NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579
FOR RELEASE: FEBRUARY 21, 1971

Release No. 71-1

GALACTIC ASTRONOMY EXPERIMENT LAUNCHED AT WALLOPS ISLAND

An experiment to search for x-ray polarization of the Crab Nebula was launched by the National Aeronautics and Space Administration at Wallops Island, Virginia at 7:43 p.m. EST today.

A two-stage Aerobee 350 sounding rocket carried the 971-pound payload to an altitude of approximately 122 statute miles and recovery from the Ocean's surface will be attempted early tomorrow.

The purpose of the experiment is to determine whether the x-rays coming from the Crab Nebula are polarized by using a narrow-band polarimeter sensitive to x-rays at 2.6 kev and a broad-band polarimeter sensitive in the region of 5-25 kev.

The Crab Nebula is the remnant of a super nova explosion that occurred in 1054 A.D. It was witnessed by the Chinese astronomers of that day and was so bright as to have been visible even in daylight for several weeks after the explosion. This object has turned out to be of central importance in the development of our understanding of astrophysical phenomenon. Astrophysicists have long wondered whether the emission from this object results

- more -

from the initial energy release in the explosion or if there might be a remnant of the original star which is still producing energy. The answer to this question was dramatically obtained a few years ago when it was found that a small stellar object in the center of the Crab Nebula is a pulsar.

This pulsar is unique in that it is found to be pulsing at a rate of 30 pulses per second in the radio, optical, and x-ray bands. It is now generally believed the exploding star blew off a shell of gas which we now recognize as the Crab Nebula and that the remainder of the star collapsed to very small dimensions with nuclear densities. These densities are so high that the entire remaining stellar mass has a radius of about 10 miles; i.e., it is as if our sun collapsed from its diameter of almost 1 million miles (864,000,000) to about 10 miles. This neutron star at the center of the nebula is believed to be producing high energy particles which account for the emission in the nebula and for the production of cosmic rays which pervade the universe. It is believed these high energy particles in the nebula produce visible radiation through their acceleration by a magnetic field in the nebulae. This is evidenced by very strong polarization of the optical emission for the nebulae.

The x-ray polarization measurement experiment is designed to determine whether or not the nebula x-rays are also produced by the magnetic acceleration process. If the x-rays are produced by this mechanism,

then the experimenters expect an x-ray polarization in the neighborhood of 12-20 percent. Thus the rocket flight should provide an important new insight into one of the most fascinating of all astrophysical objects.

The Aerobee 350 payload carried two polarimeters sensitive to the x-rays at 2.6 kev and from 5 to 25 kev.

The first polarimeter is a lithium-block scattering device mounted on the forward face (exposed after startracker ejection) of the payload and operating in the 5-25 kev range. Its greater surface area and increased sensitivity makes it more effective than previously flown instruments of this type. This is a larger version of a device previously flown in an Aerobee 170 from White Sands, New Mexico.

The second polarimeter is a set of mosaic crystal devices mounted on each of four side doors. It has high sensitivity in the 2.6 kev range and is capable of detecting polarization as small as nine percent.

An attitude control system pointed the payload at the Crab Nebula through a series of roll, pitch, and yaw maneuvers.

The Aerobee 350 is a liquid-fueled rocket with a solid-propellant Nike booster as first stage. It is 52 feet long, 22 inches in diameter and weighs over 3.5 tons. The Nike booster has a thrust of 45,000 pounds and the Aerobee 350 sustainer a thrust of 16,500 pounds.

Recovery operations under the direction of Robert S. Nock will be attempted after daylight tomorrow by Wallops helicopter, fixed-wing aircraft, and the Range Recoverer ship.

John G. Guidotti of the NASA Goddard Space Flight Center, Maryland,

is the Project Manager. Dr. R. Novick of the Astrophysical Laboratory of Columbia University, New York, is the Principle Investigator. Columbia Co-Investigators are Dr. M. Wisskopf, Dr. R. Wolff, Mr. G. Epstein, and Mr. R. Linke. Joseph R. Duke was in charge of the rocket launch as Project Engineer for Wallops Station.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: February 24, 1971 P.M.

Release No. 71-2

ASTRONOMY EXPERIMENT LAUNCHED AT WALLOPS

A rocket-borne telescope instrumented for infra-red astronomy by scientists from the U. S. Naval Research Laboratory was launched at the NASA Wallops Island, Virginia, facility today at 8:14 p.m. EST. The 17-inch diameter solid-propellant Black Brant VB rocket was produced by Bristol Aerospace Limited of Canada and is capable of lifting a 478-pound payload to an altitude of 175 miles. Payload recovery will be attempted after daylight tomorrow.

A unique engineering feature of the telescope was the cooling of the entire unit to the temperature of boiling liquid helium (-450° F). The extremely cold temperatures were required to keep radiation from the telescope itself from interfering with the measurements. The telescope before launch resembled a double-walled vacuum bottle with about 16 quarts of liquid helium within its walls.

The telescope contained photoelectric detectors sensitive to optical radiation in the spectral region between visible light and microwaves where heat rays, emitted by the atmosphere mask

-more-

celestial sources. Previous experiments indicate that one detector sensitive to the 0.3 to 1.5 millimeter wavelength band observed cosmic radiation which may have originated at the beginning of the universe ten billion years ago. Other detectors observed star-like sources of infra-red rays in the 10 to 300 micron band.

Preliminary measurements from infra-red rocket and balloon-borne telescopes carried out by NRL, Cornell University, and Goddard Institute for Space Studies indicate that within our galaxy and possibly in distant galaxies, there is a large amount of radiation in the infra-red as compared to the visible and radio regions of the spectrum. It is hoped that results from this launch and subsequent flights will make it possible to better understand the processes involved with this excess energy content.

Dr. Douglas P. McNutt (NRL) is the Project Scientist and Eddie L. Wilder (NRL) is the Project Manager. David Griffiths is the Project Engineer for Bristol Aerospace Ltd. of Canada and Robert S. Nock is the Project Engineer for Wallops.

Recovery operations under the direction of Robert T. Long will begin at daylight tomorrow utilizing Wallops recovery forces with the assistance of the U. S. Coast Guard Cutter ALERT and U. S. Coast Guard helicopted from Cape May, N. J.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579
FOR RELEASE: THURSDAY, MARCH 4, 1971

RELEASE NO. 71-3

ECLIPSE COMPARISON ROCKET LAUNCHINGS

A total of eight sounding rockets are scheduled to be launched from the National Aeronautics and Space Administration's Wallops Island launch site March 8 through 10 to obtain atmospheric data to compare with data observed during the solar eclipse of March 7, 1970.

The purpose is to observe temperatures, air density and pressures as well as wind variations on a normal day with about the same solar zenith angle that existed last year. Scientists want to compare these measurements with some rather large variations of the same conditions observed during the eclipse.

A total of 30 sounding rockets were launched in the 1970 Eclipse Program with only one failing to return any scientific data. It was the greatest amount of data ever gathered on a solar eclipse.

Weather conditions permitting, the following is the launch schedule (in Eastern Standard Time):

Nike-Cajun--grenade payload	March 8	1:24 p.m.
Nike-Cajun--grenade payload	March 9	12:30 p.m.
Nike-Apache--pitot probe	March 9	12:59 p.m.
Nike Apache--pitot probe	March 9	1:26 p.m.
Nike-Apache--pitot probe	March 9	1:41 p.m.
Nike-Cajun--grenade payload	March 9	2:11 p.m.
Nike-Cajun--grenade payload	March 9	2:41 p.m.
Nike-Cajun--grenade payload	March 10	12:45 p.m.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: IMMEDIATE

71-4

NOTE TO EDITORS:

A Conference on Remote Sensing of the Chesapeake Bay will be held at NASA's Wallops Station, Va., April 5-7. Local, state and federal government representatives will discuss environmental problems of the Chesapeake Bay area and the extent to which remote sensing from aircraft and satellites can contribute to solution of those problems. For further information, call Wallops Station, (703) 824-3411, extension 579 or 584.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: TUESDAY, MARCH 30, 1971

Release No. 71-4

REMOTE SENSING CONFERENCE AT WALLOPS ISLAND

A Conference on Remote Sensing of the Chesapeake Bay will be held at NASA's Wallops Station, Va., April 5-7.

Objective of the Conference is to identify the primary environmental problems of the Chesapeake Bay area and to determine the extent to which remote sensing from aircraft or satellites can contribute to the solution of these problems.

Cooperating in sponsoring the Conference are the States of Maryland and Delaware, the Commonwealth of Virginia, the National Aeronautics and Space Administration and the Smithsonian Institution.

Invitations have been sent to individuals in local, state and federal government agencies and educational institutions that are especially concerned with the preservation and improvement of the Chesapeake Bay environment. Some 400 are expected to attend.

The area around the bay is one of four regional test sites in the United States being considered for experimental evaluation of remote sensing techniques. The site covers 20,000 square miles of Virginia, Maryland and Delaware and was selected because of the variety of resources and environmental problems of potential interest.

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A number of remote sensing experiments will be conducted in the area using data to be acquired by the first Earth Resources Technology Satellite (ERTS-A) scheduled to be launched by NASA in the spring of 1972. In the meantime, data acquired by aircraft will be used to simulate information from ERTS.

It is believed that remote sensing space technology has the potential for contributing to the solution of problems in a wide variety of discipline areas: agriculture, forestry, hydrology, oceanography, geography, geology and many air, water and land pollution problems of current concern.

The Conference will consider such problems of interest to the Chesapeake Bay area as:

*Environmental pollution

- Pollution from industrial wastes
- Air pollution
- Pollution from agricultural sedimentation and wastes

*Environmental balance

- Estuarine turbidity, flushing, salinity and circulation
- Extractable biological resources
- Agriculture and forestry - identification, vigor and disease
- Recreational uses

*Other economic activity

- Engineering changes
- Shoreline activities
- Urban growth and development

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, APRIL 2, 1971

Release No. 71-5

"OPEN HOUSE" AT WALLOPS APRIL 17 AND 18

The public is cordially invited to visit NASA Wallops Station on Saturday and Sunday, April 17 and 18, from 10:00 a.m. until 4:30 p.m. EST.

This is a joint event of federal activities in the area including Assateague National Seashore Park, Chincoteague Coast Guard Station, Chincoteague National Wildlife Refuge, and NASA Wallops Station. All of these agencies are planning special exhibits and/or tours at their respective facilities.

Visitors will be permitted to view facilities at the Wallops Main Base and the rocket launching sites on Wallops Island. The Main Base and Wallops Island are approximately 10 miles apart. A tour of both areas will require one to two hours.

The Wallops Island part of the tour will be a self-guided "do-it-yourself" riding tour in your own private car. Descriptive literature will be provided to point out items of interest as you ride by. Visitors will see launching pads, rocket storage structures, long range tracking radars, weather towers, blockhouses, rocket assembly shops, and other related range facilities.

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At the Main Base the Range Control Center and an exhibit area containing photographs and models will be open to visitors.

The tour may begin either at the Wallops Island Launch Site or the Main Base. Information and instruction books will be available at the entrance to both areas. Cameras are permitted.

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Release No. 71-7

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, MAY 7, 1971

WALLOPS AIRCRAFT CONTRACT

The National Aeronautics and Space Administration has selected Lockheed Aircraft Service Company, Jamaica, New York, for award of a contract to provide maintenance and operation of aircraft at Wallops Station, Wallops Island, Virginia. Nine firms had submitted proposals for this work.

The cost-plus-award-fee contract will run for one year beginning next July, with provision for two one-year options. The company proposed an estimated cost of about $300,000 for the one-year period.

Services under the new contract include furnishing necessary management, personnel, material and equipment for the operation, maintenance and other incidentals necessary to operate and maintain three C-54 aircraft and one Queen Air-80 aircraft.

This contract will be administered by Wallops Station under the direction of NASA's Office of Tracking and Data Acquisition.

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Release No. 71-8

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, JUNE 11, 1971

MIGRATORY BIRD NAVIGATION EXPERIMENT

The National Aeronautics and Space Administration's Wallops Island, Virginia, facility is providing support for a migratory bird experiment by Cornell University, Ithaca, New York.

During the past two decades, much attention has been directed toward understanding the navigational systems of migrating birds. Radar studies of bird migration have provided descriptive information on the behavior of birds in flight. Experimental studies on captive animals have provided insight into the types of sensory cues that animals can use, at least in caged situations. Until recently, however, it has not been possible to combine these two techniques and to manipulate experimentally the navigational system of a free-flying bird as it travels along its migratory route.

Dr. Stephen T. Emlen and Natalie Demong of Cornell have devised a technique that makes this "manipulation" possible. Birds are captured in nets, examined, and then released to continue on their migrations under varying cloud conditions and darkness which is, in effect, a manipulation of their navigational systems. The bird is placed in a specially designed box and

-more-

carried aloft by a weather balloon to an altitude of 3,000 to 6,000 feet. The bird is released at the desired altitude and can be tracked by ground radar as it actually makes its orientational decision and departs on migration.

The Wallops Island SPANDAR (Space Range Radar) tracking radar is being used in these studies. This is a powerful, narrow beam, tracking radar. It has a 60-foot diameter "dish" antenna with digital position recording capability. In addition, the video return or blip in the radar monitor can be photographed on Polaroid film for real-time data.

The initial navigation experiments will involve releasing and tracking both passerine (small or medium-sized perching songbirds) and shorebird species under a variety of weather conditions. The results from these releases will provide baseline information necessary for evaluating the results obtained from experimentally manipulated birds. The Cornell experimenters hope to test birds when star cues are absent (under totally overcast skies), when the birds are prevented from viewing the position of sunset, and when they carry miniature magnets attached to their bodies.

They also hope to track the birds after release within thick cloud layers, when visual cues from both the sky and ground are absent. Other tests involve releasing birds that have had their internal biological clocks reset out of phase with local time.

The results from these studies are expected to give a much better idea of the importance of celestial, magnetic, topographic, and meteorological cues in the guidance systems of nocturnally migrating birds.

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Release No. 71-9

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, JUNE 11, 1971

IONOSPHERE PHYSICS EXPERIMENT CONDUCTED AT WALLOPS

Experiments to measure a wide parameter of components in the "twilight" ionosphere were rocket-launched to a peak altitude of 264 statute miles (325 kilometers) from NASA Wallops Island, Virginia yesterday. Liftoff occurred at 7:10 p.m. EDT.

The primary purpose of this flight was to identify and measure the various constituents making up the composition of the twilight ionosphere. The ionosphere is a layer or region, characterized by varying high ion and electron densities, that surrounds the Earth beginning at an altitude of about 45 miles (72 kilometers). Its effect on radio communications, including blackouts and changes in radio transmission, are well-known. This particular investigation will be directed at altitudes from about 60 miles (100 kilometers) to about 200 miles (320 kilometers), and will provide needed information concerning the evening twilight conditions as opposed to the more often studied daytime and nighttime conditions. Scientists hope to answer such questions as: "What are the neutral, positive and negative ion, and electron constituents, and what is their distribution?"; and "What is their density, temperature, and energy distribution?"

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This joint Johns Hopkins University/University of Pittsburgh project included five different experiments, one of which is a prototype of a 0.5 meter Ebert spectrometer which will be carried onboard Apollo 17 scheduled for December 1972. This device will assist scientists in analyzing the nearly "non-existent" atmosphere of the moon.

Other instruments, in addition to the Apollo spectrometer prototype, are an Ebert UV spectrometer, a neutral and an ion mass spectrometer, an electron spectrometer, and a filter-wheel spectrometer. Total payload weight was 405 pounds (184 kilograms). The secondary objective of this flight was to provide engineering data for an evaluation of the launch vehicle performance.

The Aerobee 350, a relatively new vehicle, is 52-feet long, 22 inches in diameter, and weights over 3.5 tons. The four clustered Aerobee liquid engines each develop a sea-level thrust of 4100 pounds and burn for about 52 seconds. The booster stage is a solid propellant Nike motor which has a thrust of 52,000 pounds. The Sustainer and booster stages fire simultaneously, with the Nike booster separating about 3.2 seconds later. The liquid-fueled rocket gives delicate electronic instruments a "softer" ride than the all-solid fuels.

Project Scientist for this flight is Dr. William G. Fastie of the Applied Physics Laboratory of the Johns Hopkins University. He has been conducting similar experiments on sounding rockets since the early 1970's from White Sands, New Mexico, Fort Churchill, Canada, and Wallops.

Co-Scientist is Dr. E. Zipf of the University of Pittsburg. Richard Windsor of the Goddard Space Flight Center is the NASA Project Manager and Wendell H. Lee is the Wallops Project Engineer.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, JUNE 21, 1971

Release No. 71-11

PAET SPACECRAFT LAUNCHED FROM WALLOPS ISLAND

The National Aeronautics and Space Administration successfully launched an atmospheric probe from Wallops Island, Virginia, at 3:31 p.m. EDT yesterday aboard a 4-stage Scout vehicle. It reentered the Earth's atmosphere at 15,000 miles an hour and impacted in the Atlantic Ocean about 600 miles downrange, about 100 miles northeast of Bermuda, some fifteen minutes later.

Purpose of the experiment is to investigate means of determining the structure and composition of an unknown planetary atmosphere.

The Planetary Atmosphere Experiments Test (PAET) is one step in providing the technical base necessary for advanced planetary exploration to Mars, Venus, and eventually the outer planets.

The PAET spacecraft was designed and built by NASA Ames Research Center in California.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, JUNE 25, 1971

Release No. 71-12

IONOSPHERIC PHYSICS EXPERIMENT LAUNCHED AT WALLOPS

The National Aeronautics and Space Administration launched an experiment to investigate the characteristics of the ionosphere at 4:44 a.m. EDT today from Wallops Island, Virginia. The launch vehicle was a solid-fuel, 4-stage Javelin rocket and reached a peak altitude of 414 statute miles (662 kilometers).

The purpose of the National Oceanic and Atmospheric Administration (NOAA) experiment is to investigate the region of the ionosphere above the maximum electron density where it may be treated as a well-behaved plasma (electron gas). A swept-frequency radio frequency sounder (transmitter, receiver, and dipole antenna) is used to excite electrostatic plasma waves (a type of electron sound wave) and to observe echoes of these waves after reflection from other parts of the ionosphere. These waves propagate near certain resonant frequencies of plasmas and are very sensitive to plasma properties, which also makes them useful as a measuring tool. The frequency spectrum of the returning echoes will be analyzed for comparison with the theory of plasma waves and the resulting temperature measurements will be compared with a Goddard Space Flight Center Langmuir probe also contained in the payload.

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The data received from the rocketborne propagation properties measurements will be correlated with measurements taken simultaneously by the Ionosphere Sounding Station operated by the National Bureau of Standards located at Wallops. Characteristics of the ionosphere investigated here include the lowest frequency at which echoes are received, electron densities, the virtual heights and critical frequencies of various regions, the degree of storminess of the ionosphere, and any special or unusual phenomena observed.

Dr. J. R. McAfee is the NOAA Project Scientist. Ken Brown and Ernie Busboso are the Goddard experimenters. E. Benjamin Jackson is the Wallops Project Engineer.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, JULY 9, 1971

Release No. 71-13

SOLAR RADIATION SATELLITE LAUNCHED AT WALLOPS

The National Aeronautics and Space Administration launched the Naval Research Laboratory's latest solar radiation measuring satellite at 6:58 p.m. EDT last night from Wallops Island, Va.

The 260-pound spacecraft, SOLRAD 10 (C) was boosted into Earth-orbit by NASA's all-solid propellant Scout launch vehicle.

There are 14 experiments aboard the NRL satellite, designed to monitor continuously solar electromagnetic radiation (X-ray) and ultraviolet and to measure, on command, stellar radiation (X-ray) from other celestial sources. Information gained by the satellite is expected to contribute to a better understanding of the physical processes involved in solar flares and other solar activity, and the potential effects of this activity on shortwave communications, as well as on future manned space travel.

This is the third in a series of solar radiation spacecraft launched from Wallops in a joint NRL/NASA program. The previous two were Explorer XXX launched in 1965 and Explorer XXXVII in 1968.

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Preliminary orbital elements are as follows:

Apogee	-	392 statute miles (630.30 kilometers)
Perigee	-	271 " " (436.64 ")
Inclination to equator	-	51.034°
Orbital period	-	95.3 minutes

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, August 16, 1971

Release No. 71-14

FRENCH WEATHER SATELLITE LAUNCHED FROM VIRGINIA SITE

A French meteorological satellite -- Eole, the French name for the God of Winds in mythology was launched from Wallops Island, Virginia, at 2:39 p.m. EDT today. The 186-pound (84-kilogram) satellite was developed by the French space agency -- Centre National D'Etudes Spatiales (CNES)-- in a cooperative project with the U. S. National Aeronautics and Space Administration which launched the spacecraft.

The mission of Eole is to collect information on winds, temperatures, and pressures from instrumented balloons flying at an altitude of about 39,000 feet (11,850 meters) in the Southern Hemisphere. A second objective is to demonstrate satellite and balloon technology for performing range and range-rate measurements for determining balloon positions.

Eole was launched on the 73-foot Scout rocket which is made up of four solid propellant stages. This 75th NASA launch of Scout was the first in which the rocket has carried an applications payload into orbit.

Eole was placed into an orbit of 563.1 statute miles by 420.8 statute miles (906) kilometers by 678 kilometers) inclined 50 degrees to the equator. The orbit has a 101-minute period.

-more-

From this orbital vantage point, the satellite will collect wind speed and direction, and air temperature and pressure data from as many as 500 balloons floating freely in the Southern Hemisphere. The balloons will be launched by CNES and Argentine personnel from three sites in Argentina.

The balloons can be interrogated by Eole both day and night individually, in sequence, or in a programmed group (up to 64 at a time).

Meteorological data gathered by the mission will help develop accurate mathematical models required by the World Weather Program -- a global effort, to increase our knowledge of the atmosphere, to develop better measurement techniques, and to improve the accuracy and duration of weather prediction for the benefit of mankind.

The agreement establishing the joint project provides that there shall be no exchange of funds between CNES and NASA.

CNES designed, built and tested the Eole spacecraft and balloons and will manage balloon launchings, spacecraft tracking, data acquisition and processing.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, SEPTEMBER 3, 1971

Release No. 71-15

TWO CHEMICAL CLOUD LAUNCHES SCHEDULED AT WALLOPS

The National Aeronautics and Space Administration has scheduled two sounding rocket launches from Wallops Island, Va., one at dusk on September 7 and another at dawn September 14 which will leave several glowing, colored clouds high over the mid-eastern U. S. coastline.

Usually such launches are contingent on weather conditions so that ground viewing sites can observe the clouds. However, this time an instrumented Convair 990 aircraft from Ames Research Center, Mountain View, Calif., will be aloft flying along the east coast at 40,000 feet and over any obscuring clouds. This almost eliminates weather conditions as a launch factor. If successful, instrumented aircraft will probably be used more often in the future, especially for observation in polar or other bad weather regions.

- more -

Meteorological objectives of the experiments are to measure wind direction and speeds through a region from around 50 to 106 miles altitude (80 to 170 kilometers).

The first firing is scheduled for about 7:50 p.m. EDT on Tuesday, September 7, and the second at 5:50 a.m. EDT Tuesday, September 14. Two-stage Nike-Apache sounding rockets will be used to launch the experiments, utilizing barium and lithium chemicals. The payloads are programmed to spew out a trail of lithium (a reddish trail) during ascent from 80 to 170 kilometers and then eject barium at an altitude of 170 kilometers, creating a greenish-blue cloud. The cloud first appears green then changes to blue quickly.

Data on wind conditions are obtained by photographing the motion of the vapor trails and clouds from ground-based and airborne cameras. A similar launch series was conducted at Wallops last December.

The experiments are being conducted in cooperation with the GCA Corporation, Bedford, Mass., under contract to NASA's Goddard Space Flight Center, Greenbelt, Md. Brooks L. Shaw is the Wallops Project Coordinator responsible for coordinating prelaunch, launch, and tracking operations.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: WEDNESDAY, SEPTEMBER 8, 1971

Release No. 71-16

BARIUM CLOUD EXPERIMENT RESCHEDULED AT WALLOPS

A Scout rocket launch programmed to eject a chemical payload, barium, about 20,000 miles above Central America is scheduled for about 7:30 p.m. EDT Saturday, September 11.

Last April and May attempts to launch this Barium Ion Cloud (BIC) experiment from NASA's Wallops Island, Va., were postponed because of bad weather, mostly cloud cover, at optical viewing sites. These are located in Arizona, New Mexico, and in Peru and Chile. The cloud must be observed and photographed from optical sites in both North and South America for best scientific results.

The purpose of this joint German/U.S. project is to study the behavior of a barium ion cloud at high altitudes. This will enable scientists to measure both magnetic and electrical fields in space as well as to make a plasma physics study not possible in an Earth laboratory.

- more -

The cloud should be visible to the unaided eye throughout the Western Hemisphere for some 15 to 20 minutes and will appear initially as a first-magnitude or bright star, spreading along the Earth's magnetic field lines while growing longer and dimmer with time.

The September launch opportunities occur daily from September 11 until 23. The Scout will liftoff sometime between 7:00 and 8:00 p.m. and the barium ejection will occur about 3 1/2 hours later between 10:30 and 11:30 p.m. EDT. The launch window for most days will be about thirty (30) minutes duration.

See NASA Headquarters Release No. 71-61, April 14, 1971.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: WEDNESDAY, September 8, 1971

Release No. 71-17

CHEMICAL CLOUD LAUNCH CONDUCTED AT WALLOPS

The National Aeronautics and Space Administration conducted a rocketborne experiment from Wallops Island, Virginia, at dusk yesterday which left several glowing, colored clouds high over the mid-eastern U. S. coastline.

Liftoff of the Nike-Apache rocket occurred at 7:57 p.m. EDT. The payload ejected a trail of sodium and lithium (creating a glowing reddish trail) during ascent from 80 to 170 kilometers and then ejected barium at an altitude of 170 kilometers, creating a greenish-white cloud. The barium cloud first appeared greenish-white then changed to blue.

Data on wind conditions are obtained by photographing the motion of the vapor trails and clouds from ground-based and airborne cameras. The second launch in this series is scheduled for dawn on September 14.

The experiments are being conducted in cooperation with the GCA Corporation, Bedford, Massachusetts, under contract to NASA's Goddard Space Flight Center, Greenbelt, Maryland, J. F. Bedinger is the GCA Project Director. Brooks L. Shaw is the Wallops Project Coordinator responsible for coordinating prelaunch, launch, and tracking operations.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, SEPTEMBER 16, 1971

Release No. 71-18

CHEMICAL CLOUD EXPERIMENT AT WALLOPS

At dawn today, the National Aeronautics and Space Administration completed a par of experiments which created glowing, colored clouds high over the mid-eastern U. S. coastline.

Liftoff of the Nike-Apache sounding rocket occurred at 5:56 a.m. EDT. The payload contained three chemicals which were ejected during ascent and at peak altitude. Sodium and lithium were emitted beginning at 80 kilometers altitude and continuing up to about 170 kilometers creating a glowing reddish trail and barium was ejected at peak altitude creating a greenish-white cloud which gradually turned blue in color.

Data on wind conditions are obtained by photographing the motion of the vapor trail and cloud from cameras aboard the NASA Ames Convair 990. The first experiment in this series was conducted at 7:57 p.m. EDT September 7.

The experiments are being conducted in cooperation with the GCA Corporation, Bedford, Massachusetts, under contract to NASA. J. F. Bedinger is the GCA Project Director. Brooks L. Shaw is the Wallops Project Coordinator.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: TUESDAY, September 21, 1971

RELEASE No. 71-19

BARIUM ION CLOUD LAUNCH

A barium ion cloud, visible over North and South America, was ejected into space at 11:05 p.m. EDT yesterday 20,000 miles above Central America.

The cloud appeared initially about as bright as the North star, spreading along the Earth's magnetic field lines while growing larger and dimmer with time. To optical monitors it rapidly mushroomed to appear like a cigar-shapped, milky-white smudge. However, to the naked eye it appeared as a bright star only -- which faded away 8 to 10 minutes later.

The purpose of the joint German/U. S. project was to study the behavior of a barium ion cloud at high altitudes. This will enable scientists to measure both magnetic and electrical fields in space as well as to make a plasma physics study not possible in an Earth laboratory.

The Scout rocket that launched the chemical payload from Wallops Island, Virginia at 7:31 p.m. EDT emitted a bright exhaust trail visible hundreds of miles along the Eastern seaboard as it boosted the payload on its 3½ hour journey.

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(3)

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, SEPTEMBER 23, 1971

Release No. 71-20

BARIUM ION CLOUD EXPERIMENT CONDUCTED

The Max-Planck Institute of West Germany and the National Aeronautics and Space Administration have cooperated in an experiment involving the study of a barium ion cloud released in space.

The NASA Scout rocket bearing the German-built payload was launched from Wallops Island, Virginia, Monday, September ~~21~~ 20, at 7:31 p.m. EDT. Three hours and 34 minutes later (11:05 p.m. EDT), at 20,000 miles altitude, the barium was released forming a cloud above Central America.

Because of its great distance above the Earth's surface, the cloud was within view of almost all of North and South America and the westernmost parts of Europe and Africa.

The neutral barium vapor cloud was released by a timer command. Within a minute or so of exposure to the Sun's ultraviolet radiation, the barium atoms became ionized (i.e., stripped of one of their electrons). Once ionized, the individual electrically charged particles were drawn down the Earth's magnetic field lines in tight spiral paths causing the ion cloud to become longer with time, thus visibly tracing the magnetic lines of force in space. Both neutral and ionized barium scatter sunlight

-more-

at specific wavelengths in the visible spectrum and, therefore, can be seen and photographed when viewed against the night background.

The cloud achieved its peak brightness immediately after release. To the unaided eye, it appeared to be about as bright as the North Star, grew dimmer as it elongated along the magnetic field lines, and was observed for about 8 to 10 minutes.

With special optical equipment stationed in Arizona and Chile, the cloud was photographed for a period of 1¼ hours. Analysis of the data obtained on the cloud's growth and motion will define the electric and magnetic forces existing in space to which the cloud reacted. A preliminary analysis of data indicates that the central part of the cloud followed, initially, the trajectory of the rocket payload and elongated along the magnetic field line at a rate of several miles per second. Faint field aligned striations were observed to drift away from the main body of the cloud with a velocity of several miles per second to the East under the influence of electric fields existing in the proximity of the release.

Correlative magnetic and electric field measurements were made near the extremity of the field line passing through the release point (i.e., at Great Whale, Canada and Byrd Station, Antarctica). Additional simultaneous geophysical measurements were made by existing ground based and satellite-borne instrumentation. Organizations providing supplementary experiments and observations included:

University of Alaska

University of California at Berkeley

Stanford University

North Carolina State University

Northwestern University

New Mexico State University

Smithsonian Astrophysical Observatory

Association of Universities for Research in Astronomy

Los Alamos Scientific Laboratory

National Oceanic and Atmospheric Administration

U. S. A. F. Satellite Surveillance Team

National Research Council of Canada

Mount Palomar Observatory, California

Mount Wilson Observatory, California

- END -

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, September 30, 1971

Release No. 71-21

RUNWAY RESEARCH PROGRAM

The National Aeronautics and Space Administration, the Federal Aviation Administration, and the U. S. Air Force will begin a joint runway research program October 4 with a series of aircraft and ground vehicle tests at NASA's Wallops Station, Wallops Island, Virginia.

Purpose of the research is to evaluate methods for measuring runway slipperiness at military and civil airports and improve techniques for estimating aircraft performance on runways that become slippery when wet.

Initial tests at Wallops Station will be followed by similar measurements at five airports -- Houston Intercontinental; Lubbock (Texas) Regional Airport; Edwards Air Force Base, California; Seattle-Tacoma International and John F. Kennedy International.

A Boeing 727 aircraft furnished by FAA will be used for the flight portions of the program. Special instruments for measuring and recording aircraft landing conditions and stopping distances were installed by NASA's Langley Research Center, Hampton, Virginia. The Air Force is providing a C-141 aircraft to carry test personnel and equipment to the six locations.

-more-

Surface measurements of each airport runway will be made under wet and dry conditions by a friction measuring device called a Mu-Meter provided by USAF and a NASA diagonally-braked automobile developed by Langley Research Center.

Aircraft stopping distances will be measured on each runway under dry conditions and a portion of the runway surface will then be flooded by water trucks for a similar series of tests. Before and after each landing, the Mu-Meter and the diagonally-braked auto will make friction measurements of the same runway area.

Government engineers expect to develop relationships from measurements made by the two ground vehicles and the 727 aircraft which will lead to a better technical understanding of runway slipperiness. The increased knowledge of runway friction characteristics should result in improvements in the safety of aircraft and airport ground operations in adverse weather conditions.

Engineering and technical personnel from all three agencies will conduct the research program which is expected to last two weeks. Observers from other interested aeronautical organizations will witness the research.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

FOR RELEASE:
IN ALASKA
NOVEMBER 24, 1971

EIGHT ROCKET EXPERIMENTS SCHEDULED AT POINT BARROW 703-824-3411

In December the National Aeronautics and Space Administration will begin a series of rocket-launched gravity wave experiments at Point Barrow, Alaska, to obtain upper atmospheric meteorological data within the Artic Circle.
Arctic

The eight research rockets (four Nike-Cajuns and four Nike-Apaches) are scheduled to be launched beginning December 6. They will be launched in an easterly direction from Point Barrow. Zulu (5th - 6th local time)

Tentatively scheduled for launch during a two-week period, the eight experiments may be launched within a week. If delayed by weather conditions, they will be rescheduled from day to day through December 18, resuming the schedule after the holiday season, if necessary.

1 failure rocket motor near 2nd stage burnout payload broke off

Post-launch info

######

Proj Engineer Dempsey

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

FOR RELEASE:
THURSDAY,
February 10, 1972

RELEASE NO: 72-1

NASA LAUNCHES UPPER ATMOSPHERIC PROBE

A four-stage, 48-foot-long Javelin rocket lofted a 59-kilogram (130-pound) payload of scientific instruments to an altitude of over 852 kilometers (529 statute miles) today at 12:02 p.m. EST, from the National Aeronautics and Space Administration's Wallops Island, Virginia launch site.

Purpose of the flight is to study the earth's upper atmosphere with scientific instruments provided by the National Oceanic and Atmospheric Administration (NOAA), Boulder, Colorado, and the NASA Goddard Space Flight Center, Greenbelt, Maryland.

The instruments included three neutral hydrogen energy analyzers, one energetic proton energy analyzer, three background detectors, a positive ion composition spectrometer and an aspect magnetometer.

The instruments measured the composition and concentration of upper atmosphere ions and solar wind neutral hydrogen atoms. These data will be correlated with ground observations. The results should provide information on the presence of neutral hydrogen in the solar wind and also data on ionospheric composition.

The up and down flight lasted about 16½ minutes. The payload fell into a shipping-free area of the Atlantic Ocean about 870 kilometers (541 statute miles) from Wallops. There was no planned recovery.

The Project Scientist for the flight is Mr. William Bernstein of NOAA. Mr. Norman Peterson of the Goddard Space Flight Center is Javelin Vehicle Manager. In charge of the project at Wallops Island Station is Mr. William Burns.

#######

FOR IMMEDIATE RELEASE FEBRUARY 15, 1972

"WEEKEND OF THE ISLANDS"

Three of Virginia's barrier islands have announced plans for their fourth annual Open House to be held Saturday and Sunday, April 15-16, 1972. Five federal agencies are again participating in this joint event. They are--the Assateague Island National Seashore Park, the Assateague Island Wildlife Refuge, the Chincoteague Island Coast Guard Station, the National Aeronautics and Space Administration's Wallops Island Station, and the National Oceanic and Atmospheric Administration's CDA Station.

In addition to tours of the separate facilities, there will be special attractions, such as the Wildlife Refuge's Decoy and Art Show, the Coast Guard's demonstration of special rescue equipment and vehicles, the National Park's displays and demonstrations of recreational equipment and activities, the Wallops space exhibits, and the NOAA's guided tour through their weather satellite Command and Data Acquisition Station.

Additional descriptive information will be published by the respective agencies at a later date.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

FOR RELEASE:
MONDAY
February 21, 1972

Conducted? date? Feb. 29, 72
peak altitude? 2[illegible] ft
successful? yes
payload recovered? yes

RELEASE NO: 72-2

SOLID ROCKET RESEARCH LAUNCH SET

A single stage solid propellant rocket equipped with an extensive battery of instruments to measure dynamic loads, pressure, shocks and vibrations will be launched by the National Aeronautics and Space Administration from Wallops Station, Wallops Island, Virginia, no earlier than February 23, 1972.

Purpose of the research is to obtain very precise records of vibrations and accelerations caused by small variations in the burning process of a solid rocket motor. Flight data obtained during a 3.7 second rocket burn will be compared with similar measurements made in ground vibration tests and captive firings.

NASA researchers expect that improved knowledge of the effects on payload dynamics of variations due to rocket motor burning will permit more efficient payload design.

The Solid Propellant Dynamic Project is managed by NASA's Langley Research Center, Hampton, Virginia.

-more-

Launch vehicle is a Nike rocket which will burn 3.7 seconds and produce 200,000 newtons (45,000 pounds) of thrust. The conical payload has a mass of 47.17 kilograms (104 pounds) and contains a tape recorder, accelerometers, acoustic noise sensors, instruments for measuring pressure inside the motor chamber of the rocket, a timer and temperature sensors.

After burnout of the rocket at 2.13 kilometers (7000 feet) the assembly with payload attached coasts upward to a peak altitude of approximately 12.3 kilometers (41,000 feet). Payload separation will occur after 37 seconds of flight. Separate parachutes are provided for the payload and the rocket motor assembly.

The payload will be recovered in the air as it descends by parachute by an Air Force C-130 aircraft about 11 minutes after liftoff. The booster will be recovered by ship after it lands in the Atlantic Ocean a few miles offshore.

Project Manager for Langley Research Center is Harold B. Pierce of the Vibration Section of the Loads Division. Other Langley participants include Richard M. Boykin, Jr., Project Engineer and Launch Coordinator; J. A. Schoenster, Experimenter; Virgil S. Laney, Electrical Project Engineer; William L. Gaster, Project Pyrotechnic Engineer; and Ray E. Haynes, Instrumentation Project Engineer. Wallops Project Engineer is Robert S. Nock.

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NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

FOR RELEASE:
TUESDAY A.M.
MARCH 14, 1972

Release No. 72-3

INTERNATIONAL SOUNDING ROCKET LAUNCHES AT WALLOPS

Thirty meteorological sounding rockets will be launched from NASA's launching site at Wallops Island, Va. beginning March 14 in a week-long international cooperative experiment to test weather data systems for France, Japan, and the United States.

The project is being sponsored by the Commission for Instruments and Methods of Observation of the World Meteorological Organization, a United Nations agency.

Payloads are of the radiosonde type which are ejected at apogee and descend on parachutes. Wind data will be obtained by radar, and temperature measurements will be telemetered to ground stations. From this atmospheric pressure and density can be computed. Data will be obtained from a height of about 70 kilometers (44 miles) down to 25 kilometers (16 miles).

-more-

The Japanese and the United States will use their own payloads and launching rockets, while the French will use rockets manufactured in the U.S. to launch payloads designed and built in France.

The program is aimed at a comparison of data for a better understanding of upper air temperature and wind measurements, and to encourage international cooperation in exchanging data obtained from meteorological rockets.

Technical observers will be present from Brazil and India.

A second series of launchings is planned for the second half of 1973 at a site to be determined. Present plans call for the U.S. to participate with the USSR, UK, Brazil, France, and India.

The international teams for the current launches represent the Japan Meteorological Agency and the French National Meteorological Agency.

-END-

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

Release No. 72-4

FOR RELEASE:
MONDAY A.M.
MARCH 20, 1972

CHEMICAL CLOUDS TO BE VISIBLE ALONG EAST COAST

Weather conditions permitting, a huge yellow cloud will be formed high over the mid-eastern U. S. coast at dawn tomorrow.

NASA plans to launch a series of cesium cloud experiments from Wallops Island, Va., for the Naval Research Laboratory (NRL).

The NRL scientists will be conducting a variety of radio propagation, photographic, and geomagnetic observations from rocket-released clouds of cesium ions some 60 miles up in the atmosphere. The yellowish clouds will spread out and be visible for several hundred miles to observers along the East Coast.

The experiments are scheduled to take place just before dawn (between 5:00 and 5:30 a.m. EST) while ground-based photographic and other observation equipment is still in darkness but the cesium clouds are illuminated by the first rays of the sun.

-more-

Project plans call for five rocket launchings during the 14-day period beginning Tuesday, March 21, with specific dates determined by weather conditions. If ideal conditions prevail, the experiments would be conducted in four consecutive days.

Several agencies are supporting NRL in this project including NASA and the National Oceanic and Atmospheric Administration (NOAA).

Dr. John R. Davis, NRL's Project Scientist, stated that the experiments are directed toward discerning the role of wind motions, magneto-hydrodynamic effects and the chemical-thermal processes governing the behavior of this atmospheric region upon which long-range radio communications is closely dependent.

Dr. Davis emphasized that the cesium clouds will be dispersed by winds over thousands of square miles of land and ocean over a period of several days or weeks and that any ecological effects of the chemicals will be negligible.

The Wallops Project Engineer for this series of Nike-Javelin III (two-stage, solid-propellant) rocket launches is Carole C. Flores.

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SATURDAY
March 25, 1972

First NRL cesium cloud experiment in a series of 5 was successfully launched by NASA from Wallops Island, Va., at 5:15 A.M. - EST.

This series had been postponed daily since Tuesday, March 21, 1972 because of adverse weather conditions Imostly cloudy skies). Next launch tentatively scheduled for 5:12 A.M. - EST Monday, weather permitting. Next weather briefing is 2:30 P.M. Sunday.

MONDAY
March 27, 1972

Second NRL cesium cloud experiment in a series of 5 was successfully launched by NASA from Wallops Island, Va., today at 5:08 A.M. - EST. First experiment was conducted Saturday, March 25. Weather permitting, the third launch will be conducted tomorrow at 5:05 A.M. - EST. Due to cloudy conditions, this morning's cloud was not as visible to residents along the East Coast as some of the previous cloud experiments conducted from Wallops.

WEDNESDAY
March 29, 1972

Third NRL cesium cloud experiment in a series of 5 was successfully launched by NASA from Wallops Island, Va., today at 5:07 A.M. - EST. Huge yellowish clouds were formed and were visible to residents along the East Coast. First and second experiments were conducted on Saturday, March 25, and Monday, March 27. Weather permitting, the last two launches are tentatively scheduled for dawn tomorrow, at 5:05 A.M. and 5:07 A.M. - EST.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

Release No. 72-5

FOR RELEASE:
TUESDAY
APRIL 4, 1972

MOON ROCK TO BE ON DISPLAY DURING WALLOPS OPEN HOUSE

The public is cordially invited to visit NASA Wallops Station on Saturday and Sunday, April 15 and 16, from 10:00 a.m. until 4:30 p.m. EST.

Visitors will be permitted to view facilities at the Wallops Main Base and the rocket launching sites on Wallops Island. The Main Base and Wallops Island are approximately 10 miles apart. A tour of both areas will require one to two hours.

At the Main Base, the Range Control Center and an exhibit area will be open to visitors. In addition to the Moon Rock, Apollo spacesuit, and other displays, space science lecture-demonstrations are scheduled several times each day and movies will be shown continuously. (A television set will be available to watch Apollo 16 which is scheduled for launch from Cape Kennedy, Florida, at 12:54 p.m. EST April 16.) Inside the Main Gate area, full-scale rockets are on display and visitors also may stop and take pictures here.

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Personnel will be on hand to answer questions that visitors may have concerning Wallops operations.

The Wallops Island part of the tour will be a self-guided "do-it-yourself' riding tour in the visitors' own private car. Descriptive leterature will be provided at the Causeway Gate to point out items of interest as people ride by. Visitors will see launching pads, rocket storage structures, long range tracking radars, weather towers, blockhouses, rocket assembly shops, actual launch vehicles and other related range facilities.

The tour may begin either at the Wallops Island Launch Site or the Main Base. Information and instruction books will be available at the entrance to both areas. Cameras are permitted

This is a joint event of federal activities in the area including Assateague National Seashore Park, Chincoteague Coast Guard Station, Chincoteague National Wildlife Refuge, NASA Wallops Station, and the National Oceanic and Atmospheric Administration. All of these agencies are planning special exhibits and/or tours at their respective facilities.

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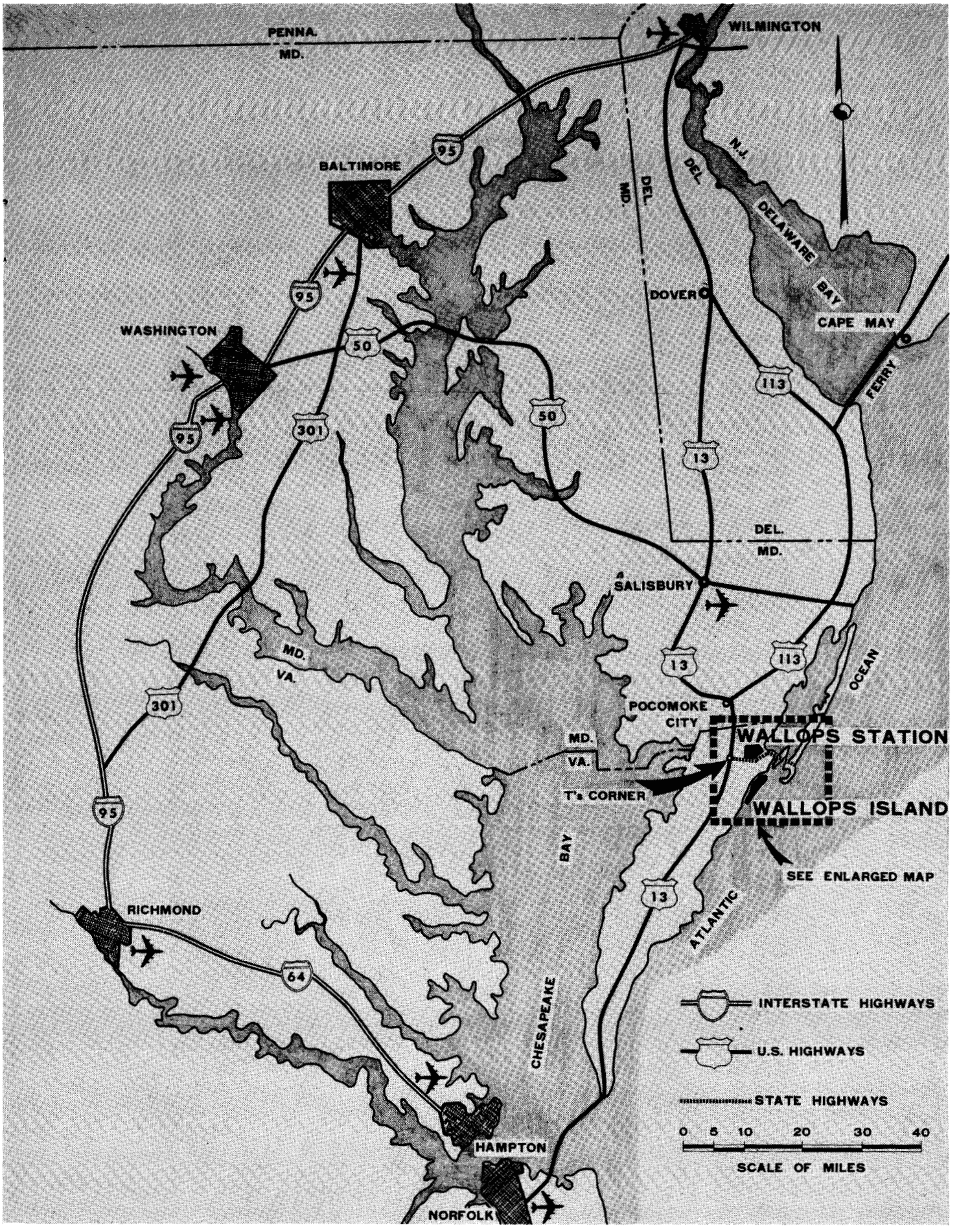
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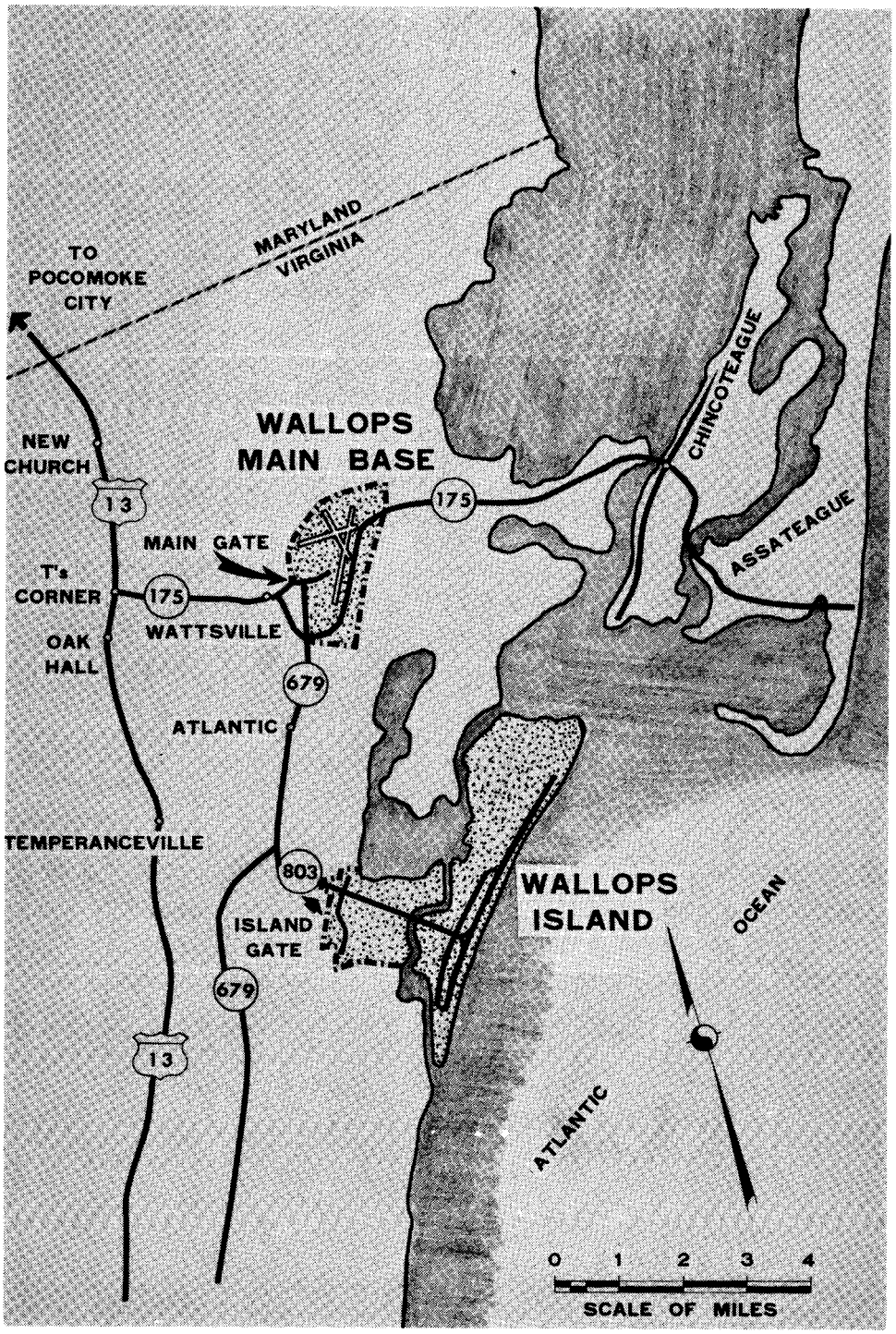
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SCALE OF MILES

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

RELEASE NO. 72-6

FOR RELEASE:
TUESDAY, P.M.
APRIL 11, 1972

Released also in
Washington, D. C.

LASER SYSTEM FOR MONITORING MARINE PLANKTON

An airborne laser system, developed by NASA's Wallops Station and Langley Research Center, Virginia, is being used to measure the presence of tiny drifting plankton in the Chesapeake and Chincoteague Bay offshore areas.

The system is mounted on a helicopter and uses an orange light flash from the laser which hits the water and becomes absorbed by the plankton. The plankton then gives off a very faint infra-red radiation beam, known as laser induced fluorescence, which is measured and recorded through a telescope on the helicopter. Results in each test have confirmed the feasibility of using such a laser system mounted on a low flying aircraft or surface vessel for the observation of chlorophyll bearing, marine micro-organisms.

Drifting plant life, known as phytoplankton or alga, is not only a vital source of marine food but also replenishes about 70 percent of the Earth's fresh oxygen supply. Many ecologists have

-more-

expressed concern about various forms of pollution which could gradually curtail such marine biological activity.

Presently, there are very few methods for measuring plankton and the laser system has certain advantages over other methods. The airborne system can map plankton distribution rapidly; it has its own illumination, rather than sunlight, making day and night monitoring possible; and an improved version of the system can be built to measure plankton distribution not only at the surface but also at varying levels below the surface.

The Environmental Protection agency is interested in the system and has invited NASA to participate in the International Field Year of the Great Lakes where multidisciplinary water quality surveillance of the Great Lakes will be performed jointly by U. S. and Canadian authorities.

This new technology for water quality surveillance was conceived by Hongsuk B. Kim of Wallops Station and is funded by NASA's Office of Aeronautics and Space Technology.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

RELEASE NO. 72-7

FOR RELEASE:
FRIDAY, A.M.
JULY 14, 1972

VIRGINIA BOARD OF AGRICULTURE AND COMMERCE TO VISIT WALLOPS

On Monday, July 19, 1972, at 10:00 a.m. NASA Wallops Station will present a program concerning the impact of remote sensing on the field of agriculture.

The program is being prepared for the annual meeting of the Virginia Board of Agriculture and Commerce. The Board has ten members, one representative from each of ten Congressional Districts in the State, and one ex officio member, the Virginia Polytechnic Institute President, Dr. T. Marshall Hahn. The program is designed to acquaint the participants with the field of remote sensing and specifically with the role that NASA is performing.

In addition, all County Agents on the Delmarva Peninsula have been invited to participate. Following the program, a tour of the Wallops remote sensing facilities will be conducted. The attending county agents will be asked to provide advice and

-more-

counsel regarding possible participation in cooperative efforts with NASA.

According to Mr. Robert L. Krieger, NASA Wallops Director, "Remote sensing shows great promise as an agricultural tool and I believe that this session will be most informative and beneficial."

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NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

FOR RELEASE:
MONDAY, A.M.
JULY 17, 1972

NOTE TO EDITORS

A change should be made in NASA Wallops Station Release No. 72-7, "Virginia Board of Agriculture and Commerce to Visit Wallops," for release Friday, a.m., July 14, 1971. Paragraph one should read:

On Wednesday, July 19, 1972, at 10:00 a.m. NASA Wallops Station will present a program concerning the impact of remote sensing on the field of agriculture.

-end-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

Release No. 72-8

FOR RELEASE:
FRIDAY,
JULY 28, 1972

REENTRY EXPERIMENT CONDUCTED AT WALLOPS

The National Aeronautics and Space Administration today launched a Trailblazer II reentry vehicle to test the elimination of radio blackout during reentry by chemical injection. The reentry vehicle and payload is one of a series of vehicles being flown for the Air Force Cambridge Research Laboratories (AFCRL) at Hanscom Field, Massachusetts.

A 34-kilogram (75 pounds) payload was lofted on a brief flight over the Atlantic Ocean from NASA Wallops Island, Virginia, to a peak altitude of about 322 kilometers (200 miles). The launch vehicle, a four-stage Trailblazer II, lifted off at 1:59 p.m. EDT.

Objective of the AFCRL Trailblazer II program is to study techniques for improving the transmission and reception of radio signals from aerospace vehicles during reentry into the earth's atmosphere. Severe attenuation, or complete blackout of telemetry, communications, radar, and navigational functions can be caused by the plasma sheath which surrounds the vehicle during this phase of

-more-

the trajectory. The solution to the reentry communications problem requires careful measurements of plasma sheath properties and their effect on the transmission and reception of radio signals in previous flights. The results have been used to develop models that are able to predict the exact behavior of a radiating system during reentry and to design alleviation systems that will eliminate blackout.

Today's payload was designed to inject a chemical into the plasma surrounding the vehicle during reentry and measure the effectiveness of this injection in eliminating "radio blackout." The measurements included RF signal attenuation and antenna coupling measurements on an S-band transmitter and plasma electron density measurements by electrostatic probes. The latter measurement provides direct measurement of the plasma surrounding the vehicle.

