NASA News

National Aeronautics and
Space Administration

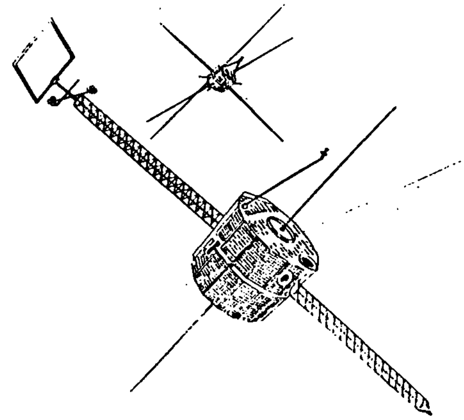
Washington, D.C. 20546
AC 202 755-8370

For Release IMMEDIATE

Press Kit

Project Dynamics Explorer

RELEASE NO: 81-95



Contents

(NASA-News-Release-81-95) DYNAMICS EXPLORER DUAL SPACECRAFT TO BE LAUNCHED ON JULY 31 (National Aeronautics and Space Administration) 23 p Avail: NASA Scientific and Technical Inf CSCL 22B 00/15

N81-27167

Unclas
30758

July 16, 1981

NASA News

National Aeronautics and
Space Administration

Washington, D.C. 20546
AC 202 755-8370

For Release:

Charles Redmond
Headquarters, Washington, D.C.
(Phone: 202/755-3680)

IMMEDIATE

Jim Lacy
Goddard Space Flight Center, Greenbelt, Md.
(Phone: 301/344-5565)

RELEASE NO: 81-95

DYNAMICS EXPLORER DUAL SPACECRAFT TO BE LAUNCHED ON JULY 31

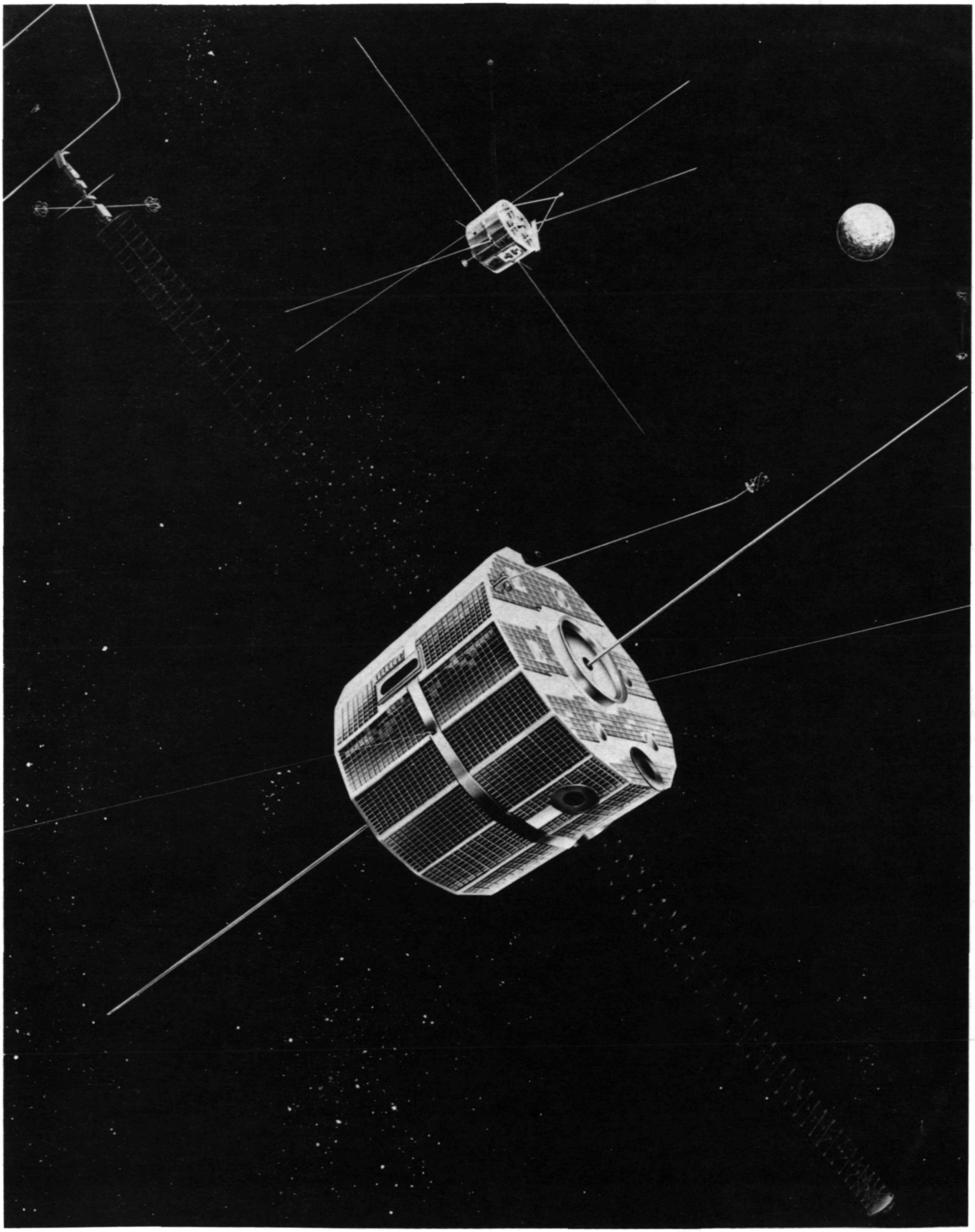
Dual spacecraft, Dynamics Explorers A and B, which will study Earth's near-space environment, will be launched by NASA no earlier than July 31 from the Western Space and Missile Center, Lompoc, Calif. Launch time is 2:55 a.m. PDT.

