APPROXIMATELY 5 AND 0.03 PHOTONS/(CM SQ-SEC-ANGSTROM), RESPECTIVELY, FOR A SIGNAL-TO-NOISE RATIO OF 50. THESE SENSITIVITIES ARE EQUALIVALENT TO OBSERVATIONS OF A B0 STAR OF NINTH TO FOURTEENTH MAGNTUDE, RESPECTIVELY.

**********IUE, NONE ASSIGNED

EXPERIMENT NAME- IUE LOW/HIGH RESOLUTION, ULTRAVIOLET
SPECTROGRAPH PACKAGE
NSSDC ID- SAS-D -01

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - NONE ASSIGNED

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL INCLUDE THE ULTRAVIOLET SPECTROGRAPH PACKAGE CARRIED BY THE IUE, CONSISTING OF TWO PHYSICALLY DISTINCT ECHELLE-SPECTROGRAPH/CAMERA UNITS CAPABLE OF ASTRONOMICAL OBSERVATIONS. EACH SPECTROGRAPH WILL BE A THREE-ELEMENT ECHELLE SYSTEM, COMPOSED OF AN OFF-AXIS PARABOLOIDAL COLLIMATOR, AN ECHELLE GRATING, AND A SPHERICAL FIRST-ORDER GRATING THAT WILL BE USED TO SEPARATE THE ECHELLE ORDERS AND, FOCUS THE SPECTRAL DISPLAY ON AN IMAGE CONVERTER-PLUS-SEC VIDICON CAMERA. (FOR EACH UNIT THERE WILL BE A SPARE CAMERA). THE CAMERA UNITS WILL BE ABLE TO INTEGRATE THE SIGNAL. THE READOUT/PREPARATION CYCLE FOR THE CAMERAS WILL TAKE APPROXIMATELY 4 MIN. WAVELENGTH CALIBRATION WILL BE PROVIDED BY THE USE OF A HOLLOW CATHODE COMPARISON LAMP. NO PHOTOMETRIC STANDARDS WILL BE CARRIED ON THE SPACECRAFT, BUT THE PHOTOMETRIC CALIBRATION WILL BE ACCOMPLISHED BY OBSERVING STANDARD STARS WHOSE SPECTRAL FLUXES HAVE BEEN PREVIOUSLY CALIBRATED BY OTHER MEANS. BOTH ECHELLE-SPECTROGRAPH/CAMERA UNITS WILL BE CAPABLE OF HIGH-RESOLUTION (0.2 A) OR LOW-RESOLUTION (6 A) PERFORMANCE. THE DUAL HIGH/LOW RESOLUTION CAPABILITY WILL BE IMPLEMENTED BY THE INSERTION OF A FLAT IN FRONT OF THE ECHELLE GRATING, SO THAT THE ONLY DISPERSION WILL BE PROVIDED BY THE SPHERICAL GRATING. AS THE SEC VIDICONS CAN INTEGRATE THE SIGNAL FOR UP TO 1 HR, DATA WITH A SIGNAL-TO-NOISE RATIO

OF 50 CAN BE OBTAINED FOR A BO STAR OF THE INTH AND FOURTEENTH MAGNITUDE IN THE HIGH- AND LOW-RESOLUTION MODES, RESPECTIVELY. THE DISTINGUISHING CHARACTERISTICS OF THE UNITS WILL BE THEIR WAVELENGTH COVERAGE. ONE UNIT WILL COVER THE WAVELENGTH RANGE FROM 1192 TO 1924 A IN THE HIGH-RESOLUTION MODE, AND 1135 TO 2085 A IN THE LOW-RESOLUTION MODE. FOR THE OTHER UNIT, THE RANGES WILL BE FROM 1893 TO 3031 A, AND 1800 TO 3255 A FOR THE HIGH- AND LOW-RESOLUTION MODES, RESPECTIVELY. EACH UNIT WILL ALSO HAVE ITS OWN CHOICE OF ENTRANCE APERTURES EITHER FOR A 3-ARC-SEC HOLE OR A 10-X 20-ARC-SEC SLOT. THE 10-X 20-ARC-SEC SLOTS CAN BE BLOCKED BY A COMMON SHUTTER, BUT THE 3-ARC-SEC APERTURE WILL ALWAYS BE OPEN. AS A RESULT, TWO APERTURE CONFIGURATIONS ARE POSSIBLE -- (1) BOTH 3-ARC-SEC APERTURES OPEN AND BOTH 10-X 20-ARC-SEC SLOTS CLOSED, OR (2) ALL FOUR APERTURES OPEN. WITH THIS INSTRUMENTATION, THE OBSERVATIONAL OPTIONS OPEN TO AN OBSERVER WILL BE LONG-WAVELENGTH AND/OR SHORT-WAVELENGTH SPECTROGRAPH, HIGH OR LOW RESOLUTION, AND LARGE OR SMALL APERTURES. EXPOSURES MAY BE MADE WITH THE TWO SPECTROGRAPHS SIMULTANEOUSLY, BUT REMEMBERING THAT THE ENTRANCE APERTURES FOR EACH ARE DISTINCT AND SEPARATED ON THE SKY BY ABOUT 1 MIN OF ARC. AN ADDITIONAL RESTRICTION IS THAT DATA CAN BE READ OUT OF ONLY ONE CAMERA AT A TIME. HOWEVER, ONE CAMERA MAY BE EXPOSING WHILE ONE CAMERA IS BEING READ OUT. THE CHOICE OF HIGH OR LOW RESOLUTION CAN BE MADE INDEPENDENTLY FOR THE TWO SPECTROGRAPHS SO THAT THE OPERATIONAL MODES OF THE UNITS NEED NOT BE THE SAME.

**********LAGEOS **********

SPACECRAFT COMMON NAME- LAGEOS
ALTERNATE NAMES- LASER GEODYNAMIC SAT.
NSSDC ID- LAGEOS

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 1 QTR 76 SPACECRAFT WEIGHT IN ORBIT- 682. KG

LAUNCH SITE- VANDENBERG AFB, UNITED STATES LAUNCH VEHICLE- DELTA

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-CA

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 3700. KM ALT PERIAPSIS- 3700. KM ALT INCLINATION- 50. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - R. DILLER NASA HEADQUARTERS WASHINGTON, DC

SPACECRAFT BRIEF DESCRIPTION
LAGEOS WILL BE A VERY DENSE (HIGH MASS/AREA RATIO) LASER RETROREFLECTOR SATELLITE WHICH WILL PROVIDE A PERMANENT REFERENCE POINT IN A VERY STABLE ORBIT FOR SUCH PRECISION EARTH-DYNAMICS MEASUREMENTS AS CRUSTAL MOTIONS, REGIONAL STRAINS, FAULT MOTIONS, POLAR MOTION AND EARTH-ROTATION VARIATIONS, SOLID EARTH TIDES, AND OTHER KINEMATIC AND DYNAMIC PARAMETERS ASSOCIATED WITH EARTHQUAKE ASSESSMENT AND ALLEVIATION. LAGEOS, IN CONJUNCTION WITH APPROPRIATE LASER TRACKING SYSTEMS, WILL PERMIT EXTREME-PRECISION RANGING MEASUREMENTS FOR BOTH GEOMETRIC MODE (MULTILATERATION) AND ORBITAL DYNAMIC MODE DETERMINATIONS OF POSITIONS OF POINTS ON THE EARTH. IT WILL BE THE FIRST SPACECRAFT DEDICATED EXCLUSIVELY TO HIGH-PRECISION LASER RANGING AND WILL PROVIDE THE FIRST OPPORTUNITY TO ACQUIRE LASER-RANGING DATA THAT IS NOT DEGRADED BY ERRORS ORIGINATING IN THE TARGET SATELLITE. THE HIGH-ACCURACY RANGE MEASUREMENTS FROM THIS PERMANENT

ORBITING REFERENCE POINT WILL BE USED TO ACCOMPLISH MANY EXTREME-PRECISION EARTH-DYNAMICS MEASUREMENTS REQUIRED BY THE EARTHQUAKE HAZARD ASSESSMENT AND ALLEVIATION OBJECTIVES OF THE EARTH AND OCEAN PHYSICS APPLICATIONS PROGRAM (EOPAP). THE PERFORMANCE IN ORBIT OF LAGEOS WILL BE LIMITED ONLY BY DEGRADATION OF THE RETROREFLECTORS. SO MANY DECADES OF USEFUL LIFE CAN BE EXPECTED. THE HIGH MASS-TO-AREA RATIO AND THE PRECISE, STABLE (ATTITUDE-INDEPENDENT) GEOMETRY OF THE SPACECRAFT IN CONCERT WITH THE PROPOSED ORBIT WILL MAKE THIS SATELLITE THE MOST PRECISE POSITION REFERENCE AVAILABLE. BECAUSE IT WILL BE VISIBLE IN ALL PARTS OF THE WORLD AND WILL HAVE AN EXTENDED OPERATION LIFE IN ORBIT, LAGEOS CAN SERVE AS A FUNDAMENTAL GLOBAL STANDARD FOR DECADES.

**********LST **********

SPACECRAFT COMMON NAME- LST
ALTERNATE NAMES- LARGE SPACE TELESCOPE
NSSDC ID- LST

LAST REPORTED STATE- A PROPOSED MISSION

PLANNED LAUNCH DATE- 00/00/80 SPACECRAFT WEIGHT IN ORBIT- 9525. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- SHUTTLE

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 6928. KM ALT PERIAPSIS- 6928. KM ALT INCLINATION- 28.5 DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PS - C.R. O'DELL NASA-MSFC HUNTSVILLE, AL

SPACECRAFT BRIEF DESCRIPTION
THE PROPOSED LARGE SPACE TELESCOPE (LST) WILL BE A SPACE-BORNE, DIFFRACTION-LIMITED TELESCOPE WITH A PLANNED EFFECTIVE APERTURE OF APPROXIMATELY 3 M. THE INITIAL LAUNCH OF THE LST INTO EARTH ORBIT IS EXPECTED IN LATE 1980. THE SPACE SHUTTLE WILL BE USED FOR INITIAL LAUNCH, IN-ORBIT SERVICING, AND FOR RETURN OF THE LST TO THE GROUND FOR MAINTENANCE. THE ANTICIPATED MINIMUM OPERATIONAL LIFETIME, EXCLUDING DOWN TIME FOR PERIODIC MAINTENANCE AND UPDATING, IS 15 YRS. THE LST SYSTEM WILL SERVE AS A NATIONAL ASTRONOMICAL SPACE OBSERVATORY FACILITY. THE USE OF THE ONBOARD INSTRUMENTATION WILL BE OPEN TO SCIENTISTS OF ALL COUNTRIES. THUS, ITS DESIGN WILL BE MOST FLEXIBLE TO ALLOW FOR THE REPLACEMENT OF SCIENTIFIC INSTRUMENTATION WHEN NECESSARY, TO INCORPORATE TECHNOLOGICAL ADVANCES, AND TO SATISFY CHANGES IN THE OBSERVATIONAL INTERESTS OF THE ASTRONOMICAL COMMUNITY. INSTRUMENTATION UPDATING, REPAIR, OR REPLACEMENT WILL BE ACCOMPLISHED BY EITHER RETURN OF THE LST TO THE GROUND, OR BY UTILIZING SUITED ASTRONAUTS FOR IN-ORBIT WORK. PRESENT PHASE B DEFINITION STUDIES INDICATE A DESIRABLE COMPLEMENT OF INSTRUMENTS AS FOLLOWS -- (1) A HIGH-RESOLUTION CAMERA TO COVER THE SPECTRAL RANGE FROM 120 TO 1100 NM, (2) A HIGH-RESOLUTION SPECTROGRAPH, OF RESOLUTION APPROXIMATELY 10 TO THE FIFTH, FOR THE 120-TO-310 NM REGION, (3) A FAINT OBJECT SPECTROGRAPH FOR WORK IN THE 90-TO-1100 NM REGION, (4) AN ASTROMETRIC PACKAGE FOR DOING WORK ON DOUBLE STARS, PROPER MOTIONS, PARALLAXES, ETC., AND (5) AN INFRARED PHOTOMETER AND/OR SPECTROMETER TO COVER THE WAVELENGTH INTERVAL FROM 1 TO 1000 MICRONS.

**********LUNAR POLAR ORB-DAUGHTER**********

SPACECRAFT COMMON NAME- LUNAR POLAR ORB-DAUGHTER
ALTERNATE NAMES- ALPO, AUTO.LUNAR POLAR ORBITER
NSSDC ID- LPO-D

LAST REPORTED STATE- A PROPOSED MISSION

PLANNED LAUNCH DATE- PROPSD79 SPACECRAFT WEIGHT IN ORBIT- 80. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- LTTAT-DLTA

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

PLANNED ORBIT PARAMETERS
ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 6000. KM ALT PERIAPSIS- 6000. KM ALT INCLINATION- 0. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - J.T. SHEA NASA-GSFC GREENBELT, MD
PS - J. PHILPOTTS NASA-GSFC GREENBELT, MD

SPACECRAFT BRIEF DESCRIPTION
THIS SPACECRAFT WILL BE FOR A PROPOSED PROBE OF THE LUNAR ENVIRONMENT. IT IS CONCEIVED TO BE COMPOSED OF TWO SPACECRAFT IN A MOTHER-DAUGHTER RELATIONSHIP. THE MOTHER SHIP WILL CONTAIN THE SCIENTIFIC EXPERIMENTS, WHICH WILL INCLUDE X-RAY, GAMMA-RAY, MAGNETIC FIELD, AND GRAVITY-DETECTING SENSORS. IT IS PROPOSED THAT THE MOTHER SHIP HAVE A CIRCULAR NEAR-POLAR, NON-STABLE ORBIT WITH AN INCLINATION OF 85 DEG AT AN ALTITUDE OF 100 KM. THE DAUGHTER SPACECRAFT, WHICH WILL BE A RANGING AND COMMUNICATION STATION, WILL BE SENT INTO AN EQUATORIAL CIRCULAR ORBIT AT AN ALTITUDE OF 6000 TO 12000 KM. IN ORBIT THE PAYLOADS ANTICIPATED WILL BE APPROXIMATELY 230 KG (500 LBS) FOR THE MOTHER SHIP AND ABOUT 80 KG (175 LBS) FOR THE DAUGHTER SHIP. THE SCIENTIFIC PAYLOAD WILL BE CONSTRAINED TO A DELTA VEHICLE. THE PROJECT IS IN THE STUDY PHASE NOW. IT IS EXPECTED THAT AFO'S WILL BE SENT OUT AT THE BEGINNING OF FISCAL '75 (07/01/74).

**********LUNAR POLAR ORB-MOTHER **********

SPACECRAFT COMMON NAME- LUNAR POLAR ORB-MOTHER
ALTERNATE NAMES- ALPO, AUTO.LUNAR POLAR ORBITER
NSSDC ID- LPO-M

LAST REPORTED STATE- A PROPOSED MISSION

PLANNED LAUNCH DATE- PROPSD79 SPACECRAFT WEIGHT IN ORBIT- 230. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- LTTAT-DLTA

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

PLANNED ORBIT PARAMETERS
ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 100. KM ALT PERIAPSIS- 100. KM ALT INCLINATION- 85. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - J.T.	SHEA	NASA-GSFC	GREENBELT, MD
PS - J.	PHILPOTTS	NASA-GSFC	GREENBELT, MD

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WILL BE FOR A PROPOSED PROBE OF THE LUNAR ENVIRONMENT. IT IS CONCEIVED TO BE COMPOSED OF TWO SPACECRAFT IN A MOTHER-DAUGHTER RELATIONSHIP. THE MOTHER SHIP WILL CONTAIN THE SCIENTIFIC EXPERIMENTS, WHICH WILL INCLUDE X-RAY, GAMMA-RAY, MAGNETIC FIELD, AND GRAVITY-DETECTING SENSORS. IT IS PROPOSED THAT THE MOTHER SHIP HAVE A CIRCULAR NEAR-POLAR, NON-STABLE ORBIT WITH AN INCLINATION OF 85 DEG AT AN ALTITUDE OF 100 KM. THE DAUGHTER SPACECRAFT, WHICH WILL BE A RANGING AND COMMUNICATION STATION, WILL BE SENT INTO AN EQUATORIAL CIRCULAR ORBIT AT AN ALTITUDE OF 6000 TO 12000 KM. IN ORBIT THE PAYLOADS ANTICIPATED WILL BE APPROXIMATELY 230 KG (500 LBS) FOR THE MOTHER SHIP AND ABOUT 80 KG (175 LBS) FOR THE DAUGHTER SHIP. THE SCIENTIFIC PAYLOAD WILL BE CONSTRAINED TO A DELTA VEHICLE. THE PROJECT IS IN THE STUDY PHASE NOW. IT IS EXPECTED THAT AFO'S WILL BE SENT OUT AT THE BEGINNING OF FISCAL '75 (07/01/74).

**********MARINER 10 **********

SPACECRAFT COMMON NAME- MARINER 10
ALTERNATE NAMES- MARINER 73, PL-732A, MARINER-J VENUS/MERCURY, MARINER VENUS/ME
NSSDC ID- 73-085A

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD DATA ACQUISITION RATE SINCE 11/03/73.

LAUNCH DATE- 11/03/73 SPACECRAFT WEIGHT IN ORBIT- 504. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- ATLAS-CENT

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - W.E.	GIBERSON	NASA-JPL	PASADENA, CA
PS - N.W.	CUNNINGHAM	NASA HEADQUARTERS	WASHINGTON, DC

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS THE FIRST ONE TO USE THE GRAVITATIONAL PULL OF ONE PLANET (VENUS) TO REACH ANOTHER (MERCURY). IT WAS LAUNCHED ON NOVEMBER 3, 1973, AT 0545 UT FROM THE KENNEDY SPACE CENTER, FLORIDA, ABOARD AN ATLAS/CENTAUR ROCKET, AND WEIGHED 503 KG IN ORBIT. THE SPACECRAFT STRUCTURE WAS AN 18.15-KG, EIGHT-SIDED FRAMEWORK WITH EIGHT ELECTRONICS COMPARTMENTS. IT MEASURED 1.39 M DIAGONALLY AND 0.457 M IN DEPTH. TWO SOLAR PANELS, EACH 2.7 M LONG AND 0.97 M WIDE, WERE ATTACHED AT THE TOP, SUPPORTING 5.1 SQUARE METERS OF SOLAR CELL AREA. THE ROCKET ENGINE WAS LIQUID-FUELED, WITH TWO SETS OF REACTION JETS USED TO STABILIZE THE SPACECRAFT ON THREE AXES. IT CARRIED A LOW-GAIN OMNIDIRECTIONAL ANTENNA, COMPOSED OF A HONEYCOMB-DISC PARABOLIC REFLECTOR, 1.37 M IN DIAMETER, WITH FOCAL LENGTH 55 CM. FEEDS ENABLED THE SPACECRAFT TO TRANSMIT AT S-BAND AND X-BAND FREQUENCIES. THE SPACECRAFT CARRIED A CANOPUS STAR TRACKER, LOCATED ON THE UPPER RING STRUCTURE OF THE OCTAGONAL SATELLITE, AND ACQUISITION SUN SENSORS ON THE TIPS OF THE SOLAR PANELS. THE INTERIOR OF THE SPACECRAFT WAS INSULATED WITH MULTILAYER THERMAL BLANKETS AT TOP AND BOTTOM. A SUNSHADE WAS DEPLOYED AFTER LAUNCH TO PROTECT THE SPACECRAFT ON THE SOLAR-ORIENTED SIDE. INSTRUMENTS ABOARD THE SPACECRAFT MEASURED THE ATMOSPHERIC, SURFACE, AND PHYSICAL CHARACTERISTICS OF MERCURY AND VENUS. EXPERIMENTS INCLUDED

TELEVISION PHOTOGRAPHY, AND MAGNETIC FIELD, PLASMA, INFRARED RADIOMETRY, ULTRAVIOLET SPECTROSCOPY, AND RADIO SCIENCE DETECTORS. AN EXPERIMENTAL X-BAND HIGH-FREQUENCY TRANSMITTER WAS FLOWN FOR THE FIRST TIME ON THIS SPACECRAFT. MARINER 10 WAS PLACED IN A PARKING ORBIT AFTER LAUNCH FOR APPROXIMATELY 25 MINUTES, THEN PLACED IN ORBIT AROUND THE SUN EN ROUTE TO VENUS. THE ORBIT DIRECTION WAS OPPOSITE TO THE MOTION OF THE EARTH AROUND THE SUN. MID-COURSE CORRECTIONS WERE MADE. THE SPACECRAFT PASSED VENUS ON FEBRUARY 5, 1974, AT A DISTANCE OF 5300 KM. IT CROSSED THE ORBIT OF MERCURY ON MARCH 29, 1974, AT A DISTANCE OF ABOUT 1000 KM FROM THE SURFACE. THE TV AND ULTRAVIOLET EXPERIMENTS WERE TURNED ON THE COMET KOHOUTEK WHILE THE SPACECRAFT WAS ON THE WAY TO VENUS. THE MARINER 10 PROJECT WAS MANAGED BY NASA-JPL, PASADENA, CALIFORNIA.

**********MARINER 10, BRIDGE

EXPERIMENT NAME- MEASUREMENT OF PLASMA ENVIRONMENT
NSSDC ID- 73-085A-03

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD DATA ACQUISITION RATE SINCE 11/03/73.

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

PI - H.S.	BRIDGE	MIT	CAMBRIDGE, MA
OI - J.H.	BINSACK	MIT	CAMBRIDGE, MA
OI - A.J.	LAZARUS	MIT	CAMBRIDGE, MA
OI - S.	OLBERT	MIT	CAMBRIDGE, MA
OI - S.J.	BAME	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - M.D.	MONTGOMERY	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - A.J.	HUNDHAUSEN	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - J.R.	ASBRIDGE	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - K.W.	OGILVIE	NASA-GSFC	GREENBELT, MD
OI - L.F.	BURLAGA	NASA-GSFC	GREENBELT, MD
OI - R.E.	HARTLE	NASA-GSFC	GREENBELT, MD
OI - C.W.	SNYDER	NASA-JPL	PASADENA, CA
OI - G.L.	SISCOE	U OF CALIFORNIA, LA	LOS ANGELES, CA

EXPERIMENT BRIEF DESCRIPTION

A SET OF HEMISPHERICAL ANALYZER PLATES AND AN ELECTRON MULTIPLIER, ALL MOUNTED ON A SCAN PLATFORM, WILL BE PROGRAMMED WITH A SEQUENCE OF ANALYZER PLATE VOLTAGES TO DETERMINE THE DIRECTIONAL CHARACTERISTICS AND THE ENERGY SPECTRUM FOR ELECTRONS FROM 4 TO 400 EV AND IONS FROM 80 EV TO 8 KEV IN THE SOLAR WIND BETWEEN 0.4 AND 1 AU DISTANCE FROM THE SUN.

**********MARINER 10, BROADFOOT

EXPERIMENT NAME- EUV SPECTROSCOPY
NSSDC ID- 73-085A-05

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD DATA ACQUISITION RATE SINCE 11/03/73.

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

PI - A.L.	BROADFOOT	KITT PEAK NATL OBS	TUCSON, AZ
OI - M.B.	MCELROY	HARVARD U	CAMBRIDGE, MA
OI - M.J.S.	BELTON	KITT PEAK NATL OBS	TUCSON, AZ

EXPERIMENT BRIEF DESCRIPTION

TWO EUV GRATING SPECTROMETERS WILL BE USED (1) TO DETECT THE PRESENCE OF AN ATMOSPHERE ON MERCURY AND DETERMINE ITS STRUCTURE AND COMPOSITION, (2)

TO OBSERVE AND DETERMINE THE STRUCTURE AND COMPOSITION OF THE VENUSIAN ATMOSPHERE, (3) TO MAP THE DIFFUSE GALACTIC AND INTERPLANETARY BACKGROUND RADIATION, AND (4) TO OBSERVE THE EARTH GEOCORONA, ESPECIALLY AT 584 AND 1216 A. THE EXISTENCE OF AN ATMOSPHERE ON MERCURY WILL BE DETERMINED BY USING ONE OF THE SPECTROMETERS TO OBSERVE THE ATMOSPHERE DURING SOLAR OCCULTATION IN FOUR CHANNELS -- 475 A, 740 A, 810 A, AND 890 A -- EACH HAVING A 40-A BANDWIDTH. THE SECOND SPECTROMETER WILL BE USED TO OBSERVE AIRGLOW EMISSIONS FROM THE EARTH, MERCURY, VENUS AND BACKGROUND SOURCES IN NINE CHANNELS -- 304 A, 584 A, 744 A, 736 A, 867 TO 879 A, 1048 A, 1216 A, 1304 A, 1657 A. FROM THESE DATA, THE MOST LIKELY CONSTITUENTS OF THE ATMOSPHERES OF MERCURY AND VENUS WILL BE DETERMINED.

**********MARINER 10, CHASE, JR.

EXPERIMENT NAME- TWO-CHANNEL IR RADIOMETER
NSSDC ID- 73-085A-06

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD DATA ACQUISITION RATE SINCE 11/03/73.

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

PI - S.C.	CHASE, JR.	SANTA BARBARA RSCH CTR	GOLETA, CA
OI - D.	MORRISON	UNIVERSITY OF HAWAII	HONOLULU, HI
OI - G.	MUNCH	CAL TECH	PASADENA, CA
OI - G.	NEUGEBAUER	CAL TECH	PASADENA, CA
OI - J.M.	SAARI	BOEING SCI RSCH LABS	SEATTLE, WA
OI - E.D.	MINER	NASA-JPL	PASADENA, CA

EXPERIMENT BRIEF DESCRIPTION

AN INFRARED RADIOMETER HAVING TWO CHANNELS, 22 TO 39 MICRONS (80 DEG K TO 300 DEG K) AND 10 TO 17 MICRONS (200 DEG K TO 650 DEG K), WILL BE USED TO OBSERVE THE THERMAL EMISSION FROM VENUS AND MERCURY IN TWO BROAD SPECTRAL BANDS. THE IR THERMAL EMISSION FROM THE SURFACE OF MERCURY BETWEEN LATE AFTERNOON AND EARLY MORNING (LOCAL TIME) AND DEVIATIONS FROM THE AVERAGE THERMAL BEHAVIOR OF THE SURFACE WILL BE MEASURED. MEASUREMENTS WILL ALSO BE MADE OF THE BRIGHTNESS TEMPERATURES OF VENUSIAN CLOUD TOPS AND LIMB DARKENING PHENOMENA.

**********MARINER 10, HOWARD

EXPERIMENT NAME- S- AND X-BAND RADIO PROPAGATION
NSSDC ID- 73-085A-02

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD DATA ACQUISITION RATE SINCE 11/03/73.

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

PI - H.T.	HOWARD	STANFORD U	STANFORD, CA
OI - G.S.	LEVY	NASA-JPL	PASADENA, CA
OI - I.I.	SHAPIRO	MIT	CAMBRIDGE, MA
OI - G.	FJELDBO	NASA-JPL	PASADENA, CA
OI - A.J.	KLIORE	NASA-JPL	PASADENA, CA
OI - J.D.	ANDERSON	NASA-JPL	PASADENA, CA

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL UTILIZE THE ONBOARD S- AND X-BAND RADIO SUBSYSTEMS TO OBTAIN INFORMATION ON THE MERCURIAN AND VENUSIAN MASSES, GRAVITIES, HARMONICS, EPHEMERIDES, IONOSPHERES, ATMOSPHERES, RADII, AND SURFACE CHARACTERISTICS.

**********MARINER 10, MURRAY

EXPERIMENT NAME- TELEVISION PHOTOGRAPHY
NSSDC ID- 73-085A-01

LAST REPORTED STATE- LAUNCHED AND OPERATING * ,**** AT ZERO
DATA ACQUISITION RATE ,E 04/03/74.

INOPERABLE 04/03/74

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

PI - B.C.	MURRAY	CAL	PASADENA, CA
OI - M.J.S.	BELTON	KI NATL OBS	TUCSON, AZ
OI - G.P.	KUIPER	ZONA	TUCZON, AZ
OI - V.E.	SUOMI	SCONSIN	MADISON, WI
OI - N.J.	TRASK, JR.	OLOGICAL SURVEY	MENLO PARK, CA
OI - D.E.	GAULT	N SA-ARC	MOFFETT FIELD, CA
OI - B.W.	HAPKE	U OF PITTSBURGH	PITTSBURG, PA
OI - M.E.	DAVIES	RAND CORP	SANTA MONICA, CA
OI - B.T.	O'LEARY	CORNELL U	ITHACA, NY

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL TAKE TELEVISION-VIDEO PHOTOGRAPHY OF BOTH VENUS AND MERCURY. THE OBJECTIVES OF THE EXPERIMENT WILL BE - (1) TO MAP AND IDENTIFY THE MAJOR PHYSIOGRAPHIC PROVINCES OF MERCURY, (2) TO DETERMINE THE ORIENTATION OF THE SPIN AXIS OF MERCURY, (3) TO COMBINE ALL OF THE MERCURY DATA TO ESTABLISH A CARTOGRAPHIC COORDINATE SYSTEM, (4) TO INVESTIGATE THE TIME-DEPENDENT PROPERTIES OF THE VENUS ULTRAVIOLET 'CLOUDS,' AND (5) TO OBTAIN HIGH-RESOLUTION IMAGERY OF THE MAIN CLOUDS OF VENUS. THE INSTRUMENT WILL BE A GEC 1 'VIDICON TUBE.' IT WILL HAVE A 42-SEC FRAMING RATE AND A 0.48- BY 0.37-DEG FIELD OF VIEW AND WILL USE TWO SPHERICAL TELESCOPE 150-MM OPTICS. IT IS PLANNED THAT APPROXIMATELY 8350 PICTURES, WITH A RESOLUTION OF 100 M, WILL BE OBTAINED.

**********MARINER 10, NESS

EXPERIMENT NAME- FLUXGATE MAGNETOMETER
NSSDC ID- 73-085A-04

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD
DATA ACQUISITION RATE SINCE 11/03/73.

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

PI - N.F.	NESS	NASA-GSFC	GREENBELT, MD
OI - K.W.	BEHANNON	NASA-GSFC	GREENBELT, MD
OI - R.P.	LEPPING	NASA-GSFC	GREENBELT, MD
OI - Y.C.	WHANG	CATHOLIC U	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF TWO TRIAXIAL FLUXGATE MAGNETOMETERS DESIGNED TO MAKE VECTOR MEASUREMENTS OF THE MAGNETIC FIELD IN THE VICINITY OF MERCURY AND VENUS AND IN THE INTERPLANETARY MEDIUM. EACH SENSOR WILL HAVE DUAL OPERATING RANGES OF MINUS TO PLUS 16 GAMMAS AND 128 GAMMAS. BIAS OFFSET CAPABILITY WILL EXTEND THE OPERATING RANGE TO MINUS TO PLUS 4096 GAMMAS.

**********MARINER 10, SIMPSON

EXPERIMENT NAME- ENERGETIC PARTICLES
NSSDC ID- 73-085A-07

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD
DATA ACQUISITION RATE SINCE 11/03/73.

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

PI - J.A.	SIMPSON	U OF CHICAGO	CHICAGO, IL
OI - J.E.	LAMPORT	U OF CHICAGO	CHICAGO, IL

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT WILL MEASURE THE CHEMICAL AND ISOTOPIC SPECIES OF SOLAR CHARGED PARTICLES BOMBARDING THE ATMOSPHERE AND SURFACE OF MERCURY. THE MEASUREMENTS WILL ALSO INCLUDE A SEARCH FOR TRAPPED HIGH-ENERGY ELECTRONS AND PROTONS IN THE POSSIBLE MAGNETOSPHERES OF MERCURY AND VENUS. THE CHARGED PARTICLE TELESCOPE WILL BE SENSITIVE TO ELECTRONS AND PROTONS WITH ENERGIES E.GT. 200 KEV AND E.GT. 600 KEV, RESPECTIVELY.

**********MARINER 77A **********

SPACECRAFT COMMON NAME- MARINER 77A
ALTERNATE NAMES- MARINER JUPITER/SATURN A, OUTER PLANETS A
NSSDC ID- MARN77A

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 2HALF 77 SPACECRAFT WEIGHT IN ORBIT- 70. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- TITAN-CENT

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - H.	SCHURMEIER	NASA-JPL	PASADENA, CA

SPACECRAFT BRIEF DESCRIPTION
THE OVERALL OBJECTIVES OF THE TWO SPACECRAFT, MARINER 77A AND MARINER 77B, WILL BE TO CONDUCT EXPLORATORY INVESTIGATIONS OF THE PLANETARY SYSTEMS OF JUPITER AND SATURN AND OF THE INTERPLANETARY MEDIUM OUT TO SATURN. PRIMARY EMPHASIS WILL BE PLACED ON COMPARATIVE STUDIES OF THESE TWO PLANETARY SYSTEMS BY OBTAINING (1) MEASUREMENTS OF THE ENVIRONMENT, ATMOSPHERE, AND BODY CHARACTERISTICS OF THE PLANETS AND ONE OR MORE OF THE SATELLITES OF EACH PLANET, (2) STUDIES OF THE NATURE OF THE RINGS OF SATURN, AND (3) EXPLORATION OF THE INTERPLANETARY (OR INTERSTELLAR) MEDIUM AT INCREASING DISTANCES FROM THE SUN. THESE OBJECTIVES WILL BE ATTAINED BY USING A VARIETY OF INSTRUMENTS AND METHODS INCLUDING TV, A COHERENT S- AND X-BAND RF RECEIVER, AN INFRARED INTERFEROMETER, ULTRAVIOLET SPECTROMETER, FLUXGATE MAGNETOMETERS, FARADAY CUPS, A PARTICLE ANALYZER, PARTICLE TELESCOPES, THE SISYPHUS METHOD PHOTOPOLARIMETER, AND A SWEEP FREQUENCY RADIO RECEIVER. THE TWO SPACECRAFT WILL BE LAUNCHED WITHIN A MONTH OF EACH OTHER.

**********MARINER 77A, BLAMONT

EXPERIMENT NAME- LYMAN ALPHA SPECTROPHOTOMETER
NSSDC ID- MARN77A-12

LAST REPORTED STATE- PRELAUNCH

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

PI - J.E.	BLAMONT	CNRS	VERRIERES-LE-BUISSON, FRANCE
OI - J.L.	BERTAUX	CNES	BRETIGNEY, FRANCE

EXPERIMENT BRIEF DESCRIPTION

A HIGH-RESOLUTION TWO-CHANNEL PHOTOMULTIPLIER WILL BE MOUNTED ON THE SCAN PLATFORM AND WILL BE FLOWN TO PROVIDE MEASUREMENTS FOR SEVERAL STUDIES, INCLUDING THOSE DEALING WITH THE SOLAR WIND GALACTIC MEDIUM INTERACTION, AND WITH THE THERMOSPHERES OF JUPITER AND SATURN. THE RESONANCE LINES MEASURED WILL BE AT 1216 A AND 3090 A, WITH A SPECTRAL RANGE OF PLUS OR MINUS 2.5 A FOR THE HYDROGEN EMISSION ,AND WITH A SPECTRAL RANGE OF PLUS OR MINUS 40 A FOR THE OH OXHYDRILL EMISSION. WHEN MEASURING IN THE HIGH SPECTRAL RESOLUTION MODE, I.E. AT 0.01 A, THE FIELD OF VIEW WILL BE 1 DEG BY 2.5 DEG.

**********MARINER 77B **********

SPACECRAFT COMMON NAME- MARINER 77B
ALTERNATE NAMES- MARINER JUPITER/SATURN B, OUTER PLANETS B
NSSDC ID- MARN77B

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 2HALF 77 SPACECRAFT WEIGHT IN ORBIT- 70. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- TITAN-CENT

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - H.	SCHURMEIER	NASA-JPL	PASADENA, CA

SPACECRAFT BRIEF DESCRIPTION

THE OVERALL OBJECTIVES OF THE TWO SPACECRAFT, MARINER 77A AND MARINER 77B, WILL BE TO CONDUCT EXPLORATORY INVESTIGATIONS OF THE PLANETARY SYSTEMS, JUPITER AND SATURN, AND OF THE INTERPLANETARY MEDIUM OUT TO SATURN. PRIMARY EMPHASIS WILL BE PLACED ON COMPARATIVE STUDIES OF THESE TWO PLANETARY SYSTEMS BY OBTAINING (1) MEASUREMENTS OF THE ENVIRONMENT, ATMOSPHERE, AND BODY CHARACTERISTICS OF THE PLANETS AND ONE OR MORE OF THE SATELLITES OF EACH PLANET, (2) STUDIES OF THE NATURE OF THE RINGS OF SATURN, AND (3) EXPLORATION OF THE INTERPLANETARY (OR INTERSTELLAR) MEDIUM AT INCREASING DISTANCES FROM THE SUN. THESE OBJECTIVES WILL BE OBTAINED USING A VARIETY OF INSTRUMENTS AND METHODS INCLUDING TV, A COHERENT S- AND X-BAND RF RECEIVER, AN INFRARED INTERFEROMETER, AN ULTRAVIOLET SPECTROMETER, FLUXGATE MAGNETOMETERS, FARADAY CUPS, A PARTICLE ANALYZER, PARTICLE TELESCOPES, THE SISYPHUS METHOD PHOTOPOLARIMETER, AND A SWEEP FREQUENCY RADIO RECEIVER. THE TWO SPACECRAFT WILL BE LAUNCHED WITHIN A MONTH OF EACH OTHER.

**********MARINER 77B, BLAMONT

EXPERIMENT NAME- LYMAN ALPHA SPECTROPHOTOMETER
NSSDC ID- MARN77B-12

LAST REPORTED STATE- PRELAUNCH

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

PI - J.E.	BLAMONT	CNRS	VERRIERES-LE-BUISSON, FRANCE
OI - J.L.	BERTAUX	CNES	BRETIGNEY, FRANCE

EXPERIMENT BRIEF DESCRIPTION

A HIGH-RESOLUTION TWO-CHANNEL PHOTOMULTIPLIER WILL BE MOUNTED ON THE SCAN PLATFORM AND WILL BE FLOWN TO PROVIDE MEASUREMENTS FOR SEVERAL STUDIES, INCLUDING THOSE DEALING WITH THE SOLAR WIND GALACTIC MEDIUM INTERACTION, AND WITH THE THERMOSPHERES OF JUPITER AND SATURN. THE RESONANCE LINES MEASURED WILL BE AT 1216 A AND 3090 A, WITH A SPECTRAL RANGE OF PLUS OR MINUS 2.5 A FOR THE HYDROGEN EMISSION, AND WITH A SPECTRAL RANGE OF PLUS OR MINUS 40 A FOR THE OH EMISSION. WHEN MEASURING IN THE HIGH SPECTRAL RESOLUTION MODE, I.E. AT 0.01 A, THE FIELD OF VIEW WILL BE 1 DEG BY 2.5 DEG.

**********METEOSAT **********

SPACECRAFT COMMON NAME- METEOSAT
ALTERNATE NAMES- METEOROLOGICAL SATELLITE
NSSDC ID- METOSAT

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 4 QTR 76 SPACECRAFT WEIGHT IN ORBIT- KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- DELTA

SPONSORING COUNTRY/AGENCY
INTERNATIONAL ESRO

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 1440. MIN
APOAPSIS- 36000. KM ALT PERIAPSIS- 36000. KM ALT INCLINATION- DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

SPACECRAFT BRIEF DESCRIPTION

METEOSAT WILL BE A GEOSTATIONARY SPACECRAFT AND WILL SERVE AS PART OF ESRO'S (EUROPEAN SPACE RESEARCH OFFICE) CONTRIBUTION TO GARP (GLOBAL ATMOSPHERIC RESEARCH PROJECT). THE SPIN-STABILIZED SPACECRAFT WILL BE EQUIPPED WITH A VISUAL-INFRARED SENSOR TO PROVIDE NEAR-CONTINUOUS OBSERVATIONS OF VARIOUS WEATHER FEATURES. AS PART OF GARP, THE SATELLITE WILL HELP TO SUPPLY DATA REQUIRED FOR GLOBAL DATA SETS, TO BE USED IN IMPROVEMENT OF MACHINE WEATHER FORECASTS. IN GENERAL, THE SPACECRAFT DESIGN, INSTRUMENTATION, AND OPERATION WILL BE SIMILAR TO SMS/GOES.

**********NIMBUS-G **********

SPACECRAFT COMMON NAME- NIMBUS-G
ALTERNATE NAMES-
NSSDC ID- NIMBS-G

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 1 QTR 77 SPACECRAFT WEIGHT IN ORBIT- KG

LAUNCH SITE- VANDENBERG AFB, UNITED STATES LAUNCH VEHICLE-

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OA

PLANNED ORBIT PARAMETERS

ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 108. MIN
APOAPSIS- 1100. KM ALT PERIAPSIS- 1100. KM ALT INCLINATION- 100. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - J. SARGENT NASA-GSFC GREENBELT, MD
PS - W.R. BANDEEN NASA-GSFC GREENBELT, MD

SPACECRAFT BRIEF DESCRIPTION
THE NIMBUS-G RESEARCH AND DEVELOPMENT SATELLITE WILL SERVE AS A STABILIZED, EARTH-ORIENTED PLATFORM FOR THE TESTING OF ADVANCED SYSTEMS FOR SENSING AND COLLECTING METEOROLOGICAL DATA ON A GLOBAL SCALE. THE POLAR-ORBITING SPACECRAFT WILL CONSIST OF THREE MAJOR STRUCTURES -- (1) A HOLLOW TORUS-SHAPED SENSOR MOUNT, (2) SOLAR PADDLES, AND (3) A CONTROL HOUSING UNIT THAT IS CONNECTED TO THE SENSOR MOUNT BY A TRIPOD TRUSS STRUCTURE. CONFIGURED SOMEWHAT LIKE AN OCEAN BUOY, NIMBUS-G WILL BE NEARLY 3.7 M TALL, 1.5 M IN DIAMETER AT THE BASE, AND ABOUT 3 M WIDE WITH SOLAR PADDLES EXTENDED. THE SENSOR MOUNT THAT FORMS THE SATELLITE BASE WILL HOUSE THE ELECTRONICS EQUIPMENT AND BATTERY MODULES. THE LOWER SURFACE OF THE TORUS WILL PROVIDE MOUNTING SPACE FOR SENSORS AND ANTENNAS. A BOX-BEAM STRUCTURE MOUNTED WITHIN THE CENTER OF THE TORUS WILL PROVIDE SUPPORT FOR THE LARGER SENSOR EXPERIMENTS. MOUNTED ON THE CONTROL HOUSING UNIT, WHICH WILL BE LOCATED ON TOP OF THE SPACECRAFT, WILL BE SUN SENSORS, HORIZON SCANNERS, AND A COMMAND ANTENNA. AN ADVANCED ATTITUDE CONTROL SYSTEM WILL PERMIT THE SPACECRAFT'S ORIENTATION TO BE CONTROLLED TO WITHIN PLUS OR MINUS 1 DEG IN ALL THREE AXES (PITCH, ROLL, AND YAW). NINE EXPERIMENTS HAVE BEEN SELECTED. THEY ARE (1) LACATE - LOWER ATMOSPHERIC COMPOSITION AND TEMPERATURE, (2) SAMS - STRATOSPHERIC AND MESOSPHERIC SOUNDER, (3) CZCS - COASTAL ZONE OCEAN COLOR SCANNER, (4) THIR - TEMPERATURE AND HUMIDITY INFRARED RADIOMETER, (5) MAPS - MEASUREMENT OF AIR POLLUTION FROM SATELLITE, (6) SAM - STRATOSPHERIC AEROSOL MEASUREMENT, (7) ERB - EARTH RADIATION BUDGET, (8) SMMR - SCANNING MICROWAVE RADIOMETER, AND (9) BUV/TOMS - BACKSCATTER UV/TOTAL OZONE MAPPING STUDY. THIS COMPLEMENT OF SENSORS WILL BE CAPABLE OF OBSERVING SEVERAL PARAMETERS OF IMPORTANCE AT AND BELOW THE MESOSPHERIC LEVELS. A NEW CAPABILITY OF IMPORTANCE WILL BE DIRECTED TOWARD OBSERVATION OF ATMOSPHERIC AND OCEAN POLLUTANTS. SUFFICIENT RUNTIME IS PLANNED FOR SEQUENTIAL MAPS (IMAGERY) OF THE PARAMETERS TO BE AVAILABLE FOR STUDY.

**********PIONEER 10 **********

SPACECRAFT COMMON NAME- PIONEER 10
ALTERNATE NAMES- PIONEER-F, PL-723D, 06860
NSSDC ID- 72-012A

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD DATA ACQUISITION RATE SINCE 03/03/72.

LAUNCH DATE- 03/03/72 SPACECRAFT WEIGHT IN ORBIT- 231. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- ATLAS-CENT

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - C.F. HALL NASA-ARC MOFFETT FIELD, CA
PS - J.H. WOLFE NASA-ARC MOFFETT FIELD, CA

SPACECRAFT BRIEF DESCRIPTION

PIONEER 10 WAS THE FIRST OF TWO 258-KG, SPIN-STABILIZED (AT 4.8 RPM), EARTH-POINTING SPACECRAFT DESIGNED TO PROVIDE INFORMATION ON THE INTERPLANETARY MEDIUM, THE ASTEROID BELT, AND JUPITER AND ITS ENVIRONMENT. THE SPACECRAFT COMPLEMENT OF 11 EXPERIMENTS INCLUDED PLASMA AND ENERGETIC PARTICLE DETECTORS, A MAGNETOMETER, METEROID DETECTORS, AN IMAGING PHOTOPOLARIMETER, A UV PHOTOMETER AND AN IR RADIOMETER. PASSIVE IONOSPHERIC OCCULTATION AND CELESTIAL MECHANICS STUDIES WERE ALSO CARRIED OUT. POWER WAS PROVIDED BY FOUR BOOM-MOUNTED RADIOISOTOPE THERMOELECTRIC GENERATORS. EIGHT BIT RATES (8 TO 2048 BPS) WERE AVAILABLE. DURING JOVIAN ENCOUNTER THE BIT RATE WAS 1024 BPS. PIONEER 10 CROSSED THE JOVIAN BOW SHOCK AT ABOUT 108 PLANETARY RADII ON NOVEMBER 26, 1973, ALMOST 21 MONTHS AFTER LAUNCH, AND AFTER SURVIVING ITS TRANSIT OF THE ASTEROID BELT WITH NO DAMAGE. CLOSEST APPROACH OCCURRED ON DECEMBER 4, 1973, AT 130,000 KM (1.8 PLANETARY RADII) ABOVE THE CLOUD TOPS. FINAL EXIT FROM THE JOVIAN MAGNETOSHEATH OCCURRED AT ABOUT 240 PLANETARY RADII. DESPITE THE INTENSE FLUXES OF VERY ENERGETIC PARTICLES, THE SPACECRAFT SYSTEMS (EXCEPT THE SPACECRAFT STELLAR REFERENCE ASSEMBLY) AND EXPERIMENTS (EXCEPT FOR THE ASTEROID-METEOROID DETECTOR) SURVIVED THE JOVIAN ENCOUNTER WELL. THE SPACECRAFT IS NOW ON A TRAJECTORY OF ESCAPE FROM THE SOLAR SYSTEM. IT IS EXPECTED TO TRANSMIT DATA UNTIL 1977, WHEN THE SPACECRAFT WILL BE ABOUT 20 AU DISTANT.

**********PIONEER 10, GEHRELS

EXPERIMENT NAME- IMAGING PHOTOPOLARIMETER (IPP)
NSSDC ID- 72-012A-07

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD DATA ACQUISITION RATE SINCE 03/03/72.

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

PI - T.	GEHRELS	U OF ARIZONA	TUCSON, AZ
OI - D.L.	COFFEEN	U OF ARIZONA	TUCSON, AZ
OI - J.	HAMEEN-ANTILLA	U OF ARIZONA	TUCSON, AZ
OI - C.E.	KENKNIGHT	U OF ARIZONA	TUCSON, AZ
OI - R.F.	HUMMER	SANTA BARBARA RSCH CEN	GOLETA, CA
OI - M.G.	TOMASKO	U OF ARIZONA	TUCZON, AZ

EXPERIMENT BRIEF DESCRIPTION

THE IMAGING PHOTOPOLARIMETER EXPERIMENT (IPP) WAS USED DURING JOVIAN ENCOUNTER TO MAKE SIMULTANEOUS TWO-COLOR (BLUE - 3900 TO 4900 A, RED - 5800 TO 7000 A) POLARIMETRIC AND RADIOMETRIC MEASUREMENTS, AND MODERATE-RESOLUTION (ABOUT 200 KM AT BEST) SPIN-SCAN IMAGES OF JUPITER AND THE JOVIAN SATELLITES. THE POLARIMETRIC AND RADIOMETRIC WORK WAS PERFORMED USING AN 8- X 8- MRAD FIELD-STOP APERTURE, WHILE THE SPIN-SCAN IMAGING USED A 0.5- X 0.5-MRAD APERTURE STOP. RELATIVE RADIOMETRIC CALIBRATION WAS DERIVED USING AN INTERNAL TUNGSTEN LAMP. LONG-TERM ABSOLUTE CALIBRATION OF THE INSTRUMENT WAS ACCOMPLISHED BY MEANS OF A SUNLIGHT DIFFUSOR/ATTENUATOR ELEMENT LOCATED IN THE SPACECRAFT ANTENNA STRUCTURE, I.E., PRIMARY RADIOMETRIC CALIBRATION WAS OBTAINED THROUGHOUT THE MISSION BY PERIODICALLY COMMANDING THE TELESCOPE TO VIEW THIS DIFFUSE BACKLIGHTED (SUNLIGHT) SOURCE. THE EXPERIMENTAL TRAIN FOR THE IPP PACKAGE CONSISTED OF THE FOLLOWING ELEMENTS -- (1) A NEAR-DIFFRACTION-LIMITED 2.54-CM MAKSUTOV CATADIOPTRIC TELESCOPE (F/3.4), (2) A FOCAL PLANE WHEEL CONTAINING FIELD-OF-VIEW APERTURES, DEPOLARIZERS, CALIBRATION SOURCE, ETC., (3) A WOLLASTON PRISM TO SPLIT LIGHT INTO TWO ORTHOGONALLY POLARIZED BEAMS, (4) A 45-DEG DICHROMATIC MIRROR THAT REFLECTED WAVELENGTHS LESS THAN 5500 A (BLUE BEAM) AND TRANSMITTED ALL LIGHT OF GREATER WAVELENGTH (RED BEAM), (5) FOR EACH SPECTRAL BEAM (TWO POLARIZATIONS), A FILTERING COATED RELAY LENS AND FOLDING

MIRRORS, AND (6) FOR EACH SPECTRAL BEAM, TWO BENDIX CHANNELTRON DETECTORS (BLUE BIALKALI S-11 PHOTOCATHODES RED S-20 PHOTOCATHODES) TO REGISTER THE INTENSITY IN EACH POLARIZATION COMPONENT. (NOTE - THIS EXPERIMENT WAS ALSC ABOARD PIONEER 11).