In today's flight two of the four stages of the solid-fuel rocket propelled the experimental payload to apogee. The final two stages were used to drive the reentry vehicle back into the earth's atmosphere at the desired reentry speeds of eighteen thousand feet per second.

Major L. R. Maloney designed the experiment and served as the AFCRL project engineer. The payload was built by AFCRL and Mr. R. Sukys of Northeastern University (Boston, Massachusetts). Mr. Joseph R. Duke was in charge of the rocket launch as the NASA Wallops Project Engineer.

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NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

FOR RELEASE:
WEDNESDAY
AUGUST 16, 1972

Release No. 72-9

WALLOPS RENEWS ENGINEERING SUPPORT CONTRACT

The National Aeronautics and Space Administration has renewed its contract with Computer Sciences Corporation, Falls Church, Virginia, for award of the third year's services for approximately $1,074,000 for engineering support services at Wallops Island, Virginia. The contract will be for a period of one year, effective July 1, 1972.

Services under this contract include engineering support in the areas of data analysis and computation, experimental facilities systems, range safety systems, instrumentation development, and reliability and quality assurance.

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NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

FOR RELEASE:
FRIDAY, OCTOBER 6, 1972

Release No. 72-10

CHEMICAL CLOUD LAUNCHES SCHEDULED FROM ALASKA

Three Nike-Apache sounding rockets that will spread glowing colored clouds over the Alaskan region are scheduled for launch, weather permitting, from Poker Flats, Alaska, next week--two at dawn on October 9 and one at dusk on October 10.

The launchings will be carried out under the direction of NASA's Wallops Station, Wallops Island, Virginia

Two different chemical payloads, releasing clouds of atomic sodium and lithium and of trimethylaluminum (TMA), will be used in this series to continue a program of research in the upper atmosphere through a region from about 80 kilometers (50 statute miles) up to 200 kilometers (125 miles). Similar chemical release missions have been conducted by NASA from Wallops Island in the past several years.

One objective of these experiments is the development of a daytime wind measuring system to study ionospheric dynamics at high latitudes and to compare data from several measuring methods.

-more-

Wallops personnel will conduct the two sodium-lithium experiments just before dawn (about 4 a.m. and 5:30 a.m., local time) on October 9 and the single TMA experiment before dusk (about 5:00 p.m.) on October 10 while Earth's surface is still in darkness but the chemical clouds are illuminated by the Sun's rays. The reddish-orange artificial clouds will spread out and be visible for several hundred miles in the Alaskan region if the degree of cloud cover permits.

Usually, such launches are contingent on weather conditions, so that ground viewing sites can photograph and monitor the clouds. In this series, instead of ground viewing sites, an instrumented Convair 990 aircraft from NASA's Ames Research Center, Mountain View, California will be aloft, flying along a ground track of 220 kilometers (about 130 miles) east-southeast of the launch area, near Fairbanks, at 12,000 meters (40,000 feet) altitude over any obscuring clouds.

The GCA Corporation, Bedford, Massachusetts, provides the payloads and payload support, and the Geophysical Institute of the University of Alaska provides range support, under contract to NASA.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

FOR RELEASE:
MONDAY
March 26, 1973

Release No. 73-1

WALLOPS AWARDS CONTRACTS

Since January 1, 1973, the National Aeronautics and Space Administration at Wallops Station, Wallops Island, Virginia, has awarded many contracts. Several large contracts (over $100,000) are as follows:

A contract in the amount of $349,291 for a Laser Tracking System has been awarded to RCA/Government and Commercial Systems/Missile and Surface Radar Division in Moorestown, New Jersey.

Dynalectron Corporation in Washington D. C., has been awarded a contract in the amount of $154,749 for Services Necessary to Provide Photographic Laboratory Services for one year.

A contract in the amount of $106,714 has been awarded to the Metric Systems Corporation in Fort Walton Beach, Florida, for a Real-Time Meteorological Data Processing System.

And to the Joseph S. Floyd Corporation in Norfolk, Virginia, a contract for Rehabilitation of Sounding Rocket Facility in the amount of $205,000.

-END-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

Release No. 73-2

FOR RELEASE:
MONDAY
April 2, 1973

WALLOPS OPEN HOUSE

The public is cordially invited to visit NASA Wallops Station on Saturday and Sunday, April 14 and 15, from 10:00 a.m. until 4:30 p.m. EST.

Visitors will be permitted to view facilities at the Wallops Main Base and the rocket launching sites on Wallops Island. The Main Base and Wallops Island are approximately 7 miles apart. A tour of both areas will require one to two hours.

At the Main Base, the Range Control Center and an exhibit area will be open to visitors. In addition to space science displays, movies are scheduled several times each day. Inside the Main Gate area, full-scale rockets are on display and visitors also may stop and take pictures here. Personnel will be on hand to answer questions that visitors may have concerning Wallops operations.

The Wallops Island part of the tour will be a self-guided "do-it-yourself" riding tour in the visitors' own private car. Descriptive literature will be provided at the Causeway Gate to point our items of interest as people ride by. Visitors will see launching pads,

-more-

rocket storage structures, long range tracking radars, weather towers, blockhouses, rocket assembly shops, actual launch vehicles and other related range facilities.

The tour may begin either at the Wallops Island Launch site or the Main Base. Information and instruction books will be available at the entrance to both areas. Cameras are permitted.

This is a joint event of federal activities in the area including Assateague National Seashore Park, Chincoteague Coast Guard Station, Chincoteague National Wildlife Refuge, NASA Wallops Station, and the National Oceanic and Atmospheric Administration. All of these agencies are planning special exhibits and/or tours at their respective facilities.

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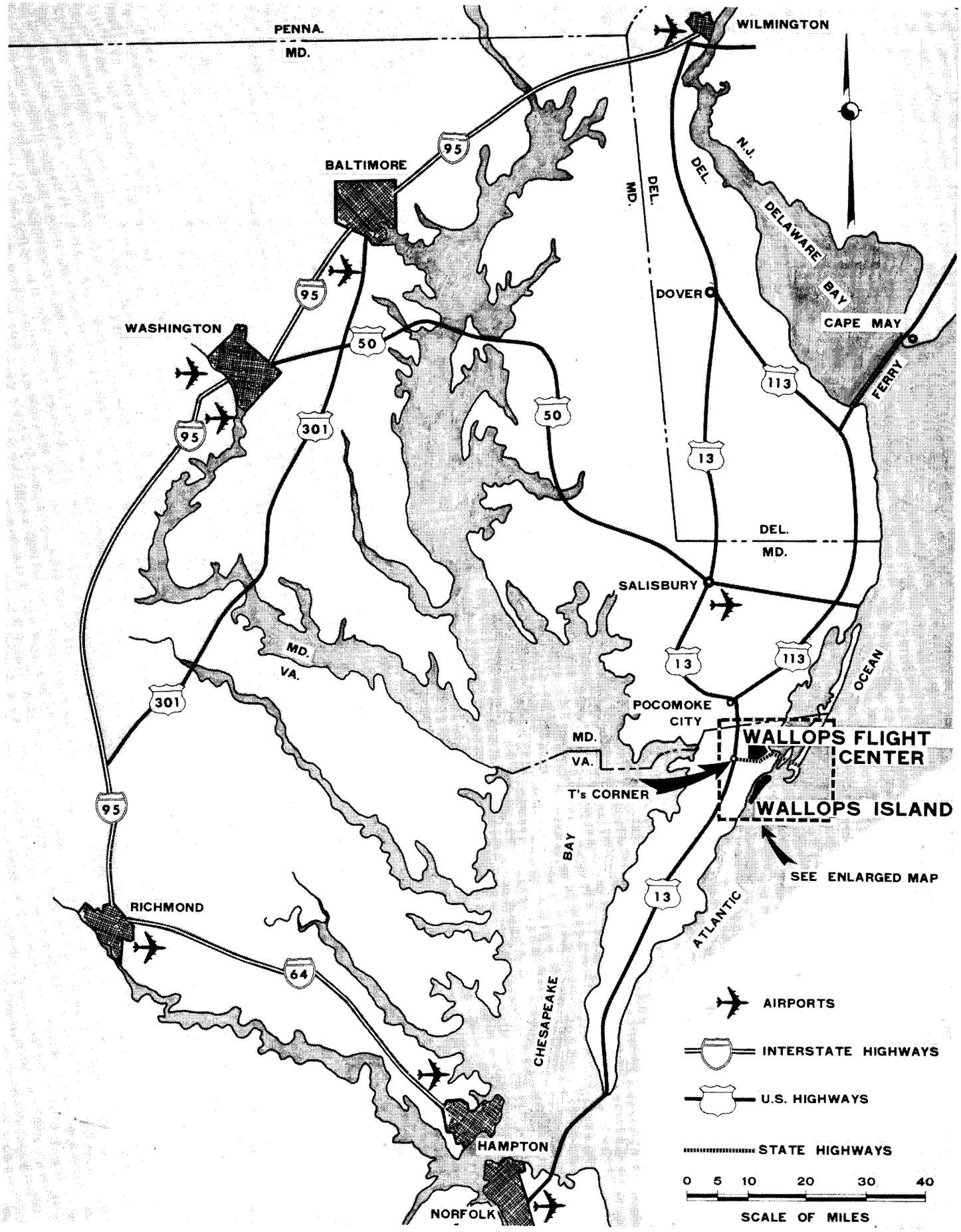
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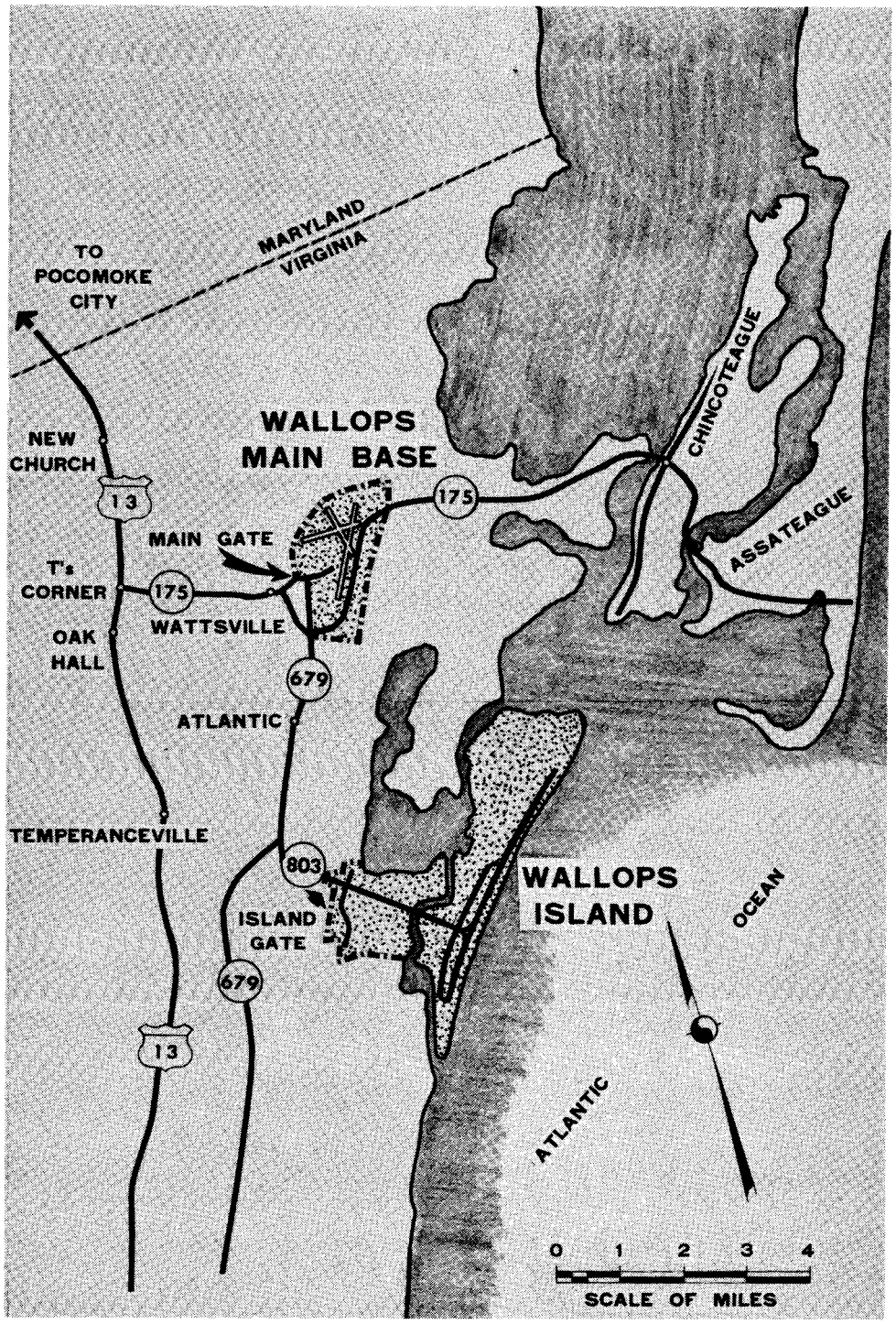
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

Release No. 73-3

FOR RELEASE:
MONDAY
April 30, 1973

WHALE WALLOWS ON THE SHORE

The soil survey of Accomack and Northampton Counties in 1917 noted common occurrences of circular soil ridges with depressed centers which were referred to as saucer-like depressions. These unusual landforms have been the source of much speculation over the past century. NASA Wallops Island has a cooperative research project with the Agronomy Department of Virginia Polytechnic Institute and State University to study the application of remote sensing to agriculture. The data from this program has provided an excellent opportunity to study these landforms in great detail on the Eastern Shore in addition to supplying valuable information to the agricultural program.

Utilizing modern pedological and remote sensing techniques, Dr. David E. Pettry of Virginia Tech and Mr. J. H. Scott, Jr., NASA Wallops Island, have made detailed investigations of these common landscape features of the Eastern Shore literally from the land, sea, and air including outer space. They have sampled numerous of the areas throughout the length of the mainland portion of the two counties and also investigated these features on

-more-

off-shore islands. Remote sensing imagery has been obtained from altitudes ranging from 500 feet to 65,000 feet from aircraft and from the ERTS 1 satellite several hundred miles in outer space.

Previous studies of these landforms in the Carolinas and other coastal areas have resulted in numerous names for these features and even more theories for their origin. They have been referred to as Carolina Bays, Whale Wallows, Maryland Basins, and Neptune's Racetracks. The name Carolina Bay has generally gained wide acceptance. Some of the theories proposed to account for the origin of the Carolina Bays have ranged from purported showers of meteorites, to upwelling of artesian springs, to the hovering of fishes while spawning, to wallowing of whales, to the action of winds and eddy currents.

While not revealing his theory of the origin of the Carolina Bays on the Eastern Shore, Dr. Pettry did reveal that he has counted more than 150 of the Bays in Accomack and Northampton Counties and he believes they are certainly one of the major topographic features of the shore. He indicated the study will continue for some time and it will include land management and microclimate aspects of the Carolina Bays.

Dr. Pettry and Mr. Scott are presenting a paper entitled "Geormorphic Observations of Landforms and Soils in Accomack and Northampton Counties via Remote Sensing" at the Virginia Academy of Science meeting at the College of William and Mary on May 3, 1973.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

Release No. 73-4

FOR RELEASE:
FRIDAY, June 8, 1973

The National Aeronautics and Space Administration has selected Computer Sciences Corporation, Falls Church, Virginia for negotiation of a contract for engineering support and related services to Wallops Station, Virginia. Eight companies submitted proposals for this work.

The contractor's proposal for the two year, cost-plus-award-fee contract is approximately $1.9 million. The contract will be effective July 1, 1973, and will contain provisions for three additional one year periods.

Computer Sciences Corporation will provide engineering support in the areas of range and airport instrumentation, design and development of spacecraft systems and sounding rocket payload systems, development of aeronautical programs and earth resources programs, development of reliability and quality assurance plans and environmental testing procedures, safety engineering, and data analysis and computation.

The contract will be administered by the Wallops Station, Wallops Island, Virginia, under the direction of NASA's Office of Tracking and Data Acquisition.

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NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

FOR RELEASE:
MONDAY,
JULY 30, 1973

Release No. 73-8

NASA TO CONDUCT AIRCRAFT NOISE MEASURING TESTS AT WALLOPS STATION

The NASA's Wallops Station, Wallops Island, Virginia, this week will measure aircraft noise characteristics for comparison with existing noise prediction techniques as part of a broad federal effort to understand and reduce aircraft noise pollution.

The primary objective of the study is to obtain data on noise associated with aircraft landing and takeoff procedures. Of concern is the noise both close in and at large distances from an airport. The variability of the data will be studied and used to update existing analytical techniques for predicting aircraft noise.

A secondary objective is to obtain subjective response from people inside a house as the airplane flies over from various directions.

A Boeing 737 aircraft from NASA's Langley Research Center (LRC) will be used in the week long tests. The hours of operation will be from 8:00 a.m. to 4:30 p.m.

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NASA personnel will be located along various highways in upper Accomack County to tabulate readings utilizing hand-held sound level meters. They will be in vans and on foot from positions 8 to 10 miles west of Wallops, 1 mile east of Wallops, and along Route 13.

Dave Hilton of LRC is project engineer and Brooks Shaw from Wallops Station is project coordinator for the noise measurement program.

END

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

Release No. 73-9

FOR RELEASE:
TUESDAY,
September 11, 1973

WALLOPS CONFERENCE ON OVER-WATER LASER SURVEILLANCE

A one-day conference on the Use of Lasers for Hydrographic Studies opens Wednesday, September 12 at NASA's Wallops Station in Virginia.

Scientists, engineers and technicians from government and industry in the United States and Canada will review the activities connected with the use of an advanced system for use in over-water surveillance from aircraft. Known as "lidar" (laser/light detection and ranging) the equipment is designed for in flight operations.

Using improved remote sensing techniques, the laser fluorosensor can map, identify and help determine the extent of phytoplankton (algae), oil spills, or sewage in water areas. Laser fluorosensors are designed to transmit a pulse downward from an instrumented aircraft flying over lakes, rivers, estuaries, or the open sea.

-more-

The laser-induced "echo" pulse returning to the aircraft is analyzed to provide information concerning the type of material on the water surface, indicating the amounts present. A light pulse from the laser strikes the water and is absorbed by the plankton, oil or sewage. These various materials then emit a characteristic, very faint radiation beam known as laser-induced fluorescence, received back aboard the aircraft.

Users and developers of hydrographic equipment from the United States and Canada will be given an overview of present activities and technical approaches to over-water surveillance by both countries. The two nations have been jointly involved in pollution studies of the Great Lakes.

Particular attention will be given to improved laser techniques developed at Wallops by Hongsuk H. Kim, project scientist and manager.

The conference is jointly sponsored by NASA, the National Oceanographic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA) and the Navy Department. Morning and afternoon sessions will be held in Building E-2 at the Wallops Main Base.

Attendees will have an opportunity to inspect NASA's DC-4 aircraft equipped with the laser fluorosensor.

-End-

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

Release No. 73-10

FOR RELEASE:
FRIDAY,
September 14, 1973

NASA TO STUDY NORTH SEA WAVES

NASA's Wallops Station has sent an instrumented C-54 aircraft to participate with European Scientists in the Joint North Sea Wave Project (JONSWAP-2) from September 17 through 30.

This is the second in a series of studies concerned with the relationship between surface waves and prevailing wind conditions, conducted by the West German Hydrographic Institute, Hamburg, under the direction of Dr. Klaus Hasselman.

Cooperative gathering of data in the study is assisted by placement of sensors in the sea on towers and buoys to provide detailed information on surface conditions, which is being correlated with readings obtained in aircraft overflights. Particular attention is being focused this month on the effects of the sun and wind on wave formation and action in the relatively shallow and often stormy North Sea.

Besides NASA, the National Center for Atmospheric Research (NCAR), the National Oceanic and Atmospheric Administration (NOAA),

-more-

the Naval Research Laboratory (NRL), and several universities are participating in the project. Wallops Station will support the effort by conducting flights over the instrumented region of the North Sea. NASA 427, carrying Langley's S-Band radiometer and laser profilometer, NRL's K and Ka band radiometers, narrow pulse radar, and inertial navigation system and Wallops' Hasselblad and flight research cameras, will be based at Leck German Air Force Base, West Germany, for daily research flights.

The NASA 427 ferry flight across the Atlantic Ocean provided an excellent opportunity to obtain surface sea state data in support of the S-193 radar altimeter experiment aboard Skylab using the narrow pulse radar. The itinerary was arranged to fly beneath Skylab passes over Newfoundland and the Azores on September 13th. Hasselblad cameras were used to obtain additional sea state information.

Three major experiments are aboard the flying laboratory.

Wallops' and NRL's narrow pulse radar experiment will use detailed sea surface measurements and simultaneous observations with the narrow pulse radar to relate remotely sensed aircraft data to sea surface conditions. The airplanes inertial navigation system provides position and accurate ground speed information.

Langley's S-Band radiometer experiment will evaluate many aspects of the S-Band radiometer data from the sea surface, such as sun glint

effects, foam coverage effects, and surface roughness over sea water showing uniform salinity.

The objective of NRL's K and Ka band experiment is to evaluate microwave returns from the sea as a function of both foam and wave slope geometry.

The Wallops C-54 aircraft will conduct research flights daily, except weekends, over the instrumented course in the North Sea. Surface instruments are mounted on towers and bouys in the sea. NCAR's Buffalo aircraft and two Dutch helicopters will also fly research missions. Land-based members of the U. S. research group will be based on Sylt Island, offshore from the Danish border.

Dr. Edward J. Walsh of NASA Wallops Station is the Program Manager. Investigators are Dr. Hans J. C. Blume of NASA Langley Research Center and Dr. James P. Hollinger and Mr. Enzo A. Uliana of the Naval Research Laboratory.

-END-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Va. 23337

FOR RELEASE:
TUESDAY,
September 18, 1973

Release No. 73-11

WALLOPS STATION FACILITIES PROVIDE QUICK ASSIST IN SKYLAB PROBLEM

Technicians at Wallops Station operating a high precision 60-foot tracking antenna successfully received signals from Skylab to be used to analyze a recent apparent problem with one of the experimental instruments - the S-193 radar experiment, designed to collect data to be used for the design of wind, ocean wave and ocean topography sensors for future satellites, has in recent operations appeared to malfunction. Scientists have not been able to tell from the available data the exact nature of the malfunction so that the proper remedial action could be taken.

Wallops Station and Martin Denver personnel have cooperatively converted an existing antenna system at Wallops Station to receive the radar pulses from Skylab and record them for analysis. The first indications from the Wallops track on Monday are that a sizable portion of the experiment is still functioning properly.

-END-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Station
Wallops Island, Virginia

FOR RELEASE:
UPON RECEIPT

Joyce B. Milliner 703/824-3411 ext.579
(home 703/787-2408)

CHEMICAL CLOUD LAUNCHES SCHEDULED FROM ALASKA

Three Nike-Apache sounding rockets that will spread glowing colored clouds over the Alaskan region are scheduled for launch, weather permitting, from Poker Flats, Alaska, next week--two at dawn on October 9 and one at dusk on October 10.

The launchings will be carried out under the direction of NASA's Wallops Station, Wallops Island, Va.

Two different chemical payloads, releasing clouds of atomic sodium and lithium and of trimethylaluminum (TMA), will be used in this series to continue a program of research in the upper atmosphere through a region from about 80 kilometers (50 statute miles) up to 200 kilometers (125 miles). Similar chemical release missions have been conducted by NASA from Wallops Island in the past several years.

One objective of these experiments is the development of a daytime wind measuring system to study ionospheric dynamics at high latitudes and to compare data from several measuring methods.

Wallops personnel will conduct the two sodium-lithium experiments just before dawn (about 4 a.m. and 5:30 a.m., local time) on October 9 and the single TMA experiment before dusk (about 5 p.m.) on October 10 while Earth's surface is still in darkness but the chemical clouds are illuminated by the

- more -

Sun's rays. The reddish-orange artificial clouds will spread out and be visible for several hundred miles in the Alaskan region if the degree of cloud cover permits.

Usually, such launches are contingent on weather conditions, so that ground viewing sites can photograph and monitor the clouds. In this series, insteading of ground viewing sites, an instrumented Convair 990 aircraft from NASA's Ames Research Center, Mountain View, Calif., will be aloft, flying along a ground track of 220 kilometers (about 130 miles) east-southwest of the launch area, near Fairbanks, at 12,000 meters (40,000 feet) altitude, over any obscuring clouds.

The GCA Corporation, Bedford, Mass., provides the payloads and payload support, and the Geophysical Institute of the University of Alaska provides range support, under contract to NASA.

# # # #

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Washington, D. C. 20546
(Phone: 202/755-8370)

FOR RELEASE:

June 13, 1974

Nick Panagakos
Headquarters, Washington, D.C.
(Phone: 202/755-3680)

Joyce Milliner
Wallops Flight Center, Wallops Island, Va.
(Phone: 804/824/3411, Ext. 579 or 584)

RELEASE NO: 74-150

WALLOPS CENTER PLANS MASSIVE MID JUNE ROCKET SERIES

Large, glowing, colored clouds will be visible in the skies along the middle of the Atlantic Coast later this month during a massive launch of scientific rockets.

The high-altitude display will attract attention along the Atlantic Coast from Boston to Florida and into the midwest, depending on viewing conditions.

Fifty-four rockets lofted into space for atmospheric tests will be launched during a 24-hour period from NASA's Wallops Flight Center, Wallops Island, Va. Firings, using 24 launch pads at six sites at the center, will begin about June 17, weather permitting.

-more-

June 7, 1974

Atmospheric Layer and Density Distribution of Ions and Neutrals (ALADDIN '74) is an exploratory program jointly directed by NASA's Wallops Flight Center and the Air Force Cambridge Research Laboratories (AFRCL), as well as other government agencies. More than 100 researchers from the United States, England, Canada and West Germany have been involved.

Scientists expect to gain better mathematical models of the upper atmosphere and ionosphere from the ALADDIN project. They will develop these models for future use in predicting communications problems and satellite orbits, as well as for weather forecasting and pollution studies.

Joseph R. Duke is the NASA ALADDIN program manager. Edward F. McKenna is AFCRL's engineering coordinator and Dr. Russel Philbrick of AFRCL's Aeronomy Laboratory is the project's scientific coordinator.

Consulting scientists for the project at NASA's Washington headquarters are Maurice Dubin, chief of special projects in the Office of Space Science and John R. Holtz, manager for sounding rockets in the same office.

Philbrick is optimistic about the planned launch series. He said, "We should obtain the most extensive and complete measurements ever made in the upper atmosphere."

-more-

Philbrick noted that the project is the first concerted effort toward gathering all the necessary scientific parameters in this high altitude region, under similar atmospheric conditions. Along with a March 1970 launching series during an eclipse, this ranks as one of the largest series in this brief time span.

Twenty of the 29 major rocket payloads being launched will carry AFCRL experiments and nine will carry NASA experiments. Together with the larger payloads, 25 smaller meteorological class rockets are to be fired .

The flights will combine chemical releases, falling spheres, optical and mass spectrometers, as well as photometers, plasma probes and other scientific devices. The program objective is to produce a detailed study of the atmospheric conditions 30 to 85 miles above Earth.

Small meteorological probes along with more sophisticated spectrometer payloads are included in the extensive rocket array. Scientists will track and measure winds, wind shears (one layer of wind blowing past another), temperatures and diffusion parameters, upper atmosphere patterns of dynamics, structure and composition essential to understanding both ionospheric and atmospheric behavior. Newly-developed techniques using chemical releases will permit daytime wind measurements for the first time.

These chemical releases will provide the color spectacle at night. The vapor trails will be fluorescent in twilight and luminous after dark. They will be yellow to yellowish-green in appearance, with swaths of brilliant red to pinkish-white. No pullution threat exists from the experiments. The materials involved dissipate shortly after their release.

Data gathered will be by airborne, rocketborne, satellite and ground-based instrumentation. Mission coordination is critical. The June 17-29 launch window, for example, coincides with the lowest pass of NASA's Atmosphere Explorer C satellite. Its sweep across the Wallops Island area will be at a perigee of 140 kilometers (84 miles). The Explorer will look at density, composition and radiation between 140 and 500 kilometers (84 and 300 miles).

Structural and dynamic factors such as these are considered vital in understanding the behavior of the Earth's upper atmosphere.

"We dont have adequate models of a quiet atmosphere or normal ionosphere. The ALADDIN 74 program will provide the data base which can be used for developments of new atmospheric and ionospheric models and many theoretical studies of atmospheric properties. Because of the thoroughness of the investigation, the results from the program will provide a baseline for comparison of past and future atmospheric and ionospheric investigations," Philbrick said.

-end-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Flight Center
Wallops Island, Va 23337
Phone: 804/824-3411 Ext. 579

FOR RELEASE:
MONDAY
JULY 1, 1974

Joyce B. Milliner
Wallops Flight Center
(Phone: 804/824-3411, x579)

RELEASE No. 74-5

ALADDIN '74 PROJECT COMPLETED

The joint Air Force Cambridge Research Laboratory/National Aeronautics and Space Administration Project ALADDIN '74 sounding rocket launches were completed at 1:20 p.m. EDT yesterday. Beginning at 1:00 p.m. EDT Saturday, June 29, a total of 54 rocket payloads were launched into the upper atmosphere from NASA's Wallops Island, Virginia.

In addition, a pre-ALADDIN chemical experiment on a Nike-Iroquois rocket was launched Friday (June 28) evening and four post-ALADDIN meteorological rockets were launched this afternoon.

Scientists are interested in that region of the atmosphere that is above the capability of balloons and below the altitude of satellite orbits. Suborbital sounding rockets provide the only means of obtaining data from this area, from about 60 to 160

more

kilometers (35 to 100 statute miles) altitude.

This concentrated scientific endeavor was the largest such effort ever conducted. The more than 300 scientific and technical personnel from the United States, England, Canada, West Germany, and Italy have obtained data from which they expect to gain a better understanding of the upper atmosphere and ionosphere. The data will be used as a basis of numerous theoretical studies and for developments of atmospheric and ionospheric models. The results will also be used to test current scientific theories regarding the upper atmosphere.

The data received from the rocketborne experiments will be compared with data from the Atmospheric Explorer-C (AE-C) satellite as it passed over Wallops. The AE-C satellite obtained data between 150 and 500 kilometers with perigee over Wallops Island during part of the rocket launch program.

The structural and dynamic factors studied by these experimenters are considered vital in understanding the behavior of the Earth's atmosphere.

At a scientific critique meeting this morning, Joseph R. Duke, the ALADDIN '74 Project Manager of the Wallops Flight Center, stated, "The range operations were extremely successful. I'm proud of the performance of the Wallops team."

After the meeting, Dr. Russell Philbrick, the AFCRL Scientific Coordinator, made a preliminary assessment of the project. He said, "The Scientists are very happy with the data received. Scientifically, it was very successful, also. The data that was collected will be analyzed by the scientists over the next six months or so and they will get together for discussions and do a complete scientific analysis of the findings. It will probably take a year to a year and a half before publication begins. We won't know the details immediately. We do know that it will contain a large amount of new knowledge and a large number of new ideas about the make-up of the upper atmosphere -- its structure and motions."

-END-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Flight Center
Wallops Island, Va 23337
Phone: 804/824-3411 Ext. 579

Joyce B. Milliner
Wallops Flight Center
(Phone:804/824-3411, x579)

FOR RELEASE:
TUESDAY, JULY 16, 1974

RELEASE NO. 74-6

THE WHITE HOUSE

UNITED STATES SPACE WEEK, 1974

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

Just five years ago, two Americans thrilled the world when they took man's first steps on the moon. The Heavens have intrigued and mystified man for all recorded history. In that single journey, five years ago, man's knowledge of our universe, diligently gathered over the centuries, resulted in a spectacular leap away from the earth.

That leap was more than a tribute to man: it was also a tribute to America, for it would never have been possible without a concerted, cooperative effort joining government, industry and science.

Organized and led by the National Aeronautics and Space Administration and supported by our citizens, the Apollo program showed what America can do when our people agree on a goal and follow

through to achieve it. The knowledge to be gained from space will lead to scientific, technological, medical and industrial advances which cannot be fully perceived today. In time man may take for granted in the heavens such wonders as we cannot imagine--just as superhighways across America would amaze the Puritans of 1620 or transatlantic flights would astound those who passed on the Legend of Icarus. But we know that a beginning has been made that will affect the course of human life forever.

It is entirely fitting that we should commemorate the beginning of man's journey into his universe on the Anniversary of that first landing on the moon by the men of Apollo 11.

Now, therefore, I, Richard Nixon, President of the United States of America, do hereby proclaim the period July 16 through July 24, 1974, as United States Space Week and urge the people of the nation to mark this period in ways that express their pride in the leading role our nation has played in the exploration and use of space which can contribute so greatly to a better land and a better world.

In witness whereof, I have hereunto set my hand this thirteenth day of July, in the year of our Lord, Nineteen hundred seventy-four, and of the independence of the United States of America the one hundred ninty-ninth.

-END-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Flight Center
Wallops Island, Va 23337
Phone: 804/824-3411 Ext. 579

FOR RELEASE:
FRIDAY,
JULY 26, 1974

Joyce B. Milliner
Wallops Flight Center
(Phone:804/824-3411, X579

RELEASE NO. 74-7

WALLOPS AIRCRAFT CONTRACT AWARDED

The National Aeronautics and Space Administration has awarded a contract for aircraft maintenance and operation at Wallops Flight Center, Wallops Island, Virginia, to the Lockheed Aircraft Service Company, Division of Lockheed Aircraft Corporation, Jamaica, New York.

The cost-plus-award-fee contract began July 11 and will run for one year with provision for two one-year options. Total estimated price for one year operation is $457,472.00

Services under the new contract include furnishing necessary management, personnel, material, and equipment for the operation, maintenance and other incidentals necessary to operate and maintain three NASA C-54 aircraft, one NASA Queen Air-80 aircraft, one UH-1B helicopter, and operation of the Wallops airport control tower.

This contract is being monitored by the Aeronautical Programs Branch.

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Flight Center
Wallops Island, Va 23337
Phone: 804/824-3411 Ext. 579

FOR RELEASE:
THURSDAY
AUGUST 22, 1974

Joyce B. Milliner
Wallops Flight Center
(Phone: 804/824-3411, X579)

RELEASE NO. 74-8

NASA WALLOPS FLIGHT CENTER DIRECTOR HONORED

Mr. Robert L. Krieger, Director of the NASA Wallops Flight Center, has been elected as a Fellow of the American Astronautical Society (AAS). The newly elected Fellows will be presented at a luncheon to be held in conjunction with the Annual AAS Meeting at the University of Southern California on August 22nd at 12:00 noon.

The American Astronautical Society was formed in 1954 with the aim to further the progress of space exploration and expolitation by encouraging the exchange of ideas and information among scientists and engineers.

Nine other Fellows were also elected this year and include the following: George W. Jeffs, President, Space Division of Rockwell International Corporation; Vincent L. Johnson, Deputy Associate Administrator for Space Science, NASA; Bruce T. Lundin, Director of the

NASA Lewis Research Center, Cleveland, Ohio: Dr. Hans Mark, Director of NASA Ames Research Center, Moffett Field, California; Dr. Winfield W. Salisbury, Harvard College Observatory, Smithsonian Astrophysical Observatory; William C. Schneider, Acting Associate Administrator, Office of Manned Space Flight, NASA Headquarters, Lee R. Scherer, Director, NASA Flight Research Center, Edwards Air Force Base, California; Dr. Sigurd A. Sjoberg, Deputy Director NASA Johnson's Space Center, Houston, Texas; and Howard W. Tindall, Jr., Director of Data Systems and Analysis, NASA Johnson Space Center, Houston, Texas.

The AAS Fellows comprise the highest ranking members of the American Astronautical Society. The principal criterion applied in considering a candidate for a Fellow is the significance of his contribution to the field of astronautics.

Dr. Wernher von Braun is a board member of the Society and Senator Frank Moss of Utah, Chairman of the Senate Committee on Aeronautics and Space Sciences is a newly elected board member. Also Congressman Olin Teague of Texas has been appointed to fill a board member vacancy.

Mr. Krieger has headed the Wallops facility since 1948. Since the NASA's Wallops Flight Center began in 1945, over 8,000 rockets have been launched from the Island, including seventeen satellites. The Center is responsible for applied research and development of scientific space vehicle payloads, and launch and data acquisition facilities and

techniques; the conduct of a portion of NASA's Sounding Rockets Program; aeronautical and flight terminal area research; and the utilization of space technology to the collection and interpretation of ecological data. Wallops also has responsibility in the international space program to train and provide technical assistance to foreign countries in the development of their range facilities and operating techniques.

He is very active in community affairs, particularly in the field of education and is in Who's Who in America. He is married to the former Frances McLarty of Hogansville, Georgia. The Kriegers' have seven children and live on the Wallops Main Base.

-END-

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
Wallops Flight Center
Wallops Island, Va 23337
Phone: 804/824-3411 Ext. 579

FOR RELEASE:
FRIDAY,
NOVEMBER 15, 1974

Joyce B. Milliner
Wallops Flight Center
(Phone: 804/824-3411, X579)

RELEASE NO. 74-9

NASA HONOR AWARDS

Wallops Flight Center was well represented at the Annual NASA Honor Awards Ceremony held October 29, 1974 in the Health, Education and Welfare Auditorium, Independence Avenue and Fourth Street, SW, Washington, D. C. The Center and five individual employees were presented Honor Awards by Dr. James C. Fletcher, Administrator of the U. S. Space Agency.

Mr. Robert L. Krieger received a Distinguished Service Medal in recognition of his distinguished service to the Nation as Director of NASA's Wallops Flight Center (WFC). Under his leadership, WFC has made major contributions to aerodynamics and atmospheric sciences, international cooperative research, and aerospace systems for enhanced knowledge of the physical environment. This is the highest level honorary award within NASA and is awarded to someone whose

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

contribution must be so extraordinary that other forms of recognition by NASA would be inadequate. Mr. Krieger has been twice the recipient of NASA's Outstanding Leadership Award.

Hongsuk H. Kim received an Exceptional Scientific Achievement Medal for significant contributions in establishing laser induced fluorescence and bathymetry as powerful applications research tools for better understanding aquatic plant activity and marine hydrographic processes. Mr. Kim is assigned to the WFC's Directorate of Applied Science. This award is given for unusually significant scientific accomplishments to an individual whose creative efforts are of high order and who has made important contributions to science and related technology.

Joseph R. Duke was awarded an Exceptional Service Medal for leadership, initiative, and operational expertise in the planning and implementation of the ALADDIN '74 Project, a concentrated scientific endeavor which will provide significant new knowledge concerning the Earth's atmosphere. This award is granted for significant achievement or service characterized by unusual initiative or creative ability that clearly demonstrates substantial improvement in space related endeavors which contribute to the programs of NASA. Mr. Duke is assigned to the Project Management and Operations Branch.

William G. Lewers also received an Exceptional Service Medal for outstanding dedication in providing utilities operations services in support of the operations of the Wallops Flight Center. Since

Mr. Lewers was hospitalized at the time of the ceremony, his daughter, Mrs. Billie Ann Bowden accepted the medal for him. Mr. Lewers is assigned to the Wallops Flight Center Facilities Operations Branch.

For outstanding contribution in extending and improving NASA's outreach and communication with the minority community, Gregory V. Selby received an Equal Employment Opportunity Award. This honor is awarded to an individual who has achieved outstanding results through unusually effective leadership, skill, imagination, innovation, and perseverance in extending equal opportunities to men and women in Government activities. Mr. Selby is assigned to the Sounding Rocket Program Branch.

On behalf of the Wallops Flight Center, Robert T. Duffy accepted a Group Achievement Award presented to the ALADDIN '74 Project Team (Wallops Civil Service and contract employees) for dedicated and outstanding performance in support of this scientific program. This project could not have been successfully accomplished without a sustained and skillful effort on the part of all members of the team. Mr. Duffy is Director of the Directorate of Operations.

Wallops Flight Center is indeed honored to receive these NASA awards and medals.

- END -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Flight Center
Wallops Island, Va 23337
Phone: 804/824-3411 Ext. 579

FOR RELEASE:
MONDAY,
DECEMBER 30, 1974

Joyce B. Milliner
Wallops Flight Center
(Phone: 804/824-3411, x579)

RELEASE NO. 74-11

NASA WALLOPS FLIGHT CENTER AWARDS SIGNIFICANT SMALL BUSINESS CONTRACT TO LOCAL MINORITY COMPANY

On December 27th, 1974, Wallops Flight Center awarded an 8(a) contract to the Harmon Service Company, Parksley, Virginia, for providing operation of stockroom, receiving and delivering supplies and equipment for use throughout the Center, packing and crating equipment for shipment including rockets and rocket motors, and performing other related supply and shipping support. In carrying out these duties, it will be necessary for the Contractor to maintain a staff of 24 people. The contract is a negotiated fixed-price contract with the basic contract and option periods aggregating a total expenditure of approximately $746,000.

The award of this contract is particularly significant in view of the fact that Wallops' Minority Business Specialist sought out Mr. Harmon, a local individual employed by an aerospace contractor, who had extensive experience in the supply management and logistics

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

area, and worked with the individual and the Small Business Administration to secure his 8(a) program certification, contacted local lending institutions and the SMA to assist in obtaining necessary financing for contract start-up costs, and arranging leasing of vehicles necessary for performance of the contract.

It is this type of effort that is necessary to help fulfill the need to assist minority individuals to enter the mainstream of the American economy and to eventually become a self-sustaining entity and achieve a competitive and profitable position in the marketplace.

Mr. Harmon, now a resident of Parksley, Virginia, was born at New Church, Virginia, on February 4, 1942. He graduated from Mary N. Smith High School in Accomac and continued his studies at the University of Maryland Estension at Thule Greenland and Central State University, Wilberforce, Ohio.

Mr. Harmon gained extensive expertise in the supply management and logistics area beginning in the U.S. Navy in 1962 where he served until 1966. In 1966 he was employed by the RCA Corporation who was performing the Supply Management Contract at NASA Wallops and continued with RCA until 1969. He subsequently was employed by two successor contractors performing the supply management functions until January 1974, when he was hired by Lockheed Aircraft Corporation as a material supervisor on Wallops Aircraft Services Contract.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Flight Center
Wallops Island, Va 23337
Phone: 804/824-3411 Ext. 579

FOR RELEASE:
TUESDAY,
January 14, 1975

Joyce B. Milliner
Wallops Flight Center
(Phone: 804/824-3411, Ext. 579)

Release No. 75-1

ROCKET PROGRAM TO INCLUDE CHEMICAL RELEASES VISIBLE OVER EASTERN U.S.

A rocket payload, included as part of a scientific program at Wallops Flight Center, will release chemicals at high altitudes resulting in clouds which should be visible over a major portion of the eastern seaboard. This experiment is part of a follow-on program to Project ALADDIN '74 which was conducted at Wallops in June of last year.

The word ALADDIN is an acronym for Atmospheric Layering and Density Distribution of Ions and Neutrals.

The primary purpose of this Post ALADDIN program is to measure the atomic oxygen density profile using several different techniques as well as the investigation of certain other parameters which are specifically related to understanding this important species of the upper atmosphere. The measurements include three techniques for

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

measuring atomic oxygen: a mass spectrometer, an optical photometer, and an inflight optical measurement of a chemiluminous reaction between atomic oxygen and a nitric oxide release. Additional parameters include measurements of the upper atmosphere winds, temperature and diffusion coefficients from the chemical release, and measurement of the density and temperature by an accelerometer contained in a spherical package to be ejected from the main rocket body during flight. Some properties of the ionospheric motions will be measured using electric field probes and ground based ionospheric soundings. The measuring instruments for the program are contained in payloads to be launched on three major sounding rockets.

The program will commence Wednesday, January 15, with approximate launch times of 5:45, 6:21, and 6:30 p.m. EST, weather permitting. The chemical release which will be visible for several hundred miles is scheduled for the 5:45 p.m. launch. The chemical is TMA (trimethylaluminum) and will be released as a string of glowing blue-green clouds on the down leg of the trajectory. These clouds will grow in size and drift with the winds. A few minutes after release, the clouds will be greatly distorted due to the action of the winds. The clouds will be visible for about 10 minutes.

Preceding the program, an exploratory development payload will be launched tonight at 5:45 p.m., weather permitting. This payload will also produce one blue-green cloud but not as impressive as the one to be launched with the main program.

If tonight's weather conditions are unsatisfactory, the experiments will be rescheduled on a day-to-day basis for about two weeks, excluding the weekend.

The program is being conducted by the Air Force Cambridge Research Laboratories and NASA. The AFCRL Scientific Coordinator is Dr. C. R. Philbrick; Dr. D. Golomb is responsible for the chemical payloads. The NASA Wallops Project Engineer is Joseph R. Duke and the AFCRL Engineering Coordinator is Joseph F. Geary, Jr.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Flight Center
Wallops Island, Va 23337
Phone: 804/824-3411 Ext. 579

FOR RELEASE:
MONDAY,
January 21, 1975

Joyce B. Milliner
Wallops Flight Center
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Release No. 75-2

POST ALADDIN SERIES COMPLETED AT WALLOPS

The joint Air Force Cambridge Research Laboratory/National Aeronautics and Space Administration (AFCRL/NASA) Post ALADDIN rocket program started on Tuesday, January 14th, at the Wallops Flight Center was successfully completed on Friday night, January 17th. These experiments were part of a follow-on program to Project ALADDIN '74 conducted at Wallops in June of last year.

The word ALADDIN is an acronym for Atmospheric Layering and Density Distribution of Ions and Neutrals.

Ten rocketborne experiments were conducted in this series. Two of these released chemicals at dusk from high altitudes resulting in artificial clouds which were visible over a major portion of the eastern seaboard.

The first chemical experiment occurred at 5:46 p.m. EST on Wednesday, January 15th, when a Ute-Tomahawk vehicle carried a payload which released an aluminum vapor at about 100 miles altitude 145 seconds after liftoff. The blue-green glowing cloud was visible for about 15 to 20 minutes and reports of sightings were received from as far north as upper New York (Buffalo), as far south as South Carolina and as far west as Roanoke, Virginia.

The second artifical cloud scientific experiment scheduled for launch the following evening was postponed because of weather conditions and was successfully accomplished on Friday, January 17th, at 5:43 p.m. EST. During this experiment the chemical, trimethyl-aluminum (TMA), was released at about 114 miles altitude in puffs about 10 seconds apart continuously down to about 56 miles altitude, again creating blue-green clouds, visible along the east coast.

Utilizing these chemical experiments, the scientists can measure the upper atmosphere winds, temperature and diffusion coefficients.

Two other two-stage vehicles carried scientific experiments containing instrumentation to measure the atomic oxygen density profile using several different techniques. In addition five meteorological class, single-stage rockets were used to measure density, temperature, and wind.

A pre-launch vehicle performance test utilizing a Ute-Tomahawk vehicle was conducted on Tuesday, January 14th, at 3:56 p.m. EST. Other liftoff times were:

Wednesday, January 15	-	Ute-Tomahawk	5:46 p.m. EST
Friday, January 17	-	Super Loki	4:00 p.m.
Friday, January 17	-	Super Loki	4:50 p.m.
Friday, January 17	-	Ute-Tomahawk	5:43 p.m.
Friday, January 17	-	Paiute-Tomahawk	6:35 p.m.
Friday, January 17	-	Paiute-Tomahawk	6:45 p.m.
Friday, January 17	-	Super Loki	7:01 p.m.
Friday, January 17	-	Super Loki	7:12 p.m.
Friday, January 17	-	Super Loki	8:14 p.m.

According to Dr. Russell Philbrick, AFCRL Scientific Coordinator, "The scientists are very happy with the data collected by these experiments and with the success of the project."

END

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Joyce B. Milliner
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FOR RELEASE:
THURSDAY
March 6, 1975

Release No. 75-3

WALLOPS AWARDS LARGE CONSTRUCTION CONTRACT FOR REHABILITATING ISLAND SEAWALL

The National Aeronautics and Space Administration today awarded a contract for the rehabilitation of the existing shore protection system on Wallops Island to Higgerson-Buchanan, Inc. in Chesapeake, Virginia. This company was low bidder of the five companies submitting bids.

The fixed price contract for $913,940.00 is to be completed within one year.

The work consists of modifying approximately 14,000 linear feet of the existing seawall with a concrete revetment to bring the elevation up to 12 feet above sea level. This work is expected to be the final major modification to the Wallops Flight Center's seawall system.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:
MONDAY,
March 31, 1975

Howard Allaway
Headquarters, Washington, D. C.
(Phone: 202/755-8617)

Joyce B. Milliner
Wallops Flight Center
(Phone: 804/824-3411 x579)

Release No. 75-4

NEW SATELLITE TO MEASURE OCEAN SURFACE TOPOGRAPHY AND SEA STATE

An Earth-orbiting spacecraft designed to measure precisely the topography of the ocean surface and the sea state--wave height, period, and direction--is being prepared by NASA for launch no earlier than April 9.

The new oceanographic-geodetic satellite, designated Geodynamics Experimental Ocean Satellite-C (GEOS-C), is the third in a series of spacecraft designed to gain knowledge of Earth's shape and dynamic behavior.

The 340-kilogram (750-pound) satellite will be launched aboard a Delta rocket from the Western Test Range near Lompoc,

California, into a circular orbit at an altitude of 843 kilometers (523 statute miles) where it will circle Earth every 101.8 minutes on a path inclined 65 degrees retrograde to the equator.

GEOS-C will be used to compare several new and established geophysical measuring systems including a radar altimeter and satellite-to-satellite tracking as well as radar, laser, and doppler tracking.

The spacecraft will demonstrate the feasibility and the utility of satellite altimeters for measuring the geometry of the oceans and mapping the topography of the ocean surface to within a precision to 1 to 2 meters (about 40 to 80 inches). Radar pulses will be beamed to the ocean surface from the satellite and their return timed to precisely measure the satellite altitude from the sea surface, thus providing mean sea level determinations--important in the determination of Earth's gravity field and in the detection of global ocean circulation patterns. The general shape or characteristics of the returned pulses as reflected from the sea surface will provide a measure of the sea state in the areas surveyed--important in detecting rough sea conditions or the effect of storms.

The altimeter data are expected to contribute to the refinement of present knowledge of the geoid--that is, the level that would be assumed by the ocean surface in the absence of winds, currents, and tides. They will also provide a description of the behavior of the

ocean's surface that varies with time due to currents and winds. Thus the radar altimeter will contribute to technology leading to highly accurate operational satellite altimetry.

The orbit of GEOS-C must be accurately known so that the height above sea level measured by the altimeter can be accurately calibrated. To do this, GEOS-C will be tracked from the ground by laser, radio doppler, C-band radar, and S-band radar, as well as being tracked by Applications Technology Satellite-6 (ATS-6), launched last year, thus making GEOS-C the best tracked spacecraft ever launched by NASA.

In addition to altimeter calibration, the precision tracking will yield improved gravity field information and will make possible more precise position location of ground tracking stations. This data will be useful in such studies of Earth dynamics as tectonic plate motion, Earth rotation, polar motion, and continental drift theory.

The satellite-to-satellite tracking experiment by GEOS-C and ATS-6, the first of this kind, is expected to provide more precise orbit information on the observed satellite than is now obtainable by the less constant observations of ground stations.

From its geosynchronous altitude, ATS-6 can observe GEOS-C for more than half its orbit. ATS-6 will track and GEOS-C will radio

ranging signals through its S-band transponder to ATS-6, which in turn will relay the data to ground stations.

GEOS-C will carry an array of quartz reflectors for laser ranging. The ring of reflectors around the satellite has been designed to permit measurements to accuracies of 10 centimeters (4 inches), which has not been possible in laser tracking of previous satellites. A laser beam will be sent to the satellite and the reflected signal received at the same ground site. A network of ground laser ranging stations will be used to track GEOS-C during its mission lifetime.

Powered by panels of solar cells, the 132 centimeter (52 inch) diameter GEOS-C will be fixed in orbit with its antennas pointed Earthward by means of an extremely precise gravity-gradient stabilization system employing a scissors-type boom with a 45-kilogram (100-pound) end mass. The mass at the end of the boom swings outward as the spacecraft circles the globe in its fixed orbital path, like a ball twirled on a string, keeping the antennas at the opposite end aimed always at Earth. A momentum wheel, like a gyroscope, augments the gravity gradient boom to provide full three-axis stabilization.

The GEOS-C is considered a bridging step between the NGSP and the emerging NASA Earth and Ocean Physics Applications Program.

The GEOS-C Program is under the management of NASA's Office of Applications. The NASA Wallops Flight Center has project management

responsibility for GEOS-C. Mission operations are managed by the NASA Goddard Space Flight Center, which also manages the Delta launch vehicle project. The spacecraft was designed and fabricated by the Applied Physics Laboratory of the Johns Hopkins University. Launch site operations are managed by the NASA Kennedy Space Center Unmanned Launch Operations Directorate.

The GEOS-C spacecraft and instruments cost about $12.5 million; the Delta launch vehicle, about $4.5 million.

(END OF GENERAL RELEASE: BACKGROUND INFORMATION FOLLOWS.)

BACKGROUND

Since the advent of satellites, man has made much progress in refining his knowledge of the size and shape of Earth. The second U. S. satellite (Vanguard 1, March 17, 1958) determined the famous pear-shaped component of Earth during the International Geophysical Year (IGY).

The particular objectives of the NASA program in satellite geodesy have been to provide a precise measurement of Earth's surface and a mathematical description of Earth's surface and its gravity field. These objectives formed the basis of the National Geodetic Satellite Program (NGSP) initiated in 1964. Under NASA management, the NGSP was a joint venture of the Departments of Defense and Commerce, with participation by several universities and international organizations, to meet some of the geodetic needs of the U. S.

The first objective of the Geodetic Satellite Program was to generate a unified world survey network with an accuracy of 10 meters. Such a unified world survey network provides necessary points for geophysicists to obtain a basic reference for the physical measurements of Earth. These common reference points have been a very important contribution of the space program. One of the first accomplishments in space in 1959 was the generation of a Mercury datum used as a basis for the Mercury tracking network.

The second objective of the NGSP was to develope a more precise mathematical model of Earth's gravitational field. This information revealed details about Earth's dynamics and structure. It also has had significant space application in improving orbital prediction capability and made possible missions that require high-precision position determination.

The following is a brief flight history of the NASA satellite geodesy program:

-- Explorer-22 (Beacon Explorer-B), launched October 10, 1964. In addition to ionospheric studies, this satellite provided the first instance of ground-based laser tracking for use in tracking and geodetic studies.

-- Explorer-27 (Beacon Explorer-C), launched April 29, 1965. With geodetic objectives primary, this mission carried ultra-stable oscillators for precise Doppler tracking of orbital irregularities for gravity field determination. Laser tracking

experiments and ionospheric studies were continued.

-- GEOS-1 (Explorer-29), launched November 6, 1965. This mission contained basic instrumentation from several participating agencies: a U. S. Navy Doppler system, U. S. Army electronic ranging system (SECOR), U. S. Air Force optical beacons, and NASA laser reflectors and range and range-rate system. This combination of instruments accomplished two important objectives: (1) most of the observation capability of the U. S. could be focused on one satellite; and (2) errors in a particular system could be discovered and corrected by reference to other systems.

-- PAGEOS -1 (PAssive GEOS), launched July 1, 1966. This mission consisted of the use of an ECHO-1 type, aluminized Mylar balloon for optical sighting by sun light reflected from the satellite. By observing PAGEOS-1 against the star background, stations determined their orientation to one another.

-- GEOS-2 (Explorer 36), launched January 11, 1968. This mission was nearly identical to GEOS-1 with additional laser equipment and a new radar system.

-- Skylab, launched May 14, 1973. This manned orbiting laboratory was equipped with an Earth Resources Experiment Package (EREP) that included an earlier version of the GEOS-C radar altimeter. The data obtained from the altimeter provided "proof of concept" for the GEOS-C instrument and supplied localized samples of sea surface topography data.

In addition to the data from these satellites, considerable information has been acquired from many other satellites whose orbit characteristics and systems have contributed to solutions in geodesy.