The dual satellites will be stacked together on a Delta 3913 launch vehicle and placed into coplanar (in the same plane but at different altitudes) orbits.

The mission of the two spacecraft will be the study of the space around Earth from the limits of the upper atmosphere to distances far out in the Earth's magnetic field. Doing so they will complement the work of two previous sets of satellites and prepare the stage for a fourth program that will provide a comprehensive assessment of the energy balance in near-Earth space.

July 16, 1981

-more-



Dynamics Explorer-A and B Spacecraft

These Explorer programs have been designed by NASA to provide an understanding of the processes by which energy from the Sun, in the form of light waves and matter, flows through interplanetary space, enters the region around the Earth controlled by the magnetic forces from the Earth's magnetic field (magnetosphere), and eventually is deposited in the Earth's upper atmosphere to produce the aurora (northern lights), affect radio transmission, and perhaps influence basic weather patterns. The three Atmosphere Explorer satellites studied the effects of the absorption of ultraviolet light waves by the upper atmosphere at altitudes as low as a satellite can orbit (about 130 kilometers or 80 miles), while the three International Sun-Earth Explorers (ISEEs) have been studying how the solar wind interacts with the Earth's magnetic field to transfer energy and ionized charged particles into the magnetosphere.

The Dynamics Explorer program is designed to supply specific knowledge about the coupling of energy, electric currents, electric fields and plasmas (ionized atomic particles) between the magnetosphere, the ionosphere and the atmosphere. The detailed information provided by these programs will lay the foundation for a four-satellite mission in the mid 1980s to study the Origin of Plasmas in the Earth's Neighborhood (OPEN). This program should provide scientists with a comprehensive and coherent understanding of the transfer of energy and matter from the Sun to its deposition in the atmosphere.

The dual Dynamics Explorer satellites will work to acquire data simultaneously in the magnetosphere by one spacecraft and in the ionosphere and atmosphere with the second. Since the Earth's magnetic field couples energy and particles between these regions, operations will be especially planned to acquire data at two altitudes along the same magnetic field line. This is one reason for the coplanar orbits, which is a unique configuration for satellites.

Since the coupling processes take place predominantly in the higher latitude regions where the magnetic field lines are nearly vertical, polar orbits also provide the passage of the spacecraft through the critical coupling regions of near-Earth space.

One spacecraft, Dynamics Explorer-A, will move in a high orbit, up to 25,000 km (15,500 mi.) above the Earth. It will carry video cameras to photograph the changing patterns of the northern lights, which are excellent signatures of the transfer of massive amounts of energy from the magnetosphere to the upper atmosphere.

Detectors of ionized particles and of magnetic and electric fields, as well as a variety of receivers of electromagnetic (radio-like) waves which are naturally and artificially generated, will be used to study the processes whereby the ionosphere and magnetosphere exchange energy.

Meanwhile, Dynamics Explorer-B, will skim above the atmosphere from pole to pole. Because of its lower orbit it will move much faster and make many more observations of the polar regions. More importantly, it will pass through the upper atmosphere and ionosphere, where the external disturbances are most intense and easier to measure.

Instruments will measure million-ampere electric current sheets running along magnetic field lines into, through and out of the ionosphere. The ionosphere is heated by these currents, with heating rates as high as those from sunlight.

Instruments will also measure the resultant winds, which blow as fast as 1,600 km/hr (1,000 mph).

Long antennas will measure electric fields, which produce electric potentials of tens of thousands of volts across the polar cap, and which are apparently transmitted along magnetic field lines from interplanetary space.

Especially interesting to scientists is the origin of intense electron beams which shoot down from space into the atmosphere and light it up with the glow and flashing of the northern lights.