**********PIONEER 10, WEINBERG

EXPERIMENT NAME- ZODIACAL-LIGHT TWO-COLOR PHOTOPOLARIMETRY
NSSDC ID- 72-012A-14

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT AN UNKNOWN DATA ACQUISITION RATE SINCE 02/27/74.

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

PI - J.L.	WEINBERG	STATE U OF NEW YORK	ALBANY, NY
OI - M.S.	HANNER	STATE U OF NEW YORK	ALBANY, NY

EXPERIMENT BRIEF DESCRIPTION

THE IMAGING PHOTOPOLARIMETER EXPERIMENT (IPP) WAS USED TO OBTAIN MAPS OF THE ZODICAL LIGHT DISTRIBUTION IN TWC COLORS, BLUE (3900 TO 4900 A) AND RED (5800 TO 7000 A). IN EACH COLOR, THE MAPS WERE CONSTRUCTED OUT OF THE INTEGRATED-DETECTOR-RESPONSE (1/64 OF A ROLL PERICD), SPIN-SCAN POINT-IMAGING DATA OBTAINED BY VIEWING THROUGH A 40- X 40-MRAD SQ FIELD-STOP APERTURE. THIS WORK WAS PERFORMED DURING THE CRUISE PORTION OF THE MISSION. DETAILED SIMULTANEOUS RADIOMETRIC AND PCLARIMETRIC MAPS OF BOTH SKY COLORS WERE MADE AS THE SPACECRAFT SWEPT OUT A 360-DEG CLOCK ANGLE SWATH, AND THE TELESCOPE AND OPTICS WERE STEPPED IN CONE ANGLE (THE ANGLE BETWEEN SPACECRAFT SPIN AXIS AND THE TELESCOPE OPTICAL AXIS). AT EACH DISCRETE CONE ANGLE, A 20 ROLL MEASUREMENT CYCLE OCCURRED, CONSISTING OF 10 ROLLS FOR THE ACCUMULATION OF THE DATA AND FOR CALIBRATION, ALTERNATED WITH 10 ROLL PERIODS USED FOR THE TELEMETRY OF THE DATA. DURING A DATA ROLL, THE SIGNALS FROM FOUR DETECTORS (2/COLOR) WERE INTEGRATED OVER A TIME INTERVAL EQUAL TC 1/64 OF THE ROLL PERIOD. THE FOUR CHANNELS PROVIDED SIMULTANEOUS MEASUREMENTS AT TWO ORTHOGONAL POLARIZATION AZIMUTHS IN THE TWO SPECTRAL BANDS. THE POLARIZATION WAS SAMPLED PARALLEL AND PERPENDICULAR TO THE PLANE CONTAINING THE SPACECRAFT SPIN AXIS AND THE OPTICAL AXIS OF THE TELESCOPE. RADIOACTIVE CALIBRATION WAS PROVIDED BY A RADIOISOTOPE-ACTIVATED PHOSPHOR SOURCE. ALL SUCH DATA WERE FORMATTED TO PRODUCE A SKY MAP, 360 DEG IN CLOCK ANGLE BY 141 DEG IN CONE ANGLE. THE EXPERIMENTAL TRAIN FOR THE IPP PACKAGE CONSISTED OF THE FOLLOWING ELEMENTS -- (1) A NEAR-DIFFRACTION-LIMITED 2.54-CM MAKSUTOV CATADIOPTRIC TELESCOPE (F/3.4), (2) A FOCAL PLANE WHEEL CONTAINING FIELD-OF-VIEW APERTURES, DEPOLARIZERS, CALIBRATION SOURCE, ETC., (3) A WOLLASTON PRISM TO SPLIT LIGHT INTC TWO ORTHOGONALLY POLARIZED BEAMS, (4) A 45-DEG DICHROMATIC MIRROR THAT REFLECTED WAVELENGTHS LESS THAN 5500 A (BLUE BEAM) AND TRANSMITTED ALL LIGHT OF GREATER WAVELENGTH (RED BEAM), (5) FOR EACH SPECTRAL BEAM (TWO POLARIZATIONS), A FILTERING COATED RELAY LENS AND FOLDING MIRRORS, AND (6) FOR EACH SPECTRAL BEAM, TWO BENDIX CHANNELTRON DETECTORS (BLUE - BIALKALI S-11 PHOTOCATHODES, RED-S-20 PHOTOCATHODES) TO REGISTER THE INTENSITY IN EACH POLARIZATICN COMPONENT. (NOTE - THIS EXPERIMENT WAS ALSO ABOARD PIONEER 11).

**********PIONEER 11 **********

SPACECRAFT COMMON NAME- PIONEER 11
ALTERNATE NAMES- PIONEER-G, PL-733C, 6421
NSSDC ID- 73-019A

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD DATA ACQUISITION RATE SINCE 04/06/73.

LAUNCH DATE- 04/06/73 SPACECRAFT WEIGHT IN ORBIT- 231. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- ATLAS-CENT

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - C.F.	HALL	NASA-ARC	MOFFETT FIELD, CA
PS - J.H.	WOLFE	NASA-ARC	MOFFETT FIELD, CA

SPACECRAFT BRIEF DESCRIPTION

PIONEER 11 WAS THE SECOND OF TWO 231-KG, SPIN-STABILIZED EARTH POINTING SPACECRAFT DESIGNED TO PROVIDE INFORMATION ON THE INTERPLANETARY MEDIUM, THE ASTEROID BELT AND THE NEAR-JUPITER ENVIRONMENT. THIS JUPITER FLY-BY SPACECRAFT WAS POWERED BY A RADIOISOTOPE THERMOELECTRIC GENERATOR AND A BATTERY. THE SPACECRAFT INSTRUMENTATION STUDIED THE INTERPLANETARY AND POSSIBLE JOVIAN MAGNETIC FIELDS, THE SOLAR WIND AND POSSIBLE JOVIAN BOW SHOCK AND MAGNETOPAUSE BOUNDARIES, SOLAR AND GALACTIC COSMIC RAYS, INTERPLANETARY CHARGED PARTICLES AND POSSIBLE JOVIAN TRAPPED RADIATION, JOVIAN THERMAL ENERGY FLUX, ZODIACAL LIGHT, ASTEROIDS AND METEOROIDS, AND INTERPLANETARY AND JOVIAN ULTRAVIOLET RADIATION. AN S-BAND OCCULTATION EXPERIMENT AND A JUPITER IMAGING AND PHOTOPOLARIZATION EXPERIMENT WERE PERFORMED. THE SPACECRAFT WAS TO GO BY JUPITER BETWEEN 600 AND 750 DAYS AFTER LAUNCH AND , DEPENDING ON THE AMOUNT OF THRUSTER FUEL LEFT AFTER THE JUPITER ENCOUNTER, CONTINUE ON TO ENCOUNTER WITH SATURN APPROXIMATELY 7 YEARS AFTER LAUNCH.

**********PIONEER 11, GEHRELS

EXPERIMENT NAME- IMAGING PHOTOPOLARIMETER
NSSDC ID- 73-019A-07

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT THE STANDARD DATA ACQUISITION RATE SINCE 04/06/73.

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

PI - T.	GEHRELS	U OF ARIZONA	TUCSON, AZ
OI - D.L.	COFFEEN	U OF ARIZONA	TUCSON, AZ
OI - J.	HAMEEN-ANTILLA	U OF ARIZONA	TUCSON, AZ
OI - C.E.	KENKNIGHT	U OF ARIZONA	TUCSON, AZ
OI - R.F.	HUMMER	SANTA BARBARA RSCH CEN	GOLETA, CA
OI - M.G.	TOMASKO	U OF ARIZONA	TUCZON, AZ

EXPERIMENT BRIEF DESCRIPTION

THE IMAGING PHOTOPOLARIMETER EXPERIMENT (IPP) WAS USED DURING JOVIAN ENCOUNTER TO MAKE SIMULTANEOUS, TWO COLOR (BLUE - 3900 TO 4900 A, RED - 5800 TO 7000 A) POLARIMETRIC AND RADIOMETRIC MEASUREMENTS, AND MODERATE RESOLUTION (ABOUT 200 KM AT BEST) SPIN-SCAN IMAGES OF JUPITER AND THE JOVIAN SATELLITES. THE POLARIMETRIC AND RADIOMETRIC WORK WAS PERFORMED USING AN 8-X 8-MRAD FIELD-STOP APERTURE, WHILE THE SPIN-SCAN IMAGING USED A 0.5- X 0.5-MRAD APERTURE STOP. RELATIVE RADIOMETRIC CALIBRATION WAS DERIVED USING AN INTERNAL TUNGSTEN LAMP. LONG-TERM ABSOLUTE CALIBRATION OF THE INSTRUMENT WAS ACCOMPLISHED BY MEANS OF A SUNLIGHT DIFFUSOR/ATTENUATOR ELEMENT LOCATED IN THE SPACECRAFT ANTENNA STRUCTURE. THAT IS, PRIMARY RADIOMETRIC CALIBRATION WAS OBTAINED THROUGHOUT THE MISSION BY PERIODICALLY COMMANDING

THE TELESCOPE TO VIEW THIS DIFFUSE BACKLIGHTED (SUNLIGHT) SOURCE. THE EXPERIMENTAL TRAIN FOR THE IPP PACKAGE CONSISTED OF THE FOLLOWING ELEMENTS -- (1) A NEAR-DIFFRACTION-LIMITED 2.54-CM MATSUTOV TELESCOPE OF FOCAL RATIO F/3.4, (2) A FOCAL PLANE WHEEL CONTAINING FOV APERTURES, DEPOLARIZERS, CALIBRATION SOURCE, ETC., (3) A WOLLASTON PRISM TO SPLIT THE LIGHT INTO TWO ORTHOGONALLY POLARIZED BEAMS, (4) A 45-DEG DICHROMATIC MIRROR THAT REFLECTS WAVELENGTHS OF LESS THAN 5500 A (BLUE BEAM) AND TRANSMITS ALL LIGHT OF GREATER WAVELENGTH (RED BEAM), (5) FOR EACH SPECTRAL BEAM (TWO POLARIZATIONS ARE SEPARATED) A FILTERING-COATED RELAY LENS, AND FOLDING MIRRORS, AND (6) FINALLY, FOR EACH SPECTRAL BEAM TWO BENDIX CHANNELTRON (BLUE - BIALKALI S-11 PHOTOCATHODES, RED - S-20 PHOTOCATHODES) TO REGISTER THE INTENSITY IN EACH POLARIZATION COMPONENT. (NOTE - THIS EXPERIMENT WAS ALSO ABOARD PIONEER 10.)

**********PIONEER 11, WEINBERG

EXPERIMENT NAME- ZODIACAL-LIGHT TWO-COLOR
PHOTOPOLARIMETRY
NSSDC ID- 73-019A-1E

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT AN UNKNOWN
DATA ACQUISITION RATE SINCE 02/27/74.

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

PI - J.L.	WEINBERG	STATE U OF NEW YORK	ALBANY, NY
OI - M.S.	HANNER	STATE U OF NEW YORK	ALBANY, NY

EXPERIMENT BRIEF DESCRIPTION

THE IMAGING PHOTOPOLARIMETER EXPERIMENT (IPP) WAS USED TO OBTAIN MAPS OF THE ZODIACAL LIGHT DISTRIBUTION IN TWO COLORS, BLUE (3900 TO 4900 A) AND RED (5800 TO 7000 A). IN EACH COLOR, THE MAPS WERE CONSTRUCTED OUT OF THE INTEGRATED-DETECTOR-RESPONSE (1/64 OF A ROLL PERIOD), SPIN-SCAN POINT-IMAGING DATA OBTAINED BY VIEWING THROUGH A 40- X 40-MRAD SQ FIELD-STOP APERTURE. THIS WORK WAS PERFORMED DURING THE CRUISE PORTION OF THE MISSION. IN DETAIL, SIMULTANEOUS RADIOMETRIC AND POLARIMETRIC MAPS OF THE SKY IN BOTH COLORS WERE MADE AS THE SPACECRAFT SWEEPED OUT A 360-DEG CLOCK ANGLE SWATH, AND THE TELESCOPE AND OPTICS WERE STEPPED IN CONE ANGLE (THE ANGLE BETWEEN SPACECRAFT SPIN AXIS AND THE TELESCOPE OPTICAL AXIS). AT EACH DISCRETE CONE ANGLE, A 20 ROLL MEASUREMENT CYCLE OCCURRED, CONSISTING OF 10 ROLLS FOR THE ACCUMULATION OF THE DATA AND FOR CALIBRATION, ALTERNATED WITH 10 ROLL PERIODS USED FOR THE TELEMETRY OF THE DATA. DURING A DATA ROLL, THE SIGNALS FROM FOUR DETECTORS (2/COLOR) WERE INTEGRATED OVER A TIME INTERVAL EQUAL TO 1/64 OF THE ROLL PERIOD. THE FOUR CHANNELS PROVIDED SIMULTANEOUS MEASUREMENTS AT TWO ORTHOGONAL POLARIZATION AZIMUTHS IN THE TWO SPECTRAL BANDS. THE POLARIZANCE WAS SAMPLED PARALLEL AND PERPENDICULAR TO THE PLANE CONTAINING THE SPACECRAFT SPIN AXIS AND THE OPTICAL AXIS OF THE TELESCOPE. RADIOACTIVE CALIBRATION WAS PROVIDED BY A RADIOISOTOPE-ACTIVATED PHOSPHOR SOURCE. ALL SUCH DATA WERE FORMATTED TO PRODUCE A SKY MAP, 360 DEG IN CLOCK ANGLE BY 141 DEG IN CONE ANGLE. THE EXPERIMENTAL TRAIN FOR THE IPP PACKAGE CONSISTED OF THE FOLLOWING ELEMENTS -- (1) A NEAR-DIFFRACTION-LIMITED 2.54-CM MAKSUTOV CATADIOPTRIC TELESCOPE (F/3.4), (2) A FOCAL PLANE WHEEL CONTAINING FIELD-OF-VIEW APERTURES, DEPOLARIZERS, CALIBRATION SOURCE, ETC., (3) A WOLLASTON PRISM TO SPLIT THE LIGHT INTO TWO ORTHOGONALLY POLARIZED BEAMS, (4) A 45-DEG DICHROMATIC MIRROR THAT REFLECTED WAVELENGTHS LESS THAN 5500 A (BLUE BEAM) AND TRANSMITTED ALL LIGHT OF GREATER WAVELENGTH (RED BEAM), (5) FOR EACH SPECTRAL BEAM (TWO POLARIZATIONS) A FILTERING-COATED RELAY LENS, AND FOLDING MIRRORS, AND (6) FOR EACH SPECTRAL BEAM, TWO BENDIX CHANNELTRON DETECTORS (BLUE - BIALKALI S-11 PHOTOCATHODES, RED - S-20 PHOTOCATHODES) TO REGISTER THE INTENSITY IN EACH POLARIZATION COMPONENT.

(NOTE THIS EXPERIMENT WAS ALSO ABOARD PIONEER 10).

**********RM 20 **********

SPACECRAFT COMMON NAME- RM 20
ALTERNATE NAMES- SESP P72-2A, ST 72-2A
NSSDC ID- RM20

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 11/01/74 SPACECRAFT WEIGHT IN ORBIT- 204. KG

LAUNCH SITE- VANDENBERG AFB, UNITED STATES LAUNCH VEHICLE- ATLAS F

SPONSORING COUNTRY/AGENCY
UNITED STATES DOD-USAF

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 750. KM ALT PERIAPSIS- 750. KM ALT INCLINATION- 90. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

SPACECRAFT BRIEF DESCRIPTION
THIS SATELLITE WILL BE A LOW-ALTITUDE SATELLITE IN CIRCULAR ORBIT CARRYING FOUR EXPERIMENTS. TWO OF THE EXPERIMENTS WILL STUDY RADIATION FROM THE EARTH HORIZON. A THIRD EXPERIMENT WILL OBSERVE SOLAR EXTINCTION THROUGH THE STRATOSPHERE AND THE FOURTH WILL STUDY IONOSPHERIC RADIO PROPAGATION. THE SPACECRAFT EXPERIMENT SUPPORT EQUIPMENT WILL INCLUDE A 3-AXIS STABILIZATION SYSTEM AND A TAPE RECORDER.

**********SESP 74-2 **********

SPACECRAFT COMMON NAME- SESP 74-2
ALTERNATE NAMES- S3-3
NSSDC ID- ST74-2A

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 08/00/75 SPACECRAFT WEIGHT IN ORBIT- KG

LAUNCH SITE- VANDENBERG AFB, UNITED STATES LAUNCH VEHICLE-

SPONSORING COUNTRY/AGENCY
UNITED STATES DOD-USAF

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 8000. KM ALT PERIAPSIS- 200. KM ALT INCLINATION- DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - UNKNOWN UNKNOWN
PS - UNKNOWN UNKNOWN

SPACECRAFT BRIEF DESCRIPTION
THIS SPACECRAFT WILL BE A SMALL OBSERVATORY WITH EIGHT DIFFERENT SENSORS ON BOARD, DESIGNED TO OBSERVE VARIOUS MAGNETOSPHERIC PARAMETERS AND THEIR INTERRELATIONSHIPS. SENSORS OBSERVING ENERGETIC PROTONS AND ALPHA PARTICLES WILL ALSO PROVIDE REAL-TIME OBSERVATIONS FOR USE BY THE SPACE

FORECAST FACILITY (USAF-AWS). INFORMATION OF THE SPACECRAFT SIZE, SHAPE, POWER SYSTEM, ALTITUDE SYSTEM, ETC. ARE NOT YET AVAILABLE. THIS IS THE THIRD SPACECRAFT OF A NEW DESIGN WHICH HAS BEEN DEVELOPED FOR DOD USE.

**********SESP P73-5 **********

SPACECRAFT COMMON NAME- SESP P73-5
ALTERNATE NAMES- S3-1
NSSDC ID- ST73-5A

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 08/00/74 SPACECRAFT WEIGHT IN ORBIT- KG

LAUNCH SITE- VANDENBERG AFB, UNITED STATES LAUNCH VEHICLE-

SPONSORING COUNTRY/AGENCY
UNITED STATES DOD-USAF

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- 4500. KM ALT PERIAPSIS- 144. KM ALT INCLINATION- 90. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

SPACECRAFT BRIEF DESCRIPTION
THIS SATELLITE WILL CARRY EIGHT COMPLEMENTARY TYPES OF EXPERIMENTS, DESIGNED TO STUDY ATMOSPHERIC DENSITY AND ITS CHANGES AT LOW ALTITUDES. THE SATELLITE WILL BE SPIN STABILIZED, WITH THE SPIN AXIS PERPENDICULAR TO ITS POLAR ORBIT. WHEN THE ORBIT IS INCLINED MORE THAN 70 DEG, PERIGEE MOTION WILL BE LIMITED TO LESS THAN 2 DEG PER DAY. ORBIT PRECESSION, WHEN THE ORBIT IS INCLINED MORE THAN 70 DEG, WILL BE LIMITED TO LESS THAN 0.5 DEG PER DAY. THIS WILL LIMIT OBSERVATIONS FOR SAMPLING TO LESS THAN ONE-FOURTH OF THE POSSIBLE 24 HRS OF LOCAL SOLAR TIME.

**********SOLAR MAXIMUM MISSION **********

SPACECRAFT COMMON NAME- SOLAR MAXIMUM MISSION
ALTERNATE NAMES- SMM
NSSDC ID- SMM

LAST REPORTED STATE- A PROPOSED MISSION

PLANNED LAUNCH DATE- MID 1978 SPACECRAFT WEIGHT IN ORBIT- 1300. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- DELTA

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 90. MIN
APOAPSIS- 6828. KM ALT PERIAPSIS- 6828. KM ALT INCLINATION- 28. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PS - S. JORDAN NASA-GSFC GREENBELT, MD

SPACECRAFT BRIEF DESCRIPTION

THE SCIENTIFIC OBJECTIVE OF THIS MISSION IS THE STUDY OF SOLAR FLARES AND FLARE-RELATED PHENOMENA. THE SPACECRAFT WILL BE POINTED AT THE SUN CONTINUOUSLY DURING THE DAYLIGHT PORTION OF THE ORBIT. IT WILL BE SPACE-SHUTTLE-COMPATIBLE TO ALLOW THE CAPABILITY OF RETRIEVING THE SPACECRAFT, REFITTING AND REFURBISHING IT, AND RETURNING IT TO ORBIT. THE SPACECRAFT WILL BE OPERATED BY A SOLAR OBSERVATORY OPERATIONS CENTER LOCATED AT THE GODDARD SACE FLIGHT CENTER, GREENBELT, MARYLAND. A SUBSTANTIAL GUEST INVESTIGATOR PROGRAM WILL BE SCHEDULED, TO ALLOW BROAD PARTICIPATION BY THE SCIENTIFIC COMMUNITY.

**********SOLRAD 11A **********

SPACECRAFT COMMON NAME- SOLRAD 11A
ALTERNATE NAMES- SRD-11A, SOLRAD HI-TRIP, SESP NO.NRL-111-0264, NRL-111
NSSDC ID- SRD-11A

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 03/00/75 SPACECRAFT WEIGHT IN ORBIT- 102.15 KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- TITAN 3C

SPONSORING COUNTRY/AGENCY
UNITED STATES DOD-NAVY

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 3140. MIN
APOAPSIS- 127622. KM ALT PERIAPSIS- 127622. KM ALT INCLINATION- 0. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - E.W. PETERKIN NAVAL RESEARCH LAB WASHINGTON, DC
PS - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC

SPACECRAFT BRIEF DESCRIPTION
SOLRAD 11A WILL BE ONE OF A PAIR OF IDENTICAL SATELLITES THAT WILL BE PLACED IN A CIRCULAR EQUATORIAL ORBIT OF 20 EARTH RADII. THE SATELLITES, WHICH WILL BE ORIENTED TOWARDS THE SUN, WILL PROVIDE 100 PERCENT REAL-TIME, CONTINUOUS MONITORING OF SOLAR X-RAY, UV, AND ENERGETIC PARTICLE EMISSIONS. EXPERIMENTS WILL INCLUDE BROADBAND ION CHAMBERS OBSERVING SOLAR X RAYS BETWEEN 0.1 AND 60 A, PROPORTIONAL COUNTERS AND SCINTILLATORS OBSERVING SOLAR X RAYS BETWEEN 2 AND 150 KEV, AN EUV DETECTOR COVERING THREE BANDS BETWEEN 170 AND 1000 A, A VARIABLE RESOLUTION EBERT-FASTIE SPECTROMETER COVERING THE WAVELENGTH RANGE OF 1100 TO 1600 A (RESOLUTION - 1 TO 25 A), A SOLAR WIND MONITOR, SOLAR PROTON, ELECTRON, AND ALPHA PARTICLE MONITORS, TWO X-RAY POLARIMETERS (ONE UTILIZING BRAGG SCATTERING AND THE OTHER UTILIZING THOMPSON SCATTERING), A BRAGG SPECTROMETER OBSERVING MAGNESIUM-11 AND -12 LINES, A LARGE-AREA AURORAL X-RAY DETECTOR, AND A PASSIVELY COOLED SOLID-STATE X-RAY DETECTOR TO MEASURE BACKGROUND X-RAY EMISSIONS.

**********SOLRAD 11A, BLAKE

EXPERIMENT NAME- SOLAR PROTONS
NSSDC ID- SRD-11A-14

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - J.B. BLAKE AEROSPACE CORP EL SEGUNDO, CA

OI - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
A PAIR OF IDENTICAL SENSORS WILL BE MOUNTED ON THE SPACECRAFT, WITH ONE ON THE SOLAR-ORIENTED SURFACE (THIS EXPERIMENT) AND ONE ON THE ANTISOLAR SURFACE (EXPERIMENT SRD-11A-23). EACH SENSOR WILL BE A TWO-ELEMENT COUNTER USING DISK-SHAPED SEMICONDUCTORS AS DETECTOR ELEMENTS, WITH SHIELDING MATERIAL IN FRONT OF AND BETWEEN THE TWO DETECTOR ELEMENTS. THE DETECTOR ELEMENTS WILL BE CONNECTED TO CHARGE-SENSITIVE AMPLIFIERS. COINCIDENCE AND PULSE HEIGHT ANALYSIS WILL BE USED TO SEPARATE PULSES PRODUCED BY 2-MEV PROTONS, 10-MEV PROTONS, 4.6-MEV ALPHA PARTICLES, 7.5-MEV ALPHA PARTICLES, AND HEAVY NUCLEI (Z GREATER THAN E GREATER THAN 3 MEV PER NUCLEON). A COMPLETE SET OF DATA POINTS WILL BE OBTAINED EVERY 2 MINUTES.

**********SOLRAD 11A, BLAKE

EXPERIMENT NAME- OMNIDIRECTIONAL PROTONS
NSSDC ID- SRD-11A-17

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - J.B. BLAKE AEROSPACE CORP EL SEGUNDO, CA
OI - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT IS DESIGNED TO MEASURE SOLAR PROTONS AND ALPHA PARTICLES. A SET OF FIVE SMALL SILICON CUBICAL SEMICONDUCTOR DETECTORS WILL BE USED TO SEPARATELY MEASURE THE OMNIDIRECTIONAL PROTON AND ALPHA PARTICLE FLUXES IN THE ENERGY/NUCLEON RANGES 5 TO 20, 10 TO 25, 20 TO 40, 50 TO 90, AND 100 TO 160 MEV. A TWO-ELEMENT SEMICONDUCTOR TELESCOPE WILL USE COINCIDENCE REQUIREMENTS AND PULSE HEIGHT ANALYSIS TO DETERMINE PROTON FLUXES IN FIVE DIFFERENTIAL ENERGY CHANNELS FROM 20 TO 500 KEV AND IN THREE INTEGRAL CHANNELS AT 0.5, 1, AND 1.5 MEV. THE 36 TO 74 KEV DATA AND THE 1-MEV DATA WILL BE SECTORED INTO QUADRANTS WHILE THE REMAINING CHANNELS WILL YIELD SPIN-INTEGRATED DATA. THE INSTRUMENT WILL CONSIST OF A PHOTOMULTIPLIER TUBE VIEWING A THIN PLASTIC SCINTILLATOR FOIL. PULSE HEIGHT ANALYSIS WILL BE USED TO SEPARATE IONS INTO FIVE GROUPS (Z = 1, 2, 6 TO 10, 12 TO 18, AND GREATER THAN 18). THE IONS WILL HAVE ENERGY THRESHOLDS OF 0.5 MEV/NUCLEON (Z = 1 AND 2) THROUGH 0.8 MEV/NUCLEON (Z ABOVE 18). THE Z=2 AND Z=6 THROUGH 10 DATA WILL BE SECTORED INTO FOUR QUADRANTS. THE REMAINING DATA WILL BE SPIN INTEGRATED. A COMPLETE SET OF MEASUREMENTS WILL BE MADE ONCE EVERY 2 MIN.

**********SOLRAD 11A, BLAKE

EXPERIMENT NAME- ANTISOLAR PROTONS
NSSDC ID- SRD-11A-23

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - J.B. BLAKE AEROSPACE CORP EL SEGUNDO, CA
OI - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
A PAIR OF IDENTICAL SENSORS WILL BE MOUNTED ON THE SPACECRAFT, WITH ONE ON THE ANTISOLAR SURFACE (THIS EXPERIMENT) AND ONE ON THE SOLAR-ORIENTED SURFACE (EXPERIMENT SRD-11A-14). EACH SENSOR WILL BE A TWO-ELEMENT COUNTER

TELESCOPE USING DISK-SHAPED SEMICONDUCTORS AS DETECTOR ELEMENTS, WITH SHIELDING MATERIAL IN FRONT OF AND BETWEEN THE TWO DETECTOR ELEMENTS. THE DETECTOR ELEMENTS WILL BE CONNECTED TO CHARGE-SENSITIVE AMPLIFIERS. COINCIDENCE AND PULSE HEIGHT ANALYSIS WILL BE USED TO SEPARATE PULSES PRODUCED BY 2-MEV PROTONS, 10-MEV PROTONS, 4.5-MEV ALPHA PARTICLES, 7.5-MEV ALPHA PARTICLES, AND HEAVY NUCLEI (Z GREATER THAN 2, E GREATER THAN 3 MEV PER NUCLEON). A COMPLETE SET OF DATA POINTS WILL BE OBTAINED EVERY 2 MIN.

**********SOLRAD 11A, BYRAM

EXPERIMENT NAME- STELLAR/AURORAL X RAYS
NSSDC ID- SRD-11A-16

LAST REPORTED STATE- PRELAUNCH

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

PI - E.T.	BYRAM	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF THREE PROPORTIONAL COUNTERS SENSITIVE TO X RAYS BETWEEN 1 AND 8 A. THESE PROPORTIONAL COUNTERS WILL BE MOUNTED ON THE SIDE OF THE SATELLITE AND ORIENTED 45 DEG, 90 DEG, AND 135 DEG OFF THE SPIN AXIS. THE COUNTING CIRCUITS WILL BE CONTROLLED BY THE ROLL PERIOD AND SYNCHRONIZED TO THE STAR AND/OR EARTH PULSES SO THAT DATA SAMPLES CAN BE ASSOCIATED WITH PORTIONS OF THE SKY. THE STELLAR PORTION OF THIS EXPERIMENT WILL BE ABLE TO MAP COSMIC X-RAY SOURCES AND WILL SWEEP THE ENTIRE CELESTIAL SPHERE IN ABOUT 3 MONTHS. THE AURORAL PORTION OF THE EXPERIMENT WILL BE DESIGNED TO MONITOR AURORAL X-RAY EMISSIONS FROM THE EARTH. THE STELLAR PORTION SAMPLING CYCLE WILL TAKE 16 MIN, WHILE THE AURORAL PORTION WILL REQUIRE 2 MIN FOR A SAMPLING CYCLE.

**********SOLRAD 11A, DOSCHEK

EXPERIMENT NAME- THOMSON X-RAY POLARIMETER
NSSDC ID- SRD-11A-10

LAST REPORTED STATE- PRELAUNCH

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

PI - G.A.	DOSCHEK	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

INCIDENT SOLAR X RAYS WILL BE SCATTERED BY A BLOCK OF LOW-DENSITY MATERIAL SUCH AS LITHIUM, LITHIUM HYDRIDE, OR BERYLLIUM. POLARIZED X RAYS WILL BE PREFERENTIALLY SCATTERED WHILE NON-POLARIZED X RAYS WILL BE SCATTERED ISOTROPICALLY. TWO PROPORTIONAL COUNTERS, EACH WITH A TWO-CHANNEL PULSE HEIGHT ANALYZER TO PROVIDE ENERGY RESOLUTION IN 2- TO 10-KEV AND 10- TO 50-KEV BANDS, WILL BE MOUNTED ON OPPOSITE SIDES OF THE SCATTERING BLOCK. AS THE SATELLITE ROLLS, THE SCATTERING BLOCK AND THE DETECTORS WILL BE ROTATED WITH RESPECT TO THE PLANE OF POLARIZATION OF THE INCIDENT X RAYS. THE DATA WILL BE GRATED ELECTRONICALLY INTO ACCUMULATORS ASSOCIATED WITH 45-DEG SECTORS IN THE ROLL DIRECTION. CYCLIC PULSE-COUNT VARIATIONS FROM SECTOR TO SECTOR WILL REVEAL POLARIZATION IF PRESENT. THE DATA FROM THE 45-DEG SECTORS WILL BE ACCUMULATED FOR AN INTEGRAL NUMBER OF SPINS DURING EACH 30-SEC SAMPLING CYCLE AND THEN READ OUT ON COMMAND. A RADIOACTIVE SOURCE WILL SWING OUT BETWEEN EACH DETECTOR AND THE SCATTERING BLOCK FOR CALIBRATION IN FLIGHT.

**********SOLRAD 11A, FELDMAN

EXPERIMENT NAME- 1175- TO 1800-A SOLAR UV SPECTROMETER
NSSDC ID- SRD-11A-09

LAST REPORTED STATE- PRELAUNCH

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

PI - P.D.	FELDMAN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL USE A ROTATABLE GRATING, OPERATING IN FIRST ORDER TO MEASURE THE SOLAR ELECTROMAGNETIC SPECTRUM BETWEEN 1175 AND 1800 A. A PHOTOMULTIPLIER TUBE WILL DETECT RADIATION REFLECTED THROUGH AN OPTICAL SYSTEM FROM THE GRATING. TWO SCANNING RATES WILL BE AVAILABLE -- A FAST-RATE LOW-RESOLUTION MODE THE ENTIRE 625-A RANGE WILL BE COVERED IN 93.75 SEC, USING 25-A SEGMENTS FOR EACH DATA SAMPLE, AND A SLOW-RATE HIGH-RESOLUTION MODE IN WHICH THE 625-A RANGE WILL BE COVERED IN 12.5 MIN , USING 3.125-A SEGMENTS.

**********SOLRAD 11A, FRITZ

EXPERIMENT NAME- 15- TO 150-KEV SOLAR X-RAY MONITOR
NSSDC ID- SRD-11A-01

LAST REPORTED STATE- PRELAUNCH

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

PI - G.G.	FRITZ	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL USE A CESIUM IODIDE SCINTILLATOR SURROUNDED BY A PLASTIC SCINTILLATOR OPERATED IN ANTICOINCIDENCE TO SCREEN OUT BACKGROUND COUNTS. PULSE HEIGHT ANALYSIS WILL PROVIDE SOLAR SPECTRA IN THE RANGES FROM 15 TO 20, 20 TO 30, 30 TO 60, AND 60 TO 150 KEV. NORMALLY, DATA WILL BE TELEMETERED FROM EACH CHANNEL EVERY 7.5 SEC, ALTHOUGH AN OPTIONAL MODE WILL SELECT THE 20-TO-30-KEV CHANNEL FOR TRANSMISSION EVERY 1.875 SEC. INFLIGHT CALIBRATION WILL BE MADE USING A RADIOACTIVE SOURCE WHICH WILL SWING IN FRONT OF THE DETECTOR UPON COMMAND AND REMAIN THERE FOR A 2-MIN TELEMETRY CYCLE. THE OVERALL DETECTOR DESIGN IS THE SAME AS THAT USED ON SOLRAD 10, WITH IMPROVED ELECTRONICS.

**********SOLRAD 11A, FRITZ

EXPERIMENT NAME- X-RAY BACKGROUND
NSSDC ID- SRD-11A-24

LAST REPORTED STATE- PRELAUNCH

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

PI - G.G.	FRITZ	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.	LUCKE	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.C.	HENRY	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

A SOLID-STATE DETECTOR (GERMANIUM OR LITHIUM-DRIFTED SILICON) WILL BE USED TO MEASURE THE GALACTIC X-RAY BACKGROUND IN THE 0.5- TO 20-KEV RANGE

WITH AN ENERGY RESOLUTION OF BETTER THAN 0.3 KEV. TO REACH THE DESIRED 0.3-KEV ENERGY RESOLUTION, THE DETECTOR MUST BE PASSIVELY COOLED TO 70- TO 100-DEG KELVIN. THE INSTRUMENT WILL BE MOUNTED ON THE ANTISOLAR SIDE OF THE SPACECRAFT, AND WILL SWEEP OUT A BAND NEARLY 20 DEG WIDE CENTERED NEAR THE ECLIPTIC PLANE AS THE SATELLITE MOVES AROUND THE SUN. THE DETECTOR OUTPUT WILL UNDERGO A 256-CHANNEL ANALYSIS TO PRODUCE THE ENERGY SPECTRUM. ALL 256 CHANNELS WILL BE READ OUT IN 16 MIN. A RADIOACTIVE SOURCE MOUNTED ON A SHUTTER WILL BE USED TO PROVIDE IN-FLIGHT CALIBRATION OF THE DETECTOR.

**********SOLRAD 11A, KELLEY

EXPERIMENT NAME- PROTON-ALPHA TELESCOPE
NSSDC ID- SRD-11A-20

LAST REPORTED STATE- PRELAUNCH

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

PI - J.G.	KELLEY	AFCRL	BEDFORD, MA
OI - L.	KATZ	AFCRL	BEDFORD, MA
OI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
TWO TOTALLY DEPLETED SILICON SURFACE BARRIER DETECTORS IN A COINCIDENCE TELESCOPE ARRANGEMENT WILL BE USED TO DETECT 1-TO 100-MEV PROTONS AND 10-TO 100-MEV ALPHA PARTICLES. PULSE HEIGHT ANALYSIS AND SUITABLE LOGIC ELEMENTS WILL BE USED TO PROVIDE 11 PROTON CHANNELS AND FOUR ALPHA PARTICLE CHANNELS. THE TELESCOPE WILL BE INSENSITIVE TO LIGHT AND TO ELECTRONS. VERY LITTLE FLUX DIRECTIONALITY INFORMATION WILL BE OBTAINED.

**********SOLRAD 11A, KELLEY

EXPERIMENT NAME- LOW-ENERGY PROTON SPECTROMETER
NSSDC ID- SRD-11A-21

LAST REPORTED STATE- PRELAUNCH

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

PI - J.G.	KELLEY	AFCRL	BEDFORD, MA
OI - L.	KATZ	AFCRL	BEDFORD, MA
OI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
TWO TOTALLY DEPLETED SILICON SURFACE BARRIER DETECTORS MOUNTED IN A SERIES WILL MEASURE PROTONS BETWEEN 150 KEV AND 6 MEV. PULSE HEIGHT ANALYSIS OF PULSES GENERATED IN THE FRONT DETECTOR, WHICH ARE UNACCOMPANIED BY PULSES IN THE REAR DETECTOR, WILL SEPARATE THE PROTON COUNTS INTO 12 ENERGY CHANNELS. PERMANENT MAGNETS WILL BE USED TO DEFLECT AWAY INCIDENT ELECTRONS WITH ENERGIES LESS THAN 2 MEV. VERY LITTLE FLUX DIRECTIONALITY INFORMATION WILL BE OBTAINED.

**********SOLRAD 11A, KREPLIN

EXPERIMENT NAME- 1- TO 8-A SOLAR X-RAY MONITOR
NSSDC ID- SRD-11A-04

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF TWO COMPLETE SETS OF IONIZATION-CHAMBER AND ELECTROMETER-AMPLIFIER COMBINATIONS. THE IONIZATION CHAMBERS WILL BE SENSITIVE TO SOLAR X RAYS IN THE 1- TO 8-A RANGE. THE TWO SETS WILL BE DRIVEN BY SEPARATE POWER SUPPLIES, ALTHOUGH ONLY ONE SET WILL BE SELECTED FOR TELEMETRY TRANSMISSION. DATA WILL BE TRANSMITTED WITH A 15-SEC TIME RESOLUTION. THE ELECTROMETER-AMPLIFIERS WILL BE ABLE TO CHANGE RANGES AUTOMATICALLY OR MANUALLY. THE DETECTORS CANNOT BE CALIBRATED IN FLIGHT, BUT THE ELECTROMETER-AMPLIFIERS MAY BE CALIERATED ON EACH RANGE WITHOUT DETACHING THE DETECTOR.

**********SOLRAD 11A, KREPLIN

EXPERIMENT NAME- 8- TO 16-A SOLAR X-RAY MONITOR
NSSDC ID- SRD-11A-05

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF TWO COMPLETE SETS OF IONIZATION-CHAMEER AND ELECTROMETER-AMPLIFIER COMBINATIONS. THE IONIZATION CHAMBERS WILL BE SENSITIVE TO SOLAR X RAYS IN THE 8- TO 16-A RANGE. THE TWO SETS WILL BE DRIVEN BY SEPARATE POWER SUPPLIES. ALTHOUGH ONLY ONE SET WILL BE SELECTED FOR TELEMETRY TRANSMISSION. DATA WILL BE TRANSMITTED WITH A 30-SEC TIME RESOLUTION. THE ELECTROMETER-AMPLIFIERS WILL BE ABLE TO CHANGE RANGES AUTOMATICALLY OR MANUALLY. THE DETECTORS CANNOT BE CALIBRATED IN FLIGHT, BUT THE ELECTROMETER-AMPLIFIERS MAY BE CALIERATED ON EACH RANGE WITHOUT DETACHING THE DETECTOR.

**********SOLRAD 11A, KREPLIN

EXPERIMENT NAME- 44- TO 60-A SOLAR X-RAY MONITOR
NSSDC ID- SRD-11A-06

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF TWO COMPLETE SETS OF IONIZATION-CHAMEER AND ELECTROMETER-AMPLIFIER COMBINATIONS. THE IONIZATION CHAMBERS WILL BE SENSITIVE TO SOLAR X-RAYS IN THE 44- TO 60-A RANGE. THE TWO SETS WILL BE DRIVEN BY SEPARATE POWER SUPPLIES, ALTHOUGH ONLY ONE SET WILL BE SELECTED FOR TELEMETRY TRANSMISSION. DATA WILL BE TRANSMITTED WITH A 30-SEC TIME RESOLUTION. THE ELECTROMETER-AMPLIFIERS WILL BE ABLE TO CHANGE RANGES AUTOMATICALLY OR MANUALLY. THE ELECTROMETER-AMPLIFIERS MAY BE CALIBRATED ON EACH RANGE WITHOUT DETACHING THE DETECTOR. THE DETECTORS CAN

BE CALIBRATED IN FLIGHT BY COMMANDING A SHUTTER-MOUNTED RADIOACTIVE SOURCE INTO POSITION.

**********SOLRAD 11A, KREPLIN

EXPERIMENT NAME- 170- TO 1050-A SOLAR EUV MONITOR
NSSDC ID- SRD-11A-07

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF THREE SETS OF LITHIUM-FLUORIDE PHOTOSENSITIVE SURFACE DETECTORS COUPLED TO FOUR-RANGE ELECTROMETER-AMPLIFIERS. THE THREE SETS WILL NOT BE REDUNDANT DUE TO THE DIFFERENT FILTERS BEING USED. A BERYLLIUM FILTER WILL LIMIT ONE DETECTOR'S RESPONSE TO WAVELENGTHS FROM 170 TO 500 A. A TIN FILTER WILL LIMIT A SECOND DETECTOR'S RESPONSE TO WAVELENGTHS FROM 450 TO 850 A. AN INDIUM FILTER WILL LIMIT THE THIRD DETECTOR'S RESPONSE TO WAVELENGTHS FROM 725 TO 1050 A. THE DETECTOR-ELECTROMETER SETS WILL BE DRIVEN BY SEPARATE POWER SUPPLIES. EACH DETECTOR WILL BE READ EVERY 7.5 SEC. THE ELECTROMETERS MAY BE CALIBRATED DURING FLIGHT WITHOUT DETACHING THE DETECTOR ALTHOUGH THE DETECTORS CANNOT BE CALIBRATED IN FLIGHT.

**********SOLRAD 11A, KREPLIN

EXPERIMENT NAME- 1080- TO 1350-A SOLAR UV MONITOR
NSSDC ID- SRD-11A-08

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF ONE 4-RANGE ELECTROMETER-AMPLIFIER AND THREE IONIZATION CHAMBERS. TWO OF THE IONIZATION CHAMBERS WILL BE THE STANDARD GAS-FILLED CHAMBERS FLOWN ON PREVIOUS SOLRAD SATELLITES. THESE DETECTORS, ELECTRONICALLY AND MECHANICALLY PAIRED, WILL BE DESIGNATED AS DETECTOR 'A'. THE THIRD IONIZATION CHAMBER WILL BE AN EVACUATED CHAMBER WITH A LITHIUM FLUORIDE PHOTOSENSITIVE SURFACE, AND WILL BE DESIGNATED AS DETECTOR 'B'. NORMALLY, DETECTOR B WILL BE CONTINUOUSLY SELECTED FOR TELEMETRY TRANSMISSION AND WILL BE REPLACED ONLY OCCASIONALLY BY A FOR CALIBRATING B AND EXPERIMENT 9. A MECHANICAL SHUTTER, MOVABLE BY COMMAND, WILL SHIELD THE WINDOW OF 8A FROM THE SUN. THE ELECTROMETER-AMPLIFIER CAN BE CALIBRATED WITHOUT DETACHING THE DETECTOR FROM THE DETECTOR SYSTEM. DATA WILL BE SAMPLED AT 15-SEC INTERVALS.

**********SOLRAD 11A, KREPLIN

EXPERIMENT NAME- 0.5- TO 3-A SOLAR X-RAY MONITOR
NSSDC ID- SRD-11A-12

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF THREE IONIZATION CHAMBERS CONNECTED IN PARALLEL TO A SINGLE ELECTROMETER-AMPLIFIER. THE IONIZATION CHAMBERS WILL BE SENSITIVE TO SOLAR X RAYS IN THE 0.5- TO 3.0-A RANGE. DATA WILL BE TRANSMITTED WITH A 15-SEC TIME RESOLUTION. THE ELECTROMETER-AMPLIFIER WILL BE ABLE TO CHANGE CURRENT RANGES AUTOMATICALLY OR MANUALLY. THE DETECTORS CANNOT BE CALIBRATED IN FLIGHT, BUT THE ELECTROMETER-AMPLIFIER MAY BE CALIBRATED ON EACH RANGE WITHOUT DETACHING THE DETECTOR.

**********SOLRAD 11A, KREPLIN

EXPERIMENT NAME- 1- TO 20-A SOLAR X-RAY MONITOR
NSSDC ID- SRD-11A-13

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF AN IONIZATION CHAMBER AND ONE ELECTROMETER-AMPLIFIER. THE IONIZATION CHAMBER WILL BE SENSITIVE TO SOLAR X-RAYS IN THE 1-TO 20-A RANGE. DATA WILL BE TRANSMITTED WITH A 30-SEC TIME RESOLUTION. THE ELECTROMETER-AMPLIFIER WILL BE ABLE TO CHANGE CURRENT RANGES AUTOMATICALLY OR MANUALLY. THE DETECTOR CANNOT BE CALIBRATED IN FLIGHT, BUT THE ELECTROMETER-AMPLIFIER MAY BE CALIBRATED ON EACH RANGE WITHOUT DETACHING THE DETECTOR.

**********SOLRAD 11A, MEEKINS

EXPERIMENT NAME- CONTINUUM (8.8 A) AND MAGNESIUM LINE (9.17 A AND 8.42 A) MONITOR
NSSDC ID- SRD-11A-03

LAST REPORTED STATE- PRELAUNCH

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

PI - J.F.	MEEKINS	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

SOLAR X RAYS WILL BE OBSERVED IN THE MAGNESIUM-11 AND-13 LINES (9.17 A AND 8.42 A) AND IN THE CONTINUUM AT 8.8 A. THREE SHA CRYSTALS FIXED AT THREE DIFFERENT ANGLES WILL ALLOW SOLAR X RAYS TO UNDERGO FIRST-ORDER BRAGG REFLECTION INTO THREE PROPORTIONAL COUNTERS. SHOULD THE SPACECRAFT SPIN AXIS BECOME IMPROPERLY ORIENTED, THE SPECTROMETER WOULD FUNCTION PROPERLY IF THE ASPECT ANGLE WERE NO MORE THAN 1 DEG OFF NOMINAL. ALTHOUGH THE INSTRUMENT WOULD THEN FUNCTION AS A SCANNING SPECTROMETER WITH AN EXTREMELY SMALL SPECTRAL RANGE IN THE VICINITY OF THE TARGET WAVELENGTHS. DATA WILL BE ACCUMULATED OVER INTERVALS OF 1/64 OF A SPACECRAFT'S SPIN PERIOD. AND THE

EXPERIMENT WILL HAVE A SAMPLING CYCLE OF APPROXIMATELY 1-MIN DURATION.