PROJECT DESCRIPTION

The purpose of the GEOS-C Project is to design, develop, and launch an oceanographic/geodetic satellite and to perform experiments in support of the NASA Earth and Ocean Physics Applications Program (EOPAP). The GEOS-C Project will apply satellite techniques to geoscience investigations--oceanography and solid-Earth physics--to:

1. Demonstrate the feasibility and utility of satellite altimeters for measuring the geometry of the ocean surface. With sufficient accuracy in the determination of the geocentric position of the spacecraft and with suitable altimetry, the geometry of the ocean surface can be described and sea level determinations can be made. This, in turn will contribute to refinement of the present knowledge of the geoid (that is, the level that would be assumed by the ocean surface in the absence of winds, currents, and tides) and to the initial description of the time-varying behavior of the ocean's surface and the larger quasi-steady state departures of the sea surface from the geoid--sea surface slopes, tides, geological effects on the ocean's surface, etc. The mission will provide data for the detection and measurement of oceanographic features such as sea state, wave heights, and major current systems.

2. Contribute to the calibration, data accuracy determination, and improvement of candidate ground-based and satellite-borne tracking systems. The improvement in ground tracking accuracy, especially the laser tracking, coupled with the altimeter data will contribute to the solution of such problems as detection and measurement of local gravity anomalies and the temporal variation of the gravity field; the verification of continental drift theory, polar motion, tectonic motions (changes in the structure of Earth's crust), fault motions, and Earth rotation.

3. Compare and correlate results obtained and make available both the observational data and the results of analyses.

The GEOS-C mission activities are presently scheduled for approximately a one-year period, although the altimeter and sea-surface topography feasibility objectives can be satisfied in about six months. Data will be provided to refine the geodetic and geophysical results of the National Geodetic Satellite Program (NGSP) and furnish a test bed for new systems and techniques that are expected to contribute heavily toward the objectives of EOPAP and particularly to the development of SEASAT, a new oceanographic satellite being planned for launch in 1978. This mission will also contribute to fulfilling the Department of Defense C-band radar

calibration requirements and the altimeter requirements of both the Departments of Defense and Commerce.

A broad spectrum of oceanographic and science and engineering information will result from the analysis of data obtained from GEOS-C. For example, 41 investigators or investigating teams from government, university, and industrial organizations were selected from proposals submitted in response to a call for space flight data investigations issued in October 1972. Analysis of the first quick-look data will begin about two weeks after the satellite has been turned on in orbit, and arrangements have been made to provide appropriate data to each investigator on a routine basis.

MISSION OBJECTIVES

The GEOS-C mission objectives in order of priority at launch are:

1. To perform an in-orbit satellite altimeter experiment to: (a) determine the feasibility and utility of a space-borne radar altimeter to map the topography of the ocean surface with an absolute accuracy of plus or minus 5 meters, (16½ feet) and with a relative accuracy of 1 to 2 meters (40 to 80 inches), (b) determine the feasibility of measuring the deflection of the vertical at sea, (c) determine the feasibility of measuring wave height, and (d) contribute to the technology of future altimeter-satellite systems with a 10-centimeter (4-inch) measurement capability.

2. To support further the calibration of NASA and other agencies' ground C-band radar systems by providing a spaceborne coherent C-band transponder system, to assist in locating these stations in the unified Earth-centered reference system, and to provide tracking coverage in support of the radar-altimeter experiment.

3. To perform a satellite-to-satellite tracking experiment with the Applications Technology Satellite-6 (ATS-6) using an S-band transponder system to directly measure the short period accelerations imparted to the spacecraft by the gravity field and to determine the position of the spacecraft. The satellite-to-satellite tracking system will also be used for relaying altimeter-data through ATS-6.

4. To support further the intercomparison of new and established geodetic and geophysical measuring systems, including the radar altimeter, satellite-to-satellite tracking, and C-band, S-band, laser, and doppler tracking systems.

5. To investigate solid-Earth dynamic phenomena such as polar motion, fault motion, Earth rotation, Earth tides, and continental drift theory with precision satellite tracking systems such as the laser and doppler systems.

6. To refine further orbit-determination techniques, the determination of interdatum ties, and gravity models with a spacecraft equipped with laser retroreflectors, C-band tranponders, S-band transponders, and doppler beacons.

7. To support the calibration of the S-Band sites in the NASA's Space Tracking and Data Network (STDN) by furnishing a space-borne S-Band transponder to assist in positioning the network stations in the world reference tracking system, and to assist in evaluating the

Unified S-Band system as a tool for geodesy and precision orbit determination.

SPACECRAFT

GEOS-C is a densely packed, 340-kilogram (750-pound) satellite with an eight-sided aluminum shell topped by a truncated pyramid. It is 132 centimeters (53 inches) wide and 81 centimeters (32 inches) high. Its structure is basically the same as that of GEOS-2, which was launched January 11, 1968, with the substitution of heavier trusses to accommodate the additional weight.

GEOS-C's main purpose is to perform experiments in support of the application of geodetic satellite techniques to geosciences, i.e., solid Earth physics and oceanography. The experiments GEOS-C carries to achieve its objectives are:

-- A radar altimeter--the first to be carried on an unmanned spacecraft--to demonstrate the feasibility and utility of using an on-board altimeter to detect and measure oceanographic features such as sea state, wave heights, and major current systems.

-- Two C-band transponders to support the altimeter and C-band system calibration as well as for experimentation to determine the accuracy of the system for geometric and gravimetric geodesy investigations.

-- One S-band transponder for satellite-to-satellite tracking and for Earth tracking experiments to measure more precisely the satellite orbit and the gravity field.

-- Laser retroreflectors for measuring the satellite range at optical frequencies.

-- A radio doppler system that transmits on two coherent frequencies used to obtain precision satellite range rate data.

The radar altimeter, laser retroreflectors, and the various antennas are mounted on a platform at the Earth-facing end of the satellite.

The spacecraft's outer surfaces carried panels of solar cells. The solar cell arrays are designed to provide maximum solar cell power output and minimum daily average fluctuations in the satellite's exposure to sunlight as it orbits Earth. Digital solar attitude sensors are mounted below three equatorial solar cell panels. These sensors provide information on the satellite's orientation relative to the Sun.

The C-band and S-band transponders and the doppler system are mounted in the satellite. Also included in the satellite are the command system, the telemetry system, and the battery which is wired to the solar cell array. A three-axis vector magnetometer for measuring the satellite orientation with respect to Earth's magnetic field and an electromagnet for stabilizing the satellite magnetically are also mounted in the satellite.

A 600-centimeter scissor type boom extends from a housing in the pyramid end of the spacecraft to provide gravity gradient stabilization of the satellite after it is magnetically stabilized, so that the altimeter, antennas, and laser reflectors will point Earthward at all times. The boom can be retracted or extended to different lengths by means of a motor located inside the satellite. Also in the satellite is a constant-speed momentum wheel which provides full three-axis stabilization.

INVESTIGATIONS

The GEOS-C mission will conduct investigations in 13 specific categories:

Ocean Geoid Determination

This category includes all investigations for the determination of the geometry of mean sea level using altimetry data alone or in combination with other data types.

The satellite altimeter observations provide measurements of the satellite height above the ocean surface. This data can be used directly to estimate the ocean geoid, provided the satellite position can be determined with sufficient accuracy and/or errors in satellite position corrected.

Investigations in this category may call for the combination of altimeter information with geoid information obtained from existing surface gravimetry, satellite gravity field information and geocentric station position.

One of the important results expected to be obtained from the GEOS-C altimeter is improved definition of the ocean geoid. At present, worldwide knowledge of the ocean geoid is available only from satellite gravity field data which, at best, defines variations with widths of the order of 1500 kilometers (about 900 miles) or larger. The satellite altimeter, with precision and/or accuracy of 1 to 2 meters (40 to 80 inches), has the potential for greatly increasing knowledge of the ocean geoid in those substantial parts of the ocean where no detailed surface gravity data exists, as well as contributing to increased accuracy in those areas where surface gravity and other types of gravity data exist.

Ocean Tides

At present most measurements of ocean tides are made at coastal stations where the tidal effects are strongly influence by local bathymetric effects. Although several theories exist that permit theoretical computation of deep ocean tides, only limited numbers of measurements of deep ocean tides have been made utilizing bottom tide meters.

The GEOS-C altimeter has the potential for rapid global determination of ocean tides. GEOS-C should allow evaluation of various techniques for recovery of tide data from satellite altimeter

measurements. To aid in this evaluation, the tidal analyses of GEOS-C altimeter data will be carried out on data collected in areas where ground truth in the form of bottom tide meter data is available.

Sea State Determination

In addition to giving the distance between the spacecraft and the ocean surface, the GEOS-C altimeter data, through analysis of the characteristics of the return pulse, is expected to provide information on the sea state. In particular, information on mean wave height, wave period, and wave propagation direction may be determinable.

Although theoretical studies and aircraft radar altimeter data analyses have been carried out, considerable effort is needed to determine the degree to which various types of sea state data can be extracted from a satellite altimeter and to identify the best methods for carrying out extraction of the information. Most of the investigations planned for GEOS-C for sea state determination analyses are aimed at evaluation of feasibility and identification of best methods through comparison of results obtained from the GEOS-C altimeter with ground truth information on sea state and with data obtained from aircraft-borne radar instruments.

In addition to analysis of GEOS-C data in terms of sea state parameters, the objectives these investigations include development of information for use in the design of future satellite radar altimeters and determination of potential bias introduced into altimeter sea surface topography determinations due to sea state.

Quasi-Stationary Departures from the Marine Geoid

This category includes all altimeter data analyses designed to investigate nonperiodic deviations of sea level from the expected values based on present knowledge of the gravity field. It also includes analyses of altimeter data to determine sea slopes associated with such phenomena as currents and wind setup.

The sea surface topography that will be measured by the GEOS-C altimeter is a function primarily of variation of the force of gravity over Earth's surface, changes in atmospheric pressure from point to point on the ocean surface, density structure of the water column, surface wind effects, dynamic effects due to ocean currents, and tidal effects. If only gravitational forces (including rotation) were present, the sea surface topography would coincide with the geoid.

The effects of atmospheric pressure variations, wind forces, and tides are time-variable with a reasonably high temporal frequency. The effects of density structure of the water column and currents are usually considered to be quasi-stationary departures from the geoid, even though the effects of currents do shift over restricted areas of the surface.

One of the primary aims of NASA's Earth and Ocean Physics Applications Program (EOPAP) is to determine, from altimeter measurements, departures of sea surface topography from the marine geoid due to water motion. The reason for this interest lies in the fact that the velocity and volume of water in motion can be inferred from these departures.

Gravity Model Improvement

This category includes all analyses of GEOS-C altimeter and tracking data which has the ultimate objective of determining an improved Earth gravity field model. These include both normal perturbation analyses combining GEOS-C tracking data with data from other satellites and analyses in which the altimeter geoid height information, satellite-to-satellite tracking experiment rate information, or other tracking data are combined with existing information for gravity field model improvement.

Improvement of the existing gravity models is required to achieve EOPAP goals from three viewpoints. First, satisfaction of a number of EOPAP goals requires improved satellite orbit determination which, to a large extent, depends on an improved gravity model. Second, determination of effects of ocean currents on sea surface topography requires high accuracy in geoids with which altimeter-derived sea surface topography can be compared. Increased geoid accuracy requires increased accuracy in knowledge of the gravity field. Finally, interpretation of an improved gravity field offers the potential of increased understanding of plate tectonics, and therefore, of the mechanisms producing earthquakes.

Gravity field information can be derived from GEOS-C data in three ways: (1) by combining information on the perturbations of GEOS-C from tracking data with data from other satellites in a general perturbation analysis; (2) by analysis of satellite-to-satellite tracking data in the same manner as Lunar Orbiter and Apollo data were analyzed to obtain residual line-of-sight accelerations or compatible gravity anomaly information; and (3) by

transforming altimeter geoid height data to gravity anomaly information. The investigations also include the combination of GEOS-C data with gravity field information from other sources.

Geological Investigations

One important use of the geoid results to be derived from the GEOS-C altimeter data is interpretation in terms of the geological and geophysical significance of the results. The GEOS-C altimeter results can be of particular value in extending information to areas in which little or no surface gravity information presently exists.

Solid-Earth Dynamics

This category includes all analyses involving the determination of Earth tides, polar motion, and changes in rotation rate of Earth. It also includes determination of very precise positions on Earth's surface using GEOS-C tracking data for such purposes as determination of fault motion and crustal plate motion.

High precision tracking of the GEOS-C satellite, particularly by the submeter precision laser systems, allows derivation of improved information on the dynamics of the solid Earth. Determinations can be made of the effects of solid Earth tides and of the motions of Earth's pole including Chandler motion, yearly motion, and the diurnal wobble.

Intercomparison, Evaluation, and Calibration of Instrumentation Systems

This category includes all investigations whose objective is the evaluation and calibration of altimeter, satellite-to-satellite tracking, and ground tracking instrumentation to be used with the GEOS-C mission. Evaluations of the on-board instrumentation and the ground systems are included. All instrument intercomparison investigations and studies related to instrumentation technology are in this category.

Since the satellite-to-satellite experiment involves new instrumentation, special emphasis will be given to evaluation and calibration of these results.

Ground Truth Determination

This category includes all investigation whose objective is the collection of data from ground, ship, and aircraft based systems and the use of this data to evaluate satellite system characteristics.

Tracking Station Location Improvement

This category includes all investigations to determine the location of tracking stations where the objective is geodetic in nature and not for Earth dynamic purposes.

Several types of tracking data taken using the GEOS-C satellite can be used to provide improved station location information that will be useful in support of altimeter calibration and to support other project objectives. GEOS-C will provide data from new stations, data of higher accuracy than previously available, and data from new instrumentation types such as very long baseline interferometer (VLBI) measurements.

Orbit Determination Improvement

Indirectly, GEOS-C can be expected to support improved orbit determination by providing improved gravity field information. However, this category will emphasize new types of tracking information such as the satellite-to-satellite tracking experiment and altimeter data and its capability to support improved orbit determination.

Data Management/Information Processing

This category includes investigations whose objective is the development of methods and techniques for managing and processing the data taken by the various instrumentation on the GEOS-C spacecraft. This includes the development of data editing and preprocessing techniques. Specifically, investigations are directed toward those systems expected to be most useful in future Earth and ocean physics applications activities and involve advanced techniques applicable to future activities.

Unique System Investigations

Three GEOS-C investigations are uniquely associated with a particular instrumentation and do not fit into any of the preceding 12 categories. One investigation deals with atmospheric studies utilizing satellite-to-satellite tracking experiment data taken through the atmosphere while the other two relate to altimeter and to the C-Band system.

PRINCIPAL INVESTIGATORS

GEOS-C investigations will be conducted by many members of the scientific community. Principal investigations are listed by investigational category.

Ocean Geoid

Black, Dr. H. D.	Johns Hopkins University, Applied Physics Laboratory
Chovitz, B. H.	National Oceanic and Atmospheric Administration (NOAA)
Dohler, G. C.	Department of the Environment, Ottawa, Canada
Gaposchkin, Dr. E. M.	Smithsonian Astrophysical Observatory
Hadgigeorge, G.	Air Force Cambridge Research Laboratory
Jordan, Dr. S. K.	The Analytic Sciences Corporation
Lambeck, Dr. K.	Observatorie de Paris, Mendon, France
Mather, Dr. R. S.	University of New South Wales, Australia
Siry, Dr. J. W.	NASA Goddard Space Flight Center
Tolson, R. R.	NASA Langley Research Center

Ocean Tides

Dohler, G. C.	Department of the Environment, Ottawa, Canada
Hendershott, Dr. M. C.	Scripps Institute of Oceanographys
Kuo, Dr. J. T.	Lamont-Doherty Geological Observatory
Mofjeld, Dr. H. O.	NOAA
Siry, Dr. J. W.	NASA Goddard Space Flight Center

Sea State

Barrick, Dr. D. E.	NOAA
Black, P. G.	NOAA
Gower, Dr. J. F. R.	Marine Sciences Directorate, Victoria, B. C., Canada
Miller, Dr. L. S.	Applied Science Associates, Inc.
Pierson, Dr. W. J.	University Institute of Oceanography
Ross, D.	NOAA
Walsh, Dr. E. J.	NASA Wallops Flight Center
Wells, Dr. W. T.	Wolf Research and Development Corporation
Whitlock, C. H.	NASA Langley Research Center

Quasi-Stationary Departures from the Marine Geoid

Apel, Dr. J. R.	NOAA
Leitao, C. D.	NASA Wallops Flight Center

Gravity Model Improvement

Chovitz, B. H.	NOAA
Khan, Dr. M. A.	Computer Sciences Corporation
Rapp, Dr. R. H.	Ohio State University
Siry, Dr. J. W.	NASA Goddard Space Flight Center
Sjogren, W. L.	Jet Propulsion Laboratory
Wong, L.	The Aerospace Corporation

Geological Investigations

Kaula, Prof. W. M.	University of California
Talwani, Dr. M.	Lamont-Doherty Geological Observatory

Solid Earth Dynamics

Bower, Dr. D. R.	Department of Energy, Mines and Resources, Ottawa, Canada
Douglas, B. C.	NOAA
Smith, Dr. D. E.	NASA Goddard Space Flight Center
Tapley, Dr. B. D.	University of Texas

Intercomparison, Evaluation and Calibration

Berbert, J. H.	NASA Goddard Space Flight Center
Bryan, J. W.	NASA Goddard Space Flight Center
Dooley, Dr. R. P.	Technology Service Corporation
Lutz, G.	DFVLR Mobile Rakentenbasis, Federal Republic of Germany
Martin, Dr. C. F.	Wolf Research and Development Corporation
Godbey, T. W.	General Electric Company

Ground Truth

Mourad, A. G.	Battelle Memorial Institute
Pierson, Dr. W. J.	University Institute of Oceanography

Tracking Station Location

Fisher, D.	Tel-Aviv University, Tel-Aviv, Israel

Tracking Station Location - continued

Krabill, W. B.	NASA Wallops Flight Center
Marsh, J. G.	NASA Goddard Space Flight Center
Escobol, P.	Jet Propulsion Laboratory
Wilson, Dr. P.	Technischen Universitat, Munchen, Federal Republic of Germany

Orbit Determination

Balmino, Dr. G.	Centre National D'Etudes Spatiales, France
Black, H. D.	Johns Hopkins University, Applied Physics Laboratory

Data Management/Information Processing

Godbey, T. W.	General Electric Company

Unique System Investigations

Hofmeister, Dr. E. L.	General Electric Company
Jackson, E. B.	NASA Wallops Flight Center
Liu, A. S.	Jet Propulsion Laboratory

DELTA LAUNCH VEHICLE

GEOS-C will be launched from SLC-2W at the Western Test Range, CA, by a two-stage Delta launch vehicle. The vehicle is approximately 32 meters (106 feet) long, with a maximum body diameter of 2.4 m (8 feet). The Delta has been launched successfully 90 percent of the time for the past 14 years.

First Stage

The first stage is a McDonnell Douglas modified Thor booster incorporating four strap-on Thiokol Castor II solid-fuel rocket motors. The booster is powered by a Rocketdyne MB-III B engine using liquid oxygen and liquid hydrocarbon propellants. The main engine is gimbal-mounted to provide pitch and yaw control from liftoff to main engine cutoff (MECO). Two liquid-propellant vernier engines provide roll control throughout first stage operation and pitch and yaw control from MECO to separation of the first and second stages.

Second Stage

The second stage is powered by a TRW liquid-fuel pressure-fed TR-201 engine that also is gimbal-mounted to provide pitch and yaw control through second stage burn. A nitrogen gas system using eight fixed nozzles, provides roll control during powered and coast flight as well as pitch and yaw control during coast and after second stage cutoff. Two fixed nozzles, fed by the propellant-tank helium pressurization system, provide retrothrust after spacecraft separation.

DELTA FACTS AND FIGURES

The Delta launch vehicle project is under the the technical management of the Goddard Space Flight Center, Greenbelt, Maryland; McDonnell Douglas Astronautics Co., Huntington Beach, California, is the prime contractor. The two-stage Delta has the following general characteristics:

Height 32 meters (106 feet) including shroud;
Maximum diameter 2.4 m (8 ft.) without attached solids;
Liftoff weight 110, 165 kg (243,190 lbs.)
Liftoff thrust 1,375,000 newtons (307,000 lbs.), including four strap-on solids.

First Stage (liquid only) consists of an extended long tank Thor, produced by McDonnell Douglas Astronautics Co., with MB-III B engines, produced by the Rocketdyne Division of Rockwell International, and has the following characteristics:

A diameter of 2.4 m (8 feet);
A height of 18 (60 feet);
Propellants of RP-1 kerosene as the fuel and liquid oxygen (LOX) as the oxidizer;
A thrust of 780,000 N (175,000 lbs.);
A burning time of about three minutes and 48 seconds;
A weight of about 84,600 kg (186,000 lbs.) excluding strap-on solids.

Strap-on solids consist of four Castor II solid propellant rockets produced by the Thiokol Chemical Corporation, with the following features:

A diameter of 0.8 m (31 in.);
A height of 7 m (23.6 feet);
A total weight of 17, 900 kg (39,400 lbs.) for four 4,475 kg (9,850 lbs.) each
A maximum thrust of 925,600 N (208,000 lbs.) for four 231,400 N (52,000 lbs.) each
A burning time of 38 seconds

Second Stage: Produced by McDonnell Douglas Astronautics Co., using a TRW-201 rocket engine; major contractors for the vehicle inertial guidance system located on the second stage are Hamilton Standard and Teledyne.

Propellants: Liquid--Aerozene 50 for the fuel and Nitrogen Tetroxide (N_2O_4) for the oxidizer.

Diameter: 1.5 m (5 feet) plus 2.4 m (8 feet) attached ring.

Height: 6.4 m (21 feet)

Weight: 61,800 kg (136,000 lbs.)

Thrust: About 42,300 N (9,500 lbs.)

Total Burning Time: 335 seconds.

LAUNCH OPERATIONS

NASA launch operations from its West Coast facility are conducted by the Kennedy Space Center's Unmanned Launch Operations, Western Launch Operations Division (WLOD). This facility is located at Vandenberg Air Force Base, near Lompoc, California, approximately 125 miles northwest of Los Angeles and 280 miles south of San Francisco. Launch facilities are located on a promontory which juts into the Pacific Ocean near Point Arguello. This makes it possible to launch to the south and place payloads in polar and near-polar orbits without overflying populated areas.

GEOS-C will be launched by Delta 110 from Space Launch Complex 2 West, which has been extensively updated over the years to accept the various Delta configurations, including the powerful new version now in use. The GEOS-C mission will be the second launch this year from this complex. Delta 107 was successfully launched on January 22 to place LANDSAT-2 in a near polar, sun-synchronous orbit at an altitude of 920 kilometers (570 statute miles).

Preparations for the launch of GEOS-C began in late January with the arrival of the Delta 110 first and second stages at WLOD for preliminary checkout and erection. The GEOS-C spacecraft was shipped from the Johns Hopkins Applied Physics Laboratory in mid-February and arrived at KSC/WLOD during the third week of February.

GEOS-C LAUNCH EVENTS

EVENT	TIME (SEC.)	ALTITUDE KM	ALTITUDE MILES	METERS/SEC	VELOCITY (FT./SEC.)
Liftoff	0	0	0	0	0
Four Solid Motor Burnout	9	4.4	2.7	448	1494
Four Solid Motor Jettison	120	26	16	475	1584
Main Engine Cutoff	272	96	60	4179	13931
First/Second Stage Separation	280	104	64	4174	13914
Second Stage Ignition	285	109	68	4164	13879
Fairing Jettison	305	126	78	4267	14224
Second Stage First Cut-off	576	185	115	7854	26180
Second Stage Restart	3419	842	522	7140	23799
Second Stage Second Cut-off	3426	842	522	7314	24381
Spacecraft Separation	3501	840	521	7315	24382

- more -

GEOS-C MANAGEMENT

NASA Headquarters

Charles W. Mathews	Associate Administrator for Applications
Francis L. Williams	Director of Special Programs
Dick S. Diller	GEOS-C Program Manager
James P. Murphy	GEOS-C Program Scientist
Noel W. Hinners	Associate Administrator for Space Science
Joseph B. Mahon	Director of Launch Vehicle and Propulsion Program
I. T. Gillam IV	Small Launch Vehicle and International Programs Manager
P. T. Eaton	Delta Program Manager

Wallops Flight Center

Robert L. Krieger	Director
Laurence C. Rossi	Project Manager
H. Ray Stanley	Project Scientist
Frank M. Boykin	Spacecraft Systems Manager

Goddard Space Flight Center

Dr. John F. Clark	Director
Robert N. Lindley	Director of Projects
John B. Zegalia	Mission Operations Systems Manager and Mission Support Manager
Richard H. Sclafford	Network Support Manager

Goddard Space Flight Center (con't.)

Robert C. Baumann	Associate Director of Projects for Delta
Francis J. Lawrence	Delta Mission Integration Engineer

Kennedy Space Center

Lee R. Scherer	Director
John J. Neilon	Director, Unmanned Launch Operations
Henry R. Van Goey	Manager, KSC Western Launch Operations Division
Wilmer "Bud" Thacker	Chief, Delta Operations, Launch Vehicle Engineering Branch
Carl Latham	GEOS-C Spacecraft Coordinator

Experiment Managers

C. L. Purdy	Radar Altimeter Experiment Systems Manager, NASA Wallops Flight Center
E. B. Jackson	C-Band Experiment System Manager, WFC
B. J. Trudell	Satellite-to-Satellite Experiment System Manager, GSFC
C. C. Stephanides	Laser Experiment System Manager, GSFC
D. Anderle	Doppler System Manager, NWL
I. M. Salzberg	S-Band Experiment System Manager, GSFC

Support Organizations

Spacecraft and Experiment Hardware Contractor: Applied Physical Laboratory, Johns Hopkins University

Launch Vehicle Contractor: McDonald-Douglas Aircraft Corporation

Launch Site: Air Force Western Test Range, Vandenberg Air Force Base, CA

ATS-6 Project: Dr. James E. Kupperian, Jr., Project Manager, GSFC

Ground Truth: National Oceanic and Atmospheric Administration--Lt. L. Goodman

Naval Research Laboratory--Ben Yaplee

CONTRACTORS

HARDWARE

GEOS-C Spacecraft	Applied Physics Lab
Delta Launch Vehicle	McDonnell Douglas Aircraft Corp.
Altimeter	General Electric
S-Band Transponder	Motorola
C-Band Transponder	Vega Precision Labs
Laser Cubes	Zygo Corp.
Doppler	Applied Physics Lab

SUPPORT

Computer Sciences Corp.

Wolf Research and Development Corp.

Applied Sciences Associates

RCA Corp.

- end -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:
THURSDAY A.M.
APRIL 10, 1975

Joyce B. Milliner
Wallops Flight Center
(Phone: 804/824-3411 x579)

Release No. 75-5

NASA LAUNCHES NEW SATELLITE TO MEASURE OCEAN SURFACE TOPOGRAPHY AND SEA STATE

An Earth-orbiting spacecraft designed to measure precisely the topography of the ocean surface and the sea state-- wave height, period, and direction--was successfully launched at 7:58 p.m. EDT yesterday (April 9) from the Western Test Range near Lompoc. California.

The new oceanographic geodetic satellite, designated Geodynamics Experimental Ocean Satellite-3 (GEOS-3) is the third in a series of spacecraft designed to gain knowledge of Earth's shape and dynamic behavior.

The 340-kilogram (750-pound) satellite, was launched aboard a two-stage Delta 1410 launch vehicle and placed in a circular orbit very close to nominal, with an apogee of 844.9 kilometers (525 statute miles) and a perigee of 837.7 kilometers (521 statute miles).

The spacecraft circles the Earth every 101.8 minutes on a path inclined 115 degrees to the equator.

GEOS-3 will be used to compare several new and established geophysical measuring systems including a radar altimeter and satellite-to-satellite tracking as well as radar, laser and doppler tracking.

The purpose of GEOS-3 is to design, develop, and launch an oceanographic/geodetic satellite and to perform experiments in support of the NASA Earth and Ocean Physics and Applications Program (EOPAP). GEOS will apply satellite techniques to geoscience investigations--oceanography and solid-Earth physics.

NASA Wallops Flight Center has project management responsibility for GEOS-3--Laurence C. Rossi is the Project Manager and H. Ray Stanley is the Project Scientist. The spacecraft was designed and fabricated by the Applied Physics Laboratory of the Johns Hopkins University.

The GEOS-3 mission activities are presently scheduled for approximately a one-year period. A broad spectrum of oceanographic and science and engineering information will result from the analysis of data obtained from this satellite. For example, 41 investigators or investigating teams from government, university, and industrial organizations were selected from proposals submitted in response to a call

for space flight data investigations issued in October 1972. Thirteen specific categories are covered in these investigations.

According to Project Manager Laurence Rossi, "The Delta 1410 launch vehicle lifted off right on time Wednesday night and 'performed flawlessly'. Indications are that all is going well with the new GEOS-3 spacecraft. Subsystems checkouts are in progress; the gravity gradiant boom has been partially deployed successfully to 5.44 feet, with full deployment to 21 feet expected early Saturday morning. Experiment data acquisition should begin on April 21."

- END -

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FOR RELEASE:
~~IMMEDIATE~~
13 May 75

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RELEASE NO. 75-6

AMERICAN-PERUVIAN ROCKET LAUNCHINGS SET FOR MAY

The United States and Peru will launch 44 sounding rockets and balloons over South America this month in a joint study of Earth's atmosphere and ionosphere.

The project, named "Antarqui" for the Inca god of flight, will involve launchings over a two-to-three week period beginning about May 21.

Thirty sounding rockets and about 14 balloons carrying scientific instruments will be launched from the Chilca Launch Range in Peru to heights ranging from 20 to 160 kilometers (12 to 99 statute miles).

The site of the launchings is at a very special location because it is on the magnetic equator, where Earth's magnetic field is horizontal. The magnetic equator does not pass through

the United States. It is associated with the large motions in the atmosphere which blow up to great heights the ionospheric layers that affect long distance short-wave radio communications.

The atmospheric and ionospheric region to be studied will be measured under quiet magnetic field conditions, and under disturbed conditions. Measurements will include those dealing with the composition of the neutral and ionized atmosphere, density and temperature, and wind, shear and turbulence.

The launchings will be conducted in conjunction with the operation of instruments on the Atmosphere Explorer-C satellite (AE-C) and a large ground-based installation at Jicamarca, Peru, that uses radar signals.

The Chilca Range, on the Pacific coast, is 64 km (40 mi.) south of Lima, Peru. To support existing facilities at the range, a considerable amount of equipment was assembled at NASA's Wallops Flight Center, Wallops Island, Virginia, and shipped to Peru in mid-February, 1975. This includes several rocket launchers, mobile vans for telemetry, radar, data receiving, a 40 x 100-foot payload building, as well as all the rocket motors, payloads, and payload support equipment.

The Instituto Geofisico del Peru (IGP) is arranging for use of the range and is supplying range operation and logistics

support in Peru, correlative ground-based measurements from Jicamarca and Huancaya Observatories, assistance in recovery operations and some preliminary work at the range.

The overall mission will include the launching of 4 Nike-Tomahawks, 8 Nike-Apaches, 7 Super Arcas vehicles, 11 Super Loki vehicles and several test rockets, as well as 2 balloons measuring 36 meters (120 feet) in diameter and 12 ozonesonde balloons.

The launches are planned to begin no earlier than May 21 (see launch schedule attached).

In addition to Wallops Flight Center, the following are furnishing scientific experiments for the rocket payloads: NASA Goddard Space Flight Center, Greenbelt, Maryland; Dudley Observatory, Albany, New York; University of Pittsburgh, Pennsylvania, University of Illinois at Urbana; Pennsylvania State University; University of Denver, Colorado; and GCA Corporation, Bedford, Massachusetts.

Project Antarqui is a continuation of the NASA sounding rocket program conducted during the 1964-65 International Quiet Sun Year. Early in 1965, the NASA Wallops Flight Center success fully completed an expedition of launching scientific research rockets off the west coast of South America from a sea-going

launch platform, the U. S. Naval Ship Croatan. The scientific community of Peru participated in this expedition in which 77 rockets were sent aloft.

Data from the current expedition will be correlated with the earlier findings.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS).

Project ANTARQUI

Tentative Launch Schedule

Date 1975	Local Time	Vehicle Type	Vehicle Number	Scientist	TM Frequency	TM Support	Trajectory	Special Support Requirement
5/21	0000	Nike-Apache	14.525 UI	Bowhill	240.2 & 3.145 2.114 } Gd. TX	Van	Tone Ranging	K_p> 3 & Jicamarca
5/21	0030	Super-Loki	Met. #048		1680	GMD	MPS-19	
5/21	1200	Ozone Balloon		Holland	1670	GMD	None	
5/21	1700	10^6 cu. ft. Balloon		Barcus	38.0 & 138.54 Gd. TX	Van	None	18.170 GE is GO
5/21	1800	Ozone Balloon		Holland	1670	GMD	None	
5/21	1900	Super-Loki	Met. #046		1690	GMD	MPS-19	
5/21	2000	Nike-Tomahawk	18.170 GE	Goldberg	244.3	Van	Tone Ranging	A_p> 20 (K_p> 4) & Jicamarca
5/21	2005	Super Arcas	15.140 UE	Hale	1680	GMD	MPS-19	*
5/21	2050	Super Arcas	15.133 GM	Hilsenrath	1690	GMD	MPS-19	*
5/21	2100	Ozone Balloon		Holland	1670	GMD	None	*
5/22	0000	Super-Loki	Met. #050		1680	GMD	MPS-19	*
5/22	0010	Ozone Balloon		Holland	1670	GMD	None	*
5/22	0200	Nike-Tomahawk	18.171 GE	Goldberg	244.3	Van	Tone Ranging	*
5/22	0205	Super Arcas	15.141 UE	Hale	1680	GMD	MPS-19	*
5/22	0250	Super Arcas	15.134 GM	Hilsenrath	1690	GMD	MPS-19	*
5/22	0300	Ozone Balloon		Holland	1670	GMD	None	*
5/22	0340	Super-Loki	Met. #051		1680	GMD	MPS-19	*
5/22	0600	Ozone Balloon		Holland	1670	GMD	None	*
5/22	1100	Ozone Balloon		Holland	1670	GMD	None	*
5/22	1100	Super-Loki		Krueger	1680	GMD	MPS-19	*
5/22	1200	Super Arcas	15.135 GM	Hilsenrath	1690	GMD	MPS-19	*
5/22	1245	Super-Loki	Met. #052		1680	GMD	MPS-19	*
5/23	0000	Super-Loki	Met. #049		1690	GMD	MPS-19	*

*18.170 GE launched.

Hilsenrath one didn't work

Project ANTARQUI

Date 1975	Local Time	Vehicle Type	Vehicle Number	Scientist	TM Frequency	TM Support	Trajectory	Special Support Requirement
5/23	1100	Ozone Balloon		Holland	1670	GMD	None	*
5/23	1100	Super-Loki		Krueger	1680	GMD	MPS-19	*
5/23	1200	Super-Loki	Met. #053		1680	GMD	MPS-19	•
5/23	1700	10^6 cu. ft. Balloon		Barcus	88.0	Van	None	•
5/23	2000	Ozone Balloon		Holland	1670	GMD	None	*
5/24	0000	Super-Loki	Met. #054		1680	GMD	MPS-19	*
**5/26	0200	Nike-Apache	14.530 UA	Hemenway	240.2	Van	Tone Ranging	Recovery
**5/26	1400	Nike-Apache	14.531 UA	Hemenway	240.2	Van	Tone Ranging	Recovery
**5/27	1600	Nike-Apache	14.532 UE	Bowhill	240.2 & 3.145, 2.114 } Gd. TX	Van	Tone Ranging	Jicamarca
**5/27	1630	Super Arcas	15.139 UE	Hale	1680	GMD	MPS-19	14.532 UI launched
**5/28	0000	Nike-Apache	14.524 UI	Bowhill	240.2 & 3.145, 2.114 } Gd. TX	Van	Tone Ranging	$K_p < 1$ and Jicamarca
5/29	0000	Nike-Apache	14.538 UA	Zipf	244.3	Van	Tone Ranging	
6/3	1200	Nike-Tomahawk	18.149 GE	Maynard	232.9 & 244.3	Van	Tone Ranging	AE-C overpass and Jicamarca
6/3	1210	Nike-Apache	14.540 CA	Bedinger	None	None	MPS-19	Lear Jet and Jicamarca
6/4	1200	Nike-Tomahawk	18.150 GE	Maynard	232.9 & 244.3	Van	Tone Ranging	AE-C overpass and Jicamarca
6/5	1200	Nike-Apache	14.541 CA	Bedinger	None	None	MPS-19	Lear Jet and Jicamarca
Spare		Super Arcas	15.136 GM	Hilsenrath	1690	GMD	MPS-19	
Spare (3)		Ozone Balloon		Holland	1670	GMD	None	
Spare		Met.	Met. #047			GMD	MPS-19	

*18.170 GE launched.
**These vehicles could be launched as early as 5/21/75, depending upon ionospheric and weather conditions.

C. E. Manion
Project ANTARQUI Manager

PROJECT ANTARQUI SCIENCE PAYLOADS

A brief description of the scientific objectives of each launch or series of launches follows:

1. GSFC/R. A. Goldberg - Nike-Tomahawks 18.170 GE/GU2-7717 and 18.171 GE/GU2-7718 These payloads will measure bremsstrahlung radiation using scintillation counters and measure electron fluxes using Geiger-Muller counters and electrostatic detectors.

2. GSFC/E. Hilsenrath - Super Arcases 15.133 GM/TU1-7727 through 15.136 GM/TU1-7730 These payloads will measure the diurnal variability of ozone in the mesosphere and stratosphere by means of a chemiluminescent sonde, released near apogee and descending by parachute.

3. GSFC/A. J. Krueger - Super-Loki Vehicles GU1-7743 and GU1-7744 Two payloads will determine the daytime ozone profile and its variability by means of a photometer.

4. GSFC/N. C. Maynard - Nike-Tomahawks 18.149 GE/GU2-7715 and 18.150 GE/GU2-7716 Measurements will be made of the total magnetic field, and three axis vector components of the electric field, and the electron density. Measurements will be made by means of a cesium magnetometer, three-axis electric field booms, and a Langmuir probe, respectively. These measurements will be coordinated with measurements made by the Jicamarca backscatter radar and with an overpass of of the AE-C satellite.

5. Dudley Observatory/C. L. Hemenway - Nike-Apaches 14.530 UA/TU2-7725 and 14.531 UA/TU2-7726 These payloads will collect upper atmospheric particles by means of a passive collection experiment called Pandora. Payload recovery is mandatory in order to recover data.

6. University of Pittsburgh/E. C. Zipf - Nike Apache 14.538 UA/TU2-7722 This payload will measure the constituents of the atmosphere, at mesospheric altitudes by means of an optical mass spectrometer.

7. University of Illinois/S. A. Bowhill - Nike-Apaches 14.524 UI/TU2-7719, 14.525 UI/TU2-7720, and 14.532/UE/TU2-7721 The general objective of these launches will be to investigate the anomalous properties of the equatorial ionosphere with one daytime and two nighttime launches. The objectives include:

(1) A comparison of electron temperature measurements taken by the University of Illinois Langmuir probe, temperatures measured by a probe supplied by Dr. K. Hirao of Japan, and the measurements taken by the incoherent scatter technique at Jicamarca.

(2) Observation of the fine structure in the electron density profile to examine the role of vertical transport in layering metallic ions.

(3) Examination of the role of energetic electrons as a nighttime source of ionization.

8. Pennsylvania State University/L.C. Hale - Super Arcases 15.135 UE/TU1-7731 through 15.141 UE/TU1-7733 Measurements of mesospheric ion conductivity will be made using parachute-borne blunt probe instruments. These payloads will be launched after Nike-Tomahawks 18.170 GE and 18.171 GE and Nike Apache 14.524 UI.

9. GCA/J. F. Bedinger - Nike-Apaches 14.540 CA/TU2-7723 and 14.541 CA/TU2-7724 Measurement of ionospheric neutral winds (electrojet) will be made by ejecting trails of lithium vapor into the daytime ionosphere and photographing the vapor trails through narrow band filters from a Lear Jet.

10. GSFC - Super-Loki Vehicles TU1-7734 through TU1-7742 The Super-Loki payloads will obtain temperature and wind profiles from 65 to 20 km (39 miles). Temperature will be measured by a bead thermistor. Nine of these meteorological rockets will be launched in support of 18.170 GE and 18.171 GE.

11. University of Denver/J. Barcus - Two 10^6 Cubic Foot Balloons These balloon payloads will study the total radiation environment at 40 km (24 miles), using a scintillation counter, an ionization chamber, an electron conductivity probe, an electric field probe, and a charged particle telescope counter.

12. WFC/A. C. Holland - 12 Ozonesonde Balloons These balloons will measure the ozone profile to 38 km (23 miles), using optical ozonesondes.

- END -

May 13, 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Flight Center
Wallops Island, Va 23337
Phone: 804/824-3411 Ext. 579

FOR RELEASE:
MONDAY,
June 30, 1975

Joyce B. Milliner
Wallops Flight Center
(Phone: 804/824-3411, x579)

RELEASE NO. 75-8

WALLOPS RECEIVES CERTIFICATE OF COMMENDATION FOR SAFETY RECORD

The National Safety Council announced today that the NASA Wallops Flight Center, located at Wallops Island, Virginia has been awarded the Council's certificate of commendation for its excellent safety record. The award is presented only where an establishment's record satisfied rigid requirements laid down in the Council's Award Plan for Recognizing Good Industrial Safety Records.

Howard Pyle, President of the National Safety Council, in a letter of congratulations to Mr. Robert L. Krieger, Director of Wallops Flight Center, explained that the center qualified for the award because of its injury-free period of 1, 846,557 man hours from September 21, 1972 to December 31, 1974.

Mr. L. C. Parker, Head of Safety and Qualify Assurance Engineering

Branch, Directorate of Engineering, presented the plaque to Mr. Krieger, Wallops Flight Center Director on June 20, 1975.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Flight Center
Wallops Island, Va 23337
Phone: 804/824-3411 Ext. 579

FOR RELEASE:
THURSDAY,
September 25, 1975

Joyce B. Milliner

Wallops Flight Center

(Phone: 804/824-3411, x579)

RELEASE NO. 75-11

WALLOPS LAUNCHES ROCKETBORNE MAGNETOSPHERIC PHYSICS EXPERIMENT

The National Aeronautics and Space Administration yesterday conducted an experiment to study the magnetospheric properties of the ionosphere.

At 5:27 p.m. EDT on September 24, a 153-pound payload was rocketed on a brief flight over the Atlantic Ocean from NASA's Wallops Flight Center, Wallops Island, Virginia, aboard a two-stage, solid-propellant rocket--a Nike-Tomahawk. The objective of this experiment is to obtain daytime and auroral ultraviolet and plasma measurements using rocketborne instrumentation at E and F region heights. The results will be correlated with ground-based ionosonde, optical and radar backscatter data in the study of the extreme ultraviolet spectra in the aurora and sunlit atmosphere, the metallic ion distribution, the

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

auroral ion composition, and the plasma density irregularities.

The experiment reached a peak altitude of 276 kilometers (172 statute miles) and impacted in the Atlantic Ocean about 255 kilometers (137 nautical miles) downrange. No recovery was planned as the data were obtained via telemetry during the flight.

Dr. A. B. Christensen from the University of Texas at Dallas was the Project Scientist and R. G. Plihal from the NASA Goddard Space Flight Center was the Mission Chief. The Wallops Project Engineer was J. F. Brown.

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NASA NEWS
National Aeronautics and
Space Administration

Wallops Flight Center
Wallops Island, Virginia 23337
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For Release
TUESDAY
November 25, 1975

RELEASE NO. 75-12

WALLOPS EMPLOYEE BECOMES MEMBER OF THE NATIONAL SAFETY COUNCIL'S MILLION MILE CLUB

Mr. Bennie T. Wilson of the NASA Wallops Flight Center has been admitted to lifetime membership in the exclusive Million Mile Club of the National Safety Council for driving more than 25,000 hours without a preventable accident.

Membership in this international honor society is limited to those professional drivers of any type of vehicle who have demonstrated their expertness and safety consciousness over many years and despite continued exposure to accident-causing traffic situations.

In recognition of his outstanding record and membership in the Million Mile Club, Mr. Wilson received a handsome walnut and bronze plaque engraved with his name and organization, together with a

gold metallic wallet card similarly engraved. In addition, his name and organization have been entered on a permanent Roll of Honor at the National Safety Council headquarters in Chicago. This Roll of Honor will be on display at the National Safety Congress held each fall in Chicago.

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NASA NEWS
National Aeronautics and
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For Release
TUESDAY,
NOVEMBER 25, 1975

RELEASE NO. 75-13

WALLOPS FLIGHT CENTER EMPLOYEES RECEIVE NASA HONOR AWARDS

The Wallops Flight Center was again well represented at the annual NASA Honor Awards Ceremony held November 11, 1975 in Washington, D. C. Three Wallops personnel were presented individual NASA awards, three representatives accepted NASA group achievement awards on behalf of the Center, and one employee was presented a National Safety Council award--a total of seven.

Dr. Edward J. Walsh of the Applied Science Directorate received the NASA Exceptional Scientific Achievement Medal in recognition of his development of physical radar altimeter models and data analysis techniques leading to the extraction of wave height measurements from satellites and aircraft. This award is given for unusually significant scientific accomplishments to an individual whose creative efforts are of high order and who has made important contributions to science and related technology.

Gene E. Godwin of the Aeronautical Programs Branch received the NASA Exceptional Service Medal in recognition of his performance as Project Manager of the Microwave Landing System Phase II Test Program at the Wallops Center. His managerial skill, leadership, and personal dedication contributed to the sccessful completion of an ambitious undertaking that demanded extraordinary efforts. Mr. Godwin is responsible for managing aeronautical research project operations that require utilization of Wallops facilities.

Frank T. Wolf of the Experimental Machine Shop Section also received the NASA Exceptional Service Medal in recognition of his contributions to the success of the rocket vehicle programs conducted at the Wallops Center through his exceptional technical ability, ingenuity, and conscientiousness in the construction, checkout and installation of scientific investigative payloads. He has made major contributions to the success of several important missions such as the Orbiting Frog Otolith Program, and overseas rocket launching projects in Sweden and Peru.

On behalf of the Wallops Flight Center, Charles E. Manion accepted a Group Achievement Award presented to the Project Antarqui on-site participants, Laurence C. Rossi accepted a Group Achievement Award presented to the GEOS-3 Project Team, and Herman J. Whealton accepted a Group Achievement Award presented to the Damage Control Branch.

Project Antarqui, a joint sounding rocket venture with the Peruvian space organization, CONIDA, involved installing launchers and buildings and preparing the site in Lima, Peru, for the launching of 30 sounding rockets and numerous balloons. Forty Wallops personnel were on location in South America for several weeks to accomplish this project named for the Inca God of Flight. Mr. Manion was the Project Manager.

The GEOS-3 Satellite was NASA's first ocean dynamics satellite effort and, after four years of preparation, was launched in April 1975, and is providing a quantity and quality of scientific data significantly exceeding that originally planned. Mr. Rossi was the Project Manager for GEOS-3 which was launched from the Western Test Range in California.

The Damage Control Branch had previously received a Letter of Appreciation from the city of Salisbury, Maryland, for their quick arrival with foam fire-fighting equipment and aid in extinguishing the very dangerous fire at the gasoline storage tank at the Exxon terminal on March 26, 1975

Bennie T. Wilson of the Facilities Operations Branch received the National Safety Council's Million Mile Club Award for his outstanding performance in driving 1,000,000 miles or 25,000 hours without a preventable accident.

The Honorable Philip W. Buchen, Counsel to the President, commended the awardees and NASA for their achievements in space and aeronautics. NASA Administrator Dr. James C. Fletcher and Deputy Administrator Dr. George M. Low made the individual awards at the annual headquarters ceremony.

"I have a deep conviction that these men and women represent the best of America, and that their accomplishments we acknowledge today are not only significant elements in our past performance but a major factor in the assurance of our nation's future," Dr. Fletcher said.

The agency honored 161 individuals for outstanding performances of their assignments during the past year. Additional federal employees were honored in 32 group achievement awards and employees of industrial firms contributing to the space effort were awarded medals and citations for their participation in the space program.

A special feature of this year's ceremony was the recognition of 40 individuals for their contributions to the success of the Apollo-Soyuz Test Project.

Leading the awards in 10 different categories were the NASA Distinguished Service Medal, awarded to six agency employees; and the Distinguished Public Service Medal, received by three individuals in organizations outside government.

Seventy-seven NASA employees agency-wide received the Exceptional Service Medal; nine were awarded the Outstanding Leadership Medal; 13 persons received the Exceptional Scientific Achievement Medal; and seven Equal Employment Opportunity Awards were given this year.

Wallops Flight Center is indeed honored to have received the NASA awards and medals.

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NASA NEWS
National Aeronautics and
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For Release
THURSDAY,
December 4, 1975

RELEASE NO. 75-14

WALLOPS CONDUCTS A SERIES OF 31 METEOROLOGICAL EXPERIMENTS IN A ROCKET/NIMBUS SATELLITE COMPARISON II PROJECT

The National Aeronautics and Space Administration completed the winter phase of meteorological rocket/satellite comparisons today. These comparisons included the launching of 31 single-and two-stage rockets. These comparisons began on November 18th. The launchings were divided into three day and two night series to accomplish the satellite/rocket comparison both with and without the sun's energy input.

The purpose of this project is to provide an in-depth comparison between remote sensors on satellites and sensors on rockets from a mid-latitude site. The launches were conducted in conjunction with Nimbus VI satellite overpasses of the Wallops facility. The beginning time of each series was selected to make the satellite overpass occur as close to the mid-point in each series as feasible.

Each of the series was preceded and followed by support balloon sondes.

Two types of solid-propellant rockets were used--Super-Loki and Nike-Cajun. The Super-Loki is a single-stage vehicle with an inert second state. The Nike-Cajun is a two-stage vehicle.

The Super-Loki meteorological rockets carried three types of payloads. They were: (1) inflatable spheres made of mylar used to obtain atmospheric density and winds; (2) Datasondes, instruments which obtained temperature and wind data; and (3) ozone measuring devices. The Nike-Cajun rockets carried acoustic grenade payloads which also measured winds and temperatures by recording the time and location of each grenade detonation with the use of telemetry and radar, measuring the time lapse and direction of sound arrival on arrays of sensitive microphones located near the launch site.

The data obtained will be used to verify measurements received from the Nimbus VI satellite which has the most advanced remote sounding instruments flown to date. This rocket/satellite project is the latest of several similar comparisons conducted from the Wallops facility since 1970.

Project Scientists for the rocket experiments were F. Schmidlin, NASA Wallops Flight Center; R. Olson, White Sands Missile Range, New Mexico; A. Krueger and D. Wright, NASA Goddard Space Flight Center, Maryland. J. Gille, National Center for Atmospheric Research, Colorado; John Houghton, University of Oxford, England; and W. Smith, National Environmental Satellite Service are the satellite experimenters. John Theon, NASA Goddard Space Flight Center, Maryland is the Nimbus VI Project Scientist. Dempsey Bruton, Jr. was the Wallops Project Engineer and Richard H. Bradford and J. D. Layton were the Wallops Project Coordinators.

The five sets of rocketborne experiments were conducted as follows:

5 on November 18

6 on November 19

7 on November 21

6 on December 3

7 on December 4

One rocket failed when the second stage on a Nike-Cajun did not ignite, resulting in no scientific data.

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NASA NEWS
National Aeronautics and
Space Administration

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For Release
FRIDAY,
January 9, 1976

RELEASE NO. 76-1

ROCKET SERIES TO INCLUDE CHEMICAL RELEASES VISIBLE OVER EASTERN U.S.

Two scientific payloads, included as part of a Winter Anomaly Campaign at the NASA Wallops Flight Center, will release chemicals at high altitudes resulting in artificial clouds which should be visible over a major portion of the eastern seaboard. The series is expected to begin about 1:00 p.m. EST on Monday, January 12, weather permitting.

The Winter Anomaly Campaign is comprised of ground-based, rocket-borne and satellite experiments which are coordinated in a program to study winter days of normal and anomalous electron and ion concentrations in the ionospheric D-region. The D-region is the lowest portion of the ionosphere located about 60 to 100 kilometers (roughly 36 to 60 miles) above the earth, where electrons influence radio communications.

- more -

A total of twenty-one single- and two-stage sounding rockets carrying various scientific experiments for a team of scientists from about a dozen different universities and other research agencies will be launched from the Wallops range.

The scientists are primarily interested in the cause of this anomalous or abnormal winter behavior of the D-region, which produces high absorption of radio waves during the daytime. The D-region ionization levels are lower and fairly stable during the summer months at middle latitudes. The anomaly occurs only on certain winter days when there is an enhancement of the ionization densities, causing high absorption of radio waves reflected from the ionosphere. It is believed that upper atmosphere winds and turbulence may be responsible for this winter phenomenon and atmospheric gases such as nitric oxide may be transported from the polar regions to middle latitudes where they are ionized by the sun's ultraviolet radiation.

The rocket launch portion of the campaign will be conducted in two parts; one during a normal D-region winter day and one during an anomalous D-region day. In addition, results from ground-based measurements and selected satellite measurements will be correlated with the results.

Two-stage Nike-Tomahawk sounding rockets will be used to loft the two chemical cloud experiments scheduled for 5:30 p.m. EST on Monday and Tuesday (January 12 and 13)--one each day at dusk--weather permitting. Two kinds of chemicals will be utilized--a Titanium Tetrachloride (TiCl) tracer will be deposited in the altitude region 70 to 90 kilometers (about 44 to 56 miles) in three distinct puffs and will appear as white clouds--and a Trimethyl-Aluminum (TMA) vapor trail will continue from 90 to 130 kilometers (about 56 to 80 miles) in altitude and appear as a blue-green trail. Data on wind speed and direction will be obtained by photographing the motion of the vapor puffs and trails from two camera sites within a 100-mile radius of Wallops, requiring good visibility. If Monday's ionospheric and weather conditions are unsatisfactory, the experiments will be rescheduled on a day-to-day basis.

A similar Winter D-region Campaign is being conducted by several European countries at the El Arenosillo range in Spain. Dr. D. Offermann of the University of Bonn is coordinating the European campaign. Dr. C. F. Sechrist of the University of Illinois is the scientific coordinator at Wallops and he communicates daily with Dr. Offermann. There is, however, no requirement that the European and U. S. campaigns be conducted on the same days.

- more -

It is expected that correlating the ground-based measurements, satellite and sounding rocket data from both the U. S. and European Campaigns will give scientists a better understanding of the causes for the anomalous winter behavior of the lower ionosphere.

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NASA News

National Aeronautics and
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For Release:
April 22, 1976

RELEASE NO: 76-4

WALLOPS RECEIVES SAFETY AWARD

NASA, Wallops Flight Center has been recognized by the National Safety Council for its exemplary performance in on-the-job safety.

In selecting Wallops Flight Center for a third place award in its Aerospace Section/Research and Development Division annual on-the-job safety contest, the Council honors the lowest disabling injury frequency rates achieved by NSC member organizations during 1975.

The company qualified for its safety award with a recorded rate of zero lost-time injuries per million man-hours worked. This compares with a 1.4 rate for all competing units in the Research and Development industry.

Accepting the award on behalf of Wallops Flight Center employees

- more -

was Mr. Robert Krieger, Director. The safety citation was presented by Mr. F. S. Karick, Head, Safety Office.

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NASA News

National Aeronautics and
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Wallops Island, Virginia 23337
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William Der Bing
Headquarters, Washington, D.C.
(Phone: 202/755-3680)

Joe McRoberts
Goddard Space Flight Center, Greenbelt, Maryland
(Phone: 301/983-4955)

Joyce B. Milliner
Wallops Flight Center
(Phone: 804/824-3411 x579)

For Release:
Immediate

RELEASE NO: 76-9

NASA TO LAUNCH RED, WHITE AND BLUE CHEMICAL CLOUD PAYLOAD

NASA will launch a four-stage Javelin sounding rocket from Wallops Flight Center, Virginia, during the period July 14-29. The rocket will carry a 76-kilogram (170-pound) payload from Wallops Center and will release red, white, and blue chemical clouds at twilight that should be seen readily from Charleston to Boston and inland as far away as Cleveland, Ohio. Weather conditions permitting, it might be seen all the way up and down the East Coast and possibily as far inland as Iowa.

The trails released from the rocket will contain two constituents. One remains neutral and its glow enables wind motions

- more -

of the upper atmosphere to be observed.

The other component is ionized by the Sun, and its motion is governed by the electric and magnetic fields. Observation of these trails provides a technique for measuring winds and magnetic and electric fields in space. These techniques will be candidates for use in later flights on a Delta rocket and on Space Shuttle.