To study what gives these electrons their speed, the coplanar orbits have been carefully chosen to intercept the same stream at different altitudes at about the same time.

There exist many clues -- from observations of the streams by single spacecraft to measurements of intense radio noise bursts -- suggesting that "nature's electron gun" is located between 4,800 and 13,000 km (3,000 and 8,000 mi.) above the polar regions. But it will be the role of the Dynamics Explorer spacecraft working together to supply the hard and detailed evidence as to what exactly is taking place.

Both spacecraft are equipped with many instruments, some using booms and antennas as long as 100 meters (328 feet), sticking in all directions away from the spacecraft bodies. Solar cell arrays mounted on the 1.36-m (53.5-inch)-diameter spacecraft bodies will supply the electrical energy needed to run the instruments and to telemeter the data to receiving stations on the ground. Weight of the combined payload is approximately 820 kilograms (1,800 pounds), with Dynamics Explorer-A weighing 403 kg (888 lb.) and Dynamics Explorer-B weighing 415 kg (915 lb.). Cost of developing the two spacecraft and the instrument payload is estimated to be about $54 million. Cost of the Delta launch is $23 million.

The spacecraft were built by RCA Astro-Electronics in Princeton, N.J. The Delta rocket was built by McDonnell Douglas Astronautics Corp. of Huntington Beach, Calif.

Project Manager for the Dynamics Explorer program is George D. Hogan, and the Project Scientist is Dr. Robert A. Hoffman, both of the Goddard Space Flight Center, Greenbelt, Md.

Tracking of the spacecraft and maintaining communications with them will be provided by Goddard's Space Tracking and Data Network (STDN) and the NASA worldwide communications system, NASCOM, also at Goddard.

(END OF GENERAL RELEASE; BACKGROUND INFORMATION FOLLOWS.)

MISSION SUMMARY

The general objective of the Dynamics Explorer Project is to investigate the strong interactive processes coupling the hot, tenuous, convecting plasmas of the magnetosphere and the cooler, dense plasmas and gases co-rotating in the Earth's ionosphere, upper atmosphere and plasmasphere.

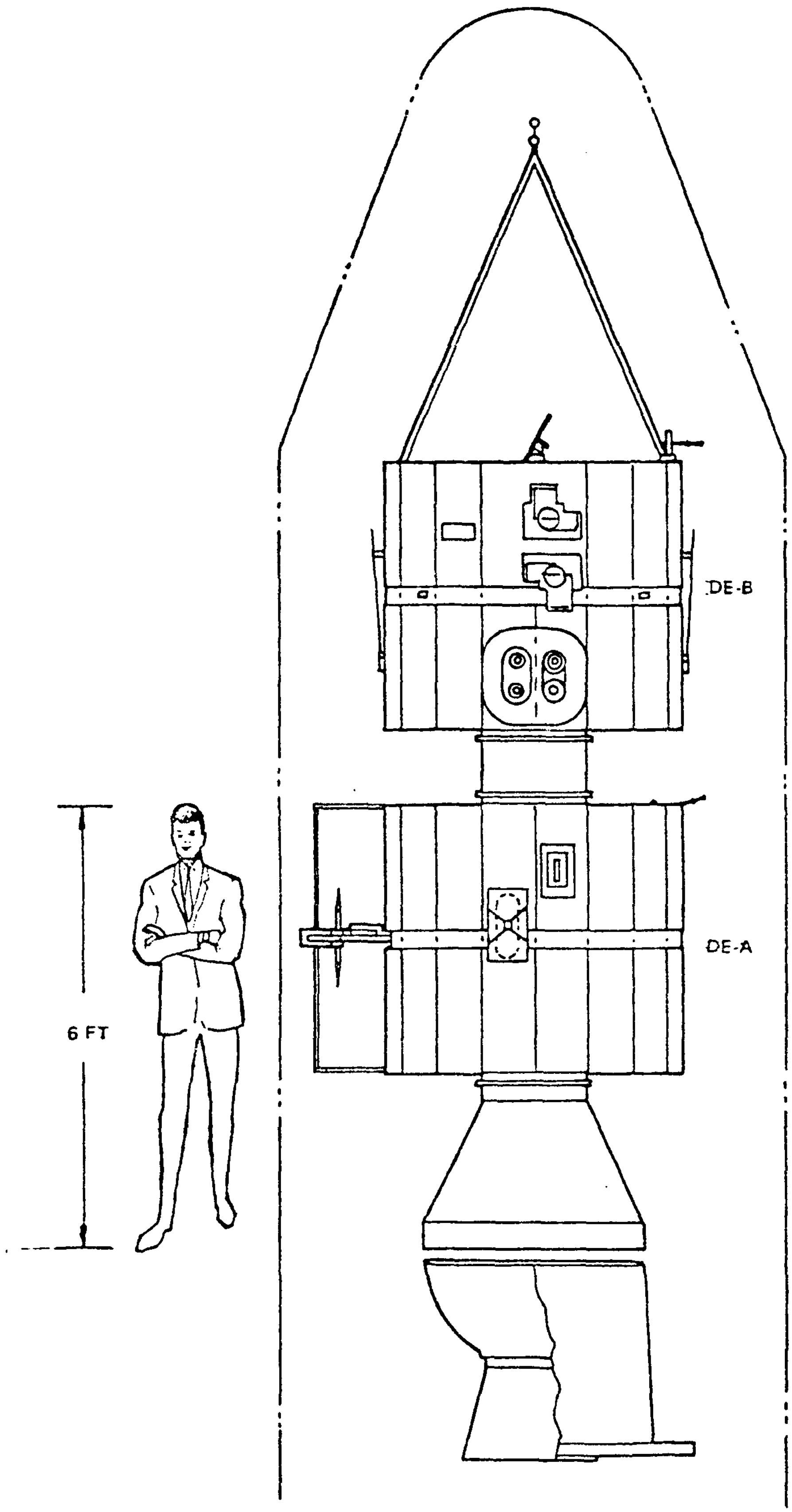
Individually, each spacecraft is capable of contributing to scientific knowledge; however, the mission basically relies on correlative sets of measurements from the two spacecraft. Dynamics Explorer-B will have a perigee lower than 350 km (220 mi.) for neutral composition, temperature and wind measurements, and an apogee greater than 1,000 km (621 mi.) to make measurements above the interaction regions for suprathermal ions and plasma flow measurements at the feet of the magnetospheric field lines. Dynamics Explorer-A will have an apogee altitude of 24,875 km (15,457 mi.) for global auroral imaging, wave measurements in the heart of the magnetosphere, and crossings of auroral field lines at several Earth radii.