**********SOLRAD 11A, MEEKINS

EXPERIMENT NAME- BRAGG X-RAY POLARIMETER
NSSDC ID- SRD-11A-11

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - J.F. MEEKINS NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT WILL UTILIZE A LITHIUM FLUORIDE CRYSTAL, FIXED AT AN ANGLE TO ALLOW SOLAR X RAYS OF ABOUT 2.8 A TO UNDERGO FIRST-ORDER BRAGG REFLECTION INTO A PROPORTIONAL COUNTER. SINCE THE REFLECTION OF POLARIZED RADIATION DEPENDS UPON THE ANGLE BETWEEN THE ELECTRIC VECTOR OF THE RADIATION AND THE REFLECTING ANGLE OF THE CRYSTAL, THE SPIN OF THE SATELLITE WILL MODULATE THE INTENSITY OF REFLECTED POLARIZED RADIATION. DATA PULSES ASSOCIATED WITH 45-DEG SECTORS IN THE ROLL DIRECTION WILL BE ELECTRONICALLY GRATED INTO CORRESPONDING ACCUMULATORS. SIGNAL VARIATIONS FROM SECTOR TO SECTOR WILL INDICATE THE PRESENCE OF POLARIZED RADIATION. DATA FOR EACH 45-DEG SECTOR WILL BE ACCUMULATED FOR AN INTEGRAL NUMBER OF SPINS AND READ OUT ONCE IN EACH 2-MIN TELEMETRY CYCLE.

**********SOLRAD 11A, SMATHERS

EXPERIMENT NAME- X-RAY MONITOR (0.1-1.6 A, 0.5-3 A, 1-4 A)
NSSDC ID- SRD-11A-02

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - H.W. SMATHERS NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
FOUR ELECTRONICALLY PAIRED GAS-FILLED PROPORTIONAL COUNTERS WILL BE USED TO MEASURE X-RAY EMISSION BETWEEN 4 AND 100 KEV IN FOUR CHANNELS. ALL FOUR DETECTORS WILL HAVE 10-MIL BERYLLIUM WINDOWS PLUS ADDITIONAL ALUMINUM OR BERYLLIUM MATERIAL MOUNTED IN FRONT OF THE DETECTORS. EACH DETECTOR WILL BE SAMPLED ONCE EVERY 7.5 SEC. ALTHOUGH AN OPTIONAL MODE WILL TRANSMIT DATA FROM ONLY ONE OR TWO DETECTORS. EFFECTIVELY QUADRUPLING OR DOUBLING THE SAMPLING RATE OF THAT DETECTOR. IN-FLIGHT CALIBRATION WILL BE PERFORMED USING A RADIOACTIVE SOURCE WHICH CAN BE MOVED IN FRONT OF THE DETECTORS UPON COMMAND.

**********SOLRAD 11A, VAMPOLA

EXPERIMENT NAME- SOLAR FLARE ELECTRONS
NSSDC ID- SRD-11A-22

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - A.L. VAMPOLA AEROSPACE CORP EL SEGUNDO, CA
OI - J.B. BLAKE AEROSPACE CORP EL SEGUNDO, CA
OI - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL MEASURE SOLAR ELECTRONS. TWO PERMANENT MAGNETS WILL BE USED TO MOMENTUM-ANALYZE INCIDENT ELECTRONS. ARRAYS OF SILICON DETECTORS WILL COUNT INCIDENT ELECTRONS IN 12 ENERGY CHANNELS FROM 11 KEV TO 1.5 MEV. SPIN-INTEGRATED DATA WILL BE OBTAINED ONCE EVERY 2 MIN, EXCEPT THAT 11-KEV AND 405-KEV DATA WILL BE SECTORED INTO QUADRANTS, AND 60-KEV AND 610-KEV DATA WILL BE OBTAINED WITH 15-SEC RESOLUTION.

**********SOLRAD 11A, WELLER, JR.

EXPERIMENT NAME- GEOCORONAL-EXTRATERRESTRIAL EUV - DETECTOR 1
NSSDC ID- SRD-11A-1@

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - C.S. WELLER, JR. NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

A COLLIMATED CHANNELTRON PHOTOMULTIPLIER MOUNTED BEHIND A FILTER WHEEL WILL BE USED TO MEASURE EUV RADIATION FROM NON-SOLAR SOURCES. THE FILTER WHEEL WILL ALLOW VARIOUS EMISSION LINES BETWEEN 200- AND 1400-A TO BE ISOLATED, AS WELL AS ALLOWING IN-FLIGHT CALIBRATION THROUGH THE USE OF A RADIOACTIVE SOURCE. THE DETECTOR WILL BE MOUNTED TO LOOK 90 DEG OFF THE SPIN AXIS OF THE SPACECRAFT AND WILL SWEEP THE CELESTIAL SPHERE IN ABOUT SIX MONTHS. EACH DATA SAMPLE WILL BE ACCUMULATED OVER INCREMENTS OF 1/64 OF THE SPACECRAFT'S SPIN, WITH THE SAMPLE SOURCE REFERENCED TO EITHER A STAR PULSE OR THE EARTH PULSE. THE DATA WILL BE READ OUT IN 2-MIN INTERVALS. THIS EXPERIMENT IS NOT EXPECTED TO BE OPERATED MORE THAN 1 HR PER DAY.

**********SOLRAD 11A, WELLER, JR.

EXPERIMENT NAME- GEOCORONAL-EXTRATERRESTRIAL EUV - DETECTOR 2
NSSDC ID- SRD-11A-19

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - C.S. WELLER, JR. NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

A COLLIMATED CHANNELTRON PHOTOMULTIPLIER MOUNTED BEHIND A FILTER WHEEL WILL BE USED TO MEASURE EUV RADIATION FROM NON-SOLAR SOURCES. THE FILTER WHEEL WILL ALLOW VARIOUS EMISSION LINES BETWEEN 200-AND 1400 -A TO BE ISOLATED, AS WELL AS ALLOWING IN-FLIGHT CALIBRATION THROUGH THE USE OF A RADIOACTIVE SOURCE. THE DETECTOR WILL BE MOUNTED TO LOOK 90 DEG OFF THE SPIN AXIS OF THE SPACECRAFT AND WILL SWEEP THE CELESTIAL SPHERE IN ABOUT 6 MONTHS. EACH DATA SAMPLE WILL BE ACCUMULATED OVER INCREMENTS OF 1/64 OF THE SPACECRAFT'S SPIN, WITH THE SAMPLE SOURCE REFERENCED TO EITHER A STAR PULSE OR THE EARTH PULSE. THE DATA WILL BE READ OUT IN 2-MIN INTERVALS. THIS EXPERIMENT IS NOT EXPECTED TO BE OPERATED MORE THAN 1 HR PER DAY.

**********SOLRAD 11B **********

SPACECRAFT COMMON NAME- SOLRAD 11B

ALTERNATE NAMES- SOLRAD HI-TRIP, NRL-111, PL-723F, SESP NO.NRL-111-0264, SOLRAD
NSSDC ID- SRD-11B

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 03/00/75 SPACECRAFT WEIGHT IN ORBIT- 102.15 KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- TITAN 3C

SPONSORING COUNTRY/AGENCY
UNITED STATES DOD-NAVY

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 3140. MIN
APOAPSIS- 127622. KM ALT PERIAPSIS- 127622. KM ALT INCLINATION- 0. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - E.W.	PETERKIN	NAVAL RESEARCH LAB	WASHINGTON, DC
PS - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC

SPACECRAFT BRIEF DESCRIPTION
SOLRAD 11B WILL BE ONE OF A PAIR OF IDENTICAL SATELLITES THAT WILL BE PLACED IN A CIRCULAR EQUATORIAL ORBIT OF 20 EARTH RADII. THE SATELLITES, WHICH WILL BE ORIENTED TOWARD THE SUN, WILL PROVIDE 100 PERCENT REAL-TIME, CONTINUOUS MONITORING OF SOLAR X-RAY, UV, AND ENERGETIC PARTICLE EMISSIONS. EXPERIMENTS WILL INCLUDE BROADBAND ION CHAMBERS OBSERVING SOLAR X RAYS BETWEEN 0.1 AND 60 A, PROPORTIONAL COUNTERS AND SCINTILLATORS OBSERVING SOLAR X RAYS BETWEEN 2 AND 150 KEV, AN EUV DETECTOR COVERING THREE BANDS BETWEEN 170 AND 1000 A, A VARIABLE RESOLUTION EBERT-FASTIE SPECTROMETER COVERING THE WAVELENGTH RANGE OF 1100 TO 1600 A (RESOLUTION - 1 TO 25 A), A SOLAR WIND MONITOR, SOLAR PROTON, ELECTRON, AND ALPHA PARTICLE MONITORS, TWO X-RAY POLARIMETERS (ONE UTILIZING BRAGG SCATTERING AND THE OTHER UTILIZING THOMPSON SCATTERING), A BRAGG SPECTROMETER OBSERVING MAGNESIUM-11 AND -12 LINES, A LARGE-AREA AURORAL X-RAY DETECTOR, AND A PASSIVELY COOLED SOLID-STATE X-RAY DETECTOR TO MEASURE BACKGROUND X-RAY EMISSIONS.

**********SOLRAD 11B, BLAKE

EXPERIMENT NAME- SOLAR PROTONS
NSSDC ID- SRD-11B-14

LAST REPORTED STATE- PRELAUNCH

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

PI - J.B.	BLAKE	AEROSPACE CORP	EL SEGUNDO, CA
OI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
A PAIR OF IDENTICAL SENSORS WILL BE MOUNTED ON THE SPACECRAFT, WITH ONE ON THE SOLAR-ORIENTED SURFACE (THIS EXPERIMENT) AND ONE ON THE ANTISOLAR SURFACE (EXPERIMENT SRD-11B-23). EACH SENSOR WILL BE A TWO-ELEMENT COUNTER TELESCOPE USING DISK-SHAPED SEMICONDUCTORS AS DETECTOR ELEMENTS, WITH SHIELDING MATERIAL IN FRONT OF AND BETWEEN THE TWO DETECTOR ELEMENTS. THE DETECTOR ELEMENTS WILL BE CONNECTED TO CHARGE-SENSITIVE AMPLIFIERS. COINCIDENCE AND PULSE HEIGHT ANALYSIS WILL BE USED TO SEPARATE PULSES PRODUCED BY 2-MEV PROTONS, 10-MEV PROTONS, 4.5-MEV ALPHA PARTICLES, 7.5-MEV ALPHA PARTICLES, AND HEAVY NUCLEI (Z GREATER THAN 2, E GREATER THAN 3 MEV PER NUCLEON). A COMPLETE SET OF DATA POINTS WILL BE OBTAINED EVERY 2 MIN.

**********SOLRAD 11B, BLAKE

EXPERIMENT NAME- OMNIDIRECTIONAL PROTONS
NSSDC ID- SRD-11B-17

LAST REPORTED STATE- PRELAUNCH

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

PI - J.B.	BLAKE	AEROSPACE CORP	EL SEGUNDO, CA
OI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL BE ABLE TO MEASURE SOLAR PROTONS AND ALPHA PARTICLES. A SET OF FIVE SMALL SILICON CUBICAL SEMICONDUCTOR DETECTORS WILL BE USED TO SEPARATELY MEASURE THE OMNIDIRECTIONAL PROTON AND ALPHA PARTICLE FLUXES IN THE ENERGY/NUCLEON RANGES 5 TO 20, 10 TO 25, 20 TO 40, 50 TO 90, AND 100 TO 160 MEV. A TWO-ELEMENT SEMICONDUCTOR TELESCOPE WILL USE COINCIDENCE REQUIREMENTS AND PULSE HEIGHT ANALYSIS TO DETERMINE PROTON FLUXES IN FIVE DIFFERENTIAL ENERGY CHANNELS FROM 20 TO 500 KEV AND IN THREE INTEGRAL CHANNELS AT 0.5, 1, AND 1.5 MEV. THE 36-TO 74-KEV AND THE 1-MEV DATA WILL BE SECTORED INTO QUADRANTS WHILE THE REMAINING CHANNELS WILL YIELD SPIN-INTEGRATED DATA. THE INSTRUMENT WILL CONSIST OF A PHOTOMULTIPLIER TUBE VIEWING A THIN PLASTIC SCINTILLATOR FOIL. PULSE HEIGHT ANALYSIS WILL BE USED TO SEPARATE IONS INTO FIVE GROUPS -- Z EQUAL TO 1, 2, 6 TO 10, 12 TO 18, AND GREATER THAN 18. THE IONS WILL HAVE ENERGY THRESHOLDS OF 0.5 MEV/NUCLEON (Z EQUAL TO 1 OR 2) THROUGH 0.8 MEV/NUCLEON (Z GREATER THAN 18). THE Z=2 AND Z=6 THROUGH 10 DATA WILL BE SECTORED INTO FOUR QUADRANTS. THE REMAINING DATA WILL BE SPIN INTEGRATED. A COMPLETE SET OF MEASUREMENTS WILL BE MADE ONCE EVERY 2 MIN.

**********SOLRAD 11B, BLAKE

EXPERIMENT NAME- ANTISOLAR PROTONS
NSSDC ID- SRD-11B-23

LAST REPORTED STATE- PRELAUNCH

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

PI - J.B.	BLAKE	AEROSPACE CORP	EL SEGUNDO, CA
OI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

A PAIR OF IDENTICAL SENSORS WILL BE MOUNTED ON THE SPACECRAFT, ONE ON THE ANTISOLAR SURFACE (THIS EXPERIMENT) AND ONE ON THE SOLAR-ORIENTED SURFACE (EXPERIMENT SRD-11B-14). EACH SENSOR WILL BE A TWO-ELEMENT COUNTER TELESCOPE USING DISK-SHAPED SEMICONDUCTORS AS DETECTOR ELEMENTS, WITH SHIELDING MATERIAL IN FRONT OF AND BETWEEN THE TWO DETECTOR ELEMENTS. THE DETECTOR ELEMENTS WILL BE CONNECTED TO CHARGE-SENSITIVE AMPLIFIERS. COINCIDENCE ANALYSIS AND PULSE HEIGHT-ANALYSIS WILL BE USED TO SEPARATE PULSES PRODUCED BY 2-MEV PROTONS, 10-MEV PROTONS, 4.5-MEV ALPHA PARTICLES, 7.5-MEV ALPHA PARTICLES, AND HEAVY NUCLEI (Z GREATER THAN 2), WITH E GREATER THAN 3 MEV PER NUCLEON. A COMPLETE SET OF DATA POINTS WILL BE OBTAINED EVERY 2 MINUTES.

**********SOLRAD 11B, BYRAM

EXPERIMENT NAME- STELLAR/AURORAL X-RAYS

NSSDC ID- SRD-11B-16

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - E.T. BYRAM NAVAL RESEARCH LAB WASHINGTON, DC
OI - D.M. HORAN NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT WILL CONSIST OF THREE PROPORTIONAL COUNTERS SENSITIVE TO X RAYS BETWEEN 1 AND 8 A. THESE PROPORTIONAL COUNTERS WILL BE MOUNTED ON THE SIDE OF THE SATELLITE AND ORIENTED 45 DEG, 90 DEG, AND 135 DEG OFF THE SPIN AXIS. THE COUNTING CIRCUITS WILL BE CONTROLLED BY THE ROLL PERIOD AND SYNCHRONIZED TO THE STAR AND/OR EARTH PULSES SO DATA SAMPLES CAN BE ASSOCIATED WITH PORTIONS OF THE SKY. THE STELLAR PORTION OF THIS EXPERIMENTWILL BE ABLE TO MAP COSMIC X-RAY SOURCES AND SWEEP THE ENTIRE CELESTIAL SPHERE IN ABOUT6X MONTHS. THE AURORAL PORTION OF THE EXPERIMENT IS DESIGNED TO MONITOR AURORAL X-RAY EMISSIONS FROM THE EARTH. THE STELLAR PORTION SAMPLING CYCLE WILL REQUIRE 16 MIN WHILE THE AURORAL PORTION WILL REQUIRE TWO MINUTES FOR A SAMPLING CYCLE.

**********SOLRAD 11B, DOSCHEK

EXPERIMENT NAME- THOMSON X-RAY POLARIMETER
NSSDC ID- SRD-11B-10

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - G.A. DOSCHEK NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
INCIDENT SOLAR X-RAYS WILL BE SCATTERED BY A BLOCK OF LOW-DENSITY MATERIAL SUCH AS LITHIUM, LITHIUM HYDRIDE, OR BERYLLIUM. POLARIZED XRAYS WILL BE PREFERENTIALLY SCATTERED WHILE NON-POLARIZED X RAYS WILL BE SCATTERED ISOTROPICALLY. TWO PROPORTIONAL COUNTERS, EACH WITH TWO-CHANNEL PULSE HEIGHT ANALYZERS TO PROVIDE ENERGY RESOLUTION IN 2- TO 10-KEV AND 10- TO 50-KEV BANDS, WILL BE MOUNTED ON OPPOSITE SIDES OF THE SCATTERING BLOCK. AS THE SATELLITE ROLLS, THE SCATTERING BLOCK AND THE DETECTORS WILL BE ROTATED WITH RESPECT TO THE PLANE OF POLARIZATION OF THE INCIDENT X RAYS. THE DATA WILL BE GATED ELECTRONICALLY INTO ACCUMULATORS ASSOCIATED WITH 45-DEG SECTORS IN THE ROLL DIRECTION. CYCLIC PULSE-COUNT VARIATIONS FROM SECTOR TO SECTOR WILL REVEAL POLARIZATION IF PRESENT. THE DATA FROM THE 45-DEG SECTORS WILL BE ACCUMULATED FOR AN INTEGRAL NUMBER OF SPINS DURING EACH 30-SEC SAMPLING CYCLE AND THEN READ OUT ON COMMAND. A RADIOACTIVE SOURCE WILL SWING OUT BETWEEN EACH DETECTOR AND THE SCATTERING BLOCK FOR CALIBRATION IN FLIGHT.

**********SOLRAD 11B, FELDMAN

EXPERIMENT NAME- 1175- TO 1800-A SOLAR UV SPECTROMETER
NSSDC ID- SRD-11B-09

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - P.D. FELDMAN NAVAL RESEARCH LAB WASHINGTON, DC
OI - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL USE A ROTATABLE GRATING, OPERATING IN FIRST ORDER TO MEASURE THE SOLAR ELECTROMAGNETIC SPECTRUM BETWEEN 1175 AND 1800 A. A PHOTOMULTIPLIER TUBE WILL DETECT RADIATION REFLECTED THROUGH AN OPTICAL SYSTEM FROM THE GRATING. TWO SCANNING RATES WILL BE AVAILABLE -- A FAST-RATE LOW RESOUTION MODE IN WHICH THE ENTIRE 625-A RANGE WILL BE COVERED IN 93.75 SECONDS, USING 25-A SEGMENTS FOR EACH DATA SAMPLE, AND A SLOW-RATE HIGH-RESOLUTION MODE IN WHICH THE 625 -A RANGE WILL BE COVERED IN 12.5 MINUTES, USING 3.125-A SEGMENTS.

**********SOLRAD 11B, FRITZ

EXPERIMENT NAME- 15- TO 150-KEV SOLAR X-RAY MONITOR
NSSDC ID- SRD-11B-01

LAST REPORTED STATE- PRELAUNCH

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

PI - G.G.	FRITZ	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL USE A CESIUM IODIDE SCINTILLATOR SURROUNDED BY A PLASTIC SCINTILLATOR OPERATED IN ANTICOINCIDENCE TO SCREEN OUT BACKGROUND COUNTS. PULSE HEIGHT ANALYSIS WILL PROVIDE SOLAR SPECTRA IN THE RANGES FROM 15 TO 20, 20 TO 30, 30 TO 60, AND 60 TO 150 KEV. NORMALLY, DATA WILL BE TELEMETERED FROM EACH CHANNEL EVERY 7.5 SEC, ALTHOUGH AN OPTIONAL MODE CAN SELECT THE 20 -O 30-KEV CHANNEL FOR TRANSMISSION EVERY 1.875 SEC. IN-FLIGHT CALIBRATION WILL BE MADE USING A RADIOACTIVE SOURCE WHICH WILL SWING IN FRONT OF THE DETECTOR UPON COMMAND AND REMAIN THERE FOR A 2-MIN TELEMETRY CYCLE. THE OVERALL DESIGN IS THE SAME AS THAT USED ON SOLRAD 10, WITH IMPROVED ELECTRONICS.

**********SOLRAD 11B, FRITZ

EXPERIMENT NAME- X-RAY BACKGROUND
NSSDC ID- SRD-11B-24

LAST REPORTED STATE- PRELAUNCH

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

PI - G.G.	FRITZ	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.	LUCKE	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.C.	HENRY	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

A SOLID-STATE DETECTOR (GERMANIUM OR LITHIUM-DRIFTED SILICON) WILL BE USED TO MEASURE THE GALACTIC X-RAY BACKGROUND IN THE 0.5- TO 20-KEV RANGE WITH AN ENERGY RESOLUTION OF BETTER THAN 0.3 KEV. TO REACH THE DESIRED 0.3-KEV ENERGY RESOLUTION, THE DETECTOR MUST BE PASSIVELY COOLED TO 70- TO 100-DEG KELVIN. THE INSTRUMENT WILL BE MOUNTED ON THE ANTISOLAR SIDE OF THE SPACECRAFT AND WILL SWEEP OUT A BAND NEARLY 20-DEG WIDE CENTERED NEAR THE ECLIPTIC PLANE AS THE SATELLITE MOVES AROUND THE SUN. THE DETECTOR OUTPUT WILL UNDERGO 256-CHANNEL ANALYSIS TO PRODUCE THE ENERGY SPECTRUM. ALL 256 CHANNELS WILL BE READ OUT IN 16 MIN. A RADIOACTIVE SOURCE MOUNTED ON A SHUTTER WILL BE USED TO PROVIDE IN-FLIGHT CALIBRATION OF THE DETECTOR.

**********SOLRAD 11B, KELLEY

EXPERIMENT NAME- PROTON-ALPHA TELESCOPE
NSSDC ID- SRD-11B-2C

LAST REPORTED STATE- PRELAUNCH

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

PI - J.G.	KELLEY	AFCRL	BEDFORD, MA
OI - L.	KATZ	AFCRL	BEDFORD, MA
OI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
TWO TOTALLY DEPLETED SILICON SURFACE-BARRIER DETECTORS IN A COINCIDENCE TELESCOPE ARRANGEMENT WILL BE USED TO DETECT 1- TO 100-MEV PROTONS AND 10- TO 100-MEV ALPHA PARTICLES. PULSE HEIGHT ANALYSIS AND SUITABLE LOGIC ELEMENTS WILL BE USED TO PROVIDE 11 PROTON CHANNELS AND FOUR ALPHA PARTICLE CHANNELS. THE TELESCOPE WILL BE INSENSITIVE TO LIGHT AND TO ELECTRONS. VERY LITTLE FLUX DIRECTIONALITY INFORMATION WILL BE OBTAINED.

**********SOLRAD 11B, KELLEY

EXPERIMENT NAME- LOW-ENERGY PROTON SPECTROMETER
NSSDC ID- SRD-11B-21

LAST REPORTED STATE- PRELAUNCH

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

PI - J.G.	KELLEY	AFCRL	BEDFORD, MA
OI - L.	KATZ	AFCRL	BEDFORD, MA
OI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
TWO TOTALLY DEPLETED SILICON SURFACE BARRIER DETECTORS MOUNTED IN A SERIES WILL MEASURE PROTONS BETWEEN 150 KEV AND 6 MEV. PULSE HEIGHT ANALYSIS OF PULSES GENERATED IN THE FRONT DETECTOR WHICH ARE UNACCOMPANIED BY PULSES IN THE REAR DETECTOR WILL SEPARATE THE PROTON COUNTS INTO 12 ENERGY CHANNELS. PERMANENT MAGNETS WILL BE USED TO DEFLECT AWAY INCIDENT ELECTRONS WITH ENERGIES LESS THAN 2 MEV. VERY LITTLE FLUX DIRECTIONALITY INFORMATION WILL BE OBTAINED.

**********SOLRAD 11B, KREPLIN

EXPERIMENT NAME- 1- TO 8-A SOLAR X-RAY MONITOR
NSSDC ID- SRD-11B-04

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT WILL CONSIST OF TWO COMPLETE SETS OF IONIZATION/CHAMBER AND ELECTROMETER-AMPLIFIER COMBINATIONS. THE IONIZATION CHAMBERS WILL BE SENSITIVE TO SOLAR X RAYS IN THE 1- TO 8-A RANGE. THE TWO SETS WILL BE DRIVEN BY SEPARATE POWER SUPPLIES, ALTHOUGH ONLY ONE SET WILL BE SELECTED FOR TELEMETRY TRANSMISSION. DATA WILL BE TRANSMITTED WITH A 15-SEC TIME RESOLUTION. THE ELECTROMETER-AMPLIFIERS WILL BE ABLE TO CHANGE

CURRENT RANGES AUTOMATICALLY OR MANUALLY. THE DETECTORS CANNOT BE CALIBRATED IN FLIGHT, BUT THE ELECTROMETER-AMPLIFIERS MAY BE CALIBRATED ON EACH RANGE WITHOUT DETACHING THE DETECTOR.

**********SOLRAD 11B, KREPLIN

EXPERIMENT NAME- 8- TO 16-A SOLAR X-RAY MONITOR
NSSDC ID- SRD-11B-05

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF TWO COMPLETE SETS OF IONIZATION-CHAMBER AND ELECTROMETER-AMPLIFIER COMBINATIONS. THE IONIZATION CHAMBERS WILL BE SENSITIVE TO SOLAR X-RAYS IN THE 8- TO 16-A RANGE. THE TWO SETS WILL BE DRIVEN BY SEPARATE POWER SUPPLIES, ALTHOUGH ONLY ONE SET WILL BE SELECTED FOR TELEMETRY TRANSMISSION. DATA WILL BE TRANSMITTED WITH A 30-SEC TIME RESOLUTION. THE ELECTROMETER-AMPLIFIERS WILL BE ABLE TO CHANGE CURRENT RANGES AUTOMATICALLY OR MANUALLY. THE DETECTORS CANNOT BE CALIBRATED IN FLIGHT, BUT THE ELECTROMETER-AMPLIFIERS MAY BE CALIBRATED ON EACH RANGE WITHOUT DETACHING THE DETECTOR.

**********SOLRAD 11B, KREPLIN

EXPERIMENT NAME- 44- TO 60-A SOLAR X-RAY MONITOR
NSSDC ID- SRD-11B-06

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF TWO COMPLETE SETS OF IONIZATION-CHAMBER AND ELECTROMETER-AMPLIFIER COMBINATIONS. THE IONIZATION CHAMBERS WILL BE SENSITIVE TO SOLAR X RAYS IN THE 44- TO 60-A RANGE. THE TWO SETS WILL BE DRIVEN BY SEPARATE POWER SUPPLIES, ALTHOUGH ONLY ONE SET WILL BE SELECTED FOR TELEMETRY TRANSMISSION. DATA WILL BE TRANSMITTED WITH A 30-SEC TIME RESOLUTION. THE ELECTROMETER-AMPLIFIERS WILL BE ABLE TO CHANGE CURRENT RANGES AUTOMATICALLY OR MANUALLY. THE ELECTROMETER-AMPLIFIERS MAY BE CALIBRATED ON EACH RANGE WITHOUT DETACHING THE DETECTOR. THE DETECTORS CAN BE CALIBRATED IN FLIGHT BY COMMANDING A SHUTTER-MOUNTED RADIOACTIVE SOURCE INTO POSITION.

**********SOLRAD 11B, KREPLIN

EXPERIMENT NAME- 170- TO 1050-A SOLAR EUV MONITOR
NSSDC ID- SRD-11B-07

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF THREE SETS OF LITHIUM FLUORIDE PHOTOSENSITIVE SURFACE DETECTORS COUPLED TO FOUR-RANGE ELECTROMETER-AMPLIFIERS. THE THREE SETS WILL NOT BE REDUNDANT DUE TO THE DIFFERENT FILTERS BEING USED. A BERYLLIUM FILTER WILL LIMIT ONE DETECTOR'S RESPONSE TO THE RANGE FROM 170 TO 500 A. A TIN FILTER WILL LIMIT A SECOND DETECTOR'S RESPONSE TO THE RANGE FROM 450 TO 850 A. AN INDIUM FILTER WILL LIMIT A THIRD DETECTOR'S RESPONSE TO THE RANGE FROM 725 TO 1050 A. THE DETECTOR-ELECTROMETER SETS WILL BE DRIVEN BY SEPARATE POWER SUPPLIES. EACH DETECTOR WILL BE READ EVERY 7.5 SEC. THE ELECTROMETERS MAY BE CALIBRATED DURING FLIGHT WITHOUT DETACHING THE DETECTOR, ALTHOUGH THE DETECTORS CANNOT BE CALIBRATED IN FLIGHT.

**********SOLRAD 11B, KREPLIN

EXPERIMENT NAME- 1080- TO 1360-A SOLAR UV MONITOR
NSSDC ID- SRD-11B-08

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF ONE 4-RANGE ELECTROMETER-AMPLIFIER AND THREE IONIZATION CHAMBERS. TWO OF THE IONIZATION CHAMBERS WILL BE THE STANDARD GAS-FILLED CHAMBERS FLOWN ON PREVIOUS SOLRAD SATELLITES. THESE DETECTORS, ELECTRONICALLY AND MECHANICALLY PAIRED, WILL BE DESIGNATED DETECTOR 'A'. THE THIRD IONIZATION CHAMBER WILL BE AN EVACUATED CHAMBER WITH A LITHIUM FLUORIDE PHOTOSENSITIVE SURFACE, AND WILL BE DESIGNATED DETECTOR 'B'. NORMALLY, DETECTOR B WILL BE CONTINUOUSLY SELECTED FOR TELEMETRY TRANSMISSION AND WILL BE REPLACED ONLY OCCASIONALLY BY DETECTOR A FOR CALIBRATING EXPERIMENT 8B AND EXPERIMENT 9. A MECHANICAL SHUTTER, MOVABLE BY COMMAND, WILL SHIELD THE WINDOW OF DETECTOR A FROM THE SUN. THE ELECTROMETER-AMPLIFIER CAN BE CALIBRATED WITHOUT DETACHING THE DETECTOR FROM THE SYSTEM. DATA WILL BE SAMPLED AT 15-SEC INTERVALS.

**********SOLRAD 11B, KREPLIN

EXPERIMENT NAME- 0.5- TO 3- A SOLAR X-RAY MONITOR
NSSDC ID- SRD-11B-12

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORAN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF THREE IONIZATION CHAMBERS CONNECTED IN PARALLEL TO A SINGLE ELECTROMETER-AMPLIFIER. THE IONIZATION CHAMBERS WILL BE

SENSITIVE TO SOLAR X RAYS IN THE 0.5- TO 3.0-A RANGE. DATA WILL BE TRANSMITTED WITH A 15-SEC TIME RESOLUTION. THE ELECTROMETER-AMPLIFIER WILL BE ABLE TO CHANGE CURRENT RANGES AUTOMATICALLY OR MANUALLY. THE DETECTORS CANNOT BE CALIBRATED IN FLIGHT, BUT THE ELECTROMETER-AMPLIFIERS MAY BE CALIBRATED ON EACH RANGE WITHOUT DETACHING THE DETECTOR.

**********SOLRAD 11B, KREPLIN

EXPERIMENT NAME- 1- TO 20-A SOLAR X-RAY MONITOR
NSSDC ID- SRD-11B-13

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W.	KREPLIN	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - R.G.	TAYLOR	NAVAL RESEARCH LAB	WASHINGTON, DC
OI - D.M.	HORÁN	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL CONSIST OF AN IONIZATION CHAMBER AND ONE ELECTROMETER-AMPLIFIER. THE IONIZATION CHAMBER WILL BE SENSITIVE TO SOLAR X RAYS IN THE 1- TO 20-A RANGE. DATA WILL BE TRANSMITTED WITH A 30-SEC TIME RESOLUTION. THE ELECTROMETER-AMPLIFIER WILL BE ABLE TO CHANGE CURRENT RANGES AUTOMATICALLY OR MANUALLY. THE DETECTOR CANNOT BE CALIBRATED IN FLIGHT, BUT THE ELECTROMETER-AMPLIFIER MAY BE CALIBRATED ON EACH RANGE WITHOUT DETACHING THE DETECTOR.

**********SOLRAD 11B, MEEKINS

EXPERIMENT NAME- CONTINUUM (8.8 A) AND MAGNESIUM LINE (9.17 A AND 8.42 A) MONITOR
NSSDC ID- SRD-11B-03

LAST REPORTED STATE- PRELAUNCH

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

PI - J.F.	MEEKINS	NAVAL RESEARCH LAB	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

SOLAR X RAYS WILL BE OBSERVED IN THE MAGNESIUM 11 AND 12 LINES (9.17 AND 8.42 A) AND IN THE CONTINUUM AT 8.8 A. THREE SHA CRYSTALS FIXED AT THREE DIFFERENT ANGLES WILL ALLOW SOLAR X RAYS TO UNDERGO FIRST-ORDER BRAGG REFLECTION INTO THREE PROPORTIONAL COUNTERS. SHOULD THE SPACECRAFT SPIN AXIS BECOME IMPROPERLY ORIENTED, THE SPECTROMETER WOULD FUNCTION PROPERLY IF THE ASPECT ANGLE WERE NO MORE THAN ONE DEG OFF NOMINAL, ALTHOUGH THE INSTRUMENT WILL THEN FUNCTION AS A SCANNING SPECTROMETER WITH AN EXTREMELY SMALL SPECTRAL RANGE IN THE VICINITY OF THE TARGET WAVELENGTHS. DATA WILL BE ACCUMULATED OVER INCREMENTS OF 1/64 OF A SPACECRAFT SPIN PERIOD, AND THE EXPERIMENT WILL HAVE A SAMPLING CYCLE OF APPROXIMATELY 1-MIN DURATION.

**********SOLRAD 11B, MEEKINS

EXPERIMENT NAME- BRAGG X-RAY POLARIMETER
NSSDC ID- SRD-11B-11

LAST REPORTED STATE- PRELAUNCH

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

PI - J.F. MEEKINS NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
THIS EPERIMENT WILL UTILIZE A LITHIUM FLUORIDE CRYSTAL FIXED AT AN ANGLE SO AS TO ALLOW SOLAR X-RAYS OF ABOUT 2.8 A TO UNDERGO FIRST-ORDER BRAGG REFLECTION INTO A PROPORATIONAL COUNTER. SINCE THE REFLECTION OF POLARIZED RADIATION DEPENDS UPON THE ANGLE BETWEEN THE ELECTRIC VECTOR OF THE RADIATION AND THE REFLECTING ANGLE OF THE CRYSTAL, THE SPIN OF THE SATELLITE WILL MODULATE THE INTENSITY OF REFLECTED POLARIZED RADIATION. DATA PULSES ASSOCIATED WITH 45-DEG SECTORS IN THE ROLL DIRECTION WILL BE ELECTRONICALLY GATED INTO CORRESPONDING ACCUMULATORS. SIGNAL VARIATIONS FROM SECTOR TO SECTOR WILL INDICATE THE PRESENCE OF POLARIZED RADIATION. DATA FOR EACH 45-DEG SECTOR WILL BE ACCUMULATED FOR AN INTEGRAL NUMBER OF SPINS AND READ OUT ONCE IN EACH 2-MIN TELEMETRY CYCLE.

**********SOLRAD 11B, SMATHERS

EXPERIMENT NAME- X-RAY MONITOR (0.1-1.6 A, 0.5-3 A, 1-4 A)
NSSDC ID- SRD-11B-02

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - H.H. SMATHERS NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
FOUR GAS-FILLED PROPORTIONAL COUNTERS WILL BE USED TO MEASURE X-RAY EMISSION BETWEEN 4 AND 100 KEV IN FOUR CHANNELS. ALL FOUR DETECTORS WILL HAVE 10-MIL BERYLLIUM WINDOWS, PLUS ADDITIONAL ALUMINUM OR BERYLLIUM MOUNTED IN FRONT OF THE DETECTORS. EACH DETECTOR WILL BE SAMPLED ONCE EVERY 7.5 SEC, ALTHOUGH AN OPTIONAL MODE WILL TRANSMIT DATA FROM ONLY ONE OR TWO DETECTORS, EFFECTIVELY QUADRUPLING OR DOUBLING THE SAMPLING RATE OF THAT DETECTOR. IN-FLIGHT CALIBRATION WILL BE PERFORMED BY USING A RADIOACTIVE SOURCE WHICH CAN BE MOVED IN FRONT OF THE DETECTORS UPON COMMAND.

**********SOLRAD 11B, VAMPOLA

EXPERIMENT NAME- SOLAR FLARE ELECTRONS
NSSDC ID- SRD-11B-22

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - A.L. VAMPOLA AEROSPACE CORP EL SEGUNDO, CA
OI - J.B. BLAKE AEROSPACE CORP EL SEGUNDO, CA
OI - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
THIS EXPERIMENT WILL MEASURE SOLAR ELECTRONS. TWO PERMANENT MAGNETS WILL BE USED TO MOMENTUM-ANALYZE INCIDENT ELECTRONS. ARRAYS OF SILICON DETECTORS WILL COUNT INCIDENT ELECTRONS IN 12 ENERGY CHANNELS FROM 11 KEV TO 1.5 MEV. SPIN-INTEGRATED DATA WILL BE OBTAINED ONCE EVERY 2 MIN, EXCEPT THAT 11-KEV AND 405-KEV DATA WILL BE SECTORED INTO QUADRANTS, AND 60-KEV AND 610-KEV DATA WILL BE OBTAINED WITH 15-SEC RESOLUTION.

**********SOLRAD 11B, WELLER, JR.

EXPERIMENT NAME- GEOCORONAL-EXTRATERRESTRIAL EUV -
DETECTOR 1
NSSDC ID- SRD-11B-18

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - C.S. WELLER, JR. NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
A COLLIMATED CHANNELTRON PHOTOMULTIPLIER MOUNTED BEHIND A FILTER WHEEL WILL BE USED TO MEASURE EUV RADIATION FROM NON-SOLAR SOURCES. THE FILTER WHEEL WILL ENABLE INVESTIGATORS TO ISOLATE VARIOUS EMISSION LINES BETWEEN 200 AND 1400 A AND ALLOW IN-FLIGHT CALIBRATION THROUGH THE USE OF A RADIOACTIVE SOURCE. THE DETECTOR WILL BE MOUNTED TO LOOK 90 DEG OFF THE SPIN AXIS OF THE SPACECRAFT AND WILL SWEEP THE CELESTIAL SPHERE IN ABOUT 6 MONTHS. EACH DATA SAMPLE WILL BE ACCUMULATED OVER INCREMENTS OF 1/64 OF THE SPACECRAFT'S SPIN, WITH THE SAMPLE SOURCE REFERENCED TO EITHER A STAR PULSE OR THE EARTH PULSE. THE DATA WILL BE READ OUT IN 2-MIN INTERVALS. THIS EXPERIMENT IS NOT EXPECTED TO BE OPERATED MORE THAN 1 HR PER DAY.

**********SOLRAD 11B, WELLER, JR.

EXPERIMENT NAME- GEOCORONAL-EXTRATERRESTRIAL EUV -
DETECTOR 2
NSSDC ID- SRD-11B-19

LAST REPORTED STATE- PRELAUNCH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)
PI - C.S. WELLER, JR. NAVAL RESEARCH LAB WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION
A COLLIMATED CHANNELTRON PHOTOMULTIPLIER MOUNTED BEHIND A FILTER WHEEL WILL BE USED TO MEASURE EUV RADIATION FROM NON-SOLAR SOURCES. THE FILTER WHEEL WILL ENABLE INVESTIGATORS TO ISOLATE VARIOUS EMISSION LINES BETWEEN 200 AND 1400 A AND ALLOW IN-FLIGHT CALIBRATION THROUGH THE USE OF A RADIOACTIVE SOURCE. THE DETECTOR WILL BE MOUNTED TO LOOK 90 DEG OFF THE SPIN AXIS OF THE SPACECRAFT AND WILL SWEEP THE CELESTIAL SPHERE IN ABOUT 6 MONTHS. EACH DATA SAMPLE WILL BE ACCUMULATED OVER INCREMENTS OF 1/64 OF THE SPACECRAFT'S SPIN, WITH THE SAMPLE SOURCE REFERENCED TO EITHER A STAR PULSE OR THE EARTH PULSE. THE DATA WILL BE READ OUT IN 2-MIN INTERVALS. THIS EXPERIMENT IS NOT EXPECTED TO BE OPERATED MORE THAN 1 HR PER DAY.

**********SPACELAB **********

SPACECRAFT COMMON NAME- SPACELAB
ALTERNATE NAMES-
NSSDC ID- SPACLAB

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 00/00/79 SPACECRAFT WEIGHT IN ORBIT- 30000. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- SHUTTLE

SPONSORING COUNTRY/AGENCY
INTERNATIONAL ESRO

PLANNED ORBIT PARAMETERS
ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- MIN
APOAPSIS- KM ALT PERIAPSIS- KM ALT INCLINATION- DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)
PM - UNKNOWN UNKNOWN

SPACECRAFT BRIEF DESCRIPTION
SPACELAB WILL CONSIST OF MANNABLE PRESSURIZED LABORATORY MODULES AND UNPRESSURIZED INSTRUMENT PLATFORMS (PALLETS) SUITABLE FOR CONDUCTING RESEARCH AND APPLICATION ACTIVITIES ON SPACE SHUTTLE (NASA) SORTIE MISSIONS. THE MODULE AND THE PALLET, EITHER SEPARATELY OR TOGETHER, WILL BE TRANSPORTED TO AND FROM EARTH ORBIT IN THE SPACE SHUTTLE ORBITER PAYLOAD BAY AND WILL REMAIN ATTACHED TO, AND SUPPORTED BY, THE ORBITER THROUGHOUT EACH MISSION. SPACELAB WILL BE DESIGNED FOR AN OPERATIONAL LIFETIME OF 50 MISSIONS, EACH OF 7 DAYS DURATION AFTER GROUND REFURBISHMENT. NON-ASTRONAUT SCIENTISTS AND ENGINEERS (AVERAGE CREW SIZE WILL BE FOUR SCIENTISTS IN ADDITION TO THE TWO CREWMEN OPERATING THE SPACE SHUTTLE) WILL BE ON THE FLIGHT TO CONTROL EXPERIMENTS AND SUBSYSTEMS AND BRING BACK THEIR DATA. THE SPACELAB CREW WILL RIDE IN THE ORBITER DURING ASCENT AND DESCENT AND WILL USE THESE FACILITIES FOR EATING, SLEEPING, AND PERSONAL HYGIENE. SPACELAB WILL BE THE WORKING BASE, AND THE USE (FOR THE FIRST TIME IN SPACE WORK) OF A SEA-LEVEL OXYGEN/NITROGEN ATMOSPHERE WILL MEAN THAT THE SPACELAB CREW WILL HAVE AN EARTH-TYPE ENVIRONMENT (EXCEPT FOR ZERO-G) IN THEIR LABORATORY. SEE ESRO/ELDO BULLETIN, AUGUST 1973, FOR FURTHER INFORMATION.

**********TD 1A **********

SPACECRAFT COMMON NAME- TD 1A
ALTERNATE NAMES- PL-721E, TD 1, 05879
NSSDC ID- 72-014A

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT A SUBSTANDARD DATA ACQUISITION RATE SINCE 02/14/73.

LAUNCH DATE- 03/12/72 SPACECRAFT WEIGHT IN ORBIT- 472. KG

LAUNCH SITE- VANDENBERG AFB, UNITED STATES LAUNCH VEHICLE- TA DELTA

SPONSORING COUNTRY/AGENCY
INTERNATIONAL ESRO

INITIAL ORBIT PARAMETERS
EPOCH DATE- 03/12/72 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 95.291 MIN
APOAPSIS- 541.9 KM ALT PERIAPSIS- 523.43 KM ALT INCLINATION- 97.555 DEG

RECENT ORBIT PARAMETERS
EPOCH DATE- 09/05/73 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 95.141 MIN
APOAPSIS- 535.90 KM ALT PERIAPSIS- 529.19 KM ALT INCLINATION- 97.569 DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

SPACECRAFT BRIEF DESCRIPTION
THE TD-1 SPACECRAFT WAS ESSENTIALLY COMPOSED OF TWO BOXES. THE UPPER BOX CONTAINED THE EXPERIMENTS AND THE LOWER BOX CONTAINED THE SPACECRAFT EQUIPMENT. THE EXPERIMENT COMPARTMENT WAS BUILT AROUND TWO LARGE TELESCOPES (26 AND 30 CM IN DIAM) AND A SPARK CHAMBER. THE SPACECRAFT WAS SOLAR POWERED, AND DURING THE SUNLIT PHASE OF ITS ORBIT WAS ATTITUDE CONTROLLED TO

ABOUT 1 MIN OF ARC. ONE AXIS WAS POINTED TO WITHIN ONE ARC-MIN OF THE SUN, AND ANOTHER AXIS LAY WITHIN 0.5 DEG OF THE PLANE OF THE SUN, EARTH, AND SPACECRAFT (I.E., THE SPACECRAFT Z AXIS ALWAYS POINTED TOWARDS THE EARTH). BOTH TAPE RECORDERS FAILED WITHIN TWO MONTHS OF LAUNCH, CAUSING DATA RECOVERY TO DROP FROM 95 PERCENT TO LESS THAN 25 PERCENT. IN OCTOBER 1972, THE SPACECRAFT WAS PLACED IN HIBERNATION FOR ABOUT FOUR MONTHS SINCE IT COULD NOT WITHSTAND, FOR ANY LENGTH, PERIODS OF SPACECRAFT NIGHT WHILE IN ACTIVE USE. IN FEBRUARY 1973 THE SPACECRAFT WAS SUCCESSFULLY REACTIVATED AND REAL-TIME TELEMETRY COVERAGE WAS INCREASED TO ABOUT 70 PERCENT. THE COSMIC X-RAY SPECTROMETER EXPERIMENT (S-77) CAUSED ABNORMAL READOUTS IN THE HOUSEKEEPING TELEMETRY CHANNELS, AND HENCE WAS NOT OPERATED UNTIL JULY, 1973.

**********TD 1A, MONFILS

EXPERIMENT NAME- STELLAR UV RADIATION EXPERIMENT
NSSDC ID- 72-014A-01

LAST REPORTED STATE- LAUNCHED AND OPERATING NORMALLY AT A SUBSTANDARD DATA ACQUISITION RATE SINCE 02/14/73.

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

PI - A.G.	MONFILS	U OF LIEGE	LIEGE, BELGIUM
PI - R.	WILSON	U COLLEGE, LONDON	LONDON, ENGLAND
OI - C.	JAMAR	U OF LIEGE	LIEGE, BELGIUM
OI - P.J.	BARKER	RUTHEFORD HI ENRG. LAB	CHILTON, DIDCOT, BERKSHIRE, ENGLAND

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A 1.4-M TELESCOPE WITH A SPECTROMETER BOX ATTACHED TO IT. AN OFF-AXIS PARABOLOID MIRROR (F/3.5, DIAM 275 MM) REFLECTED STARLIGHT ONTO A SYSTEM OF TWO SLITS SITUATED IN THE PRIME FOCAL PLANE. ONE OF THE TWO SLITS FED THE STELLAR LIGHT INTO A SINGLE PHOTOMETRIC CHANNEL WITH A FILTER LIMITING THE PASSBAND TO 400 A CENTERED AT 2750 A. THE OTHER SLIT WAS MUCH WIDER (11.9 X 17 ARC-MIN), AND LED INTO THE THREE-CHANNEL GRATING SPECTROMETER. ONCE PER ORBIT, THE TELESCOPE, ALIGNED ALONG THE Z AXIS, SCANNED A GREAT CIRCLE OF THE SKY. BECAUSE OF THIS MOTION ACROSS THE SKY, THE PRIMARY IMAGE OF A CERTAIN STAR ENTERING THE TELESCOPE'S FIELD OF VIEW MOVED ACROSS THE PHOTOMETER AND SPECTROPHOTOMETER SLOTS. WHILE THE STAR IMAGE TRAVERSED THE WIDE SPECTROPHOTOMETER SLOT, ITS CORRESPONDING SPECTRUM MOVED IN THE FOCAL PLANE OF THE SPECTROGRAPH ACROSS THE THREE EXIT SLITS, BEHIND WHICH THERE WERE THREE PULSE-COUNTING PHOTOMULTIPLIERS. BY EMPLOYING THE SCANNING MOTION OF THE SATELLITE, A SPECTRUM SCANNING ACTION WAS ACHIEVED WITHOUT THE NEED FOR MOVING PARTS. THE THREE EXIT SLITS OF THE SPECTROPHOTOMETER WERE FIXED AT THE FOLLOWING WAVELENGTHS -- 1350 TO 1760 A, 1760 TO 2160 A AND 2150 TO 2550 A. THE WAVELENGTH REGION FROM 1350 TO 2550 A WAS FULLY COVERED BY THE THREE CHANNELS IN 3.3 SEC, YIELDING A TOTAL OF ABOUT 60 DATA POINTS. IN EACH CHANNEL THE SPECTRUM WAS SCANNED AT 19.4-A INTERVALS, THE EFFECTIVE PASSBAND DURING EACH INTEGRATION INTERVAL HAVING A FULL-WIDTH HALF-MAXIMUM OF 35 TO 40 A. JUST BEFORE THE TELESCOPE WAS INTEGRATED INTO THE SATELLITE, THE INSTRUMENT WAS EXTENSIVELY CALIBRATED IN ORDER TO ACHIEVE AN ABSOLUTE PHOTOMETRIC ACCURACY BETWEEN 10 AND 20 PERCENT, A RELATIVE PHOTOMETRIC ACCURACY WITHIN 10 PERCENT AND A WAVELENGTH CALIBRATION ACCURATE TO A FEW ANGSTROMS. THIS EXPERIMENT WAS TO DETECT 20,000 STARS, OF WHICH 6000 SHOULD HAVE GIVEN USEFUL UV SPECTRA. IT WAS ABLE TO MEASURE STARS OF MAGNITUDE 10.5. TWO MAJOR OBJECTIVES WERE THE STUDY OF INTERSTELLAR EXTINCTION AND THE PREPARATION OF A UV STAR CATALOG.