Launch time each day, beginning July 14, will be 9:20 p.m., EDT and will be about one minute earlier each day, should the launch be delayed. Clear skies are necessary for observation purposes.

The payload will release a red lithium trail beginning at an altitude of 185 kilometers (114 miles) and ending at 300 kilometers (186 miles). Then a bluish-white barium cloud will be released at 700 kilometers (434 miles) altitude.

The project is managed by Goddard Space Flight Center, Greenbelt, Maryland, and the launch is under the direction of Wallops Flight Center and Thiokol Corporation, Ogden, Utah, fabricated the payload.

An artist's drawing to illustrate this news release will be distributed without charge only to media representatives in

the United States. It may be obtained by writing or phoning:

The Public Affairs Audio-Visual Office
Code FP/NASA Headquarters
Washington, D. C. 20546

Telephone No: 202/755-8366 Photo No: 76-H-521

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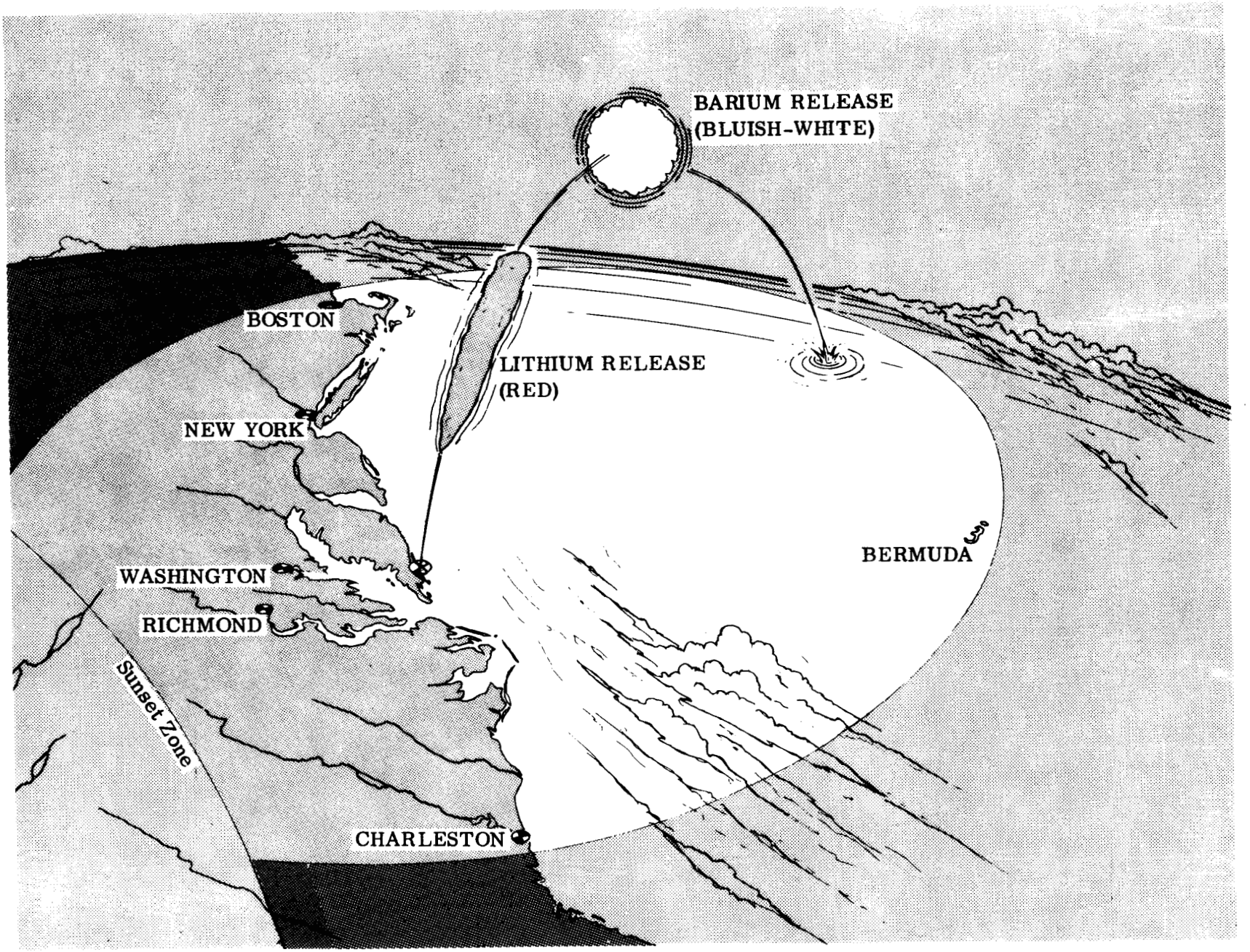

NASA Photo: 76-H-521

NASA News

National Aeronautics and
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For Release:
August 12, 1976

RELEASE NO: 76-12

IONOSPHERIC EXPERIMENT CONDUCTED AT WALLOPS ISLAND

A rocketborne experiment to investigate the effects of metal ions from a meteor shower on the upper atmosphere was conducted today at 11:54 a.m. EDT from NASA's Wallops Flight Center.

A two-stage, solid propellant Nike-Tomahawk sounding rocket lofted the 149.3-kilogram (330-pound) payload to a peak altitude of 147.5 kilometers (92 statute miles).

The payload consisted of two experiment sections, one for the University of Illinois (U/Ill.) and one for the University of Bern (U/Bern), Switzerland. The Illinois section also carried an instrument for the NASA Goddard Space Flight Center. Wallops provided a solar aspect sensor and a clamshell nosecone for the experimenters.

-more-

The meteor shower, called the Perseids, deposits metallic debris in the ionosphere in the height range 90 kilometers to 120 kilometers (about 56 to 75 statute miles). By measuring the relative concentration of the different metals (magnesium, iron, calcium, potassium, etc.) the nature and origin of the meteor can be studied. A second objective is the study of the dispersion of the metal ions in the atmosphere and their concentration in thin layers called sporadic E layers. These layers are responsible for some unusual propagation of radio and TV signals.

The meteor shower was predicted to occur for a period of four days, which started yesterday (August 11, 1976). Ionospheric activity was evaluated prior to launch to determine if the expected interaction between the meteor shower and the ionosphere was occurring.

Dr. L. G. Smith is the University of Illinois Scientist. The University of Bern is represented by Drs. P. Eberhardt and E. Kopp of Switzerland and Dr. M. Hidalgo of Spain. Charles R. Hickman is the computer Science Corporation Payload Manager and Dempsey B. Bruton, Jr. is the Wallops Project Engineer.

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NASA News

National Aeronautics and
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For Release:
Immediate
Oct 7, 1976

Oct 6, 1976

RELEASE NO: 76-14

ROCKET VEHICLE MALFUNCTION AT WALLOPS FLIGHT CENTER

A rocketborne experiment launched onboard a two-stage Nike-Cajun vehicle malfunctioned yesterday when the second stage failed to ignite at 17 seconds after liftoff. Liftoff ocurred at 3:30 p.m. EDT Wednesday.

Objectives of this scientific experiment were to determine the ion composition in the D and the lower E regions of the ionosphere with special interest being placed on the transition region. A planned mid-air recovery of the experiment package was not possible since the very brief rocket flight did not permit enough time for the proper programmed events to occur. Aerial recovery would have spared the package from impact and exposure to damaging salt-water environment thus potentially allowing it to be re-flown many times at substantial cost savings.

-more-

The Cajun and attached payload package impacted in the Atlantic Ocean about six miles offshore approximately two minutes and fourteen seconds after liftoff.

A committee has been appointed to investigate the exact cause of the malfunction.

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NASA News

National Aeronautics and
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For Release:
October 22, 1976

RELEASE NO: 76-15

WELL-KNOWN SPACE SCIENTIST GUEST SPEAKER AT WALLOPS

WOMEN'S DAY PROGRAM

Dr. Mary Helen Johnston, an outstanding metallurgist of the NASA Marshall Space Flight Center, Huntsville, Alabama, will be the principal guest speaker at the Wallops Federal Women's Day Program on November 3. She, along with several other women scientists and engineers, has received special training which will qualify her for Spacelab. She hopes to be among the first American women selected to travel into space.

In late 1974, Dr. Johnston, as part of an all-woman crew of scientific experimenters, conducted a five-day exercise in Marshall's General Purpose Laboratory (GPL), a cylindrical structure approximately the size and shape of the European Spacelab being developed for Space Shuttle flights in the 1980's.

-more-

Training for Spacelab joint flights between NASA and the European Space Agency is now underway. The crew also utilized the neutral buoyancy simulator which is the working area for handling of experiment packages in a zero gravity environment. These studies will help in developing techniques of manipulation of experiments that will fly on Spacelab. Dr. Johnston, the principal investigator for three scientific experiments and co-investigator on one other, is planning these space experiments with the expectations of going on Space Shuttle/Spacelab Earth Orbital missions in the 1980's.

The other guest speaker will be Ms. Audrey Rowe Colom, the Director of Women's Activities at the Corporation of Public Broadcasting, Washington, D. C. Ms. Colom has gained national attention as the current president of the National Women's Political Caucus, and as a Presidential appointee to the National Commission on the Observance of International Women's Year.

The Federal Women's Program is focused on the special concerns of women to assure equal opportunity in employment and advancement in their careers. Designed to focus attention on the roles of women today, the program theme is "Today's Woman."

Activities will begin at 9:30 a.m. with coffee and doughnuts in the Wallops auditorium and end at 1:00 p.m. with a luncheon in the cafeteria.

At 10:00 a.m. the Wallops Federal Women's Program Coordinator will introduce the guests and the Director of the Center, Robert L. Krieger, who will give the welcoming address. In addition to the guest speakers, there will be humourous skits by Center employees regarding some serious situations. There will also be a narration entitled "Two Centuries of American Women on Parade," with characterizations and "costumes of the day."

Local business concerns and civic organizations in the Delmarva area have been invited to send a representative to participate in this Wallops program. Reservations for the meeting and luncheon should be directed to Joyce B. Milliner, Building F-6, NASA Wallops Flight Center, Wallops Island, Virginia 23337 (Telephone 804/824-3411, Ext. 584).

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APR 14/77

NASA News

National Aeronautics and
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For Release:

Thursday
April 14, 1977

RELEASE NO: 77-2

WALLOPS OPEN HOUSE

The public is cordially invited to visit NASA Wallops Flight Center on Saturday and Sunday, April 23 and 24, from 9:00 a.m. until 5:00 p.m.

Visitors will be permitted to view facilities at the rocket launching sites on Wallops Island. (NASA Main Base not included.)

The Wallops Island tour will be a self-guided "do-it-yourself" riding tour in the visitors' own private car. Descriptive literature will be provided at the Causeway Gate to point out items of interest as people ride by. Visitors will see launching pads, rocket storage structures, long range tracking radars, weather towers, blockhouses, rocket assembly shops, actual launch vehicles and other related range facilities. Cameras are permitted. The tour should take about one hour.

This is a joint event of federal activities in the area including Assateague National Seashore Park, Chincoteague Coast Guard Base, Chincoteague National Wildlife Refuge, NASA Wallops Flight Center, and National Oceanic and Atmospheric Administration. All of these agencies are planning special exhibits and/or tours at their respective facilities.

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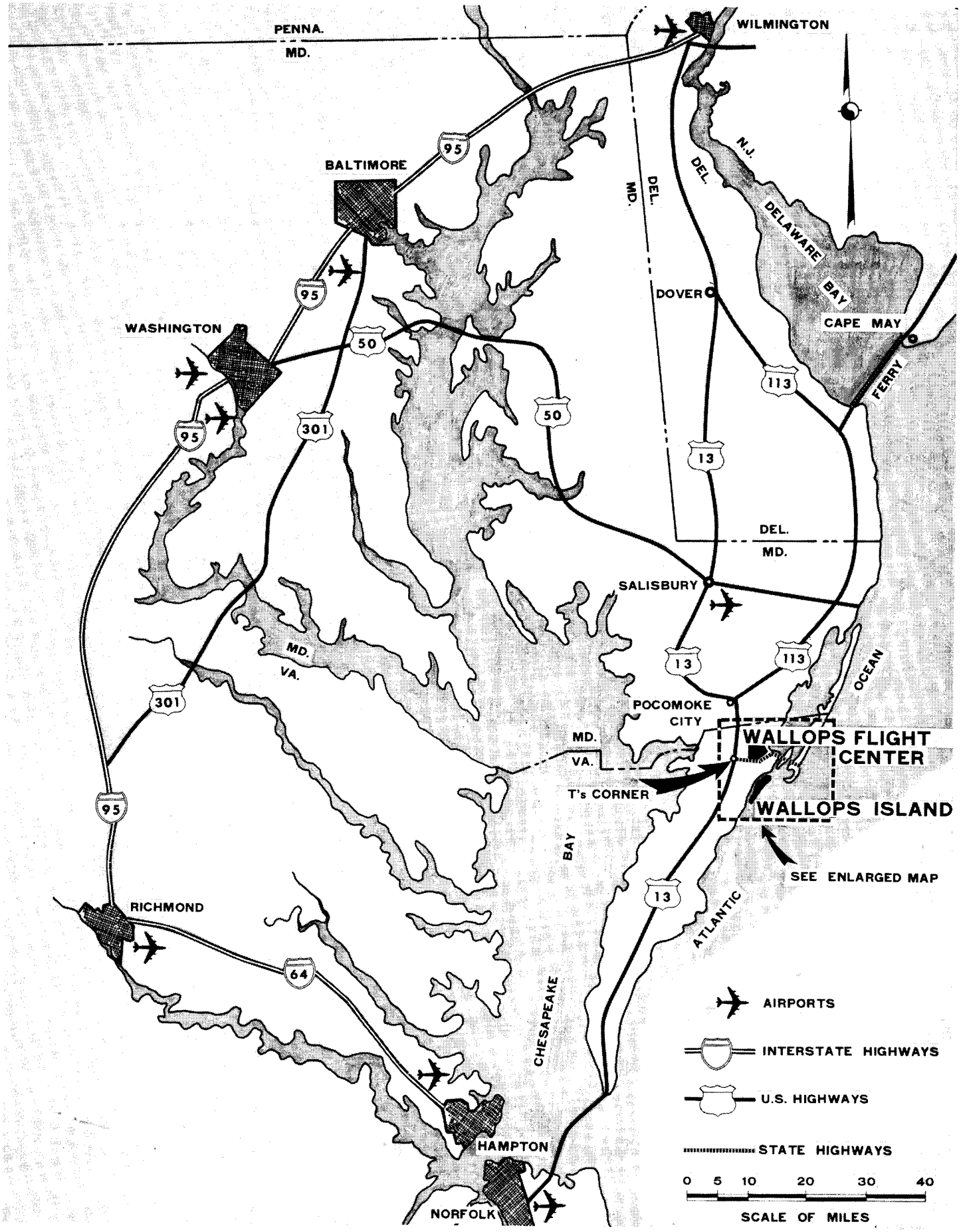
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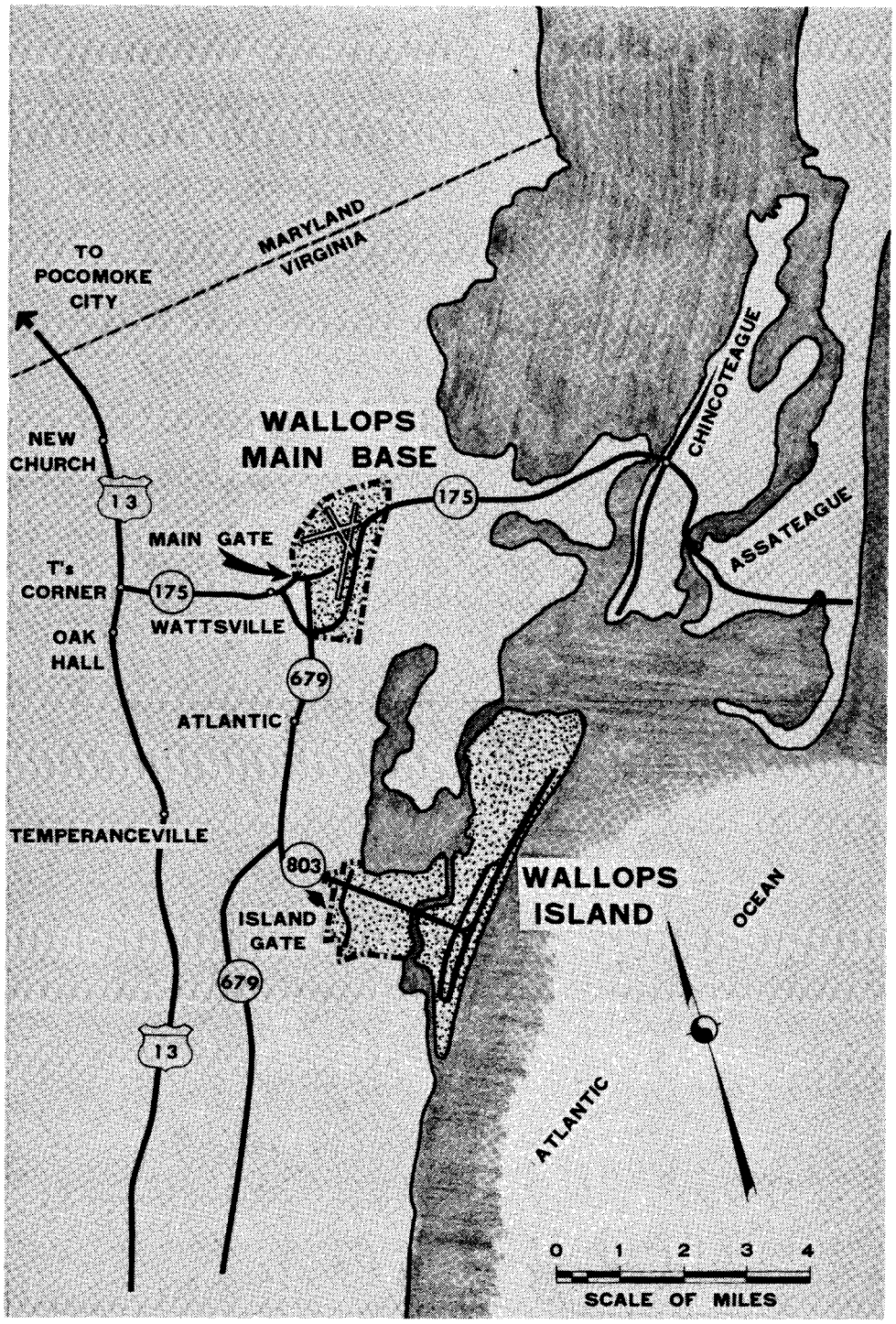
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SCALE OF MILES

NASA News

National Aeronautics and
Space Administration

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Joyce B. Milliner
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For Release:
Wednesday
May 18. 1977

RELEASE NO: 77-4

NASA WALLOPS FLIGHT CENTER OBSERVES SMALL BUSINESS WEEK

By Presidential Proclamation, the Week of May 22nd has been designated as Small Business Week. This week is set aside to honor the nation's small businesses who employ 100 million Americans and produce nearly half of our gross business product. A successful small business is evidence of the independence, initiative and hard work of the person who owns and operates it. Their spirit has been, and will continue to be, a major factor in our nation's growth.

Federal Procuring Agencies are charged with the responsibility of conducting their procurement programs in such a manner that will ensure preservation of small concerns through expanded utilization of their skills and capabilities and encouraging other small firms to participate.

- more-

To further implement the stated objectives of the Small Business program, all small business concerns or interested individuals are urged to contact the Small Business Specialist at the National Aeronautics and Space Administration, Wallops Flight Center, Wallops Island, Virginia to submit their capabilities and obtain advice pertaining to contracting or subcontracting opportunities. During this week, an office has been established in Room 211 of Building E-107 to facilitate visits by prospective contractors.

All correspondence should be addressed to Mr. Elton R. Scott, Small Business Specialist or telephonic inquiries directed to him by calling (804) 824-3411, extension 542.

- END -

NASA News

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For Release:
Immediate
July 1, 1977

RELEASE NO: 77-5

U.S., SOVIETS TO CONDUCT JOINT ROCKET TESTS OFF VIRGINIA COAST

NASA and the Soviet Hydromet Service are planning to conduct a two-week long rocketsonde intercomparison test in the area of Wallops Island, Virginia, in mid-August. NASA will launch its rockets from NASA's Wallops Flight Center and the Soviet Hydromet Service will launch its rockets from the "Akademik Korolev," a hydrometeorological research ship located offshore in international waters off the United States' eastern coast.

The objective of this intercomparison is to establish a basis for relating U.S. and Soviet measurements of upper air temperature and winds taken by meteorological instruments in their respective rocketsonde systems and to suggest possible corrections for any discrepancies found.

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The 1971 NASA-Soviet Academy of Sciences agreement on space science and applications called for exchange of meteorological rocket data from several launch sites along two meridian lines, one in the Eastern Hemisphere (about 60 degrees East) and one in the Western Hemisphere (about 70 degrees West). The Eastern Hemisphere network is coordinated by the U.S.S.R. Hydrometeorological Service (on behalf of the Soviet Academy) and the Western Hemisphere network is coordinated by NASA.

Exchange of rocketsonde data began in January 1972 and both sides began performing hemispheric analyses with that information. These analyses revealed that the measured temperature field in the Eastern Hemisphere was consistently colder than that of the Western Hemisphere. As a result of this discrepancy, both countries began evaluating their rocketsonde systems for possible sources of error.

In 1973 direct comparisons of the U.S., U.S.S.R., French and British rocketsondes were conducted at Kourou, French Guiana. These comparisons revealed some discrepancies in measurements of temperature and wind data.

Since the 1973 comparisons, improvements in meteorological rocket systems and data analysis techniques make it necessary again to compare the U.S. and U.S.S.R. systems.

-END-

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For Release:
Immediate
July 20, 1977

RELEASE NO.: 77-7

NASA'S ROTOR AIRCRAFT SERVES AS "FLYING WIND TUNNEL"

The first of two Rotor Systems Research Aircraft (RSRA) is scheduled to arrive at NASA's Wallops Flight Center, Wallops Island, Virginia, this week to complete a series of contractor flight tests.

The RSRA is designed as a versatile test aircraft that can fly as a pure helicopter, as a compound helicopter (equipped with both rotors and wings) or as a conventional fixed wing aircraft.

It will be used as a "flying wind tunnel" for many kinds of rotor systems, from those that are articulated, hingeless or gimballed, to rotors with variable geometry, variable diameter or controllable twist.

The RSRA's engines can be changed and its wings can be removed, depending on the particular systems being tested.

- more -

The RSRA program is jointly sponsored by NASA and the U. S. Army's Air Mobility Research and Development Laboratory. NASA's Langley Research Center, Hampton, Virginia, is managing the contract.

Sikorsky Aircraft, Stratford, Connecticut, built the two RSRA craft and will conduct the flight tests at Wallops. The first RSRA will be formally delivered to NASA and the Army in September 1978.

The RSRA program will provide flying laboratories to develop advanced technology to increase performance; improve safety, strength and reliability; and reduce noise, vibration and maintenance for rotary wing aircraft.

- End-

NASA News

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For Release:
Wednesday,
July 27, 1977

RELEASE NO: 77-9

NASA GRADUATES THIRD EMT CLASS

Wallops Flight Center recognized, in the fall of 1975, a need to provide a reserve of properly trained persons who could adequately respond to the needs of the Center during an emergency. From this need evolved an effort directed by the Range Safety Branch to provide professional training at the Emergency Medical Technician Level.

The first class started in January 1976 and graduated June 10, 1976. The Emergency Medical Technician-Ambulance is the designation given to that individual who has completed 100 hours of supervised classroom and field training in the emergency care of the sick and injured. Included in this program are about 10 hours of formal testing. The basic program is based on the guidelines set forth by the Department of Transportation, National Highway Safety Administration, and consists of instruction in the following major areas:

I. Management of life-threatening conditions

II. Management of nonlife-threatening conditions

III. Management of nonmedical areas

- more -

The EMT persons trained at Wallops have elected to be tested and certified by the National Registry of Emergency Medical Technicians. This certification provides a standard of excellence recognized in the emergency medical field. Continued certification is achieved through a positive program of continuing education.

Part of the continuing education program is accomplished through an agreement with Peninsula General Hospital. The EMT persons at Wallops are scheduled for duty in the PGH Emergency Room Department for a minimum of 36 hours each year. This places the EMT in actual emergency conditions and provides direct supervision by Doctors and Nurses within that department. Additional educational points are acquired through refresher courses, training sessions, seminars and practical drills.

The EMT employees at Wallops provide daily support to the Damage Control and Health Services Units by placing one EMT on duty each work day. This EMT has radio contact with the Damage Control units and responds from his normal duty station to emergency situations as they develop.

Each area of residence of EMT persons is equipped with a trauma kit which provides all of the equipment necessary for emergency attention to patients while awaiting the arrival of the ambulance.

On July 20, the third class of Emergency Medical Technicians was awarded certificates by the Center Director, Robert L. Krieger. This places 40 qualified EMT persons available for support on the station, island and at remote launch facilities requiring Wallops personnel.

Another benefit from this program is the utilization of these trained Wallops employees within their communities as volunteers in the rescue squads and fire departments.

Through continued training and educational opportunities, the EMT employees stand qualified and ready to assist their fellow employees and neighbors.

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For Release:
Wednesday,
July 27, 1977

RELEASE NO: 77-10

AIRCRAFT SPIN TESTS BEGIN AT WALLOPS

On July 18th, a light general aviation aircraft arrived at the Wallops Flight Center (WFC) to begin a spin research program.

This aircraft from the Langley Research Center (LaRC) is part of an aeronautical research program initiated there in 1972. The program includes tests of full-scale airplane configurations and corresponding spin-tunnel models and radio-controlled, powered, free-flight models in the study of safety problems related to aircraft stalls and spins.

Scheduled to continue at Wallops intermittently for a year or more, these initial flight tests will investigate the effects of tail design on spin and recovery characteristics of a representative light, low-wing, single engine airplane. Results will also be used to validate spin tunnel and radio-control model tests, and to develop spin design criteria. Several different tail configurations have been designed and fabricated at LaRC for this particular aircraft. A spin recovery parachute system, designed and built at Langley, has been fitted to the airplane to assist the test pilot

- more -

during difficult spin recoveries. Different controls at spin entry as well as for spin recovery are being examined. Two additional single engine aircraft will be ferried here sometime during the next year to study high wing as well as low wing designs.

Wallops support includes communications, ground-based telemetry, aerial and ground photography and TV coverage, damage control, and a standby search and rescue helicopter.

Jim Patton, Head of LaRC's Operations Branch of the Flight Research Division is the project pilot; Paul Stough is the LaRC Project Engineer; and Brooks Shaw is the WFC Project Coordinator.

- END -

NASA News

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July 27 | 77

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For Release:
Immediate

RELEASE NO: 77-11

WALLOPS ROCKETS MEASURE OZONE CHANGES IN UPPER ATMOSPHERE

The Applications Sounding Rocket Program (ASRP), a joint NASA-Goddard Space Flight Center (GSFC) and NASA-Wallops Flight Center (WFC) program, has conducted a series of unique measurements utilizing rockets, balloons, and supporting ground observations from Wallops Island, Virginia on July 19-22, 1977 to obtain basic information on the natural variability of the Earth's ozone layer and the possible effects of man's activities on the stratosphere. Also, information has been gathered to test the theory of catalytic destruction of ozone by naturally occurring agents near the top of the stratosphere.

The soundings were conducted as part of NASA's efforts to determine the role of stratospheric ozone on the Earth's climate and the environmental quality, using direct sounding systems and satellites.

The present series of rocket and balloon flights to measure the day-to-day variations of the vertical distribution of ozone is being performed in order to test photochemical theories used to predict effects of

- more -

pollutants in disturbing the ozone layer. From this information, it may also be possible to predict the minimum length or time needed to detect the fluorocarbon effect on ozone.

The greatest effects of fluorocarbons on ozone are expected to occur at 40 km (24 miles) altitude, above the levels normally reached by balloons. Also, present satellite measurements **cannot** perform this experiment since they determine ozone at a single time of day.

This measurement series will also determine the changes of ozone throughout the day and night above 50 km (30 miles).

At these levels, hydroxyl radicals (naturally formed from water vapor in the stratosphere) also destroy ozone by chemical reactions.

The importance of this reaction can be determined by a series of measurements throughout the day. Once this is established, the ozone models can then better predict the importance of man-made pollutants that enter the stratosphere. If the abundance of hydroxyl is as large as recent measurements by the Aeronomy Laboratory of NOAA, Boulder, Colorado indicate, then readily detectable natural diurnal ozone changes should be found during the course of a day.

In addition, an additional rocket launch was conducted to provide a calibration with the Backscatter Ultra-Violet (BUV) experiment on the Nimbus-4 Satellite, which has been measuring stratospheric ozone since 1970.

This series was accomplished by personnel from NASA-GSFC, NASA-WFC and NOAA-Environmental Research Laboratories, Boulder, Colorado.

July 27, 1977

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NASA News

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For Release:

September 23, 1977

Release No: 77-12

NASA TO OPEN FACILITY FOR MANAGEMENT EDUCATION

NASA's new Management Education Center will be opened officially this month at Wallops Flight Center, Wallops Island, Va.

Dr. Robert A. Frosch, NASA Administrator, will preside at dedication ceremonies scheduled for 11 a.m. Friday, September 30. A tour of the new facility is scheduled for 10 a.m. preceding the dedication event.

"This facility has been established to provide personnel throughout the agency with unique educational opportunities by offering a variety of instruction," said Mary K. Fortune, Director of the Office of Professional Development, NASA Headquarters, Washington, D.C.

"The Management Education Center at Wallops will offer a full curriculum of short-term residential programs designed specifically for current and future NASA leaders. The sessions will range from three-day seminars to two-week courses in residence."

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As a unit of the Headquarters Office of Professional Development, the new effort at Wallops will be the focal point agencywide for management education.

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For Release:
October 17, 1977

Release No. 77-13

WALLOPS FLIGHT CENTER'S ANNUAL WOMEN'S DAY PROGRAM

The Wallops Federal Women's Advisory Group cordially invites the public to attend their Annual Women's Day program and luncheon on Wednesday, November 2, 1977. The theme, "To Form a More Perfect Union," is taken from the preamble to the Constitution of the United States. Program focus will be on the need for a concerted effort by women and men to provide equal opportunity for women to contribute to all phases of our Nation's life.

The program will begin at 10:30 a.m. (coffee at 10:00 a.m.) in Building D-10, followed by a luncheon in Building E-2, provided by English's Catering Service. Guest speakers will be Ms. Lillian Levy, Assistant Director, Public Services Division and Senior Science Writer, Office of Public Affairs, NASA Headquarters, Washington, D.C., and Ms. Jill Barbon, Administrative Assistant, Salisbury Chamber of Commerce. A tour of Wallops Flight Center will be provided following the luncheon.

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Luncheon and tour reservations should be made by October 28. Although there are no limitations on the meeting, only a limited number of luncheon reservations can be accommodated and will be made on a "first-come, first served" basis. You will be billed for your luncheon reservation unless it is cancelled by October 31st. If your luncheon reservation cannot be accommodated, you will be notified prior to the meeting.

For further information write or call Ms. Jean Hall, Building E-108, NASA Wallops Flight Center, Wallops Island, VA 23337 (telephone 804/824-3411, extension 348).

-END-

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For Release:
November 28, 1977

Release No. 77-15

JOINT US/USSR MEETING AT WALLOPS

The eighth annual meeting of a US-USSR Space Biology and Medicine Working Group was held November 19-25 at NASA's Wallops Flight Center, Wallops Island, Virginia. Prior to the formal meeting, a workshop on simulated weightlessness was held November 16-18 in Bethesda, Maryland. The workshop and meeting are part of a continuing program under the 1971 Science and Applications Agreement between NASA and the Soviet Academy of Sciences.

The meeting focused on biomedical results, including the preliminary results of the Soviet COSMOS 936 flight on which U. S. experiments were flown; a briefing from the Soviets on Salyut 5 missions flown in 1976/1977; and a U. S. briefing on a Spacelab Mission Demonstration Test conducted in May 1977 at Johnson Space Center, Houston, Texas with Ames Research Center participation. Participants also discussed forecasting man's health state in weightlessness and the research approach to studying space motion sickness.

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The U.S. delegation at the formal meeting was headed by Dr. David Winter, NASA Director for Life Sciences. Dr. Rufus Hessberg, Director of Space Medicine, neaded the U.S. workshop participants. The Soviet leader at both meetings was Dr. Nikolai N. Gurovsky, Chief of the Department of Space Biology and Medicine, of the USSR Ministry of Health

- END -

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For Release:
May 12, 1978

Release No: 78-4

TWO CHEMICAL CLOUD LAUNCHES SCHEDULED AT WALLOPS

Weather conditions permitting, two chemical vapor trails will be ejected from rocket-launched payloads at dawn on consecutive days next week.

NASA plans to launch a pair of upper atmospheric experiments from Wallops Island, Va., for the Air Force Geophysics Laboratory (AFGL), Hanscom AF Base, Mass., at 5:30 a.m. EDT Tuesday and again on Wednesday, May 16 and 17.

The objective of these launches is to measure the turbulent transport properties of the stratosphere by observing the evolution of chemical vapor trails deposited at an altitude of between 15 to 50 kilometers (about 9 to 31 statute miles). The vapor trails will be composed of titanium dioxide particles released in spurts at 10-second intervals forming a series of

-more-

dashes, similar to an aircraft contrail. The lower portion of these vapor trails should appear as an orangish color and the upper trail will appear white.

A two-stage Nike-Nike sounding rocket will be used to loft the experiment package. The chemical vapor trail is expected to be visible to residents within an 80-mile radius of Wallops Flight Center (WFC).

The vapor trail dispersions are recorded by camera sites on the ground. If weather conditions are unsatisfactory Tuesday morning, the experiments will be rescheduled on a day-to-day basis during the two-week launch window.

Dr. A. F. Quesada is the AFGL project scientist and Richard H. Bradford is the WFC project coordinator.

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NASA News

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For Release:

May 15, 1978

PRESS KIT

PROJECT

Joint American-Soviet Particle
Intercalibration (JASPIC) Project

RELEASE NO: 78-5

CONTENTS

General Release 1-3

Background Information 4

Scientific Considerations and Comparison Criteria 4-7

Project Officials 7-8

NASA News

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For Release:
May 15, 1978

RELEASE NO: 78-5

SOVIET SHIP ARRIVES NEXT MONTH FOR JOINT ROCKET TESTS

A Soviet research ship will arrive off the Virginia coast near NASA's Wallops Flight Center, Wallops Island, Virginia about June 1 to participate in a series of rocket tests designed to investigate ionization sources in the upper atmosphere.

Launches will be conducted before, during, and after a solar flare and the resulting magnetic storm.

Ionization is the process by which neutral atoms or groups of atoms become electrically charged, either positively or negatively, by the loss or gain of electrons.

Objective of the Joint American-Soviet Particle Intercalibration (JASPIC) Project is to compare the techniques used by both countries over the years

-more-

to deduce the intensity of energetic electrons and protons coming down into the lower ionosphere. The project is designed to gather experimental evidence concerning the role of these particles in creating ionization in the lower ionosphere at night at midlatitudes.

The particles are thought to cause high latitude auroras, and sunlight is believed to be the principal source of ionization everywhere in the daytime.

The research ship, Professor Vize, will operate off-shore and serve as the Soviet launch platform. Comparison tests will be made on the basis of four sounding rocket launches from Wallops Island and five Soviet MR-12 rocket launches from the ship. One of the Wallops-launched rockets will carry a chemical cloud release which may be visible to East Coast residents.

Each organization will be responsible for conducting countdown and launch operations for their respective launches.

A similar project involving U.S./U.S.S.R. intercomparison of meteorological sounding rockets was conducted jointly last August from the Wallops Island range and the Soviet ship, Akademik Korolev, located offshore. In that project, 22 pairs of meteorological rockets were launched during a two-week period.

In the past there have been disparate instrument measurements of energetic particles in the ionosphere. At a meeting of the International Union of Geodesy and Geophysics in Grenoble, France, in 1975, U.S. and Soviet scientists agreed that the first question to be resolved was instrument credibility. A joint measurement of the intensity of energetic electrons and protons at

the same time and place is a first step in understanding the apparently conflicting results reported in the scientific literature.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS.)

BACKGROUND INFORMATION

Many discussions supporting and rejecting the existence of a midlatitude nighttime particle (electrons and/or protons) ionization source have been made by scientific researchers.

There have been reported direct measurements by satellite and rocket instrumentation which measured insignificant fluxes of energetic particles in the precipitation loss cones for midlatitudes and reports of optical observations which placed low upper limits on the possible precipitating fluxes. There are also many reports of rocket measurements of plasma densities from which large particle fluxes have been inferred, several rocket flights in which significant fluxes of particles were measured directly, and several more rocket flights in which particle fluxes were inferred from the background counts in instruments designed for other purposes.

Theorists have proposed alternative mechanisms to explain excess plasma densities and, of course, various experimenters have proposed various mechanisms which would lead to incorrect flux measurements. Several of the investigators in this project have been involved in these earlier efforts made at different times and different locations.

At a meeting of the International Union of Geodesy and Geophysics in Grenoble in 1975, U.S. and Soviet scientists agreed that the first question to be resolved was instrument credibility. Therefore, a joint measurement of the fluxes at the same time and place was the first step necessary to understand the apparently conflicting results in the scientific literature. Future steps could involve identification of location and conditions leading to precipitation and identification of mechanisms to be tested.

SCIENTIFIC CONSIDERATIONS AND COMPARISON CRITERIA

Objectives

The primary objective of this intercalibration experiment is to establish the credibility of the following U.S. and Soviet instruments and designs used in the past to directly determine the existence of particles (electrons and/or protons) which would be responsible for ionizing the lower regions of the ionosphere at night.

- Phosphor (a thermoluminescent dosimeter);
- Magnetic electron spectrometer;
- Solid state integral detectors;
- Electrostatic analyzer; and
- Geiger counters.

This objective will be attained by:

- Simultaneously measuring energetic particle fluxes which would be capable of causing ionization in the nighttime ionosphere between 100 and 180 kilometers (62 and 112 miles) with each of the instruments listed above;

- Making confirmatory measurements of the effects of these particles, i.e.; ionization levels and optical emissions;

- Making a latitudinal survey of any optical emissions caused by particles;

- Making an all-sky survey for any "patchiness" in the emissions caused by nonuniform precipitation of the particles in the vicinity of Wallops Center;

- Measuring the ionization level at both Wallops Center and Arecibo, Puerto Rico, to determine the latitude variation of particle flux levels; and

- Determining the particle fluxes on the same L shells at higher altitudes by utilizing data from satellites. Satellite data may also provide a means to observe the fluxes and their latitudinal changes of pitch angle distributions which occur during the time the vertical probe (rocket) data is obtained. From satellite data the changes in particle populations before and after the rocket launches can also be followed. Additionally, the rockets will be launched over a two or three day interval to follow the time development at low altitudes not accessible to satellite.

Scientific Considerations

This project represents a coordinated effort to bring U.S. and Soviet scientists and techniques together which heretofore have made disparate measurements from several locations at separate times. This plan details the coordinated measurements required to overcome such deficiencies as:

- Instrument malfunctions or imprecise understanding of instrument behavior and calibrations.

- Geographic differences;

- Differences owing to changing conditions with time; and

- Lack of ancillary measurements to help analyze results obtained.

Airglow which must accompany particle fluxes will be measured at Wallops Center and other locations in order to obtain an understanding of particle flux changes with latitude and their spatial uniformity. Plasma densities will be measured along each of the rocket trajectories together with energetic particle fluxes. Ion densities will also be obtained between the E and F regions. The possibility that observed "excess" ionization is not the result of particle impact, but due to dynamics of the wind systems, will be determined by both the in-situ particle measurements and by observations of a trimethyl aluminum (TMA) trail.

This material reacts with atomic oxygen to create a chemiluminescence which can be seen at any time during a moonless, clear night. This trail deforms if wind shears are present. Knowledge of the deformation rate permits wind speeds to be calculated. These data are also vital to our understanding of the intermediate layer.

Each of the various particle instruments being flown was selected for its part in the historical record. Some designs have previously been on spacecraft, others have been rocket borne. The rocket carrying the TMA will also release barium at apogee, permitting electric field strengths to be determined.

Specific launch times will be determined after the ship arrives on site from a daily analysis of magnetometer data and ionosonde data. It is also expected that real time data from other locations will be available on occasion and they will also be used in the decision-making process as available.

The solar forecast center at Boulder will make data from its worldwide net of observation stations available in real time and will provide forecasts for the geomagnetic activity.

The scientific literature records a flux dependence on level of disturbance of the Earth's magnetic field resulting from solar flares. The forecast center will assist in selecting the period in June 1978 having the greatest likelihood of an intense magnetic storm and make the magnetic data available for the scientists to use in selecting the appropriate launch times.

Summarizing

Energetic particles will be measured directly. However, since these measurements can be spurious if contaminated by ambient dense plasma, ultraviolet light, insufficient outgassing of detectors, high voltage, intermittent breakdown or by the existence of large fluxes of particles at energies or charge not expected, different types of particle sensors having different susceptibilities to masking by supurious effects will be used. The atmospheric effects produced by particles will also be measured with a variety of techniques in flight and from the ground.

Comparison Criteria

A total of nine sounding rockets will be launched during JASPIC. Five of these will be the Soviet MR-12 rocket system, each equipped with a variety of instruments designed to measure the required parameters. The NASA portion of the total measurements scheme will be conducted using four sounding rocket systems, complemented by ground-based and airborne measurements.

The proposed sequence of launches and supporting rationale follows: One MR-12 system will be launched during a quiet time to obtain background data for payload instruments and to provide a reference set of data. After sunset on the day of a magnetic disturbance, a set of three rockets will be launched approximately within a few minutes of one another. This set will consist of one NASA TMA (trimethyl aluminum) payload, and one Nike Apache diagnostic payload and one MR-12.

About three hours later, a second group of launches is planned: one MR-12, a second NASA Nike Apache and the NASA Nike Tomahawk. The nightglow will be monitored from the ground prior to the first set of launchings until after the second set. These airglow measurements will be made from the ground at Wallops Island, from Arecibo, Puerto Rico, and from Huancayo, Peru, in order to obtain the latitudinal variation in the airglow produced by the particle fluxes.

Airborne measurements of airglow and of ionospheric density around the Wallops vicinity will also be made in order to ascertain the extent of local "patchiness" and provide data in the event that clouds cover the ground observation sites. The data from these sets of launches, together with the airborne and ground-based measurements, comprise the prime data comparison set.

It should be noted that it is necessary to make measurements of particles during a moderate geomagnetic disturbance for verification of literature results since there is little question that auroral type precipitation should be seen at Wallops Center under extreme conditions when the aurora is pushed far to the south. A very large event is certainly useful for intercomparison. If there is reason to expect a "giant storm" event, the operation will be modified accordingly.

The final phase of this intercomparison is to monitor the effects of the magnetic storm with time. This will be effected by use of the Soviet rockets remaining following the flights during the disturbance. Of these two Soviet time dependence flights, the exact time chosen will be determined on-site by the U.S.S.R. side and will depend upon results obtained on previous launches and will be coordinated with U.S. satellite overflights if feasible, all within two or three days after the disturbance.

The decision regarding exact launch time will be made at the site utilizing solar forecast center data on immiment solar and geomagnetic activity. For example, a new, large flare would lead to a few days delay in launching one or more of the Soviet time dependence payloads in order to monitor the effect of the new magnetic storm near its peak.

The three MR-12 launches which are planned to occur outside the period of disturbance, together with satellite and ground-based data, comprise an important comparison of Soviet in-situ measurements with U.S. ground-based measurements and are important to the understanding of the physics of the magnetosphere-ionospheric interactions over time and latitude.

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For Release:
May 22, 1978

Release No: 78-6

SECOND CHEMICAL CLOUD EXPERIMENT CONDUCTED AT WALLOPS

NASA successfully conducted the second in a series of two chemical cloud experiments at dawn today from its Wallops Flight Center (WFC) on the Eastern Shore of Virginia.

Liftoff of the two-stage Nike-Nike sounding rocket occurred at 5:27 a.m. EDT. The first in this pair of similar experiments was successfully conducted on Saturday (May 20) at 5:29 a.m. EDT.

These upper atmospheric experiments were originally scheduled for dawn on May 16 and 17 but were postponed for several days due to adverse weather conditions. Since the vapor trail dispersions are recorded by two camera sites (one at Pocomoke City, Md. and one at Wachapreague, Va.), good visibility is required.

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The objective of these two launches is to measure the winds and turbulence in the stratosphere by observing the dispersion of the chemical vapor trails deposited at an altitude between 15 to 50 kilometers (about 10 to 35 statute miles).

The chemical--titanium dioxide particles--was released in spurts at 10-second intervals forming a series of long white dashes, similar to an aircraft contrail. The lower portion of Saturday's vapor trail appeared orangish in color and the upper portion was white.

These experiments were conducted for the Air Force Geophysics Laboratory (AFGL), Hanscom Air Force Base, Mass. Dr. A. F. Quesada is the AFGL project scientist and Richard H. Bradford is the WFC project coordinator.

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For Release:
June 2, 1978

Release No: 78-7

CHEMICAL CLOUD EXPERIMENT SCHEDULED AT WALLOPS

Weather conditions permitting, a chemical vapor trail will be ejected from a rocketborne payload at dusk tomorrow (June 3) which may be visible to mid-East Coast residents.

NASA in conjunction with Cornell University and the Danish Meteorological Institute plans to launch a two-stage Nike-Apache sounding rocket carrying two kinds of chemicals to measure upper atmospheric winds and electric fields. Trimethylaluminum (TMA) will be ejected as the rocket ascends beginning at an altitude of 80 kilometers and continuing up to about 170 kilometers creating a glowing orange and blue vapor trail. At apogee (about 212 kilometers altitude) barium will be ejected creating a greenish-white vapor cloud. Liftoff is tentatively scheduled for 9:14 p.m. EDT.

This experiment is part of the previously announced Joint American-Soviet Particle Intercalibration (JASPIC) Project scheduled to occur after a solar flare and during the resulting magnetic storm.

- more -

Six rocket-launched experiments are tentatively scheduled -- three at dusk and three about three hours later during a moderate magnetic disturbance which is predicted to occur Saturday night. The remaining three experiments are expected to be conducted within the next two or three days.

However, since these experiments are dependent upon special upper atmospheric conditions, they will be scheduled on a day-to-day basis based on information from solar forecast centers.

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National Aeronautics and
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For Release:
June 11, 1978

RELEASE NO. 78-9

CHEMICAL CLOUD EXPERIMENT LAUNCHED FROM WALLOPS

A chemical vapor trail was ejected from a rocketborne payload at 2:32 a.m. EDT today to measure upper atmospheric winds. Trimethylaluminum (TMA) was ejected as the rocket ascended beginning at 80 kilometers and continuing up to about 170 kilometers creating a glowing orange and blue vapor trail. A two-stage Nike-Apache was utilized to loft the experiment.

A Soviet MR-12 solid propellant sounding rocket was launched a few minutes prior to the Nike-Apache, at 2:27 a.m. EDT, from their ship, the Professor Vize, offshore of the Wallops launch site. The Soviet payload contained instruments to measure energetic particles impacting the earth's atmosphere as well as making ionospheric measurements.

These experiments are part of the previously announced Joint American-Soviet Particle Intercalibration (JASPIC) Project which was scheduled to occur during a geomagnetic storm. Seven additional rocketborne measurements are scheduled during the next two weeks.

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For Release:
June 27, 1978

Release No: 78-12

EIGHT ROCKET LAUNCHINGS CONDUCTED DURING US/USSR PROJECT

Eight rockets were launched from NASA's Wallops Flight Center and the Soviet research ship, Professor Vize, located off Virginia's Eastern Shore in the period June 2 through June 25. The launchings were part of the Joint American-Soviet Particle Intercalibration (JASPIC) Project and were designed to investigate ionization sources in the upper atmosphere during geomagnetic activity and to compare U.S. and Soviet particle measuring instrumentation. Complimentary measurements were made using satellite, aircraft and ground-based instrumentation.

Three of the eight were American rockets launched from Wallops and the remaining five were launched from the Professor Vize. Ionosonde measurements were made from Wallops Island, radar ionospheric measurements were made from Millstone, Massachusetts, and airglow measurements were made from Wallops and Arecibo, Puerto Rico. Preliminary results indicate that all launches were successful except for one which did not reach nominal altitude.

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Following are liftoff times and dates:

Sunday, June 11 --	Soviet MR-12 rocket at 2:27 a.m. EDT
	Nike-Apache (chemical payload) at 2:32 a.m. EDT
Tuesday, June 20 --	Soviet MR-12 at 12:10 a.m. EDT
	Nike-Apache at 12:15 a.m. EDT
Friday, June 23 --	Soviet MR-12 at 10:13 p.m. EDT
Sunday, June 25 --	Soviet MR-12 at 9:31 p.m. EDT
	Nike-Tomahawk at 10:08 p.m. EDT
	Soviet MR-12 at 10:31 p.m. EDT

Since only moderate magnetic activity occurred in the ionosphere during the Soviet vessel's visit, the launch of the ninth rocket, a Nike-Apache, was postponed and rescheduled for mid-July. Scientists will seek an opportunity to launch after a solar flare and during the intense magnetic storm which usually follows such an event.

Cary F. Milliner, Jr. was the NASA Wallops Flight Center Project Manager and Dr. Fred A. Morse of Aerospace Corporation was the Project Scientist. Dr. G. S. Ivanov-Kholodniy was the Soviet Project Manager and Dr. S. I. Avdyushin was the Soviet Program Scientist.

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For Release:
August 29, 1978

Release No: 78-13

MID-AIR RECOVERY OF ROCKET PAYLOAD AT WALLOPS

A rocketborne experiment launched onboard a single stage meteorological rocket was successfully retrieved in a mid-air recovery operation today by NASA's Wallops Flight Center (WFC).

The objective of this experiment was to obtain vertical profiles of nitric oxide concentrations throughout the middle and upper atmosphere between 50 and 30 kilometers. Future applications of the experiment include providing in situ support measurements for Nimbus G satellite from launch sites in the Northern hemisphere.

The payload was launched on a Super Arcas rocket at 3:38 p.m. EDT today and reached an altitude of 66 kilometers (216,000 feet). The 8.7 kilogram payload was ejected at apogee and the parachute deployed immediately as programmed. Using radars at WFC, the fixed-wing Sky Van aircraft was vectored to an intercept position.

The package was snared in mid-air about 4 kilometers (13,000 feet) above the surface of the ocean. The operation occurred at T-plus 1 hour 11 minutes some 13 kilometers (7 nautical miles) offshore from Wallops Island.

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The mid-air retrieval system (MARS) for parachute-borne payloads was evaluated and made operational at the WFC in lieu of the water recovery to alleviate salt water damage to the payload and to allow payload refurbishment for use on future missions resulting in cost savings. The recovery equipment was provided by the All American Engineering Company. The Sky Van aircraft is a light cargo aircraft manufactured by Short Brothers and Harland Ltd., of Northern Ireland, with short take-off and landing (STOL) performance capability. This fixed-wing aircraft, which is sub-contracted to Summit Airlines, has proved to be a near-optimum aerial retrieval platform from the standpoints of safety, reliability and economy in previous evaluation and operational tests.

Payload design and fabrication was provided by the NASA WFC under cognizance of the NASA Sounding Rocket Program. Project management, flight mission planning and analyses, and launch vehicle support is also being provided by Wallops. The experiment package, consisting of a chemiluminescent nitric oxide detector, was developed by the University of Michigan and a telemetry module was provided by the Physical Science Laboratory of New Mexico State University.

Robert J. Frostrom, Jr., was the Wallops Mission Manager, L. Warren Gurkin the Wallops Payload Manager and Robert T. Long the Wallops Recovery Director. The Sky Van pilot was Walt Austin. Dr. J. J. Horvath of the University of Michigan was the Project Scientist.

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For Release:
3:00 p.m., Thursday
September 7, 1978

RELEASE NO: 78-14

WALLOPS ENGINEERING SUPPORT CONTRACT TO BE NEGOTIATED

The National Aeronautics and Space Administration has selected Computer Sciences Corporation, Falls Church, Virginia for negotiation of a contract for engineering support and related services to Wallops Flight Center, Virginia. Three companies submitted proposals for this work.

The company's proposal for a two-year, cost-plus-award-fee contract is approximately $3.8 million. The contract will be effective October 1, 1978 and will contain provisions for three additional one year periods.

The services to be provided are: engineering support in the areas of instrumentation, computer operation, programming, data support, aerodynamics, mechanical design and systems integration for both flight articles and ground instrumentation facilities, and for some related specializations.

The contract will be administered by the Wallops Flight Center, Wallops Island, Virginia.

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For Release:
Friday a.m.
September 15, 1978

RELEASE NO: 78-15

NEW PROCUREMENT OFFICER SELECTED AT WALLOPS FLIGHT CENTER

David V. Davis, who has been the Assistant Procurement Officer for the past five years, has been selected to be the Wallops Flight Center's Procurement Officer to replace Louis T. Birch who retired from Federal service on August 25.

As Head of the Procurement and Supply Branch he will be responsible for developing, planning, and administering the procurement and supply programs necessary to support the research, development, scientific, and operational functions of the Center and directing the small business, minority business, and labor surplus area programs.

Prior to joining the NASA procurement staff in 1961, Dave was employed at the Chincoteague Naval Air Station.

Dave and his wife, Eleanor, reside in Chincoteague, Virginia. They have one son, David L. Davis, who is employed in the Wallops Engineering Directorate. He also resides in Chincoteague.

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Karen Miller
Langley Research Center
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For Release:
Friday
September 22, 1978

RELEASE NO: 78-16

NASA AND U.S. ARMY TO ACCEPT ROTOR SYSTEMS RESEARCH AIRCRAFT

The first Rotor Systems Research Aircraft (RSRA) will be accepted by the National Aeronautics and Space Administration (NASA) and the U. S. Army Aviation Research and Development Command (AVRADCOM) on September 28 in a ceremony at NASA's Wallops Flight Center, Wallops Island, Virginia. The ceremony will be held at 2:30 p.m. at Hangar N-159 on the Wallops Main Base.

Sikorsky Aircraft Division, United Technologies Corporation, is developing two RSRA for NASA and the U.S. Army. The project has been jointly managed and funded by NASA and the Army Structures Laboratory (AVRADCOM) at Langley Research Center, Hampton, Virginia since November 6, 1973.

The acceptance ceremony marks the completion of the design, fabrication, and flight testing of RSRA number two, which will be delivered to the Government in the helicopter configuration. The number one RSRA is scheduled for acceptance by the Government after completion of flight testing in the compound configuration.

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The RSRA will provide the United States with a highly sophisticated and much needed research facility for continued development and understanding of rotary wing technology. The RSRA helicopters will be used by NASA and the Army to provide data for technology verification and to investigate and evaluate a wide variety of existing and advanced rotor systems. The RSRA will help eliminate the costly practice of having to develop or extensively modify helicopter aircraft in order to conduct flight investigations for each promising new rotor and provide precise measurements of a variety of rotors under repeatable test conditions.

The RSRA are unique aircraft which have the first helicopter crew emergency escape system, an active isolator/balance system, and can be configured as a helicopter, a compound aircraft (helicopter with fixed-wings), and fixed-wing aircraft.

The emergency escape system provides for severance of the main rotor blades, separation/fragmentation of the canopies and sequenced upward extraction of the crew using tractor rocket motors. Being comprised solely of mechanical and pyrotechnic components, this system is insensitive to electromagnetically-induced radiation and lightning.

The active isolator/balance system provides wide-band attenuation of vibrations to the fuselage from main rotor vibratory forces and moments. This wide-band attenuation enables different rotors to be installed on the RSRA without retuning the fuselage. The system achieves vibration isolation by using hydraulic-pneumatic units to connect the main rotor gear box to the fuselage.

Speakers at the acceptance ceremony will be Major General Story C. Stevens, Commanding General, U.S. Army Aviation Research and Development Command; Dr. James J. Kramer, Associate Administrator, Office of Aeronautics and Space Technology, NASA; Mr. Robert F. Daniell, Sikorsky Executive Vice President for Engineering and Programs; Dr. Donald P. Hearth, Director, Langley Research Center; and Dr. Robert L. Krieger, Director, Wallops Flight Center.

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For Release:
September 27, 1978

RELEASE NO: 78-18

WALLOPS ROCKET MEASURES MAGNETIC ACTIVITY IN THE EARTH'S IONOSPHERE

A two-stage Nike-Apache sounding rocket was launched at 1:30 a.m. EDT today from NASA's Wallops Island range to investigate ionization sources in the upper atmosphere during geomagnetic activity.