SPACECRAFT DESCRIPTION

Each spacecraft structure is a 16-sided polygon approximately 1.35 m (53 in.) wide and 1.14 m (45 in.) high consisting of baseplates, center column, separation adapter, shear webs and hat structure. The structure provides mounting surfaces for the outer shells, instruments, electronic packages, attitude control systems, S-Band antenna and launch vehicle adapter.

The solar array "hats," upper and lower, used on each spacecraft, each interface with their respective baseplates and the center rings. The hats provide 7,200 square inches of mounting area for the solar cells to supply the necessary power to operate the spacecraft.

The Dynamics Explorer-A spacecraft weighs 403 kg (888 lb.) including 105 kg (231 lb.) of instruments. The Dynamics Explorer-B spacecraft weighs 415 kg (915 lb.) including 111 kg (245 lb.) of instruments.



Dynamics Explorer Stacked Launch Configuration

DYNAMICS EXPLORER-A AND B INSTRUMENTS AND INVESTIGATORS

Dynamics Explorer-A

Instrument	Investigator
Magnetometer (MAG-A)	M. Sugiura Goddard Space Flight Center
Plasma Wave Instrument (PWI)	S. Shawhan University of Iowa
Spin-Scan Auroral Imager (SAI)	L. Frank University of Iowa
Retarding Ion Mass Spectrometer (RIMS)	C. Chappell Marshall Space Flight Center
High Altitude Plasma Instrument (HAPI)	J. Burch Southwest Research Institute
Energetic Ion Composition Spectrometer (EICS)	E. Shelley Lockheed, Palo Alto

Dynamics Explorer-B

Instrument	Investigator
Magnetometer (MAB-B)	M. Sugiura Goddard Space Flight Center
Vector Electric Field Instrument (VEFI)	N. Maynard Goddard Space Flight Center
Neutral Atmosphere Composition Spectrometer (NACS)	G. Carignan University of Michigan
Wind and Temperature Spectrometer (WATS)	N. Spencer Goddard Space Flight Center
Fabry-Perot Interferometer (FPI)	P. Hays University of Michigan
Ion Drift Meter (IDM)	R. Heelis University of Texas
Retarding Potential Analyzer (RPA)	W. Hansen University of Texas
Low Altitude Plasma Instrument (LAPI)	J. Winningham Southwest Research Institute
Langmuir Probe Instrument (LANG)	L. Brace Goddard Space Flight Center

Non-Flight-Hardware Investigators

Magnetospheric Energy Coupling to Atmosphere Investigation	A. F. Nagy University of Michigan
Auroral Physics Investigation	F. V. Coroniti University of California, Los Angeles
Neutral Plasma Interactions Investigation	R. G. Roble National Center for Atmospheric Research
Atmospheric Dynamics and Energetics Investigation	H. G. Mayr Goddard Space Flight Center
Controlled and Naturally-Occurring Wave-Particle Interactions in the Magnetosphere	R. A. Helliwell Stanford University
Low-Altitude Plasma Investigation: High Angular Resolution	R. A. Hoffman Goddard Space Flight Center

DEPLOYED SYSTEMS

The Dynamics Explorer-A spacecraft has a single communications S-band antenna. It is folded during launch and deployed prior to third stage spinup. The antenna is approximately 1.5 m (5 ft.) long and is erected in the direction of, but offset from, the -z axis.