**********VIKING-A LANDER **********

SPACECRAFT COMMON NAME- VIKING-A LANDER
ALTERNATE NAMES- VIKNG-A
NSSDC ID- VIKG-AL

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 3 QTR 75 SPACECRAFT WEIGHT IN ORBIT- 87. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- LT DELTA

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - J.S.	MARTIN, JR.	NASA-LARC	HAMPTON, VA
PS - G.A.	SOFFEN	NASA-LARC	HAMPTON, VA

SPACECRAFT BRIEF DESCRIPTION
THIS SPACECRAFT WILL BE THE LANDING VEHICLE FOR THE TWO-PART SPACECRAFT MISSION. IT WILL SOFT-LAND ON THE MARTIAN SURFACE SOMEWHERE IN THE LATITUDE RANGE PLUS OR MINUS 30 DEG (PREDETERMINED FROM THE ORBITER VEHICLE EXPERIMENTS DESIGNED TO CHOOSE A LANDING SPOT). THE LIFETIME OF THE LANDER IS DESIGNED TO BE AT LEAST 90 DAYS AFTER LANDING. THE PRIME LANDING AREA WILL BE SELECTED FROM A LOW-ALTITUDE REGION, WITH TWO SECONDARY AREAS ALSO PRESELECTED IN LOW-ALTITUDE REGIONS. IF THE PRIMARY SITE PROVES TO BE UNSATISFACTORY, THE SECONDARY AREAS WILL BE EXAMINED FOR SELECTION. THE ORBITER WILL HAVE THE CAPABILITY OF BEING MADE SYNCHRONOUS WITH THE LANDER TO PROVIDE FOR DAILY RELAY AND LANDING SITE OBSERVATION FOR 90 DAYS. IT WILL ALSO BE CAPABLE OF OBTAINING DATA FOR THE SELECTION OF LANDING SITES FOR FUTURE MISSIONS. THE LANDER VEHICLE WILL CONTAIN THE MAJORITY OF EXPERIMENTS TO BE CONDUCTED ON MARS. THE LANDER WILL HAVE A 70-W POWER CAPACITY. THE SCIENTIFIC PAYLOAD FOR THE LANDER WILL WEIGH APPROXIMATELY 87 KG (190 LBS.).

**********VIKING-A LANDER, ANDERSON

EXPERIMENT NAME- SEISMOLOGY
NSSDC ID- VIKG-AL-08

LAST REPORTED STATE- PRELAUNCH

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

PI - D.L.	ANDERSON	CAL TECH	PASADENA, CA
OI - R.F.	PRESS	MIT	CAMBRIDGE, MA
OI - M.N.	TOKSOZ	MIT	CAMBRIDGE, MA
OI - G.	SUTTON	U OF HAWAII	HONOLULU, HI
OI - R.L.	KOVACH	STANFORD U	STANFORD, CA
OI - G.V.	LATHAM	U OF TEXAS	GALVESTON, TX

EXPERIMENT BRIEF DESCRIPTION
THE PURPOSE OF THE SEISMOLOGY INVESTIGATION WILL BE TO DETERMINE THE SEISMIC BACKGROUND AND EVENT ACTIVITY OF MARS. THREE PERPENDICULAR COMPONENTS OF GROUND MOTION WILL BE MEASURED OVER AS BROAD A FREQUENCY RANGE AS PRACTICAL (MAXIMUM EMPHASIS OVER THE BAND 0.4 TO 4 HZ). THE RESOLUTION WILL BE 50 MILLIMICRONS OR LESS OF GROUND DISPLACEMENT AT 1 HZ, WITH AN ACCURACY SUCH THAT TRUE GROUND MOTION AMPLITUDE CAN BE RECOVERED TO PLUS OR MINUS 10 PERCENT OR BETTER. DYNAMIC RANGE MAY BE INCREASED BY NARROWBAND FILTERING OF THE SEISMIC DATA AT THREE FREQUENCIES. THE SEISMOMETER WILL BE MOUNTED IN THE EQUIPMENT AREA OF THE LANDER. THE ORIENTATION OF THE SENSOR

WILL BE KNOWN TO WITHIN 15 DEG IN AZIMUTH AND 5 DEG IN ELEVATION. TRANSMISSIBILITY OF THE LANDER SHOULD BE GREATER THAN 0.8 FOR FREQUENCIES LESS THAN 10 HZ. THE LANDER SHALL HAVE NO RESONANCES LESS THAN 10 HZ WITH Q GREATER THAN TWO.

**********VIKING-A LANDER, BIEMANN

EXPERIMENT NAME- MOLECULAR ANALYSIS
NSSDC ID- VIKG-AL-04

LAST REPORTED STATE- PRELAUNCH

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

PI - K.	BIEMANN	MIT	CAMBRIDGE, MA
OI - H.C.	UREY	U OF CALIFORNIA, SD	SAN DIEGO, CA
OI - D.M.	ANDERSON	CRREL	HANOVER, NH
OI - T.	OWEN	NEW YORK STATE U	STONYBROOK, NY
OI - J.	ORO	U OF HOUSTON	HOUSTON, TX
OI - L.E.	ORGEL	SALK INST BIOL STUDIES	SAN DIEGO, CA
OI - G.P.	SHULMAN	CASA LOMA COLLEGE	PACOIMA, CA
OI - A.O.C.	NIER	U OF MINNESOTA	MINNEAPOLIS, MN
OI - P.	TOULMIN, 3RD	US GEOLOGICAL SURVEY	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS INVESTIGATION IS TO ANALYZE THE MARTIAN SURFACE FOR ITS ORGANIC CONTENT BY VAPORIZING MATERIAL ONTO A GAS CHROMATOGRAPHIC COLUMN WHICH WILL BE CONNECTED TO A FAST-SCANNING (10-SEC) MASS SPECTROMETER. THE HEATING WILL BE ACCOMPLISHED IN STEPS TO VAPORIZE THOSE MATERIALS PRESENT WHICH HAVE SUFFICIENT VAPOR PRESSURE, AND ULTIMATELY TO DECOMPOSE PYROLYTICALLY NONVOLATILE SUBSTANCES INTO VOLATILE DEGRADATION PRODUCTS FROM WHICH THE NATURE OF THE MATERIAL CAN THEN BE DEDUCED. TO ACCOMPLISH THE OBJECTIVES OF THIS INVESTIGATION, CERTAIN PRIMARY REQUIREMENTS MUST BE MET. THE SENSITIVITY OF THE MASS SPECTROMETER SHOULD BE SUCH THAT A MASS SPECTRUM TAKEN OF A SINGLE ORGANIC COMPOUND WHICH IS ONE PART IN TEN MILLION (0.1 PPM) SHOWS PEAKS WHICH ARE 1 PERCENT OF THE BASE PEAK. THE MASS RANGE REQUIRED FOR ANALYSIS WILL BE AT LEAST 12 TO 200, WITH UNIT RESOLUTION OR BETTER. THE RELATIVE DYNAMIC RANGE FOR EACH MASS SPECTRUM SHOULD BE 500 TO 1. A CONTROLLED TEMPERATURE WILL BE REQUIRED FOR VAPORIZATION PYROLYSIS UP TO 500 DEG C IN THREE PRESCRIBED STEPS OF 30 SEC. PROVISIONS WILL BE MADE TO ENSURE THAT THE EVOLUTION OF LARGE QUANTITIES OF GAS (AS MUCH AS 10 PERCENT OF SAMPLE WEIGHT) DOES NOT IMPAIR THE FUNCTION OF THE MASS SPECTROMETER. THIS IS TO BE ACCOMPLISHED BY VENTING THE EXCESS GAS BEFORE IT REACHES THE MASS SPECTROMETER. THREE DIFFERENT SAMPLES TAKEN AT SPECIFIED TIMES DURING THE FIRST 60 DAYS OF THE MISSION (COVERING SEASONAL CHANGES) WILL BE STUDIED. THE ORGANIC INVESTIGATION WILL NOT BE INITIATED UNTIL AFTER THE OPERATION OF THE ATMOSPHERIC ANALYSES REQUIRED DURING THE FIRST THREE DAYS.

**********VIKING-A LANDER, HARGRAVES

EXPERIMENT NAME- MAGNETIC PROPERTIES
NSSDC ID- VIKG-AL-10

LAST REPORTED STATE- PRELAUNCH

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

PI - R.B.	HARGRAVES	PRINCETON U	PRINCETON, NJ

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT, WHICH WILL BE PART OF THE LANDER SECTION EXPERIMENTS, WILL MEASURE THE MAGNETIC PROPERTIES OF THE SURFACE PARTICLES ON MARS USING THREE MAGNET ARRAYS FOR SAMPLING. DATA RETURNED WILL BE IN THE FORM OF IMAGES OF THE MAGNETIC ARRAYS.

**********VIKING-A LANDER, HESS

EXPERIMENT NAME- METEOROLOGY EXPERIMENT
NSSDC ID- VIKG-AL-07

LAST REPORTED STATE- PRELAUNCH

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

PI - S.L.	HESS	FLORIDA STATE U	TALLAHASSEE, FL
OI - C.B.	LEOVY	U OF WASHINGTON	SEATTLE, WA
OI - R.M.	HENRY	NASA-LARC	HAMPTON, VA
OI - J.A.	RYAN	MCDONNELL-DOUGLAS	REDONDO BEACH, CA
OI - J.E.	TILLMAN	U OF WASHINGTON	SEATTLE, WA

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL MEASURE THE METEOROLOGICAL ENVIRONMENT NEAR THE PLANETARY SURFACE AND OBTAIN INFORMATION ABOUT MOTION SYSTEMS OF VARIOUS SCALES. THE ELEMENTS TO BE DETERMINED ARE PRESSURE, TEMPERATURE, AND WIND VELOCITY OF THE MARTIAN ATMOSPHERE. DIURNAL AND TEMPORAL VARIATIONS OF THE PARAMETERS WILL BE OF PARTICULAR IMPORTANCE. THE SAMPLING RATES AND DURATIONS FOR ANY ONE MARTIAN DAY ARE TO BE SELECTABLE BY GROUND COMMAND. ALL MEASUREMENTS ARE TO BE CONTINUED FOR THE LANDER LIFETIME. THE SENSORS WILL BE MOUNTED ON AN ERECTABLE BOOM.

**********VIKING-A LANDER, KLEIN

EXPERIMENT NAME- BIOLOGY INVESTIGATION
NSSDC ID- VIKG-AL-03

LAST REPORTED STATE- PRELAUNCH

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

PI - H.P.	KLEIN	NASA-ARC	MOFFETT FIELD, CA
OI - J.	LEDERBERG	STANFORD U	STANFORD, CA
OI - A.	RICH	MIT	CAMBRIDGE, MA
OI - N.H.	HOROWITZ	CAL TECH	PASADENA, CA
OI - V.I.	OYAMA	NASA-ARC	MOFFETT FIELD, CA
OI - G.V.	LEVIN	BIOSPHERICS INC	ROCKVILLE, MD

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL BE COMPOSED OF THREE PARTS. IT WILL MEASURE -- (1) THE PHOTOSYNTHETIC AND RESPIRATORY FIXATION OF CARBON DIOXIDE, (2) THE CHANGES IN GAS COMPOSITION ABOVE A SURFACE SAMPLE IN CONTACT WITH A LIQUID MEDIUM, AND (3) THE CARBON DIOXIDE RELEASED FROM ADDED LABELED ORGANIC COMPOUNDS. IT WILL ATTEMPT TO DETERMINE THE PRESENCE OF LIFE ON MARS.

**********VIKING-A LANDER, MICHAEL, JR.

EXPERIMENT NAME- RADIO SCIENCE
NSSDC ID- VIKG-AL-11

LAST REPORTED STATE- PRELAUNCH

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

PI - W.H.	MICHAEL, JR.	NASA-LARC	HAMPTON, VA
OI - I.I.	SHAPIRO	MIT	CAMBRIDGE, MA
OI - G.	FJELDBO	NASA-JPL	PASADENA, CA
OI - J.G.	DAVIES	U OF MANCHESTER	MANCHESTER, ENGLAND
OI - G.S.	LEVY	NASA-JPL	PASADENA, CA
OI - D.L.	CAIN	NASA-JPL	PASADENA, CA
OI - M.	GROSSI	RAYTHEON CORP	SUDBURY, MA
OI - G.L.	TYLER	STANFORD, U	STANFORD, CA

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL UTILIZE THE LANDER-TO-EARTH AND ORBITER-TO-EARTH S-BAND COMMUNICATIONS LINK (INCLUDING RANGE AND RANGE-RATE CAPABILITIES), THE LANDER-TO-ORBITER UHF RELAY LINK, THE RADAR ALTIMETER, THE TERMINAL DESCENT LANDING RADAR, AND THE ORBITER-TO-EARTH X-BAND DOWNLINK. THE RESULTING DATA WILL BE USED TO DETERMINE THE MARTIAN GRAVITATIONAL FIELD, AXIS OF ROTATION, EPHEMERIS, FIGURE, ATMOSPHERE, STRUCTURE, IONOSPHERE, AND SURFACE PROPERTIES. IN ADDITION, THE DATA WILL BE USED TO DETERMINE THE LANDER LOCATION, TO STUDY RELATIVITY, TO STUDY THE INTERPLANETARY MEDIUM, AND, IF CONDITIONS PERMIT, TO STUDY THE SOLAR CORONA.

**********VIKING-A LANDER, MUTCH

EXPERIMENT NAME- FACSIMILE CAMERA
NSSDC ID- VIKG-AL-06

LAST REPORTED STATE- PRELAUNCH

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

PI - T.A.	MUTCH	BROWN U	PROVIDENCE, RI
OI - C.	SAGAN	CORNELL U	ITHACA, NY
OI - A.B.	BINDER	PLANETARY SCIENCE INST	TUCSON, AZ
OI - E.C.	MORRIS	US GEOLOGICAL SURVEY	FLAGSTAFF, AZ
OI - A.T.	YOUNG	TEXAS A+M	COLLEGE STATION, TX
OI - F.O.	HUCK	NASA-LARC	HAMPTON, VA
OI - E.C.	LEVINTHAL	STANFORD U	STANFORD, CA

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THE IMAGING INVESTIGATION FROM THE LANDER WILL BE TO VISUALLY CHARACTERIZE THE LANDING SITE, PROVIDING DATA WITH BIOLOGICAL, GEOLOGICAL, AND METEOROLOGICAL RELEVANCE. TWO CAMERAS WITH A 0.04-DEG SCANNING RESOLUTION WILL BE REQUIRED. THE VERTICAL FIELD OF VIEW FOR EACH CAMERA WILL BE 20 DEG, WITH A CAPABILITY OF OBTAINING A COMPLETE 0- TO 360-DEG HORIZONTAL PANORAMA. VERTICAL POINTING BY COMMAND FOR ANGULAR COVERAGE FROM 40 DEG ABOVE TO 60 DEG BELOW THE HORIZONTAL PLANE OF THE LANDER IN 10-DEG INCREMENTS WILL BE REQUIRED. AZIMUTH POINTING BY COMMAND WILL BE IN 2.5-DEG INCREMENTS. THE CAMERAS WILL BE MOUNTED AT LEAST 1.3 M ABOVE THE MARTIAN SURFACE AND MUST BE CAPABLE OF VIEWING TWO FOOTPADS AND AT LEAST 90 PERCENT OF THE AREA ACCESSIBLE TO THE SURFACE SAMPLER. EACH CAMERA MUST BE CAPABLE OF OBTAINING VISUAL COLOR IMAGERY. PROVISION HAS BEEN MADE TO OPERATE IN ADDITIONAL IR SPECTRAL BANDS BETWEEN 0.8 AND 1.1 MICRONS. HORIZONTAL STEREO WITH A MINIMUM BASE OF 0.8 M WILL BE REQUIRED.

**********VIKING-A LANDER, NIER

EXPERIMENT NAME- ENTRY-ATMOSPHERIC STRUCTURE
NSSDC ID- VIKG-AL-02

LAST REPORTED STATE- PRELAUNCH

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

PI - A.O.C.	NIER	U OF MINNESOTA	MINNEAPOLIS, MN
OI - M.B.	MCELROY	HARVARD U	CAMBRIDGE, MA
OI - W.B.	HANSON	U OF TEXAS	DALLAS, TX
OI - N.W.	SPENCER	NASA-GSFC	GREENBELT, MD
OI - A.	SEIFF	NASA-ARC	MOFFETT FIELD, CA

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT IS DESIGNED TO DETERMINE THE PRESSURE, TEMPERATURE, AND DENSITY VARIATIONS WITH ALTITUDE IN THE LOWER MARTIAN ATMOSPHERE THROUGH MEASUREMENT OF ACCELERATION, PRESSURE, AND TEMPERATURE. THE ACCELEROMETER OF THE GUIDANCE AND CONTROL SYSTEM WILL BE USED FOR THE ATMOSPHERIC STRUCTURE INVESTIGATION.

**********VIKING-A LANDER, NIER

EXPERIMENT NAME- ENTRY-ATMOSPHERIC COMPOSITION
NSSDC ID- VIKG-AL-12

LAST REPORTED STATE- PRELAUNCH

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

PI - A.O.C.	NIER	U OF MINNESOTA	MINNEAPOLIS, MN
OI - N.W.	SPENCER	NASA-GSFC	GREENBELT, MD
OI - M.B.	MCELROY	HARVARD U	CAMBRIDGE, MA
OI - W.B.	HANSON	U OF TEXAS	DALLAS, TX
OI - A.	SEIFF	NASA-ARC	MOFFETT FIELD, CA

EXPERIMENT BRIEF DESCRIPTION

THE VIKING ENTRY-ATMOSPHERIC COMPOSITION EXPERIMENT IS DESIGNED TO PROVIDE THE COMPOSITION DATA (FOR BOTH NEUTRAL AND CHARGED SPECIES) NEEDED TO DEFINE THE PRESENT PHYSICAL AND CHEMICAL STATE OF THE MARTIAN ATMOSPHERE. A DOUBLE-FOCUSING (ELECTROSTATIC AND MAGNETIC) MASS SPECTROMETER, MOUNTED IN AN OPENING IN THE AEROSHELL WITH ITS ELECTRON IMPACT OPEN ION SOURCE RECESSED BELOW THE SURFACE OF THE AEROSHELL, WILL BE USED TO MEASURE THE CONCENTRATIONS OF THE ATMOSPHERIC SPECIES THAT HAVE MASS-TO-CHARGE RATIOS FROM 1 TO 49. IT IS PLANNED THAT THE EXPERIMENT WILL OBTAIN ACCURATE ALTITUDE PROFILES OF ALL SPECIES, AND IN PARTICULAR FOR BOTH ATOMIC AND MOLECULAR OXYGEN, CARBON MONOXIDE, AND CARBON DIOXIDE. TWO COLLECTORS WILL BE USED -- ONE COVERING THE MASS RANGE FROM 1 TO 7 AMU AND THE OTHER SIMULTANEOUSLY COVERING THE RANGE FROM 7 TO 49 AMU. MASS SPECTRA WILL BE OBTAINED BY SWEEPING THE ION ACCELERATION VOLTAGE AND THE DEFLECTION VOLTAGE ACROSS THE ELECTROSTATIC PLATES. THE SWEEP PERIOD WILL BE APPROXIMATELY FIVE SEC, AND A DYNAMIC RANGE OF 1E5 WILL BE PROVIDED WITHIN EACH SPECTRUM. AFTER CALIBRATION, THE INSTRUMENT WILL BE SEALED UNDER VACUUM AND OPENED WHEN THE LANDER IS RELEASED FROM THE ORBITER. DURING ENTRY, THE LANDER WILL BE TRAVELING WITH ITS AXIS ORIENTED ESSENTIALLY ALONG THE VELOCITY VECTOR, SO THE AMBIENT SPECIES WILL ENTER AT AN ANGLE NORMAL TO THE ENTRANCE PLANE. A RETARDING POTENTIAL ANALYZER (RPA) WILL MEASURE THE IONOSPHERIC PROPERTIES OVER APPROXIMATELY THE SAME ALTITUDE RANGE AS THE MASS SPECTROMETER. ITS FRONT END WILL MATE TO THE AEROSHELL SO THAT THE ENTRANCE GRID IS NEARLY FLUSH TO THE SURFACE, WHICH WILL BE MADE CONDUCTING IN THE REGION OF THE RFA TO PROVIDE A GROUND PLANE. THE SPACE BETWEEN THE ENTRANCE AND COLLECTOR WILL BE ELECTRICALLY SEGMENTED BY FIVE GRIDS WHOSE POTENTIALS WILL DETERMINE THE ENERGY AND SIGN OF THE CHARGED PARTICLES THAT CAN REACH THE COLLECTOR. THE FIRST (ENTRANCE GRID), SECOND, AND LAST GRID WILL BE GROUNDED TO THE

SPACECRAFT. THE THIRD AND FOURTH GRIDS TOGETHER WILL COMPRISE THE RETARDING GRID, AND THE FIFTH GRID, THE SUPRESSOR GRID, WILL BE HELD AT A FIXED POTENTIAL OPPOSITE IN SIGN TO THAT ON THE RETARDING GRID. THREE DIFFERENT LINEAR VOLTAGE RAMPS WILL BE APPLIED IN SUCCESSION TO THE RETARDING GRID. ONE RAMP WILL COVER THE VOLTAGE RANGE FROM - 75 TO 0 V(IN ABOUT 1 SEC), USED TO MEASURE SOLAR WIND ELECTRONS AND IONOSPHERIC PHOTOELECTRONS. ANOTHER WILL COVER FROM -1.5 TO 0 V (IN ABOUT ONE SEC), AND MEASURE ELECTRON TEMPERATURES IN THE IONOSPHERE. THE LAST RAMP WILL COVER FROM +15 TO 0 V (IN ABOUT 2 SEC), AND PROVIDE ION TEMPERATURES AND ION CONCENTRATION DATA. WHEN THE LANDER IS ALIGNED WITH ITS AXIS ALONG THE VELOCITY VECTOR, LOW-ENERGY PLASMA WILL ENTER THE RPA AT AN ANGLE NEARLY NORMAL TO THE APERTURE GRID. EACH PARAMETER WILL BE EVALUATED APPROXIMATELY EVERY 4 KM IN ALTITUDE, A SMALL DISTANCE COMPARED TO THE ANTICIPATED SCALE HEIGHTS. MORE EXPERIMENT DETAIL CAN BE FOUND IN "ENTRY SCIENCE EXPERIMENT FOR VIKING 1975," BY A. O. C. NIER, ET AL., ICARUS, VOL. 16, PP. 74, 1972.

**********VIKING-A LANDER, SHORTHILL

EXPERIMENT NAME- PHYSICAL PROPERTIES INVESTIGATION
NSSDC ID- VIKG-AL-01

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W. SHORTHILL	U OF UTAH	SALT LAKE CITY, UT
OI - N.W. SPENCER	NASA-GSFC	GREENBELT, MD
OI - R.E. HUTTON	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - H.J. MOORE, 2ND	U S GEOLOGICAL SURVEY	MENLO PARK, CA
OI - R.F. SCOTT	CAL TECH	PASADENA, CA

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THE PHYSICAL PROPERTIES EXPERIMENT INVESTIGATION WILL BE TO DETERMINE THE PHYSICAL PROPERTIES OF THE MARTIAN SURFACE AND ENVIRONMENT AT THE LANDING SITE, PRIMARILY USING ENGINEERING MEASUREMENTS AND SCIENTIFIC INSTRUMENTS REQUIRED TO MEET OTHER MISSION OBJECTIVES. IN PARTICULAR, IT WILL ATTEMPT TO DETERMINE SUCH PROPERTIES AS BULK DENSITY, BEARING STRENGTH, ANGLE OF REPOSE, COHESION, ANGLE OF INTERNAL FRICTION, PARTICLE CHARACTERISTICS, THERMAL PARAMETERS, EOLIAN TRANSPORTABILITY, TOPOGRAPHY, AND CERTAIN ENVIRONMENTAL PROPERTIES SUCH AS WIND, TEMPERATURE, AND SOLAR FLUX LEVELS. MAXIMUM USE WILL BE MADE OF HARDWARE AND INSTRUMENTS INTENDED FOR OTHER APPLICATIONS, SUCH AS THE MECHANICAL SUBSYSTEMS AND LANDER CAMERAS. ONLY PASSIVE DEVICES, SUCH AS MIRRORS AND LANDING LEG STROKE GAUGES, ARE BEING ADDED FOR THIS EXPERIMENT.

**********VIKING-A LANDER, TOULMIN, III

EXPERIMENT NAME- X-RAY FLOURESCENCE SPECTROMETER
NSSDC ID- VIKG-AL-13

LAST REPORTED STATE- PRELAUNCH

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

PI - P. TOULMIN, III	US GEOLOGICAL SURVEY	WASHINGTON, DC
OI - A.K. BAIRD	POMONA COLLEGE	CLAREMONT, CA
OI - K. KEIL	U NEW MEXICO	ALBUQUERQUE, NM
OI - H.J. ROSE	US GEOLOGICAL SURVEY	WASHINGTON, DC
OI - B.C. CLARK	MARTIN MARIETTA AERO	DENVER, CO

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL UTILIZE AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE SPECTROMETER IN WHICH FOUR SEALED AND GAS-FILLED PROPORTIONAL COUNTERS WILL DETECT X RAYS EMITTED FROM SAMPLES OF THE MARTIAN SURFACE MATERIALS IRRADIATED BY X RAYS FROM RADIOISOTOPE SOURCES (IRON-55 AND CADMIUM-109). THE OUTPUT OF THE PROPORTIONAL COUNTERS WILL BE SUBJECTED TO PULSEHEIGHT ANALYSIS BY AN ONBOARD STEP-SCANNING SINGLE-CHANNEL ANALYZER WITH ADJUSTABLE COUNTING PERIODS. THIS INSTRUMENT WILL BE LOCATED INSIDE THE LANDER BODY, AND SAMPLES WILL BE DELIVERED TO IT BY THE LANDER SURFACE SAMPLER. CALIBRATION STANDARDS WILL BE AN INTEGRAL PART OF THE INSTRUMENT. RECONSTRUCTED SPECTRA ARE EXPECTED TO YIELD SURFACE COMPOSITION WITH ACCURACIES RANGING FROM A FEW TENS OF PARTS PER MILLION FOR TRACE ELEMENTS TO A FEW PERCENT FOR MAJOR ELEMENTS, DEPENDING UPON THE ELEMENT IN QUESTION.

**********VIKING-A ORBITER **********

SPACECRAFT COMMON NAME- VIKING-A ORBITER
ALTERNATE NAMES- PL-733A, VIKNG-A
NSSDC ID- VIKG-A

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 3 QTR 75 SPACECRAFT WEIGHT IN ORBIT- 3216. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- TITAN-CENT

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

PLANNED ORBIT PARAMETERS
ORBIT TYPE- MARSCENTRIC ORBIT PERIOD- 1476. MIN
APOAPSIS- 32500. KM ALT PERIAPSIS- 1500. KM ALT INCLINATION- 23. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - J.S.	MARTIN, JR.	NASA-LARC	HAMPTON, VA
PS - G.A.	SOFFEN	NASA-LARC	HAMPTON, VA

SPACECRAFT BRIEF DESCRIPTION

THE VIKING SPACECRAFT WILL CONSIST OF AN ORBITER AND A LANDER. THE ORBITER WILL BE CAPABLE OF ORBITING THE PLANET MARS IN A HIGH-ECCENTRICITY ELLIPTICAL ORBIT. A LANDER WILL SEPARATE FROM THE ORBITER, ENTER THE MARTIAN ATMOSPHERE, AND SOFT-LAND ON THE SURFACE. ORBITAL, ENTRY, AND SCIENTIFIC DATA FROM THE LANDER WILL BE COLLECTED AND TRANSMITTED TO EARTH. THE SPACECRAFT WILL BE A SOLAR-CELL-POWERED SATELLITE STABILIZED IN 3 AXES, USING INERTIAL AND CELESTIAL REFERENCES. BOTH THE ORBITER AND THE LANDER WILL HAVE A 90-DAY LIFE EXPECTANCY. THERE WILL BE 500-W POWER CAPACITY FOR THE ORBITER AND A 70-W CAPACITY FOR THE LANDER. SCIENTIFIC AND PHOTOGRAPHIC ANALYSIS INSTRUMENTS WILL WEIGH APPROXIMATELY 77 KG (170 LB).

**********VIKING-A ORBITER, CARR

EXPERIMENT NAME- ORBITER IMAGING
NSSDC ID- VIKG-A -01

LAST REPORTED STATE- PRELAUNCH

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

PI - M.H.	CARR	US GEOLOGICAL SURVEY	MENLO PARK, CA

OI - W.A.	BAUM	LOWELL OBSERVATORY	FLAGSTAFF, AZ
OI - H.	MASURSKY	US GEOLOGICAL SURVEY	FLAGSTAFF, AZ
OI - D.U.	WISE	U OF MASSACHUSETTS	AMHERST, MA
OI - G.A.	BRIGGS	NASA-JPL	PASADENA, CA
OI - J.A.	CUTTS	NASA-JPL	PASADENA, CA

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSES OF THE VIKING ORBITER TV IMAGING EXPERIMENT INVESTIGATION ARE TO AID IN THE SELECTION OF LANDING SITES FOR THE VIKING LANDERS AND FUTURE MISSIONS, TO MONITOR THE REGION SURROUNDING THE LANDER, AND TO STUDY THE DYNAMIC CHARACTERISTICS OF MARS. THE GEOMETRIC RESOLUTION OF THE ORBITER IMAGING SYSTEM WILL BE 40 M PER LINE OR BETTER AT A REFERENCE ALTITUDE OF 1500 KM, WITH IMAGE SMEARING FROM ORBITER MOTION TO BE LESS THAN 50 PERCENT OF THIS RESOLUTION. PRIOR TO LANDER SEPARATION, THE ORBITER WILL BE REQUIRED TO PHOTOGRAPH WITH CONTIGUOUS PICTURES A SWATH AT LEAST 40 KM CROSS-TRACK BY 500 KM DOWN-TRACK ON A SINGLE ORBITAL PASS FROM THE NEAR-PERIAPSIS PORTION OF THE ORBIT. THE NEAR-PERIAPSIS COVERAGE REQUIREMENT AFTER LANDER SEPARATION WILL OBTAIN COMPLETE COVERAGE WITH CONTIGUOUS PICTURES OF AN AREA AT LEAST 50 KM IN RADIUS CENTERED ON THE LANDER. TO OBTAIN BOTH BROAD AREA AND HIGH RESOLUTION COVERAGE, IT WILL BE REQUIRED THAT IMAGERY BE OBTAINABLE FROM THE PERIAPSIS AND APOAPSIS REGIONS OF THE ORBIT USING THE SAME IMAGING SYSTEM. THE DYNAMIC RANGE WILL BE 80 TO 1, AND THE SENSITIVITY WILL BE SUFFICIENT TO OBTAIN PICTURES AS CLOSE TO THE TERMINATOR AS 30 DEG WITH OPTIMUM IMAGE QUALITY AND AS CLOSE AS 5 DEG TO THE TERMINATOR WITH DEGRADED IMAGE QUALITY.

**********VIKING-A ORBITER, FARMER

EXPERIMENT NAME- IR SPECTROMETER -- WATER VAPOR MAPPING
NSSDC ID- VIKG-A -03

LAST REPORTED STATE- PRELAUNCH

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

PI - C.B.	FARMER	NASA-JPL	PASADENA, CA
OI - D.D.	LAPORTE	SANTA BARBARA RSCH CEN	GOLETA, CA
OI - D.W.	DAVIES	NASA-JPL	PASADENA, CA

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVES OF THE IR SPECTROMETRY EXPERIMENT WILL BE TO DETERMINE THE SPATIAL AND TEMPORAL DISTRIBUTION OF WATER VAPOR, TO AID IN THE SELECTION OF LANDING SITES FOR THE VIKING LANDERS, AND (FOR FUTURE MISSIONS) TO MONITOR THE REGION SURROUNDING THE LANDER AND STUDY THE DYNAMIC CHARACTERISTICS OF MARS. THE INFRARED SPECTROMETER WILL BE BORESIGHTED WITH THE IMAGING SYSTEM. IT WILL BE OPERABLE FROM THE PERIAPSIS AND APOAPSIS REGIONS OF THE ORBIT. THE WATER VAPOR MEASUREMENT RANGE WILL BE FROM 1 TO 1000 MICRONS OF PRECIPITABLE WATER WITH AN ACCURACY OF 1 MICRON BETWEEN 1 AND 20 MICRONS AND 5 PERCENT BETWEEN 20 AND 1000 MICRONS. THE INSTANTANEOUS FIELD OF VIEW OF THE INSTRUMENT IS 2 BY 16 MILLIRADIANS.

**********VIKING-A ORBITER, KIEFFER

EXPERIMENT NAME- IR RADIOMETRY -- THERMAL MAPPING
NSSDC ID- VIKG-A -02

LAST REPORTED STATE- PRELAUNCH

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

PI - H.H.	KIEFFER	U OF CALIFORNIA, LA	LOS ANGELES, CA
OI - G.	MUNCH	CAL TECH	PASADENA, CA
OI - E.D.	MINER	NASA-JPL	PASADENA, CA
OI - G.	NEUGEBAUER	CAL TECH	PASADENA, CA
OI - S.	CHASE	SANTA BARBARA RSCH CEN	GOLETA, CA

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVES OF THE INFRARED RADIOMETRY EXPERIMENT WILL BE TO OBTAIN SURFACE AND ATMOSPHERIC TEMPERATURE DATA FOR MARS, TO AID IN THE SELECTION OF LANDING SITES FOR THE VIKING LANDERS, AND (FOR FUTURE MISSIONS) TO MONITOR THE REGIONS SURROUNDING THE LANDER AND STUDY THE DYNAMIC CHARACTERISTICS OF MARS. THE INFRARED RADIOMETER WILL BE BORESIGHTED WITH THE IMAGING SYSTEM ON THE SCAN PLATFORM AND WILL BE OPERABLE FROM THE PERIAPSIS AND APOAPSIS REGIONS OF THE ORBIT. A TOTAL OF 28 DETECTORS IN FOUR TELESCOPES WILL COVER FIVE INFRARED WAVELENGTH BANDS AND THE INTEGRAL SOLAR SPECTRUM. THE TEMPERATURE RESOLUTION WILL BE 1 DEG K AT 200 DEG K, AND THE MEASUREMENT RANGE WILL BE FROM 140 TO 330 DEG K. THERE WILL BE SEVEN SIMULTANEOUS FIELDS OF VIEW ARRANGED IN A 'V' PATTERN, EACH FIVE MILLIRADIANS IN DIAMETER.

**********VIKING-B LANDER **********

SPACECRAFT COMMON NAME- VIKING-B LANDER
ALTERNATE NAMES- VIKNG-B
NSSDC ID- VIKG-BL

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 3 QTR 75 SPACECRAFT WEIGHT IN ORBIT- 87. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- LT DELTA

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM - J.S.	MARTIN, JR.	NASA-LARC	HAMPTON, VA
PS - G.A.	SOFFEN	NASA-LARC	HAMPTON, VA

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WILL BE THE LANDING VEHICLE FOR THE TWO-PART SPACECRAFT MISSION. IT WILL SOFT-LAND ON THE MARTIAN SURFACE SOMEWHERE WITHIN 30 DEG OF THE MARTIAN EQUATOR. THE LANDING SITE FOR THIS SECOND MISSION (VIKNG-B) WILL BE SELECTED BASED ON KNOWLEDGE GAINED FROM THE FIRST LANDER'S OPERATION DURING ENTRY AND ON THE SURFACE AND FROM ORBITAL RECONNAISANCE DATA OBTAINED EITHER BY THE FIRST ORBITER (VIKING-A-LANDER) OR THE SECOND ORBITER (VIKING-B-ORBITER) DEPENDING ON ARRIVAL AND SEPARATION. IF THE FIRST ORBITER IS USED THE RELAY OPERATION WILL NOT BE INTERRUPTED PRIOR TO ABOUT THE 20TH DAY ON THE SURFACE. THE SECOND LANDER WILL BE CAPABLE OF ACCOMPLISHING THE FIRST LANDER MISSION AS A BACKUP. THE LANDER WILL CARRY THE MAJORITY OF THE SCIENTIFIC EXPERIMENTS TO BE CONDUCTED ON MARS. IT WILL HAVE A 70-W POWER CAPACITY AND A SCIENTIFIC PAYLOAD OF APPROXIMATELY 87 KG (190 LBS.).

**********VIKING-B LANDER, ANDERSON

EXPERIMENT NAME- SEISMOLOGY
NSSDC ID- VIKG-BL-08

LAST REPORTED STATE- PRELAUNCH

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

PI - D.L.	ANDERSON	CAL TECH	PASADENA, CA
OI - F.	PRESS	MIT	CAMBRIDGE, MA
OI - M.N.	TOKSOZ	MIT	CAMBRIDGE, MA
OI - G.	SUTTON	U OF HAWAII	HONOLULU, HI
OI - R.L.	KOVACH	STANFORD U	STANFORD, CA
OI - G.V.	LATHAM	U OF TEXAS	GALVESTON, TX

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THE SEISMOLOGY INVESTIGATION WILL BE TO DETERMINE THE SEISMIC BACKGROUND AND EVENT ACTIVITY OF MARS. THREE PERPENDICULAR COMPONENTS OF GROUND MOTION WILL BE MEASURED OVER AS BROAD A FREQUENCY RANGE AS PRACTICAL (MAXIMUM EMPHASIS OVER THE BAND 0.4 TO 4 HZ). THE RESOLUTION WILL BE 50 MILLIMICRONS OR LESS OF GROUND DISPLACEMENT AT 1 HZ, WITH AN ACCURACY SUCH THAT TRUE GROUND MOTION AMPLITUDE CAN BE RECOVERED TO PLUS OR MINUS 10 PERCENT OR BETTER. DYNAMIC RANGE MAY BE INCREASED BY NARROWBAND FILTERING OF THE SEISMIC DATA AT THREE FREQUENCIES. THE SEISMOMETER WILL BE MOUNTED IN THE EQUIPMENT AREA OF THE LANDER. THE ORIENTATION OF THE SENSOR WILL BE KNOWN TO WITHIN 15 DEG IN AZIMUTH AND 5 DEG IN ELEVATION. TRANSMISSIBILITY OF THE LANDER SHOULD BE GREATER THAN 0.8 FOR FREQUENCIES LESS THAN 10 HZ. THE LANDER SHALL HAVE NO RESONANCES LESS THAN 10 HZ WITH Q GREATER THAN TWO.

**********VIKING-B LANDER, BIEMANN

EXPERIMENT NAME- MOLECULAR ANALYSIS
NSSDC ID- VIKG-BL-04

LAST REPORTED STATE- PRELAUNCH

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

PI - K.	BIEMANN	MIT	CAMBRIDGE, MA
OI - H.C.	UREY	U OF CALIFORNIA, SD	SAN DIEGO, CA
OI - D.M.	ANDERSON	CRREL	HANOVER, NH
OI - T.	OWEN	NEW YORK STATE U	STONYBROOK, NY
OI - J.	ORO	U OF HOUSTON	HOUSTON, TX
OI - L.E.	ORGEL	SALK INST BIOL STUDIES	SAN DIEGO, CA
OI - G.P.	SHULMAN	CASA LOMA COLLEGE	PACOIMA, CA
OI - A.O.C.	NIER	U OF MINNESOTA	MINNEAPOLIS, MN
OI - P.	TOULMIN, 3RD.	USGS	WASHINGTON, DC

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS INVESTIGATION IS TO ANALYZE THE MARTIAN SURFACE FOR ITS ORGANIC CONTENT BY VAPORIZING MATERIAL ONTO A GAS CHROMATOGRAPHIC COLUMN WHICH WILL BE CONNECTED TO A FAST-SCANNING (10-SEC) MASS SPECTROMETER. THE HEATING WILL BE ACCOMPLISHED IN STEPS TO VAPORIZE THOSE MATERIALS PRESENT WHICH HAVE SUFFICIENT VAPOR PRESSURE, AND ULTIMATELY TO DECOMPOSE PYROLYTICALLY NONVOLATILE SUBSTANCES INTO VOLATILE DEGRADATION PRODUCTS FROM WHICH THE NATURE OF THE MATERIAL CAN THEN BE DEDUCED. TO ACCOMPLISH THE OBJECTIVES OF THIS INVESTIGATION, CERTAIN PRIMARY REQUIREMENTS MUST BE MET. THE SENSITIVITY OF THE MASS SPECTROMETER SHOULD BE SUCH THAT A MASS SPECTRUM TAKEN OF A SINGLE ORGANIC COMPOUND WHICH IS ONE PART IN TEN MILLION (0.1 PPM) SHOWS PEAKS WHICH ARE 1 PERCENT OF THE BASE PEAK. THE MASS RANGE REQUIRED FOR ANALYSIS WILL BE AT LEAST 12 TO 200, WITH UNIT RESOLUTION OR BETTER. THE RELATIVE DYNAMIC RANGE FOR EACH MASS SPECTRUM SHOULD BE 500 TO 1. A CONTROLLED TEMPERATURE WILL BE REQUIRED FOR

VAPORIZATION PYROLYSIS UP TO 500 DEG C IN THREE PRESCRIBED STEPS OF 30 SEC. PROVISIONS WILL BE MADE TO ENSURE THAT THE EVOLUTION OF LARGE QUANTITIES OF GAS (AS MUCH AS 10 PERCENT OF SAMPLE WEIGHT) DOES NOT IMPAIR THE FUNCTION OF THE MASS SPECTROMETER. THIS IS TO BE ACCOMPLISHED BY VENTING THE EXCESS GAS BEFORE IT REACHES THE MASS SPECTROMETER. THREE DIFFERENT SAMPLES TAKEN AT SPECIFIED TIMES DURING THE FIRST 60 DAYS OF THE MISSION (COVERING SEASONAL CHANGES) WILL BE STUDIED. THE ORGANIC INVESTIGATION WILL NOT BE INITIATED UNTIL AFTER THE OPERATION OF THE ATMOSPHERIC ANALYSES REQUIRED DURING THE FIRST THREE DAYS.

**********VIKING-B LANDER, HARGRAVES

EXPERIMENT NAME- MAGNETIC PROPERTIES
NSSDC ID- VIKG-BL-10

LAST REPORTED STATE- PRELAUNCH

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

PI - R.B.	HARGRAVES	PRINCETON U	PRINCETON, NJ

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT, WHICH WILL BE PART OF THE LANDER SECTION EXPERIMENTS, WILL MEASURE THE MAGNETIC PROPERTIES OF THE SURFACE PARTICLES ON MARS USING THREE MAGNET ARRAYS FOR SAMPLING. DATA RETURNED WILL BE IN THE FORM OF IMAGES OF THE MAGNETIC ARRAYS.

**********VIKING-B LANDER, HESS

EXPERIMENT NAME- METEOROLOGY EXPERIMENT
NSSDC ID- VIKG-BL-07

LAST REPORTED STATE- PRELAUNCH

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

PI - S.L.	HESS	FLORIDA STATE U	TALLAHASSEE, FL
OI - C.B.	LEOVY	U OF WASHINGTON	SEATTLE, WA
OI - R.M.	HENRY	NASA-LARC	HAMPTON, VA
OI - J.A.	RYAN	MCDONNELL-DOUGLAS	REDONDO BEACH, CA
OI - J.E.	TILLMAN	U OF WASHINGTON	SEATTLE, WA

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL MEASURE THE METEOROLOGICAL ENVIRONMENT NEAR THE PLANETARY SURFACE AND OBTAIN INFORMATION ABOUT MOTION SYSTEMS OF VARIOUS SCALES. THE ELEMENTS TO BE DETERMINED ARE PRESSURE, TEMPERATURE, AND WIND VELOCITY OF THE MARTIAN ATMOSPHERE. DIURNAL AND TEMPORAL VARIATIONS OF THE PARAMETERS WILL BE OF PARTICULAR IMPORTANCE. THE SAMPLING RATES AND DURATIONS FOR ANY ONE MARTIAN DAY ARE TO BE SELECTABLE BY GROUND COMMAND. ALL MEASUREMENTS ARE TO BE CONTINUED FOR THE LANDER LIFETIME. THE SENSORS WILL BE MOUNTED ON AN ERECTABLE BOOM.

**********VIKING-B LANDER, KLEIN

EXPERIMENT NAME- BIOLOGY INVESTIGATION
NSSDC ID- VIKG-BL-03

LAST REPORTED STATE- PRELAUNCH

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

PI - H.P.	KLEIN	NASA-ARC	MOFFETT FIELD, CA
OI - J.	LEDERBERG	STANFORD U	PALO ALTO, CA
OI - A.	RICH	MIT	CAMBRIDGE, MA
OI - N.H.	HOROWITZ	CAL TECH	PASADENA, CA
OI - V.I.	OYAMA	NASA-ARC	MOFFETT FIELD, CA
OI - G.V.	LEVIN	BIOSPHERICS INC	ROCKVILLE, MD

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL BE COMPOSED OF THREE PARTS. IT WILL MEASURE -- (1) THE PHOTOSYNTHETIC AND RESPIRATORY FIXATION OF CARBON DIOXIDE, (2) THE CHANGES IN GAS COMPOSITION ABOVE A SURFACE SAMPLE IN CONTACT WITH A LIQUID MEDIUM, AND (3) THE CARBON DIOXIDE RELEASED FROM ADDED LABELED ORGANIC COMPOUNDS. IT WILL ATTEMPT TO DETERMINE THE PRESENCE OF LIFE ON MARS.

**********VIKING-B LANDER, MICHAEL, JR.

EXPERIMENT NAME- RADIO SCIENCE
NSSDC ID- VIKG-BL-11

LAST REPORTED STATE- PRELAUNCH

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

PI - W.H.	MICHAEL, JR.	NASA-LARC	HAMPTON, VA
OI - I.I.	SHAPIRO	MIT	CAMBRIDGE, MA
OI - G.	FJELDBO	NASA-JPL	PASADENA, CA
OI - J.G.	DAVIES	U OF MANCHESTER	MANCHESTER, ENGLAND
OI - G.S.	LEVY	NASA-JPL	PASADENA, CA
OI - D.L.	CAIN	NASA-JPL	PASADENA, CA
OI - M.D.	GROSSI	RAYTHEON CORP	SUDBURY, MA
OI - G.L.	TYLER	STANFORD U	STANFORD, CA

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL UTILIZE THE LANDER-TO-EARTH AND ORBITER-TO-EARTH S-BAND COMMUNICATIONS LINK (INCLUDING RANGE AND RANGE-RATE CAPABILITIES), THE LANDER-TO-ORBITER UHF RELAY LINK, THE RADAR ALTIMETER, THE TERMINAL DESCENT LANDING RADAR, AND THE ORBITER-TO-EARTH X-BAND DOWNLINK. THE RESULTING DATA WILL BE USED TO DETERMINE THE MARTIAN GRAVITATIONAL FIELD, AXIS OF ROTATION, EPHEMERIS, FIGURE, ATMOSPHERE, STRUCTURE, IONOSPHERE, AND SURFACE PROPERTIES. IN ADDITION, THE DATA WILL BE USED TO DETERMINE THE LANDER LOCATION, TO STUDY RELATIVITY, TO STUDY THE INTERPLANETARY MEDIUM, AND, IF CONDITIONS PERMIT, TO STUDY THE SOLAR CORONA.

**********VIKING-B LANDER, MUTCH

EXPERIMENT NAME- FACSIMILE CAMERA
NSSDC ID- VIKG-BL-06

LAST REPORTED STATE- PRELAUNCH

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

PI - T.A.	MUTCH	BROWN U	PROVIDENCE, RI
OI - C.	SAGAN	CORNELL U	ITHACA, NY
OI - A.B.	BINDER	PLANETARY SCIENCE INST	TUCSON, AZ
OI - E.C.	MORRIS	US GEOLOGICAL SURVEY	FLAGSTAFF, AZ
OI - A.T.	YOUNG	TEXAS A+M	COLLEGE STATION, TX
OI - F.O.	HUCK	NASA-LARC	HAMPTON, VA
OI - E.C.	LEVINTHAL	STANFORD U	STANFORD, CA

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THE IMAGING INVESTIGATION FROM THE LANDER WILL BE TO VISUALLY CHARACTERIZE THE LANDING SITE, PROVIDING DATA WITH BIOLOGICAL, GEOLOGICAL, AND METEOROLOGICAL RELEVANCE. TWO CAMERAS WITH A 0.04-DEG SCANNING RESOLUTION WILL BE REQUIRED. THE VERTICAL FIELD OF VIEW FOR EACH CAMERA WILL BE 20 DEG WITH A CAPABILITY OF OBTAINING A COMPLETE 30- TO 60-DEG HORIZONTAL PANORAMA. VERTICAL POINTING BY COMMAND FOR ANGULAR COVERAGE FROM 40 DEG ABOVE TO 60 DEG BELOW (OUTER EDGE OF FIELD-OF-VIEW) THE HORIZONTAL PLANE OF THE LANDER IN 10-DEG INCREMENTS WILL BE REQUIRED. AZIMUTH POINTING BY COMMAND WILL BE IN 2.5-DEG INCREMENTS. THE CAMERAS WILL BE MOUNTED AT LEAST 1.3 M ABOVE THE MARTIAN SURFACE AND MUST BE CAPABLE OF VIEWING TWO FOOTPADS AND AT LEAST 90 PERCENT OF THE AREA ACCESSIBLE TO THE SURFACE SAMPLER. EACH CAMERA MUST BE CAPABLE OF OBTAINING VISUAL COLOR IMAGERY. PROVISION WILL BE MADE TO OPERATE IN ADDITIONAL IR SPECTRAL BANDS BETWEEN 0.8 AND 1.1 MICRONS. HORIZONTAL STEREO WITH A MINIMUM BASE OF 0.8 M WILL BE REQUIRED.