This rocketborne experiment has been postponed day-by-day since June 2 awaiting an intense magnetic storm which usually follows a solar flare.

The rocket payload reached a peak altitude of 183 kilometers (114 statute miles). Preliminary results indicate that all instrumentation performed satisfactorily and good data was obtained.

This launching was part of and completes the Joint American Soviet Particle Intercalibration (JASPIC) Project designed to compare U.S. and Soviet particle measuring instrumentation. Eight previous rocketborne experiments were conducted jointly during June from Wallops and the Soviet research ship, Professor Vize, located off Virginia's Eastern Shore.

Dempsey B. Bruton was the Wallops project Engineer and Dr. L. G. Smith of the University of Illinois was the project scientist.

- END -

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For Release:
September 27, 1978

RELEASE NO: 78-19

WALLOPS ANNUAL FEDERAL WOMEN'S DAY PROGRAM

Wallops Flight Center will observe its Fourth Annual Federal Women's Day with a program beginning at 10 a.m. in Building D-10 on Wednesday, October 18, 1978. Registration will commence at 9:30 a.m., and the University of Maryland, Eastern Shore Band will present musical selections at 9:40 a.m. The theme for this year's program is "Horizons Unlimited." Speakers for the program will be Mrs. Lucille Fletcher Wallop and Dr. Adrienne F. Timothy.

Lucille Fletcher Wallop is a novelist and playwright who writes under the name of Lucille Fletcher. She is perhaps best known for her radio play, "Sorry, Wrong Number," which she also turned into a movie starring Barbara Stanwyck and Burt Lancaster. Miss Fletcher has written six novels of suspense and is the author of a play, "Night Watch," which has been made into a movie with Elizabeth Taylor in the leading role. She is married to John Douglass Wallop III, whose family once owned Wallops Island as part of a 17th century land grant. He is also a novelist whose book, "The Year the Yankees Lost the Pennant," became the hit musical, "Damn Yankees."

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Dr. Adrienne F. Timothy was recently appointed the Assistant Associate Administrator for Space Science at NASA Headquarters. In her post, Dr. Timothy serves as the chief scientist for the Office of Space Science (OSS), the focal point for obtaining, evaluating and utilizing the expertise of the scientific community in the planning of the OSS programs. She was born in Caterham, Surrey, England, earned a B.Sc. in physics and a Ph.D. in space science at University College, London.

The program will also feature skits and a luncheon. Community business people are invited to attend. Luncheon reservations can be made through October 11 by calling Jean Hall, Wallops Federal Women's Program Coordinator, at 804-824-3411, Extension 348. Cancellations will be accepted through October 13.

- END -

NASA News

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For Release:
October 3, 1978

RELEASE NO: 78-20

WALLOPS CONTRACT AWARDED

The National Aeronautics and Space Administration has awarded a contract for electrical power service for the Center to the Delmarva Power and Light Company, Salisbury, Maryland.

The fixed price contract for $642,000 is for one year and was effective October 1, 1978.

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For Release:
November 1, 1978

RELEASE NO: 78-21

WALLOPS LAUNCHES TAURUS-TOMAHAWK

A two-stage solid propellant sounding rocket, the Taurus-Tomahawk, was launched at 2:47 p.m. EST yesterday from Wallops Island, Virginia. The purpose of the launch was to flight test this vehicle configuration for future use in the NASA sounding rocket program.

The Taurus and the Tomahawk rocket motors are currently in use, but this was the first flight of this configuration. Peak altitude reached was 554 kilometers (344 statute miles). This successful test flight qualifies this vehicle to launch scientific payloads, and the first operational flights will be launched at Poker Flat Research Range in Fairbanks, Alaska, in March 1979.

The thirty-foot vehicle will be capable of carrying a 27.4 kilogram payload (60 pounds) to an altitude of 575 kilometers to conduct scientific experiments in the near Earth environment.

NASA Wallops Flight Center Project Manager was Bobby J. Flowers and the Project Engineer was William T. Burns.

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For Release:
November 27, 1978

RELEASE NO: 78-22

EASTERN SHOREMAN NAMED DEPUTY DIRECTOR OF NASA'S AMES RESEARCH CENTER

A. Thomas Young, son of Mr. and Mrs. W. T. Young of Wachapreague, Virginia, has been named Deputy Director of NASA's Ames Research Center, Mountain View, California. The assignment is effective February 1, 1979.

Mr. Young is now Director of Planetary Programs in the Office of Space Sciences at NASA Headquarters, Washington, DC. Before appointment to his current position in November 1976, Young was Mission Operations Manager and Mission Director of Project Viking at NASA's Langley Research Center in Hampton, Virginia. Viking was a NASA flight effort directed toward exploration of the planet Mars using automated spacecraft. Two scientific laboratories were landed on Mars in 1976.

Mr. Young began work at Langley in 1961, and was Assistant Project Manager of Project Vector, a rotating-solid-rocket attitude control system. He became Mission Definition Manager of the Lunar Orbiter Project in March 1965. In 1968 he was assigned responsibility for the development of Mars mission objectives for the Advanced Space Project Office (Unmanned). He was named Viking Science Integration Manager before his

- more -

appointment as Viking Mission Operations Manager in early 1974.

Young received Langley's Sustained Superior Performance Award in 1967 for his contribution to the Lunar Orbiter Project and in 1977 for his work on Viking. In 1977 he also received NASA's highest award, the Distinguished Service Medal, for his contributions to Viking.

Mr. Young was born in Nassawadox, Virginia, in 1938. He received a bachelor of science degree in aeronautical engineering and bachelor of science in mechanical engineering from the University of Virginia. He was a Sloan Fellow at the Massachusetts Institute of Technology in 1971-72, where he received a master's degree in management.

- END -

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Dick McCormack
Headquarters, Washington, DC
(Telephone: 202/755-2070)

For Release:
November 29, 1978

RELEASE NO: 78-23

EARTH TERRAIN CONTOURING DONE BY SATELLITE

Radar altimeter measurements from an experimental oceanographic satellite have resulted in an unexpected technological breakthrough. For the first time, Earth terrain contouring has proven feasible from a satellite microwave sensor to an accuracy comparable to conventional ground and aerial surveys used for small scale mapping.

In an experiment sponsored by NASA's Wallops Flight Center, Wallops Island, Virginia, terrain contouring has been accomplished using GEOS-3 (Geodynamics Experimental Ocean Satellite) radar altimeter measurements from a height of 840 kilometers (520 miles) above the Earth's surface.

The terrain topographic mapping demonstration took place over the San Joaquin Valley of southern California. Nineteen GEOS-3 passes over the valley resulted in terrain elevation for 40,000 square km (15,500 square miles). Comparison of the satellite derived contours with U.S. Geological Survey small scale topographic maps of the valley shows agreement to within 1 meter (3 feet)

As GEOS-3 circles the globe at a velocity of 7 km/sec (4 mps), the radar altimeter points vertically down towards the Earth. The distance between the satellite and the Earth's surface is measured with a precision of 50 centimeters (20 inches). As the satellite passes over a hill, the measured distance is shorter; over a valley, it is longer.

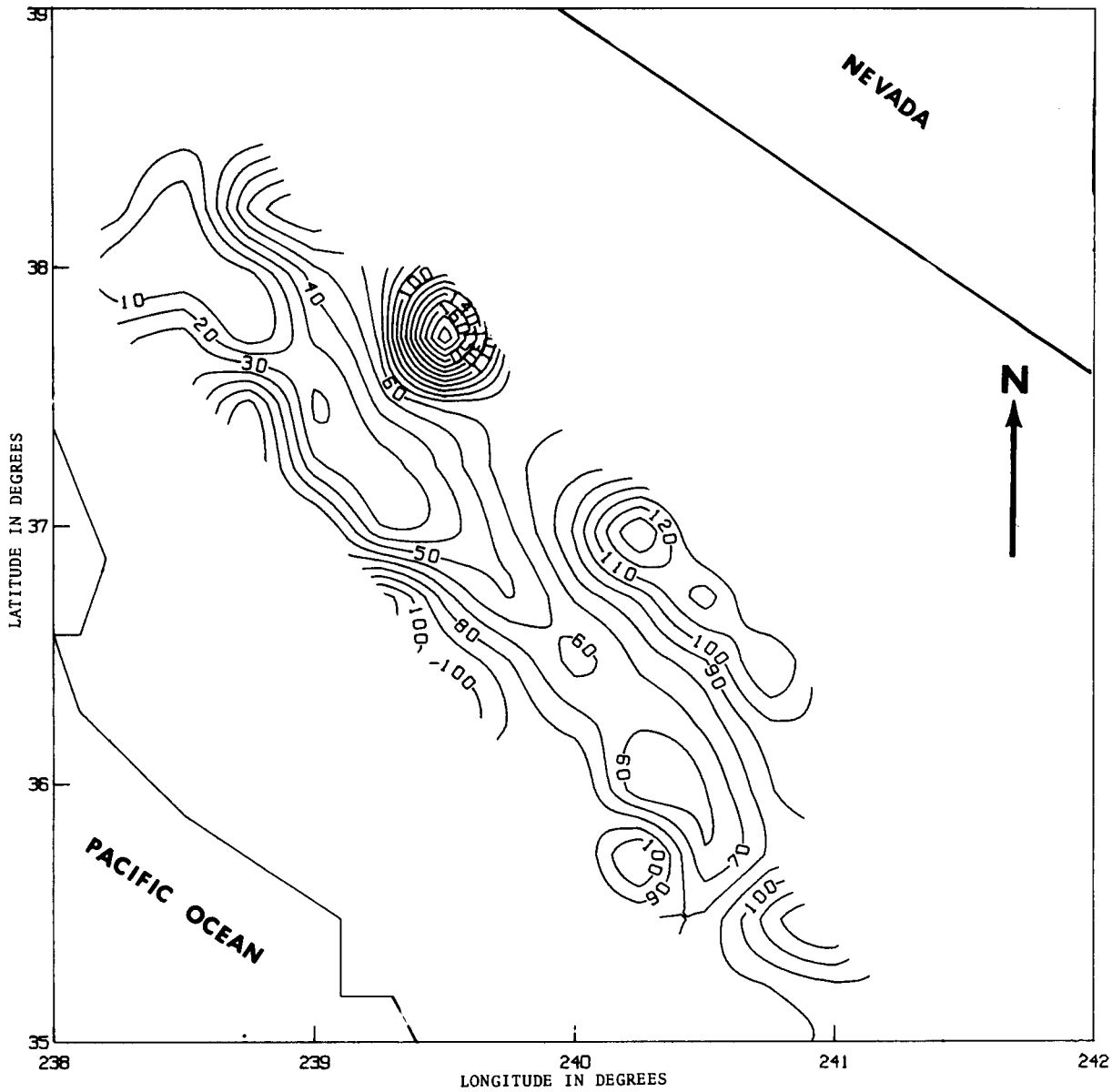
Because of the nature of radar backscatter and since the altimeter was designed as an ocean-sensing system, the acquisition of meaningful data over land was unexpected. Due to the ocean-optimized design of the altimeter, the measurement of terrain variations is restricted necessarily to smooth or gently rolling topography, such as a coastal plain, interior plain or valley.

These GEOS-3 overland results indicate that a future satellite-borne altimeter could be designed to provide terrain elevations in more rugged areas, at an accuracy level sufficient to satisfy many small scale mapping requirements at a cost competitive with conventional methods. This technique would be particularly useful in remote areas of the world, such as arctic and dessert regions where conventional surveying is difficult and expensive.

The GEOS-3 was launched in April 1975 with an expected lifetime of one year. The original oceanographic objectives of the mission have been accomplished, and all systems on the spacecraft are still functioning. Currently, the satellite altimeter measurements are being utilized in near-real time to provide ocean wave heights, wind speeds at the air-sea interface, ocean current boundaries and velocities, and sea-ice locations.

The attached illustration shows terrain contours of the San Joaquin Valley; the depicted contour lines have been derived solely from GEOS-3 altimeter measurements.

- more -



TERRAIN CONTOURS OF THE SAN JOAQUIN VALLEY OF SOUTHERN CALIFORNIA, DERIVED SOLELY FROM SATELLITE RADAR ALTIMETER MEASUREMENTS. CONTOUR INTERVAL IS 10 METERS.

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For Release:
February 18, 1979

RELEASE NO: 79-4

SUCCESSFUL SAGE LAUNCH WILL EXAMINE EARTH'S STRATOSPHERE

A 324-pound spacecraft was lofted into earth orbit today from NASA's Wallops Flight Center in Virginia at 11:18 a.m. EST. Called SAGE, for Stratospheric Aerosol and Gas Experiment, the satellite is designed to obtain data on the aerosols and ozone in the Earth's stratosphere.

The applications satellite was launched into a near-circular Earth orbit by the four-stage solid propellant Scout vehicle. Orbital elements are: apogee 655.1 kilometers (407 statute miles), perigee 554.6 kilometers (344.6 statute miles), inclination 54.9°, and period 96.9 minutes.

The SAGE mission is international in scope, as its findings will be checked against extensive "ground truth" measurements conducted by special teams in the U.S., Japan and Europe.

Worldwide concern has developed in recent years over the environmental quality of the stratosphere, that region of the Earth's atmosphere beginning above cloud tops at about 12 kilometers (8 miles) and extending

to approximately 50 km (30 miles). The stratosphere is a very fragile and important portion of the Earth's environment; its ozone, for example, is known to protect the Earth and its inhabitants from much of the Sun's ultraviolet (UV) radiation.

The stratosphere also contains a layer of dust-like particles, or aerosols, that are concentrated below the ozone peak. Aerosols, small solid particles or liquid droplets suspended in the surrounding air, are typically less than one millionth of a meter in diameter.

The aerosol layer acts somewhat like a filter by reducing the amount of sunlight that reaches the Earth's surface and the amount of reflected sunlight that eventually escapes to space. Small changes in aerosol concentration may cause changes in climate with important implications for agriculture and our general economy.

Concerns have developed that man's industrial and technological activities on and above the Earth may lead to changes in these aerosols and ozone in the stratosphere, causing unknown and possible adverse affects to life on the Earth's surface.

Besides man-made injections directly into the stratosphere, aerosols and gases are generated in the troposphere (starting at the Earth's surface and extending to the stratosphere) by processes that are only partly understood.

The main objective of SAGE is to obtain and use global data on stratospheric aerosols and ozone in various studies concerning the Earth's climate and environmental quality. The mission is designed to obtain this data from tropical to high latitudes for a period of at least one year.

Comparable aerosol data for the polar regions are being obtained by a Stratospheric Aerosol Measurement (SAM-II) experiment on the Nimbus-7 satellite, launched October 24, 1978. This information will complement the SAGE aerosol data base.

The NASA Headquarters Environmental Observations program has overall responsibility for the AEM/SAGE program. The NASA Goddard Space Flight Center, Greenbelt, Maryland is responsible for project management of the spacecraft, scientific planning and coordination, and the tracking and data acquisition system. NASA Langley is responsible for the instrument module systems, the Scout launch vehicle, and all scientific data processing and use. The NASA Wallops Flight Center is responsible for the launching and launch support.

- END -

NASA News

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For Release:
March 12, 1979

RELEASE NO: 79-6

NASA WALLOPS FLIGHT CENTER'S CANADIAN SOLAR ECLIPSE EXPEDITION COMPLETED SUCCESSFULLY

On February 26, a total eclipse of the sun occurred over the northwestern United States and central Canada. This was the last total eclipse observable from the North American Continent in this century.

Four organizations in the United States and Canada joined with several universities and laboratories to conduct rocketborne experiments in atmospheric and ionospheric physics from two rocket launching sites established in western Ontario, Canada. The National Aeronautics and Space Administration (NASA), the Army Atmospheric Sciences Laboratory (ASL), the Air Force Geophysics Laboratory (AFGL), and the National Research Council of Canada (NRC) launched a total of 33 meteorological and sounding rockets. Objectives of the research are to produce improved models with which to predict atmospheric responses under a variety of disturbances.

About 70 Wallops Flight Center (WFC) personnel traveled to the launch site to participate in the field operations. In addition, Wallops mobile range

- more -

equipment--radar vans, telemetry vans, power van, sounding rocket launchers, etc.--were also transported to the launch site. Site preparation in Canada began last June and the launchers were installed in September.

There were two rocket launching and tracking sites established in the Red Lake area of Ontario, about 800 kilometers (500 miles) north of Minneapolis. From the NRC and ASL small rocket site at Cochenour 19 meteorological rockets--9 Super Loki and 10 Super Arcas--and one Canadian Black Brant VA sounding rocket were successfully launched. At the NASA/ASL large rocket site on the Chukuni River 13 sounding rockets were successfully launched. The closeness of the sites--about 25 miles apart--allowed positive safety controls to be maintained and the sharing of support facilities.

According to Jim Gray, WFC's Program Manager, although some minor problems were encountered, good data were received and recorded from all of the launches. Ten of the sounding rocket payloads (rocketborne experiments) were to be recovered, refurbished and reflown in the future. Successful recoveries were accomplished on seven of the payloads, however, excellent data were received during flight from all the experiments. The expedition scientists, after a preliminary look at their measurements, termed the project "very successful," and final analysis and results will be published later in the year.

During their stay in Canada, they reported temperatures averaged -20°F. with snow flurries almost every day. All personnel had returned to Wallops by March 5.

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(A firing schedule for both ranges is attached.)

ECLIPSE SMALL ROCKET LAUNCH SEQUENCE

No.	Launch Day	Launch time (local)	Rocket	Payload	Results
1.	Feb. 19	2:38 p.m.	Super Loki	Meteorological Probe	Successful
2.	Feb. 23	12:00 noon	Super Loki	Meteorological Probe	Successful
3.	Feb. 24	9:51 a.m.	Super Loki	Meteorological Probe	Successful
4.	Feb. 24	10:55 a.m.	Super Arcas	Electron Density	Successful
5.	Feb. 24	11:22 a.m.	Super Arcas	Blunt Probe	Successful
6.	Feb. 25	11:00 a.m.	Super Arcas	Electron Density	Successful
7.	Feb. 25	11:30 a.m.	Super Arcas	Gerdien Condenser	Successful
8.	Feb. 25	12:30 p.m.	Super Loki	Meteorological Probe	Successful
9.	Feb. 26	10:53 a.m.	Super Arcas	Gerdien Condenser	Successful
10.	Feb. 26	11:30 a.m.	Super Arcas	Gerdien Condenser	Successful
11.	Feb. 26	12:40 p.m.	Super Arcas	Electron Density	Successful
12.	Feb. 26	1:15 p.m.	Super Loki	Meteorological Probe	Successful
13.	Feb. 26	9:30 p.m.	Super Arcas	Gerdien Condenser	Successful
14.	Feb. 26	10:30 p.m.	Super Loki	Blunt Probe	Successful
15.	Feb. 26	11:30 p.m.	Super Loki	Meteorological Probe	Successful
16.	Feb. 27	7:06 a.m.	Super Arcas	Gerdien Condenser	Successful
17.	Feb. 27	8:10 a.m.	Super Arcas	Electron Density	Successful
18.	Feb. 27	8:40 a.m.	Super Loki	Blunt Probe	Successful
19.	Feb. 27	9:45 a.m.	Super Loki	Meteorological Probe	Successful

ECLIPSE LARGE ROCKET LAUNCH SEQUENCE

No.	Agency	Launch Day	Launch Time(local)	Vehicle	Experiment	Experimenter (Organization)	Results
1.	NASA	Feb. 24	10:52 a.m.	Nike Tomahawk	Plasma physics	University of Bern, Switzerland and University of Illinois	Successful
2.	ASL	Feb. 26	10:28 a.m.	Nike-Orion	Aeronomy	Utah State University and New Mexico State University	Successful
3.	ASL	Feb. 26	10:28 a.m.+30sec.	Nike-Orion	Aeronomy	Utah State University and New Mexico State University	Successful
4.	NRC	Feb. 26	10:50 a.m.+45sec.	Black Brant VA	Aeronomy, solar physics	NRC, York University, University of Saskatchewan	Successful;
5.	NASA	Feb. 26	10:50 a.m.+50sec.	Astrobee D	Plasma physics	Penn State University	Successful; no parachute and no recovery
6.	AFGL	Feb. 26	10:51 a.m.+55sec.	Nike Orion	Aeronomy	AFGL and Utah State University	Successful
7.	NASA	Feb. 26	10:52 a.m.	Nike Tomahawk	Plasma physics	University of Bern, Switzerland and University of Illinois	Successful
8.	AFGL	Feb. 26	10:52 a.m.+30sec.	Paiute-Tomahawk	Aeronomy	AFGL	Successful
9.	NASA	Feb. 26	10:53 a.m.+30sec.	Taurus-Orion	Plasma physics	Cornell University	Successful
10.	NASA	Feb. 26	10:53 a.m.+45sec.	Taurus-Orion	Aeronomy	University of Pittsburgh	Successful
11.	NASA	Feb. 26	10:54 a.m.+10sec.	Nike-Tomahawk	Plasma physics	University of Bern, Switzerland and University of Illinois	Successful
12	AFGL	Feb. 26	11:41 a.m.	Paiute-Tomahawk	Aeronomy	AFGL	Successful; no recovery
13.	AFGL	Feb. 26	5:48 p.m.	Niro	Aeronomy	AFGL	Successful
14.	NASA	Feb. 27	6:00 a.m.	Astrobee D	Plasma physics	Penn State University	Successful; no recovery

NASA News

National Aeronautics and
Space Administration

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For Release:
Tuesday, May 8, 1979

RELEASE NO: 79-7

WALLOPS FLIGHT CENTER OBSERVES SMALL BUSINESS WEEK

By Presidential Proclamation the week of May 13th has been designated as Small Business Week. This week is set aside to honor the nation's small businesses who comprise 97 percent of American business concerns, employ 41 percent of the work force, produce 43 percent of America's gross national product, and contribute more than half of all commerical innovations and inventions. These factors indicate the extreme importance of the small, independently owned business to American society.

As the world's largest single customer, the U.S. Government bears the responsibility for maintaining the economic system which insures the vitality of free enterprise as we know it.

To further implement the objectives of the Small Business Program, all small business concerns or interested individuals are urged to contact the Small Business Specialist at the National Aeronautics and Space Administration, Wallops Flight Center, Wallops Island, VA 23337, to submit their capabilities and obtain advice pertaining to contracting or subcontracting opportunities. All correspondence should be addressed to Elton R. Scott, Small Business Specialist, Room 211, Building E-107, or telephonic inquiries directed to him by calling (804) 824-3411, extension 542.

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NASA News

National Aeronautics and
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May 9

Keith Koehler
Langley Research Center
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Joyce B. Milliner
Wallops Flight Center
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For Release:
Immediately

RELEASE NO: 79-8

NASA SATELLITE TRACKS, STUDIES NEW VOLCANIC ERUPTION

The volcano, La Soufrière, on the island of St. Vincent in the Caribbean, is providing scientists with the opportunity, for the first time, to measure and track volcanic emmission flows in the stratosphere by satellite on a global scale.

Researchers at NASA's Langley Research Center, Hampton, Virginia, through the use of the Stratospheric Aerosol and Gas (SAGE) Experiment satellite and ground truth experiments, are tracking the material spewed into the stratosphere by La Soufrière which erupted April 13, 14 and 17, 1979, ejecting ash and volcanic gases into the surrounding atmosphere.

As much as an inch of dust was deposited on neighboring islands.

The volcanic eruption may provide a rare opportunity for scientists to study the long-term global distribution throughout the stratosphere of aerosols from a single point source, according to SAGE experiment scientist, Dr. M. Patrick McCormick of the Langley Research Center. This will depend on the

- more -

May 9, 1979

exact magnitude of La Soufrière's perturbation on the total aerosol loading in the stratosphere, he added.

These data may allow scientists, therefore, the ability to check predicted versus actual radiative disruptions to surface and stratospheric temperatures. They offer the opportunity to study the stratospheric transport of this material and the formation of aerosols through various gas-to-particle conversion processes.

Researchers are now directing SAGE data processing to the volcanic eruption and are checking a band between six and twenty degrees North latitude around the Earth measuring the spreading volcanic veil. Other latitudes will be studied as the veil expands toward the poles. McCormick noted that they are coordinating their studies with the scientific community and have alerted a number of researchers throughout the world to put their groundbased and balloon-borne instruments into use in an attempt to provide more data on the volcanic layer.

Langley researchers aboard the Wallops Flight Center's P-3 aircraft were working on SAGE ground truth experiments in Brazil at the time of the first two days of volcanic activity. On their return trip to the U.S., they stopped in Barbados, where they received word of the volcanic eruption. The researchers were William H. Fuller, Jr., Bill R. Rouse, Samuel Sokol and David C. Woods from Langley and William H. Hunt and Forrest C. Diehl, Langley contractor employees from Wyle Laboratories in Hampton, Virginia. The flight crew consisted of John T. Riley and Clarence D. Barrett from NASA-Wallops and Robert L. Snell, Jr., Bobby C. Easley and Edward D. Leinberger, Wallops contractor employees from Lockheed Aircraft.

A measurement mission to the St. Vincent's area was planned for April 17, just before sunset. As the aircraft approached the area at approximately 5 p.m. local time (4 p.m. EST), La Soufrière erupted, sending a large visible plume of material high into the troposphere, appearing to top off at 50,000 feet and move eastward. The cloud looked like a nuclear explosion cloud or a thundercloud with an anvil blowing off the east.

Researchers aboard the plane took 8-mm movies and pictures of these events, and made measurements of the plume's aerosol size distribution and concentration and lidar measurements of the aerosol layer. Because of surrounding water vapor clouds and the large amount of dust present, the lidar data taken during the eruption were not easy to interpret in real time and are undergoing analysis at Langley. Lidar measures the concentration and latitude of the aerosol layer by laser light backscattering. This was the first time that such measurements were made under a fresh volcanic plume.

Sulfur gases were detected by the researchers aboard the plane and oxygen masks were donned. The aircraft immediately returned to Barbados, continuing to take data. Another flight mission was planned on April 18 and the aircraft lidar detected the stratospheric aerosol layering moving both east and southwest from St. Vincent. Data from this mission showed that material from the volcanic eruption definitely penetrated the tropopause, the boundary between the upper troposphere and lower stratosphere, and entered the stratosphere. This information was reported to the SAGE satellite research team at Langley the following morning, April 19.

McCormick said that SAGE passed the area on April 23 and 24 and that data from a real-time SAGE pass at 15 degrees North, 57 degrees West, on April 23, one week after the eruption, showed that SAGE detected the volcanic

aerosol layer in the stratosphere. The complete data sets from these days are now being scrutinized in an attempt to determine the magnitude and extent of this event in the total stratospheric aerosol loading, McCormick said.

SAGE, launched February 18, 1979, from NASA's Wallops Flight Center, maps vertical profiles of ozone, aerosols, nitrogen dioxide and molecular extinction in the stratosphere around the globe. This information provides scientists with information to help answer questions about the effects of aerosols and ozone on climate and environmental quality.

The aerosol layer acts like a filter by reducing the amount of sunlight that reaches the Earth's surface and the amount of reflected sunlight that eventually escapes to space. Aerosols, small solid particles or liquid droplets suspended in the surrounding air, are typically less than one millionth of a meter in diameter.

According to SAGE science team member Theordore J. Pepin, Department of Physics and Astronomy, University of Wyoming, Laramie, many questions remain on what effects the ash and volcanic gases will have on the stratosphere. He said that in the coming months these data will help answer some of those questions.

Pepin said that the emissions could increase the concentration of the Earth's aerosol layer, but the magnitude of this ejection is not certain. If there is a large increase in the aerosol concentration, it could possibly affect the Earth's climate with important implications for agriculture.

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For Release:
May 7, 1979

RELEASE NO. 79-9

EXPLORER SCOUTS PARTICIPATE IN SYMPOSIUM

Wallops Flight Center recently hosted an "Aeronautics and Space Science Symposium for Explorers" from May 4 through May 6. The symposium was sponsored by NASA Langley Research Center and the Peninsula Council Boy Scouts of America, Explorer Division. The three-day seminar was designed to acquaint Explorers who have career objectives in the aerospace sciences with all phases of NASA planetary programs and aircraft energy efficient research.

The Explorers were welcomed to the seminar by Dr. Robert L. Krieger, Wallops Director. M. Keith Wible, Director of Administration at Wallops gave the keynote address, entitled "The Outlook for Space and Aeronautics." Topics discussed in the 3-day sumposium were planetary programs, aeronautics, advanced transportation systems, large space structures, energy efficient aircraft, space settlements and applications satellite systems. Speakers were from NASA Ames Research Center, California; NASA Langley Research Center and Wallops Flight Center, Virginia; Lewis Research Center, Ohio;

- more -

and NASA Headquarters, Washington, DC; Thiokol Corporation, Utah; and the National Oceanic and Atmospheric Administration, Maryland.

Seventy-four boys, girls, and leaders from Washington, DC., to Macon, Georgia, and west to Charlottesville, Virginia participated in the three-day training symposium.

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June 19

NASA News

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For Release:
June 19, 1979

RELEASE NO. 79-12

WALLOPS ASSOCIATE DIRECTOR ON SPECIAL ASSIGNMENT TO AID IN ASSESSMENT OF SHUTTLE PROBLEMS

Abraham Spinak, Wallops Flight Center's Associate Director, is on a special assignment for the next few months to aid NASA management in assessing the management of the Space Transportation System. Acting as executive assistant, he will coordinate the special senior staff support.

In addition to Mr. Spinak, the staff consists of: Dr. Richard C. Mc Curdy, former NASA Associate Administrator for Organization and Management; Willis H. Shapley, former NASA Associate Deputy Administrator; Maj. Gen. James Abrahamson, F-16 Program Director, United States Air Force; A. Thomas Young, Deputy Director, NASA Ames Research Center, Mountain View, California; and John E. O'Brien, Assistant General Counsel for Procurement Matters, NASA Headquarters.

-more-

The staff will assist in the study of Space Shuttle funding problems, uncertainties of program predictions and information flow and control processes.

Dr. Alan Lovelace, Deputy Administrator, said: "With the assistance of this special staff, I feel we can develop a thorough assessment of the major management issues."

-END-

NASA News

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For Release:
June 22, 1979

RELEASE NO. 79-13

WALLOPS LISTS CONTRACT AWARDS

During the period January 1 thru May 31, 1979, Wallops Flight Center, Wallops Island, Virginia, awarded contracts each valued at $50,000 or more to firms in nine states and the District of Columbia. The contracts went to firms in states and cities as follows:

ARIZONA - Tempe--Space Data Corporation, $76,075, darts and fuse assemblies; and $122,712, Super Loki Data Sondes and launches.

CALIFORNIA - Canoga Park--Litton Aero Products, $61,200, Omega/VLF Navigation system; El Segundo--Aerospace Corporation, $72,924, Improvement of the 90GHZ radiometer.

DISTRICT OF COLUMBIA - Washington--Nelson-Bliss & Associates, $66,757, A & E final design for construction of Facility Operational Shop Building.

FLORIDA - Hialeah--Universal Air Service, Inc., $89,848, overhaul P-3 Aircraft quick engine change assembly.

-more-

MARYLAND - Baltimore--Johns Hopkins University, $52,331, Study of the ocean fine structure; Marlow Heights--The Bechdon Company, $62,650, 14" Recovery and Ignition Systems; Rockville--EG&G Washington Analytical Services Center, $55,790, Sea ice and ice sheet studies.

NEW JERSEY - Union--Joule' Technical Corporation, $812,641, Metal trades and instrument construction support.

OKLAHOMA - Stillwater--Oklahoma State University, $207,290, Mobile telemetry tracking systems.

UTAH - Brigham City--Thiokol Corporation, $102,400, Rocket Ozone payloads; and $242,000, Rocket motors.

VIRGINIA - Norfolk--Baldwin & Gregg Ltd., $68,145, A & E services for final design for repair of roads, sidewalks, paved areas and airfield facilities; Woodington Electric, Inc., $84,500, Rehabilitation of tower Y-85; Wallops Island--Chemal, Inc., $65,222, Operation of the Chemistry and Bioscience laboratory.

WASHINGTON - Seattle--University of Washington, $90,000, Air-sea interaction studies for satellite measurements.

During the Five-month period, awarded contracts each valued at $50,000 or more, totaled $2,332,486. This amount does not include contracts of less than $50,000 which were awarded during this same period.

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NASA News

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For Release:
October 4, 1979

RELEASE NO. 79-16

WALLOPS LISTS CONTRACT AWARDS

During the period June 1 through September 30, 1979, Wallops Flight Center, Wallops Island, Virginia, awarded contracts valued at $50,000 or more each to firms in seven states. The contracts were awarded to firms in states and cities as follows:

ALABAMA - Dothan--Hayes International Corporation, $158,267, inspect, modify and refurbish aircraft.

ARIZONA - Phoenix--Space Data Corporation, $243, 554, Super Loki rocket motors and Dart Assemblies.

FLORIDA - Miami--Hamilton Standard, $62,548, Propeller Assembly.

OKLAHOMA - Tulsa--Great Planes Sales, Inc., $500,000, SC-7 Skyvan Aircraft.

PENNSYLVANIA - Springhouse--Tenco Services, Inc., $396,963, Provide Structural and Airport Firefighting and Plant Protection; Tenco Services, Inc. $294,062, Operate Steam Generating, Water and Wastewater Plants; Tenco

- more -

Services, Inc., $290,662, Facilities Maintenance (Renewal): Tenco Services, Inc., $94,563, Transportation Services (Renewal).

TEXAS - Dallas--Kentron International, Inc., $527,583, Radar Graphics Display System.

VIRGINIA - Chincoteague--Earl R. Stephens, $73,850, Modification to Building F-10; Gainesville--Atlantic Research Corporation, $109,408, Rocket Motors; Greenbush--Greenbush Service Co., $414,165, Supply Management Services (Renewal); McLean--Honeywell Information Systems, $59,592, Lease Front-End Network Processor; Parksley--W. L. Taylor Construction Co., $217,817, Rehabilitation of Building F-3; W. L. Taylor Construction Co., $88,700, Rehabilitation of Rocket Motor and Igniter Magazines; Wharton Worldwide Services, $259,000, Janitorial Services; Richmond--Small Business Administration, $170,000, Rehabilitation of Building D-1; Tasley--Lance J. Eller, Inc., $459,960, Modification of High-Speed Turnoff; Wallops Island--Lockheed Aircraft Services Co., $484,170, Operation and Maintenance of Aircraft (Renewal); Chemal, Inc., $148,191, Operation of Switchboard, Teletype and Reproduction Facilities (Renewal).

During the four-month period, awarded contracts each valued at $50,000 or more, totaled $5,053,055. This amount does not include contracts of less than $50,000 which were awarded during this same period.

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NASA News

National Aeronautics and
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Oct 15

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For Release:
October 15, 1979

RELEASE NO. 79-17

INTERNATIONAL ROCKET PROJECT TO COMPARE OZONE SENSORS

Scientists and engineers from five countries--Australia, Canada, India, Japan, and the United States--have gathered at NASA's Wallops Flight Center on Virginia's eastern shore to compare their techniques of gathering information about ozone in the Earth's stratosphere.

Twenty rocket-borne experiments will be conducted during a 14-day period, starting October 21, in an effort to establish instrument precision and comparability. Resulting ozone data should provide information on ozone variability during the 14 days.

Four kinds of rockets--two-stage Nike Orion, single-stage Orion, Super Arcas and Super Loki--will be used to carry the ozone measuring instruments into the stratosphere. The rocket flights will coincide with orbiting satellite overpasses of Wallops for comparison of the rocket measure ments with those of the satellites. Meteorological rockets and balloons,

-more-

as well as ground based equipment, also will be collecting ozone data.

New ground measuring techniques to determine the distribution of ozone in the stratosphere will be tested.

Several of the rocket payloads will be recovered in mid-air by the Wallops Skyvan aircraft.

Rocket-borne instruments in use worldwide employ different physical techniques to measure stratospheric ozone and have never been compared to establish possible systematic errors and other biases in their measurements. A systematic comparison of all the instruments is necessary if rocket ozone data is to serve as "ground truth" verification of satellite measurements, particularly as the latter are coming to be relied upon to detect global ozone trends.

This joint effort is sponsored by the World Meteorological Organization, the Federal Aviation Administration of the Department of Transportation and NASA. Comparison of techniques is an important part of the world organization's Global Ozone Research and Monitoring Project since the use of satellite ozone measurements is placing increased importance on rocket data to verify, calibrate and determine long-term stability of satellite instruments.

Objectives of the rocket flights are to compare the performances of rocket-borne instruments under conditions that will:

- Establish the precision of various rocket ozone instruments;
- Assemble a common data base from rocket sounding;
- Establish reference points for evaluation and use of future data by each experimenter.

By accomplishing the stated objectives, the project should help in providing additional data for:

- o Improving the accuracy of rocket ozone data used for validation of satellite ozone sensors.
- o Establishing a selected set of upper level ozone profiles with greater accuracy.
- o Determining ozone trends, if any, at altitude levels where current stratospheric models predict the greatest reduction in ozone densities due to anthropogenic (man-made) pollutants, such as fluorocarbons.

Participating organizations are: University of Adelaide, Australia; University of Saskatchewan and National Research Council, both of Canada; Physical Research Laboratory and Indian Space Research Organization, of India; University of Tokyo and University of Tsukuba, Japan; NASA's Goddard Space Flight Center, Greenbelt, Maryland, and the Wallops Flight Center.

NASA News

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For Release:
November 8, 1979

Ken Atchison
Headquarters, Washington, D.C.
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RELEASE NO. 79-18

PILOT-AID SYSTEM FOR SMALL AIRPORTS DEMONSTRATED

Flight demonstrations are being conducted by NASA of an experimental Automated Pilot Advisory System which broadcasts airport and air traffic advisory messages, using a computer-generated voice technique.

The system automatically tracks aircraft within three miles of an uncontrolled airport and issues messages on air traffic location and heading. Uncontrolled airports are small, general aviation airports. Airport wind, barometric pressure, temperature and active-runway messages also are broadcast by the system.

Major objectives of the automated system are to:

- Broadcast airport advisory information at least once every two minutes.
- Broadcast air traffic advisory information at least once every 20 seconds.
- Broadcast collision warnings when required.

-more-

The technology being demonstrated at NASA's Wallops Flight Center, Wallops Island, Va., has application to high-density uncontrolled airports where more than half of midair collisions occur. Accident factors include failure to see other aircraft and take evasive action, traffic pattern flow errors and the lack of communications. The technology also could find application as a possible shift-reliever at controlled airports (large air terminals).

Principal elements of the experimental system are a radar set, a mini- and a micro-computer, weather sensors and a very high frequency transmitter.

The computers provide radar detection and target tracking, evaluation of weather sensor data and generation of the several audio voice messages for transmission to arriving or departing aircraft.

The NASA program will attempt to optimize these techniques and to determine the feasibility of a low-cost radar and computer to achieve an automatic system tailored for the high-density, uncontrolled airport environment.

NASA and the Federal Aviation Administration have established a cooperative program to insure compatibility of the system with an Automated Terminal Service project underway at the aviation agency. NASA is assisting in specifying the technical requirements and relative benefits of both the advisory system and the terminal service project.

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The Wallops project manager is John L. Parks, Jr. Project coordinator is Gene Godwin and Loyd C. Parker is the principal investigator.

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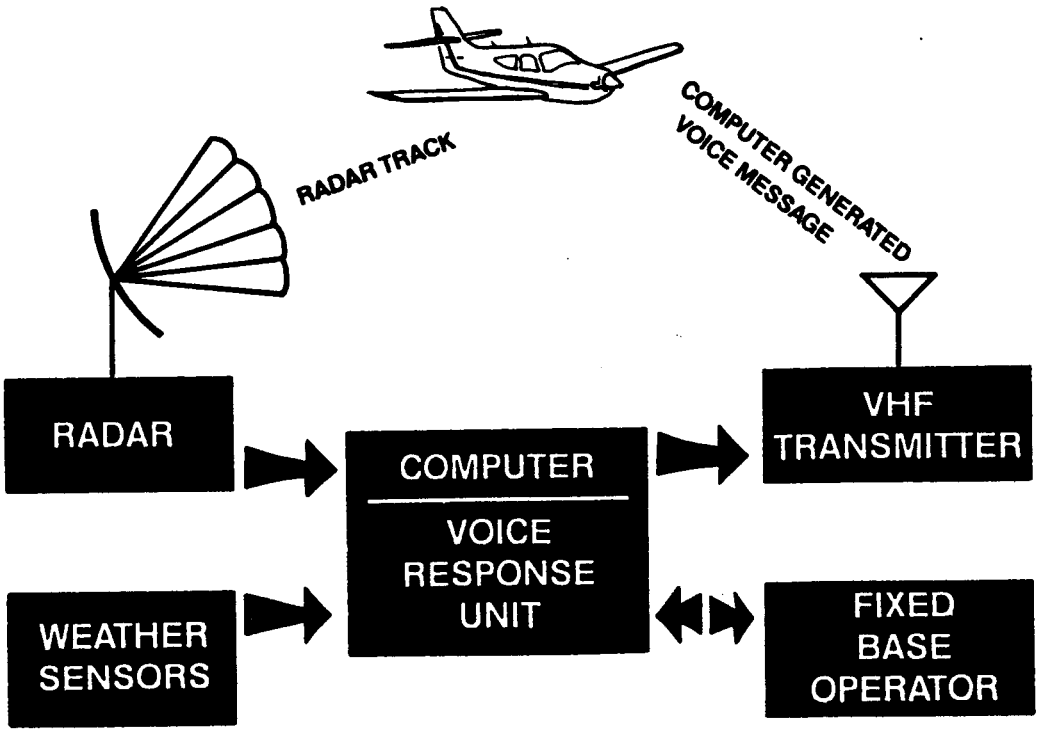

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X

For Release:
April 2, 1980
~~3:00~~ P.M.

Release No. 80-2

WALLOPS FLIGHT CENTER AWARDS CONSTRUCTION CONTRACT FOR FACILITIES OPERATION BUILDING

NASA's Wallops Flight Center (WFC) today awarded a contract for the construction of a new facilities operation building on its Main Base to W.B. Venables & Sons, Inc., Mechanic Street, Laurel, Delaware. This company was low bidder of the six companies submitting bids.

The fixed price contract for $1,062,000 is to be completed within one year (March 30, 1981).

The completion of the building will allow for most of the technical support shops (carpenter, electric, welding, garage, etc.) which are now widely dispersed in obsolete World War II buildings, to be centrally located.

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NASA News

National Aeronautics and
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Apr 18

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For Release:
3:00 p.m. EST
April 18, 1980

RELEASE NO. 80-3

WALLOPS FLIGHT CENTER AWARDS CONTRACT FOR MOBILE RADAR SYSTEM

NASA's Wallops Flight Center (WFC) has awarded a contract for the purchase of a Mobile C-Band Instrumentation Radar System to Automation Industries, Inc., Vitro Services Division, Industrial Park, Fort Walton Beach, Florida.

The fixed price contract, negotiated non-competively for $1,239,032, calls for delivery within 20 months.

This new mobile radar system will replace an existing acquisition radar--MPS-19--to update WFC's tracking capabilities.

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NASA News

National Aeronautics and
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June 3

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For Release:
Tuesday,
June 3, 1980

RELEASE NO. 80-6

FORMAL AGREEMENT SIGNED FOR LONG-TERM NAVY PROJECT AT WALLOPS

The NASA Wallops Flight Center (WFC) on Virginia's Eastern Shore and the Naval Surface Weapons Center (NSWC) in Dahlgren, Virginia, have recently signed a Host-Tenant Agreement involving a long-term Navy project to be conducted on Wallops Island.

The NSWC needed to establish a new surface ship weapons engineering facility to augment its current facilities. The Wallops Island location will provide the realistic environment necessary to conduct research and development of complex, integrated surface ship weapons systems. After studying alternatives for the location of this facility, the NASA WFC was judged to be the most desirable location.

Discussions between Dahlgren and Wallops led to an agreement by NASA to host this important project on Wallops Island. The NSWC plans to conduct research and development programs at WFC on a continuing and long-term basis.

The Navy and NASA have mutually benefited from a long and close relationship and a number of Navy projects have been performed at Wallops in the past. It is anticipated that the proposed use of Wallops by NSWC as a location for a new

-more-

engineering facility will further enhance these benefits by increasing the utilization of existing and special facilities and services at Wallops; and by providing additional opportunities to transfer technology between NASA and the U.S. Navy and to jointly use unique capabilities within each agency.

It is envisioned that the Navy's use of Wallops as an engineering facility will continue indefinitely. The initial installation of the surface ship weapons engineering facility known as the NSWC Combat Systems Laboratory, will be located at the south end of Wallops Island. Navy personnel will use existing NASA buildings and services. In addition a communication system consisting of two antennas and associated transmitters and receivers will be installed in front of the mainland radar facilities.

The first project, the Mark 86 Gun Fire Control System, could eventually move as many as five civilian workers and their families to this area. There is a possibility of additional facilities being added at Wallops Island in the future as dictated by Navy requirements.

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NASA News

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For Release:
June 12, 1980

Ken Atchison
Headquarters, Washington, D.C.
(Phone: 202/755-2497)

RELEASE NO. 80-7

COMPUTER ADVISORIES TO AID PILOTS AT SMALL AIRPORTS BEING TESTED

Testing begins this month at a Virginia airport of an experimental NASA computer advisory system which will expand the information available to pilots using smaller airports without control set-ups.

The Automated Pilot Advisory System goes into operation on June 23 and will continue through July 26 at Manassas Municipal Airport, Virginia.

Designed as an extension of the procedural Visual Flight Rules system used at uncontrolled airports, the experimental system will help pilots keep track of other aircraft in the vicinity by supplying them with air traffic information.

Computer-generated voice, radar and weather sensory information will broadcast automatically an airport advisory every two minutes and a traffic advisory every 20 seconds.

To receive these advisories, the pilot need only to tune his radio to the proper frequency.

- more -

The airport advisory will provide the airport identifier, broadcast time, wind speed and direction, favored or active runway, altimeter setting, and ambient and dew point temperature. The traffic advisory will provide the number of aircraft on each pattern leg (final, base, downwind, crosswind or upwind), position and heading of arriving or departing aircraft.

NASA's objective in performing the flight demonstration tests at Manassas is to obtain an evaluation from pilots using the system in an uncontrolled high-density environment.

The Manassas airport is especially suited for this demonstration because it is estimated that this airport handles approximately 200,000 operations per year — landings and/or takeoffs.

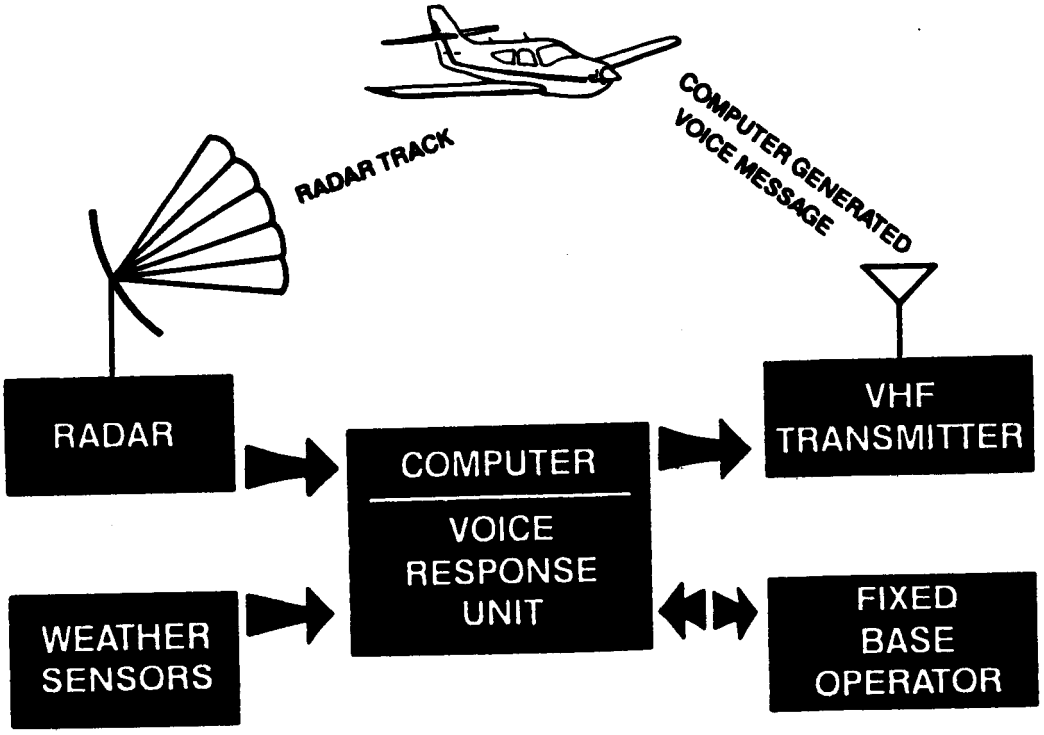
Pilots who want to take part in the demonstration can get the test schedule, information on using the system and an evaluation form at Manassas airport. There will be a van open to the public and questions concerning the system can be addressed to the project manager, John L. Parks, Jr.

Principal elements of the experimental system are a radar set, a mini- and microcomputer, weather sensors, a very high frequency (VHF) transmitter and an operator control panel.

The computers provide target detection and tracking, pattern classification, evaluation of weather sensory data and generation of the several audio voice messages for transmission to aircraft.

The technology is being demonstrated by NASA's Wallops Flight Center, Wallops Island, Virginia.

- END -


RADAR TRACK
COMPUTER GENERATED VOICE MESSAGE
RADAR
COMPUTER
VOICE RESPONSE UNIT
VHF TRANSMITTER
WEATHER SENSORS
FIXED BASE OPERATOR

NASA News

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July 8

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For Release:
July 8, 1980

RELEASE NO. 80-8

WALLOPS FLIGHT CENTER OBSERVES 35TH ANNIVERSARY OF FIRST LAUNCH

One of the oldest and busiest ranges in the world, Wallops has been conducting rocketborne experiments for 35 years. The first research rocket, a 17-foot Tiamat, was launched on July 4, 1945.

The Island obtained its name almost three hundred years ago from John Wallop who was appointed Deputy Surveyor of Virginia by Col. Edmund Scarburgh in the 17th Century and was granted a patent in 1672. Formerly the Island had been called "Keeckotank," "Accocomoson," or "Occocomoson."

Since its origin as a rocket range, Wallops has launched approximately 12,000 research vehicles consisting of from one to seven rocket stages, in the quest for aeronautical research information on the flight characteristics of airplanes and to increase the Nation's knowledge of the upper atmosphere and the near space environment. Vehicles have flown as high as 19,000 miles above the Atlantic Ocean and at speeds in excess of 38,000 miles an hour. Nineteen satellites have orbited from the Island.

In the early years, research at Wallops was concentrated on obtaining aerodynamic data at transonic and low supersonic speeds, as part of the effort to penetrate the sound barrier of flight. Today rocket vehicles launched from Wallops carry

- more -

scientific experiments to gather information about the atmosphere and space, aeronautics and the characteristics of aerospace flight, and to develop concepts and instrumentation that are candidates for future space flight.

In 1945, NASA's predecessor agency, the National Advisory Committee for Aeronautics (NACA), established a launch site on Wallops Island under the direction of the Langley Research Center. This site was designated the Pilotless Aircraft Research Station (PARS) and assigned the mission of conducting aeronautical research to supplement wind tunnel and laboratory investigations. When Congress established the National Aeronautics and Space Administration (NASA) in 1958 and absorbed Langley and other NACA field centers and research facilities, the PARS became a separate facility—Wallops Station—operating directly under NASA Headquarters in Washington, D.C. It was renamed Wallops Flight Center in 1974.

It was from Wallops that Sam and Miss Sam, two rhesus monkeys, rode into space to test the Mercury spacecraft. These two space pioneers, aboard a Little Joe booster, checked out the recovery and life-support systems before Astronaut Alan Shepard took his famous ride during Project Mercury. The first test launch of the Echo balloon satellite was also performed here. The sodium and barium vapor cloud experiments which measure the earth's magnetic fields and winds aloft have created spectacular "space shows" for East Coast residents.

Today a substantial part of the Center's manpower is still devoted to the support and management of the national sounding rocket program. Sounding rockets are used to fill the gap between the maximum altitude for balloons (about 30 miles) and the minimum altitude for satellites (about 300 miles). Experiments flown on sounding rockets provide a variety of information, including high altitude wind shear and velocity, density and temperature of particles in the upper atmosphere, properties and changes in the ionosphere, measurements of the brightness of stars and natural radiation surrounding the Earth, characteristics of the ionization phenomena as

space vehicles reenter the atmosphere, and many other phenomena of Earth's environment in space.

In addition to supporting rocket-propelled experiments, Wallops uses its airport as a research facility in support of aeronautical programs. Some of the research here includes: helicopter and aircraft noise abatement projects; slow speed landing techniques for jet aircraft; anti-skid tests on grooved runways; V/STOL terminal area research; collision avoidance program; laser and radar tracking of aircraft spin characteristics, cross-wind landings, pilot performance, and procedures and aids at uncontrolled airports and airspace.

Wallops Flight Center has an active role in NASA's international cooperation in space research. The Center has trained foreign personnel in range operations, has assisted activation of foreign launch sites, has furnished technical assistance and advice to foreign countries in launching experiments and operating ranges. Personnel from many countries have visited Wallops to conduct experiments, train, or seek assistance in establishing a sounding rocket facility.

Wallops mission has included project management responsibility for several agency-wide projects, including the Geodynamics Experimental Ocean Satellite-3 (GEOS-3), the Experimental Inter-American Meteorological Rocket Network (EXAMETNET), the instrument module for SEASAT, operation of remote site launching and tracking facilities and operation of NASA's portable range facilities for sounding rockets. The NASA Balloon Program, also managed by Wallops, provides balloons, helium, and field support for universities and other scientific groups in support of high energy astrophysics, astronomy, and upper atmospheric research. Wallops will also play an important role in tracking and command of Shuttle.

With a capital investment of more than $140,000,000, Wallops operates on an annual budget of about $39 million. About half of its 400 personnel are engineers and technicians. Its contracts to private industry amount to several million dollars annually.

In recent years, Wallops has become involved in another interesting program—ocean physics. This program involves the application of aerospace technology to solve problems associated with earth and ocean dynamics. At Wallops the primary emphasis is being placed in ocean dynamics where investigations in the broad areas of sea state measurement, surface currents and ocean topographical mapping are in progress. Aircraft and satellites are being utilized to carry the remote sensing equipment such as radar altimeters and laser/radar devices.

Wallops, with is versatility, is expected to continue playing a very active and vital part in global measurements of the atmosphere and near space as well as significant roles in aeronautics and oceanography.

- END -

(A photograph of the Tiamat to illustrate this news release can be obtained by the media, without charge, by writing or phoning:

Public Affairs Office
NASA
Wallops Flight Center
Wallops Island, VA 23337

Telephone No: 804/824-3411, x579 or 584)

NASA News

National Aeronautics and
Space Administration

Wallops Flight Center
Wallops Island, Virginia 23337
AC 804 824-3411

Aug 1

Joyce B. Milliner
Wallops Flight Center
(Telephone: 804/824-3411, x579)

For Release:
August 1, 1980

RELEASE NO. 80-9

WALLOPS FLIGHT TESTS ROCKET CARRYING DUAL PAYLOADS

A two-stage sounding rocket configuration was successfully launched yesterday from the NASA Wallops Flight Center (WFC) to flight test the vehicle system and a "mother-daughter" electrodynamics experiment planned for a series of three launches from Norway this fall.

The 216 kilogram (476-pound) instrumented payload was launched on an Honest John-Orion on July 31 at 8:18 a.m. EDT. The two-part payload designated "mother" and "daughter" was programmed to separate at an altitude of about 95 kilometers (59 miles) and obtain measurements of the atmosphere's electric field and profiles of the ion density and conductivity.

The payload system is a prototype of a new series of payloads to measure the electric fields and other parameters that can cause variations in the electric fields in the middle atmosphere, the region between approximately 20 and 100 kilometers (about 12-62 miles). Coupling between the atmospheric electric fields, which are related to thunder storms, and the electric fields in the ionosphere and above occurs in this region. Detailed electric field measurements have not previously been made over much of this altitude range. It is hoped that these measurements will aid in understanding how changes in the electrical conditions in the atmosphere or the ionosphere affect each other.