The Dynamics Explorer-A spacecraft also has six instrument appendages, as follows:

a. The Plasma Wave Instrument contributes five of these:

(1) Two furlable, 4-m (13-ft.) tubular antennas, to be deployed coincident with the $\pm z$ axis.

(2) Two wires, 100 m (328 ft.) long, to be deployed opposite one another in the XY plane.

(3) A triangular truss boom, 5.9 m (19 ft.) long, mounting three antennas: a loop, search-coil, and a short electric antenna. The boom is to be deployed in the XY plane.

b. The magnetometer instrument also required a triangular truss boom, 5.9 meters (19 ft.) long, deployable, with a magnetometer mounted to the end, the boom being located 180 degrees from the Plasma Wave Instrument boom.

The Dynamics Explorer-B spacecraft has a single 1.5-m (5-ft.) low-gain S-band antenna. It is mounted on a fixed bipod with guy wire supports approximately 1.5 m (5 ft.) from the solar array hat on the -z axis.

The Dynamics Explorer-B spacecraft also has nine instrument appendages, as follows:

a. The Vector Electric Field Instrument contributes six of these:

(1) Four tubular antennas, 11 m (36 ft.) long, to be deployed 90 degrees apart in the XY plane.

(2) Two tubular antennas, 11 m (36 ft.) long, to be deployed parallell, but offset, from the Z axis.

b. The magnetometer requires a 5.9 m (19 ft.) truss boom, as on Dynamics Explorer-A, to be deployed parallel to the -X axis in the XY plane and angled out of the XY plane toward the -Z axis by approximately 5 degrees.

c. The Langmuir Probe Instrument uses two deployable probes approximately 0.7 m (2.3 ft.) long, located along ±Y and canted 20 degrees toward the ±Z axis.

INSTRUMENTS

The scientific objectives and a brief description of each instrument carried on board the Dynamics Explorer A/B spacecraft are:

Dynamics Explorer-A

Magnetic Field Observations -- The magnetic field instrument consists of a fluxgate magnetometer on each of the two satellites to obtain magnetic field data essential to the studies of the magnetosphere-ionosphere-atmosphere coupling. The primary objectives of the instrument are measurements of field-aligned currents in the auroral oval and over the polar cap at two different altitudes using the two spacecraft and correlations of these measurements with observations of electric fields, plasma waves, suprathermal particles and thermal plasmas, and with auroral images obtained from the high altitude spacecraft.

Plasma Wave Instrument -- This will measure spatial, temporal, spectral and wave charactistics, particularly the vector component along the magnetic field line and the wave polarization of extra low frequency, very low frequency and high frequency noise phenomena. Of special interest are the auroral kilometric radiation and very low frequency hiss, and a variety of electrostatic waves that may cause field-aligned acceleration of particles.

Spin-Scan Auroral Imager -- The global auroral imaging instrumentation comprises spin-scan imaging photometers for acquiring:

a. Images at several visible wavelengths with adequate immunity to scattered light during sunlit portions of the satellite orbit.

b. Images within a vacuum ultraviolet 'window' which allows usable imaging of the aurora in the sunlit ionosphere.

c. Photometric measurements of the hydrogen corona.

Retarding Ion Mass Spectrometer -- The retarding ion mass spectrometer consists of a retarding potential analyzer for energy analysis, in series with a magnetic ion mass spectrometer for mass analysis. The instrument is designed to operate in two basic commandable modes: a high altitude mode in which the density, temperature and the bulk flow characteristics of H+, He+ and 0+ ions are measured and a low altitude mode which concentrates on the composition in the 1-64 amu range.

High Altitude Plasma Instrument -- The high altitude plasma instrument consists of an array of electrostatic analyzers capable of making measurements of the phase-space distributions of electrons and positive ions from 5 eV to 25 keV as a function of pitch angle. Analysis of the data from this instrument will contribute to the studies of:

a. The composition of energy of Birkeland current charge carriers;

b. The dynamic configuration of high altitude magnetic flux tubes;

c. Auroral particle source regions and acceleration mechanisms;

d. Sources and effect of polar cap and particle fluxes;

e. Transport of plasma within and through the magnetospheric clefts;

f. Wave-particle interactions; and

g. Hot-cold plasma interactions.

Energetic Ion Composition Spectrometer -- This is a high sensitivity, high resolution, energetic ion mass spectrometer which will cover the energy range from 0 to 17 keV per unit charge and the mass range from 1 to over 138 amu per unit charge.