**********VIKING-B LANDER, NIER

EXPERIMENT NAME- ENTRY-ATMOSPHERIC STRUCTURE
NSSDC ID- VIKG-BL-02

LAST REPORTED STATE- PRELAUNCH

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

PI - A.O.C.	NIER	U OF MINNESOTA	MINNEAPOLIS, MN
OI - M.B.	MCELROY	HARVARD U	CAMBRIDGE, MA
OI - W.B.	HANSON	U OF TEXAS	DALLAS, TX
OI - N.W.	SPENCER	NASA-GSFC	GREENBELT, MD
OI - A.	SEIFF	NASA-ARC	MOFFETT FIELD, CA

EXPERIMENT BRIEF DESCRIPTION

THE PARTICULAR ELEMENTS OF MARTIAN ATMOSPHERIC STRUCTURE TO BE DETERMINED WILL BE PRESSURE, TEMPERATURE, AND DENSITY VARIATIONS WITH ALTITUDE IN THE LOWER MARTIAN ATMOSPHERE. THE MEASUREMENTS TO BE MADE TO DETERMINE THESE ATMOSPHERIC PARAMETERS ARE SPACECRAFT ACCELERATION, PRESSURE, AND TEMPERATURE. THE ACCELEROMETER OF THE GUIDANCE AND CONTROL SYSTEM WILL BE USED FOR THE ATMOSPHERIC STRUCTURE INVESTIGATION.

**********VIKING-B LANDER, NIER

EXPERIMENT NAME- ENTRY-ATMOSPHERIC COMPOSITION
NSSDC ID- VIKG-BL-12

LAST REPORTED STATE- PRELAUNCH

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

PI - A.O.C.	NIER	U OF MINNESOTA	MINNEAPOLIS, MN
OI - N.W.	SPENCER	NASA-GSFC	GREENBELT, MD
OI - M.B.	MCELROY	HARVARD U	CAMBRIDGE, MA
OI - W.B.	HANSON	U OF TEXAS	DALLAS, TX
OI - A.	SEIFF	NASA-ARC	MOFFETT FIELD, CA

EXPERIMENT BRIEF DESCRIPTION

THE VIKING ENTRY-ATMOSPHERIC COMPOSITION EXPERIMENT IS DESIGNED TO PROVIDE THE COMPOSITION DATA (FOR BOTH NEUTRAL AND CHARGED SPECIES) NEEDED TO DEFINE THE PRESENT PHYSICAL AND CHEMICAL STATE OF THE MARTIAN ATMOSPHERE. A DOUBLE-FOCUSING (ELECTROSTATIC AND MAGNETIC) MASS SPECTROMETER, MOUNTED IN AN OPENING IN THE AEROSHELL WITH ITS ELECTRON IMPACT "OPEN" ION SOURCE

RECESSED BELOW THE SURFACE OF THE AEROSHELL, WILL BE USED TO MEASURE THE CONCENTRATIONS OF THE ATMOSPHERIC SPECIES THAT HAVE MASS-TO-CHARGE RATIOS FROM 1 TO 49. IT IS PLANNED THAT THE EXPERIMENT WILL OBTAIN ACCURATE ALTITUDE PROFILES OF ALL SPECIES, SPECIFICALLY FOR BOTH ATOMIC AND MOLECULAROXYGEN, CARBON MONOXIDE, AND CARBON DIOXIDE. TWO COLLECTORS WILL BE USED, ONE FOR THE MASS RANGE FROM 1 TO 7 AMU, AND THE OTHER SIMULTANEOUSLY MEASURING IN THE MASS RANGE FROM 7 TO 49 AMU. MASS SPECTRA WILL BE OBTAINED BY SWEEPING THE ION ACCELERATION VOLTAGE AND THE DEFLECTION VOLTAGE ACROSS THE ELECTROSTATIC PLATES. THE SWEEP PERIOD WILL BE APPROXIMATELY FIVE SEC, AND A DYNAMIC RANGE OF 1E5 POWER WILL BE PROVIDED WITHIN EACH SPECTRUM. A RETARDING POTENTIAL ANALYZER (RPA) WILL MEASURE THE IONOSPHERIC PROPERTIES OVER APPROXIMATELY THE SAME ALTITUDE RANGE AS THE MASS SPECTROMETER. ITS FRONT END WILL MATE TO THE AEROSHELL SO THAT THE ENTRANCE GRID IS NEARLY FLUSH TO THE SURFACE, WHICH IS MADE CONDUCTING IN THE REGION OF THE RPA TO PROVIDE A GROUND PLANE. THE SPACE BETWEEN THE ENTRANCE GRID AND COLLECTOR WILL BE ELECTRICALLY SEGMENTED BY FIVE GRIDS WHOSE POTENTIALS WILL DETERMINE THE ENERGY AND SIGN OF THE CHARGED PARTICLES THAT CAN REACH THE COLLECTOR. THREE DIFFERENT LINEAR VOLTAGE RAMPS WILL BE APPLIED IN SUCCESSION TO THE RETARDING GRID, ONE RAMP WILL COVER THE VOLTAGE RANGE FROM -75 V TO 0 V (IN ABOUT 1 SEC), WHICH WILL BE USED TO MEASURE SOLAR WIND ELECTRONS AND IONOSPHERIC PHOTOELECTRONS, ANOTHER RAMP WILL COVER FROM -1.5 V TO 0V (IN ABOUT 1 SEC), AND MEASURE ELECTRON TEMPERATURES IN THE IONOSPHERE AND THE LAST FROM +15 V TO 0 V (IN ABOUT 2 SEC), WHICH WILL BE USED TO PROVIDE ION TEMPERATURE AND ION CONCENTRATION DATA, MORE EXPERIMENT DETAILS CAN BE FOUND IN, 'ENTRY SCIENCE EXPERIMENT FOR VIKING 1975,' ICARUS, VOL 16, PP. 74-91, 1972, BY A. O. NIER, ET AL.

**********VIKING-B LANDER, SHORTHILL

EXPERIMENT NAME- PHYSICAL PROPERTIES INVESTIGATION
NSSDC ID- VIKG-BL-01

LAST REPORTED STATE- PRELAUNCH

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

PI - R.W. SHORTHILL	U OF UTAH	SALT LAKE CITY, UT
OI - N.W. SPENCER	NASA-GSFC	GREENBELT, MD
OI - R.E. HUTTON	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - H.J. MOORE, 2ND	U S GEOLOGICAL SURVEY	MENLO PARK, CA
OI - R.F. SCOTT	CAL TECH	PASADENA, CA

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THE PHYSICAL PROPERTIES EXPERIMENT INVESTIGATION WILL BE TO DETERMINE THE PHYSICAL PROPERTIES OF THE MARTIAN SURFACE AND ENVIRONMENT AT THE LANDING SITE, PRIMARILY USING ENGINEERING MEASUREMENTS AND SCIENTIFIC INSTRUMENTS REQUIRED TO MEET OTHER MISSION OBJECTIVES. IN PARTICULAR, IT WILL ATTEMPT TO DETERMINE SUCH PROPERTIES AS BULK DENSITY, BEARING STRENGTH, ANGLE OF REPOSE, COHESION, ANGLE OF INTERNAL FRICTION, PARTICLE CHARACTERISTICS, THERMAL PARAMETERS, EOLIAN TRANSPORTABILITY, TOPOGRAPHY, AND CERTAIN ENVIRONMENTAL PROPERTIES SUCH AS WIND, TEMPERATURE, AND SOLAR FLUX LEVELS. MAXIMUM USE WILL BE MADE OF HARDWARE AND INSTRUMENTS INTENDED FOR OTHER APPLICATIONS, SUCH AS THE MECHANICAL SUBSYSTEMS AND LANDER CAMERAS. ONLY PASSIVE DEVICES, SUCH AS MIRRORS AND LANDING LEG STROKE GAUGES, ARE BEING ADDED FOR THIS EXPERIMENT.

**********VIKING-B LANDER, TOULMIN, III

EXPERIMENT NAME- X-RAY FLOURESCENCE SPECTROMETER

NSSDC ID- VIKG-BL-13

LAST REPORTED STATE- PRELAUNCH

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

PI -	P.	TOULMIN, III	US GEOLOGICAL SURVEY	WASHINGTON, DC
OI -	A.K.	BAIRD	POMONA COLLEGE	CLAREMONT, CA
OI -	K.	KEIL	U NEW MEXICO	ALBUQUERQUE, NM
OI -	H.J.	ROSE	US GEOLOGICAL SURVEY	WASHINGTON, DC
OI -	B.C.	CLARK	MARTIN MARIETTA AERO	DENVER, CO

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WILL UTILIZE AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE SPECTROMETER IN WHICH FOUR SEALED AND GAS-FILLED PROPORTIONAL COUNTERS WILL DETECT X RAYS EMITTED FROM SAMPLES OF THE MARTIAN SURFACE MATERIALS IRRADIATED BY X RAYS FROM RADIOISOTOPE SOURCES (IRON-55 AND CADMIUM-109). THE OUTPUT OF THE PROPORTIONAL COUNTERS WILL BE SUBJECTED TO PULSEHEIGHT ANALYSIS BY AN ONBOARD STEP-SCANNING SINGLE-CHANNEL ANALYZER WITH ADJUSTABLE COUNTING PERIODS. THIS INSTRUMENT WILL BE LOCATED INSIDE THE LANDER BODY, AND SAMPLES WILL BE DELIVERED TO IT BY THE LANDER SURFACE SAMPLER. CALIBRATION STANDARDS WILL BE AN INTEGRAL PART OF THE INSTRUMENT. RECONSTRUCTED SPECTRA ARE EXPECTED TO YIELD SURFACE COMPOSITION WITH ACCURACIES RANGING FROM A FEW TENS OF PARTS PER MILLION FOR TRACE ELEMENTS TO A FEW PERCENT FOR MAJOR ELEMENTS, DEPENDING UPON THE ELEMENT IN QUESTION.

**********VIKING-B ORBITER **********

SPACECRAFT COMMON NAME- VIKING-B ORBITER
ALTERNATE NAMES- PL-733B, VIKNG-B
NSSDC ID- VIKG-B

LAST REPORTED STATE- AN APPROVED MISSION

PLANNED LAUNCH DATE- 3 QTR 75 SPACECRAFT WEIGHT IN ORBIT- 3216. KG

LAUNCH SITE- CAPE KENNEDY, UNITED STATES LAUNCH VEHICLE- TITAN-CENT

SPONSORING COUNTRY/AGENCY
UNITED STATES NASA-OSS

PLANNED ORBIT PARAMETERS
ORBIT TYPE- MARSCENTRIC ORBIT PERIOD- 1476. MIN
APOAPSIS- 32500. KM ALT PERIAPSIS- 1500. KM ALT INCLINATION- 23. DEG

SPACECRAFT PERSONNEL (PM=PROJECT MANAGER, PS=PROJECT SCIENTIST)

PM -	J.S.	MARTIN, JR.	NASA-LARC	HAMPTON, VA

SPACECRAFT BRIEF DESCRIPTION

THE VIKING SPACECRAFT WILL CONSIST OF AN ORBITER AND A LANDER. THE ORBITER WILL BE CAPABLE OF ORBITING THE PLANET MARS IN A HIGH-ECCENTRICITY ELLIPTICAL ORBIT. A LANDER WILL SEPARATE FROM THE ORBITER, ENTER THE MARTIAN ATMOSPHERE, AND SOFT-LAND ON THE SURFACE. ORBITAL, ENTRY, AND SCIENTIFIC DATA FROM THE LANDER WILL BE COLLECTED AND TRANSMITTED TO EARTH. THE SPACECRAFT WILL BE A SOLAR-CELL-POWERED SATELLITE STABILIZED IN 3 AXES, USING INERTIAL AND CELESTIAL REFERENCES. BOTH THE ORBITER AND THE LANDER WILL HAVE A 90-DAY LIFE EXPECTANCY. THERE WILL BE 500-W POWER CAPACITY FOR THE ORBITER AND A 70-W CAPACITY FOR THE LANDER. SCIENTIFIC AND PHOTOGRAPHIC ANALYSIS INSTRUMENTS WILL WEIGH APPROXIMATELY 77 KG (170 LB).

**********VIKING-B ORBITER, CARR

EXPERIMENT NAME- OREITER IMAGING
NSSDC ID- VIKG-B -01

LAST REPORTED STATE- PRELAUNCH

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

PI - M.H.	CARR	US GEOLOGICAL SURVEY	MENLO PARK, CA
OI - W.A.	BAUM	LOWELL OBSERVATORY	FLAGSTAFF, AZ
OI - H.	MASURSKY	US GEOLOGICAL SURVEY	FLAGSTAFF, AZ
OI - D.U.	WISE	U OF MASSACHUSETTS	AMHERST, MA
OI - G.A.	BRIGGS	NASA-JPL	PASADENA, CA

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSES OF THE VIKING ORBITER TV IMAGING EXPERIMENT INVESTIGATION ARE TO AID IN THE SELECTION OF LANDING SITES FOR THE VIKING LANDERS AND FOR FUTURE MISSIONS, TO MONITOR THE REGION SURROUNDING THE LANDER, AND TO STUDY THE DYNAMIC CHARACTERISTICS OF MARS. THE GEOMETRIC RESOLUTION OF THE ORBITER IMAGING SYSTEM WILL BE 30 METERS PER LINE OR BETTER AT A REFERENCE ALTITUDE OF 1000 KM WITH IMAGE SMEARING FROM ORBITER MOTION TO BE LESS THAN 50 PERCENT OF THIS RESOLUTION. PRIOR TO LANDER SEPARATION, IT WILL BE REQUIRED TO COVER COMPLETELY WITH CONTIGUOUS PICTURES A SWATH AT LEAST 40 KM CROSS-TRACK BY 500 KM DOWN-TRACK ON A SINGLE ORBITAL PASS FROM THE NEAR-PERIAPSIS OF THE ORBIT. THE NEAR-PERIAPSIS COVERAGE REQUIREMENT AFTER LANDER SEPARATION WILL BE TO OBTAIN COMPLETE COVERAGE WITH CONTIGUOUS PICTURES OF AN AREA AT LEAST 50 KM IN RADIUS, CENTERED ON THE LANDER, ON A SINGLE ORBITAL PASS. THE CAPABILITIES PROVIDED TO ACCOMPLISH THE ABOVE REQUIREMENTS WILL BE UTILIZED TO ACCOMPLISH THE OTHER CITED PURPOSES. TO OBTAIN BOTH BROAD-AREA AND HIGH-RESOLUTION COVERAGE, IT WILL BE REQUIRED THAT IMAGERY BE OBTAINABLE FROM ONE PERISPSIS AND APOAPSOS REGIONS OF THE ORBIT USING THE SAME IMAGING SYSTEM. THE DYNAMIC RANGE WILL BE 80 TO 1, AND THE SENSITIVITY WILL BE SUFFICIENT TO OBTAIN PICTURES AS CLOSE TO THE TERMINATOR AS 30 DEG WITH OPTIMUM IMAGE QUALITY AND AS CLOSE AS 5 DEG TO ONE TERMINATOR WITH DEGRADED IMAGE QUALITY.

**********VIKING-B ORBITER, FARMER

EXPERIMENT NAME- IR SPECTROMETER -- WATER VAPOR MAPPING
NSSDC ID- VIKG-B -03

LAST REPORTED STATE- PRELAUNCH

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

PI - C.B.	FARMER	NASA-JPL	PASADENA, CA
OI - D.D.	LAPORTE	SANTA BARBARA RSCH CEN	GOLETA, CA
OI - D.W.	DAVIES	NASA-JPL	PASADENA, CA

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVES OF THE IR SPECTROMETRY EXPERIMENT WILL BE TO DETERMINE THE SPATIAL AND TEMPORAL DISTRIBUTION OF WATER VAPOR, TO AID IN THE SELECTION OF LANDING SITES FOR THE VIKING LANDERS, AND (FOR FUTURE MISSIONS) TO MONITOR THE REGION SURROUNDING THE LANDER AND STUDY THE DYNAMIC CHARACTERISTICS OF MARS. THE INFRARED SPECTROMETER WILL BE BORESIGHTED WITH THE IMAGING SYSTEM. IT WILL BE OPERABLE FROM THE PERIAPSIS AND APOAPSIS REGIONS OF THE ORBIT. THE WATER VAPOR MEASUREMENT RANGE WILL BE FROM 1 TO 1000 MICRON OF PRECIPITABLE WATER WITH AN ACCURACY OF 1 MICRON BETWEEN 1 AND 20 MICRONS AND 5 PERCENT BETWEEN 20 AND 1000 MICRONS. THE INSTANTANEOUS

FIELD OF VIEW OF THE INSTRUMENT IS 2 BY 16 MILLIRADIANS.

**********VIKING-B ORBITER, KIEFFER

EXPERIMENT NAME- IR RADIOMETRY -- THERMAL MAPPING
NSSDC ID- VIKG-B -02

LAST REPORTED STATE- PRELAUNCH

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

PI - H.H.	KIEFFER	U OF CALIFORNIA, LA	LOS ANGELES, CA
OI - G.	MUNCH	CAL TECH	PASADENA, CA
OI - E.D.	MINER	NASA-JPL	PASADENA, CA
OI - G.	NEUGEBAUER	CAL TECH	PASADENA, CA
OI - S.	CHASE	SANTA BARBARA RSCH CEN	GOLETA, CA

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVES OF THE INFRARED RADIOMETRY EXPERIMENT WILL BE TO OBTAIN SURFACE AND ATMOSPHERIC TEMPERATURE DATA FOR MARS, TO AID IN THE SELECTION OF LANDING SITES FOR THE VIKING LANDERS, AND (FOR FUTURE MISSIONS) TO MONITOR THE REGIONS SURROUNDING THE LANDER AND STUDY THE DYNAMIC CHARACTERISTICS OF MARS. THE INFRARED RADIOMETER WILL BE BORESIGHTED WITH THE IMAGING SYSTEM ON THE SCAN PLATFORM AND WILL BE OPERABLE FROM THE PERIAPSIS AND APOAPSIS REGIONS OF THE ORBIT. A TOTAL OF 28 DETECTORS IN FOUR TELESCOPES WILL COVER FIVE INFRARED WAVELENGTH BANDS AND THE INTEGRAL SOLAR SPECTRUM. THE TEMPERATURE RESOLUTION WILL BE 1 DEG K AT 200 DEG K, AND THE MEASUREMENT RANGE WILL BE FROM 140 TO 330 DEG K. THERE WILL BE SEVEN SIMULTANEOUS FIELDS OF VIEW ARRANGED IN A "V" PATTERN, EACH FIVE MILLIRADIANS IN DIAMETER.

SECTION 2 - INDEXES

	Title	Page
2.1	Cumulative Index of Active and Planned Spacecraft and Experiments	1085
2.2	Cumulative Bar Graph Indexes for Electromagnetic Radiation Experiments	1117
	Solar Broadband Electromagnetic Radiation	1119
	Astronomical Broadband Electromagnetic Radiation	1120
	Spectral Measurements (All Solar, Except OAO-3)	1121

Cumulative Index of Active and Planned Spacecraft and Experiments
(Spacecraft Alternate Name and Current Status)

SECTION 2.1 - CUMULATIVE INDEX OF ACTIVE AND PLANNED SPACECRAFT AND EXPERIMENTS

The following pages contain a list of the names of all spacecraft and experiments that were either active or planned as of March 31, 1974. The spacecraft are listed alphabetically by both common and alternate names. The alternate names are printed with a reference to the NSSDC spacecraft common name. Next to the NSSDC spacecraft common name are printed the sponsoring country and agency, launch date, orbit type, NSSDC ID code, and status. The epoch date, status, and data rate of all launched spacecraft and/or experiments are listed under the CURRENT STATE heading. For prelaunch spacecraft entries, only the status will be shown under this heading; there will be no information for prelaunch spacecraft experiments in this column. The status and data rate, for the most part, reflect the values as of March 31, 1974, that became effective as of the date shown in the EPOCH date column. However, a few changes subsequent to this date may appear. An explanation of the terms used in these columns may be found under Definitions in the annual report. The experiments are listed following the associated spacecraft common name and are ordered alphabetically by the principal investigator's (PI's) last name. The experiment name, NSSDC ID code, and experiment status are also given for each experiment. Finally, each name is followed by a page number, referencing the description of the spacecraft or experiment, in either the original report (page numbers 3 - 355) or in this supplement (page numbers 1003 - 1081).

CUMULATIVE INDEX OF ACTIVE AND PLANNED SPACECRAFT AND EXPERIMENTS
BY SPACECRAFT NAMES AND PRINCIPAL INVESTIGATOR

SPACECRAFT NAME / *PRINC.INVEST.NAME	EXPERIMENT NAME	COUNTRY AND AGENCY	LAUNCH DATE	ORBIT TYPE	NSSDC ID	CURRENT STATE EPOCH MMDDYY	CURRENT STATE STATUS	CURRENT STATE DATA RATE	PAGE NO.
AE-C		UNITED STATES	NASA-OSS 12/16/73	GEOCENTRIC	73-101A	12/16/73	NORMAL	STD	147
BARTH	NITRIC OXIDE AIRGLOW				73-101A-13	12/16/73	NORMAL	STD	155
BRACE	ELECTRON TEMPERATURE AND CONCENTRATION				73-101A-01	12/16/73	NORMAL	STD	148
BRINTON	BENNETT ION-MASS SPECTROMETER				73-101A-11	12/18/73	NORMAL	STD	154
CHAMPION	ATMOSPHERIC DRAG				73-101A-02	12/17/73	NORMAL	STD	148
DOERING	PHOTOELECTRON SPECTROMETER				73-101A-03	12/16/73	NORMAL	STD	149
HANSON	ION TEMPERATURE				73-101A-04	12/16/73	NORMAL	STD	149
HAYS	AIRGLOW PHOTOMETER				73-101A-14	12/16/73	NORMAL	STD	156
HEATH	SOLAR EUV FILTER PHOTOMETER				73-101A-05	12/16/73	NORMAL	STD	149
HINTEREGGER	SOLAR EUV SPECTROPHOTOMETER				73-101A-06	12/16/73	NORMAL	STD	150
HOFFMAN	MAGNETIC ION-MASS SPECTROMETER				73-101A-10	12/16/73	NORMAL	STD	153
HOFFMAN	LOW-ENERGY ELECTRONS				73-101A-12	12/16/73	NORMAL	STD	155
NIER	OPEN SOURCE NEUTRAL MASS SPECTROMETER				73-101A-07	12/16/73	NORMAL	STD	150
RICE	COLD CATHODE ION GAUGE				73-101A-15	12/16/73	NORMAL	STD	157
RICE	CAPACITANCE MANOMETER				73-101A-16	12/16/73	NORMAL	STD	158
SPENCER	NEUTRAL GAS TEMPERATURE AND CONCENTRATION				73-101A-09	12/16/73	NORMAL	STD	152
AE-D		UNITED STATES	NASA-OSS MARCH 75	GEOCENTRIC	AE-D		APPROVED		158
BARTH	NITRIC OXIDE AIRGLOW				AE-D -11				165
BRACE	ELECTRON TEMPERATURE AND CONCENTRATION				AE-D -01				159
CHAMPION	ATMOSPHERIC DRAG				AE-D -02				160
DOERING	PHOTOELECTRON SPECTROMETER				AE-D -03				160
HANSON	ION TEMPERATURE				AE-D -04				160
HAYS	AIRGLOW PHOTOMETER				AE-D -13				167
HINTEREGGER	SOLAR EUV SPECTROPHOTOMETER				AE-D -06				161
HOFFMAN	ION COMPOSITION AND CONCENTRATION				AE-D -10				164
HOFFMAN	LOW-ENERGY ELECTRONS				AE-D -12				166
NIER	OPEN SOURCE NEUTRAL MASS SPECTROMETER				AE-D -07				162
PELZ	CLOSED SOURCE NEUTRAL MASS SPECTROMETER				AE-D -08				163
RICE	CAPACITANCE MANOMETER				AE-D -14				167
RICE	COLD CATHODE ION GAUGE				AE-D -15				168
SPENCER	NEUTRAL GAS TEMPERATURE AND CONCENTRATION				AE-D -09				164
AE-E		UNITED STATES	NASA-OSS SEPT. 75	GEOCENTRIC	AE-E		APPROVED		168
BRACE	ELECTRON TEMPERATURE AND CONCENTRATION				AE-E -01				169
BRINTON	ION COMPOSITION AND CONCENTRATION				AE-E -10				174
CHAMPION	ATMOSPHERIC DRAG				AE-E -02				169
DOERING	PHOTOELECTRON SPECTROMETER				AE-E -03				170
HANSON	ION TEMPERATURE				AE-E -04				170
HAYS	AIRGLOW PHOTOMETER				AE-E -11				175
HEATH	SOLAR EUV FILTER PHOTOMETER				AE-E -05				171
HINTEREGGER	SOLAR EUV SPECTROPHOTOMETER				AE-E -06				171
NIER	OPEN SOURCE NEUTRAL MASS SPECTROMETER				AE-E -07				172
PELZ	CLOSED SOURCE NEUTRAL MASS SPECTROMETER				AE-E -08				173
RICE	CAPACITANCE MANOMETER				AE-E -12				176

SPACECRAFT NAME / *PRINC.INVEST.NAME	COUNTRY AND AGENCY / EXPERIMENT NAME	LAUNCH DATE	ORBIT TYPE	NSSDC ID	CURRENT STATE: EPOCH MMDDYY	STATUS	DATA RATE	PAGE NO.
RICE	COLD CATHODE ION GAUGE			AE-E -13				177
SPENCER	NEUTRAL GAS TEMPERATURE AND CONCENTRATION			AE-E -09				174
AEROS-B	FED. REP. OF GERMANY GFW UNITED STATES NASA-OSS	JULY 74	GEOCENTRIC	AEROS-B		APPROVED		177
KRANKOWSKY	MASS SPECTROMETER (MS)			AEROS-B-01				178
NESKE	ELECTRON CONCENTRATION IN THE IONOSPHERE			AEROS-B-03				179
ROEMER	ATMOSPHERIC DRAG ANALYSIS			AEROS-B-06				180
SCHMIDTKE	FLUX AND SPECTRAL DISTRIBUTION OF SOLAR EUV RAD AND THEIR TEMP AND SPATIAL VAR			AEROS-B-04				179
SPENCER	NEUTRAL ATMOSPHERE TEMPERATURE EXPERIMENT			AEROS-B-05				179
SPENNER	ENERGY DISTRIBUTION OF IONS AND ELECTRONS			AEROS-B-02				178
ALPO	SEE LUNAR POLAR ORB-DAUGHTER							
ALPO	SEE LUNAR POLAR ORB-MOTHER							
ALSEP 12	SEE APOLLO 12 LM/ALSEP							
ALSEP 14	SEE APOLLO 14 LM/ALSEP							
ALSEP 15	SEE APOLLO 15 LM/ALSEP							
ALSEP 16	SEE APOLLO 16 LM/ALSEP							
ALSEP 17	SEE APOLLO 17 LM/ALSEP							
ANS	THE NETHERLANDS NIVR UNITED STATES NASA-OSS	AUG. 74	GEOCENTRIC	ANS		APPROVED		181
DE JAGER	LOW-ENERGY X-RAY EXPERIMENT			ANS -02				182
GURSKY	HIGH ANGULAR AND SPECTRAL RESOLUTION OBSERVATIONS OF COSMIC X-RAY SOURCES			ANS -03				182
VANDUINEN	UV TELESCOPE			ANS -01				181
APOLLO 12 LM/ALSEP	UNITED STATES NASA-OMSF UNITED STATES NASA-OSS	11/14/69	LUNAR LANDER	69-099C	11/19/69	NORMAL	STD	40
FREEMAN	SUPRATHERMAL ION DETECTOR			69-099C-05	03/18/70	NORMAL	SUBS	42
LATHAM	PASSIVE SEISMIC			69-099C-03	10/00/73	PARTIAL	SUBS	41
SNYDER	SOLAR WIND SPECTROMETER			69-099C-02	11/05/71	PARTIAL	STD	41
APOLLO 12C	SEE APOLLO 12 LM/ALSEP							
APOLLO 14 LM/ALSEP	UNITED STATES NASA-OMSF UNITED STATES NASA-OSS	01/31/71	LUNAR LANDER	71-008C	02/05/71	NORMAL	STD	55
FREEMAN	SUPRATHERMAL ION DETECTOR			71-008C-06	03/29/72	PARTIAL	SUBS	57

SPACECRAFT NAME / *PRINC.INVEST.NAME	EXPERIMENT NAME	COUNTRY AND AGENCY	LAUNCH DATE	ORBIT TYPE	NSSDC ID	CURRENT STATE: EPOCH MMDDYY	STATUS	DATA RATE	PAGE NO.
JOHNSON	COLD CATHODE ION GAUGE EXPERIMENT				71-008C-07	03/29/72	PARTIAL	SUBS	57
KOVACH	ACTIVE SEISMIC				71-008C-05	12/07/73	PARTIAL	SUBS	56
LATHAM	PASSIVE SEISMIC				71-008C-04	11/17/72	PARTIAL	SUBS	56
O'BRIEN	CHARGED PARTICLE LUNAR ENVIRONMENT				71-008C-08	02/01/73	PARTIAL	SUBS	58
APOLLO 14C	SEE APOLLO 14 LM/ALSEP								
APOLLO 15 LM/ALSEP		UNITED STATES	NASA-OMSF 07/26/71	LUNAR LANDER	71-063C	07/30/71	NORMAL	STD	76
		UNITED STATES	NASA-OSS						
BATES	LUNAR DUST DETECTOR				71-063C-09	07/31/71	NORMAL	STD	79
FREEMAN	SUPRATHERMAL ION DETECTOR				71-063C-05	12/16/71	PARTIAL	STD	78
JOHNSON	COLD CATHODE ION GAUGE EXPERIMENT				71-063C-07	12/16/71	PARTIAL	SUBS	79
LANGSETH	HEAT FLOW				71-063C-06	08/07/71	PARTIAL	STD	78
LATHAM	PASSIVE SEISMIC				71-063C-01	07/31/71	NORMAL	STD	77
APOLLO 15C	SEE APOLLO 15 LM/ALSEP								
APOLLO 16 LM/ALSEP		UNITED STATES	NASA-OMSF 04/16/72	LUNAR LANDER	72-031C	04/21/72	NORMAL	STD	1003
		UNITED STATES	NASA-OSS						
DYAL	LUNAR SURFACE MAGNETOMETER				72-031C-03	08/17/73	NORMAL	STD	1003
KOVACH	ACTIVE SEISMIC				72-031C-02	12/07/73	NORMAL	SUBS	102
LATHAM	PASSIVE SEISMIC				72-031C-01	04/21/72	NORMAL	STD	101
APOLLO 16C	SEE APOLLO 16 LM/ALSEP								
APOLLO 17 LM/ALSEP		UNITED STATES	NASA-OMSF 12/07/72	LUNAR LANDER	72-096C	12/11/72	NORMAL	STD	123
		UNITED STATES	NASA-OSS						
BERG	LUNAR EJECTA AND METEORITES				72-096C-05	12/17/72	PARTIAL	STD	124
KOVACH	LUNAR SEISMIC PROFILING EXPERIMENT				72-096C-06	12/20/72	NORMAL	SUBS	125
LANGSETH	HEAT FLOW				72-096C-01	12/11/72	NORMAL	STD	124
WEBER	LUNAR SURFACE GRAVIMETER				72-096C-09	12/12/72	PARTIAL	SUBS	126
APOLLO 17C	SEE APOLLO 17 LM/ALSEP								
APOLLO-SOYUZ TEST PROJ.	SEE ASTP								
APPLICATIONS EXP MISSION	SEE HCMM								
ASTP		UNITED STATES	NASA-OMSF 07/15/75	GEOCENTRIC	ASTP		APPROVED		182
		U.S.S.R.	SAS						
ANG	INFLUENCE OF WEIGHTLESSNESS ON THE IMMISCIBILITY OF MONOTECTIC ALLOY SYSTEMS				ASTP -06				184
BOWYER	EXTREME ULTRAVICLET ASTRONOMY				ASTP -01				183
BOWYER	HELIUM GLOW				ASTP -02				183
BUCKER	BIOSTACK				ASTP -16				188
CRISWELL	EFFECTS OF SPACE FLIGHT ON THE CELLULAR RESPONSE OF MAN				ASTP -14				187
DONAHUE	ULTRAVIOLET ATMOSPHERIC ABSORPTION				ASTP -03				183

SPACECRAFT NAME / *PRINC.INVEST.NAME	EXPERIMENT NAME	COUNTRY AND AGENCY	LAUNCH DATE	ORBIT TYPE	NSSDC ID	CURRENT STATE: EPOCH MMDDYY	CURRENT STATE: STATUS	CURRENT STATE: DATA RATE	PAGE NO.
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WILLIAMS	ENERGETIC PARTICLE MONITOR				GOES-C -02				219
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HOVIS	HEAT CAPACITY MISSION RADIOMETER				AEM-A -01				1011
HEAO-A		UNITED STATES	NASA-OSS 1HALF 77	GEOCENTRIC	HEAO-A		APPROVED		1012
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FRIEDMAN	LARGE AREA COSMIC X-RAY SURVEY				HEAO-A -01				1013
GURSKY	X-RAY SCANNING MODULATION COLLIMATOR				HEAO-A -03				1013
PETERSON	LOW-ENERGY GAMMA-RAY SKY SURVEY				HEAO-A -04				1014
HEAO-B		UNITED STATES	NASA-OSS 2HALF 78	GEOCENTRIC	HEAO-B		APPROVED		1015
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GIACCONI	HIGH RESOLUTION IMAGER				HEAO-B -02				1016
GURSKY	IMAGING PROPORTIONAL COUNTER				HEAO-B -04				1016
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ISRAEL	HEAVY NUCLEII EXPERIMENT				HEAO-C -03				1017
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GURNETT	FINE FREQUENCY, COARSE TIME RESOLUTION SPECTRUM ANALYSIS			HELIO-B-05				230
GURNETT	50 KHZ-2 MHZ RADIO WAVE			HELIO-B-06				230
KEPPLER	ENERGETIC ELECTRON DETECTOR			HELIO-B-10				232
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UNKNOWN	LOW-ENERGY COSMIC X-RAY PACKAGE			HELOS -02				240
HEOS 2	INTERNATIONAL ESRO	01/31/72	GEOCENTRIC	72-005A	01/31/72	NORMAL	STD	86
DILWORTH	HIGH-ENERGY ELECTRONS			72-005A-05	01/31/72	NORMAL	STD	88
ELLIOTT	FLUXGATE MAGNETOMETER			72-005A-01	01/31/72	NORMAL	STD	87
FECHTIG	MICROMETEOROID DETECTOR			72-005A-07	01/31/72	NORMAL	STD	89

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PAGE	PARTICLE COUNTER TELESCOPE			72-005A-04	01/31/72	NORMAL	STD	88
PETERS	SOLAR VLF OBSERVATION			72-005A-03	01/31/72	NORMAL	STD	88
PIZZELLA	ELECTRON AND PROTON MEASUREMENTS (20 EV-50 KEV)			72-005A-02	01/31/72	NORMAL	STD	87
ROSENBAUER	SOLAR WIND MEASUREMENTS (230 EV-16 KEV)			72-005A-06	01/31/72	NORMAL	STD	89
HEOS-A2	SEE HEOS 2							
HI.ECCEN LUN OCCULT.SAT.	SEE HELOS							
IME-O	SEE ISEE-B							
IME-H	SEE ISEE-C							
IME-M	SEE ISEE-A							
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IMP-H	UNITED STATES / NASA-GSS	09/23/72	GEOCENTRIC	72-073A	09/23/72	NORMAL	STD	109
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FRANK	MEASUREMENT OF LOW-ENERGY PROTONS AND ELECTRONS			72-073A-04	09/23/72	NORMAL	STD	110
GLOECKLER	IONS AND ELECTRONS IN THE ENERGY RANGE 0.1 TO 2 MEV			72-073A-03	11/25/72	PARTIAL	STD	110
KRIMIGIS	PROPAGATION CHARACTERISTICS OF SOLAR PROTONS AND ELECTRONS			72-073A-08	12/11/73	PARTIAL	STD	112
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OGILVIE	SOLAR WIND ION COMPOSITION			72-073A-12	09/24/72	NORMAL	STD	115
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SIMPSON	SOLAR FLARE HIGH-Z/LOW-E AND LOW-Z ISOTOPE EXPERIMENT			72-073A-07	09/23/72	NORMAL	STD	112
STONE	ELECTRONS AND HYDROGEN AND HELIUM ISOTOPES			72-073A-06	09/23/72	NORMAL	STD	111
WILLIAMS	ENERGETIC ELECTRONS AND PROTONS			72-073A-05	09/26/72	NORMAL	STD	111
IMP-I	UNITED STATES / NASA-GSS	03/13/71	GEOCENTRIC	71-019A	03/13/71	NORMAL	STD	59
AGGSON	ELECTROSTATIC FIELDS			71-019A-02	03/20/71	NORMAL	STD	60
ANDERSON	MEDIUM-ENERGY SOLAR PROTONS AND ELECTRONS			71-019A-06	03/13/71	NORMAL	STD	61
BAME	MEASUREMENT OF SOLAR PLASMA			71-019A-11	03/15/71	NORMAL	STD	64
BOSTROM	MONITORING OF SOLAR PROTONS			71-019A-07	03/14/71	NORMAL	STD	62

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GURNETT	ELECTROSTATIC WAVES AND RADIO NOISE -- IONA			71-019A-03	03/14/71	NORMAL	STD	60
GURNETT	ELECTROSTATIC WAVES AND RADIO NOISE			71-019A-16	03/13/71	NORMAL	STD	66
HADDOCK	INTERPLANETARY LONG-WAVELENGTH RADIO ASTRONOMY EXPERIMENT			71-019A-13	03/13/71	NORMAL	STD	65
KELLOGG	ELECTROSTATIC WAVES AND RADIO NOISE			71-019A-12	03/11/74	PARTIAL	STD	65
MCDONALD	SOLAR AND GALACTIC COSMIC-RAY STUDIES			71-019A-08	10/14/71	PARTIAL	STD	63
NESS	MEASUREMENT OF MAGNETIC FIELDS			71-019A-01	03/13/71	NORMAL	STD	59
SIMPSON	NUCLEAR COMPOSITION OF COSMIC AND SOLAR PARTICLE RADIATIONS			71-019A-09	03/13/71	PARTIAL	STD	63
IMP-J	UNITED STATES / NASA-GSS	10/26/73	GEOCENTRIC	73-078A	10/26/73	NORMAL	STD	241
AGGSON	ELECTROSTATIC FIELDS			73-078A-11	10/26/73	NORMAL	STD	245
BAME	MEASUREMENT OF SOLAR PLASMA			73-078A-10	10/26/73	NORMAL	STD	245
BRIDGE	MEASUREMENT OF SOLAR PLASMA			73-078A-02	10/26/73	NORMAL	STD	241
FRANK	MEASUREMENT OF LOW-ENERGY PROTONS AND ELECTRONS			73-078A-04	10/26/73	NORMAL	STD	242
GLOECKLER	SOLID-STATE DETECTORS			73-078A-03	10/26/73	NORMAL	STD	242
GURNETT	ELECTROSTATIC WAVES AND RADIO NOISE			73-078A-12	10/26/73	NORMAL	STD	246
KRIMIGIS	PROPAGATION CHARACTERISTICS OF SOLAR PROTONS AND ELECTRONS			73-078A-08	04/00/74	PARTIAL	STD	244
MCDONALD	SOLAR- AND COSMIC-RAY PARTICLES			73-078A-09	10/26/73	NORMAL	STD	244
NESS	MAGNETIC FIELD EXPERIMENTS			73-078A-01	10/26/73	NORMAL	STD	241
SIMPSON	SOLAR FLARE HIGH-Z/LOW-E AND LOW-Z EXPERIMENTS			73-078A-07	10/26/73	NORMAL	STD	244
STONE	ELECTRONS AND HYDROGEN AND HELIUM ISOTOPES			73-078A-06	10/26/73	NORMAL	STD	243
WILLIAMS	ENERGETIC ELECTRONS AND PROTONS			73-078A-05	10/26/73	NORMAL	STD	243
IMP-K	SEE ISEE-A							
IMP-K PRIME	SEE ISEE-B							
INDIAN SCIENTIFIC SAT.	INDIA / ISRO	12/00/74	GEOCENTRIC	INDASAT		APPROVED		246
DANIEL	SOLAR NEUTRON AND GAMMA RAYS			INDASAT-02				247
RAO	X-RAY ASTRONOMY			INDASAT-01				247
SATYAPRAKASH	IONOSPHERIC ELECTRON TRAP AND UV CHAMBERS			INDASAT-03				247
INJUN 6	SEE HAWKEYE							
INJUN-F	SEE HAWKEYE							
INT ULTRAVIOLET EXPL	SEE IUE							
INTA SATELLITE	SEE INTASAT							

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INTASAT		SPAIN UNITED STATES	CNIE-INTA NASA-OSS	07/00/75	GEOCENTRIC	INTASAT		APPROVED		248
UNKNOWN	IONOSPHERIC BEACON					INTASAT-01				248
INTERCOSMOS 10		U.S.S.R.	UNKNOWN	10/30/73	GEOCENTRIC	73-082A	10/30/73	NORMAL	UNKN	1019
UNKNOWN	MAGNETIC FIELD MEASUREMENT					73-082A-01	10/30/73	NORMAL	UNKN	1020
UNKNOWN	ELECTRIC FIELD MEASUREMENT					73-082A-02	10/30/73	NORMAL	UNKN	1020
UNKNOWN	LOW-ENERGY PARTICLES					73-082A-03	10/30/73	NORMAL	UNKN	1020
UNKNOWN	VLF EMISSIONS					73-082A-04	10/30/73	NORMAL	UNKN	1021
UNKNOWN	ELECTRON CONCENTRATION AND TEMPERATURE					73-082A-05	10/30/73	NORMAL	UNKN	1021
IONOSPHERE SOUNDING SAT.	SEE ISS									
ISEE-A		UNITED STATES INTERNATIONAL	NASA-OSS ESRO	2HALF 77	GEOCENTRIC	MOTHER		APPROVED		1021
ANDERSON	ENERGETIC ELECTRONS AND PROTONS					MOTHER -10				287
BAME	50-EV TO 40-KEV PROTON AND 5-EV TO 20-KEV ELECTRON PLASMA PROBE					MOTHER -01				282
FRANK	HOT PLASMA					MOTHER -03				283
GURNETT	10-HZ TO 10-KHZ MAGNETIC AND 10-HZ TO 200-KHZ ELECTRIC FIELD TRIAXIAL PROBES					MOTHER -07				285
HARVEY	ACTIVE PLASMA EXPERIMENT					MOTHER -08				1022
HELLIWELL	VLF WAVE INJECTION					MOTHER -13				288
HEPPNER	DC ELECTRIC FIELDS					MOTHER -11				287
HOVESTADT	LOW-ENERGY COSMIC-RAY COMPOSITION					MOTHER -05				284
MOZER	DC TO 12-HZ ELECTRIC FIELD PROBE					MOTHER -06				1022
OGILVIE	THREE-DIMENSIONAL (SIX AXES), 6-EV TO 10-KEV ELECTRON SPECTROMETER					MOTHER -02				283
RUSSELL	MAGNETIC FIELDS					MOTHER -04				284
SHARP	PLASMA COMPOSITION					MOTHER -12				288
SIMPSON	MEDIUM-ENERGY COSMIC RAYS					MOTHER -14				288
WILLIAMS	ENERGETIC ELECTRONS AND PROTONS					MOTHER -09				286
ISEE-B		UNITED STATES INTERNATIONAL	NASA-OSS ESRO	2HALF 77	GEOCENTRIC	DAUGHTR		APPROVED		1023
ANDERSON	ENERGETIC ELECTRONS AND PROTONS					DAUGHTR-08				200
EGIDI	50-EV TO 25-KEV ION AND 35-EV TO 7-KEV ELECTRON PLASMA PROBES					DAUGHTR-02				197
FRANK	HOT PLASMA					DAUGHTR-03				198
GURNETT	10-HZ TO 10-KHZ MAGNETIC AND 10-HZ TO 200-KHZ ELECTRIC FIELD MONOAXIAL PROBES					DAUGHTR-05				199
HARVEY	RADIO PROPAGATION RECEIVER					DAUGHTR-06				1024
KEPPLER	ENERGETIC ELECTRONS AND PROTONS					DAUGHTR-07				199
PASCHMANN	50-EV TO 40-KEV PROTON AND 5-EV TO 20-KEV ELECTRON PLASMA PROBE					DAUGHTR-01				197
RUSSELL	MAGNETIC FIELDS					DAUGHTR-04				198

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ISEE-C	UNITED STATES / NASA-GSS	2HALF 78	HELIOCENTRIC	HELOCTR		APPROVED		233
ANDERSON	X RAYS AND ELECTRONS			HELOCTR-09				237
BAME	150-EV TO 7-KEV PROTON AND 5-EV TO 2.5-KEV ELECTRON PLASMA PROBE			HELOCTR-01				234
DE FEITER	ENERGETIC PROTONS			HELOCTR-08				237
HECKMAN	HIGH-ENERGY COSMIC RAYS			HELOCTR-05				236
HOVESTADT	LOW-ENERGY COSMIC-RAY COMPOSITION			HELOCTR-03				235
MEYER	COSMIC-RAY ELECTRONS AND NUCLEI			HELOCTR-06				236
OGILVIE	MASS SPECTROMETER FOR 470 TO 10,500 EV PER CHARGE AND 1 TO 5.6 AMU PER CHARGE			HELOCTR-11				238
SCARF	20-HZ TO 1-KHZ MAGNETIC AND 20-HZ TO 100-KHZ ELECTRIC FIELD DETECTORS			HELOCTR-07				237
SMITH	MAGNETIC FIELDS			HELOCTR-02				234
STEINBERG	20-KHZ TO 3-MHZ RADIO MAPPING			HELOCTR-10				238
STONE	COSMIC-RAY COMPOSITION			HELOCTR-12				239
VON ROSENVING	SOLAR, GALACTIC, AND MAGNETOSPHERIC ENERGETIC PARTICLES			HELOCTR-04				235
WILCOX	SOLAR AND INTERPLANETARY MAGNETIC FIELDS (CORRELATIVE STUDY)			HELOCTR-13				239
ISIS 1	CANADA / CRC UNITED STATES / NASA-OSS	01/30/69	GEOCENTRIC	69-009A	01/30/70	PARTIAL	SUBS	24
BARRINGTON	VLF RECEIVER			69-009A-03	01/30/70	NORMAL	SUBS	26
BRACE	CYLINDRICAL ELECTROSTATIC PROBE			69-009A-07	01/30/70	NORMAL	SUBS	27
CALVERT	FIXED FREQUENCY SOUNDER			69-009A-02	01/30/70	NORMAL	SUBS	26
FORSYTH	RADIO BEACON			69-009A-09	01/30/69	PARTIAL	SUBS	29
HARTZ	COSMIC RADIO NOISE			69-009A-10	01/30/70	NORMAL	SUBS	29
MCDIARMID	ENERGETIC PARTICLE DETECTORS			69-009A-04	01/30/70	NORMAL	SUBS	27
SAGALYN	SPHERICAL ELECTROSTATIC ANALYZER			69-009A-08	01/30/70	NORMAL	SUBS	28
WHITTEKER	SWEEP FREQUENCY SOUNDER			69-009A-01	01/30/70	NORMAL	SUBS	25
ISIS 2	CANADA / CRC UNITED STATES / NASA-OSS	04/01/71	GEOCENTRIC	71-024A	02/04/73	NORMAL	SUBS	66
ANGER	3914- TO 5577-A PHOTOMETER			71-024A-11	02/04/73	NORMAL	SUBS	72
BARRINGTON	VLF RECEIVER			71-024A-03	02/04/73	NORMAL	SUBS	68
BRACE	CYLINDRICAL ELECTROSTATIC PROBE			71-024A-07	02/04/73	NORMAL	SUBS	71
CALVERT	FIXED FREQUENCY SOUNDER			71-024A-02	02/04/73	NORMAL	SUBS	68
FORSYTH	RADIO BEACON			71-024A-09	04/23/71	PARTIAL	SUBS	72
HARTZ	COSMIC RADIO NOISE			71-024A-10	02/04/73	NORMAL	SUBS	72
HEIKKILA	SOFT-PARTICLE SPECTROMETER			71-024A-05	02/04/72	PARTIAL	STD	70
HOFFMAN	ION MASS SPECTROMETER			71-024A-06	02/04/73	NORMAL	SUBS	70
MAIER	RETARDING POTENTIAL ANALYZER			71-024A-08	02/04/73	NORMAL	SUBS	71
MCDIARMID	ENERGETIC PARTICLE DETECTORS			71-024A-04	02/04/72	PARTIAL	STD	69
SHEPHERD	6300-A PHOTOMETER			71-024A-12	02/04/73	NORMAL	SUBS	73
WHITTEKER	SWEEP FREQUENCY SOUNDER			71-024A-01	02/04/73	NORMAL	SUBS	67
ISIS-A	SEE ISIS 1							