-more-

The daughter section which is a sphere with six, one-meter long booms extending from the sphere performed excellently and demonstrated good stability until descent. Telemetry indicated the payload separated as planned and the two sections--mother and daughter--reached a peak altitude of 111 kilometers (69 miles). At 73 kilometers (45 miles) altitude on the way down, a 65-foot diameter mylar disc-gap-band parachute was deployed from the mother section. The parachute was deployed at a lower altitude than planned and experienced problems during descent resulting in a higher than planned fall rate. The mother payload was sufficiently stablized, however, so that usable experiment data were obtained. The mother section was instrumented with a movie camera to film the parachute's deployment. Recovery of this section from the Atlantic Ocean is in progress.

Experiments that will measure auroral effects in the flights from Norway this fall were not included in this flight, since the primary purpose here was to flight test the dual payload configuration. The three rocketborne experiments from Norway will measure the energetic particle and X-ray fluxes and the ultraviolet light from the aurora in addition to the electric fields, ion density and conductivity.

Dr. Nelson C. Maynard of the Goddard Space Flight Center is the project scientist. Bobby J. Flowers is the Wallops project manager and John F. Adkisson is the Wallops project engineer.

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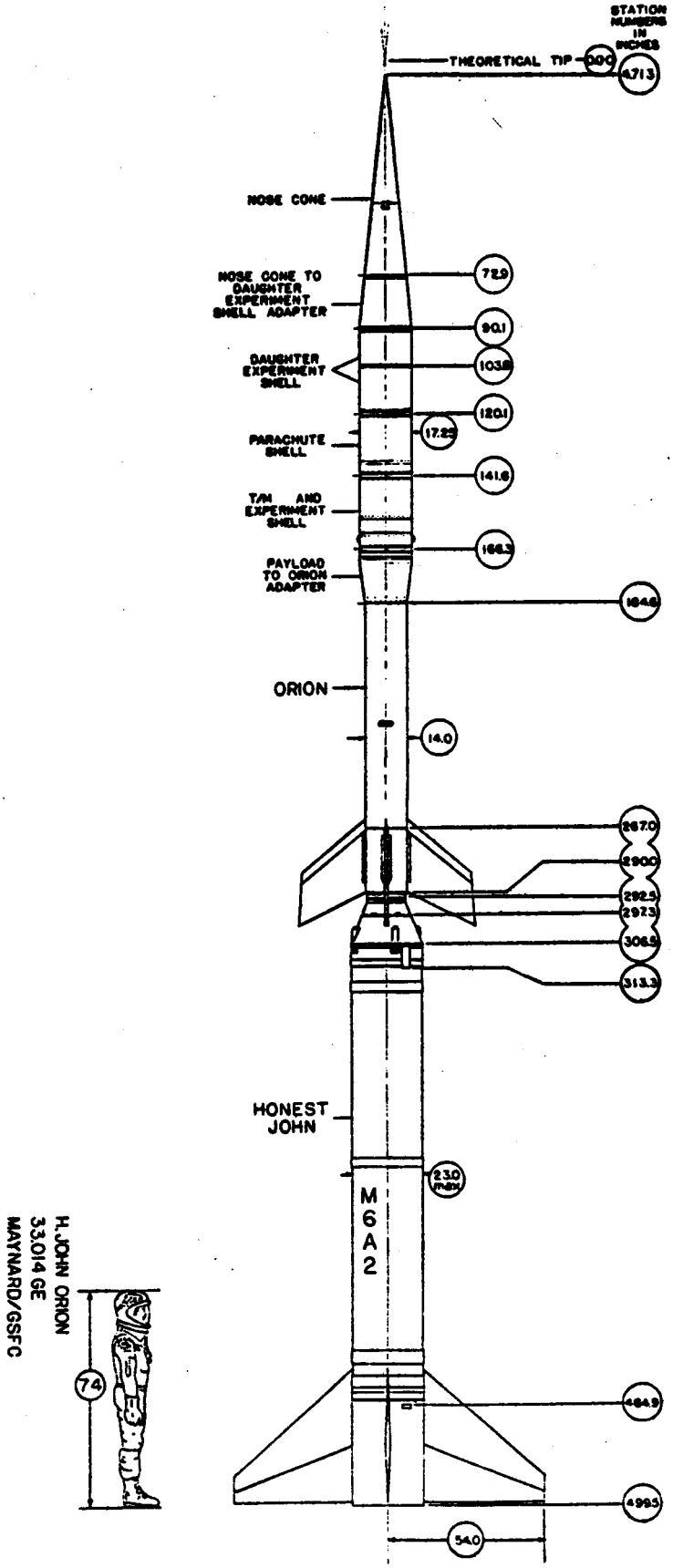
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H. JOHN ORION
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MAYNARD/GSFC
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NASA News

National Aeronautics and
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Wallops Flight Center
Wallops Island, Virginia 23337
AC 804 824-3411

Aug 14

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For Release:
August 14, 1980

Release No. 80-11

WALLOPS CONDUCTS NIGHTTIME EXPERIMENTS TO MEASURE ELECTRIC FIELDS IN THE EARTH'S "MIDDLE ATMOSPHERE"

Electric field measurement techniques have progressed through the past decade to the point where reliable data can now be obtained in the troposphere, stratosphere, ionosphere, magnetosphere and even in deep space. However conspicuously absent are measurements in the middle atmosphere, that is, the region from balloon ceiling to the ionosphere (about 30 to 100 kilometers).

The purpose of last night's experiments is to extend the measurement capability into this region, and further, to compare several measurement techniques simultaneously on a worldwide basis. Rockets and a balloon were utilized to loft the experiments locally while radars in Puerto Rico, Peru, Alaska, Massachusetts, France, and Scandinavia made supporting groundbased measurements.

A 100,000 cubic foot polyethylene balloon inflated with helium was launched at 8:35 p.m. EDT yesterday from NASA's Wallops Island, Virginia. It carried a 21-kilogram (46-pound) payload to measure DC and AC electric fields from 0 to 10 kilohertz. After a ten-hour flight the mission was terminated and a chase plane located the payload near Roanoke, Virginia. Recovery operations are now in progress. This experiment was designed by Dr. Robert Holzworth of the Aerospace Corporation in El Segundo, California.

-more-

The two-stage Nike-Orion rocket was launched from Pad 0 at 10:40 p.m. EDT last night carrying a 232-kilogram (510-pound) payload for Dr. M. C. Kelley of Cornell University. Dr. Kelley who has been involved in the evolution of these electric field measurement techniques for almost fifteen years, said: "This successful flight obtained data which will add to our knowledge of the near-earth atmosphere." The rocket reached a peak altitude of 90.2 kilometers (56 miles) and recorded data both ascending and descending.

The payload package included a water recovery system and was successfully recovered 1¼ hours after liftoff (at 11:58 p.m.) and returned to the Wallops Flight Center.

At 11:11 p.m. yesterday a single-stage Super Arcas rocket was launched to a peak altitude of 90 kilometers (58 miles) from Pad 2 carrying an experiment for Dr. L. C. Hale of Pennsylvania State University. This experiment, called a "Blunt Probe," also measured electric fields along with positive and negative conductivities of the middle atmosphere region in conjunction with the balloon borne and Nike-Orion rocketborne electric field measurements.

The Wallops project personnel are: William L. Lord, Test Director; F. Ronald Sawyer, Range Safety Officer; Paul J. Alfonsi, Project Manager; Robert T. Long, Project Engineer; and Mendel N. Silbert, Balloon Systems Engineer.

-END-

NASA News

National Aeronautics and
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Wallops Flight Center
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AC 804 824-3411

Sept 23
Morning

Joyce B. Milliner
Wallops Flight Center
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For Release:
September 23, 1980

Release No. 80-12

CENTER DIRECTOR RECEIVES PRESIDENTIAL HONOR

The NASA Wallops Flight Center Director has been honored with the Presidential Rank of Meritorious Executive.

Dr. Robert L. Krieger recently received his award in special ceremonies at NASA Headquarters in Washington, D. C.

These Ranks are awarded by the President, to career federal employees in the Senior Executive Service, whose performance has been exceptional for a period of several years. The Ranks were authorized in the Civil Service Reform Act of 1978.

Dr. Krieger was honored for "greatly contributing to the nation's aeronautical and aerospace research efforts for more than 41 years, including 32 years as Director of the Wallops facility." Specific mention was made of the role he has played "in fostering the development of peaceful international space flight cooperation by providing training in launch, tracking, and data acquisition techniques to foreign nationals and advising foreign nations in launch range development."

In addition to numerous other awards, he has twice received NASA's Outstanding Leadership Medal as well as NASA's highest award, the Distinguished Service Medal. A total of 25 NASA employees received the Presidential Rank at the September 10 ceremony.

-END-

The President of the United States of America
has conferred on

ROBERT L. KRIEGER

the rank of Meritorious Executive
in the Senior Executive Service
for sustained superior accomplishment in
management of programs
of the United States Government
and for noteworthy achievement of
quality and efficiency in the public service.

1980

Jimmy Carter

NASA News

National Aeronautics and
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Wallops Flight Center
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Joyce B. Milliner
Wallops Flight Center
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For Release:

October 1, 1980

Release No. 80-13

WALLOPS LISTS CONTRACT AWARDS

During Fiscal Year 1980, Wallops Flight Center, Wallops Island, Virginia, awarded contracts valued at $50,000 or more to firms in 15 states. The contracts went to firms in states and cities as specified in the following report.

ALABAMA: Huntsville - Management Services, Inc., $394,955, Operations and Maintenance of aircraft.

ALASKA: Fairbanks - University of Alaska, $759,102, Maintenance and Operation of Poker Flat Research Range.

CALIFORNIA: Northridge - Space Vector Corporation, $110,328, Gyro assemblies.

DELAWARE: Frederica - ILC Dover, $149,125, Design of a lighter-than-air high powered platform utilizing microwave linked power source.
Laurel - Continental Service Co., $109,590, Maintain and repair refrigeration air conditioning, heating and plumbing equipment (Renewal);
W. B. Venables & Sons, Inc., $1,062,000 Construction of Facilities Operation Shop.

FLORIDA: Fort Walton Beach - Vitro Services Division, $1,239,032, C-Band Instrumentation Radar System.

MARYLAND: Elkton - Thiokol Corporation $70,800, Orion Igniter system
Rockville - E G & G Washington Analytical Services Center, Inc., $124,792, Mission planning, data reduction and task analysis report.

MASSACHUSETTS: Cambridge - Harvard University, $130,942, Balloon-Borne effort in the stratosphere.

MINNESOTA: Northfield - Sheldahl, Inc., $69,580, Design and Manufacture parachutes.

NEW JERSEY: Camden - Science Pump Corporation, $99,866, Ozonesondes.
Edison - Tiger Maintenance, $300,209, Equipment Maintenance and Build-Trades Support.

- more -

NEW JERSEY: Union - Joule' Technical Corporation, $551,405, Operation and maintenance of telemetry and communication equipment.
Joule' Technical Corporation $1,134,646, Provide Metal trades and instrumentation construction support services (Renewal).

OHIO: Dayton - University of Dayton Research Institute, $102,452, Correlative Data Efforts in Support of WFC Field Measurements Office.

OKLAHOMA: Stillwater - Oklahoma State University, $378,200, Mini-tracker ranging system.

PENNSYLVANIA: Springhouse - Tenco Services, Inc., $99,320, Transportation services (Renewal).
Tenco Services, Inc., $296,425, Operation and Maintenance of Heating Plant, Sewage and Water Facilities (Renewal).

TEXAS: San Antonio - Southwest Research Institute, $94,952, Scientific Balloon Stress Analysis.

UTAH: Ogden - Thiokol Corporation, $79,515, Rocket ozone payloads.

VERMONT: Derby - Estabrook Engineering Company, $201,500, Orion tail assemblies.

VIRGINIA: Chincoteague - Earl R. Stephens, $499,990, Rehabilitation of Building F-10.
Falls Church - Computer Sciences Corporation, $1,853,049, Engineering Support and Related Services (Renewal).
Grafton - B. D. Ashe, Inc., $353,863, Grounds Maintenance (Renewal)
Greenbush - Greenbush Services Co., $439,663, Supply Management services (Renewal).
Onancock - Seeltech Services, $65,500, Operate, Modify and Maintain MPS-19 radar systems and ancillary meteorological equipment (Renewal).
Parksley - W. L. Taylor Construction Company, $439,500. Rehabilitation of Building N-159;
W. L. Taylor Construction Company, $241,767, Construction of Visitors Center;
W. L. Taylor Construction Company, $178,700, Reroofing of Building F-10;
Wharton Worldwide Services, $262,279, Janitorial Services (Renewal)
Richmond - Davis-Taylor-Forster Co., $154,094, Programmable horizontal spindle milling machine.
Tasley - Lance J. Eller, Inc., $443,457, Rehabilitation of Airfield Facilities.
Wallops Island - Chemal, Inc., $72,816, Operation of Chemistry and Bioscience Laboratory (Renewal);
Chemal, Inc., $147,491, Operation of switchboard, teletype and reproduction facilities (Renewal);
William J. Gillespie, $114,593, Modification to Bay 3, Building Z-41.

- - End - -

NASA News

National Aeronautics and
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Wallops Flight Center
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For Release:
December 15, 1980

RELEASE NO. 80-14

MOORE NAMED DIRECTOR OF ADMINISTRATION AT NASA-WALLOPS

Frank V. Moore, Chief of the Acquisition Division at NASA's Langley Research Center in Hampton since 1975, has been named Director of Administration at the Wallops Flight Center, Wallops Island, Virginia, effective in late January.

Moore will be responsible for public affairs, financial management, administrative management, personnel and procurement.

Moore began his NASA career at Langley in 1962 as a Contract Assistant. He was appointed Head of the Contract Administration Section in 1970 and Assistant Head of the Research and Development Contracting Branch in 1972. In 1973 he became Assistant Chief of the Procurement Division, now known as the Acquisition Division.

As Chief of the Acquisition Division, Moore was responsible for managing the center's procurement program, which totals nearly $200 million annually, and advising center management on acquisition-related matters.

Moore was born in Providence, Rhode Island, where he graduated from Mount Pleasant High School. He earned a bachelor of science degree in business administration from the Richmond Professional Institute of the College of William and Mary in 1962. He attended Cornell University from 1969 to 1970 under a National Institute of Public Affairs/Career Educational Award Fellowship. He received a master of

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business administration degree from the College of William and Mary in 1974.

He is a charter member of the Hampton Roads Chapter of the National Contract Management Association and was designated a NCMA Fellow in 1975. In 1976 Moore received an award from the William A. Jump Memorial Foundation for his achievements in public administration.

The author of numerous articles and papers on contracting and management, Moore received a NASA Special Service Award in 1967 and was recently selected to participate in a Brookings Institute Conference on Business Policy and Operations to be held early next year.

Moore and his wife, Rose, formerly of Williamsburg, will reside in Hallwood, Virginia. They have two sons.

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For Release:
March 30, 1981

RELEASE NO. 81-2

CHEMICAL CLOUDS TO BE VISIBLE ALONG EAST COAST

Weather conditions permitting, red and bluish-yellow clouds will be formed high over the mid-eastern U.S. coast at dawn on Thursday, April 2, and Friday, April 3. The tests, scheduled to be conducted 24 hours apart, may be delayed from day to day for bad weather.

The National Aeronautics and Space Administration plans to launch a pair of rocketborne chemical vapor trail experiments from Wallops Island, Virginia, in a continuing investigation of neutral winds and convective electric fields in the upper atmosphere. Specific objectives are to investigate new release techniques and evaluate traces formed by releases of various chemical compounds.

The trails and clouds released from the two-stage Taurus-Orion rockets will contain two constituents. One remains neutral and its glow enables wind motions of the upper atmosphere to be observed.

The other component is ionized by the Sun, and its motion is governed by the electric and magnetic fields. Observation of these trails provides a technique for measuring winds and electric fields in space. These techniques will be candidates for use in later flights on Space Shuttle.

- more -

Launch time, beginning April 2, will be 4:48 a.m. EST and will be about one minute earlier each day, should the launch be delayed. Clear skies are necessary for observation purposes. The primary source of data acquisition will be photographic data obtained from three tracking sites located at Blackstone, Virginia, Raleigh, North Carolina and Wallace, North Carolina.

The chemicals will be released as the rocket ascends, at apogee, and as the payload descends. The first payload will release three clouds. The first cloud at 180 km (113 miles) will appear bright red from lithium emissions. The second at 220 km (138 miles) will appear blue-green from barium and strontium emissions and the third at 180 km (113 miles) on the descent will contain both lithium and barium. The second payload will release a red and blue trail of lithium and strontium beginning at an altitude of 140 km (88 miles) and ending near 200 km (125 miles). Then a blue-green barium and strontium cloud will be released at 210 km (131 miles). On the downleg of the trajectory another lithium and strontium trail will begin at 190 km (119 miles) and will end near 120 km (75 miles).

Although bright to an unaided eye the amount of released material is quite small involving a total of only 1.5 pounds (.68 kg) of lithium, 7.5 pounds (3.4 kg) of barium, and 9.0 pounds (4 kg) of strontium for the two payloads. The clouds will be dispersed by winds over thousands of miles and any ecological effects will be negligible.

The highest releases should be visible above elevation angles of 10 degrees from Boston, Massachusetts to Savannah, Georgia and west to Greenville, South Carolina. From Washington, D.C. they will appear 15 to 30 degrees above the horizon in the southeast.

The project is managed by the Goddard Space Flight Center, Greenbelt, Maryland, and the launch is under the direction of Wallops Flight Center and Thiokol Corporation, Ogden, Utah, fabricated the payload.

Dr. James P. Heppner is the Goddard Project Scientist. Paul J. Alfonsi is the Wallops Project Manager and Robert T. Long is the Wallops Project Engineer.

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NASA News

National Aeronautics and
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Apr 2.

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For Release:
April 2, 1981

RELEASE NO. 81-3

CHEMICAL CLOUD EXPERIMENT CONDUCTED FROM WALLOPS

NASA conducted a rocketborne experiment from Wallops Island, Virginia, at dawn today which left several glowing, colored clouds high over the mid-eastern U.S. coastline.

Liftoff of the two-stage Taurus-Orion rocket occurred at 4:48 a.m. EST. The 150-pound payload released three chemical clouds--as it ascended, at apogee, and as it descended. The first cloud at 180 km (113 miles) appeared bright red from lithium emissions. The second at 220 km (138 miles) appeared blue-green from barium and strontium emissions and the third at 180 km (113 miles) on the descent contained both lithium and barium.

The colorful clouds illuminated by the sun's rays, were visible for several hundred miles. (Reports of sightings from as far north as New York, as far south as Huntsville, Alabama, and as far west as South Bend, Indiana have been received at the Wallops Range Control Center).

Observation of these chemical clouds provides a technique for measuring winds and electric fields in space. These techniques will be candidates for use in later flights on Space Shuttle. Weather permitting, a second chemical release experiment is scheduled for dawn tomorrow--4:51 a.m. EST.

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NASA News

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For Release:
April 3, 1981

RELEASE NO. 81-4

SECOND CHEMICAL CLOUD EXPERIMENT CONDUCTED FROM WALLOPS

NASA successfully conducted the second in a series of two chemical cloud experiments at dawn today from its Wallops Flight Center (WFC) on the Eastern Shore of Virginia.

Liftoff of the two-stage Taurus-Orion sounding rocket occurred at 4:51 a.m. EST. The first in this pair of similar experiments was successfully conducted yesterday at 4:48 a.m. EST.

The 170-pound payload released three chemical trails--as it ascended, at apogee, and as it descended. A red and blue trail of lithium and strontium was released beginning at an altitude of 140 km (88 miles) and ending near 200 km (125 miles). Then a blue-green barium and strontium cloud was released at 210 km (131 miles). On the downleg of the trajectory another lithium and strontium trail was released beginning at 190 km (119 miles) and ending near 120 km (75 miles).

The colorful trails illuminated by the sun's rays were visible for several hundred miles. (Reports of sightings from Ontario, Canada, Long Island, New York, and Cincinnati, Ohio have been received at the Wallops Range Control Center).

Observation of these chemical clouds provides a technique for measuring winds and electric fields in space. These techniques will be candidates for use in later flights on Space Shuttle.

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NASA News

National Aeronautics and
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Dennis
May 4

Joyce B. Milliner
Wallops Flight Center
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For Release:
May 4, 1981

RELEASE NO. 81-6

WALLOPS FLIGHT CENTER AWARDS CONTRACT FOR NEW ADMINISTRATIVE AIRCRAFT

On April 29, 1981, NASA, Wallops Flight Center awarded a contract to Beech Aircraft Corporation, Wichita, Kansas, for a Beech King Air 200 aircraft to replace the current Beech Queenair aircraft at Wallops. Beech was the low bidder of three (3) firms submitting bids.

The fixed-price contract has a value of $1,331,601.00 and calls for delivery of the aircraft within 270 calendar days of award of contract

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NASA News

National Aeronautics and
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For Release:
June 1, 1981

RELEASE NO. 81-7

WALLOPS FLIGHT CENTER DIRECTOR ANNOUNCES RETIREMENT

Dr. Robert L. Krieger, long time Director of NASA's Wallops Flight Center, Wallops Island, Virginia, today announced his plans to leave the Government services in early August, after almost 43 years with NACA and NASA. Since 1948 he has headed the Wallops Island facility here on the Eastern Shore of Virginia.

Krieger actually retired on February 29, 1980, but, at the request of NASA's Administrator, has continued to serve as Wallops Center Director in order to provide continuity through the busy period of the Shuttle launch. More recently the request has been extended "until August of this year to help make the Wallops/Goddard consolidation as smooth as possible."

A native of Kentucky, Krieger began his career with NASA's predecessor agency, the National Advisory Committee for Aeronautics (NACA) at the Aeronautical Laboratory in Hampton, Virginia before World War II in 1936. He left Langley to attend the Georgia Institute of Technology and received a BS degree in Mechanical Engineering in 1943.

Returning to Langley, Dr. Krieger was part of the group which established a branch facility, the Pilotless Aircraft Research Station at Wallops Island, Virginia,

-more-

under the leadership of Robert R. Gilruth, foremost in also establishing the U. S.'s manned space flight program. Working at Wallops part time, Krieger participated in the first firing of a U.S. guided missile on July 4, 1945.

In 1948 he assumed leadership of the Wallops facility which became an experimental laboratory from which instrumented aerodynamic test models were rocket propelled at high speeds, providing data used as the basis of design of supersonic airplanes and missiles.

In 1958 the Wallops facility became an independent field center of the National Aeronautics and Space Administration (NASA) which Dr. Krieger led through a period of rapid growth to make the first successful test flight of the Mercury capsule. He has continued to guide the expansion of NASA Wallops Flight Center's capabilities to accommodate flight systems and component development testing; aerodynamics and heat transfer research; launching small satellites into orbit; sounding rocket probes of the atmosphere; and the training of foreign nationals in space launch, tracking and data acquisition techniques. Thousands of research test vehicles, including nineteen satellites, have been launched from the Wallops range since its beginning in 1945.

During his long career Krieger has initiated and encouranged many important contributions to range, aeronautical and space technologies and is recognized as one of the leaders in that community.

Dr. Krieger has been very active in the educational and civic activities of Maryland's lower shore and Virginia's Eastern Shore. He was Chairman of the Eastern Shore Chamber of Commerce Steering Committee for the E.S. Community College and has since served as a member of the College Board. He has served as a Director and as President of the E.S. Chamber of Commerce and as Chairman, Virginia District Boy Scouts of America. He was a member of the Accomack Recreation Commission. In 1968 he was honored as being the Outstanding Citizen of the Eastern

Shore of Virginia. He has twice been awarded NASA's Outstanding Leadership Medal and in 1974 was awarded NASA's Distinguished Service Medal. He is in Who's Who in America and was elected as a Fellow of the American Astronautical Society. In 1978 he was awarded an honorary Doctorate in Engineering by the University of Maryland Eastern Shore Branch.

Dr. Krieger and his wife, Frances, have acquired a home in Hampton, Virginia, as three of their seven children are residing in that area. After retirement, Dr. Krieger, who has an insatiable interest in the history of Virginia's Eastern Shore, hopes to spend a good deal of time photographing the area and studying Shore History.

END

NASA News

National Aeronautics and
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For Release:
June 23, 1981

Release No. 81-8

WALLOPS FLIGHT CENTER AWARDS SIGNIFICANT 8(a) CONTRACT

Wallops Flight Center recently awarded an 8(a) contract to Greenbush Services, Inc., Parksley, Virginia, for providing Supply Management and Materials Handling Services. In fulfilling the requirements for these services it will be necessary for the Contractor to maintain a staff of twenty-six (26) people. The contract is a negotiated fixed-price contract with the basic contract and two option periods of one year each aggregating a total expenditure of approximately $1.7 million.

The services to be provided are: complete stores management, operation of the Federal cataloging program, shipping and receiving, materials handling operations, inventory control, and utilization and disposal functions.

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NASA News

National Aeronautics and
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AC 804 824-3411

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For Release:
Friday a.m.,
July 24, 1981

RELEASE NO. 81-10

WALLOPS SUCCESSFULLY RECOVERS TWO ROCKETBORNE EXPERIMENTS IN MID-AIR

Rocketborne payloads launched on board two single-stage Orion sounding rockets were successfully retrieved in mid-air recovery operations yesterday (July 23, 1981) by NASA's Wallops Flight Center (WFC).

The objective of these flights was to obtain vertical profiles of nitric oxide concentrations throughout the middle and upper stratosphere (30-50 km altitude) as well as to test the repeatability of the nitric oxide sensor. Both scientific experiments (payloads) have been flown twice before, from the Wallops range and from Red Lake, Canada, during an eclipse, and refurbished to fly again. The previous launches supported the Nimbus 7 satellite.

Two balloons and two meteorological rockets were also launched in this series to take meteorological and ozone measurements to supplement the Orion payload data.

Recovery of the two experiments was accomplished by a Wallops crew flying in the Skyvan aircraft equipped with special mid-air retrieval equipment to hook the parachute and winch it and the payload into the plane.

- more -

The Orion rocket is 14 inches in diameter and almost nine feet long (with payload attached, about 16½ feet long) and weighs 472 kilograms (1,044 pounds). The "met" rockets used were single stage Super Loki Datasondes, four inches in diameter and about 10 feet long. The balloons were electrochemical concentration cell (ECC) balloons about eight feet in diameter.

The first experiment was launched on an Orion at 1:30 p.m yesterday and reached an altitude of 73 kilometers (45 statute miles). The payload was separated from the rocket motor near apogee at an altitude of approximately 72 kilometers and mid-air recovery occurred 67 minutes later.

The payload on board the second Orion was launched at 2:20 p.m. and also successfully recovered about 37 miles offshore and returned for postflight analysis and refurbishment for future satellite support. This series of rocket and balloon launches, as well as the recovery operations, was completed about 4:00 p.m. EDT.

Dr. J.J. Horvath of the University of Michigan is the Project Scientist; Robert J. Frostrom, Jr., is the Wallops Mission Coordinator; Robert A. Patterson is the Wallops Payload Manager; and Robert T. Long is the Wallops Recovery Director. Wallops Test Director is William L. Lord and Range Safety Officer is John L. Parks, Jr. The pad operations are handled by Carl Rhodes.

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For Release:
August 10, 1981

RELEASE NO. 81-11

WALLOPS BALLOON, ROCKETS AND AIRPLANE PROBE THUNDERSTORM

Saturday night (August 8) a coordinated balloon, airplane and rocket experiment was conducted from NASA's Wallops Island, Virginia, facility to study electric fields near and above thunderstorms.

Stormtime electric fields were measured from the troposphere to the ionosphere by five vehicle payloads simultaneously.

Two Nike boosted rockets lifted payloads built by Cornell University under their project scientist, Dr. Michael Kelly. A Nike-Orion measured vector electric fields up to 92 kilometers (57 miles) apogee from DC to 20 kHz. A Taurus-Orion measured mesopheric electric fields up to 160 kilometers (99 miles) in the same frequency range using a new triaxial boom arrangement which performed perfectly.

A Super Arcas payload provided by Dr. Les Hale of Penn State University measured vertical electric fields and conductivity on a parachuted dropsonde from 70 kilometers (43 miles) altitude. A balloon borne payload provided by Dr. Robert Holzworth of the Aerospace Corporation measured vector electric fields in the stratosphere at 30 kilometers altitude from DC up to 100 kHz near the same thunderstorm.

- more -

Completing the measurements involved with the campaign was an instrumented Turbo-Baron aircraft provided by Dr. Ralph Markson of Airborne Research Association which measured vector electric fields and conductivity in the troposphere with polonium probes and a field mill. The rocket and balloon experiments were also complemented by ground-based observations from Georgia Tech and NASA Wallops Spandar facilities.

All payloads performed extremely well and resulted in a unique data set which included many scientific firsts. This was the first time multiple simultaneous electric field devices were flown to these altitudes over thunderstorms. This was the first time direct insitu observations of electric fields were made of lightning strokes in the ionosphere. And this was the first time lightning waveforms up to 100 kHz were measured in the stratosphere. Overall, the experiment was a "thundering" success.

Recovery was planned for all the experiments except the Super Arcas payload. The balloon experiment was released over the Eastern Shore of Maryland and recovered near Airey, Maryland, Sunday afternoon (August 9).

Early Sunday the search aircraft, the unique Wallops Skyvan, located the Nike-Orion payload package about 83 kilometers (52 miles) offshore and the Coast Guard Cutter "Point Highland" out of Chincoteague accomplished recovery about 8:00 a.m. EDT Sunday. The Taurus-Orion experiment package was recovered about 4:15 p.m. EDT, 94 kilometers (58 miles) offshore also by the Coast Guard Cutter. The experiment packages were returned to the Wallops Flight Center for refurbishment and future space flights.

The two sounding rockets utilized in this series were the Nike-Orion 16½ inches in diameter and 35 feet long and the Taurus-Orion 23 inches in diameter and 38 feet long (both including payload section).

Dr. Michael Kelly is the Cornell University project scientist for the particle experiments carried on board the Nike-Orion and Taurus-Orion. Dr. Les Hale is the project scientist for the Penn State University experiment carried on the Super Arcas. David F. Detwiler, Jr. is the Wallops project manager, Robert T. Long is the project engineer and recovery officer and Richard H. Bradford is the project coordinator. Dr. Robert Holzworth is the Aerospace Corporation project scientist for the balloon experiment and Mendel Silbert is the Wallops project manager.

- END -

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For Release:
August 14, 1981

RELEASE NO. 81-12

FIRST BLACK BRANT X LAUNCH

A new high performance sounding rocket, the three stage Black Brant X (BBX), was launched from NASA Wallops Flight Center at 3:43 a.m. EDT today (August 14, 1981). The NASA BBX Project Manager, Mr. John H. Lane from Goddard Space Flight Center, reported that the flight was highly successful. Val Maksimovic, the BBX Assistant Project Manager, indicated that the vehicle reached a peak altitude of 388 miles (625 kilometers) and impacted at a range of 438 miles (705 kilometers).

The Black Brant X (BBX) sounding rocket is being developed by the NASA/Goddard Space Flight Center (GSFC) in a cooperative effort with the Canadian National Research Council, Bristol Aerospace Limited, the Swedish Space Corporation, and SAAB-Scania Corporation.

The primary objective of the test flight was to demonstrate the capability of the BBX and its payload systems to investigate the Earth's polar cusp and to conduct other space science missions.

The propulsion for the BBX consists of a Terrier MOD I as first stage, a Black Brant VC (BBVC) as second stage, and the newly developed Nihka motor as third stage. Four fins are used on both the first and second stages to provide static

- more -

stability and desired roll rate history. The third stage of the BBX is gyroscopically stabilized using the spin rate imparted from the second stage fins. A SAAB-built S-19 Boost Control System located in the second stage payload is operated for the first 18 seconds of flight to reduce trajectory dispersion.

Bristol Aerospace builds the BBX second and third stage motors and much of the flight hardware. Much of the BBX flight analysis is performed for Goddard by GE MATSCO.

On the recent flight a second stage telemetry system was carried to monitor BBVC chamber pressure and information on the operation of the S-19 and the second-to-third stage separation system. The third stage igniter housing was equiped with a yo-yo despin system and a third stage payload separation system. The third stage payload consisted of performance instrumentation, a magnetic attitude control system (ACS), an ejectable nose fairing, deployable dummy experiment booms, a small nutation damper experiment and suitable balance and ballast weights.

The newly developed ACS is designed to align the spinning payload with the Earth's magnetic field during the period of scientific data collection.

NASA plans to launch at least four BBX rockets for scientific investigations during the next nine months. Two of these will be flown from Cape Parry in Northwestern Canada and two will be flown from Poker Flat Research Range in Alaska.

Other key GSFC personnel on the BBX Program include Cary Cooper (Instrumentation Manager), Stewart Meyers (Mechanical Systems Manager), Norman Peterson (Vehicle Manager), and Dave Olney and Lee Shiflett (ACS Managers).

Robert T. Long is the Wallops Project Engineer, William L. Lord is the Test Director, and Claude G. Linton is the Pad Supervisor.

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For Release:
September 17, 1981

RELEASE NO. 81-13

NASA CENTER DEVELOPS NEW TRAINING DEVICE FOR STUDENT PILOTS

A new concept for training student pilots in the performance of instrument flight rules procedures has been developed by engineers at NASA's Wallops Flight Center, Wallops Island, Virginia.

Current government regulations require general aviation pilots seeking certification to operate aircraft under instrument flight rules conditions to complete a minimum number of hours of instructional flying by procedures applicable to these rules. Nearly always this involves significant expenditures of time and money as generally only major airfields have the required electronic navigational aids, and often such airfields are remote from the student pilot's locations. Also, normal air traffic density and mix (student pilots training in small aircraft together with commercial air carriers) cause delays in completing training exercises.

An existing table-top flight simulator was extensively modified for installation in a typical general aviation aircraft to provide simulated instrument flight conditions independent of ground-based navigational aids. This hybrid system is dependent primarily on electrical signals derived from the actual airspeed, altitude and heading of the training aircraft.

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In addition to air traffic control voice simulation, the device presents a standard very high frequency omni range, automatic direction finding, distance measuring equipment and instrument landing system indications to the student pilot and instructor on simulator driven instruments. Training can be conducted at safe altitudes away from normal traffic areas. Scenarios provided can include elementary procedures, such as holding patterns or very high frequency omni range navigation practice through full instrument flight rules procedures flights for selected airports.

The radio-navigation-related panel instruments of the ground-based simulator were installed in a Cessna 172 for test flights and evaluation at the Wallops airport. Observers from NASA's Langley Research Center, Hampton, Virginia; Airplane Owners and Pilots Association; General Aviation Manufacturing Association; Analog Training Computers, Inc. (the simulator manufacturer); and the Federal Aviation Agency who flew with the Wallops pilots stated they could not tell the difference between the simulated approach demonstrated and those encountered at actual airports.

Embry-Riddle Aeronautical University of Florida, under contract with Wallops, also evaluated the operational feasibility of this concept by flying the instrument flight rules procedures training flights in the aircraft at their Daytona Beach facility. Results of their study indicate the in-flight simulator is an effective training device for teaching instrument flight rules procedural skills.

The benefits expected from this concept include increased safety by reducing the number of general aviation aircraft conducting instrument flight rules training flights in congested terminal areas, and reduced fuel use and instruction costs by lessening the need to fly to and from navaid equipped airports and by increased efficiency of the required in-flight training.

This concept, it is believed, has potential as a cost effective alternative to building reliever instrument flight rules training airports, now being considered by the FAA for reducing the risk of midair collisions during such flight training.

J. Brad Aaron is the Wallops project manager and Gerald G. Morris is the project engineer.

(A NASA Technical Memorandum -- No. NASA TM7392 -- is available from the National Technical Information Service (NTIS) in Springfield, Virginia. When requesting this document, please use acquisition number HSI-26156.)

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For Release:
September 29, 1981

RELEASE NO. 81-14

WALLOPS ACTING DIRECTOR ANNOUNCES RETIREMENT PLANS

Mr. Abraham D. Spinak, Acting Director of the NASA Wallops Flight Center, Wallops Island, Virginia, has announced his plans to retire from the Government service in early December after almost 33 years with NACA and NASA. Since 1966 he has been the Associate Center Director and recently, Acting Director.

Spinak actually retired about a year ago, on September 1, 1980, but has remained on in order to provide continuity during the transition of management. In August when Dr. Krieger retired he became the Acting Director of the Wallops Center.

On October 1, the new consolidated organization with Goddard will take effect and Mr. Spinak will be the Acting Director of the Suborbital Projects and Operations Directorate until the new Director is appointed. This appointment is expected to take place prior to December 1.

A native of Gloversville, New York, he served in the U. S. Army from 1943 to 1945. After graduating with a B.M.E. degree from Clarkson college of Technology in 1948, he began his career as an aeronautical engineer with NASA's predecessor agency, the National Advisory Committee for Aeronautics (NACA) at the Langley Research Center in Hampton, Virginia. Early in 1949 he transferred to the Wallops facility

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which was at that time a Langley field station. His early work was in high speed aerodynamics and ram jet engine development in the Wallops supersonic wind tunnel.

In August 1958, when NASA was formed by Congress, Mr. Spinak was assigned responsibility for the planning for the expansion of Wallops during the transition from NACA to NASA. From 1959 to 1963 he was Head of the Facilities and Research Techniques Branch of the Wallops Station. In 1963 he became Chief of the Range Engineering Division and in 1966 he was promoted to Associate Director of Wallops Flight Center.

Wallops has played a key role in the NASA's program of international cooperation in space research and Mr. Spinak has been intimately involved. He has assisted many foreign countries in setting up their own space programs. In 1969 he traveled to Argentina as the U.S. representative on an international advisory group appointed by the Secretary General of the United Nations to advise the Committee on the Peaceful Uses of Outer Space with regard to the sponsorship by the UN of the Argentina Mar Chiquita rocket launching facility.

He has had many special assignments including, in 1979, an assignment by the NASA Administrator as Executive Assistant to a special senior staff appointed to study the adequacy of the Space Shuttle management system.

Mr. Spinak has received the NASA Exceptional Service Medal. He is a member of the American Institute of Aeronautics and Astronautics; Rotary International; and member of the Board of Visitors and Governors, Washington College, Chestertown, Maryland; member of Board of Trustees, Peninsula General Hospital; Chairman, Chancelor's Advisory Council, University of Maryland Eastern Shore. He was recently elected as a Fellow of the American Astronautical Society.

He is married to the former Ruth Heilig of Pocomoke City, Maryland. They have three children, Barry, Stephen and Susan. Abe and Ruth reside on Winter Quarters Drive in Pocomoke City, Maryland.

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For Release:

October 7, 1981

RELEASE NO. 81-15

WALLOPS LISTS CONTRACT AWARDS

During Fiscal Year 1981, Wallops Flight Center, Wallops Island, Virginia, awarded contracts valued at $50,000 or more to firms in 14 states. The contracts went to firms in states and cities as specified in the following report.

ALABAMA: Huntsville - Management Services, Inc., $438,208, Support services operation and maintenance of aircraft.

ARIZONA: Tempe - Space Data Corporation, $438,000, Loki rocket motors and Super Loki datasonde dart assemblies.

CALIFORNIA: Northridge - Space Vector Corporation, $228,822, Refurbish attitude control systems.

Santa Barbara - Sentran Company, $69,527, Provide engineering facilities and technical service for support of optical ozonesonde instrument payloads.

DELAWARE: Frederica - ILC Dover, $133,500, Tethered balloon systems.
ILC Dover, $145,125, Design a lighter-than-air high altitude powered platform.
Laurel - Continental Service Company, $125,068, Maintain and repair refrigeration, air conditioning, heating and plumbing equipment. (Renewal)

FLORIDA: Fort Walton Beach - Vitro Services Division, $63,771, Services to support Nike 778KA and C band radars.

GEORGIA: Atlanta - Scientific Atlanta, Inc., $157,907, Servo Control Unit.

KANSAS: Wichita - Beech Aircraft Corporation, $1,361,716, Twin turbine administrative aircraft.
Beech Aircraft Corporation, $104,503, Spare parts for Beechcraft King Air B200

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MARYLAND: Aberdeen - Central Atlantic Contractors, Inc., $188,627, Repair of roads, sidewalks and paved areas.
Baltimore - Johns Hopkins University, $50,244, Conduct an investigation of surface wave and turbulence phenomena associated with remote sensing.
Pocomoke City - Mervin L. Blades & Son, Inc., $78,000, Construct aircraft support building.
Rockville - E G & G Washington Analytical Services Center, Inc., $81,330, Conduct data reduction and analysis support task.
E G & G Washington Analytical Services Center, Inc., $244,952, Mission planning, studies, analysis and software design in support of airborne oceanographic lidar system.

MASSACHUSETTS: Bedford - Lambda Physics, Inc., $55,345, Excimer pumped tuneable dye laser system.
Fitchburg - Barkley & Dexter Laboratories, Inc., $69,250, Recovery and ignition systems.
Barkely & Dexter Laboratories, Inc., $148,999, Orion tail and fin assemblies.

NEW JERSEY: Camden - Science Pump Corporation, $109,350, ECC Ozonesondes.
Edison - Tiger Maintenance, $385,957, Services for facilities maintenance. (Renewal)
Union - Joule' Technical Corporation, $1,527,537, Provide metal trades and instrument construction support services. (Renewal)
Joule' Technical Corporation, $1,210,658, Operation and Maintenance of telemetry and communication equipment.(Renewal)

NORTH CAROLINA: Apex - Applied Science Associates, $90,308, Develop data analysis system
Research Triangle Park - Research Triangle Institute, $59,977, Conduct airborne traffic advisory system study.

PENNSYLVANIA: Springhouse - Tenco Services, Inc., $108,994, Transportation services.
Tenco Services, Inc., $329,516, Operations and maintenance of heating plant, sewage and water. (Renewal)
Tenco Services, Inc., $419,070, Provide structural and airport firefighting services and plant protection. (Renewal)

VIRGINIA: Chincoteague - Earl R. Stephens, $288,000, Construct antenna platform and equipment enclosure.
Earl R. Stephens, $363,385, Rehabilitation of Building F-6
Earl R. Stephens, $144,000, Rehabilitation of Building X-55
Falls Church - Computer Sciences Corporation, $1,898,938, Engineering support and related services.
Grafton - B. D. Ashe, Inc., $289,426, Grounds Maintenance. (Renewal)
Greenbush - Greenbush Service Company, $539,000, Provide supply management and material handling services.
McLean - Honeywell Information Systems, Inc., $270,318, Lease computer systems hardware.
Norfolk - T. A. Sheets Mechanical General Contractor, $445,060, Fire systems protection modification water supply and distribution.
Electrical Mechanical Specialist Company, $537,943, Modification of HVAC systems in various buildings.

VIRGINIA: Norfolk - G & V Contractors, Inc., $113,449, Rehabilitation of building F-5.
American Sheet Metal Corporation, $68,584, Reroofing of building F-160.

Onancock - Seeltech Services, Inc., $72,000, Operate, modify and maintain radar systems and ancillary meteorological equipment. (Renewal)

Parksley - W. L. Taylor Construction Company, $428,300, Rehabilitation of building F-4
W. L. Taylor Construction Company, $249,737, Construct visitors information center.
W. L. Taylor Construction Company, $445,872, Rehabilitation of building N-159.
Wharton Worldwide Services, $251,526, Janitorial services. (Renewal)

Richmond - American Engineers, $68,061, A & E services for updating Wallops' Facilities master plan.

Tasley - Lance J. Eller, Inc., $469,584, Rehabilitation of Aircraft Fueling system.
Lance J. Eller, Inc., $193,735, Fire Protection systems modification.
Lance J. Eller, Inc., $251,055, Repair of roads, sidewalks and paved areas.

Vienna - Gage - Babcock Associates, $66,443, A & E services - final design for modification to fire protection systems.

Wallops Island - Chemal, Inc., $75,659, Operation of Chemistry and bioscience laboratory. (Renewal)
William L. Gillespie, $144,984, Modification to Bay 3. building Z-41.
Chemal, Inc., $155,692, Operate switchboard, teletype and reproduction facilities.

WASHINGTON: Kent - Pacific Propeller, Inc., $59,145, Overhaul components of propeller system.

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Oct 14

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For Release:
October 14, 1981

RELEASE NO. 81-16

WALLOPS ROCKET MEASURES MAGNETIC ACTIVITY IN THE EARTH'S IONOSPHERE

A two-stage Nike Orion sounding rocket was launched at 12:47 a.m. today to investigate ionization sources in the earth's upper atmosphere during geomagnetic activity.

This rocketborne experiment, first in a series of two, has been postponed day-by-day since May 11 awaiting an intense magnetic storm which usually follows a solar flare. Absence of solar activity precluded its launch last year; however, last evening the experimenter was pleased to obtain data during a major magnetic storm. The second experiment is scheduled for launch in December.

The 50-kilogram (110-pound) payload reached a peak altitude of 197 kilometers (124 statute miles). Preliminary results indicate that all instrumentation performed satisfactorily and good data were obtained. The Nike Orion is a two-stage, solid-propellant, unguided sounding rocket about 9 meters (30 feet) long.

This launching was conducted for the University of Illinois as part of their continuing investigation of energetic particles which have been trapped in the Van Allen radiation belt by the earth's magnetic field and then gradually flow into the ionosphere. According to Dr. L. G. Smith, University of Illinois project scientist, "We are not only studying the loss of these particles from the Van Allen belt but also their effects on the ionosphere."

The rocketborne experiment was conducted during nighttime conditions because the sun's radiation during daylight hours would mask the energetic particle precipitation in the E-region.

Wallops project personnel were: Robert Frostrom, project engineer; Paul Alfonsi, payload manager; and William L. Lord, test director.

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For Release:
November 20, 1981

RELEASE NO. 81-17

NEW DIRECTOR ARRIVES AT WALLOPS

Mr. Warren Keller has been appointed the Director of Goddard's Suborbital Projects and Operations Directorate (SPOD). He will report for duty on November 23. This position was formerly held by Mr. Abraham Spinak who retired from Wallops on November 20.

Mr. Keller comes to Goddard/Wallops from NASA Headquarters where he has served for the past year as Deputy Director of the Solar Terrestrial and Astrophysics Division of the Office of Space Science (OSS). This assignment followed the combining of the Astrophysics Division with the Solar Terrestrial Division where he served from 1979 as Deputy Director.

Prior to that position, Mr. Keller was Manager of Astronomy Payloads in the Astrophysics Division of OSS, where he also acted as the original Program Manager of the Space Telescope Program from 1976 until 1979. He came to the Astrophysics Division from the Lunar and Planetary Division of OSS where from 1972 until 1976, as Manager, Outer Planets Mission, he was Program Manager for the Voyager mission. From September 1970 until January 1972, he served in the Planetary Division of OSS as Deputy Program Manager, Advanced Programs and Technology, and as Program Manager for the Outer Planets Grand Tour.

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Prior to joining OSS, Mr. Keller served for 8 1/2 years in the Space Vehicles Division of the Office of Advanced Research and Technology (OART) at NASA Headquarters as Chief, Space Vehicles Environmental Factors Branch. He came to Headquarters from the Research Projects Division at Marshall Space Flight Center where he headed the Nuclear Physics Section of the Nuclear and Ion Physics Branch.

Prior to joining NASA, Mr. Keller served as a senior nuclear engineer with Convair, Fort Worth, Texas.

Born on August 12, 1931, in Knoxville, Tennessee, Mr. Keller attended the University of Tennessee where he received a B.S. in the Engineering Physics in 1953. From then until 1955, he served as a Lieutenant in the Ordnance Corps at Aberdeen Proving Grounds. In 1955, he returned to the University of Tennessee where he received an M.S. in Physics in 1957. He holds membership in Sigma Xi, Tau Beta Pi, and Phi Kappa Phi honorary societies, and recently received the NASA Outstanding Leadership Medal, as well as a special AAS award, for his contributions to the Voyager Program.

Mr. Keller is married to the former Carolyn Burk. They have two daughters (Karen and Susan) and a son (Tom). The Kellers will be coming from Annandale, Virginia.

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For Release:
November 20, 1981

RELEASE NO: 81-18

NASA AND CANADIANS TO STUDY MAGNETOSPHERIC CLEFT AT CAPE PARRY

NASA and the National Research Council (NRC) of Canada will hold a cooperative sounding rocket program in the Northwest Territories of Canada to study the dynamics of the cleft or wedge shaped opening in the Earth's magnetic field.

Five large rockets carrying some 30 experiments will be launched into the pre-noon, noon and post-noon magnetospheric cleft region from November 25 to December 21.

Ground based instrumentation stations were installed this past summer at Cape Parry and Sachs Harbor, N.W.T., as well as additional launch support and accommodation facilities at Cape Parry.

Scientists have ample practical as well as scientific reasons for this study, for what happens in this region can cause problems ranging from communications disruptions to pipeline corrosion, and, in ways not yet fully understood, influence long-term weather patterns.

The primary goal of the Cleft Energetics, Transport and Ultraviolet Radiation (CENTAUR) Project will be a comparison of mechanisms responsible for the production of Birkeland currents -- great sheet currents of electricity that run

- more -

into and out of the ionosphere around the auroral ovals -- and the associated energization of charged particles in the pre- and post-noon magnetospheric cleft. In particular, the anticipated difference in the direction of the electric field downward on the morningside and upward on the eveningside, implies different mechanisms involving different charge carriers.

The magnetospheric cleft is an opening between the Earth's magnetic field and the interplanetary field associated with the magnetic poles. Charged particles entering the Earth's upper atmosphere cause the airglow or aurora which occurs in this area. At this time of year, as the Sun approaches winter solstice and is below the horizon in this region, scientists can explore atmospheric conditions on the "Sun side" of the Earth as they appear in the dark from the ground.

The cleft offers a unique opportunity to study particle acceleration mechanisms in a regime which is less structured in space and time, as opposed to the highly dynamic nightside auroral region, yet is equally interesting and physically rewarding.

Data will be acquired by an assortment of ground instrumentation and sounding rocket payloads instrumented with sensitive scientific experiments. Sounding rocket launches will consist of: two Black Brant X systems for the NASA Goddard Space Flight Center, Greenbelt, Maryland; one Terrier-Malemute II system for NASA Wallops Flight Center, Wallops Island, Virginia; and two Black Brant IV systems for the National Research Council of Canada. Wallops has campaign responsibility for NASA and is responsible for launching, tracking and data acquisition of the NASA rocket systems and experiments.

Ground based instrumentation will consist of special equipment installed at the launch site (Cape Parry) and Sachs Harbor, Banks Island, about 200 kilometers (124 miles) poleward. The project will also use other existing ground based instruments in the Arctic region, as well as data from Earth orbiting satellites, such as Dynamics Explorer, and the International Sun-Earth Explorer Satellite.

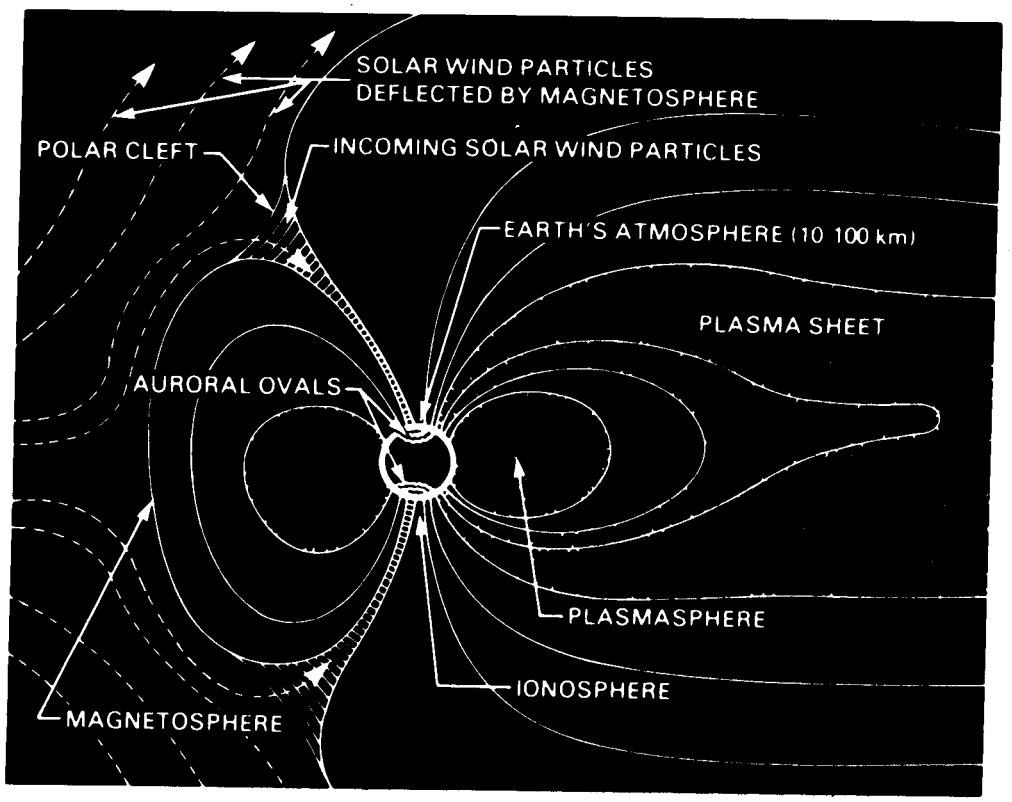
Project CENTAUR is the culmination of three separately planned experiments which will enhance the science of each individual experiment and allow the sharing of facilities at the remote launch site. The project is being conducted within the framework of the existing Memorandum of Understanding between NASA and NRC.

Some anticipated results are:

- Determination of the mechanism(s) responsible for particle acceleration in the cleft.
- Delineation of differences or similarities between pre- and post-noon acceleration processes (i.e., how can morning electron arcs be produced when the overall parallel electric field has the wrong sign).
- Verification of the presence of tangential (shear) discontinuities in the cleft ion flow (region of no electric field) and the scale size of the null electric field (zero flow). Is it as small as the local ion gyroradius?
- Determination of the spatial relationship between ion shear flows, field aligned currents, particle acceleration (inverted Vs), dayside auroral arcs and associated waves.
- Observation and analysis of plasma instabilities generated by currents. Special interest will be centered on the field-aligned currents by which the ion cyclotron instability is known to be generated. Also it is possible that the reversal in plasma flow across the current sheet can generate the Kelvin-Helmhotz instability.

Wallops and NRC personnel installed equipment and instrumentation at the launch site last summer for the November/December expedition. There will be about 70 personnel on-site to support the mission and conduct scientific experiments. In Addition to 17 from Wallops, there are personnel from Goddard; Johns Hopkins University, Baltimore, Maryland; Southwest Research Institute, San Antonio, Texas; Aerospace Corporation, El Segundo, California; University of Alaska, Fairbanks; Danish Space Research Institute, Denmark; University of Saskatchewan, Canada;

University of Western Ontario, Canada; Herzberg Institute of Astrophysics, Canada; the Canada Center for Space Science, Ottawa, Ontario; the Swedish Royal Institute of Technology, Stockholm; Mullard Space Science Laboratory, London; and the Uppsala Ionospheric Observatory, Sweden.



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For Release:
December 9, 1981

RELEASE NO: 81-19

WALLOPS PERSONNEL RECEIVE THREE AWARDS

At the recent Annual Honor Awards Ceremony at the NASA Langley Research Center, Hampton, Virginia, three Group Achievement Awards were presented personnel of the NASA Wallops Flight Center. These awards were in recognition of the Wallops Flight Center's performance in applications aircraft mission responsibilities supporting three Langley programs.

An award was presented to the aircraft mission support team for the Stratospheric Aerosol Measurement/Stratospheric Aerosol Gas Experiment (SAM II/SAGE) Satellite Ground Truth Measurement Program for outstanding performance in carrying out the flight mission responsibilities of the Wallops Flight Center. The satellite instruments are designed to measure vertical profiles of aerosol extinction. The ground-truth sensor selected by the experiment teams to provide the primary aerosol validation was the airborne lidar. The aircraft that fulfilled the lidar mission requirements was the Wallops P-3A aircraft. Flight missions in support of SAGE were conducted in the states of Wyoming, New York, Texas, Oregon, Alaska and the countries of Canada, Greenland and Brazil. Missions to the volcanoes of La Soufriere (St. Vincent Island) and Mt. St. Helens were also conducted. Mr. Roger Navarro, Wallops Project Engineer, accepted the award for the team at the Langley Awards Ceremony.