The measurements obtained from this instrument will be used:

a. To investigate the strong coupling mechanism between the magnetosphere and the ionosphere that results in large fluxes of energetic 0+ ions being accelerated from the ionosphere and injected into the magnetosphere during magnetic storms.

b. To study the properties of the minor ionic species such as He+ and He++ relative to the major constituents of the energetic magnetosphere plasma in order to evaluate the relative importance of the different sources of the plasma and of various energization transport and loss processes which may be mass or charge dependent.

Dynamics Explorer-B

Vector Electric Field Instrument -- A vector electric field instrument will employ an orthogonal set of antennas with 20-m (66-ft.) baselines for vector measurements of dc electric fields. The system is designed to provide the data necessary to meet the following objectives:

a. Obtain accurate and comprehensive triaxial dc electric field measurements at ionospheric altitudes.

b. Study to what degree and in what region the electric field maps to the equatorial plane.

c. Obtain measurements of extremely low-frequency-and lower-frequency irregularity structures.

Neutral Atmosphere Composition Spectrometer -- The neutral atmosphere composition instrument is a mass spectrometer designed to obtain in-situ measurements of the composition of the neutral atmosphere and to study the variations of the neutral atmosphere in response to energy coupled into it from the magnetosphere. The energy inputs produce temperature enhancements, large scale circulation cells, and wave propagation, each of which possesses a rather specific signature in composition variations. Measurements of these variations will permit study of the parition, flow and disposition of the energy from the magnetosphere.

Wind and Temperature Spectrometer -- The neutral wind and temperature measurement instrument will use a mass spectrometer to measure the in-situ neutral winds, the neutral particle temperatures and the concentration of selected gases on the Dynamics Explorer-B mission. The science objective is to study the interrelationships between the winds, the temperature, plasma drift, electric fields and other properties of the thermosphere which are expected to be measured by other instruments on the spacecraft.

Knowing how these properties are interrelated will help explain the consequences of the acceleration of ions by neutrals creating electric fields, and the related energy transfer between the ionosphere and the magnetosphere.

Three components of the winds, one normal to the satellite velocity vector in the horizontal plane, one vertical and one in the satellite direction will be measured. From these quantitative measurements, the wind vector will be computed.

Fabry-Perot Interferometer -- The Fabry-Perot interferometer is a high resolution instrument designed to measure the drift and temperature of neutral ionic atomic oxygen using the Doppler technique. Zenith angle scanning provides wind determinations at various altitudes below the spacecraft. The information obtained from these measurements will be used to study the dynamics response of the thermosphere to the energy source due to magnetospheric electric fields and by the absorption of solar ultraviolet light in the thermosphere.

Ion Drift Meter -- The ion drift meter will measure the bulk motions of the ionospheric plasma perpendicular to the satellite velocity vector. It is anticipated that these measurements will yield valuable information on:

a. The ion convection (electric field) pattern in the auroral and polar ionosphere;

b. The flow of plasma along magnetic field lines within the plasmasphere determining whether this motion is simply a breathing of the protonosphere, a refilling of this region after a storm, or an interhemisphere transport of plasma;

c. The thermal ion contribution to field-aligned electric currents;

d. Velocity fields associated with small-scale phenomena that are important at both low and high altitudes;

e. The magnitude and variation of the total ion concentration along the orbital flight path.

Retarding Potential Analyzer -- The retarding potential analyzer will provide data on ion temperature, ion composition, ion concentration and the ion bulk velocity nominally parallel to the vehicle velocity. The measured parameters are basic to the understanding of mechanisms that influence the plasma; i.e., to the understanding of the coupling between the solar wind and the Earth's atmosphere. It is anticipated that the instrument will define the ion temperature in the regions where N(1) is greater than 100 ions cm^{-3} and will determine the value of N(1) from its maximum value down to approximately 10 ions cm^{-3}.

Science Data Processing System -- The Science Data Processing System, located at Goddard, is a central computer facility composed of a computer accessed by several types of graphics terminals at the investigators' facilities. The computer provides seven functions to the user community: (1) direct access to telemetry, orbit and attitude data bases, (2) the creation of common time scale plots of abstracted data from the instruments, called summary plots, (3) processing of the data to create a data base for analysis, designated Mission Analysis Files, (4) storage of and access to the Mission Analysis Files, (5) interactive analysis of data, (6) creation of graphics displays, and (7) system support functions. The facility will be augmented by another computer, designated the Mission Analysis Computer System, to provide vastly increased on-line storage for the Mission Analysis files and a considerable improvement in computer power to support the interactive analysis.