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ISIS-B	SEE ISIS 2							
ISS	JAPAN	NASDA 02/00/76	GEOCENTRIC	ISS		APPROVED		249
FUGONO	ION MASS SPECTROMETER			ISS -04				250
MIYAZAKI	RETARDING POTENTIAL PROBE			ISS -03				250
UNKNOWN	SWEEP FREQUENCY SOUNDER			ISS -01				249
UNKNOWN	RADIO NOISE			ISS -02				250
ITOS-D	SEE NOAA 2							
ITOS-F	SEE NOAA 3							
ITOS-G	UNITED STATES	NOAA-NESS JULY 74	GEOCENTRIC	ITOS-G		APPROVED		254
BOSTROM	SOLAR PROTON MONITOR			ITOS-G -01				254
NESS STAFF	SCANNING RADIOMETER (SR)			ITOS-G -02				255
NESS STAFF	VERY HIGH RESOLUTION RADIOMETER (VHRR)			ITOS-G -03				256
NESS STAFF	VERTICAL TEMPERATURE PROFILE RADIOMETER (VTPR)			ITOS-G -04				256
ITOS-H	UNITED STATES	NOAA-NESS 4 QTR 76	GEOCENTRIC	ITOS-H		APPROVED		257
	UNITED STATES	NASA-OSS						
NESS STAFF	ADVANCED VERY HIGH RESOLUTION RADIOMETER (AVHRR)			ITOS-H -01				258
NESS STAFF	TIROS OPERATIONAL VERTICAL SOUNDER (TOVS)			ITOS-H -02				258
SHENK	SPACE ENVIRONMENTAL MONITOR (SEM)			ITOS-H -04				259
UNKNOWN	DATA COLLECTION AND PLATFORM LOCATION SYSTEM (DCS)			ITOS-H -03				259
ITOS-I	UNITED STATES	NOAA-NESS 2 QTR 78	GEOCENTRIC	ITOS-I		APPROVED		260
	UNITED STATES	NASA-OSS						
NESS STAFF	ADVANCED VERY HIGH RESOLUTION RADIOMETER (AVHRR)			ITOS-I -01				260
NESS STAFF	TIROS OPERATIONAL VERTICAL SOUNDER (TOVS)			ITOS-I -02				261
UNKNOWN	DATA COLLECTION AND PLATFORM LOCATION SYSTEM (DCS)			ITOS-I -03				261
ITOS-J	UNITED STATES	NASA-OSS 12/01/79	GEOCENTRIC	ITOS-J		APPROVED		262
	UNITED STATES	NOAA-NESS						
NESS STAFF	ADVANCED VERY HIGH RESOLUTION RADIOMETER (AVHRR)			ITOS-J -01				263
NESS STAFF	TIROS OPERATIONAL VERTICAL SOUNDER (TOVS)			ITOS-J -02				263
UNKNOWN	DATA COLLECTION AND PLATFORM LOCATION SYSTEM (DCS)			ITOS-J -03				264
IUE	UNITED STATES	NASA-OSS 2HALF 76	GEOCENTRIC	SAS-D		APPROVED		1024

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	INTERNATIONAL ESRO UNITED KINGDOM SRC							
NONE ASSIGNED IUE LOW/HIGH RESOLUTION, ULTRAVIOLET SPECTROGRAPH PACKAGE				SAS-D -01				1025
LAGEOS	UNITED STATES NASA-OA	1 QTR 76	GEOCENTRIC	LAGEOS		APPROVED		1026
LARGE SPACE TELESCOPE	SEE LST							
LASER GEODYNAMIC SAT.	SEE LAGEOS							
LEM 12	SEE APOLLO 12 LM/ALSEP							
LEM 14	SEE APOLLO 14 LM/ALSEP							
LEM 15	SEE APOLLO 15 LM/ALSEP							
LEM 16	SEE APOLLO 16 LM/ALSEP							
LEM 17	SEE APOLLO 17 LM/ALSEP							
LST	UNITED STATES NASA-OSS	00/00/80	GEOCENTRIC	LST		PROPOSED		1027
LUNAR POLAR ORB-DAUGHTER	UNITED STATES NASA-OSS	PROPSD79	SELENOCENTRIC	LPO-D		PROPOSED		1028
LUNAR POLAR ORB-MOTHER	UNITED STATES NASA-OSS	PROPSD79	SELENOCENTRIC	LPO-M		PROPOSED		1028
MARINER 10	UNITED STATES NASA-OSS	11/03/73	VENUS FLYBY	73-085A	11/03/73	NORMAL	STD	1029
BRIDGE — MEASUREMENT OF PLASMA ENVIRONMENT				73-085A-03	11/03/73	NORMAL	STD	1030
BROADFOOT — EUV SPECTROSCOPY				73-085A-05	11/03/73	NORMAL	STD	1030
CHASE, JR. — TWO-CHANNEL IR RADIOMETER				73-085A-06	11/03/73	NORMAL	STD	1031
HOWARD — S- AND X-BAND RADIO PROPAGATION				73-085A-02	11/03/73	NORMAL	STD	1031
MURRAY — TELEVISION PHOTOGRAPHY				73-085A-01	04/03/74	INOPERABLE	ZERO	1032
NESS — FLUXGATE MAGNETOMETER				73-085A-04	11/03/73	NORMAL	STD	1032
SIMPSON — ENERGETIC PARTICLES				73-085A-07	11/03/73	NORMAL	STD	1032
MARINER 73	SEE MARINER 10							
MARINER 77A	UNITED STATES NASA-OSS	2HALF 77	JUPITER FLYBY	MARN77A		APPROVED		1033
BLAMONT — LYMAN ALPHA SPECTROPHOTOMETER				MARN77A-12				1033
BRIDGE — PLASMA				MARN77A-06				273
BROADFOOT — ULTRAVIOLET SPECTROSCOPY				MARN77A-04				272
ESHLEMAN — COHERENT S- AND X-BAND TRANSMITTER AND S-BAND RECEIVER				MARN77A-02				271
HANEL — INFRARED SPECTROSCOPY AND RADIOMETRY				MARN77A-03				271
KRIMIGIS — LOW-ENERGY CHARGED PARTICLE ANALYZER AND TELESCOPE				MARN77A-07				273
LILLIE — MULTIFILTER PHOTOPOLARIMETER, 2200-7300 A				MARN77A-11				275

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NESS	TRIAXIAL FLUXGATE MAGNETOMETERS				MARN77A-05				272
SMITH	TV PHOTOGRAPHY				MARN77A-01				273
SOBERMAN	INTERPLANETARY DUST PARTICLE MEASUREMENT				MARN77A-09				274
VOGT	HIGH- AND MODERATELY LOW-ENERGY COSMIC-RAY TELESCOPE				MARN77A-08				274
WARWICK	SWEEP FREQUENCY (0.02 TO 40 MHZ) RADIO RECEIVER				MARN77A-10				275
MARINER 77B		UNITED STATES	NASA-OSS 2HALF 77	JUPITER FLYBY	MARN77B		APPROVED		1034
BLAMONT	LYMAN ALPHA SPECTROPHOTOMETER				MARN77B-12				1034
BRIDGE	PLASMA				MARN77B-06				279
BROADFOOT	ULTRAVIOLET SPECTROSCOPY				MARN77B-04				278
ESHLEMAN	COHERENT S- AND X-BAND TRANSMITTER AND S-BAND RECEIVER				MARN77B-02				277
HANEL	INFRARED SPECTROSCOPY AND RADIOMETRY				MARN77B-03				277
KRIMIGIS	LOW-ENERGY CHARGED PARTICLE ANALYZER AND TELESCOPE				MARN77B-07				279
LILLIE	MULTIFILTER PHOTOPOLARIMETER, 2200-7300 A				MARN77B-11				281
NESS	TRIAXIAL FLUXGATE MAGNETOMETERS				MARN77B-05				278
SMITH	TV PHOTOGRAPHY				MARN77B-01				276
SOBERMAN	INTERPLANETARY DUST PARTICLE MEASUREMENT				MARN77B-09				280
VOGT	HIGH- AND MODERATELY LOW-ENERGY COSMIC-RAY TELESCOPE				MARN77B-08				280
WARWICK	SWEEP FREQUENCY (0.02 TO 40 MHZ) RADIO RECEIVER				MARN77B-10				281
MARINER JUPITER/SATURN A	SEE MARINER 77A								
MARINER JUPITER/SATURN E	SEE MARINER 77B								
MARINER VENUS/MERCURY	SEE MARINER 10								
MARINER-J VENUS/MERCURY	SEE MARINER 10								
METEC	SEE METEOROID TECHNOLOGY SAT								
METEOROID TECHNOLOGY SAT		UNITED STATES	NASA-OAST 08/13/72	GEOCENTRIC	72-061A	08/27/72	PARTIAL	SUBS	106
KINARD	METEOROID PENETRATION				72-061A-01	03/11/74	NORMAL	SUBS	106
METEOROLOGICAL SATELLITE	SEE METEOSAT								
METEOSAT		INTERNATIONAL	ESRO 4 QTR 76	GEOCENTRIC	METOSAT		APPROVED		1035
MOTHER	SEE ISEE-A								
MTS	SEE METEOROID TECHNOLOGY SAT								

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NEUTRAL POINT EXPLORER	SEE HAWKEYE							
NIMBUS 4	UNITED STATES / NASA-GA	04/08/70	GEOCENTRIC	70-025A	04/08/71	PARTIAL	SUBS	42
COTE	INTERROGATION, RECORDING, AND LOCATION SYSTEM (IRLS)			70-025A-07	04/08/71	PARTIAL	SUBS	45
HEATH	SOLAR UV MONITOR			70-025A-01	03/11/74	NORMAL	SUBS	44
HEATH	BACKSCATTER ULTRAVIOLET (BUV) SPECTROMETER			70-025A-05	04/08/71	PARTIAL	SUBS	44
NIMBUS 5	UNITED STATES / NASA-GA	12/11/72	GEOCENTRIC	72-097A	01/04/73	PARTIAL	STD	127
HOUGHTON	SELECTIVE CHOPPER RADIOMETER (SCR)			72-097A-02	12/11/72	NORMAL	STD	128
MCCULLOCH	TEMPERATURE/HUMIDITY INFRARED RADIOMETER (THIR)			72-097A-08	12/11/72	NORMAL	STD	130
SMITH	INFRARED TEMPERATURE PROFILE RADIOMETER (ITPR)			72-097A-01	01/00/73	PARTIAL	STD	128
STAELIN	NIMBUS-E MICROWAVE SPECTROMETER (NEMS)			72-097A-03	12/11/72	NORMAL	STD	129
WILHEIT, JR.	ELECTRICALLY SCANNING MICROWAVE RADIOMETER (ESMR)			72-097A-04	12/11/72	NORMAL	STD	129
NIMBUS-D	SEE NIMBUS 4							
NIMBUS-E	SEE NIMBUS 5							
NIMBUS-F	UNITED STATES / NASA-GA	10/00/74	GEOCENTRIC	NIMBS-F		APPROVED		289
BANDEEN	TEMPERATURE/HUMIDITY INFRARED RADIOMETER (THIR)			NIMBS-F-12				294
GILLE	LIMB RADIANCE INVERSION RADIOMETER (LRIR)			NIMBS-F-04				292
HOUGHTON	PRESSURE-MODULATED RADIOMETER (PMR)			NIMBS-F-09				293
KELLOGG	TROPICAL WIND ENERGY CONVERSION AND REFERENCE LEVEL EXPERIMENT (TWERLE)			NIMBS-F-01				290
MCCULLOCH	HIGH RESOLUTION INFRARED RADIATION SOUNDER (HIRS)			NIMBS-F-02				291
SMITH	EARTH RADIATION BUDGET (ERB)			NIMBS-F-05				292
STAELIN	SCANNING MICROWAVE SPECTROMETER (SCAMS)			NIMBS-F-10				294
VONBUN	TRACKING AND DATA RELAY			NIMBS-F-13				295
WILHEIT, JR.	ELECTRICALLY SCANNING MICROWAVE RADIOMETER (ESMR)			NIMBS-F-03				291
NIMBUS-G	UNITED STATES / NASA-GA	1 QTR 77	GEOCENTRIC	NIMBS-G		APPROVED		1035
NOAA 2	UNITED STATES / NOAA-NESS	10/15/72	GEOCENTRIC	72-082A	10/15/72	NORMAL	STD	116
	UNITED STATES / NASA-GA							
BOSTROM	SOLAR PROTON MONITOR			72-082A-01	10/15/72	NORMAL	STD	117
NESS STAFF	SCANNING RADIOMETER (SR)			72-082A-02	10/15/72	NORMAL	STD	117
NESS STAFF	VERY HIGH RESOLUTION RADIOMETER (VHRR)			72-082A-03	10/15/72	NORMAL	STD	118

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NOAA 3	UNITED STATES / UNITED STATES	NOAA-NESS / NASA-OA	11/06/73 GEOCENTRIC	73-086A	11/29/73	NORMAL	STD	250
BOSTROM	SOLAR PROTON MONITOR			73-086A-01	11/06/73	NORMAL	STD	251
NESS STAFF	SCANNING RADIOMETER (SR)			73-086A-02	03/15/74	PARTIAL	UNKN	252
NESS STAFF	VERY HIGH RESOLUTION RADIOMETER (VHRR)			73-086A-03	03/15/74	NORMAL	STD	252
NESS STAFF	VERTICAL TEMPERATURE PROFILE RADIOMETER (VTPR)			73-086A-04	03/15/74	PARTIAL	UNKN	253
NRL-111	SEE SOLRAD 11A							
NRL-111	SEE SOLRAD 11B							
OAO 3	UNITED STATES	NASA-OSS	08/21/72 GEOCENTRIC	72-065A	08/21/72	NORMAL	STD	107
BOYD	STELLAR PHOTOMETRY			72-065A-02	06/00/73	PARTIAL	STD	108
SPITZER	HIGH RESOLUTION TELESCOPES			72-065A-01	08/21/72	NORMAL	STD	108
OAO-C	SEE OAO 3							
OSO 7	UNITED STATES	NASA-OSS	09/29/71 GEOCENTRIC	71-083A	05/18/73	NORMAL	SUBS	80
CLARK	COSMIC X-RAY SOURCES IN THE RANGE 1.5 TO 9 A			71-083A-04	05/18/73	NORMAL	SUBS	82
NEUPERT	X-RAY AND EUV SPECTROHELIOGRAPH (2 TO 400 A)			71-083A-01	05/18/73	PARTIAL	SUBS	80
PETERSON	COSMIC X-RAY EXPERIMENT			71-083A-03	05/18/73	NORMAL	SUBS	82
PETERSON	HARD SOLAR X-RAY MONITORING			71-083A-05	09/29/73	NORMAL	STD	83
TOUSEY	WHITE-LIGHT CORONOGRAPH AND EXTREME ULTRAVIOLET CORONOGRAPH			71-083A-02	09/00/73	PARTIAL	SUBS	81
OSO-EYE	SEE OSO-I							
OSO-H	SEE OSO 7							
OSO-I	UNITED STATES	NASA-OSS	03/00/75 GEOCENTRIC	OSO-I		APPROVED		295
BOLDT	COSMIC X-RAY SPECTROSCOPY			OSO-I -06				298
BRUNER, JR.	HIGH RESOLUTION ULTRAVIOLET SPECTROMETER MEASUREMENTS			OSO-I -01				296
CULHANE	MAPPING X-RAY HELIOMETER			OSO-I -04				297
FRUST	HIGH-ENERGY CELESTIAL X RAYS			OSO-I -07				298
KRAUSHAAR	SOFT X-RAY BACKGROUND RADIATION INVESTIGATION			OSO-I -05				297
LEMAIRE	CHROMOSPHERE FINE STRUCTURE STUDY			OSO-I -02				296
NOVICK	HIGH-SENSITIVITY GRAPHITE CRYSTAL SPECTROSCOPY OF STELLAR AND SOLAR X RAYS			OSO-I -03				296
WELLER, JR.	EUV FROM EARTH AND SPACE			OSO-I -08				298
OUTER PLANETS A	SEE MARINER 77A							
OUTER PLANETS B	SEE MARINER 77B							

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OVS-6		UNITED STATES	DOD-USAF 05/23/69	GEOCENTRIC	69-046B	05/23/69	NORMAL	STD	30
YATES	GEIGER-MUELLER TUBE, SOLAR X-RAY DETECTOR, 2 TO 12 A				69-046B-01	05/23/69	NORMAL	STD	30
YATES	SODIUM IODIDE SCINTILLATOR, GAMMA-RAY DETECTOR, 19 TO 1175 KEV				69-046B-02	05/23/69	NORMAL	STD	30
YATES	PROTON ALPHA PARTICLE TELESCOPE				69-046B-03	08/12/72	NORMAL	SUBS	31
YATES	LOW-ENERGY ELECTRON DETECTOR				69-046B-05	05/23/69	NORMAL	STD	31
P 73-4	SEE ELMS 1								
P 74-3	SEE ELMS 2								
PIONEER 6		UNITED STATES	NASA-OSS 12/16/65	HELIOCENTRIC	65-105A	02/07/71	NORMAL	SUBS	3
BRIDGE	SOLAR WIND PLASMA FARADAY CUP				65-105A-02	02/07/71	NORMAL	SUBS	4
ESHLEMAN	TWO-FREQUENCY RADIO RECEIVER				65-105A-04	02/07/71	NORMAL	SUBS	5
FAN	COSMIC-RAY TELESCOPE				65-105A-03	10/22/67	PARTIAL	SUBS	5
MCCRACKEN	COSMIC-RAY ANISOTROPY DETECTION				65-105A-05	05/21/66	NORMAL	SUBS	6
PIONEER 7		UNITED STATES	NASA-OSS 08/17/66	HELIOCENTRIC	66-075A	08/17/66	NORMAL	STD	6
MCCRACKEN	COSMIC-RAY ANISOTROPY				66-075A-05	02/09/69	PARTIAL	SUBS	9
SIMPSON	COSMIC-RAY TELESCOPE				66-075A-06	05/26/69	PARTIAL	SUBS	9
WOLFE	ELECTROSTATIC ANALYZER				66-075A-03	02/16/69	PARTIAL	SUBS	8
PIONEER 8		UNITED STATES	NASA-OSS 12/13/67	HELIOCENTRIC	67-123A	01/25/71	NORMAL	SUBS	10
BERG	COSMIC DUST DETECTOR				67-123A-04	01/25/71	NORMAL	SUBS	13
ESHLEMAN	TWO-FREQUENCY BEACON RECEIVER				67-123A-03	01/25/71	NORMAL	SUBS	13
MCCRACKEN	COSMIC-RAY ANISOTROPY				67-123A-05	01/25/71	NORMAL	SUBS	14
NESS	SINGLE-AXIS MAGNETOMETER				67-123A-01	01/25/71	NORMAL	SUBS	11
WEBBER	COSMIC-RAY GRADIENT DETECTOR				67-123A-06	01/25/71	NORMAL	SUBS	15
WOLFE	ELECTROSTATIC ANALYZER				67-123A-02	01/25/71	PARTIAL	SUBS	12
PIONEER 9		UNITED STATES	NASA-OSS 11/08/68	HELIOCENTRIC	68-100A	05/19/69	NORMAL	SUBS	17
BERG	COSMIC DUST DETECTOR				68-100A-04	05/19/69	NORMAL	SUBS	20
ESHLEMAN	TWO-FREQUENCY BEACON RECEIVER				68-100A-03	05/19/69	PARTIAL	STD	19
MCCRACKEN	COSMIC-RAY ANISOTROPY				68-100A-05	05/19/69	NORMAL	SUBS	20
SCARF	PLASMA WAVE DETECTOR				68-100A-07	05/19/69	NORMAL	SUBS	22
SONETT	THREE-AXIS MAGNETOMETER				68-100A-01	05/19/69	NORMAL	SUBS	18
WEBBER	COSMIC-RAY TELESCOPE				68-100A-06	05/19/69	NORMAL	SUBS	21
WOLFE	ELECTROSTATIC ANALYZER				68-100A-02	05/19/69	PARTIAL	SUBS	18
PIONEER 10		UNITED STATES	NASA-OSS 03/02/72	JUPITER FLYBY	72-012A	03/03/72	NORMAL	STD	1036
ANDERSON	CELESTIAL MECHANICS				72-012A-09	03/03/72	NORMAL	STD	94
FILLIUS	JOVIAN TRAPPED RADIATION				72-012A-05	03/03/72	NORMAL	STD	92
GEHRELS	IMAGING PHOTOPOLARIMETER (IPP)				72-012A-07	03/03/72	NORMAL	STD	1037
JUDGE	ULTRAVIOLET PHOTOMETRY				72-012A-06	03/03/72	NORMAL	STD	93
KINARD	METEOROID DETECTORS				72-012A-04	03/03/72	NORMAL	STD	92
KLIORE	S-BAND OCCULTATION				72-012A-10	03/03/72	NORMAL	STD	95

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MCDONALD — COSMIC-RAY SPECTRA				72-012A-12	03/02/72	NORMAL	STD	96
SIMPSON — CHARGED PARTICLE COMPOSITION				72-012A-02	03/03/72	NORMAL	STD	91
SMITH — MAGNETIC FIELDS				72-012A-01	03/03/72	NORMAL	STD	90
SOBERMAN — ASTEROID/METEOROID ASTRONOMY				72-012A-03	03/03/72	NORMAL	STD	91
VAN ALLEN — JOVIAN CHARGED PARTICLES EXPERIMENT				72-012A-11	03/03/72	NORMAL	STD	95
WEINBERG — ZODIACAL-LIGHT TWO-COLOR PHOTOPOLARIMETRY				72-012A-14	02/27/74	NORMAL	UNKN	1038
WOLFE — PLASMA EXPERIMENT				72-012A-13	03/03/72	NORMAL	STD	96
PIONEER 11	UNITED STATES	NASA-OSS 04/06/73	JUPITER FLYBY	73-019A	04/06/73	NORMAL	STD	1038
ANDERSON — CELESTIAL MECHANICS				73-019A-09	04/06/73	NORMAL	STD	135
FILLIUS — JOVIAN TRAPPED RADIATION				73-019A-05	04/06/73	NORMAL	STD	133
GEHRELS — IMAGING PHOTOPOLARIMETER				73-019A-07	04/06/73	NORMAL	STD	1039
JUDGE — ULTRAVIOLET PHOTOMETRY				73-019A-06	04/06/73	NORMAL	STD	134
KINARD — METEOROID DETECTOR				73-019A-04	04/06/73	NORMAL	STD	133
KLIORE — S-BAND OCCULTATION				73-019A-10	04/06/73	NORMAL	STD	135
MCDONALD — COSMIC-RAY SPECTRA				73-019A-12	04/06/73	NORMAL	STD	136
MUNCH — INFRARED RADIOMETER				73-019A-08	04/06/73	NORMAL	ZERO	135
NESS — JOVIAN MAGNETIC FIELD				73-019A-14	04/06/73	NORMAL	SUBS	137
SIMPSON — CHARGED PARTICLE COMPOSITION				73-019A-02	04/06/73	NORMAL	STD	132
SMITH — MAGNETIC FIELDS				73-019A-01	04/06/73	NORMAL	STD	131
SOBERMAN — ASTEROID/METEOROID ASTRONOMY				73-019A-03	04/06/73	NORMAL	STD	132
VAN ALLEN — JOVIAN CHARGED PARTICLES EXPERIMENT				73-019A-11	04/06/73	NORMAL	STD	136
WEINBERG — ZODIACAL-LIGHT TWO-COLOR PHOTOPOLARIMETRY				73-019A-15	02/27/74	NORMAL	UNKN	1040
WOLFE — PLASMA EXPERIMENT				73-019A-13	04/06/73	NORMAL	STD	137
PIONEER VENUS 1978	SEE PIONEER VENUS PROBE A							
PIONEER VENUS 1978	SEE PIONEER VENUS PROBE B							
PIONEER VENUS 1978	SEE PIONEER VENUS PROBE C							
PIONEER VENUS 1978	SEE PIONEER VENUS PROBE D							
PIONEER VENUS 1978	SEE PIONEER VENUS PROBE E							
PIONEER VENUS 1978 ORBIT	SEE PIONEER VENUS ORBITER							
PIONEER VENUS LARG PROBE	SEE PIONEER VENUS PROBE B							
PIONEER VENUS ORBITER	UNITED STATES	NASA-OSS 08/00/78	VENUSCENTRIC	PI078OR		PROPOSED		299
PIONEER VENUS PROBE A	UNITED STATES	NASA-OSS 05/00/78	VENUS FLYBY	PI078PA		PROPOSED		299
KNUDSEN — RETARDING POTENTIAL ANALYZER				PI078PA-04				301
NAGY — LANGMUIR PROBE				PI078PA-01				300
PETTENGILL — DIFFERENTIAL VERY-LONG-BASELINE INTERFEROMETRIC TRACKING				PI078PA-06				302

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STEWART	ULTRAVIOLET SPECTROMETER			PI078PA-05				302
TAYLOR, JR.	ION MASS SPECTROMETER			PI078PA-02				301
VON ZAHN	NEUTRAL PARTICLE MASS SPECTROMETER			PI078PA-03				301
PIONEER VENUS PROBE C	UNITED STATES NASA-OSS	05/00/78	VENUS LANDER	PI078PB		PROPOSED		302
BLAMONT	CLOUD EXTENT, STRUCTURE, AND DISTRIBUTION			PI078PB-02				304
KNOLLENBERG	CLOUD PARTICLE SIZE SPECTROMETER			PI078PB-03				304
UYAMA	GAS CHROMATOGRAPH			PI078PB-04				304
PETTENGILL	DIFFERENTIAL VERY-LONG-BASELINE INTERFEROMETRIC TRACKING			PI078PB-09				306
SEIFF	ATMOSPHERE STRUCTURE			PI078PB-01				303
SPENCER	NEUTRAL PARTICLE MASS SPECTROMETER			PI078PB-06				305
SUOMI	INFRARED RADIOMETER			PI078PB-05				305
TOMASKO	SOLAR ENERGY PENETRATION INTO THE ATMOSPHERE			PI078PB-07				305
WEINMAN	SPIN-SCAN PHOTOMETER			PI078PB-08				306
PIONEER VENUS PROBE EUS	SEE PIONEER VENUS PROBE A							
PIONEER VENUS PROBE C	UNITED STATES NASA-OSS	05/00/78	VENUS LANDER	PI078PC		PROPOSED		307
BLAMONT	CLOUD EXTENT, STRUCTURE, AND DISTRIBUTION			PI078PC-02				308
PETTENGILL	DIFFERENTIAL VERY-LONG-BASELINE INTERFEROMETRIC TRACKING			PI078PC-03				308
SEIFF	ATMOSPHERE STRUCTURE			PI078PC-01				307
PIONEER VENUS PROBE D	UNITED STATES NASA-OSS	05/00/78	VENUS LANDER	PI078PD		PROPOSED		308
BLAMONT	CLOUD EXTENT, STRUCTURE, AND DISTRIBUTION			PI078PD-02				310
PETTENGILL	DIFFERENTIAL VERY-LONG-BASELINE INTERFEROMETRIC TRACKING			PI078PD-03				310
SEIFF	ATMOSPHERE STRUCTURE			PI078PD-01				309
PIONEER VENUS PROBE E	UNITED STATES NASA-OSS	05/00/78	VENUS LANDER	PI078PE		PROPOSED		310
BLAMONT	CLOUD EXTENT, STRUCTURE, AND DISTRIBUTION			PI078PE-02				311
PETTENGILL	DIFFERENTIAL VERY-LONG-BASELINE INTERFEROMETRIC TRACKING			PI078PE-03				312
SEIFF	ATMOSPHERE STRUCTURE			PI078PE-01				311
PIONEER VENUS SMAL PROBE	SEE PIONEER VENUS PROBE C							
PIONEER VENUS SMAL PROBE	SEE PIONEER VENUS PROBE D							
PIONEER VENUS SMAL PROBE	SEE PIONEER VENUS PROBE E							
PIONEER-A	SEE PIONEER 6							

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PIONEER-B	SEE PIONEER 7							
PIONEER-C	SEE PIONEER 8							
PIONEER-D	SEE PIONEER 9							
PIONEER-F	SEE PIONEER 10							
PIONEER-G	SEE PIONEER 11							
RADIO ASTRONOMY EXPLORER	SEE RAE-B							
RAE-B	UNITED STATES / NASA-OSS	06/10/73	GEOCENTRIC	73-039A	06/10/73	NORMAL	STD	140
STONE	STEP FREQUENCY RADIOMETERS			73-039A-01	06/10/73	NORMAL	STD	140
STONE	RAPID-BURST RECEIVERS			73-039A-02	06/10/73	NORMAL	STD	141
STONE	CAPACITANCE PROBE			73-039A-03	06/10/73	NORMAL	STD	141
RELATIVITY	SEE GP-A							
RM 20	UNITED STATES / DOD-USAF	11/01/74	GEOCENTRIC	RM20		APPROVED		1041
ROVER 15	SEE APOLLO 15 LM/ALSEP							
ROVER 16	SEE APOLLO 16 LM/ALSEP							
ROVER 17	SEE APOLLO 17 LM/ALSEP							
S 6C	SEE AE-C							
S 6D	SEE AE-D							
S 6E	SEE AE-E							
S-CUBED A	UNITED STATES / NASA-OSS	11/15/71	GEOCENTRIC	71-096A	11/15/71	NORMAL	STD	83
CAHILL, JR.	SEARCH COIL MAGNETOMETER			71-096A-05	04/01/73	PARTIAL	SUBS	85
FRITZ	SOLID-STATE PROTON-ALPHA PARTICLE TELESCOPE			71-096A-02	11/15/71	NORMAL	STD	85
GURNETT	AC ELECTRIC FIELD MEASUREMENT			71-096A-07	05/01/73	PARTIAL	SUBS	86
HOFFMAN	CHANNEL ELECTRON MULTIPLIERS WITH ELECTROSTATIC ANALYZERS			71-096A-01	11/15/71	NORMAL	STD	84
WILLIAMS	SOLID-STATE DETECTORS			71-096A-03	11/15/71	NORMAL	STD	85
S3-1	SEE SESP F73-5							
S3-3	SEE SESP 74-2							
SAN MARCO 4	UNITED STATES / ITALY / NASA-OSS / CRA	02/18/74	GEOCENTRIC	74-009A	02/18/74	NORMAL	STD	319

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BROGLIO	ATMOSPHERIC DRAG DENSITY ACCELERCMETER				74-009A-01	03/12/74	PARTIAL	UNKN	319
NEWTON	NEUTRAL ATMOSPHERE COMPOSITION				74-009A-02	03/12/74	NORMAL	STD	320
SPENCER	NEUTRAL ATMOSPHERE TEMPERATURE				74-009A-03	03/12/74	NORMAL	STD	320
SAN MARCO C-2	SEE SAN MARCC 4								
SARI		FRANCE	00/00/76	GEOCENTRIC	SARI		PROPOSED		312
SAS 1	SEE SAS-A								
SAS-A		UNITED STATES NASA-GSS	12/12/70	GEOCENTRIC	70-107A	01/23/71	PARTIAL	SUBS	54
GIACCONI	ALL-SKY X-RAY SURVEY				70-107A-01	04/00/73	PARTIAL	SUBS	55
SAS-C		UNITED STATES NASA-GSS	2 QTR 75	GEOCENTRIC	SAS-C		APPROVED		313
CLARK	ANALYSIS OF EXTRAGALACTIC X-RAY SOURCES				SAS-C -01				313
CLARK	ANALYSIS OF GALACTIC X-RAY SOURCES				SAS-C -02				314
CLARK	CONTINUOUS X-RAY FLUCTUATION MONITOR OF SCO X-1				SAS-C -03				314
CLARK	X-RAY ABSORPTION CONTOURS OF THE GALAXY				SAS-C -04				315
SAS-D	SEE IUE								
SATS	SEE HCMM								
SE-C	SEE SOLRAD 10								
SESP 74-2		UNITED STATES DOD-USAF	08/00/75	GEOCENTRIC	ST74-2A		APPROVED		1041
SESP NO.NRL-111-0264	SEE SOLRAD 11A								
SESP NO.NRL-111-0264	SEE SOLRAD 11B								
SESP P72-2A	SEE RM 20								
SESP P73-4	SEE ELMS 1								
SESP P73-5		UNITED STATES DOD-USAF	08/00/74	GEOCENTRIC	ST73-5A		APPROVED		1042
SESP P74-3	SEE ELMS 2								
SIRIO-A		ITALY	2 QTR 75	GEOCENTRIC	SIRIO-A		APPROVED		317
SMALL APPLICATIONS TECH	SEE HCMM								
SMM	SEE SOLAR MAXIMUM MISSION								
SMS-A		UNITED STATES NOAA-NESS UNITED STATES NASA-OA	05/30/74	GEOCENTRIC	SMS-A		APPROVED		320

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NESS STAFF	VISIBLE-INFRARED SPIN-SCAN RADIOMETER (VISSR)			SMS-A -01				321
UNKNOWN	METEOROLOGICAL DATA COLLECTION AND TRANSMISSION SYSTEM			SMS-A -05				323
WILLIAMS	ENERGETIC PARTICLE MONITOR			SMS-A -02				322
WILLIAMS	SOLAR X-RAY MONITOR			SMS-A -03				322
WILLIAMS	MAGNETIC FIELD MONITOR			SMS-A -04				323
SMS-B	UNITED STATES / UNITED STATES	NOAA-NESS / NASA-GA	07/00/74 GEOCENTRIC	SMS-B		APPROVED		323
NESS STAFF	VISIBLE-INFRARED SPIN-SCAN RADIOMETER (VISSR)			SMS-B -04				325
UNKNOWN	METEOROLOGICAL DATA COLLECTION AND TRANSMISSION SYSTEM			SMS-B -05				326
WILLIAMS	ENERGETIC PARTICLE MONITOR			SMS-B -01				324
WILLIAMS	SOLAR X-RAY MONITOR			SMS-B -02				325
WILLIAMS	MAGNETIC FIELD MONITOR			SMS-B -03				325
SMS-C	UNITED STATES / UNITED STATES	NOAA-NESS / NASA-GA	AUG. 74 GEOCENTRIC	SMS-C		APPROVED		327
NESS STAFF	VISIBLE-INFRARED SPIN-SCAN RADIOMETER (VISSR)			SMS-C -01				327
WILLIAMS	ENERGETIC PARTICLE MONITOR			SMS-C -02				328
WILLIAMS	SOLAR X-RAY MONITOR			SMS-C -03				328
WILLIAMS	MAGNETIC FIELD MONITOR			SMS-C -04				329
SOLAR EXPLORER-C	SEE SOLRAD 1C							
SOLAR MAXIMUM MISSION	UNITED STATES	NASA-OSS	MID 1978 GEOCENTRIC	SMM		PROPOSED		1042
SOLRAD 9	UNITED STATES / UNITED STATES	NASA-OSS / DOD-NAVY	03/05/68 GEOCENTRIC	68-017A	02/25/74	PARTIAL	SUBS	16
KREPLIN	SOLAR RADIATION DETECTORS			68-017A-01	02/25/74	PARTIAL	SUBS	16
SOLRAD 10	UNITED STATES / UNITED STATES	NASA-OSS / DOD-NAVY	07/08/71 GEOCENTRIC	71-058A	07/00/73	NORMAL	SUBS	74
KREPLIN	SOLAR RADIATION DETECTORS			71-058A-01	12/11/73	NORMAL	SUBS	75
KREPLIN	ALL-SKY X-RAY SURVEY			71-058A-02	07/00/73	NORMAL	SUBS	76
SOLRAD 11A	UNITED STATES	DOD-NAVY	03/00/75 GEOCENTRIC	SRD-11A		APPROVED		1043
BLAKE	SOLAR PROTONS			SRD-11A-14				1043
BLAKE	OMNIDIRECTIONAL PROTONS			SRD-11A-17				1044
BLAKE	ANTISOLAR PROTONS			SRD-11A-23				1044
HYRAM	STELLAR/AURORAL X RAYS			SRD-11A-16				1045
JOSCHEK	THOMSON X-RAY POLARIMETER			SRD-11A-10				1045
FELDMAN	1175- TO 1800-A SOLAR UV SPECTROMETER			SRD-11A-09				1046
FRITZ	15- TO 150-KEV SOLAR X-RAY MONITOR			SRD-11A-01				1046
FRITZ	X-RAY BACKGROUND			SRD-11A-24				1046

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KELLEY	PROTON-ALPHA TELESCOPE			SRD-11A-20				1047
KELLEY	LOW-ENERGY PROTON SPECTROMETER			SRD-11A-21				1047
KREPLIN	1- TO 8-A SOLAR X-RAY MONITOR			SRD-11A-04				1047
KREPLIN	8- TO 16-A SOLAR X-RAY MONITOR			SRD-11A-05				1048
KREPLIN	44- TO 60-A SOLAR X-RAY MONITOR			SRD-11A-06				1048
KREPLIN	170- TO 1050-A SOLAR EUV MONITOR			SRD-11A-07				1049
KREPLIN	1080- TO 1350-A SOLAR UV MONITOR			SRD-11A-08				1049
KREPLIN	0.5- TO 3-A SOLAR X-RAY MONITOR			SRD-11A-12				1049
KREPLIN	1- TO 20-A SOLAR X-RAY MONITOR			SRD-11A-13				1050
MEEKINS	CONTINUUM (8.6 A) AND MAGNESIUM LINE (9.17 A AND 8.42 A) MONITOR			SRD-11A-03				1050
MEEKINS	BRAGG X-RAY POLARIMETER			SRD-11A-11				1051
SMATHERS	X-RAY MONITOR (0.1-1.6 A, 0.5-3 A, 1-4 A)			SRD-11A-02				1051
VAMPOLA	SOLAR FLARE ELECTRONS			SRD-11A-22				1051
WELLER, JR.	GEOCORONAL-EXTRATERRESTRIAL EUV - DETECTOR 1			SRD-11A-18				1052
WELLER, JR.	GEOCORONAL-EXTRATERRESTRIAL EUV - DETECTOR 2			SRD-11A-19				1052
SOLRAD 11B	UNITED STATES / DOD-NAVY	03/00/75	GEOCENTRIC	SRD-11B		APPROVED		1052
BLAKE	SOLAR PROTONS			SRD-11B-14				1053
BLAKE	OMNIDIRECTIONAL PROTONS			SRD-11B-17				1054
BLAKE	ANTISOLAR PROTONS			SRD-11B-23				1054
BYRAM	STELLAR/AURORAL X-RAYS			SRD-11B-16				1054
DOSCHEK	THOMSON X-RAY POLARIMETER			SRD-11B-10				1055
FELDMAN	1175- TO 1800-A SOLAR UV SPECTROMETER			SRD-11B-09				1055
FRITZ	15- TO 150-KEV SOLAR X-RAY MONITOR			SRD-11B-01				1056
FRITZ	X-RAY BACKGROUND			SRD-11B-24				1056
KELLEY	PROTON-ALPHA TELESCOPE			SRD-11B-20				1057
KELLEY	LOW-ENERGY PROTON SPECTROMETER			SRD-11B-21				1057
KREPLIN	1- TO 8-A SOLAR X-RAY MONITOR			SRD-11B-04				1057
KREPLIN	8- TO 16-A SOLAR X-RAY MONITOR			SRD-11B-05				1058
KREPLIN	44- TO 60-A SOLAR X-RAY MONITOR			SRD-11B-06				1058
KREPLIN	170- TO 1050-A SOLAR EUV MONITOR			SRD-11B-07				1058
KREPLIN	1080- TO 1350-A SOLAR UV MONITOR			SRD-11B-08				1059
KREPLIN	0.5- TO 3- A SOLAR X-RAY MONITOR			SRD-11B-12				1059
KREPLIN	1- TO 20-A SOLAR X-RAY MONITOR			SRD-11B-13				1060
MEEKINS	CONTINUUM (8.6 A) AND MAGNESIUM LINE (9.17 A AND 8.42 A) MONITOR			SRD-11B-03				1060
MEEKINS	BRAGG X-RAY POLARIMETER			SRD-11B-11				1060
SMATHERS	X-RAY MONITOR (0.1-1.6 A, 0.5-3 A, 1-4 A)			SRD-11B-02				1061
VAMPOLA	SOLAR FLARE ELECTRONS			SRD-11B-22				1061
WELLER, JR.	GEOCORONAL-EXTRATERRESTRIAL EUV - DETECTOR 1			SRD-11B-18				1062
WELLER, JR.	GEOCORONAL-EXTRATERRESTRIAL EUV - DETECTOR 2			SRD-11B-19				1062

SPACECRAFT NAME / PRINC.INVEST.NAME	EXPERIMENT NAME	COUNTRY AND AGENCY	LAUNCH DATE	ORBIT TYPE	NSSDC ID	CURRENT STATE EPOCH MMDDYY	CURRENT STATE STATUS	CURRENT STATE DATA RATE	PAGE NO.
SOLRAD HI	SEE SOLRAD 11B								
SOLRAD HI-TRIP	SEE SOLRAD 11A								
SOLRAD HI-TRIP	SEE SOLRAD 11B								
SOLRAD-C	SEE SOLRAD 10								
SPACE SHUTTLE		UNITED STATES	NASA-OMSF 12/00/78	GEOCENTRIC	SHUTTLE		APPROVED		316
SPACELAB		INTERNATIONAL	ESRO 00/00/79	GEOCENTRIC	SPACLAB		APPROVED		1062
SRATS		JAPAN	TOKYO U 1975	GEOCENTRIC	SRATS		APPROVED		330
FUGONO	IONIC COMPOSITION				SRATS -07				332
HIRAO	ELECTRON TEMPERATURE				SRATS -05				331
MATSUOKA	SOLAR X-RAY MONITOR				SRATS -01				330
MIYAZAKI	PLASMA DIAGNOSIS				SRATS -06				331
OHYA	ELECTRON DENSITY MEASUREMENT				SRATS -04				331
OSHIO	HYDROGEN LYMAN-ALPHA				SRATS -02				330
TOHMATSU	GEOCORONAL UV GLOW AND EARTH UV ALBEDO				SRATS -03				331
TOHMATSU	EARTH ULTRAVIOLET ALBEDO				SRATS -08				332
SRD-11A	SEE SOLRAD 11A								
SSS-A	SEE S-CUBED A								
ST 72-2A	SEE RM 2C								
ST 73-4A	SEE ELMS 1								
ST 74-3A	SEE ELMS 2								
STP PROBE	SEE ISEE-C								
SYNC MET. SAT. A	SEE SMS-A								
SYNC MET. SAT. B	SEE SMS-B								
SYNCH METEOROLOGCL SAT. A	SEE SMS-A								
SYNCH METEOROLOGCL SAT. B	SEE SMS-B								
TD 1	SEE TD 1A								
TD 1A		INTERNATIONAL	ESRO 03/12/72	GEOCENTRIC	72-014A	02/14/73	NORMAL	SUBS	1063
DE JAGER	SOLAR X-RAY MONITOR				72-014A-06	02/14/73	NORMAL	SUBS	100
LABEYRIE	SPECTROMETRY OF PRIMARY CHARGED PARTICLES				72-014A-03	02/14/73	NORMAL	SUBS	99

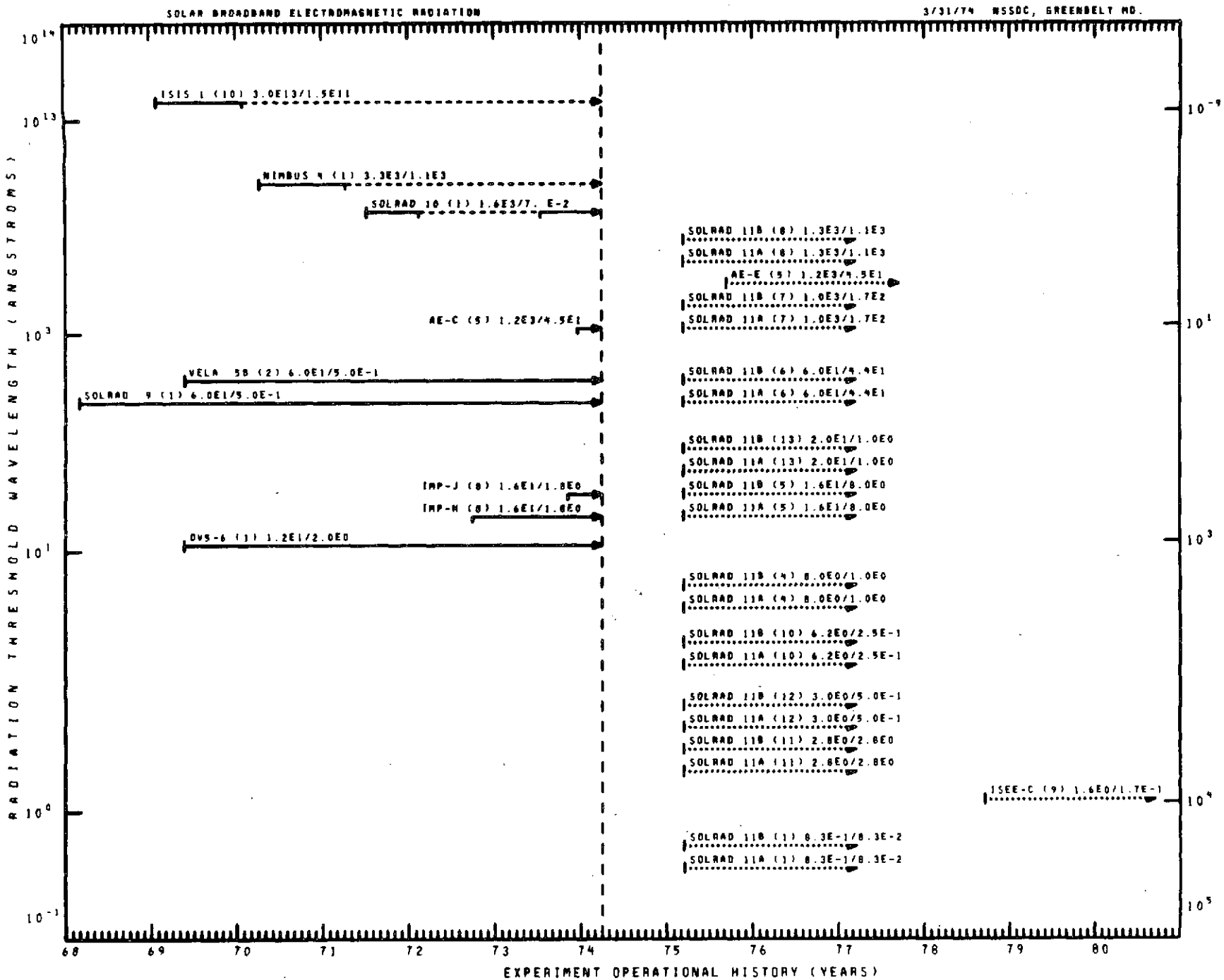
SPACECRAFT NAME / *PRINC.INVEST.NAME	EXPERIMENT NAME	COUNTRY AND AGENCY	LAUNCH DATE	ORBIT TYPE	NSSDC ID	CURRENT STATE EPOCH MMDDYY	CURRENT STATE STATUS	DATA RATE	PAGE NO.
LABEYRIE	SPECTROMETRY OF EXTRATERRESTRIAL X RAYS				72-014A-04	07/02/73	NORMAL	SUBS	99
LABEYRIE	GAMMA-RAY MEASUREMENT				72-014A-07	02/14/73	NORMAL	SUBS	100
MONFILS	STELLAR UV RADIATION EXPERIMENT				72-014A-01	02/14/73	NORMAL	SUBS	1064
OCCHIALINI	SOLAR GAMMA RAYS IN THE 50- TO 500-MEV ENERGY RANGE				72-014A-05	02/14/73	NORMAL	SUBS	99
TIROS-N		UNITED STATES	NOAA-NESS UNDERSTY	GEOCENTRIC	TIROS-N		APPROVED		334
NESS STAFF	ADVANCED VERY HIGH RESOLUTION RADIOMETER (AVHRR)				TIROS-N-01				334
NESS STAFF	TIROS OPERATIONAL VERTICAL SOUNDER (TOVS)				TIROS-N-02				335
UNKNOWN	DATA COLLECTION AND PLATFORM LOCATION SYSTEM (DCS)				TIROS-N-03				335
TOS-F	SEE ESSA 8								
UHURU 1	SEE SAS-A								
UK 5		UNITED KINGDOM	SRC 08/00/74	GEOCENTRIC	UK-5		APPROVED		336
		UNITED STATES	NASA-GSS						
BOYD	0.3- TO 30-KEV COSMIC X RAY WITH A ROTATION COLLIMATOR				UK-5 -01				336
BOYD	HIGH RESOLUTION SOURCE SPECTRA				UK-5 -03				337
ELLIOTT	HIGH-ENERGY COSMIC X-RAY SPECTRA				UK-5 -05				338
HOLT	ALL-SKY MONITOR				UK-5 -06				339
POUNDS	2- TO 10-KEV SKY SURVEY				UK-5 -02				337
POUNDS	POLARIMETER/SPECTROMETER				UK-5 -04				338
UNITED KINGDOM 5	SEE UK 5								
VELA 5A		UNITED STATES	DOD-USAF 05/23/69	GEOCENTRIC	69-046D	05/23/69	NORMAL	STD	32
BAME	NEUTRON DETECTOR				69-046D-07	05/23/69	NORMAL	STD	33
KLEBESADEL	GAMMA-RAY ASTRONOMY				69-046D-08	05/23/69	NORMAL	STD	33
VELA 5A (USAF)	SEE VELA 5A								
VELA 5B		UNITED STATES	DOD-USAF 05/23/69	GEOCENTRIC	69-046E	05/23/69	NORMAL	STD	33
BAME	SOLAR WIND EXPERIMENT				69-046E-05	01/00/74	PARTIAL	SUBS	36
BAME	NEUTRON DETECTOR				69-046E-07	05/23/69	NORMAL	STD	37
CHAMBERS	SOLAR X-RAY DETECTORS, 0.5 TO 3.0 A, 1 TO 8 A, 1 TO 16 A, 44 TO 60 A				69-046E-02	01/00/74	INOPERABLE	ZERO	34
CONNER	COSMIC RAYS				69-046E-06	01/00/74	NORMAL	SUBS	36
SINGER	SOLAR PARTICLE TELESCOPES				69-046E-03	05/23/69	NORMAL	STD	35
SINGER	ELECTRON DETECTORS				69-046E-04	05/23/69	NORMAL	STD	35
VELA 5B (USAF)	SEE VELA 5B								