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Another award was presented to the NASA task team for the Nantucket Shoals Project for outstanding contributions in planning and conducting a multidisciplinary remote sensing experiment to define the dynamics of phytoplankton growth on Nantucket Shoals and to demonstrate the operational integration of aircraft and shipboard sensors to accomplish synoptic, three-dimensional oceanographic studies. The primary instrument for the project was the Wallops Airborne Oceanographic Lidar (AOL) aboard the Wallops P-3A aircraft. Ten successful flight missions were conducted over Nantucket Shoals and surrounding waters in conjunction with an extensive array of sea-truth vessels and research teams from Woods Hole Oceanographic Institute, State University of New York, Brookhaven National Laboratory, Bigelow Laboratories, the University of Rhode Island and National Marine Fisheries. Dr. Frank Hoge was the Wallops Project Scientist and Mr. Peter Bradfield was the Wallops Project Coordinator. Dr. Wayne Esaias of Langley, Principal Investigator for the project, accepted the award for the team.

The third Group Achievement Award was presented to the NASA task team for the Environmental Protection Agency 1980 Persistent Elevated Pollution Episodes/Northeast Regional Oxidant Study (PEPE/NEROS) Field Study for demonstrating the application of NASA developed remote sensing technology to regional scale air pollution research of national concern. The primary instrumentation for this study was the Langley Ultra Violet Differential Absorption Lidar (UV-DIAL) and the University of Wisconsin High Spectral Resolution Laser (HSRL) which were flown aboard the Wallops L-188 aircraft to provide regional scale mapping of ozone and aerosol loading, respectively, in the mixing layers. Eight flight missions were conducted over the Eastern United States in cooperation with the EPA efforts to develop and apply remote sensing techniques to studies of the formation and transport of polluted air masses on a regional scale. Mr. Roger Navarro was the Wallops Project Engineer. Dr. Edward Browell of Langley was the Principal Investigator for the study. Mr. Wendell Ayers of Langley accepted the award for the team.

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DU 22

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For Release:
December 22, 1981

RELEASE NO. 81-20

ROCKETBORNE STUDIES OF THE MAGNETOSPHERIC CLEFT SUCCESSFULLY COMPLETED IN CANADIAN ARCTIC

The National Aeronautics and Space Administration and the National Research Council of Canada have successfully completed the cooperative sounding rocket program at Cape Parry, Northwest Territories, Canada to study the dynamics of the cleft or wedge shaped opening in the Earth's magnetic field. Launch operations were conducted from temporary facilities established at a Distant Early Warning Radar site on the Arctic coast at a latitude of 70° N.

Five large sub-orbital rockets carrying some 30 experiments were launched from Cape Parry into the pre-noon, noon and post-noon cleft region from November 30 to December 13, 1981.

The magnetospheric cleft is an opening between the Earth's magnetic field and the interplanetary field associated with the magnetic poles. Charged particles entering the Earth's upper atmosphere cause the airglow or aurora which occurs in this area. At this time of year, as the Sun is near its winter solstice and is below the horizon in this region, scientists can explore atmospheric conditions on the "Sun side" of the Earth as they appear in the dark from the ground. Scientists will combine ground based observations, with data from the sounding rocket experiments and satellite data to further understand this part of the magnetosphere

- more -

and its influence on the earth's atmosphere and ionospheric regions.

The first rocket, a three-stage Black Brant X (BBX), was launched at 8:38 p.m. EST on November 30 to a peak altitude of 681 kilometers. Instruments carried aloft by the 50-foot vehicle collected data to compare mechanisms responsible for the production of Birkeland currents -- great sheet currents of electricity that run into and out of the ionosphere around the auroral ovals. In particular, the anticipated difference in the direction of the electric field, downward on the morningside and upward on the eveningside, implies different mechanisms involving different charge carriers. Project Scientist is Dr. J. D. Winningham of the Southwest Institute and Mission Chief is Val Maksimovic of the Goddard Space Flight Center. An identical payload was launched on another BBX on December 13 at 5:54 p.m. EST, last in the series of five launches.

The third NASA rocket, a Terrier Malemute II, was launched on December 6 at 7:00 p.m. EST to a peak altitude of 452 kilometers. This rocketborne experiment was designed to make spectral measurements of atmospheric emissions excited by soft particle precipitation at high latitudes in the cleft region. The wavelength range of 530 to 8500 A will be investigated, using four optical spectrometers and three photometers. Dr. A. Christensen of the Aerospace Corporation is the Principal Investigator and Mr. John van Overeem of the Wallops Flight Center is the Project Manager.

Two Black Brant IV rockets were launched for the Canadian Space Group on December 6 at 6:15 EST and on December 13 at 4:31 p.m. EST, (2nd and 4th in the series).

The seven experiments carried aloft by these two stage sounding rockets were selected to study the cleft during the morning and evening side of magnetic noon. Data will supplement extensive ground based instrumentation installed for the project at Cape Parry and at Sachs Harbour, on Banks Island about 200 kilometers to the north.

According to the Campaign Manager William A. Brence of Wallops, "Preliminary results indicate the Campaign was successful."

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For Release:
June 18, 1982

Release No. 82-2

WALLOPS FLIGHT CENTER AWARDS SIGNIFICANT 8(a) CONTRACT

Wallops Flight Center recently awarded an 8(a) contract to Wharton Worldwide Service Company of Parksley, Virginia, for Services and Materials to provide Janitorial Services. In fulfilling the requirements for these services, it will be necessary for the Contractor to maintain a staff of eighteen (18) people. The contract is a negotiated fixed-price contract with the basic contract and two option periods of one year each aggregating a total expenditure of approximately $1.1 million.

NASA News

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For Release:
Wednesday,
June 23, 1982

RELEASE NO. 82-3

NASA GODDARD/WALLOPS FLIGHT CENTER CONDUCTS PLASMA PHYSICS STUDIES

A two-stage Nike Orion sounding rocket was launched at 11:40 a.m. EDT today from NASA's Goddard/Wallops Flight Center, Virginia to study magnetospheric plasma wave/particle instabilities induced by very low frequency (VLF) waves produced in the troposphere.

This rocketborne experiment, first in a series of two, was launched in conjunction with a Stimulated Emission of Energetic Particles (SEEP) satellite overpass to detect particle precipitations triggered by VLF waves. The source of these waves was a high intensity transmitter located in Maryland.

A second objective was to study large mesopheric electric fields at midlatitudes in a continuing study of middle atmospheric electrodynamics.

The 248-kilogram (547-pound) payload reached a peak altitude of 85 kilometers (53 miles). Preliminary results indicate that all primary instrumentation performed satisfactorily and that the flight was a success. The Nike-Orion is a two-stage solid-propellant, unguided sounding rocket about 9 meters (30 feet) long.

- more -

Rocket instrumentation included a VLF receiver, geiger counter, X-ray detector, a Gerdien probe, electric field sensors, and a two axis magnetometer. The payload was programmed to descend on a parachute to increase sampling time on a stable platform in the critical region of interest. The satellite also carries instrumentation to measure particles and X-rays.

The rocketborne payload was successfully retrieved in mid-air recovery operations by a Wallops crew flying in Skyvan aircraft equipped with special equipment to hook the parachute and winch it and the payload into the plane. Recovery was accomplished about 60 nautical miles offshore from the Wallops range at 12:51 p.m. EDT.

During the satellite overpass, the groundbased VLF transmitter was keyed to emit discrete CW wave pulse trains. The satellite provided broad spatial coverage, and the rocket, localized but detailed insitu coverage, in the search for stimulated electron bursts with a timed signature characteristic of the emitted waves. The X-ray detectors remote sensed Bremsstrahlung X-rays caused by the anticipated electron bursts impacting with the upper atmosphere. A meteorological rocket carrying a datasonde was launched at 12:00 noon to provide temperature and wind information essential for analysis of the electric field and Gerdien probes.

A second identical Nike Orion rocket may be launched in a week or more pending an analysis of the satellite and rocket results from the first launch and may be scheduled during the night.

- more

Dr. Richard A. Goldberg of the NASA Goddard Space Flight Center in Greenbelt, Maryland, is the project scientist; Dempsey B. Bruton, Jr., is the Wallops project engineer; Jay F. Brown is the Wallops payload manager; John L. Parks is the Wallops safety officer; William L. Lord is the Wallops test director; and Robert T. Long is the Wallops recovery director.

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For Release:
Wednesday,
July 7, 1982

RELEASE NO. 82-4

NASA GODDARD/WALLOPS FLIGHT CENTER CONDUCTS PLASMA PHYSICS STUDIES

A two-stage Nike Orion sounding rocket was launched at 5:01 a.m. EDT today from NASA's Goddard/Wallops Flight Center, Virginia to study magnetospheric plasma wave/particle instabilities induced by very low frequency (VLF) waves produced in the troposphere. The source of these waves was a high intensity transmitter located in Maryland.

A second objective was to study large mesopheric electric fields at midlatitudes in a continuing study of middle atmospheric electrodynamics.

This rocketborne experiment was the second in a series of two. The first was conducted two weeks ago--June 23.

The 248-kilogram (547-pound payload reached a peak altitude of 80 kilometers (50 miles). Preliminary results indicate that all instrumentation performed staisfactorily and that the flight was a success. The Nike-Orion is a two-stage solid-propellant, unguided sounding rocket about 9 meters (30 feet) long.

- more -

Rocket instrumentation included a VLF receiver, geiger counter, X-ray detector, a Gerdien probe, electric field sensors, and a two axis magnetometer. The payload was programmed to descend on a parachute to increase sampling time on a stable platform in the critical region of interest.

The rocketborne payload was successfully retrieved in mid-air recovery operations by a Wallops crew flying in Skyvan aircraft equipped with special equipment to hook the parachute and winch it and the payload into the plane. Recovery was accomplished offshore from the Wallops range at 6:10 a.m. EDT.

The groundbased VLF transmitter was keyed to emit discrete CW wave pulse trains. The rocket provided detailed insitu coverage in the search for stimulated electron bursts with a timed signature characteristic of the emitted waves. The X-ray detectors remote sensed Bremsstrahlung X-rays caused by the anticipated electron bursts impacting with the upper atmosphere. A meteorological rocket carrying a datasonde was launched about 20 minutes later to provide temperature and wind information essential for analysis of the electric field and Gerdien probes.

Dr. Richard A. Goldberg of the NASA Goddard Space Flight Center in Greenbelt, Maryland, is the project scientist; Dempsey B. Bruton, Jr., is the Wallops project engineer; Jay F. Brown is the Wallops payload manager; John L. Parks is the Wallops safety officer; William L. Lord is the Wallops test director; and Robert T. Long is the Wallops recovery director.

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For Release:
September 22, 1982

Release No. 82-7

YO-YO DEVICE ON NASA BALLOON PROVES SUCCESSFUL IN TEXAS TESTS

Testing of a giant yo-yo device designed to conduct future studies in the atmosphere from balloons proved highly successful last week, according to officials at NASA's Goddard Space Flight Center Wallops Flight Facility.

The balloon-borne experiment was a test of a stratospheric observation reel-down system that could be called the world's biggest yo-yo. The instrument package can be lowered 16 kilometers (10 miles) below the balloon and hoisted up again, as a yo-yo is, using energy generated and stored during descent. On last week's test flight, conducted September 15 from the National Scientific Balloon Facility (NSBF) in Palestine, Texas, the required energy for the reel-back came from 54 kilograms (120 pounds) of storage batteries.

During the flight, the 26-million-cubic-foot balloon and its package rose to an altitude of 40,538 meters (133,000 feet). The package was reeled down to a distance of 12,192 meters (40,000 feet) below the balloon and then reeled back up. The reel-down took approximately 27 minutes, and the reel-up about

-more-

36 minutes. The instrument package was released from the balloon on a parachute near Tyler, Texas, where payload recovery was accomplished, according to NASA officials.

Scientists hope to use this system on long duration balloon flights on which the package will be lowered and hoisted 10 or 12 times, sampling the chemistry of the stratosphere at different altitudes, times of day and locations.

The primary purpose is to make extensive measurements to help resolve questions as to whether the stratospheric ozone layer is seriously threatened by synthetic chemicals, such as the fluorocarbons used as refrigerants and, to a diminishing extent, as spray can propellants.

The project scientist, Dr. James G. Anderson, professor of atmospheric chemistry at Harvard University, hopes that flights of 2 or 3 months can eventually be accomplished. The reel-down system was designed and fabricated by the Harvard group under contract to NASA. Launch and flight operations were conducted by personnel of the NSBF at Palestine, Texas. This project was performed as part of the NASA Balloon Program which is managed by the NASA Goddard Space Flight Center's Wallops Facility located at Wallops Island, Virginia.

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For Release:
Wednesday,
November 10, 1982

RELEASE NO. 82-8

NASA ASSUMES CONTROL OF NATIONAL SCIENCE FOUNDATION FACILITY

NASA and the National Science Foundation (NSF) have signed an agreement which transfers the management and operation of the National Scientific Balloon Facility (NSBF), Palestine, Texas, from NSF to NASA, effective October 1, 1982.

The balloon facility, which provides launch and service operations for scientific balloons, is the largest and most advanced facility of its type in the world. The facility is located about 320 kilometers (200 miles) north of Houston, Texas. This location was selected due to its generally good launch conditions for lighter-than-air craft and because the ground track after launch places the balloon over large portions of the continental United States, allowing easy tracking and instrument monitoring.

Balloon high altitude vehicles are used for carrying payloads to altitudes above the stratosphere (21,330 meters, 70,000 feet, or higher) for research in atmospheric physics, astronomy and astrophysics. The Goddard Space Flight Center/Wallops Flight Facility at Wallops Island, Virginia will manage the facility for NASA.

- more -

For the past several years, NASA has been the principal user of the facility; other users are supported by the National Science Foundation, private institutions and foreign research institutions.

On October 21, 1982, the NASA GSFC/Wallops Flight Facility awarded a contract to the University Corporation for Atmospheric Research (UCAR), Boulder, Colorado, for the operation and maintenance of the NSBF at Palestine. The cost-plus-fixed-fee contract has a value of $4,803,000 and is for a period of one year with a six-month option.

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For Release:
IMMEDIATE

Release No. 82-9

NASA AWARDS CONTRACT TO JOULE' TECHNICAL CORPORATION

On October 15, 1982, the NASA Goddard Space Flight Center's Wallops Flight Facility (GSFC/WFF) at Wallops Island, Virginia, awarded a contract to the Joule' Technical Corporation, Orange, New Jersey, for services necessary to maintain and operate radar, telecommunication and photographic systems and provide meteorological forecasting.

This fixed price contract has a value of $1,618,908 and is for a period of one year with a two-year option.

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For Release:
November 16, 1982

Release No. 82-10

TETHERED BALLOON PROJECT CONDUCTED AT WALLOPS

A large blimp with pilot warning strobe lights may be seen floating over the NASA Goddard Space Flight Center's Wallops Flight Facility (GSFC/WFF) intermittently during the next couple of weeks beginning tomorrow, weather permitting.

Hovering at altitudes as high as 8,000 feet, the white balloon looks like a giant whale in the sky. These balloon flights are a part of Project Hy-Wire, an ongoing experiment designed to measure the earth's electrical potential at various altitudes and environmental conditions.

The 38,000 cubic feet aerostat is a modified Class C balloon with a conical afterbody (dirigible shaped). It measures 98 feet in length, 31 feet in diameter, 37 feet in height (rear vertical fin), and weighs 665 pounds. The Hy-Wire experiment consists of a long steel insulated wire attached to a corona ball on the ground. It will measure voltages in excess of 500 kilowatts, collect meteorological data, as well as housekeeping data on the aerostat's performance..

The project's long range goal, according to WFF Balloon Program Manager Harvey Needleman "is to develop a monitoring system that will provide a geoelectric index indicating the level of global thunderstorm activity. This in turn

- more -

could be used in severe-storm studies, weather prediction, and lightning and solar terrestrial research."

Project Hy-Wire began about two years ago as part of a NASA study called Middle Atmosphere Electric Fields over Thunderstorms." Three flights have been conducted at Wallops since 1980.

Gene E. Godwin is the project coordinator and Richard H. Bradford is the range user project manager.

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For Release:

December 27, 1982

Release No. 82-11

NASA AWARDS CONTRACT TO CANADIAN COMMERCIAL CORP.

On December 20, 1982, the NASA Goddard Space Flight Center's Wallops Flight Facility (GSFC/WFF) at Wallops Island, Virginia, awarded a contract to the Canadian Commercial Corp., Ottawa, Ontario, Canada, for engineering and field support for Black Brant Propulsion Systems. These systems are solid rocket propelled vehicles utilized in NASA's Sounding Rocket Program.

The cost-plus fixed-fee contract has a value of $1,792,716.00 and is for a period of three years beginning January 1, 1983.

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NASA News

National Aeronautics and
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For Release:
January 13, 1983

8x928-5579

RELEASE NO. 83-2

NASA SUCCESSFULLY RECOVERS TWO ROCKETBORNE EXPERIMENTS IN MID-AIR

Rocketborne payloads launched on board two single-stage Orion sounding rockets were successfully retrieved in mid-air recovery operations today (January 13, 1983) by NASA's Goddard Space Flight Center's Wallops Flight Facility (GSFC/WFF).

The specific objectives of these flights are to test the repeatability of the nitric oxide sensor by obtaining vertical profiles of nitric oxide concentrations throughout the middle and upper stratosphere (30-50 kilometers altitude), and to make an intercomparison of the standard nitric oxide payloads with one having a newly added inflight calibrator. Both scientific experiments (payloads) have been flown three times before, twice from the Wallops range and once from Red Lake, Canada, during an eclipse, and refurbished to fly again. The previous launches supported the Nimbus 7 satellite.

A meteorological rocket and balloon were also launched in this series to take meteorological measurements to supplement the Orion payload data.

- more -

Recovery of the two experiments was accomplished by a Wallops crew flying in the Skyvan aircraft equipped with special mid-air retrieval equipment to hook the parachute and winch it and the payload into the plane.

The Orion rocket is 14 inches in diameter and almost nine feet long (with payload attached, about 16½ feet long) and weighs 472 kilograms (1,044 pounds). The "met" rocket used was a single stage Super Loki Datasonde, four inches in diameter and about 10 feet long. The balloon was a meteorological sphere about 15 feet in diameter with a radiosonde attached to measure atmospheric density, temperature, and pressure.

The first experiment was launched on an Orion at 12:31 p.m. today and reached an altitude of about 70 kilometers (44 statute miles). The payload was separated from the rocket near apogee and mid-air recovery occurred one hour and 37 minutes later.

The payload on board the second Orion was launched at 1:39 p.m. and also successfully recovered about 50 miles offshore, 1 hour and 9 minutes after launch, and returned for postflight analysis and refurbishment for future scientific measurements. This series of rocket and balloon launches, as well as the recovery operations, was completed about 3:20 p.m. EDT.

According to the Project Scientist, Mr. J. J. Horvath of the University of Michigan, "The inflight calibrator performed as expected and the resulting data should provide the necessary information to access, i.e., to confirm, the absolute accuracy of this chemiluminescent nitric oxide measurement system. The data recovered from these flights will add to the growing data base for nitric oxide in the approximate altitude region 30-50 kilometers. A systematic study of nitric oxide at these altitudes is necessary to permit better evaluation of the global mean profile for comparison with atmospheric modeling results."

Dempsey B. Bruton, Jr., is the GSFC/Wallops Project Engineer; Robert A. Patterson is the Payload Manager; and Robert T. Long is the Recovery Director. GSFC/Wallops Test Director is William L. Lord and Range Safety Officer is John L. Parks. The pad operations are handled by Carl Rhodes.

-END-

NASA News

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For Release:
IMMEDIATE

PRESS KIT

PROJECT: CONDOR

Release No. 83-4

CONTENTS

GENERAL RELEASE. 1-4

BACKGROUND INFORMATION. 5-7

SCIENTIFIC BACKGROUND. 8-16

ROCKETS AND EXPERIMENTS. 17-28

LAUNCH SCHEDULE. 29-31

ROCKET DRAWINGS--DIMENSIONS & WEIGHTS. 32-33

RECOVERY OPERATIONS PLAN. 34-40

MISSION MANAGEMENT AND EXPERIMENTERS. 41-42

NASA News

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For Release:
February 28, 1983

James C. Elliott
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Release No. 83-4

INTERNATIONAL ROCKET EXPERIMENTS TO BE HELD IN PERU

An international team of scientists will hold a month-long program of sounding rocket launches in Peru to study the upper tropical atmosphere.

The operation, called Project CONDOR, is an equatorial atmospheric rocket/radar campaign of universities and aerospace agencies from the United States, Peru, The Federal Republic of Germany, and France. Operating from the Punta Lobos Launch Range, a distant point on Peru's desert coast about 60 kilometers (37 miles) south of Lima, the scientists hope to launch 29 sounding rockets. The Jicamarca Radio Observatory, east of Lima, will provide ground-based information and measurements from the sounding rockets.

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Cooperating in the effort are the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), the Comission Nacional de Investiacion Y Desarrollo Aeroespacial (CONIDA), and the Instituto Geofisico del Peru (IGP).

Scientists, engineers and other specialists from a number of universities also are taking part in the project. The universities represented include the University of Alaska; University of California at San Diego; Cornell University; University of Denver; University of Illinois; Max Planck Institute, West Germany; Pennsylvania State University; University of Toulon, France; and Utah State University.

NASA will provide the rockets, scientific payloads, and the equipment for tracking the rockets and receiving data transmitted from them. CONIDA will provide the range and range support. IGP will provide ground-based atmospheric measurements and support from Jicamarca Radio Observatory and the Hunacayo Observatory, approximately 200 km (125 mi.) east of Lima.

The launch window for the project opens Feb. 26 and runs through the end of March. Of the 29 launches, 19 are expected to be sent aloft in one 24-hour period on March 7. In addition, two of the rockets, scheduled for pre-dawn launches on March 12, will release colorful chemical clouds that will be visible as far away as Arequipa, 850 km (528 mi.) to the south, and Chiclayo, 650 km (404 mi.) to the north.

-more-

The clouds, formed by releasing barium and strontium at altitudes of 555 km (345 mi.) and 425 km (264 mi.), will first appear as small white balls and then expand in size and change in color to greenish blue.

The launches will vary in size from the relatively small Super Loki, 31 kilograms, 3.3 meters long, 10 centimeters in diameter (68½ pounds, 131 inches, 4 inches) to the Terrier Malemute 1,607 kg, 12 m long and 46 cm in diameter (3,543 lb., 39 ft., 18 in.). The payloads will vary from the 2.7 kg (6 lb.) Super Loki payload to the Taurus Orion payload weight of 156 kg (343 lb.). Water recovery of several of the payloads by ship or helicopter is planned. Peruvian recovery forces will be utilized to make the recoveries.

The purpose of the experiments, according to the scientists, is to map electrical conditions and the wind and radio wave patterns found in the upper atmosphere in the tropics. The tropical atmosphere is of interest in part because the magnetic equator (located in Peru) is the portion of the planet where the magnetic field is perfectly horizontal while gravity points directly downward.

While some of the experiments are expected to supply pure scientific information, others may have practical applications to communications and navigation technology, the scientists said.

-more-

Satellite ranging systems, used to determine the position of ships at sea, for example, could be affected by conditions in the ionosphere, that region 80 to 400 km (50 to 250 mi.) above the earth where present day knowledge above the equator is far from complete.

Project CONDOR is a part of the NASA Sounding Rocket Program and is managed for NASA by the Goddard Space Flight Center, Wallops Flight Facility at Wallops Island, Virginia.

(END OF GENERAL RELEASE -- BACKGROUND INFORMATION FOLLOWS)

BACKGROUND INFORMATION

The equatorial ionosphere has held a fascination for upper atmosphere researchers since the early years of space exploration. At the magnetic equator we find a unique geometrical relationship between the forces which control the dynamics and evolution of the Earth's upper atmosphere. The magnetic field (B) is horizontal and hence perpendicular to the Earth's gravitational field (g). The dominant zonal component of the neutral atmospheric wind is, in turn, perpendicular to both B and g. This geometrical relationship results in some of the most interesting electrodynamic processes in the near space regions of the Earth.

For example, the largest electric currents and electric fields outside the auroral zone are generated in the equatorial electrojet. The current is sufficiently high that the two stream instability threshold is exceeded and highly nonlinear plasma turbulence results. This instability, and the closely associated gradient drift process, are among the first to be studied in detail in space. As such, the evolution of its understanding from discovery, through linear instability theory, through refined experiment based on theory and, most recently, via nonlinear theory and computer simulation, is a model for space plasma physics.

Further evidence for the dynamic nature of the equatorial region comes from the study of equatorial spread F. This convective instability is driven by the gravitational field and results in a turbulent mixing of high and low density plasma in the post sunset ionosphere. In fact, this phenomenon creates a greater disturbance in the ionosphere than does a magnetospheric substorm. This is clear from the effect of the irregular ionosphere on communications channels. One of the great surprises of the past decade was that the gigahertz frequency band was sometimes severly disrupted in the equatorial zone. This never happens in the auroral environment and was not predicted prior to implementation in many systems. Again great strides have occurred in understanding this process due to its accessibility to detailed experimental study. Furthermore, the communications and the disturbed media aspects are of interest to the Defense Department and, in particular, a considerable amount of basic research has been conducted under the auspices of the Defense Nuclear Agency.

Basic aeronomy and planetary electrodynamics aspects of ionospheric physics have also greatly progressed in the equatorial zone. Here the magnetic, electric, and wind related forces are more clearly understood on a day to day basis. This basic understanding allows for more clear cut observations during disturbed times. We now know, for example, that electric fields of solar wind and magnetospheric origin sometimes penetrate deep into the inner magnetosphere. In such events, the worldwide equatorial potential structure can reverse sign in a few minutes

with a total change of nearly 20 kilovolts between the dawn and dusk terminators. This causes the electrojet to reverse direction and may even change the pattern of the "fair weather" electric field near the Earth's surface.

These and other exciting aspects of space research in the equatorial region have acted as focal points for numerous theoreticians and experimentalists alike in the last decade. Furthermore, because of the geographical location of the region, numerous scientists in "third world" countries play important roles in equatorial science. Notable in this regard is the outstanding radar observatory at Jicamarca, Peru. This facility has one of the largest antennas in the world at 90,000 square meters and can transmit up to 5 megawatts of power. Jicamarca is supported primarily by the Instituto Geophysico del Peru with additional funds from several external agencies including the NSF and NASA.

Many African and Indian scientists have also greatly contributed to equatorial science. Pioneering rocket studies of the equatorial electrojet were performed in the 1960's from Thumba, India. The payloads were constructed in India, flown on rockets provided by NASA, and were instrumental in verifying some aspects of linear instability theory.

Intensifying interest in equatorial plasma instabilities, electrodynamics, and aeronomy led to several rocket campaigns in the 1970's. These were conducted at Thumba, India; Natal, Brazil; Punta Lobos, Peru; and Kwajalein, one of the Marshall Islands. Satellite studies from OVI-17, several Atmospheric Explorers, and the DNA Wideband satellite have also made important contributions to our understanding of equatorial F region physics.

Thus, in equatorial physics as in many areas of space research, the exploratory era of equatorial physics is nearing a close. Many problem areas are "mature" in the sense that plausible theories exist but that crucial experiments remain to be done to test against these competing theories.

Against this background, a conference was held in October 1979 to discuss equatorial physics. The meeting was held at Cornell University and was sponsored by the National Aeronautics and Space Administration. The purposes of the conference were:

a. To review the state-of-the-art of equatorial physics both in theory and experiment.

b. To identify those crucial experiments needed to test existing theories and to guide efforts in areas not yet clarified theoretically. In particular, an effort was to be made to identify those rocket experiments needed in conjunction with

radar observations.

c. To review those sets of experimental data which appear to be in conflict with each other and to suggest methods of resolving these conflicts.

d. To discuss previous rocket campaigns, their strengths and limitations, and the necessary simultaneous measurements needed on the rockets themselves and from the ground.

e. To identify developing areas of equatorial physics, particularly in the middle atmosphere.

f. To identify active experiments of relevance to equatorial problems.

To accomplish these goals, experts were invited to Cornell to formally discuss the present status of their disipline and to suggest areas where experimental data are needed. For this aspect, theoreticians were chosen preferentially in order to drive the discussions toward definitive problems. Experimentalists were invited with backgrounds in all aspects of equatorial research: radar systems, rocket probes, chemical releases, satellite sensors, and scintillation measurements. The present Director of the Jicamarca Radar Observatory attended as did two former Directors. The only other incoherent scatter radar system capable of making equatorial measurements is the Altair system on Kwajalein and a representative was present who has used that facility.

With the single exception of the Indian rocket research program, participants of all the equatorial rocket campaigns conducted in the 1970's were present at the meeting. The list included both scientific and technical personnel with the hope that a realistic approach could be made to the problems of logistics and simultaneity as they arose.

Following is a summary of the results of the meeting.

SCIENTIFIC BACKGROUND

1. PLANETARY ELECTRODYNAMICS

To first order, the inner magnetosphere, and its conducting base and source at ionospheric altitudes, co-rotates with the solid Earth. The same statement can of course, be made concerning the neutral atmosphere since it also rotates with the Earth. That the ionosphere co-rotates is not surprising since it is well coupled to the neutral atmosphere through collisions. However, it is not so obvious that plasma on magnetic field lines which thread the mid to low latitude ionosphere should also share in the rotational motion particularly at altitudes up to several Earth radii where collisions are virtually nonexistent. The motion is caused by an electric field which maps from ionospheric heights along the highly conducting magnetic field lines and causes the plasma to $\underline{E}\times\underline{B}$ drift. This electric field competes with magnetospheric sources. At a nominal L value of about four Earth radii (60 degrees magnetic latitude) the two sources of electric field are comparable and at high L values magnetospheric sources dominate.

In the rotating frame where most measurements are made, the rotational electric field is zero. The total electric field does not vanish however, in that frame, since the neutral atmospheric wind does not vanish on the rotating Earth. Winds, tides, planetary and internal gravity waves, and turbulence create a dynamic and structured atmosphere at scales from sizes from tens of meters to thousands of kilometers. The neutral atmospheric wind field, $\underline{V}(\underline{r})$, creates an electric current $\underline{J}(\underline{r})$ in the ionosphere via the relationship

$$\underline{J}(\underline{r}) = \underline{\sigma}\ (\underline{r})\ (\underline{V}(\underline{r})\times\underline{B}(\underline{r})$$

where $\underline{\sigma}(\underline{r})$ is the tensor conductivity and $\underline{B}(\underline{r})$ is the magnetic field. Since none of these vector or tensor fields are homogeneous, the divergence of $\underline{J}(\underline{r})$ is unlikely to be zero as it must be on macroscopic time scales. The divergence free condition is met by charge separation and the consequent generation of electric fields. Once established these electric fields also map along magnetic field lines into the inner magnetosphere where they determine the motions of the plasmaspheric medium.

Fields generated due to the divergence of wind driven currents in the E region create the large scale zonal electric field between the positively charged dawn terminator and the negatively charged dusk terminator. These correspond to the conductivity gradient between the nightside and the dayside. Vertical conductivity gradients in the E region also create important meridional electric fields including the field which drives the electrojet. At night the E region conductivity is much reduced, although even sharper gradients exist, and F region current systems become equally important. Thus E and F region dynamos driven by winds, tides and gravity waves dominate the

electrodynamics of the mid and low latitude ionosphere and plasmasphere during all but the most active magnetic intervals.

Because of the unique geometrical properties of the equatorial zone, clearly defined studies of electrodynamics are possible and many have been done using the incoherent scatter facility at Jicamarca. These data have yielded an excellent basis for further study in that the average local time dependence, as well as the seasonal and solar cycle variations, are now well established (Appendix A 1). Penetration of magnetospheric fields to the equatorial zone have also been studied. A remarkable set of simultaneous measurements of auroral zone fields in Alaska and Canada, mid-latitude fields in the Northeastern United States, and equatorial fields in Peru showed a striking relationship between a northward turning of the interplanetary magnetic field and the worldwide electric field (Appendix A.1).

Such detailed knowledge of equatorial electric fields, coupled with the ability to make continuous electric field measurements at Jicamarca, make possible definitive tests of theoretical predictions. We focus here on some outstanding questions amenable to further experimental work which in most cases requires additional measurements simultaneous to the radar data.

- what is the magnitude of the vertical electric field in the daytime equatorial electrojet and its relationship to the density profile? Although predicted for decades and inferred from radar and magnetic field data, no direct measurements of the vertical field exist. This field may exceed 10 mV/m and is the largest ionospheric field expected outside the auroral zone.

- what is the electrodynamic structure of the highly irregular nighttime equatorial ionosphere? We know that the plasma density is highly irregular and that intense plasma instabilities result at night (see next section). We do not know whether the electric field is also structured and hence whether shears exist in the electron drift velocity. Interferrometric measurements of plasma waves suggest that such a shear may indeed exist.

- what is the electric field in the "valley" between the E region and the F layer? The Jicamarca system requires a reasonable electron density (> 104cm-3) to yield electric field measurements. Thus our entire data set comes from the high density plasma region. Circumstantial evidence from the motion of irregularity patches, and of parts of a barium ion cloud release, suggest that plasma in the valley region is not participating in the super-rotation velocity typical of the post-sunset F region.

- does F layer theory adequately explain the relationship between electric fields and neutral thermospheric winds near the pre-reversal enhancement of the zonal electric field?

Successful explanation of this phenomenon, a near doubling of the zonal electric field just prior to its reversal in sign to typical nighttime values, is a crucial test of dynamo theory.

These examples show the types of electrodynamics problems amenable to detailed study and understanding in the equatorial zone. Their solution relates to electrodynamics throughout the low and middle latitude zone. Better understanding of how motions of the neutral atmosphere create electric fields may, in turn, assist in developing our understanding of the high latitude zone where the roles are reversed and electric fields drive thermospheric winds.

2. PLASMA INSTABILITIES OF THE EQUATORIAL ELECTROJET

One of the first and most successful applications of linear plasma instability theory in space physics was to the two-stream instability in the equatorial electrojet. Originally termed equatorial sporadic E, radar studies in the early 1960's showed that the equatorial irregularities were quite different from mid-latitude sporadic E. They exhibit phase velocities, for example, equal to the sound velocity. More surprising, the velocity never exceeds the sound speed in a reference frame fixed to the atmosphere, even when the electron velocity driving the instability does exceed the sonic velocity. Furthermore, the velocity is independent of the angle with respect to the current. Diagrams in Appendix B 1 show an artists conception of the turbulence and examples of the backscattered spectra.

These properties of the two stream mode and other aspects of electrojet instabilities are still not understood even though the linear instability theory is well established experimentally. This is a common feature of naturally occuring plasma phenomena: the nonlinear evolution of an instability bears only a superficial relationship to the linear theory.

Herein lies one of the important aspects of the study of electrojet instabilities: the ability to make detailed experimental studies of a fully turbulent plasma instability and to compare the results to nonlinear theory. The wealth of available radar data has, in fact, encouraged numerous analytic studies and computer simulations of electrojet processes. Verification of computer simulations as a general tool in nonlinear plasma instability theory is very important since very few regions in geospace are as accessible to probing as the equatorial ionosphere.

There are actually two terms corresponding to two different physical processes during the electrojet instabilities. The second is termed the gradient drift instability which appears as a second branch in the linear dispersion erlation (see Appendix B 1 for details) along with the two stream. Peak growth rates for the two branches occur in quite different wavelength regimes and

their nonlinear development is also quite different. Some generalizations concerning nonlinear evolution of plasma instabilities may come from the study of these two modes.

Quasi-static electric fields play a crucial role in both modes. In the two stream case it is the $\underline{E}\times\underline{B}$ drift of electrons in the vertical electrojet polarization field which exceeds the sound velocity. In the gradient drift case the electric field must be anti-parallel to the density gradient to drive the instability. Furthermore, electric fields exist in the turbulence since it is an electrostatic instability. Radar and recent in situ electric field measurements show that the velocity fluctuations in the gradient drift mode are comparable to the mean drift, one measure of strong turbulence.

Although a powerful tool for studying instabilities, radar methods are limited to investigation of a single direction along the line of sight and a single wavelength equal to half the transmitted electromagnetic wavelength. Furthermore they are not sensitive to electric field fluctuations at all and hence information on the velocity field can only be inferred from the phase velocity of the scattering density fluctuations. In situ density and electric field spectra are needed simultaneously with radar echoes to characterize the spectra over the full range of wave number space.

Some outstanding questions concerning electrojet instabilities include:

- why is the phase velocity of type I waves limited at the sound speed and independent of zenith angle?

- why in fact are there two distinct echo types and what determines which instability dominates?

- what characteristics of the instability lead to cascade of energy from one region of k space to another?

- what are the in situ k spectra of the density and electric field fluctations during the two distinct types of radar echo?

- are primary electric fields strong enough to drive waves unstable perpendicular to the current and create the observed vertical wave vectors?

- do interferometric methods yield valid horizontal phase velocities? Verification of this method with in situ electric field probes may be necessary.

- what is the relationship between equatorial electrojet irregularities and their auroral counterpart? Why are there apparant differences in the nonlinear saturation mechanism in the two regions?

Electrojet instabilities are thus far from completely understood in their nonlinear state. Extending our knowledge in this regard is not merely academic since most natural turbulent phenomena evolve to the nonlinear state.

3. EQUATORIAL SPREAD F

This term originated in the same way as did the use of equatorial sporadic E to characterize electrojet instabilities. The associated phenomena are much more complex than mid latitude spread F. The modern era of equatorial spread F study can be marked by a paper published in 1970 by researchers at Jicamarca who summarized a decade of spread F studies at that facility. They concluded that no theory published to date could explain the many properties which characterize equatorial spread F.

The radar results, observations of turbulent electrostatic fields in the equatorial zone via satellite probes, and initial results of barium release experiments at the equator have fascinated numerous experimentalists and theoreticians alike. The result has been a decade of intense study, perhaps unparalleled in space research. Nearly every type of experimental method available to space physics has been applied to equatorial spread F (rocket, satellite, radar, ionosonde, and forward scatter) as have most of the tools of theoretical plasma physics (linear, nonlinear, analytic theory, and computer simulations of the nonlinear equations).

The result has been an explosive increase in relevant data as well as great strides in theoretical understanding. Although not universally accepted, most workers consider the gravitational driven Rayleigh-Taylor instability as the prime candidate. This process is the plasma analogy of a heavy liquid supported against gravity by a light fluid. The horizontal magnetic field plays the role of the light fluid in the plasma case supporting the dense F layer against gravity. The instability acts to interchange the high mass density plasma on the topside with low density plasma from below. Perturbation electric fields create this interchange via $\underline{E}\times\underline{B}$ drifts. Crucial evidence for this process comes from radar plumes extending to nearly a thousand kilometers altitude, satellite and rocket observations of topside bubbles with large internal velocities, and intense scintillation effects on forward scattered radio waves from VHF through GHz frequencies.

As more data accumulate and theory progresses, however, the study of equatorial spread F has grown increasingly complex and interesting. We now know that irregularities exist at scale sizes from hundreds of kilometers down to a fraction of a meter. They occur in the F layer valley, on the bottomside and well above the F peak. Thus ten years past the initial Jicamarca study we can still say that no single theory explains the full range of equatorial spread F phenomena.

Some outstanding questions include:

TOPSIDE SPREAD F

- how does the spread of energy in k space occur? Is there a turbulent cascade as in fluid turbulence, a hierarchy of instabilities?

- what are the wave number spectra of density and electric field fluctuations?

- what are the principal wavelengths at which energy is introduced into the plasma?

- is there velocity and density turbulence in the wake of upwelling bubbles?

- do field aligned currents act to discharge perturbation electric fields in bubbles? Are those unstable to ion cyclotron waves in the F layer valley?

- are short wavelength waves created on the steep edges of topside bubbles or do they also occur inside and outside?

- is the internal composition of topside bubbles charactaeristic of the bottomside?

- what is the nature of decaying turbulence in the post midnight period? Are electric fields shorted out with only density structures remaining?

- what initiates spread F and is a finite initial perturbation necessary?

BOTTOMSIDE SPREAD F

- how do bottomside electric field fluctuation spectra relate to the density spectra? Does this relationship prove that an electrostatic instability is operating?

- do neutral winds or gravity waves, rather than an electrostatic instability, create the bottomside structure?

- what is the cause for the apparant discrepancy between extrapolated long wavelength spectra and the short wavelength measurements at Jicamarca and Altair?

F LAYER VALLEY

- what is explosive spread F?

- are there ion cyclotron waves in the valley?

- what is the origin of 150 km echoes often observed at Jicamarca?

Clearly many unresolved questions remain concerning the physics of the disturbed equatorial F region ionosphere. Their solution will advance our understanding of how instabilities operating at long wavelengths create structure across a vast spectrum of scale sizes. Insights into the ability of computer simulations to model instabilities in the collisionless regime have already occurred and many new results are expected. The short wavelength portion of the spectrum is particularly interesting since it may relate to the "universal" instability which acts to destroy density gradients in all plasmas. Finally, auroral zone irregularities are similar to the equatorial version although less intense and probably of quite different origin. It is important to understand both the similarites and differences in these two regimes.

4. EQUATORIAL AERONOMY

Several interesting problems exist in the aeronomy of the equatorial zone. One involves the complex structure of the nighttime plasma density profile. This profile is often not measureable at Jicamarca since it is so unstable to the gradient drift proces that 50 MHz backscatter is seldom possible in the incoherent scatter mode. Also, the altitude resolution is only about five kilometers. Rocket probes have shown however, that the entire region from 95-130 km altitude (and sometimes higher) is typically dominated by sharp density gradients throughout.

At mid latitudes, similar phenomena occur, although usually not nearly as structured as in the equatorial zone. Theories for the former usually involve wind shears which gather ionization along magnetic field lines. This requires a reasonable magnetic dip angle, however, which vanishes at the magnetic equator. Attempts have been made to relate the equatorial structure to a slightly off-equatorial wind shear mechanism. This is not too convincing, since the same structure occurs from 100 km to 130 km at the .5 degree dip angle region above the Punta Lobos rocket range in Peru.

Another fundamental question involves the role of energetic particle precipitation at equatorial latitudes. This again is an extension of similar phenomena occurring at mid latitudes, but has unique equatorial properties. Ring current protons may undergo a double charge exchange process. They first charge exchange with neutral geocoronal hydrogen at high altitudes on

magnetic L shells between 3 and 5. Energetic neutrals result which easily move across magnetic field lines to focal points near the ionospheric equator. There they charge exchange again to produce energetic ions at very low latitudes.

In addition to energetic protons, which have been detected by satellite instruments, numerous reports have been made of energetic electron fluxes. Both satellite and rocket instruments have detected electrons in the range of 1-20 keV with fluxes sometimes reported comparable to those in the auroral zone. Absence of a believable theory for such particle fluxes have relegated their observation to the status of "questionable" even though the instruments used seem to be reliable in other applications.

Definitive experiments are necessary to resolve the questions concerning energetic particle fluxes in the equatorial zone.

Important questions remain concerning super-rotation of the upper atmosphere. It has been suggested that the absence of ion drag at night allows for a net eastward average zonal wind. Ion drag is low at night since the F region dynamo creates an eastward $\underline{E} \times \underline{B}$ drift which causes the plasma to drift with the wind and no drag results. There is thus a close coupling between aeronomy, electrodynamics, and neutral atmospheric winds. The interaction of gravity waves, ionospheric plasma, and metallic ions is also of interest to the aeronomy of the equatorial zone.

The seasonal and solar cycle dependencies of equatorial spread F and of the quasi-dc electric fields in the equatorial zone are well established but as yet unexplained. Aeronomical effects may control these phenomena through the conductivity of the E and F region plasma.

5. THE MIDDLE ATMOSPHERE

Study of the middle atmosphere between 10 and 100 km is still in the exploratory phase. The Middle Atmosphere Program, a decade long international study has just begun and is aimed at solidifying the basics of middle atmosphere physics.

This neglect until recently is not due to a lack of interest but rather the absence of experimental techniques. Until recently radar probing was not possible in the altitude range between the upper troposphere and the lower ionosphere. Pioneering efforts using the Jicamarca radar have shown that the large incoherent scatter radar systems are capable of measuring winds and wave patterns in the mesosphere, stratosphere, and troposphere (M-S-T radar). This has added a new dimension to middle atmosphere studies and measurements of this type are now possible at Chatanika, Alaska; Arecibo, Puerto Rico; Kiruna, Sweden; San Santin, France; as well as in Peru.

In situ measurement platforms are limited to rockets since balloons cannot fly much above 40 km and satellites seldom

penetrate below 130 km. Rocket probes have primarily been used for ionospheric work since instrument developments have often paralled satellite applications. Recently, increased interest in the middle atmosphere has resulted in the development of more rocket payloads for this regime.

Topics of interest in the middle atmosphere include the dynamics of wind and wave patterns. Planetary waves, Rossby waves, baroclinic waves, internal gravity waves, and turbulence all play important roles in distributing energy and minor constituents in the middle atmosphere. Due to the amplyfying effect of the exponential atmosphere, small amplitude waves in the stratosphere and troposphere can grow as they propagate upward, becoming more important in the tenuous upper atmosphere. Cold fronts, jet streams, and orographic features can all create strong waves in the upper atmosphere.

Turbulence is a ubiquitous feature of the atmosphere, effectively mixing the constituents into a homogeneous fluid. The turbopause marks the boundary between mixing and diffusive separation in the gravitational field. The turbopause is not yet understood. Speculations that the ionized constituents play some role have occurred. Conversely, some have argued that neutral turbulence creates the plasma irregularities which backscatter the radar signals and which are usually considered to be of plasma instability origin.

Interest in middle atmosphere electrodynamics has also increased dramatically in recent years. It is now well established that extraterrestrial sources of electric fields exist, as well as those due to terrestrial wind dynamos, and that these fields map deep into the Earth's lower atmosphere. In ways that are not yet established, these fields couple to fair weather and thunderstorm electrical generators in the troposphere. This coupling occurs through the unexplored mesosphere. Furthermore, evidence for a mesospheric generator has come from preliminary studies of middle atmospheric electric fields. If correct, major changes would be necessary in our models of planetary electrodynamics.

There do not appear to be compelling reasons at this time to conduct all of these middle atmosphere experiments at the equator, since other launch sites are suitable. Exceptions involve the study of thin layers of turbulence which can be detected by the Jicamarca radar and of middle atmospheric electric fields which have been reported to be anonymously large near the equator.

ROCKETS AND EXPERIMENTS

TAURUS ORIONS 33.026 UE and 33.027 UE (2)

Project Personnel and Responsibility

Name	Organization	Function
Dr. R. Pfaff	Cornell Univ.	Project Scientist
Dr. Mc. Kelly	Cornell Univ.	Co-Project Scientist
Dr. K. Baker	Utah State Univ.	Co-Investigator
Dr. P. Kintner	Cornell Univ.	Co-Investigator
Mr. D. Detwiler	NASA GSFC/WFF	Payload Manager
Dr. E. Kudeki	Cornell Univ.	Jicamarca Operations

Scientific Objectives and Experiments

1. Objectives

The primary objective of these launches is to measure the electric field and plasma density, dc and ac, associated with the equatorial electrojet during daytime and nighttime conditions. They will be flown in conjunction with Jicamarca Radar Observatory (JRO) measurements.

2. Experiments

a.	Plasma Fequency Probe	Dr. K. Baker, Utah State Univ.
b.	E-Field	Dr. R. Pfaff, Cornell Univ.
c.	Plasma Density	Dr. P. Kintner, Cornell Univ.

Vehicle Description

The Taurus Orion is a two stage solid-propellant, fin stabilized unquided rocket. At booster burnout the Taurus and Orion motors are separated by differential drag forces. (See pages 32 and 33 for dimensions and weights.)

Payload Description

The payload configuration is comprised of a ballast section, a standard Orion ignition system, Sandia MK.1 water recovery system, an experiment/instrumentation section housing a yo-yo despin system and 3-pairs of 5.5 meter Weitzmann booms. The nose cone will be a 19 degree total angle cone and will house the Utah State University plasma frequency probe. With the exception of ballast weight, both payloads will be identical.

An unballasted payload weight of 343 pounds with a center of gravity 55.7 inches forward of the payload base is estimated. A recovery weight of 268 pounds is also estimated. This estimate considers ejection of the nose cone and probe. The net hanging weight on the chute is approximately 250 pounds.

Taurus Orion 33.026 will be a daytime launch to an apogee of 115 km. Taurus Orion 33.027 will be a nighttime launch to an apogee of 135 km.

NIKE ORIONS 31.028 UE and 31.029 UE (2)

Project Personnel and Responsibility

Name	Organization	Function
Dr. L. G. Smith	Univ. of Illinois	Project Scientist
Mr. L. J. Johnson	Univ. of Illinois	Payload Engineer
Mr. N. D. Busboom	Univ. of Illinois	Payload Technician
Mr. B. A. Tomei	Univ. of Illinois	Payload Technician
Mr. O. Royrvik	Univ. of Illinois	Project Scientist
Mr. B. M. Halpern	Univ. ov Illinois	Payload Technician
Mr. David Detwiler	NASA GSFC/WFF	Payload Manager

Scientific Objectives and Experiments

1. Objectives

The general mission objective is the investigation of the daytime equatorial ionosphere in the D and E regions. Specific objectives are as follows:

a. Investigation of anomalous differential absorption of radio waves inthe altitude range of 55 to 70 km.

b. Determination of the electron density profile of the D and E regions.

c. Investigation of irregular structure of the electron density profile (fine structure) in terms of neutral turbulence in the D region, plasma instabilities in the quatorial electrojet and gravity wave effects ("150 km-echoes") in the upper E region. These measurements will be correlated with simultaneous observations at Jicamarca.

Experiments

a. Langmuir Probe
b. Fine sTructure Probe
c. Propagation Experiment

Vehicle Description

The Nike Orion is a two stage, solid-propellant, unquided sounding rocket. The Nike burns 3.5 seconds. The Orion motor is a dual thrust motor with a total burn time of 32 seconds. (See drawings on pages 32 and 33 for dimensions and weights.)

Payload Description

The payload comprises a nose cone (11° included angle) with a ceramic and steel nose tip (the electrode of the probe experiment). The nose cone encloses the electronics for the probe experiment. Immediately to the rear is the section having a fiberglass shell, which contains the antennas and receivers (two of each) for the propagation experiment.

The payload is 16.8 cm (6.625 in.) in diameter and the overall length is to be 190.2 cm (74.90 in.). The weight is estimated to be 31. 3 kg. (69 lb).

The individual experiments are:

a. Langmuir Probe

This experiment is used primarily to obtain the structural features of the electron density profile. An absolute calibration for electron density is obtained by combining this experiment with the radio propagation experiment. The probe is held at constant voltage to apogee then a voltage sweep is introduced periodically. The sweep mode allows measurement of electron temperature. The probe experiment requires two channels of the FM/FM system. The output of the experiment in the fexed voltage mode is further processed in the following experiment.

b. Fine Structure Probe

The output of the probe contains information on irregularities in electron density in all sizes down to 1 m. The spectrum of irregularity structure is obtained by spectral analysis of the probe output signal. In the fine-structure experiment some of the signal processing is incorporated in the payload. Two channels contain broad-band information and another two contain narrow-band information.

c. Propagation Experiment

Radiowave propagation at 2.114 MHz and 5.040 MHz will be used in differential absorption and differential Doppler (Faraday rotation) frequencies. Some modifications have been effected to optimize the lower frequency for differential absorption and to optimize the upper frequency for differential Doppler. This requires additional circuits in the payload. The signals are radiated from four linearly polarized antennas; one N-S and one E-W at each frequency. The transmitter van must be interconnected with the telemetry receiving van. The receiver output and magnetometer signals are sent from telemetry to the transmitter and frequency and amplitude monitoring signal sent from the transmitter to telemetry (for recording). The experiment uses four TM channels for the modulation and AGC signals from the receivers and two additional TM channels for error signals generated in the on-board circuits.

The experiment is supported by a spin-magnetometer. This uses two TM channels; one for the output (sinusoid); a second for a square wave derived from the magnetometer output and used in the differential absorption experiment.

TERRIER-MALEMUTES 29.019 UE and 29.020 UE

Project Personnel and Responsibility

Name	Organization	Function
Dr. M. C. Kelly	Cornell Univ.	Principal Investigator
Dr. P. Kintner	Cornell Univ.	Co-Investigator
Dr. R. R. Green	Cornell Univ.	Payload Engineer
Dr. R. Pfaff	Cornell Univ.	Co-Investigator
Dr. K. Baker	Utah State Univ.	Co-Investigator
Dr. L. Smith	Univ. of Illinois	Co-Investigator
Dr. N. Maynard	NASA/GSFC	Co-Investigator
Mr. C. Siefring	Cornell Univ.	Payload Specialist
Mr. J. LaBelle	Cornell Univ.	Payload Specialist
Mr. D. F. Detwiler	NASA/GSFC/WFF	Payload Manager
Dr. E. Kudeki	Cornell Univ.	Jicamarca Operations

Scientific Objectives and Experiments

1. Objectives

Terrier Malemute 29.019 UE - The general objective of this experiment is to fully characterize equitorial spread F (ESF) and the quasi-static electric field and plasma density at the magnetic equator.

Terrier-Malemute 29.020 UE - The general objective of this experiment is to emphasize rocket altitude and to take Cornell University's wave experiment as high as possible into an ESF plume.

Experiments

a. 29.019 UE:

(1) E-field	Dr. M. Kelly, Cornell Univ.
(2) Particle detector	Dr. L. Smith, Univ. of Illinois
(3) Plasma frequency probe	Dr. K. Baker, Utah State Univ.
(4) D/C E field booms	Dr. N. Maynard, NASA/GSFC
(5) Plasma density	Dr. P. Kintner, Cornell Univ.

b. 29.020 UE:

(1) E-field	Dr. M. Kelly, Cornell Univ.
(2) Particle detector	Dr. L. Smith, Univ. of Illinois
(3) Plasma density	Dr. P. Kintner, Cornell Univ.

Vehicle Description

The Terrier-Malemute is a two-stage solid propellant unguided sounding rocket. The Terrier has an interstage clamp which is released, causing the stages to separate by drag differential.

Payload Description

The full-up experiment has been designated Terrier-Malemute 29.019. The payload configuration will consist of a 16-inch diameter to a 14-inch diameter transition section housing the second

stage ignition and yo-yo despin systems. A 14-inch diameter instrumentation/experiment section will house one set of 5.5 meter Weitzmann booms, one set of 3.0 meter Weitzmann booms and one set of Maynard/GSFC E field booms-cross and diagonal. An 11° phenolic nose cone will house a University of Illinois particle experiment and a Utah State University plasma frequency probe. The 3.0 meter Weitzmann booms are just below the nose cone interface. The Maynard E field booms are located just below. The 5.5 meter Weitzmann booms are located at the bottom of the payload structure.

The modified experiment has been designated Terrier-Malemute 29.020. The payload configuration will consist of a 16-inch diameter to a 14-inch diameter transition section housing the second stage ignition. A 14-inch diameter instrumentation/experiment section will house two sets of 5.5 meter Weitzmann booms. An 11° phenolic nose cone will house the University of Illinois particle experiment.

SUPER-LOKI SPHERES and SUPER LOKI DATASONDES (11 plus 4 back-ups)

Project Designations

Project designations have been made by WFF and include four back-up numbers. They are as follows:

Super Loki-Sphere

TU1-380, TU1-381, TU1-382, TU1-383, TU1-384, TU1-385, TU1-386, TU1-358, TU1-359, TU1-360

Super Loki-Datasonde

TU1-388, TU1-389, TU1-390, TU1-391, TU1-351

Project Personnel and Responsibility

Name	Organization	Function
Mr. Frank Schmidlin	NASA/GSFC/WFF	Project Scientist
Dr. Ronald Woodman	IGP	Co-Investigator
Mr. Wayne Cornell	NASA/Joule'	Payload Technician
Mr. Bobby Flowers	NASA/GSFC/WFF	Payloqd Manager

Scientific Objectives and Experiments

Objectives

The specific objectives of the tests are to provide mesospheric wind profiles and temperature data of the neutral atmosphere.

New information indicates that correlation may exist between the atmospheric electrical structure and temperature and wind of the neutral atmosphere. Two layers of special interest are the 50-70 km region where ion-ion recombination coefficients appear related to the neutral atmosphere structure; and, the 60-35 km region where the horizontal electrical field appears related to the neutral wind.

Experiments

a. Inflatable Sphere (PWN-12A Modified)

b. Temperature Sensor and Starute Decelerator (PWN-11A)

Vehicle Description

The single stage boosted dart vehicle used for this test is manufactured by Space Data Corporation, Tempe, Arizona. The vehicle consists primarily of a solid propellant rocket motor, interstage adaptor, dart tail and ejection assembly, and a thermal ablative coated dart body that houses the payload.