The Mission Analysis Files are the primary data base used by the Science Team for scientific interpretation. The data base management system allows for scanning a central directory via the terminals to initially sort and select data for scientific investigations. The selected data sets will then be accessed by the terminals and further analyzed interactively or, in some case, transferred to a computer-assisted terminal for detailed analyses.

The summary plots are being developed primarily for the identification and selection of time periods or events for detailed analysis. The plots will contain unverified data in geophysical units on common time scales from most of the instruments. These plots on microfiche will be duplicated, then distributed to the investigators and other appropriate scientists. The auroral image data will be processed off-line at the University of Iowa and returned to the Goddard computer for storage and the generation of microfilm plots for distribution.

The graphics display terminals (vector, gray scale or color) and hard-copy units at each of the investigator's facilities are tailored to the specific needs of the individual investigator. Many of the terminals are associated with minicomputers.

Many of the data displays for analysis and for archival purposes will be recorded on 35-mm microfilm and on microfiche. For timely production a micrographics unit with gray scale and color capability has been obtained for the Science Data Processing System.

LAUNCH VEHICLE

The Dynamics Explorer-A and B spacecraft will be launched in a stacked configuration on one Delta 3913 launch vehicle.

The first stage is a McDonnell Douglas Astronautics Corp. modified Thor booster incorporating nine Thiokol strap-on solid fuel rocket motors. The booster is powered by a Rocketdyne engine. The main engine is gimbal-mounted to provide pitch and yaw control from liftoff to main engine cutoff. Two liquid-propellant vernier engines provide roll control throughout first-stage operations and pitch and yaw control from main engine cutoff to first stage separation.

The second stage is powered by a TRW Systems TR-201 liquid-fuel, pressure-fed engine which is also gimbal-mounted to provide pitch and yaw control through second-stage burn. A nitrogen gas system using six fixed nozzles provides roll control during powered and coast flight, as well as yaw and pitch control after second-stage cutoff. Propellant settling before restart of the second stage is achieved by thrust from nitrogen gas jets. Two fixed nozzles fed by the propellant-tank helium pressurization system provide retro-thrust after Dynamics Explorer-B spacecraft separation.

The Dynamics Explorer-A spacecraft will be attached to the Delta third stage by means of a payload attach fitting which incorporates the separation system. The Delta fairing is attached to the forward face of the second stage and is 7.9 m (312 in.) long and 2.4 m (96 in.) wide.

An all-inertial guidance system controls the vehicle and sequence of operations from liftoff to spacecraft separation. This guidance system consists of an inertial sensor package and digital guidance computer.

The low-altitude spacecraft, Dynamics Explorer-B, will be separated first into its orbit and will be spin stabilized at separation from the Delta vehicle. The high-altitude spacecraft, Dynamics Explorer-A, will be spun up by the Delta spin table before the Delta third stage injects it into orbit.

CHARACTERISTICS OF DELTA 3913 LAUNCH VEHICLE

First Stage

McDonnell Douglas Astronautics Corp. Model DSV-3P-1B has the following characteristics:

Thrust: 912,000 newtons (205,036 lb.)

Fuel Type: Liquid Oxygen (LOX) RJ-1

Fuel Weight: 80,740 kg (178,001 lb.)

Gross Weight: 85,276 kg (188,001 lb.)

Guidance: Inertial (on second stage)

Tracking Aids: None (uses second stage TRK aid)

The first stage is augmented by nine Thiokol TX 526-2 Castor IV solid motors, each with the following characteristics:

Thrust: 329,000 N (73,966 lb.)

Gross Weight: 10,840 kg (23,898 lb.)

Fuel Weight: 9,373 kg (20,664 lb.)

Six motors burn from liftoff to 58 seconds, and three motors burn from 4 to 122 seconds.

Second Stage

TRW TR-201 has the following characteristics:

Thrust: 44,482 N (10,000 lb.)

Fuel Type: N_2O_4 and Aerozine 50

Fuel Weight: 4,729 kg (10,426 lb.)

Gross Weight: 6,085 kg (13,416 lb.)

Guidance: Inertial

Tracking Aids: C-band transponder

Third Stage

TE 364-14 has the following characteristics:

Thrust: 38,400 N (8,633 lb.)

Fuel Type: Solid Propellant

Fuel Weight: 558 kg (1,230 lb.)

Gross Weight: 622 kg (1,371 lb.)

Guidance: Spin stabilized

Tracking Aids: TLM S-band

LAUNCH OPERATIONS

NASA launch operations from its West Coast facility are conducted by the Kennedy Space Center's Expendable Vehicles Operations Directorate. This facility is located at the Western Space and Missile Center at Vandenberg Air Force Base near Lompoc, Calif., approximately 201 km (125 mi.) northwest of Los Angeles and 451 km (280 mi.) south of San Francisco. Launch facilities are located on a promontory which juts into the Pacific Ocean near Point Arguello, making it possible to launch to the south to place payloads into polar orbit without overflying populated areas.