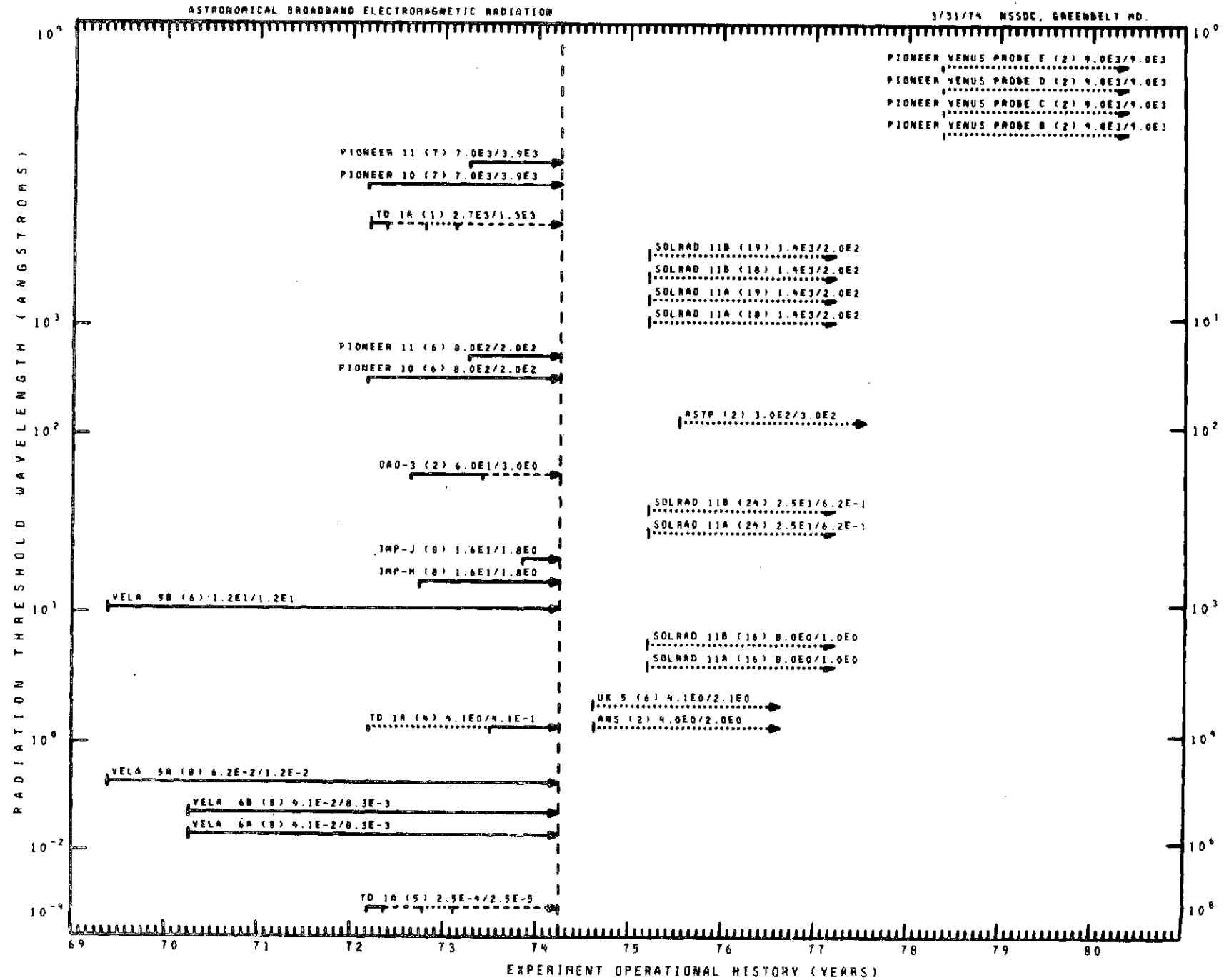
SPACECRAFT NAME / #PRINC.INVEST.NAME	EXPERIMENT NAME	COUNTRY AND AGENCY	LAUNCH DATE	ORBIT TYPE	NSSDC ID	CURRENT STATE EPOCH MMDDYY	CURRENT STATE STATUS	CURRENT STATE DATA RATE	PAGE NO.
VELA 6A		UNITED STATES	DOD-USAF 04/08/70	GEOCENTRIC	70-027A	04/08/70	NORMAL	STD	47
BAME	SOLAR WIND EXPERIMENT				70-027A-05	04/12/72	PARTIAL	SUBS	49
BAME	NEUTRON DETECTOR				70-027A-07	04/08/70	NORMAL	STD	50
CHAMBERS	SOLAR X-RAY DETECTORS, 0.5 TO 3.0 A, 1 TO 8 A, 1 TO 16 A, 44 TO 60 A				70-027A-02	04/08/70	NORMAL	STD	48
KLEBESADEL	GAMMA-RAY ASTRONOMY				70-027A-08	04/08/70	NORMAL	STD	50
SINGER	SOLAR PARTICLE TELESCOPES				70-027A-03	04/08/70	NORMAL	STD	48
SINGER	ELECTRON DETECTORS				70-027A-04	04/08/70	NORMAL	STD	49
VELA 6A (USAF)	SEE VELA 6A								
VELA 6B		UNITED STATES	DOD-USAF 04/08/70	GEOCENTRIC	70-027B	04/08/70	NORMAL	STD	51
BAME	NEUTRON DETECTOR				70-027B-07	04/08/70	NORMAL	STD	53
CHAMBERS	SOLAR X-RAY DETECTORS, 0.5 TO 3.0 A, 1 TO 8 A, 1 TO 16 A, 44 TO 60 A				70-027B-02	04/08/70	NORMAL	STD	51
KLEBESADEL	GAMMA-RAY ASTRONOMY				70-027B-08	04/08/70	NORMAL	STD	53
SINGER	SOLAR PARTICLE TELESCOPES				70-027B-03	04/08/70	NORMAL	STD	52
SINGER	ELECTRON DETECTORS				70-027B-04	04/08/70	NORMAL	STD	52
VELA 6B (USAF)	SEE VELA 6B								
VELA 9 (TRW)	SEE VELA 5A								
VELA 10 (TRW)	SEE VELA 5B								
VELA 11 (TRW)	SEE VELA 6A								
VELA 12 (TRW)	SEE VELA 6B								
VIKING-A LANDER		UNITED STATES	NASA-OSS 3 QTR 75	MARS LANDER	VIKG-AL		APPROVED		1065
ANDERSON	SEISMOLOGY				VIKG-AL-08				1065
BIEMANN	MOLECULAR ANALYSIS				VIKG-AL-04				1066
HARGRAVES	MAGNETIC PROPERTIES				VIKG-AL-10				1066
HESS	METEOROLOGY EXPERIMENT				VIKG-AL-07				1067
KLEIN	BIOLOGY INVESTIGATION				VIKG-AL-03				1067
MICHAEL, JR.	RADIO SCIENCE				VIKG-AL-11				1067
MUTCH	FACSIMILE CAMERA				VIKG-AL-06				1068
NIER	ENTRY-ATMOSPHERIC STRUCTURE				VIKG-AL-02				1068
NIER	ENTRY-ATMOSPHERIC COMPOSITION				VIKG-AL-12				1069
SHORTHILL	PHYSICAL PROPERTIES INVESTIGATION				VIKG-AL-01				1070
TOULMIN, III	X-RAY FLOURESCENCE SPECTROMETER				VIKG-AL-13				1070
VIKING-A ORBITER		UNITED STATES	NASA-OSS 3 QTR 75	MARSCENTRIC	VIKG-A		APPROVED		1071
CARR	ORBITER IMAGING				VIKG-A -01				1071
FARMER	IR SPECTROMETER -- WATER VAPOR MAPPING				VIKG-A -03				1072
KIEFFER	IR RADIOMETRY -- THERMAL MAPPING				VIKG-A -02				1072
VIKING-B LANDER		UNITED STATES	NASA-OSS 3 QTR 75	MARS LANDER	VIKG-BL		APPROVED		1073

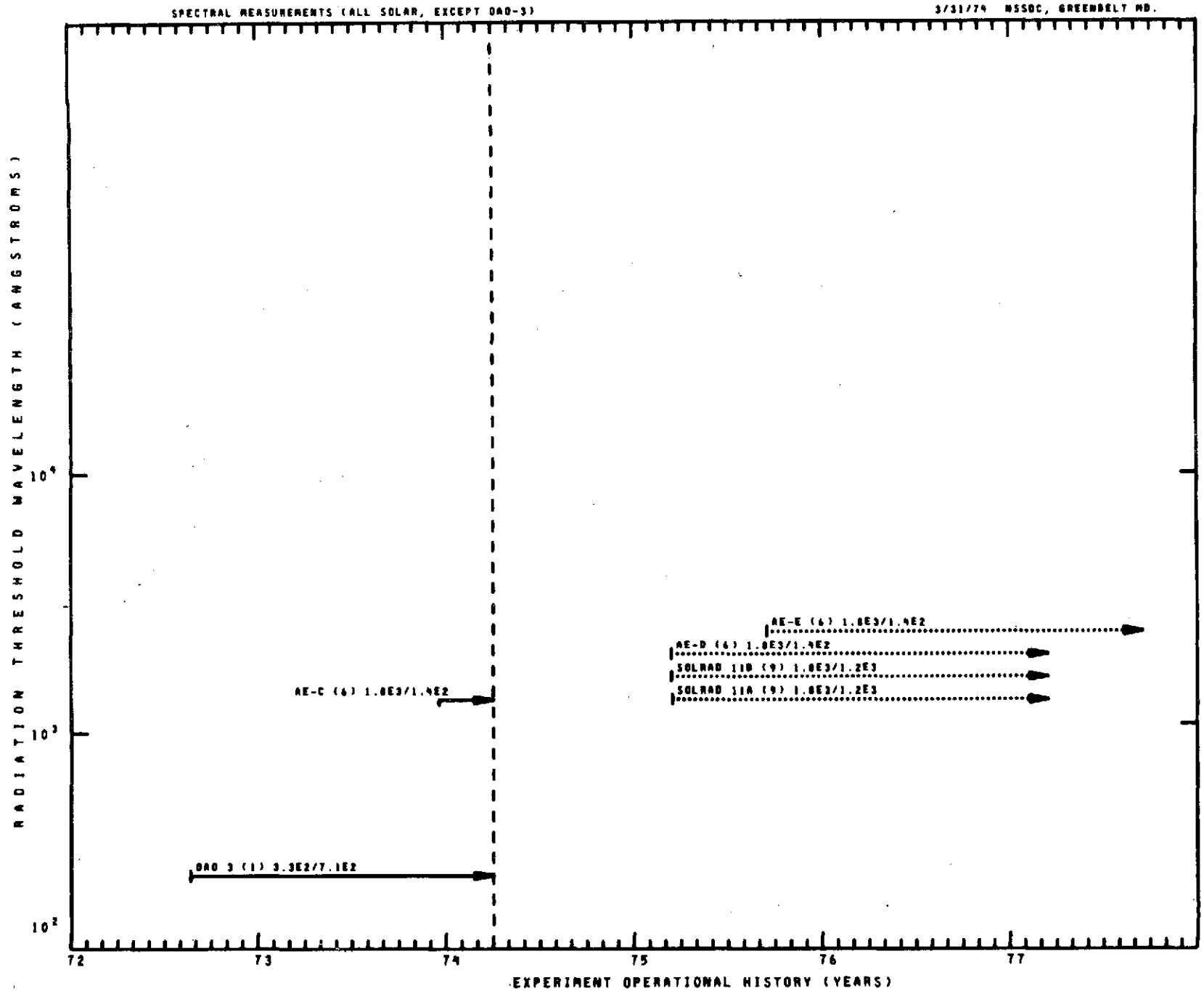
SPACECRAFT NAME / PRINC.INVEST.NAME	COUNTRY AND AGENCY / EXPERIMENT NAME	LAUNCH DATE	ORBIT TYPE	NSSDC ID	CURRENT STATE: EPOCH MMDDYY	CURRENT STATE: STATUS	CURRENT STATE: DATA RATE	PAGE NO.
ANDERSON	SEISMOLOGY			VIKG-BL-08				1073
BIEMANN	MOLECULAR ANALYSIS			VIKG-BL-04				1074
HARGRAVES	MAGNETIC PROPERTIES			VIKG-BL-10				1075
HESS	METEOROLOGY EXPERIMENT			VIKG-BL-07				1075
KLEIN	BIOLOGY INVESTIGATION			VIKG-BL-03				1075
MICHAEL, JR.	RADIO SCIENCE			VIKG-BL-11				1076
MUTCH	FACSIMILE CAMERA			VIKG-BL-06				1076
NIER	ENTRY-ATMOSPHERIC STRUCTURE			VIKG-BL-02				1077
NIER	ENTRY-ATMOSPHERIC COMPOSITION			VIKG-BL-12				1077
SHURTHILL	PHYSICAL PROPERTIES INVESTIGATION			VIKG-BL-01				1078
TOULMIN, III	X-RAY FLOURESCENCE SPECTROMETER			VIKG-BL-13				1078
VIKING-B ORBITER	UNITED STATES / NASA-OSS	3 QTR 75	MARSCENTRIC	VIKG-B		APPROVED		1079
CARR	ORBITER IMAGING			VIKG-B -01				1080
FARMER	IR SPECTROMETER -- WATER VAPOR MAPPING			VIKG-B -03				1080
KIEFFER	IR RADIOMETRY -- THERMAL MAPPING			VIKG-B -02				1081

SECTION 2.2 - CUMULATIVE BAR GRAPH INDEXES FOR ELECTROMAGNETIC RADIATION EXPERIMENTS

As discussed in some detail in the original report, the NSSDC information system permits the generation of bar graphs illustrating when instruments sensing various phenomena were operational. Several such graphs illustrating not only magnetic and electric field coverage but also charged particle coverage, grouped by energy and region of measurement, were printed in the original report. A new set of bar graphs has recently been generated covering electromagnetic radiation from solar and non-solar sources separately for experiments with limited spectral resolution ($\lambda/\Delta\lambda < 10$) and jointly for experiments with greater spectral resolution ($\lambda/\Delta\lambda > 10$). These bar graphs are included in the following pages. In the future it is planned to include a full set of bar graphs in the annual report only.


SOLAR BROADBAND ELECTROMAGNETIC RADIATION
3/31/74 NSSDC, GREENBELT MD.
RADIATION THRESHOLD WAVELENGTH (ANGSTROMS)
RADIATION THRESHOLD ENERGY (EV)
EXPERIMENT OPERATIONAL HISTORY (YEARS)
68
69
70
71
72
73
74
75
76
77
78
79
80
ISIS I (10) 3.0E13/1.5E11
NIMBUS 4 (1) 3.3E3/1.1E3
SOLRAD 10 (1) 1.6E3/7. E-2
AE-C (5) 1.2E3/4.5E1
VELA 5B (2) 6.0E1/5.0E-1
SOLRAD 9 (1) 6.0E1/5.0E-1
IMP-J (8) 1.6E1/1.8E0
IMP-H (8) 1.6E1/1.8E0
OVS-6 (1) 1.2E1/2.0E0
SOLRAD 11B (8) 1.3E3/1.1E3
SOLRAD 11A (8) 1.3E3/1.1E3
AE-E (5) 1.2E3/4.5E1
SOLRAD 11B (7) 1.0E3/1.7E2
SOLRAD 11A (7) 1.0E3/1.7E2
SOLRAD 11B (6) 6.0E1/4.4E1
SOLRAD 11A (6) 6.0E1/4.4E1
SOLRAD 11B (13) 2.0E1/1.0E0
SOLRAD 11A (13) 2.0E1/1.0E0
SOLRAD 11B (5) 1.6E1/8.0E0
SOLRAD 11A (5) 1.6E1/8.0E0
SOLRAD 11B (4) 8.0E0/1.0E0
SOLRAD 11A (4) 8.0E0/1.0E0
SOLRAD 11B (10) 6.2E0/2.5E-1
SOLRAD 11A (10) 6.2E0/2.5E-1
SOLRAD 11B (12) 3.0E0/5.0E-1
SOLRAD 11A (12) 3.0E0/5.0E-1
SOLRAD 11B (11) 2.8E0/2.8E0
SOLRAD 11A (11) 2.8E0/2.8E0
ISEE-C (9) 1.6E0/1.7E-1
SOLRAD 11B (1) 8.3E-1/8.3E-2
SOLRAD 11A (1) 8.3E-1/8.3E-2


ASTRONOMICAL BROADBAND ELECTROMAGNETIC RADIATION
3/31/74 NSSDC, GREENBELT MD.
PIONEER VENUS PROBE E (2) 9.0E3/9.0E3
PIONEER VENUS PROBE D (2) 9.0E3/9.0E3
PIONEER VENUS PROBE C (2) 9.0E3/9.0E3
PIONEER VENUS PROBE B (2) 9.0E3/9.0E3
PIONEER 11 (7) 7.0E3/3.9E3
PIONEER 10 (7) 7.0E3/3.9E3
TD 1A (1) 2.7E3/1.3E3
SOLRAD 11B (19) 1.4E3/2.0E2
SOLRAD 11B (18) 1.4E3/2.0E2
SOLRAD 11A (19) 1.4E3/2.0E2
SOLRAD 11A (18) 1.4E3/2.0E2
PIONEER 11 (6) 8.0E2/2.0E2
PIONEER 10 (6) 8.0E2/2.0E2
ASTP (2) 3.0E2/3.0E2
OAO-3 (2) 6.0E1/3.0E0
SOLRAD 11B (24) 2.5E1/6.2E-1
SOLRAD 11A (24) 2.5E1/6.2E-1
IMP-J (8) 1.6E1/1.8E0
IMP-H (8) 1.6E1/1.8E0
VELA 5B (6) 1.2E1/1.2E1
SOLRAD 11B (16) 8.0E0/1.0E0
SOLRAD 11A (16) 8.0E0/1.0E0
UK 5 (6) 4.1E0/2.1E0
ANS (2) 9.0E0/2.0E0
TD 1A (4) 4.1E0/4.1E-1
VELA 5A (8) 6.2E-2/1.2E-2
VELA 6B (8) 9.1E-2/8.3E-3
VELA 6A (8) 4.1E-2/8.3E-3
TD 1A (5) 2.5E-4/2.5E-5
RADIATION THRESHOLD WAVELENGTH (ANGSTROMS)
RADIATION THRESHOLD ENERGY (EV)
EXPERIMENT OPERATIONAL HISTORY (YEARS)
69
70
71
72
73
74
75
76
77
78
79
80


SPECTRAL MEASUREMENTS (ALL SOLAR, EXCEPT OAO-3)
3/31/74 NSSDC, GREENBELT MD.
RADIATION THRESHOLD WAVELENGTH (ANGSTROMS)
RADIATION THRESHOLD ENERGY (EV)
10^4
10^3
10^2
10^0
10^1
10^2
AE-E (6) 1.8E3/1.4E2
AE-D (6) 1.8E3/1.4E2
SOLRAD 11B (9) 1.8E3/1.2E3
SOLRAD 11A (9) 1.8E3/1.2E3
AE-C (6) 1.8E3/1.4E2
OAO 3 (1) 3.3E2/7.1E2
72
73
74
75
76
77
EXPERIMENT OPERATIONAL HISTORY (YEARS)

SECTION 3 - SPACECRAFT AND EXPERIMENTS LAUNCHED OR INACTIVATED BETWEEN APRIL 1, 1973, AND MARCH 31, 1974

	Title	Page
3.1	Spacecraft Launched	1125
3.2	Spacecraft and Experiments Which Became Operational Off	1133
3.3	Spacecraft and Experiments Which Became Inoperable	1137

Spacecraft Launched

SECTION 3.1 - SPACECRAFT LAUNCHED

The following table of spacecraft successfully launched between April 1, 1973, and March 31, 1974, consists of both active spacecraft and other spacecraft for which little is known beyond the fact that they have been launched and have the initial orbit parameters indicated. This second group is included to inform the scientific community of the spacecraft launching; it is anticipated that such information may be relevant to studies performed by the users of this document. Some information concerning these lesser known spacecraft is available through the SPACEWARN Bulletin (described in the Introduction to the annual report).

This table is ordered chronologically by the spacecraft launch date. The spacecraft common name, NSSDC ID code, spacecraft funding country/countries, orbit type, and spacecraft orbit parameters (epoch date, apoapsis, periapsis, inclination, and period) are also included for each spacecraft entry listed in the table. The distance and time parameters are shown in km altitude and minutes except for heliocentric-type orbits, where they are shown in AU radial and days.

SPACECRAFT LAUNCHED

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	EPOCH DATE	ORBIT TYPE	APOAPSIS	PERIAPSIS	INCLINATION	PERIOD
SALUTE 2	73-017A	U.S.S.R.	04/04/73	04/04/73	GEOCENTRIC	260.0	215.0	51.6	89.0
MOLNIYA 2E	73-018A	U.S.S.R.	04/05/73	04/06/73	GEOCENTRIC	39100.0	500.0	65.0	11.4
PIONEER 11	73-019A	UNITED STATES	04/06/73		JUPITER FLYBY				
COSMOS 553	73-020A	U.S.S.R.	04/12/73	04/13/73	GEOCENTRIC	519.0	282.0	71.0	92.2
COSMOS 554	73-021A	U.S.S.R.	04/19/73	04/20/73	GEOCENTRIC	308.0	212.0	72.9	89.5
INTERCOSMOS 9	73-022A	U.S.S.R.	04/19/73	04/20/73	GEOCENTRIC	1552.0	202.0	48.5	102.2
ANIK 2	73-023A	CANADA	04/19/73	05/01/73	GEOCENTRIC	35788.0	35781.0	0.1	1436.0
COSMOS 555	73-024A	U.S.S.R.	04/25/73	04/26/73	GEOCENTRIC	253.0	216.0	81.3	89.0
COSMOS 556	73-025A	U.S.S.R.	05/05/73	05/06/73	GEOCENTRIC	252.0	209.0	81.3	89.0
COSMOS 557	73-026A	U.S.S.R.	05/11/73	05/12/73	GEOCENTRIC	266.0	218.0	51.6	89.1
SKYLAB	73-027A	UNITED STATES	05/14/73	05/14/73	GEOCENTRIC	442.0	434.0	50.0	93.4
1973-028A	73-028A	UNITED STATES	05/16/73	05/17/73	GEOCENTRIC	399.0	139.0	110.5	89.9
COSMOS 558	73-029A	U.S.S.R.	05/17/73	05/17/73	GEOCENTRIC	501.0	269.0	71.0	92.3
COSMOS 559	73-030A	U.S.S.R.	05/18/73	05/19/73	GEOCENTRIC	345.0	217.0	65.4	89.8
COSMOS 560	73-031A	U.S.S.R.	05/23/73	05/24/73	GEOCENTRIC	336.0	211.0	72.9	89.7
SKYLAB CSM 1	73-032A	UNITED STATES	05/25/73	05/25/73	GEOCENTRIC	438.0	428.0	50.0	93.2
COSMOS 561	73-033A	U.S.S.R.	05/25/73	05/26/73	GEOCENTRIC	317.0	215.0	65.4	89.5
METEOR 1S	73-034A	U.S.S.R.	05/29/73	05/30/73	GEOCENTRIC	909.0	867.0	81.2	102.5
COSMOS 562	73-035A	U.S.S.R.	06/05/73	06/06/73	GEOCENTRIC	510.0	282.0	71.0	92.1
COSMOS 563	73-036A	U.S.S.R.	06/06/73	06/07/73	GEOCENTRIC	320.0	312.0	65.4	89.5
COSMOS 564	73-037A	U.S.S.R.	06/08/73	06/09/73	GEOCENTRIC	1507.0	1392.0	74.0	114.5
COSMOS 565	73-037B	U.S.S.R.	06/08/73	06/09/73	GEOCENTRIC	1507.0	1392.0	74.0	114.5
COSMOS 566	73-037C	U.S.S.R.	06/08/73	06/09/73	GEOCENTRIC	1507.0	1392.0	74.0	114.5
COSMOS 567	73-037D	U.S.S.R.	06/08/73	06/09/73	GEOCENTRIC	1507.0	1392.0	74.0	114.5
COSMOS 568	73-037E	U.S.S.R.	06/08/73	06/09/73	GEOCENTRIC	1507.0	1392.0	74.0	114.5
COSMOS 569	73-037F	U.S.S.R.	06/08/73	06/09/73	GEOCENTRIC	1507.0	1392.0	74.0	114.5
COSMOS 570	73-037G	U.S.S.R.	06/08/73	06/09/73	GEOCENTRIC	1507.0	1392.0	74.0	114.5
COSMOS 571	73-037H	U.S.S.R.	06/08/73	06/09/73	GEOCENTRIC	1507.0	1392.0	74.0	114.5

SPACECRAFT LAUNCHED

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	EPOCH DATE	ORBIT TYPE	APOAPSIS	PERIAPSIS	INCLINATION	PERIOD
COSMOS 572	73-038A	U.S.S.R.	06/10/73	06/11/73	GEOCENTRIC	294.0	211.0	51.7	89.3
RAE-B	73-039A	UNITED STATES	06/10/73	09/07/73	GEOCENTRIC	1070.3	1059.1	38.7	221.9
1973-040A	73-040A	UNITED STATES	06/12/73	07/01/73	GEOCENTRIC	35901.0	35533.0	0.5	1431.9
COSMOS 573	73-041A	U.S.S.R.	06/15/73	06/16/73	GEOCENTRIC	329.2	196.2	51.6	89.5
COSMOS 574	73-042A	U.S.S.R.	06/20/73	06/21/73	GEOCENTRIC	1026.0	996.0	83.0	105.0
COSMOS 575	73-043A	U.S.S.R.	06/21/73	06/22/73	GEOCENTRIC	299.0	208.0	65.4	89.3
COSMOS 576	73-044A	U.S.S.R.	06/27/73	06/28/73	GEOCENTRIC	356.0	212.0	72.9	89.9
MOLNIYA 2F	73-045A	U.S.S.R.	07/11/73	07/12/73	GEOCENTRIC	39280.0	480.0	65.3	705.0
1973-046A	73-046A	UNITED STATES	07/13/73	07/15/73	GEOCENTRIC	269.0	156.0	96.2	88.8
MARS 4	73-047A	U.S.S.R.	07/21/73		MARS FLYBY				
COSMOS 577	73-048A	U.S.S.R.	07/25/73	07/26/73	GEOCENTRIC	312.0	209.0	65.4	89.5
MARS 5	73-049A	U.S.S.R.	07/25/73		MARS FLYBY				
SKYLAB CSM 2	73-050A	UNITED STATES	07/28/73	07/28/73	GEOCENTRIC	441.0	423.0	50.0	93.2
COSMOS 578	73-051A	U.S.S.R.	08/01/73	08/02/73	GEOCENTRIC	308.0	207.0	65.4	89.4
MARS 6	73-052A	U.S.S.R.	08/05/73		MARS LANDER				
MARS 7	73-053A	U.S.S.R.	08/09/73		MARS FLYBY				
1973-054A	73-054A	UNITED STATES	08/17/73	08/17/73	GEOCENTRIC	852.0	811.0	98.9	101.6
COSMOS 579	73-055A	U.S.S.R.	08/21/73	08/22/73	GEOCENTRIC	315.0	209.0	65.4	89.5
1973-056A	73-056A	UNITED STATES	08/21/73	09/01/73	GEOCENTRIC	39296.0	460.0	63.3	705.7
COSMOS 580	73-057A	U.S.S.R.	08/22/73	08/23/73	GEOCENTRIC	518.0	283.0	71.0	92.2
INTELSAT 4 F-7	73-058A	UNITED STATES	08/23/73	10/01/73	GEOCENTRIC	35794.0	35781.0	0.4	1436.1
COSMOS 581	73-059A	U.S.S.R.	08/24/73	08/25/73	GEOCENTRIC	303.0	211.0	51.6	89.4
COSMOS 582	73-060A	U.S.S.R.	08/28/73	08/29/73	GEOCENTRIC	559.0	521.0	74.0	95.3
MOLNIYA 1Z	73-061A	U.S.S.R.	08/30/73	08/31/73	GEOCENTRIC	37970.0	480.0	65.3	619.0
COSMOS 583	73-062A	U.S.S.R.	08/30/73	08/31/73	GEOCENTRIC	316.0	208.0	65.0	89.5
COSMOS 584	73-063A	U.S.S.R.	09/06/73	09/07/73	GEOCENTRIC	360.0	213.0	72.9	89.9
COSMOS 585	73-064A	U.S.S.R.	09/08/73	09/09/73	GEOCENTRIC	1416.0	1385.0	74.0	113.6

SPACECRAFT LAUNCHED

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	EPOCH DATE	ORBIT TYPE	APOAPSIS	PERIAPSIS	INCLINATION	PERIOD
COSMOS 586	73-065A	U.S.S.R.	09/14/73	09/15/73	GEOCENTRIC	1020.0	986.0	83.0	105.0
COSMOS 587	73-066A	U.S.S.R.	09/21/73	09/22/73	GEOCENTRIC	330.0	215.0	65.4	89.6
SOYUZ 12	73-067A	U.S.S.R.	09/27/73	09/28/73	GEOCENTRIC	249.0	194.0	51.6	88.6
1973-068A	73-068A	UNITED STATES	09/27/73	09/28/73	GEOCENTRIC	385.0	131.0	110.5	89.7
COSMOS 588	73-069A	U.S.S.R.	10/02/73	10/03/73	GEOCENTRIC	312.0	204.0	72.8	89.7
COSMOS 589	73-069B	U.S.S.R.	10/02/73	10/03/73	GEOCENTRIC	312.0	204.0	72.8	89.7
COSMOS 590	73-069C	U.S.S.R.	10/02/73	10/03/73	GEOCENTRIC	312.0	204.0	72.8	89.7
COSMOS 591	73-069D	U.S.S.R.	10/02/73	10/03/73	GEOCENTRIC	312.0	204.0	72.8	89.7
COSMOS 592	73-069E	U.S.S.R.	10/02/73	10/03/73	GEOCENTRIC	312.0	204.0	72.8	89.7
COSMOS 593	73-069F	U.S.S.R.	10/02/73	10/03/73	GEOCENTRIC	312.0	204.0	72.8	89.7
COSMOS 594	73-069G	U.S.S.R.	10/02/73	10/03/73	GEOCENTRIC	312.0	204.0	72.8	89.7
COSMOS 595	73-069H	U.S.S.R.	10/02/73	10/03/73	GEOCENTRIC	312.0	204.0	72.8	89.7
COSMOS 596	73-070A	U.S.S.R.	10/03/73	10/04/73	GEOCENTRIC	312.0	204.0	72.8	89.7
COSMOS 597	73-071A	U.S.S.R.	10/06/73	10/07/73	GEOCENTRIC	312.0	212.0	65.4	89.5
COSMOS 598	73-072A	U.S.S.R.	10/10/73	10/11/73	GEOCENTRIC	360.0	213.0	72.9	90.0
COSMOS 599	73-073A	U.S.S.R.	10/15/73	10/16/73	GEOCENTRIC	294.0	206.0	65.0	89.3
COSMOS 600	73-074A	U.S.S.R.	10/16/73	10/17/73	GEOCENTRIC	366.0	215.0	72.9	90.0
COSMOS 601	73-075A	U.S.S.R.	10/16/73	11/17/73	GEOCENTRIC	1561.0	210.0	82.0	102.3
MOLNIYA 2G	73-076A	U.S.S.R.	10/19/73	10/20/73	GEOCENTRIC	40600.0	509.0	62.8	736.0
COSMOS 602	73-077A	U.S.S.R.	10/20/73	10/21/73	GEOCENTRIC	365.0	213.0	72.9	90.0
IMP-J	73-078A	UNITED STATES	10/26/73	10/29/73	GEOCENTRIC	288857.0	141185.0	28.7	17279.0
COSMOS 603	73-079A	U.S.S.R.	10/27/73	10/28/73	GEOCENTRIC	380.0	213.5	72.9	90.1
COSMOS 604	73-080A	U.S.S.R.	10/29/73	10/30/73	GEOCENTRIC	647.0	624.0	81.2	97.2
OSCAR(NAV) 20	73-081A	U.S.S.R.	10/31/73	10/31/73	GEOCENTRIC	1139.0	902.0	90.2	106.0
INTERCOSMOS 10	73-082A	U.S.S.R.	10/30/73	10/31/73	GEOCENTRIC	1477.0	265.0	74.0	102.0
COSMOS 605	73-083A	U.S.S.R.	10/31/73	11/01/73	GEOCENTRIC	424.0	221.0	62.8	90.7
COSMOS 606	73-084A	U.S.S.R.	11/02/73	11/03/73	GEOCENTRIC	39310.0	657.0	62.9	709.9
MARINER 10	73-085A	UNITED STATES	11/03/73		VENUS FLYBY				

SPACECRAFT LAUNCHED

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	EPOCH DATE	ORBIT TYPE	APOAPSIS	PERIAPSIS	INCLINATION	PERIOD
NOAA 3	73-086A	UNITED STATES	11/06/73	11/07/73	GEOCENTRIC	1509.2	1500.0	102.1	116.1
COSMOS 607	73-087A	U.S.S.R.	11/10/73	11/11/73	GEOCENTRIC	364.0	214.0	72.9	90.0
1973-088A	73-088A	UNITED STATES	11/10/73	11/11/73	GEOCENTRIC	275.0	159.0	96.9	88.9
1973-088B	73-088B	UNITED STATES	11/10/73	11/11/73	GEOCENTRIC	257.0	159.0	96.9	88.7
1973-088D	73-088D	UNITED STATES	11/10/73	11/11/73	GEOCENTRIC	508.0	486.0	96.3	94.6
MOLNIYA 1ZA	73-089A	U.S.S.R.	11/14/73	11/15/73	GEOCENTRIC	39197.0	480.0	65.0	702.0
SKYLAB CSM-3	73-090A	UNITED STATES	11/16/73	11/17/73	GEOCENTRIC	435.0	435.0	50.0	90.0
COSMOS 608	73-091A	U.S.S.R.	11/20/73	11/21/73	GEOCENTRIC	528.0	281.0	71.0	93.2
COSMOS 609	73-092A	U.S.S.R.	11/21/73	11/22/73	GEOCENTRIC	370.0	207.0	70.0	90.0
COSMOS 610	73-093A	U.S.S.R.	11/27/73	11/28/73	GEOCENTRIC	560.0	515.0	74.0	95.2
COSMOS 611	73-094A	U.S.S.R.	11/28/73	11/30/73	GEOCENTRIC	481.0	270.0	71.0	92.1
COSMOS 612	73-095A	U.S.S.R.	11/28/73	11/29/73	GEOCENTRIC	371.0	214.0	72.9	90.1
COSMOS 613	73-096A	U.S.S.R.	11/30/73	12/01/73	GEOCENTRIC	295.0	195.0	51.6	89.1
MOLNIYA 1Z8	73-097A	U.S.S.R.	11/30/73	12/01/73	GEOCENTRIC	40829.0	460.0	62.7	737.0
COSMOS 614	73-098A	U.S.S.R.	12/04/73	12/05/73	GEOCENTRIC	830.0	770.0	74.0	100.7
COSMOS 615	73-099A	U.S.S.R.	12/13/73	12/14/73	GEOCENTRIC	859.0	280.0	71.0	95.7
1973-100A	73-100A	UNITED STATES	12/13/73	01/05/74	GEOCENTRIC	36475.0	35065.0	2.7	1435.2
1973-100B	73-100B	UNITED STATES	12/13/73	01/07/74	GEOCENTRIC	36299.0	35349.0	2.3	1438.0
AE-C	73-101A	UNITED STATES	12/16/73	12/17/73	GEOCENTRIC	4303.0	158.0	68.1	132.5
COSMOS 616	73-102A	U.S.S.R.	12/17/73	12/18/73	GEOCENTRIC	355.0	214.0	72.9	89.9
SOYUZ 13	73-103A	U.S.S.R.	12/18/73	12/19/73	GEOCENTRIC	272.0	225.0	51.6	89.2
COSMOS 617	73-104A	U.S.S.R.	12/19/73	12/26/73	GEOCENTRIC	1486.0	1336.0	74.0	114.0
COSMOS 618	73-104B	U.S.S.R.	12/19/73	12/20/73	GEOCENTRIC	1489.0	1446.0	74.0	115.3
COSMOS 619	73-104C	U.S.S.R.	12/19/73	12/20/73	GEOCENTRIC	1493.0	1423.0	74.0	115.1
COSMOS 620	73-104D	U.S.S.R.	12/19/73	12/21/73	GEOCENTRIC	1495.0	1461.0	74.0	115.5
COSMOS 621	73-104E	U.S.S.R.	12/19/73	12/20/73	GEOCENTRIC	1485.0	1410.0	74.0	114.8
COSMOS 622	73-104F	U.S.S.R.	12/19/73	12/20/73	GEOCENTRIC	1487.0	1371.0	74.0	114.4

SPACECRAFT LAUNCHED

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	EPOCH DATE	ORBIT TYPE	APOAPSIS	PERIAPSIS	INCLINATION	PERIOD
COSMOS 623	73-104G	U.S.S.R.	12/19/73	12/20/73	GEOCENTRIC	1487.0	1389.0	74.0	114.6
COSMOS 624	73-104F	U.S.S.R.	12/19/73	12/20/73	GEOCENTRIC	1474.0	1366.0	74.0	114.2
COSMOS 625	73-105A	U.S.S.R.	12/21/73	12/22/73	GEOCENTRIC	346.0	214.0	72.8	89.8
MOLNIYA 2H	73-106A	U.S.S.R.	12/25/73	12/26/73	GEOCENTRIC	40809.0	488.0	62.9	737.0
OREOL 2	73-107A	U.S.S.R.	12/26/73	12/27/73	GEOCENTRIC	1995.0	407.0	74.0	109.2
COSMOS 626	73-108A	U.S.S.R.	12/27/73	12/29/73	GEOCENTRIC	259.0	257.0	65.0	89.7
COSMOS 627	73-109A	U.S.S.R.	12/29/73	12/30/73	GEOCENTRIC	1019.0	974.0	83.0	105.1
COSMOS 628	74-001A	U.S.S.R.	01/17/74	01/18/74	GEOCENTRIC	1026.0	975.0	83.0	105.0
SKYNET 2A	74-002A	UNITED KINGDOM	07/00/73	01/20/74	GEOCENTRIC	3406.0	96.0	37.6	121.5
COSMOS 629	74-003A	U.S.S.R.	01/24/74	01/25/74	GEOCENTRIC	315.0	202.0	62.8	89.4
COSMOS 630	74-004A	U.S.S.R.	01/30/74	01/31/74	GEOCENTRIC	367.0	213.0	72.9	90.0
COSMOS 631	74-005A	U.S.S.R.	02/06/74	02/07/74	GEOCENTRIC	565.0	522.0	74.0	95.3
COSMOS 632	74-006A	U.S.S.R.	02/12/74	02/13/74	GEOCENTRIC	333.0	184.0	65.0	89.4
1974-007A	74-007A	UNITED STATES	02/13/74	02/15/74	GEOCENTRIC	393.0	134.0	110.4	89.8
TANSEI-11	74-008A	JAPAN	02/16/74	02/17/74	GEOCENTRIC	3238.0	288.0	31.2	121.8
SAN MARCO 4	74-009A	UNITED STATES ITALY	02/18/74	02/22/74	GEOCENTRIC	910.0	231.0	2.9	95.9
COSMOS 633	74-010A	U.S.S.R.	02/27/74	02/27/74	GEOCENTRIC	516.0	280.0	71.0	92.2
METEOR 16	74-011A	U.S.S.R.	03/05/74	03/09/74	GEOCENTRIC	894.0	832.0	81.2	102.2
COSMOS 634	74-012A	U.S.S.R.	03/05/74	03/07/74	GEOCENTRIC	491.0	271.0	70.9	92.2
X-4	74-013A	UNITED KINGDOM	03/08/74	03/13/74	GEOCENTRIC	916.0	714.0	97.8	101.2
COSMOS 635	74-014A	U.S.S.R.	03/14/74	03/15/74	GEOCENTRIC	350.0	212.0	72.9	89.8
1974-015A	74-015A	UNITED STATES	03/16/74	03/16/74	GEOCENTRIC	877.0	782.0	98.9	101.5
COSMOS 636	74-016A	U.S.S.R.	03/20/74	03/21/74	GEOCENTRIC	409.0	174.0	65.0	90.0
COSMOS 637	74-017A	U.S.S.R.	03/26/74	03/26/74	GEOCENTRIC	230.0	178.0	51.5	88.5

Spacecraft and Experiments Which Became Operational Off

SECTION 3.2 - SPACECRAFT AND EXPERIMENTS WHICH BECAME OPERATIONAL OFF

The following table identifies spacecraft and/or experiments placed in an operational off status between April 1, 1973, and March 31, 1974. The table is ordered alphabetically by spacecraft common name. For each spacecraft listed, the following information appears: the spacecraft common name, the NSSDC ID code, the spacecraft funding country/countries, the launch date, the date the spacecraft was placed in an operational off mode, the orbit type, and the spacecraft orbit parameters (epoch date, apoapsis, periapsis, inclination, and period). The distance and time parameters are shown in km altitude and minutes except for heliocentric-type orbits, where they are shown in AU radial and days.

Operational off experiments are listed immediately below their associated spacecraft entry. The experiment NSSDC ID code, the experimenter's last name, the NSSDC experiment name, and the date the experiment was placed in an operational off mode are given for each experiment. To indicate that a spacecraft was not placed in an operational off mode, even though some of its experiments were in such a mode, the column indicating spacecraft operational off mode date will appear blank.

SPACECRAFT AND EXPERIMENTS WHICH BECAME OPERATIONAL OFF

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY / EXPERIMENTER	LAUNCH DATE / EXPERIMENT NAME	DATE S/C PLACED OP OFF / DATE EXP PLACED OP OFF	EPOCH DATE	ORBIT TYPE	APO-APSIS	PERI-APSIS	INCLI-NATION	PERIOD
ALOUETTE 2	65-098A	CANADA	11/29/65	06/03/73	01/24/72	GEOCENTRIC	2935.0	510.0	79.8	120.9
		UNITED STATES								
	65-098A-01	WHITTEKER	SWEEP FREQUENCY SOUNDER	06/03/73						
	65-098A-02	BELROSE	VLF RECEIVER	06/03/73						
	65-098A-03	HARTZ	COSMIC RADIO NOISE	06/03/73						
	65-098A-04	MCDIARMID	ENERGETIC PARTICLES DETECTORS	06/03/73						
	65-098A-05	BRACE	CYLINDRICAL ELECTROSTATIC PROBE	06/03/73						
ATS 5	69-069A	UNITED STATES	08/12/69 / /		08/23/69	GEOCENTRIC	36894.0	35760.0	2.6	1463.0
	69-069A-04	MOZER	TRI-DIRECTIONAL MEDIUM-ENERGY PARTICLE DETECTOR	09/01/73						
NIMBUS 4	70-025A	UNITED STATES	04/08/70 / /		09/07/73	GEOCENTRIC	1099.3	1087.5	99.8	107.1
	70-025A-10	HOUGHTON	SELECTIVE CHOPPER RADIOMETER (SCR)	06/00/73						
PIONEER 11	73-019A	UNITED STATES	04/06/73 / /			JUPITER FLY				
	73-019A-08	MUNCH	INFRARED RADIOMETER	04/06/73						
SKYLAB	73-027A	UNITED STATES	05/14/73	09/25/73	05/14/73	GEOCENTRIC	442.0	434.0	50.0	93.4
	73-027A-01	SHAPIRO	NUCLEAR EMULSION	09/25/73						
	73-027A-02	HENIZE	ULTRAVIOLET STELLAR ASTRONOMY	09/25/73						
	73-027A-03	TOUSEY	UV/X-RAY SOLAR PHOTOGRAPHY	09/25/73						
	73-027A-07	MILLIGAN	DUAL X-RAY TELESCOPE	09/25/73						
	73-027A-08	PACKER	UV AIRGLOW HORIZON PHOTOGRAPHY	09/25/73						
	73-027A-09	WEINBERG	GEGENSCHEIN/ZODIACAL LIGHT	09/25/73						
	73-027A-10	TOUSEY	UV CORONAL SPECTROHELIOGRAPH	09/25/73						
	73-027A-11	TOUSEY	EUV SPECTROGRAPH	09/25/73						
	73-027A-12	HEMENWAY	PARTICLE COLLECTION	09/25/73						
	73-027A-14	COURTES	ULTRAVIOLET PANORAMA	09/25/73						
	73-027A-15	REEVES	HYDROGEN ALPHA TELESCOPE NUMBER 1	09/25/73						
	73-027A-16	UNKNOWN	HYDROGEN ALPHA TELESCOPE NUMBER 2	09/25/73						
	73-027A-17	DEMEL	MULTISPECTRAL PHOTOGRAPHY FACILITY	09/25/73						
	73-027A-18	BARNETT	INFRARED SPECTROMETER	09/25/73						
	73-027A-19	KORB	MULTISPECTRAL SCANNER	09/25/73						
	73-027A-20	EVANS	MICROWAVE RADIOMETER/SCATTEROMETER/ ALTIMETER	09/25/73						
	73-027A-21	EVANS	L-BAND MICROWAVE RADIOMETER	09/25/73						
	73-027A-22	FORBES	EXPANDABLE AIRLOCK MECHANISM	09/25/73						
	73-027A-23	LEHN	THERMAL COATINGS	09/25/73						
	73-027A-24	WHEDON	MINERAL BALANCE	09/25/73						
	73-027A-25	LEACH	BIO-ASSAY OF BODY FLUIDS	09/25/73						
	73-027A-26	ORD	SPECIMEN MASS MEASUREMENT	09/25/73						
	73-027A-27	ALLEBACH	VECTOR CARDIOGRAM	09/25/73						
	73-027A-28	GRAYBIEL	HUMAN VESTIBULAR FUNCTION	09/25/73						
	73-027A-29	FROST	SLEEP MONITOR	09/25/73						
	73-027A-30	KUBIS	TIME AND MOTION STUDY	09/25/73						

SPACECRAFT AND EXPERIMENTS WHICH BECAME OPERATIONAL OFF

#SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	DATE S/C PLACED OP OFF	EPOCH DATE	ORBIT TYPE	APO-APSIS	PERI-APSIS	INCLI-NATION	PERIOD

EXPERIMENTER	EXPERIMENT NAME	DATE EXP PLACED OP OFF
73-027A-31 MICHEL	METABOLIC ACTIVITY	09/25/73
73-027A-32 THORNTON	BODY MASS MEASUREMENT	09/25/73
73-027A-33 MC KANNAN	THERMAL CONTROL COATINGS	09/25/73
73-027A-34 KIMZEY	ZERO GRAVITY FLAMMABILITY	09/25/73
73-027A-35 JOHNSON, JR.	HABITABILITY/CREW QUARTERS	09/25/73
73-027A-36 RENDALL	GRAVITY WORKBENCH	09/25/73
73-027A-37 JACKSON	EVA/IVA HARDWARE EVALUATION	09/25/73
73-027A-38 WHITSETT, JR.	ASTRONAUT MANEUVERING EQUIPMENT	09/25/73
73-027A-39 POORMAN	MATERIALS PROCESSING FACILITY EXPERIMENTS	09/25/73
73-027A-40 RANDLE	MANUAL NAVIGATION SIGHTINGS	09/25/73
73-027A-41 LEAVITT	IN-FLIGHT EXPERIMENT AEROSOL ANALYSIS	09/25/73
73-027A-42 CONWAY	CREW/VEHICLE DISTURBANCES	09/25/73
73-027A-43 GOULD	PRECISION OPTICAL TRACKING	09/25/73
73-027A-44 HEWES	FOOT-CONTROLLED MANEUVERING UNIT	09/25/73
73-027A-45 GREENBERG	CORONOGRAPH CONTAMINATION MEASUREMENTS	09/25/73
73-027A-46 MUSCARI	CONTAMINATION MEASUREMENTS	09/25/73
73-027A-47 EDWARDS	PILOT DESCRIPTION	09/25/73
73-027A-48 PRICE	TRANSURANIC COSMIC RAYS	09/25/73
73-027A-49 GEISS	FOIL HEAVY NUCLEI ABUNDANCE EXPERIMENT	09/25/73
73-027A-50 VOGEL	BONE MINERAL MEASUREMENT	09/25/73
73-027A-51 JOHNSON	LOWER BODY NEGATIVE PRESSURE	09/25/73
73-027A-52 LOCKHART	CYTOGENETIC STUDIES OF THE BLOOD	09/25/73
73-027A-53 RITZMANN	MAN'S IMMUNITY - IN VITRO ASPECTS	09/25/73
73-027A-54 JOHNSON	BLOOD VOLUME AND RED CELL LIFE SPAN	09/25/73
73-027A-55 MENGEL	RED BLOOD CELL METABOLISM	09/25/73
73-027A-56 KIMZEY	SPECIAL HEMATOLOGIC EFFECT	09/25/73
73-027A-57 WIEDEMEIER	MULTIPURPOSE ELECTRIC FURNACE	09/25/73
73-027A-58 BOND	CREW ACTIVITIES/MAINTENANCE	09/25/73
73-027A-59 ZMOLEK	ATMOSPHERIC HEAT ABSORPTION	09/25/73
73-027A-60 CRITES	VOLCANIC STUDY	09/25/73
73-027A-61 HOPFIELD	LIBRATION CLOUDS	09/25/73
73-027A-62 BUCHSLER	OBJECTS WITHIN MERCURY'S ORBIT	09/25/73
73-027A-63 HAMILTON	ULTRAVIOLET FROM QUASARS	09/25/73
73-027A-64 REIHS	X-RAY STELLAR CLASSES	09/25/73
73-027A-65 LEVENTHAL	X RAYS FROM JUPITER	09/25/73
73-027A-66 SHANNON	ULTRAVIOLET FROM PULSARS	09/25/73
73-027A-67 STAEHLE	BACTERIA AND SPORES	09/25/73
73-027A-68 MEISTER	IN VITRO IMMUNOLOGY	09/25/73
73-027A-69 JACKSON	MOTOR SENSORY PERFORMANCE	09/25/73
73-027A-70 MILES	WEB FORMATION	09/25/73
73-027A-71 WORDEKEMPER	PLANT GROWTH AND PLANT PHOTOTROPISM	09/25/73
73-027A-72 HELTZ	CYTOPLASMIC STREAMING	09/25/73
73-027A-73 JOHNSTON	CAPILLARY STUDY	09/25/73
73-027A-74 CONVERSE	MASS MEASUREMENT	09/25/73
73-027A-75 OLIST	NEUTRON ANALYSIS	09/25/73
73-027A-76 DUNLAP	LIQUID MOTION IN ZERO GRAVITY	09/25/73

SECTION 3.3 - SPACECRAFT AND EXPERIMENTS WHICH BECAME INOPERABLE

The following table identifies spacecraft and/or experiments that became inoperable during the time interval between April 1, 1973, and March 31, 1974. The table is ordered alphabetically by spacecraft common name. For each spacecraft listed, the following information appears: the spacecraft common name, the NSSDC ID code, the spacecraft funding country/countries, the launch date, the date the spacecraft became inoperable, the orbit type, and the spacecraft orbit parameters (epoch date, apoapsis, periapsis, inclination, and period). The distance and time parameters are shown in km altitude and minutes except for heliocentric-type orbits, where they are shown in AU radial and days.