Dynamic Explorer will be launched aboard Delta 155 from Space Complex Two West, which has been extensively updated over the years to accept the various Delta configurations, including the powerful new version now in use. This will mark the first time that the Delta with the powerful Castor IV strap-on solid rocket boosters has been launched from NASA's West Coast facilities.

Some Kennedy Space Center personnel are on permanent assignment as members of the Delta Western Operations Branch. These personnel are augmented by a larger management and technical group from the Kennedy Space Center in Florida during final preparations and the launch countdown. A permanent work force is maintained at these facilities by the McDonnell Douglas Corp., prime contractor for the Delta launch vehicle.

Preparations for launch of Dynamic Explorer began on May 8 with erection of the Delta 155 booster at SLC-2W. The interstage was erected on May 11 and the mating of the second stage followed on May 12. The nine Castor IV solid rocket boosters were mounted around the base of the booster May 13-15.

The Dynamics Explorer-A and B spacecraft arrived on July 8 and were moved to the Spin Test Facility where they were mated with the Delta third stage on July 17. The spacecraft/third stage assembly was moved to the pad and mated with the second stage on July 21. The payload fairing which will protect the spacecraft on their flight through the atmosphere will be placed atop the "stack" several days prior to launch.

LAUNCH TIME LINE

Event	Elapsed Time
Liftoff (5:55:42 EDT)	0 min 0 sec
Main Engine Cutoff	3 min 47 sec
Stage I Separation	3 min 55 sec
Stage II Ignition	4 min 0 sec
Fairing Jettison	4 min 4 sec
Second Engine Cutoff (SECO) 1	8 min 39 sec
Stage II Restart	12 min 28 sec
SECO 2	14 min 35 sec
Initiate Momentum Wheel Asembly Spinup	14 min 50 sec
Dynamics Explorer-B Separation	19 min 10 sec
Payload Attach Fitting Separation	22 min 55 sec
S-Band Antenna Deploy	23 min 27 sec
Fire Spin Rockets	40 min 35 sec
Jettison Stage II	40 min 37 sec
Stage III Ignition	41 min 19 sec
Stage III Burnout	42 min 0 sec
Dynamics Explorer-A Separation	43 min 15 sec

DYNAMICS EXPLORER/DELTA TEAM

NASA Headquarters

Andrew J. Stofan	Acting Associate Administrator for Space Science
Franklin D. Martin	Director, Astrophyics Division
Richard Halpern	Chief, Research Flight Program Development
Marius Weinreb	Dynamics Explorer Program Manager
Erwin R. Schmerling	Dynamics Explorer Program Scientist
Stanley I. Weiss	Associate Administrator for Space Transportation Operations
Joseph B. Mahon	Director, Expendable Launch Vehicle Program
Peter Eaton	Manager, Delta Launch Vehicles
Robert E. Smylie	Associate Administrator for Space Tracking and Data Acquisition

Goddard Space Flight Center

A. Thomas Young	Director
John H. McElroy	Deputy Director
William C. Keathley	Director of Flight Projects
Robert Lynn	Deputy Director of Flight Projects
David W. Grimes	Delta Project Manager
William Russell	Delta Project Deputy Manager, Technical
William Burrowbridge	Delta Mission Integration Manager
George D. Hogan	Project Manager, Dynamics Explorer
James Moore	Deputy Project Manager
Charles Rhoads	Deputy Project Manager, Resources
Robert A. Hoffman	Project Scientist, Dynamics Explorer
Warner Hord	Spacecraft Manager

Goddard (cont'd.)

Keith Fellerman	Instrument Manager
Carl E. Gustafson	Mission Operations Manager
Eugene Willingham	Project Operations Director
Joseph Ryan	Project Launch Operations Manager
Robert I. Seiders	Network Support Manager
John B. Zegalia	Mission Support Manager
Clyde Freeman	Science Data Processing Systems Manager

Kennedy Space Center

Richard G. Smith	Director
Thomas S. Walton	Director of Cargo Operations
Charles D. Gay	Director, Expendable Vehicles Operations
D. C. Sheppard	Chief, Automated Payloads Division
Wayne L. McCall	Chief, Delta Operations Division
C. R. Fuentes	Spacecraft Coordinator
Ray Kimlinger	Chief, Delta Western Operations Branch

RCA

Charles A. Schmidt	Vice President and General Manager
Robert Miller	Manager, NASA Programs
Donald G. Shipley	Dynamics Explorer Program Manager
William V. Fuldner	Dynamics Explorer Deputy Program Manager
Ronald C. Maehl	Manager, Dynamics Explorer Science Accommodation

-end-

(Index: 21, 29, 33, 36)