Experiments that have become inoperable are listed immediately below their associated spacecraft entry. The experiment NSSDC ID code, the experimenter's last name, the NSSDC experiment name, and the date the experiment became inoperable are given for each experiment. To indicate that a spacecraft was not placed in an inoperable mode, even though some of its experiments were in such a mode, the column indicating spacecraft inoperable date will appear blank.

When a prelaunch NSSDC ID code appears without a postlaunch NSSDC ID code, the particular spacecraft failed to orbit and was, therefore, not assigned an international designation.

SPACECRAFT AND EXPERIMENTS WHICH BECAME INOPERABLE

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	DATE S/C PLACED INOP	EPOCH DATE	ORBIT TYPE	APO-APSIS	PERI-APSIS	INCLI-NATION	PERIOD
		EXPERIMENTER	EXPERIMENT NAME				DATE EXP PLACED INOP			
AE-C	73-101A	UNITED STATES	12/16/73 / /		12/17/73	GEOCENTRIC	4303.0	158.0	68.1	132.5
	73-101A-08	PELZ	CLOSED SOURCE NEUTRAL MASS SPECTROMETER				02/17/74			
AEROS	72-100A	FED. REP. OF GERMANY	12/16/72	08/22/73	12/16/72	GEOCENTRIC	864.7	218.0	96.9	95.5
	72-100A-01	KRANKOWSKY	DENSITY AND COMPOSITION OF UPPER ATMOSPHERE (2-44 AMU)				08/22/73			
	72-100A-02	SPENNER	ENERGY DISTRIBUTION OF IONS AND ELECTRONS				08/22/73			
	72-100A-03	NESKE	ELECTRON CONCENTRATION IN THE IONOSPHERE				08/22/73			
	72-100A-04	SCHMIDTKE	FLUX AND SPECTRAL DISTRIBUTION OF SOLAR EUV RAD AND THEIR TEMP AND SPATIAL VAR				08/22/73			
	72-100A-05	SPENCER	NEUTRAL GAS TEMPERATURE IN THE THERMOSPHERE				08/22/73			
	72-100A-06	ROEMER	ATMOSPHERIC DRAG ANALYSIS				08/22/73			
APOLLO 15 LM/ALSEP	71-063C	UNITED STATES	07/26/71 / /			LUNAR LANDER				
	71-063C-03	DYAL	LUNAR SURFACE MAGNETOMETER				12/09/73			
APOLLO 15 SUBSATELLITE	71-063D	UNITED STATES	08/04/71	08/23/73	08/04/71	SELENOCEN	141.3	102.0	28.7	119.8
	71-063D-04	SJOGREN	S-BAND TRANSPONDER				08/23/73			
APOLLO 17 LM/ALSEP	72-096C	UNITED STATES	12/07/72 / /			LUNAR LANDER				
	72-096C-06	HOFFMAN	ATMOSPHERIC COMPOSITION				10/17/73			
D5-A	D5-A	FRANCE UNITED STATES	04/27/73	04/27/73		FAILED TO ORBIT				
D5-B	D5-B	FRANCE UNITED STATES	04/27/73	04/27/73		FAILED TO ORBIT				
IMP-E	67-070A	UNITED STATES	07/19/67	06/24/73	07/22/67	SELENOCEN	9388.3	2568.0	169.0	691.8
	67-070A-01	VAN ALLEN	ELECTRON AND PROTON DETECTORS				06/24/73			
	67-070A-02	ANDERSON	ENERGETIC PARTICLE				06/24/73			
	67-070A-03	SONETT	AMES MAGNETIC FIELDS				06/24/73			
	67-070A-04	NESS	GSFC MAGNETOMETER				06/24/73			
	67-070A-05	ALEXANDER	MICROMETEORITE FLUX				06/24/73			
	67-070A-07	SERBU	LOW-ENERGY INTEGRAL SPECTRUM MEASUREMENT EXPERIMENT				06/24/73			
	67-070A-08	PETERSON	BISTATIC RADAR OBSERVATIONS OF THE LUNAR SURFACE				06/24/73			
	67-070A-09	KAULA	SELENODETIC STUDIES				06/24/73			
	67-070A-10	SLIFER, JR.	SOLAR CELL DAMAGE				06/24/73			
IMP-H	72-073A	UNITED STATES	09/23/72 / /		08/23/73	GEOCENTRIC	233231.0	202306.0	8.6	17602.0

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	DATE S/C PLACED INOP	EPOCH DATE	ORBIT TYPE	APO-APSIS	PERI-APSIS	INCLI-NATION	PERIOD
	EXPERIMENTER	EXPERIMENT NAME					DATE EXP PLACED INOP			
	72-073A-01	NESS	MAGNETIC FIELDS EXPERIMENT				04/10/73			
ITOS-E	ITOS-B	UNITED STATES	07/16/73	07/16/73		FAILED TO ORBIT				
S-CUBED A	71-096A	UNITED STATES	11/15/71	/ /	09/06/73	GEOCENTRIC	25175.8	281.3	3.5	438.1
	71-096A-04	CAHILL, JR.	FLUXGATE MAGNETOMETERS				04/01/73			
	71-096A-06	MAYNARD	OC ELECTRIC FIELD MEASUREMENT				05/01/73			
SAS-B	72-091A	UNITED STATES	11/15/72	06/08/73	11/16/72	GEOCENTRIC	630.7	445.5	1.9	95.4
	72-091A-01	FICHTEL	GAMMA RAY TELESCOPE				06/08/73			

SECTION 4 - RECENT NSSDC DATA ACQUISITIONS

The following table identifies data acquired by NSSDC since July 1973 and not included in the last NSSDC supplement to the Data Catalog of Satellite Experiments. These data sets will be described in greater detail in future editions of the data catalog. During this interim, further information concerning these data sets or other NSSDC services may be obtained by directly contacting NSSDC.

This table is ordered alphabetically by spacecraft common name. In addition the table has a secondary ordering by NSSDC ID code. For each spacecraft listed, its common name, NSSDC ID code, funding country/countries, launch date, and orbit type are given. For each experiment listed, the NSSDC ID code, the experimenter's last name, and the NSSDC experiment name are given. Listed for each data set are the NSSDC ID code, the NSSDC data set name, the inclusive time period covered by the data set (MMDDYY), the time period verification code (VER), the data set availability code (AV), the data set form code (FM), and the data set quantity (QNTY).

The verification (VER) code is defined as follows:

V = time period verified by NSSDC.

E = time period provided by the experimenter and not yet verified by NSSDC.

The availability (AV) code is defined as follows:

A = the data are at NSSDC, and NSSDC can supply a comprehensive set of documented data for routine requests.

B = the data are available in published reports.

C = the data are held at another center, although NSSDC has some information concerning the data set.

D = the data are at NSSDC and are being processed; i.e., work is continuing on a data set for which the documentation or processing is not complete.

E = the data are at NSSDC, and processing is deferred; i.e., this is a data set for which the documentation is not complete and on which no additional work will be performed unless specifically requested.

F = the data are available from the experimenter; i.e., this is a data set that NSSDC does not plan to acquire, and the experimenter is willing to make it available to other scientists, usually in limited amounts.

M = the data are at another data center, but NSSDC will distribute limited portions of the data set in response to requests; i.e., the data sets are too large to be stored at NSSDC.

The data set form code (FM) is a two-letter code. The first code letter describes the basic form of the data set, and the second code letter describes the dimensions. The first code letter may be any of the following:

First Character	Basic Type	Units
A	Aperture cards	Cards
B	Books or bound volumes	Each
C	Punched cards	Each
D	Digital magnetic tapes	Reels
F	Microfiche (black and white)	Sheets
G	Microfiche (color)	Sheets
H	Hardcopy	Pages
M	Microfilm	Reels
O	Computer graphic output	Rolls
P	Computer printout	Pages
Q	Black and white slides	Each
R	Color slides	Each
S	Strip or brush charts	Rolls
U	Black and white positive film transparencies	Each
V	Color positive film transparencies	Each
W	Black and white prints	Each
X	Color prints	Each
Y	Black and white negatives	Each
Z	Color negatives	Each

The second code letter may be any of the following:

Second Character	Additional Description
D	1/2 in. x 2400 ft
E	2-1/4 x 2-1/4 in.
F	3-1/4 x 4 in.
G	4 x 5 in.
H	5 x 7 in.
I	8 x 10 in.
J	11 x 14 in.
K	16 x 20 in.
L	20 x 24 in.
M	70 mm
N	9-1/2 in.
O	35 mm
P	16 mm
Q	3-1/4 x 7-5/8 in.
R	4 x 6 in.
S	5 x 8 in.
T	Various sizes
U	Bulk packaged material
V	5 x 5 in.
W	5 x 47-1/2 in.
X	9-1/2 x 80 in.

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY / EXPERIMENTER	LAUNCH DATE / EXPERIMENT/DATA SET NAME	TIME PERIOD	VER	AV	FM	QNTY
ALOUETTE 1	62-049A	CANADA UNITED STATES	09/29/62	GEOCENTRIC				
	62-049A-01 62-049A-01Q	WHITTEKER	SWEEP FREQUENCY SOUNDER INDEX OF IONOGRAMS SHOWING DUCTED ECHOES	120162 123168	V	A	DD	1
ALOUETTE 2	65-098A	CANADA UNITED STATES	11/29/65	GEOCENTRIC				
	65-098A-01 65-098A-01N	WHITTEKER	SWEEP FREQUENCY SOUNDER INDEX OF IONOGRAMS SHOWING DUCTED ECHOES	112965 103071	V	A	DD	1
APOLLO 11 LM/EASEP	69-059C	UNITED STATES	07/16/69	LUNAR LANDER				
	69-059C-01 69-059C-01G	SHOEMAKER	LUNAR FIELD GEOLOGY LUNAR SAMPLE DATA EASE LISTING SORTED BY SAMPLE NUMBER ON 16-MM MICROFILM	072069 072069	V	D	MP	1
APOLLO 12 CSM	69-099A	UNITED STATES	11/14/69	SELENOCENTRIC				
	69-099A-12 69-099A-12A	SJOGREN	S-BAND TRANSPONDER ANALYZED ACCELERATION DATA, DERIVED FROM RADIO TRACKING, ON MICROFILM	111969 111969	V	D	MP	1
APOLLO 12 LM/ALSEP	69-099C	UNITED STATES	11/14/69	LUNAR LANDER				
	69-099C-01 69-099C-01G	SHOEMAKER	LUNAR FIELD GEOLOGY LUNAR SAMPLE DATA EASE LISTING SORTED BY SAMPLE NUMBER ON 16-MM MICROFILM	111969 112069	V	D	MP	1
	69-099C-03	LATHAM	PASSIVE SEISMIC					
	69-099C-03A		SEISMOGRAMS ON MAGNETIC TAPE	112069 102672	V	D	DD	128
	69-099C-03B		COMPRESSED TIME SCALE PLOTS OF LUNAR SEISMIC DATA ON 35-MM MICROFILM	111969 050973	V	D	MO	2
	69-099C-03C		COMPRESSED TIME SCALE PLOTS OF SELECTED LUNAR SEISMIC EVENTS ON 35-MM MICROFILM	112069 073171	V	D	MO	1
	69-099C-03D		EXPANDED TIME SCALE PLAYOUTS OF SELECTED LUNAR SEISMIC EVENTS ON 35-MM MICROFILM	112669 080872	V	D	MO	3
	69-099C-03F		ARTIFICIAL LUNAR IMPACT SEISMIC DATA ON MAGNETIC TAPE	112069 080370	V	D	DD	2
	69-099C-03G		SEISMIC EVENT LOG AS CARD IMAGES ON MAGNETIC TAPE	112069 042173	V	D	DD	1
	69-099C-04	SONETT	LUNAR SURFACE MAGNETOMETER					
	69-099C-04B		0.3-SEC MAGNETIC VECTORS ON TAPE	111969 040370	V	D	DD	35
	69-099C-09	SJOGREN	S-BAND TRANSPONDER					
	69-099C-09A		ANALYZED ACCELERATION DATA, DERIVED FROM RADIO TRACKING, ON MICROFILM	111969 111969	V	D	MP	1
APOLLO 14 CSM	71-008A	UNITED STATES	01/31/71	SELENOCENTRIC				

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	ORBIT TYPE				
	EXPERIMENTER	EXPERIMENT/DATA SET NAME		TIME PERIOD	VER	AV	FM	QNTY
	71-008A-01	UNKNOWN	ORBITAL AND SURFACE PHOTOGRAPHY					
	71-008A-01M		LUNSORT PHOTOGRAPHIC SUPPORT DATA BY LAC AREA ON MAGNETIC TAPE	020471 020771	V	D	DD	2
	71-008A-03	SJOGREN	S-BAND TRANSPONDER					
	71-008A-03B		ANALYZED ACCELERATION DATA, DERIVED FROM RADIO TRACKING, ON MICROFILM	020471 020571	V	D	MP	1
	71-008A-04	HOWARD	DOWN-LINK BISTATIC RADAR OBSERVATIONS					
	71-008A-04A		REDUCED SHORT TIME AVERAGES ON 13-CM BISTATIC RADAR LUNAR OBSERVATIONS ON TAPE	020671 020671	V	D	DD	1
	71-008A-04B		REDUCED SHORT TIME AVERAGES ON 116-CM BISTATIC RADAR LUNAR OBSERVATIONS ON TAPE	020671 020671	V	D	DD	1
	71-008A-04C		ANALYZED 13-CM AND 116-CM BIASTIC RADAR LUNAR OBSERVATIONS ON MAGNETIC TAPE	020671 020671	V	D	DD	1
APOLLO 14 LM/ALSEP	71-008C	UNITED STATES	01/31/71 LUNAR LANDER					
	71-008C-01	SWANN	LUNAR FIELD GEOLOGY					
	71-008C-01G		LUNAR SAMPLE DATA BASE LISTING SORTED BY SAMPLE NUMBER ON 16-MM MICROFILM	020371 020471	V	D	MP	1
	71-008C-04	LATHAM	PASSIVE SEISMIC					
	71-008C-04B		MAGNETIC TAPES OF LUNAR SEISMIC EVENTS	020671 102672	V	D	DD	102
	71-008C-04C		COMPRESSED TIME SCALE PLOTS OF LUNAR SEISMIC DATA ON 35-MM MICROFILM	020571 051173	V	D	MO	2
	71-008C-04D		EXPANDED TIME SCALE PLAYOUTS OF LUNAR SEISMIC DATA ON 35-MM MICROFILM	020771 080872	V	D	MO	2
	71-008C-04E		COMPRESSED TIME SCALE PLOTS OF LUNAR SEISMIC EVENTS ON 35-MM MICROFILM	020671 073171	V	D	MO	1
	71-008C-04F		ARTIFICIAL LUNAR IMPACT SEISMIC DATA ON MAGNETIC TAPE	020771 121671	V	D	DD	1
	71-008C-08	O'BRIEN	CHARGED PARTICLE LUNAR ENVIRONMENT					
	71-008C-08B		EXPERIMENT POSITION AND ORIENTATION INFORMATION VS TIME ON TAPE	010171 123173	V	D	DD	1
	71-008C-11	SJOGREN	S-BAND TRANSPONDER					
	71-008C-11A		ANALYZED ACCELERATION DATA, DERIVED FROM RADIO TRACKING, ON MICROFILM	020771 020771	V	D	MP	1
APOLLO 15 CSM	71-063A	UNITED STATES	07/26/71 SELENOCENTRIC					
	71-063A-01	DOYLE	HANDHELD PHOTOGRAPHY					
	71-063A-01J		CAL TECH MICROFICHE OF HASSELBLAD 70-MM PHOTOGRAPHY ON 4- X 6-IN. B/W FILM CARDS	072671 080771	V	D	FR	42
	71-063A-01P		COMPLETE NIKON CAMERA DIMLIGHT PHOTOGRAPHY ON 35-MM FILM	072771 080771	V	A	UO	1
	71-063A-01R		HASSELBLAD CAMERA PHOTOGRAPHY INDEX ON MICROFICHE	072671 080771	V	D	FR	6
	71-063A-02	DOYLE	PANCRAMIC PHOTOGRAPHY					

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY / EXPERIMENTER	LAUNCH DATE / ORBIT TYPE / EXPERIMENT/DATA SET NAME	TIME PERIOD	VER	AV	FM	QNTY
	71-063A-02H		NSSDC PANORAMIC CAMERA PHOTOGRAPHY INDEX ON MICROFICHE	073171 080371	V	A	FR	4
	71-063A-03	DOYLE	METRIC PHOTOGRAPHY					
	71-063A-03I		NSSDC METRIC CAMERA PHOTOGRAPHY INDEX ON B/W MICROFICHE	073171 080371	V	A	FR	4
	71-063A-11	SJOGREN	S-BAND TRANSPONDER (CSM/LM)					
	71-063A-11B		ANALYZED ACCELERATION DATA, DERIVED FROM RADIO TRACKING, ON MICROFILM	033071 033171	V	D	MP	1
	71-063A-14	HOWARD	BISTATIC RADAR					
	71-063A-14A		REDUCED SHORT TIME AVERAGES OF 13-CM BISTATIC RADAR LUNAR OBSERVATIONS ON TAPE	080171 080171	V	D	DD	2
	71-063A-14B		REDUCED SHORT TIME AVERAGES OF 116-CM BISTATIC RADAR LUNAR OBSERVATIONS ON TAPE	080171 080171	V	D	DD	1
	71-063A-14C		ANALYZED 13-CM AND 116-CM BISTIC RADAR LUNAR OBSERVATIONS ON MAGNETIC TAPE	080171 080171	V	D	DD	1
APOLLO 15 LM/ALSEP	71-063C	UNITED STATES	07/26/71 LUNAR LANDER					
	71-063C-01	LATHAM	PASSIVE SEISMIC					
	71-063C-01B		SEISMOGRAMS ON MAGNETIC TAPE	080271 102672	V	D	DD	75
	71-063C-01C		EXPANDED TIME SCALE PLAYOUTS OF LUNAR SEISMIC DATA ON 35-MM MICROFILM	080471 080872	V	D	MO	2
	71-063C-01D		COMPRESSED TIME SCALE PLOTS OF LUNAR SEISMIC DATA ON 35-MM MICROFILM	080471 051673	V	D	MO	2
	71-063C-10	SWANN	LUNAR FIELD GEOLOGY					
	71-063C-10F		LUNAR SAMPLE DATA BASE LISTING SORTED BY SAMPLE NUMBER ON 16-MM MICROFILM	073171 080271	V	D	MP	1
APOLLO 15 SUBSATELLITE	71-063D	UNITED STATES	08/04/71 SELENOCENTRIC					
	71-063D-01	ANDERSON	LUNAR PARTICLE SHADOWS AND BOUNDARY LAYER					
	71-063D-01A		10-MIN AND 2-HR AVERAGED PARTICLE COUNT RATES ON MAGNETIC TAPE	080471 020372	V	D	DD	1
APOLLO 16 CSM	72-031A	UNITED STATES	04/16/72 SELENOCENTRIC					
	72-031A-01	DOYLE	HANDHELD PHOTOGRAPHY					
	72-031A-01I		NSSDC CATALOG OF HASSELBLAD PHOTOS ON MICROFILM	041672 042772	V	D	MP	2
	72-031A-01J		NSSDC HASSELBLAD PICTORIAL CATALOG ON MICROFICHE	041672 042772	V	A	FR	60
	72-031A-01K		INDEX TO 70-MM HASSELBLAD PHOTOGRAPHY ON 16-MM MICROFILM	041672 042772	V	A	MP	1
	72-031A-01L		INDEX TO 16-MM MAURER PHOTOGRAPHY ON 16-MM MICROFILM	041672 042772	V	A	MP	1
	72-031A-02	DOYLE	PANORAMIC PHOTOGRAPHY					

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY / EXPERIMENTER	LAUNCH DATE / EXPERIMENT/DATA SET NAME	ORBIT TYPE / TIME PERIOD	VER	AV	FM	QNTY
	72-031A-02D		COMPLETE PANORAMIC CAMERA PHOTOGRAPHY CATALOG ON 35-MM B/W MICROFILM	042172 042672	V	A	MO	1
	72-031A-02E		RECTIFIED PANORAMIC CAMERA PHOTOGRAPHY ON 9- BY 80-IN. B/W POSITIVE FILM	042172 042672	V	A	UX	16
	72-031A-03	DOYLE	METRIC PHOTOGRAPHY					
	72-031A-03E		NSSDC CATALOG OF METRIC PHOTOGRAPHY ON MICROFILM	042172 042672	V	A	MP	2
	72-031A-03F		COMPLETE MAPPING CAMERA PHOTOGRAPHY CATALOG ON B/W POSITIVE MICROFICHE	042172 042672	V	A	FR	57
	72-031A-04	DOYLE	MAPPING CAMERA ASPECT STELLAR PHOTOGRAPHY					
	72-031A-04A		MAPPING CAMERA STELLAR PHOTOGRAPHY ON 70-MM MASTER POSITIVE FILM	042172 042672	V	D	UM	1
	72-031A-12	HOWARD	BISTATIC RADAR					
	72-031A-12A		REDUCED SHORT TIME AVERAGES OF 13-CM BISTATIC RADAR LUNAR OBSERVATIONS ON TAPE	042372 042372	V	D	DD	2
	72-031A-12B		REDUCED SHORT TIME AVERAGES OF 116-CM BISTATIC RADAR LUNAR OBSERVATIONS ON TAPE	042372 042372	V	D	DD	1
	72-031A-12C		ANALYZED 13-CM AND 116-CM BIASTIC RADAR LUNAR OBSERVATIONS ON MAGNETIC TAPE	042372 042372	V	D	DD	1
	72-031A-15	GARY	SKYLAB-APOLLO CONTAMINATION PHOTOGRAPHY					
	72-031A-15A		DIGITIZED CONTAMINATION PHOTOGRAPHY ON MAGNETIC TAPE	041672 042772	E	A	DD	1
APOLLO 16 LM/ALSEP	72-031C	UNITED STATES	04/16/72 LUNAR LANDER					
	72-031C-01	LATHAM	PASSIVE SEISMIC					
	72-031C-01B		SEISMOGRAMS ON MAGNETIC TAPE	042172 102672	V	D	DD	35
	72-031C-01C		EXPANDED TIME SCALE PLAYOUTS OF LUNAR SEISMIC DATA ON 35-MM MICROFILM	050272 080872	V	D	MO	2
	72-031C-01D		COMPRESSED TIME SCALE PLOTS OF LUNAR SEISMIC DATA ON 35-MM MICROFILM	090271 050773	V	D	MO	2
	72-031C-01E		ARTIFICIAL LUNAR IMPACT SEISMIC DATA ON MAGNETIC TAPE	121072 121572	V	D	DD	1
	72-031C-05	MUEHLBERGER	LUNAR FIELD GEOLOGY					
	72-031C-05B		LUNAR SAMPLE DATA BASE LISTING SORTED BY SAMPLE NUMBER ON 16-MM MICROFILM	042172 042472	V	D	MP	1
APOLLO 16 SUBSATELLITE	72-031D	UNITED STATES	04/24/72 SELENOCENTRIC					
	72-031D-01	ANDERSON	LUNAR PARTICLE SHADOWS AND BOUNDARY LAYER					
	72-031D-01A		10-MIN AND 2-HR AVERAGED PARTICLE COUNT RATES ON MAGNETIC TAPE	042572 052972	V	D	DD	1
APOLLO 17 CSM	72-096A	UNITED STATES	12/07/72 SELENOCENTRIC					

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	ORBIT TYPE	EXPERIMENTER	EXPERIMENT/DATA SET NAME	TIME PERIOD	VER	AV	FM	QNTY
	72-096A-05	DOYLE				HANDHELD PHOTOGRAPHY					
	72-096A-05B					COMPLETE HASSELBLAD PHOTOGRAPHY ON B/W POSITIVE FILM	120772 121972	V	D	UM	2
	72-096A-05C					COMPLETE COLOR HASSELBLAD PHOTOGRAPHY ON 70-MM FILM	120772 121972	V	D	VM	2
	72-096A-05D					NIKON PHOTOGRAPHY	120772 121972	V	D	UO	1
	72-096A-05E					CALTECH CATALOG OF HASSELBLAD PHOTOGRAPHY ON MICROFICHE	120772 121972	V	D	FR	52
	72-096A-05G					LUNAR SURFACE TV KINESCOPE PHOTOGRAPHY ON 16-MM B/W POSITIVE FILM	121272 121872	V	D	UP	39095
	72-096A-06	DOYLE				PANORAMIC PHOTOGRAPHY					
	72-096A-06A					5- BY 48-IN. B/W SECOND GENERATION MASTER POSITIVE PANORAMA PHOTOS	121072 121672	V	D	UW	23
	72-096A-06B					PANORAMIC CAMERA PHOTOGRAPHY SUPPORT DATA ON 16-MM MICROFILM	121072 121672	V	D	MP	1
	72-096A-06D					NSSDC CATALOG OF PANORAMIC CAMERA PHOTOS ON 35-MM MICROFILM	121072 121672	V	D	MO	1
	72-096A-07	DOYLE				METRIC PHOTOGRAPHY					
	72-096A-07C					MAPPING CAMERA PHOTOGRAPHY SUPPORT DATA ON 16-MM MICROFILM	121072 121672	V	D	MP	1
	72-096A-07D					CAL TECH CATALOG OF METRIC PHOTOGRAPHY ON MICROFICHE	121172 121672	V	D	FR	76
APOLLO 17 LM/ALSEP	72-096C	UNITED STATES	12/07/72	LUNAR LANDER							
	72-096C-02	SWANN				LUNAR FIELD GEOLOGY					
	72-096C-02B					LUNAR SAMPLE DATA BASE LISTING SORTED BY SAMPLE NUMBER ON 16-MM MICROFILM	121172 121372	V	D	MP	1
ARIEL 3	67-042A	UNITED STATES UNITED KINGDOM	05/05/67	GEOCENTRIC							
	67-042A-01	SAYERS				LANGMUIR PROBE					
	67-042A-01C					ELECTRON DENSITY AND TEMPERATURE PLOTS ON MICROFILM	050567 041568	V	D	MO	3
	67-042A-01D					ELECTRON DENSITY AND TEMPERATURE LISTINGS ON MICROFILM	050667 123167	V	D	MO	3
ESSA 3	66-087A	UNITED STATES	10/02/66	GEOCENTRIC							
	66-087A-01	NESS STAFF				ADVANCED VIDICON CAMERA SYSTEM (AVCS)					
	66-087A-01A					GLOBAL DAILY NEPHANALYSIS OF SATELLITE CLOUD OBSERVATIONS	100466 123166	V	B	BI	1
ESSA 5	67-036A	UNITED STATES	04/20/67	GEOCENTRIC							
	67-036A-01	NESS STAFF				ADVANCED VIDICON CAMERA SYSTEM (AVCS)					
	67-036A-01A					CATALOG OF METEOROLOGICAL SATELLITE DATA-	060167 090368	V	B	BI	4

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE / ORBIT TYPE	EXPERIMENTER	EXPERIMENT/DATA SET NAME	TIME PERIOD	VER	AV	FM	QNTY
					ESSA 5 TELEVISION CLOUD PHOTOGRAPHY					
ESSA 7	68-069A	UNITED STATES	08/16/68 GEOCENTRIC							
	68-069A-01	NESS STAFF			ADVANCED VIDICON CAMERA SYSTEM (AVCS)					
	68-069A-01A				CATALOG OF METEOROLOGICAL SATELLITE DATA- ESSA 7 TELEVISION CLOUD PHOTOGRAPHY	090368 033169	V	B	BI	3
ESSA 9	69-016A	UNITED STATES	02/26/69 GEOCENTRIC							
	69-016A-01	NESS STAFF			ADVANCED VIDICON CAMERA SYSTEM (AVCS)					
	69-016A-01A				CATALOG OF METEOROLOGICAL SATELLITE DATA- ESSA 9 TELEVISION CLOUD PHOTOGRAPHY	040169 061671	V	B	BI	7
GRS-A	69-097A	FED. REP. OF GERMANY UNITED STATES	11/08/69 GEOCENTRIC							
	69-097A-02			HOVESTADT	PROTON-ALPHA TELESCOPE					
	69-097A-02A				PROTON, ALPHA PARTICLE AND ELECTRON COUNT RATES ON MAGNETIC TAPE	110869 061870	E	D	DD	15
	69-097A-03			MORITZ	PROTON TELESCOPE					
	69-097A-03D				PLOTS OF PROTON AND ALPHA PARTICLE COUNT RATES AND FLUXES ON MICROFILM	110869 06287	V	D	MP	1
	69-097A-04			HOVESTADT	PROTON-ELECTRON DETECTOR					
	69-097A-04A				PROTON AND ELECTRON COUNT RATES ON MAGNETIC TAPE	110869 061870	E	D	DD	14
IMP-F	67-051A	UNITED STATES	05/24/67 GEOCENTRIC							
	67-051A-11	NESS			TRIAXIAL FLUXGATE MAGNETOMETER					
	67-051A-11D				2.5-SEC MULTICOORDINATE MAGNETIC VECTORS ON TAPE	052467 021069	V	D	DD	136
IMP-G	69-053A	UNITED STATES	06/21/69 GEOCENTRIC							
	69-053A-00G				GSFC TRAJECTORY PLOTS, SOLAR ECLIPTIC PROJECTIONS	062169 122372	V	B	BI	1
	69-053A-02			ANDERSON	ION CHAMBER					
	69-053A-02B				ELECTRON AND PROTON COUNT RATES ON MICROFILM	062169 083172	V	D	MO	5
IMP-H	72-073A	UNITED STATES	09/23/72 GEOCENTRIC							
	72-073A-00D				GSFC TRAJECTORY PLOTS, SOLAR ECLIPTIC PROJECTIONS	092372 040673	V	B	BI	1
IMP-I	71-019A	UNITED STATES	03/13/71 GEOCENTRIC							
	71-019A-09	SIMPSON			NUCLEAR COMPOSITION OF COSMIC AND SOLAR PARTICLE RADIATIONS					
	71-019A-09A				PROTON AND HIGHER Z COUNT RATES ON MAGNETIC TAPE	031371 010672	V	D	DD	18

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY / EXPERIMENTER	LAUNCH DATE / EXPERIMENT/DATA SET NAME	ORBIT TYPE / TIME PERIOD	VER	AV	FM	QNTY
	71-019A-09B		5-MIN AVERAGED PROTON AND HIGHER Z COUNT RATES ON MAGNETIC TAPE	031371 040172	V	D	DD	1
ISIS 1	69-009A	CANADA UNITED STATES	01/30/69	GEOCENTRIC				
	69-009A-01	WHITTEKER	SWEEP FREQUENCY SOUNDER					
	69-009A-01E		INDEX OF IONOGRAMS SHOWING DUCTED ECHOES	020169 122771	V	A	DD	1
	69-009A-08	SAGALYN	SPHERICAL ELECTROSTATIC ANALYZER					
	69-009A-08A		ION DENSITY ON 35-MM FILM	013169 022569	V	D	MO	1
	69-009A-08B		ION TEMPERATURE AND DENSITY ON MAGNETIC TAPE	020069 110069	V	D	DD	4
ISIS 2	71-024A	CANADA UNITED STATES	04/01/71	GEOCENTRIC				
	71-024A-01	WHITTEKER	SWEEP FREQUENCY SOUNDER					
	71-024A-01E		INDEX OF IONOGRAMS SHOWING DUCTED ECHOES	040971 062272	V	A	DD	1
MARINER 4	64-077A	UNITED STATES	11/28/64	HELIOCENTRIC				
	64-077A-02	SMITH	HELIUM MAGNETOMETER					
	64-077A-02C		2.8-MIN AVG MAGNETIC FIELD MEASUREMENTS PLOTTED 1 DAY PER 35-MM MICROFILM FRAME	112964 100165	V	D	MO	1
	64-077A-02D		4.2-SEC MAGNETIC FIELD MEASUREMENTS PLOTTED 1 HR PER 35-MM MICROFILM FRAME	112964 010365	V	D	MO	1
	64-077A-02E		16.8-SEC MAGNETIC FIELD MEASUREMENTS PLOTTED 3 HR PER 35-MM MICROFILM FRAME	010365 100165	V	D	MO	1
MARINER 9	71-051A	UNITED STATES	05/30/71	MARSCENTRIC				
	71-051A-03	HANEL	INFRARED INTERFEROMETER SPECTROMETER (IRIS)					
	71-051A-03A		INFRARED INTERFEROMETER SPECTROMETER DATA TAPES	111471 101672	V	D	DD	5
	71-051A-04	MASURSKY	TELEVISION PHOTOGRAPHY					
	71-051A-04H		TV PHOTOGRAPHIC SUPPORTING DATA ON 16-MM MICROFILM	111471 102772	V	D	MP	1
	71-051A-04I		TV PHOTOGRAPHY INDEX DATA ON 16-MM B/W NEGATIVE FILM	111471 102772	V	D	MP	2
	71-051A-04J		IPL MICROFICHE CATALOG OF SELECTED PHOTOGRAPHY	111071 080672	V	D	FR	279
	71-051A-04L		CATALOG OF MARINER 9 MTVS PHOTOGRAPHY ON 16-MM MICROFILM	111071 080672	V	D	MP	20
	71-051A-04O		LIMB PHOTOGRAPHY INDEX ON B/W MICROFICHE	111071 102872	V	D	FR	16
	71-051A-04P		LIMB PHOTOGRAPHY CATALOG ON B/W MICROFICHE	111071 102872	V	D	FR	166
	71-051A-04Q		SELECTED MTVS AND IPL PHOTOGRAPHY ON MICROFICHE FROM CAL TECH	111071 102872	V	D	FR	467

*SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE / ORBIT TYPE	TIME PERIOD	VER	AV	FM	QNTY
		EXPERIMENTER	EXPERIMENT/DATA SET NAME					
NIMBUS 2	66-040A	UNITED STATES	05/15/66 GEOCENTRIC					
	66-040A-01	SCHULMAN	ADVANCED VIDICON CAMERA SYSTEM (AVCS)					
	66-040A-01B		AVCS WORLD MONTAGE CATALOG	051566 111566	V	B	BT	1
NIMBUS 4	70-025A	UNITED STATES	04/08/70 GEOCENTRIC					
	70-025A-03	HANEL	INFRARED INTERFEROMETER SPECTROMETER (IRIS)					
	70-025A-03A		INFRARED INTERFEROMETER SPECTROMETER (IRIS) RADIANCE TAPES	040970 013071	E	M	DD	238
NIMBUS 5	72-097A	UNITED STATES	12/11/72 GEOCENTRIC					
	72-097A-04	WILHEIT, JR.	ELECTRICALLY SCANNING MICROWAVE RADIOMETER (ESMR)					
	72-097A-04A		ELECTRICALLY SCANNING MICROWAVE RADIOMETER (ESMR) DATA TAPES	121572 061273	E	M	DD	198
	72-097A-04B		SELECTED ESMR COLOR IMAGES	121572 021073	V	D	ZI	44
NOAA 2	72-082A	UNITED STATES	10/15/72 GEOCENTRIC					
	72-082A-02	NESS STAFF	SCANNING RADIOMETER (SR)					
	72-082A-02A		CATALOG OF ENVIRONMENTAL SATELLITE IMAGERY	110172 063073	V	B	BJ	6
OGO 1	64-054A	UNITED STATES	09/05/64 GEOCENTRIC					
	64-054A-21	WINCKLER	ELECTRON SPECTROMETER					
	64-054A-21I		REDUCED L-INTERPOLATED COUNT RATES ON MAGNETIC TAPE	091564 070767	V	D	DD	1
OGO 5	68-014A	UNITED STATES	03/04/68 GEOCENTRIC					
	68-014A-04	ANDERSON	ENERGETIC RADIATIONS FROM SOLAR FLARES					
	68-014A-04C		PROTON AND ALPHA PARTICLE COUNT RATES ON MAGNETIC TAPE	030868 111769	V	D	DD	2
	68-014A-09	MEYER	COSMIC RAY ELECTRONS					
	68-014A-09B		PARTICLE ACCUMULATIONS AND PULSE HEIGHT ANALYSIS ON MAGNETIC TAPE	030568 071472	V	D	DD	109
	68-014A-16	SMITH	TRIAXIAL SEARCH-COIL MAGNETOMETER					
	68-014A-16D		FREQUENCY TIME SPECTROGRAMS FOR THE 0-1000 HZ ANALOG SEARCH COIL MAGNETOMETER	030668 102768	V	D	MD	27
	68-014A-20	HADDOCK	50 KHZ TO 3.5 MHZ SOLAR RADIO ASTRONOMY IN EIGHT STEPS					
	68-014A-20A		8-CHANNEL FREQUENCY VS TIME PLOTS OF SOLAR RADIO EMISSIONS ON MICROFILM	030568 092471	V	F	MD	50
	68-014A-22	BLAMONT	GEOCORONAL LYMAN-ALPHA MEASUREMENT					
	68-014A-22A		LYMAN ALPHA GEOCORONAL DATA ON MAGNETIC TAPES	030568 123169	V	D	DD	32

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	ORBIT TYPE				
	EXPERIMENTER	EXPERIMENT/DATA SET NAME		TIME PERIOD	VER	AV	FM	QNTY
	68-014A-24	CROOK		PLASMA WAVE DETECTOR				
	68-014A-24E			0-10 KHZ SPECTRA OF MAGNETOSPHERIC AND PLASMASPHERIC BOUNDARIES ON MICROFILM	031468	051269	V	D	MO	14
	68-014A-27	SIMPSON		LOW-ENERGY HEAVY COSMIC-RAY PARTICLES (HIGH-Z LOW-E EXPERIMENT)						
	68-014A-27B			COUNT RATE PLOTS ON MICROFILM	030568	071372	V	D	MO	1
OGO 6	69-051A	UNITED STATES	06/05/69	GEOCENTRIC						
	69-051A-20	STONE		COSMIC-RAY STUDY						
	69-051A-20B			PARTICLE COUNT RATES AND EPHEMERIS PLOTS ON MICROFILM	060769	012770	V	D	MO	28
	69-051A-22	SMITH		TRIAXIAL SEARCH COIL MAGNETOMETER						
	69-051A-22A			0.03- TO 1000-HZ SEARCH COIL MAGNETOMETER	061069	101370	V	D	MP	5
OVI- 2	65-078A	UNITED STATES	10/05/65	GEOCENTRIC						
	65-078A-03	FORTNEY		X-RAY CSI CRYSTAL DOSIMETER						
	65-078A-03A			TABULATIONS OF ANALYZED DOSIMETER DATA ON HARDCOPY	100565	120165	V	B	HI	19
OVI-15	68-059A	UNITED STATES	07/11/68	GEOCENTRIC						
	68-059A-01	CHAMPION		TRIAXIAL ACCELEROMETER						
	68-059A-01A			TRIAXIAL ACCELEROMETER ATMOSPHERIC DENSITY PLOTS	071468	092868	V	B	BI	1
PIONEER 6	65-105A	UNITED STATES	12/16/65	HELIOCENTRIC						
	65-105A-02	BRIDGE		SOLAR WIND PLASMA FARADAY CUP						
	65-105A-02C			SOLAR WIND DATA FROM THE EXPERIMENTS ON PIONEER 6 AND PIONEER 7, 1 HR AVG BOOK	121665	051671	V	B	BI	1
PIONEER 7	66-075A	UNITED STATES	08/17/66	HELIOCENTRIC						
	66-075A-02	BRIDGE		SOLAR WIND PLASMA FARADAY CUP						
	66-075A-02C			SOLAR WIND DATA FROM THE EXPERIMENTS ON PIONEER 6 AND PIONEER 7, 1 HR AVG BOOK	081866	120268	V	B	BI	1
PIONEER 8	67-123A	UNITED STATES	12/13/67	HELIOCENTRIC						
	67-123A-05	MCCRACKEN		COSMIC-RAY ANISOTROPY						
	67-123A-05A			7.5-MIN AND 1-HR COUNT RATES FOR ALL MODES ON MAGNETIC TAPE	121367	033169	V	D	DD	6
PIONEER 9	68-100A	UNITED STATES	11/08/68	HELIOCENTRIC						
	68-100A-05	MCCRACKEN		COSMIC-RAY ANISOTROPY						
	68-100A-05A			7.5-MIN AND 1-HR COUNT RATES ON MICROFILM	110868	092570	V	A	MP	2

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY	LAUNCH DATE	ORBIT TYPE					
	EXPERIMENTER	EXPERIMENT/DATA SET NAME		TIME PERIOD	VER	AV	FM	QNTY	
RELAY 1	62-068A	UNITED STATES	12/13/62	GEOCENTRIC					
	62-068A-03	MCILWAIN	PROTON-ELECTRON DETECTORS						
	62-068A-03A		FORTRAN PROTON FLUX PROGRAM	010163 070163	V	A	CQ	3000	
TIROS 1	60-002B	UNITED STATES	04/01/60	GEOCENTRIC					
	60-002B-01	BUTLER	TELEVISION CAMERA SYSTEM						
	60-002B-01A		INDEX OF METEOROLOGICAL SATELLITE DATA - TIROS 1 TELEVISION CLOUD PHOTOGRAPHY	040160 061560	V	B	BI	1	
	60-002B-01B		35-MM DAYTIME TV CLOUD PHOTOGRAPHY	040160 061560	E	C	MO	50	
TIROS 2	60-016A	UNITED STATES	11/23/60	GEOCENTRIC					
	60-016A-03	BUTLER	TELEVISION CAMERA SYSTEM						
	60-016A-03A		INDEX OF METEOROLOGICAL SATELLITE DATA - TIROS 2 TELEVISION CLOUD PHOTOGRAPHY	112360 052761	V	B	BI	1	
	60-016A-03B		35-MM DAYTIME TV CLOUD PHOTOGRAPHY	112360 052761	E	C	MO	56	
TIROS 3	61-017A	UNITED STATES	07/12/61	GEOCENTRIC					
	61-017A-04	NESS STAFF	TELEVISION CAMERA SYSTEM						
	61-017A-04A		INDEX OF METEOROLOGICAL SATELLITE DATA - TIROS 3 TELEVISION CLOUD PHOTOGRAPHY	071261 012362	V	B	BI	1	
	61-017A-04B		35-MM DAYTIME TV CLOUD PHOTOGRAPHY	071261 012362	E	C	MO	70	
TIROS 4	62-002A	UNITED STATES	02/08/62	GEOCENTRIC					
	62-002A-00D		ATTITUDE SUMMARY TABLES	020862 061262	V	B	BI	1	
	62-002A-04	NESS STAFF	TELEVISION CAMERA SYSTEM						
	62-002A-04A		GLOBAL DAILY NEPHANALYSIS OF SATELLITE CLOUD OBSERVATIONS	020862 061862	V	B	BI	1	
	62-002A-04B		35-MM DAYTIME TV CLOUD PHOTOGRAPHY	020862 061862	E	C	MO	72	
TIROS 5	62-025A	UNITED STATES	06/19/62	GEOCENTRIC					
	62-025A-01	NESS STAFF	TELEVISION CAMERA SYSTEM						
	62-025A-01A		GLOBAL DAILY NEPHANALYSIS OF SATELLITE CLOUD OBSERVATIONS	061962 051463	V	B	BI	1	
	62-025A-01B		35-MM DAYTIME TV CLOUD PHOTOGRAPHY	061962 051463	E	C	MO	113	
TIROS 6	62-047A	UNITED STATES	09/18/62	GEOCENTRIC					
	62-047A-01	NESS STAFF	TELEVISION CAMERA SYSTEM						
	62-047A-01A		GLOBAL DAILY NEPHANALYSIS OF SATELLITE CLOUD OBSERVATIONS	091862 102163	V	B	BI	1	
	62-047A-01B		35-MM DAYTIME TV CLOUD PHOTOGRAPHY	091862 051463	E	C	MO	125	
TIROS 7	63-024A	UNITED STATES	06/19/63	GEOCENTRIC					
	63-024A-04	NESS STAFF	TELEVISION CAMERA SYSTEM						
	63-024A-04A		GLOBAL DAILY NEPHANALYSIS OF SATELLITE	061963 123165	V	B	BI	4	

SPACECRAFT NAME	NSSDC ID	FUNDING COUNTRY / EXPERIMENTER	LAUNCH DATE / EXPERIMENT/DATA SET NAME	ORBIT TYPE / TIME PERIOD	VER	AV	FM	QNTY
			CLOUD OBSERVATIONS					
	63-024A-04B		35-MM DAYTIME TV CLOUD PHOTOGRAPHY	061963 022666	E	C	MO	213
TIROS 8	63-054A	UNITED STATES	12/21/63	GEOCENTRIC				
	63-054A-01	NESS STAFF	TELEVISION CAMERA SYSTEM					
	63-054A-01A		GLOBAL DAILY NEPHANALYSIS OF SATELLITE CLOUD OBSERVATIONS	122163 083165	V	B	BI	3
	63-054A-01B		35-MM DAYTIME TV CLOUD PHOTOGRAPHY	122163 021266	E	C	MO	163
TIROS 9	65-004A	UNITED STATES	01/22/65	GEOCENTRIC				
	65-004A-01	NESS STAFF	TELEVISION CAMERA SYSTEM					
	65-004A-01A		GLOBAL DAILY NEPHANALYSIS OF SATELLITE CLOUD OBSERVATIONS	012365 072665	V	B	BI	2
	65-004A-01B		35-MM DAYTIME TV CLOUD PHOTOGRAPHY	012365 090866	E	C	MO	133
TIROS 10	65-051A	UNITED STATES	07/02/65	GEOCENTRIC				
	65-051A-01	NESS STAFF	TELEVISION CAMERA SYSTEM					
	65-051A-01A		GLOBAL DAILY NEPHANALYSIS OF SATELLITE CLOUD OBSERVATIONS	070465 063065	V	B	BI	1
	65-051A-01B		35-MM DAYTIME TV CLOUD PHOTOGRAPHY	070265 042066	E	C	MO	56