The non-propulsive dart is drag separated from the booster after rocket motor burnout and coasts to apogee where the payload is deployed. The payload is ejected from the dart body just prior to apogee by means of a ground fired electrically initiated pyrotechnic delay train located within the dart tail assembly.

Payload Description

1. Sphere (PWN-12A)

The payload (sphere) is constructed of 0.5 mil metallized mylar and is inflated after ejection from the dart body to a diameter of 1 meter by a capsule of isopentane. The purpose of the falling sphere is to provide density, temperature, and wind information over a range from 90 km (kilometers) down to 30 km on the descent leg of the flight where the sphere is expected to collapse.

Vehicle Weights

Super Loki Motor	50.38 lbs.	22.90 kg.
Interstage and Ballast	2.50 lbs.	1.14 kg.
Dart and Payload	14.44 lbs.	6.54 kg.
Vehicle Launch Weight	67.32 lbs.	30.58 kg.

Datasonde (PWN-11A)

The instrumented dart assembly includes a pyrotechnic time delay tail assembly, dart body, nose cone (ogive), and payload consisting of a parachute (Starute) and instrument package with temperature sensor. The instrument package consists of a transmitter and antenna assembly, a modulator, an electronic commutator, a battery pack, a loop thermistor mount, and a 10 mil diameter bead thermistor.

The parachute (7 ft.^{2}) is constructed of 1/4 mil mylar with four (4) metallized mylar "burble fences" to reduce oscillations of the payload after ejection and ram-air inflation; supports the instrument package (sonde) and provides radar tracking capabilities for positional data during the descent of the flight.

The data sensing and telemetry system incorporated in the dart utilizes the standard Ground Meteorological Detection (AN/GMD-18) system or the ground based telemetry system for data reception and print-out.

Vehicle Weights'

Super Loki Datasonde (PWN-11A)

Super Loki Motor	50.38 lbs.	22.90 kg
Interstage Adaptor	6.82 lbs.	3.10 kg
Ballast (steel shot)	as required	-
Rocket Motor "end weight"	57.63 lbs.	26.19 kg
Dart and Payload	10.00 lbs.	4.54 kg
Vehicle Launch Weight	67.63	30.74 kg

NIKE-ORIONS 31.026 GE and 31.027 GE

Project Personnel and Responsibility

Name	Organization	Function
Dr. N. C. Maynard	NASA/GSFC	Project Scientist
Dr. L.C. Hale	Penn State Univ.	Experiment Scientist
Mr. J. C. Modlin	NASA/GSFC	Payload Engineer
Mr. B. J. Flowers	NASA/GSFC/WFF	Payload Manager

Scientific Objectives and Experiments

Objectives

The general objectives are to study the daytime and nighttime middle atmospheric electric field structure, measure the polarization of the electric field, and measure two stream irregularities associated with the electrojet.

Specific objectives of the flights are as follows:

a. Map the structure of the vector electric fields within the middle atmosphere.

b. Determine the cause of variations in the vector electric field by:

1. Relating these changes to variations in the ion conductivity, ion density, ion mobility, and neutral winds.

2. Determining how such changes are related to incoming energetic radiation of x-rays.

c. Intercompare vector electric field measurements from one of these payloads with the vertical electric field measurements on board the Goldberg Orion payload in order to develop the technology for accurate electric field measurements in the middle atmosphere.

d. Study the spatial and temporal structure of the electric field.

Experiments

a. Triaxial Electric Field - Dr. N. C. Maynard, GSFC
b. Blunt Probe - Dr. L. C. Hale, PSU

Vehicle Description

The Nike-Orion is a two stage, solid-propellant, unguided sounding rocket. The Nike burns 3.5 seconds. The Orion motor is a dual thrust motor with a total burn time of 32 seconds. Ignition is at plus 9 seconds. The stages separate at Nike burnout by differential drag forces.

Payload Description

Payload for 31.025 and 31.027 contain a separable experiment-instrumentation system. This is called the DAUGHTER. This is an independent free falling, payload once it is ejected from the vehicle.

The payload will be despun down to 1.5 cps and the nose cone ejected exposing the Daughter and allowing the booms to be deployed. The Daughter will then be ejected just before apogee. The event sequence for the payloads are as follows:

		Altitude
1.	Despin	85 km
2.	Eject nose cone	87 km
3.	(Deploy booms)	87 km
4.	Payload separation	97 km
5.	Apogee	108 km

The Daughter payload instrumentation system consists of: a Space Vector "Midas" attitude gyro, a Vector MMP-600 microminiature PCM system, a TRF R104-M TRADAT ranging receiver and a 20 cell power source. Six experiment booms with spherical probes are mounted orthogonally on three axes about the sphere. Also located about the sphere are eight S-Band cavity backed slot antennae and four 550 MHz bent wire antennae.

Daughter payload telemetry data consists of Experiment E-Field and Blunt Probe, and payload housekeeping data. The output 200 Kbit B10-L PCM is combined with the 3.906 Kbit B10-L video from the tradat ranging receiver. This combined video in turn modulates the S-Band transmitter.

SUPER ARCASES 15.218 UE, 15.219 UE, 15.220 UE, 15.221 UE, 15.222 UE and 15.223 UE. (Six)

Project Personnel and Responsibility

Name	Organization	Function
Dr. L. C. Hale	Penn State Univ.	Project Scientist
Dr. J. C. Mitchell	Penn State Univ.	Project Scientist
Mr. C. L. Croskey	Penn State University	Experiment Engineer
Mr. T. W. Collins	Penn State Univ.	Payload Engineer
Mr. B. J. Flowers	NASA/GSFC/WFF	Payload Manager

Scientific Objectives and Experiments

Objectives

The new improved "electrical structure" payload is designed to measure the electrical structure of the mesosphere. The specific ofjective is to measure the electric fields between 70 and 20 km. This data will be compared with other experiments and will aid in determining the parameters which will effect the electrodynamics of the middle atmosphere.

Experiments

a. Gerdien Condenser
b. E-Field Measurements

Vehicle Description

The Super Arcas vehicle (MARC 60A2-36KS 370) is a single stage, end burning, solid propellent sounding rocket manufactured by the Atlantic Research Corporation. It is a modified version of the standard Arcas vehicle. The motor has an average thrust level of 370 pounds and a total burning time of 38 seconds. The unguided rocket is spin stabilized by four canted fins, arranged in a cruciform configuration around the aft perimeter of the motor casing. The rocket motor is 4.5 inches in diameter and 76 inches in length.

Payload Description

1. Gerdien Condenser

The Gerdien condenser has two concentric cylindrical electrodes; the inner one is the collector, and the outer one is the return electrode. Applying the correct voltage between the electrodes and measuring the current drawn to the collector, the electrical conductivity and charge number density of the plasma flowing axially through the aspirator will be determined. An ejectable phenolic nose cone is utilized to expose the conductivity probe to the atmosphere at payload ejection (148 seconds). The payload utilizes a 16 foot Disc-Gap-Band (DGB) parachute as a decelerator during the data period.

2. E-Field Measurements

An E-Field antenna constructed of braided conductor is deployed on the lanyard leading to the parachute, as in previous payloads. Four booms are deployed at angles (2 up - 2 down) to provide 3-axis measurement capability. (Although this will not enable separation of a weak horizontal component from a strong vertical field, or vice versa, previous experience has shown that large middle atmosphere fields, when they exist, are either primarily vertical or horizontal at different altitudes.) The "fair weather" field in the stratosphere and below is primarily vertical. A nose tip probe for ion and electron conductivity will be flown on the upleg (other measurements - downleg).

NIKE-ORION 31.032 GE/TU2-370 and 31.033 GE/TU2-371

Project Personnel and Responsibility

Name	Organization	Function
Dr. R. A. Goldbert	NASA/GSFC	Project Scientist
Dr. J. R. Barcus	Univ. of Denver	Experiment Scientist
Dr. J. C. Mitchell	Penn State Univ.	Experiment Scientist
Dr. L. C. Hale	Penn State Univ.	Experiment Scientist
Dr. C. L. Croskey	Penn State Univ.	Experiment Scientist
Mr. J. C. Modlin	NASA/GSFC	Payload Engineer
Mr. J. R. Hagemayer	NASA/GSFC	Payload Technician
Mr. B. J. Flowers	NASA/GSFC/WFF	Payload Manager

Scientific Objectives and Experiments

Objectives

The general objectives of this program is to study the middle atmospheric electric fields in a geomagnetically quiet and particle free environment near the magnetic equator.

Specific objectives to be studied include perturbation in the electric field structure related to local fluctuations in ion chemistry, background radiation, and meteorological parameters.

Experiments

a.	X-ray Detector and Geiger Tube	Dr. J. R. Barcus - Univ. of Denver and Dr. R. A. Goldberg - NASA/GSFC
b.	Gerdien Probe	Dr. J. C. Mitchell - Penn State Univ.
c.	Electric Field Probe	Dr. L. C. Hale - Penn State Univ.

Vehicle Description

The Nike Orion is a two-stage, solid-propellant, unguided sounding rocket. The first stage is a standard Nike motor, stabilized by three fins canted 15 minutes clockwise to induce a 1 rps roll rate at burnout. The Nike burns 3.5 seconds. The Orion motor is a dual thrust motor with a total burn time of 32 seconds. Ignition is at plus 9 seconds. The motor is stabilized by four fins canted 50 minutes clockwise to induce a 6 rps roll rate at burnout.

Payload Description

The payload consists of five sections, the ballast section, the Orion ignition and gyro/despin section, the adapter, the cylindrical experiment section, and the nose cone. The payload is 125 inches long and 14 inches in diameter, with a weight of 500 pounds. There is a single experiment section fly-away umbilical located 71 inches from the motor interface and an ignition/despin fly-away umbilical located 15 inches from the motor interface. A second umbilical has now been added to this area for gyro control. The payload must be purged with dry nitrogen while on the launcher.

TAURUS-TOMAHAWK 34.009 UE/TU2-378 and 34.010 UE/TU2-379

Project Personnel and Responsibility

Name	Organization	Function
Dr. E. M. Wescott	Univ. of Alaska	Principal Investigator
Dr. H. C. Nielsen	Univ. of Alaska	Co-Investigator
Dr. M. C. Kelly	Cornell Univ.	Co-Investigator
Dr. R. Pfaff	Cornell Univ.	Experiment Scientist
Mr. T. C. Hollinan	Univ. of Alaska	Experiment Scientist
Mr. C. Meltuedt	Univ. of Alaska	Experiment Scientist
Mr. D. Bostow	Univ. of Alaska	Payload Engineer
Mr. R. Green	Cornell Univ.	Payload Engineer
Ms. N. Meltuedt	Univ. of Alaska	Interpretor
Dr. R. B. Torbert	Univ. of California San Diego	Co-Investigator
Dr. P. Newel	Univ. of California, San Diego	Experiment Scientist
Dr. Gerhart Haerendel	Max Planck	Co-Investigator
Dr. Herman Foppl	Max Planck	Experiment Scientist
Mr. Jay Brown	NASA/WFF/CSC	Payload Manager

Scientific Objectives and Experiments

Objectives

The general objective of this program is to test the Alfven theory of critical velocity. The secondary objective is to study the conjugate Electric Fields.

Experiments

a. Taurus-Tomahawk 34.009 UE:

Radial shaped charge	Dr. E. M. Wescott, Univ. of Alaska
Optical	Dr. G. Haerendel, Max Planck

b. Taurus-Tomahawk 34.010 UE:

Particle detector	Dr. R. B. Torbert, Univ. of Cal, San Diego
E-Field	Dr. M. C. Kelley, Cornell Univ.
Conical shaped charge	Dr. E. M. Wescott, Univ. of Alaska
Optical	Dr. G. Haerendel, Max Planck

Vehicle Description

The Taurus-Tomahawk is a two-stage solid propellant unguided sounding rocket. The vehicle is stablilized by four fins (on each of the two stages), arranged in a cruciform configuration. Separation is achieved at burnout of the first stage by differential drag forces. There is no mechanical restraint between the Tomahawk motor and the transition section in the axial direction.

Motors

a. Taurus Motor

The first stage Taurus motor contains a 1662.9# Chemical cartridge made up of an ARP double-base grain in a 4-point tapered cruciform configuration. Burn time is approximately 3.4 seconds.

b. Tomahawk Motor

The second stage rocket motor is a Thiokol Chemical Corporation Tomahawk (Model No. TE-M-416). It contains 175.5 kilograms of composite case-bonded propellant, with an internal burning 3-point slotted configuration, and burns for approximately 9.0 seconds.

Payload Description

Experiment A (34.009) will consist of detonating a radial shaped charge with a strontium metal liner at apogee on a due west trajectory (perpendicular to B). There will be no telemetry on board. The principle data will be optical observations of SrI and II lones as a test of the Alfven critical velocity theory. Data will also be taken on the conjugacy of low latitude electric fields.

Experiment B (34.010) will involve a more complicated payload consisting of a separable conical barium shaped charge aimed backwards at an instrumented section remaining on the rocket body with M. C. Kelley's E field and three component magnetometer experiments and a particle detector provided by R. Torbert. The experiment will be done in UV shadow so that all ionization will be due to the Alfven effect. Morning twilight will illuminate the Barium ion cloud which will eventually become sunlit. Data on the conjugacy of ionospheric electric fields can then be obtained optically.

The radical shaped charge payload (34.09 UE) is similar to 34.03 flown in March of 1980. It is 109.2 cm long, 22.9 cm in diameter and weighs approximately 29.3 kg.

The conical shaped charge payload (34.010 UE) has the following changes from 34.008 flown in March 1982: 1) The radial shaped charge canister has become the conical shaped charge; 2)A university of California, San Diego, experiment has been changed to a second generation configuration. The new payload is 167.4 cm long, 22.9 cm in diameter and weighs approximately 59.1 kg.

SOUNDING ROCKET LAUNCH SCHEDULE

Launch	Day	Vehicle	Experiment	Experimenter	(local time) Launch Window
1. (Feb.26)	1	*Taurus-Orion	Electrojet experiments	Pfaff/Kelley Cornell Univ.	1000-1200
2. "	1.5	Nike-Orion	Daytime ionosphere	Smith, Univ. of Illinois	1100-1300
3. (Feb. 27)	2	Terrier-Malemute II	Spread F. measurements	Kelley, Cornell Univ.	1900-2400
4. (Mar. 6)	9	*Taurus-Orion	Electrojet experiment	Pfaff, Cornell Univ.	1900-2400
5. (Mar. 7)	10	Super-Loki Sphere	Mesospheric winds	Schmidlin/ Woodman Wallops & IGP	1045
6. "	10	Nike-Orion	Middle atmosphere electrodynamics	Maynard, Goddard	1100
7. "	10	Super Arcas	Mesospheric electrical	Hale, Penn State	1115
8. "	10	Super-Loki Datasonde	Small scale atmospheric structure	Schmidlin/ Woodman Wallops & IGP	1400
9. "	10	**Super Arcas	Mesospheric electrical	Hale, Penn State	1600
10. "	10	Super Arcas	Mesospheric electrical	Hale, Penn State	2000
11. "	10	Nike-Orion	Middle Atmosphere Electrodynamics	Goldberg Goddard	2200
12. "	10	Nike-Orion	Middle atmosphere Electrodynamics	Maynard Goddard	2200+1

*water recovery
**not required if night series follows

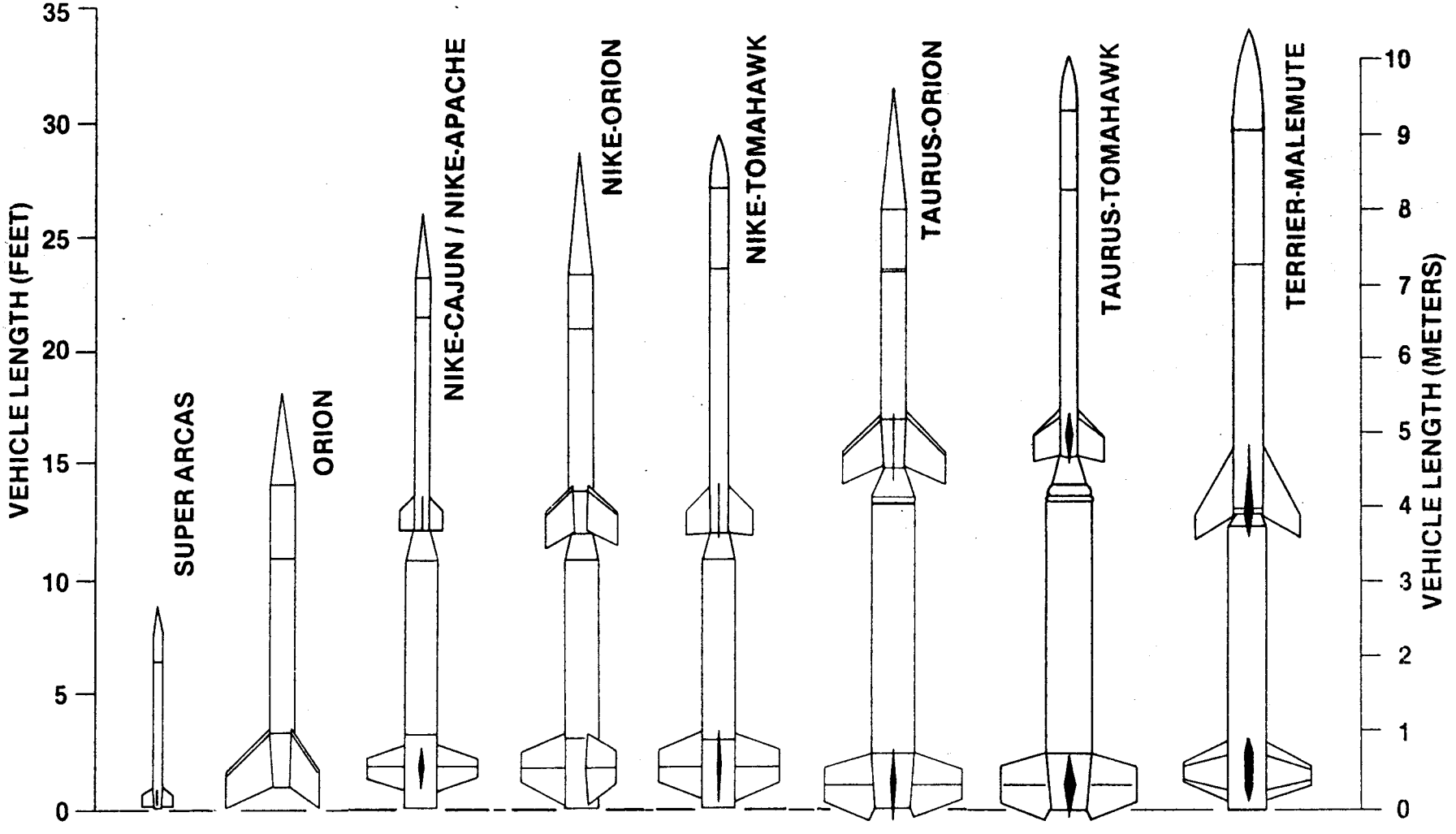
Sounding Rocket Launch Schedule, p. 2

Launch	Day	Vehicle	Experiment	Experimenter	Launch Window
13. (Mar. 7)	10	Super Loki Sphere	Small scale atmospheric structure	Schmidlin/WFF	2205
14. "	10	Super Loki Datasonde	" " " "	" "	2225
15. "	10	Super Loki Sphere	" " " "	" "	0000
16. "	10	Super Loki Sphere	" " " "	" "	0020
17. "	10	Super Loki Sphere	" " " "	" "	0040
18. "	10	Super Loki Sphere	" " " "	" "	0100
19. "	10	Super Arcas	Mesospheric electrical	Hale, Penn State	0130
20. "	10	Super Loki Sphere	Small scale atmospheric structure	Schmidlin/WFF	0345
21. "	10	Nike-Orion	Middle atmosphere electrodynamics	Goldberg/GSFC	0400
22. "	10	Super Loki Datasonde	Small scale atmospheric structure	Schmidlin/WFF	0405
23. "	10	Super Arcas	Mesospheric electrical	Hale, Penn State	0500
24. (Mar. 8)	11	Super Arcas	" "	" "	0800
25. (Mar. 9)	12	Nike-Orion	Daytime ionosphere	Smith, Univ. of Illinois	1100-1300
26. (Mar.11)	14	Terrier Malemute II	Spread F. experiments	Kelley, Cornell	1900-2400

-more-

Launch	Day	Vehicle	Experiment	Experimenter	Launch Window
27. (Mar. 12 to 27)	15-30	Taurus Tomahawk	Shaped charge BA/STR releases	Wescott/Kelley Univ. of Alaska & Cornell Univ.	0448:22+1 min.
28. (Mar. 12 to 27)	15-30	Taurus Tomahawk	" " " "	" "	0450:22+1 min.
29. (Mar. 27)	30	Super Loki Datasonde	Small scale atmospheric structure	Schmidlin/ Woodman Wallops & IGP	0900

WALLOPS SOUNDING ROCKETS



VEHICLE NAME	MOTOR DIA.	MOTOR WEIGHT	MOTOR LENGTH
TAURUS	22.8 in.	3005.9 lbs.	179.7 in.
ORION	14.0 in.	898.0 lbs.	105.5 in.
		3903.9 lbs.	285.2 in.
TAURUS	22.8 in.	3005.9 lbs.	179.7 in.
TOMAHAWK	9.0 in.	535.9 lbs.	141.1 in.
		841.8 lbs.	320.8 in.
TERRIER	18 in.	1840.0 lbs.	157.0 in.
MALEMUTE	16 in.	1439.5 lbs.	131.0 in.
		3279.3 lbs.	288.0 in.
Super Loki	3.0 in.	54 lbs.	79 in.
SUPER ARCAS	4.5 in.	82.7 lbs.	75.8 in.
NIKE	16.5	1300 lbs.	145.2 in.
ORION	14.0 in.	898.0 lbs.	105.5
		2198.0 lbs.	150.7 in.

(NOTE: The length and weight of the individual payload should be added to obtain the total dimensions and weight of the rocket vehicles.)

I. RECOVERY OPERATIONS PLAN

A. Objectives and General Information

Water recovery operations will be conducted to recover the Taurus-Orion payloads 33.026 UE/TU2-362 and 33.027 UE/TU2-363. These payloads will be refurbished and used for future flight experiments.

Taurus-Orion 33.026 UE/TU2-362 will be launched during daylight hours and weather and sea conditions permitting will be recovered by a recovery helicopter with a surface vessel as back-up. Taurus-Orion 33.027 UE/TU2-362 will be launched during nighttime hours and the prime recovery unit will be the surface vessel. In the event 33.027 UE/TU2-362 has not been recovered by daylight, the recovery helicopter may be used for recovery.

B. Recovery Procedures

1. Impact Determinations

Radar track of the payload with attached parachute to radar horizon is anticipated. Initial impact location will be determined from the radar tracking information and communicated to the recovery units from Recovery Control.

2. Payload Location and Recovery Procedures

Once initial impact location has been determined, the fixed-wing search aircraft will be radar vectored from its holding pattern to the impact area. Detection of the recovery beacon should occur prior to the aircraft reaching the impact area; however, the aircraft will remain under radar control until it has been vectored to the radar indicated impact point unless otherwise indicated from recovery control.

Upon visual detection of the payload, the fixed-wing search aircraft will perform the following:

(a) Mark the detected items with smoke and/or dye markers.

(b) Assist in vectoring the surface or helicopter recovery unit to the impact location.

(c)Maintain surveillance of detected items until recovery from the water has been performed.

3. Surface Vessel Recovery Procedures

The surface vessel will be directed to proceed to the recovery area initially by means of its own navigation based on the impact coordinates and instructions communicated from Recovery Control. On nearing the area, the vessel will be assisted by the fixed-wing search aircraft via voice instructions.

After a visual sighting is confirmed, the surface vessel will come alongside the payload and take it aboard.

Once the boarding is effected, the payload should be washed with fresh water.

The surface vessel will return to home port and from there the payload will be trucked to Punta Lobos Launch Range.

Initial location of the recovery surface vessel will be 20 Km Northeast of the predicted impact point.

4. Helicopter Recovery Procedures

Prior to dispatching the recovery helicopter to the recovery area, the fixed-wing search aircraft will have located the payload, marked the location with a dye marker, and established an orbit at the location. The helicopter will be radar vectored to the recovery area as well as vectoring assistance from the fixed-wing aircraft and the recovery beacon receiver.

After the helicopter arrives at the impact location and has visually sighted the payload, recovery procedures will be as follows:

(a) Use the telescoping pole (rigged as shown in Figure 1) to engage the retrieval hook in the lifting loops on the payload floatation bag. (See Figure 2)

(b) Release the telescoping pole which allows the lifting line to be transferred directly to the load hook beneath the helicopter.

(c) Lift the payload from the water and proceed to Punta Lobos Launch Range with the payload in trail beneath the helicopter.

(d) The fixed-wing search aircraft will maintain surveillance of the recovery helicopter until the payload has been delivered to the launch range.

5. Special Recovery Equipment Aboard Search and Recovery Units

(A) Fixed-Wing Search Aircraft

(a) Smoke flares
(b) "S" and "C" -band radar tracking beacons
(c) Operational recovery beacon receiving equipment
(d) Dye markers
(e) Portable VHF/FM radio (F-6)

(B) Recovery Helicopter

(a) "S" and "C" -band radar tracking beacons
(b) Operational recovery beacon receiving equipment
(c) Dye markers
(d) Lifting line with telescoping pole and retrieval hook attached
(e) Portable VHF/FM radio (F-6)

(C) Recovery Surface Vessel

(a) Portable VHF/FM radio (F-6)
(b) Operational pinger receiving equipment

6. Recovery Payload Description and Recovery Aids

1. Payload recoverable weight 271 lbs.(123 Kg)33.026 UE and 33.027 UE

2. Payload length 149 in.(378.5 Cm)33.026 UE and 33.027 UE.

3. Payload diameter 14 in.(35.6 Cm)33.026 UE and 33.027 UE

4. Payload colors for both payloads are gold for the cylindrical main body with a silver nose cone.

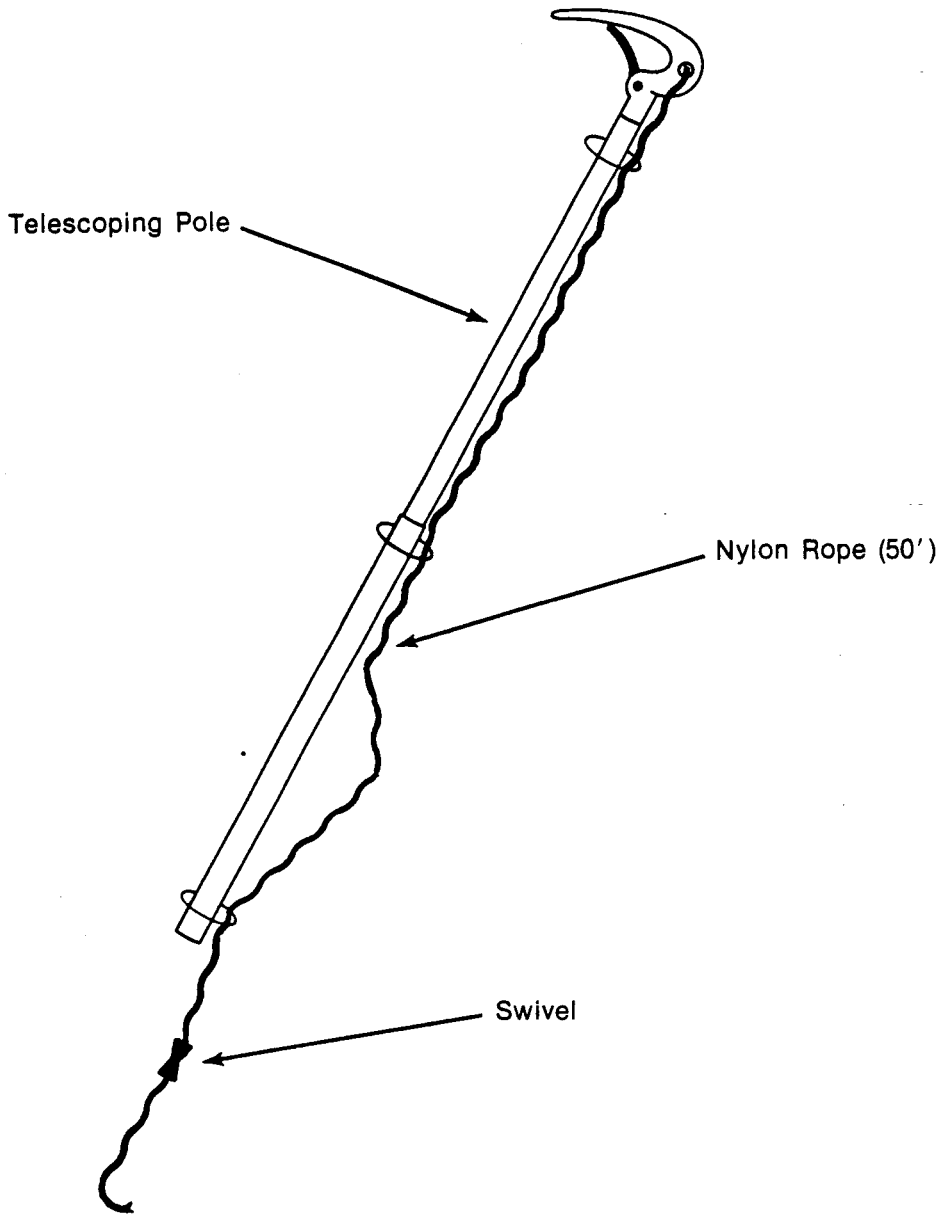


Figure 1

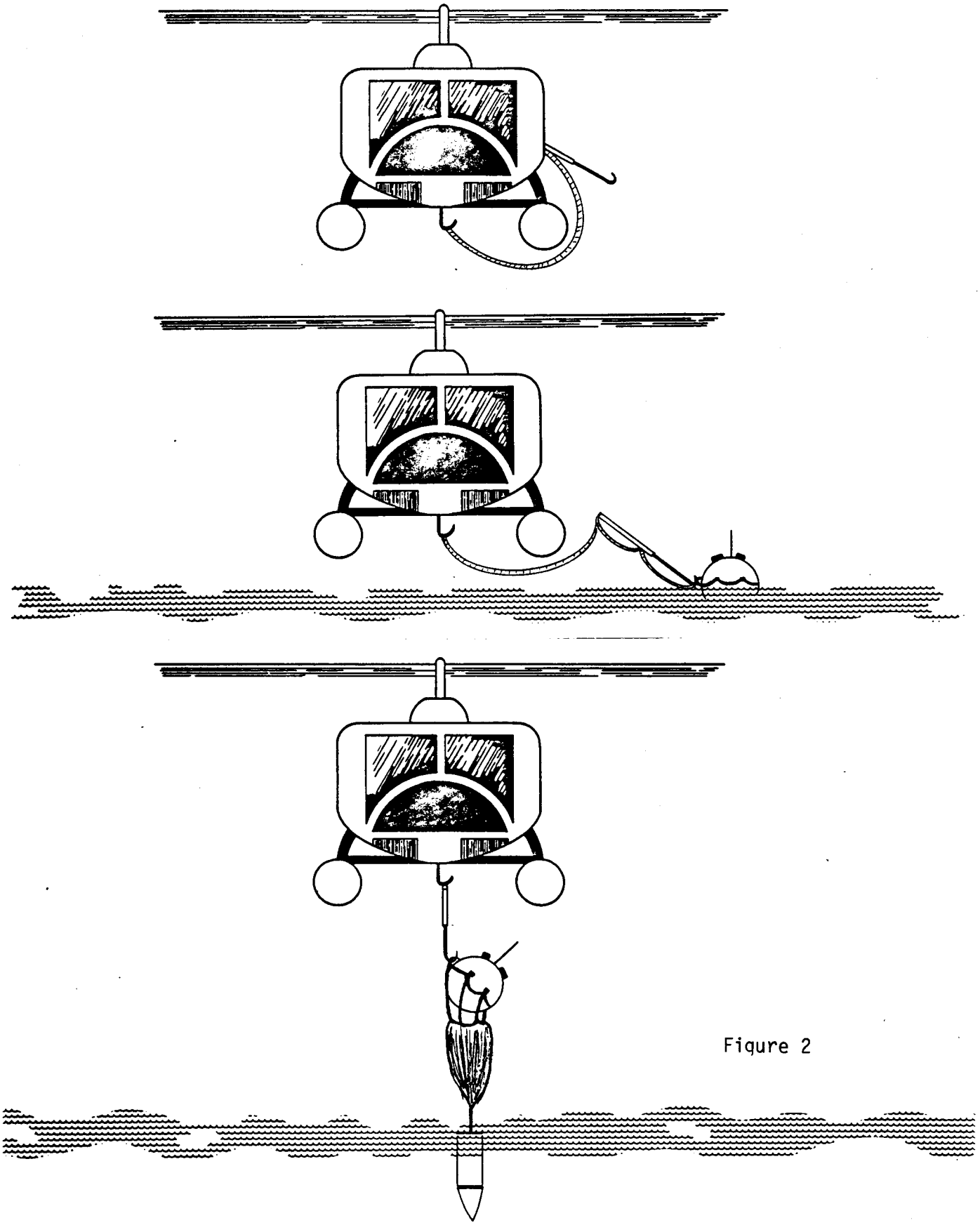


Figure 2

WATER RECOVERY SYSTEM

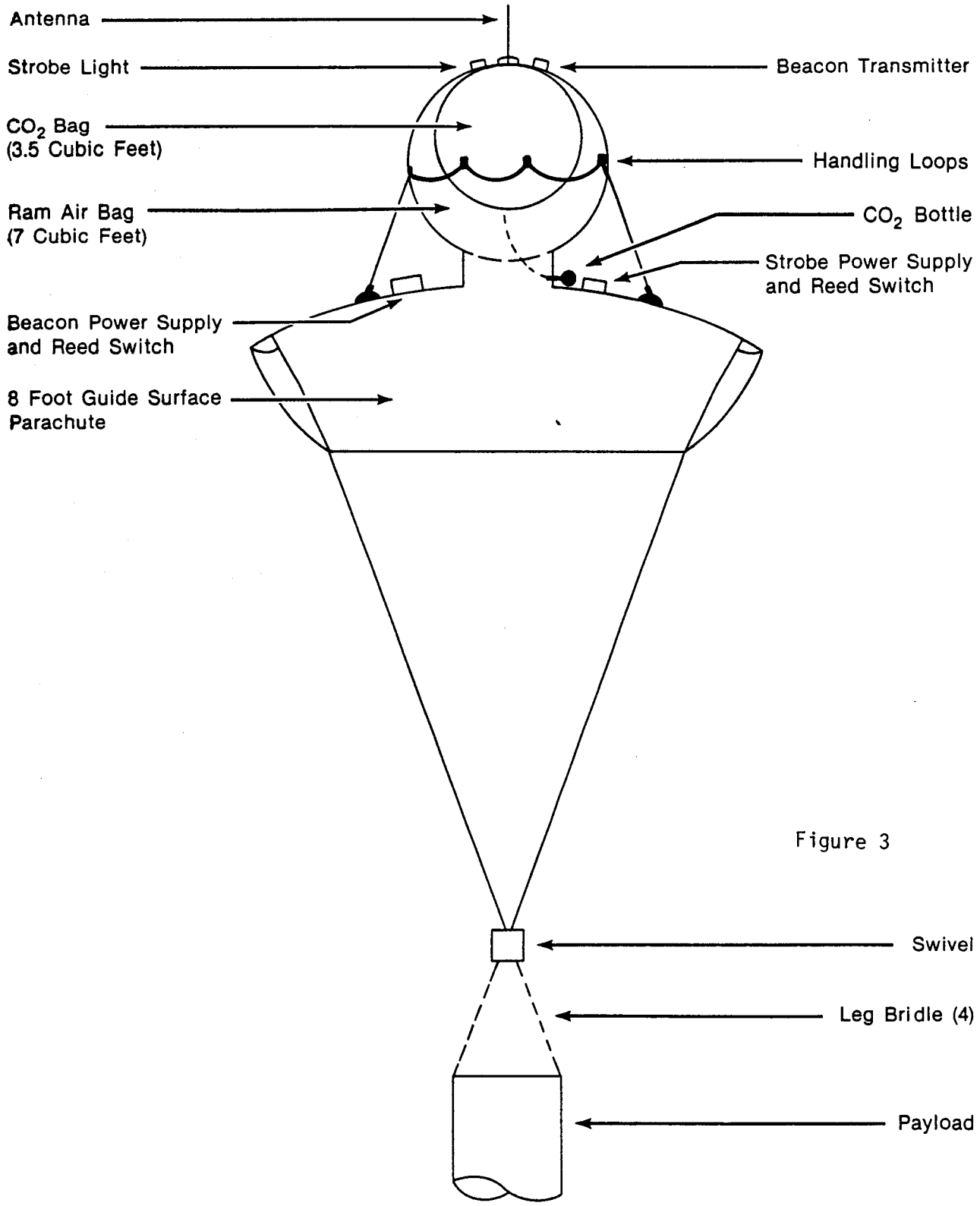


Figure 3

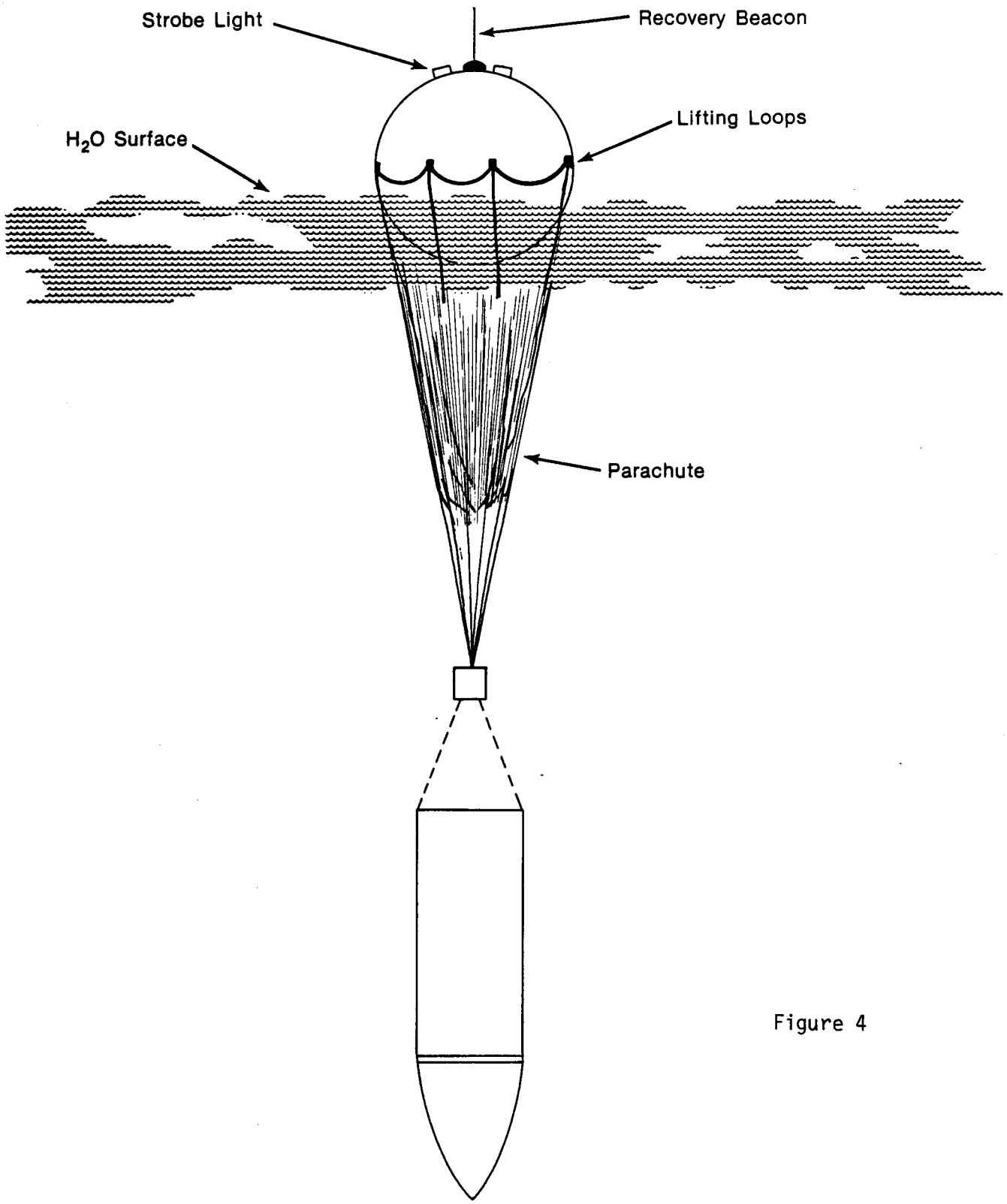

Strobe Light
Recovery Beacon
Lifting Loops
H_2O Surface
Parachute

Figure 4

MISSION MANAGEMENT

Noel W. Hinners, Director
NASA Goddard Space Flight Center

J. Warren Keller, Director
Suborbital Projects and Operations Directorate
GSFC/Wallops Flight Facility

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Bobby J. Flowers, NASA Payload Manager, Project CONDOR
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Dr. Michael Kelly, Scientific Coordinator, Project CONDOR
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Los Alamos National Laboratory

Dr. Kay Baker
Utah State University

Dr. J. R. Barcus
University of Denver

Dr. S. Basu
Air Force Geophysics Laboratory

Dr. Richard Behnki
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(Experimenters continued)

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Dr. Gerhart Haerendel
Max Planck Institute

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Penn State

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NASA News

National Aeronautics and
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RELEASE NO. 83-5

MILESTONE FLIGHT IN SOLAR ASTRONOMY AT WHITE SANDS THIS WEEK

A milestone flight in solar astronomy was conducted at the White Sands Missile Range (New Mexico) this week when NASA launched the 100th sounding rocket with a Solar Pointing Attitude Rocket Control System (SPARCS) on board.

The flight, which carried a Naval Research Laboratory solar physics experiment on a Black Brant rocket, was conducted on March 7 at 9:00 a.m. MST. according to officials at the NASA Goddard Space Flight Center. Goddard has responsibility for NASA's sounding rocket program.

Principal investigators on the experiment are Dr. G. E. Brueckner and Dr. J. D. F. Bartoe, of the E. O. Hulburt Center for Space Research at the Naval Research Laboratory in Washington, DC. Mission chief is Jack Gottlieb of the Goddard Space Flight Center.

The flight was designed to bring scientists one step closer to unravelling the mysteries of the Sun.

- more -

SPARCS is a precision three-axis recoverable solar pointing attitude control system which was developed as a lightweight, low-cost, precision pointing system to provide a more reliable means of solar pointing than systems using inertial reference gyros. The gyroless concept was developed by Lockheed Missiles and Space Company.

The first SPARCS flight was made in December, 1967.

The pointing stability of SPARCS is better than a few tenths of an arc second, or about the diameter of a dime in a 10-mile radius. This precision has yielded the best images of the Sun scientists ever have been able to obtain, according to Goddard officials.

Payloads flown on SPARCS during its 15 years of operation have made more fundamental discoveries in solar physics than all satellite programs combined, the scientists contend. To name a few: the width of the Sun's transition zone lines, the correlations between coronal holes and high speed solar wind streams, the high temperature flare plasma's fine structure, the loop structure of the flare instability, the X-ray loop structure of active regions on the Sun's surface, molecular resonance flourescence in the ultraviolet, high energy phenomena in the quiet Sun, the first X-ray pictures of the Sun, the first high resolution X-ray and ultraviolet spectrograms, and many others.

The reason for this success, the scientists say, is the combination of high pointing stability of SPARCS with the versatility of experiments flown on it and the use of photographic film.

The fine structure of the underlying low temperature layers of the solar atmosphere is a well-known phenomenon from visible light ground-based observations. However, high temperature phenomena, like the upper chromosphere transition zone and corona, are not accessible with high resolution to the ground-based observer. The observation of the fine structures of these layers is considered fundamental to understanding them, the scientists say.

The use of photographic film, together with properly designed experiments, makes retrieval of 6 to 7 minutes of information possible during the normal 10-minute rocket flight.

SPARCS is more than a high performance rocket pointer, the scientists emphasize. It has outlived the Aerobee Sounding Rocket to serve the Black Brant rocket system which can carry much larger payloads. Over the years, SPARCS has developed many auxiliary functions which makes it an integrated rocket observatory. Command uplinking for manual pointing was added in 1970 and the necessary TV feedback from the experiment to the ground in 1972. This allows the observer to use an experiment carried by SPARCS like a ground-based telescope to point at particular solar features.

Furthermore, the SPARCS laboratory at the White Sands Missile Range, operated under the supervision of John Shigamoto of Lockheed Missiles and Space Company, is considered by scientists as the best solar sounding rocket integration facility in existence. It allows the experimenter to make all necessary checks of his or her payload prior to flight.

SPARCS has made another important contribution to solar physics from space, also. Many of the experiments flown on orbiting satellites had their prototype flown on SPARCS. Those experiments, the scientists report, have proved much more successful on satillites than those that did not fly on SPARCS.

# # # # #

NASA News

National Aeronautics and
Space Administration

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For Release:
March 30, 1983

RELEASE NO. 83-7

INTERNATIONAL ROCKET EXPERIMENTS COMPLETED IN PERU

On March 29 an international team of scientists completed a month-long program of sounding rocket launches in Peru to study the upper tropical atmosphere.

The operation, called Project CONDOR, was an equatorial atmospheric rocket/radar campaign of universities and aerospace agencies from the United States, Peru, and the Federal Republic of Germany. Operating from the Punta Lobos Launch Range, a distant point on Peru's desert coast about 60 kilometers (37 miles) south of Lima, the scientists launched 32 sounding rockets. All plasma physics missions were reported successful with the exception of one Nike-Orion that experienced a payload failure. In addition, the required meteorological supportive data were obtained from the Super Loki missions. The Jiacamarca Radio Observatory, east of Lima, provided ground-based information and measurements for support of the sounding rockets.

Cooperating in the effort were the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), the Peruvian Comission Nacional de Investiacion Y Desarrollo Aeroespacial (CONIDA), and the Instituto Geofisico del Peru (IGP

- more -

Scientists, engineers and other specialists from seven U. S. universities also took part in the project. The universities represented include the University of Alaska, University of California at San Diego, Cornell University, University of Denver, University of Illinois, Pennsylvania State University and Utah State University as well as the Max Planck Institute of West Germany.

NASA provided the rockets, scientific payloads, and the equipment for tracking the rockets and receiving data transmitted from them. CONIDA provided the range and range support. IGP provided ground-based atmospheric measurements and support from Jiacamarca Radio Observatory and the Hunacayo Observatory, approximately 200 km (125 miles) east of Lima.

The launch window for the project opened on February 26 and ran through the end of March. The first launch--a Nike-Orion--occurred on February 27 and the last launch--a Loki Datasonde--occurred on March 23. Twenty-three of the rocketborne experiments were conducted on March 8 and 9 during a 21-hour period. (See Sounding Rocket Launching Schedule attached.)

Two of the rockets released colorful chemical clouds that were visible as far away as Arequipa, 850 km (528 miles) to the south, and Chiclayo, 650 km (404 miles) to the north, before dawn on March 21 and 23. The clouds, formed by releasing barium and strontium at altitudes of 555 km (354 miles) and 425 km (264 miles) first appeared as small white balls and then expanded in size and changed in color to greenish blue.

The Peruvian Coast Guard made two successful water recoveries of Taurus Orion payloads.

The purpose of the experiments, according to the scientists, is to map electrical conditions and the wind and radio wave patterns found in the upper atmosphere in the tropics. The tropical atmosphere is of interest in part because the magnetic equator (located in Peru) is the portion of the planet where the magnetic field is perfectly horizontal while gravity points directly downward.

While some of the experiments are expected to supply pure scientific information, others may have practical applications to communications and navigation technology, the scientists said. Satellite ranging systems, used to determine the positions of ships at sea, for example, could be affected by conditions in the ionosphere, that region 80 to 400 km (50 to 250 miles) above the earth where present day knowledge above the equator is far from complete.

Project CONDOR is a part of the NASA Sounding Rocket Program and is managed for NASA by the Goddard Space Flight Center, Wallops Flight Facility at Wallops Island, Virginia.

- END -

(Rocket Launching Schedule attached)

SOUNDING ROCKET LAUNCHING SCHEDULE

DATE	TIME (Z)	LAUNCH VEHICLE	MODEL NO.	RESULTS
Feb. 27	1633	Nike-Orion	31.028	Good
Mar. 2	0251	Terrier Malemute	29.020	Good
Mar. 3	0354	Taurus Orion	33.026	Good
Mar. 8	1515	Super Loki-Sphere	TU1-380	Good
Mar. 8	1635	Nike-Orion	31.026	Good
Mar. 8	1716	Super Arcas	15.218	Good
Mar. 8	1917	Super Loki-Datasonde	TU1-388	Good
Mar. 8	2200	Super Arcas	15.223	Low apogee
Mar. 8	2327 + 03	Super Arcas	15.221	Good
Mar. 9	0100	Super Arcas	15.220	Good
Mar. 9	0225	Super Loki-Sphere	TU1-381	No track
Mar. 9	0238	Super Loki-Sphere	TU1-358 (B/U)	Good
Mar. 9	0306	Nike-Orion	31.027	Good
Mar. 9	0327	Nike-Orion	31.032	Good
Mar. 9	0352	Super Loki-Datasonde	TU1-389	Good
Mar. 9	0500	Super Loki-Sphere	TU1-382	Good
Mar. 9	0520	Super Loki Sphere	TU1-383	No track
Mar. 9	0532	Super Loki-Sphere	TU1-359 (B/U)	Good
Mar. 9	0549	Super Loki-Sphere	TU1-384	No track
Mar. 9	0610	Super Loki-Sphere	TU1-385	Good
Mar. 9	0746	Super Loki-Datasonde	TU1-390	Unsuccessful; Payload broke-up after ejection; high fall rate.
Mar. 9	0820	Super Loki-Sphere	TU1-386	Good
Mar. 9	0857	Nike-Orion	31.033	Good
Mar. 9	0920	Super Loki-Datasonde	TU1-361	Good
Mar. 9	1011	Super Arcas	15.219	Good
Mar. 9	1200	Super Arcas	15.222	Good
Mar. 12	1534	Taurus Orion	33.027	Good
Mar. 12	1709	Nike-Orion	31.029	Good
Mar. 15	0233	Terrier Malemute	29.019	Good
Mar. 21	0932	Taurus Tomahawk	34.010	Good
Mar. 23	0949	Taurus Tomahawk	34.009	Good
Mar. 23	1900	Super Loki Datasonde	TU1-391	Good

NASA News

National Aeronautics and
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For Release:
Monday,
April 11, 1983

RELEASE NO. 83-9

NASA LAUNCHES UNIVERSITY OF MARYLAND'S GALACTIC ASTRONOMY EXPERIMENT FROM WALLOPS ISLAND, VIRGINIA

A three-stage Black Brant X sounding rocket was launched at 2:47 a.m. EST yesterday (April 10) from NASA's Goddard/Wallops Flight Facility to probe the interstellar gas above the Earth's outer atmosphere.

Some scientists believe our solar system is immersed in a cloud of matter which originated in the "big bang." In fact, they believe that the solar system itself evolved from gas and dust which condensed out of this residue which is known as the interstellar medium. Because of its origin, the properties of the interstellar medium reflect the history of the universe extending back to its beginning.

Much has been learned about large scale properties of the interstellar medium with astronomical techniques. However, our knowledge of the local properties is limited. There are two problems:

- more -

the interstellar medium is very diffuse--just a few particles in a cubic meter--and most of these particles are ionized by solar radiation and swept away by magnetic fields. Fortunately, however, helium atoms are a part of the interstellar medium, and these atoms can approach the Earth without being ionized by sunlight. In the spring of the year, the Earth is moving in opposition to the interstellar gas, and the scientists expect that a sounding rocket shot out well ahead of the Earth will be in a position to intercept fast-moving helium atoms as they stream Earthward.

In yesterday's sounding rocket launch, Dr. John Moore, of the University of Maryland, and Drs. Chet Opal and Robert Meier, of the Naval Research Laboratory, used a slotted disk velocity selector which will admit fast moving atoms to the exclusion of all other atoms. The fast atoms strike an electronic detector and are counted. The instrument scans back and forth across the sky and, by recording the direction of the incoming helium atoms, determines the temperature and the source of the interstellar medium. The flight data is being analyzed to determine whether all mission requirements were met. Scientific results will be published later.

The Black Brant X (BBX) was developed by the NASA Goddard Space Flight Center (GSFC) in a cooperative effort with the Canadian National Research Council, Bristol Aerospace Limited, the Swedish Space Corporation, and SAAB-Scania Corporation.

The BBX consists of a Terrier MOD I as first stage, a Black Brant VC (BBVC) as second stage, and the newly developed Nihka motor as third stage. It is 51 feet long and has a diameter of 17¼ inches (first

stage). The approximately 2740 kilogram (6125 pound) vehicle, including the payload, reached an altitude of 666 kilometers (414 miles).

Vel Maksimovic is the GSFC Mission Chief and Charlie Campbell is the GSFC Vehicle Manager. Rick Erdman and Larry Thomas are GSFC's instrumentation manager and attitude control system manager, respectively. Dr. Moore is the principal investigator. Drs. Opal and Meier are co-investigators. William T. Burns is the GSFC/Wallops project engineer, John L. Parks is the safety officer, William L. Lord is the test director, and Paul White is the pad supervisor.

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For Release
May 6, 1983

RELEASE NO. 83-10

WALLOPS FLIGHT FACILITY OBSERVES SMALL BUSINESS WEEK

By Presidential Proclamation, the week of May 8 has been designated as Small Business Week. During this week tribute is paid to small business concerns for their contributions to our success as a nation and to acknowledge our dependence on their progress and vitality for our economic well-being. Small firms employ over half of the labor force and are leaders in employment creation and innovation as well as playing an important role in expanding economic opportunities for women and minorities.

Federal Procuring Agencies bear the predominant responsibility for maintaining the economic system which insures the vitality of free enterprise.

To further implement the objective of the Small Business Program, all small concerns or interested individuals are urged to contact the Small Business Specialist at the National Aeronautics and Space Administration, Goddard Space Flight Center, Wallops Flight Facility, Wallops Island, Virginia 23337, to submit their capabilities and obtain advice pertaining to contracting or subcontracting opportunities. All correspondence should be addressed to Elton R. Scott, Small Business Specialist, Room 211, Building E-107 or telephonic inquiries directed to him by calling (804) 824-3411, extension 542.

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For Release:
Monday,
May 23, 1983

RELEASE NO: 83-11

SOUNDING ROCKET EXPERIMENTS SUPPORT SOLAR SYSTEM THEORY

Recent sounding rockets experiments involving the release of two metallic gases into the ionosphere have provided tentative additional support for a solar system evolution model which was first presented in 1942.

This past March an international team of experimenters from the University of Alaska (Fairbanks), Cornell University (Ithaca, New York), University of California (San Diego), and the Max Planck Institute for Extraterrestrial Physics, (Garching, Federal Republic of Germany), carried out two rocket-borne experiments from Peru as part of the NASA-sponsored Project Condor.

The experiments used shaped explosive charges with liners of two different metals--strontium and barium--to produce high velocity gases.

The experiments were designed to test a theory proposed by Dr. Hannes Alfven, University of California, San Diego, that a neutral gas will ionize if it crosses magnetic field lines at certain critical velocities.

- more -

Since this theory was first proposed both theoretical work and laboratory experiments have been devoted to testing the effect. Until the Project Condor experiments, however, none of the tests had been carried out in space - the only plasma laboratory where containment vessel effects are nonexistent.

To verify and understand the physical effects proposed by this theory, experiments were needed which created conditions similar to those in the primordial solar nebula. The Project Condor experiments mimicked those conditions by injecting neutral gas across magnetic field lines at speeds greater than the critical velocity. At the magnetic equator, near the launch site, this can be done with sounding rockets due to the horizontal geometry of magnetic field lines.

In the barium experiment, measuring instruments were placed in the gas stream about 2 kilometers from the explosive release at 447 km altitude. Electrons, ions and plasma waves expected in the Alfven ionization mechanism were detected. Because the sounding rocket experiments are extremely short-lived, some initial ions were required to seed the process. Solar ultra-violet light provided the seed ionization and the subsequent barium ionization was observed to be very efficient, Dr. Eugene Wescott, the University of Alaska investigator, said.

The strontium experiment differed in that there was a negligible seed ionization due to solar ultraviolet radiation resulting in very little strontium ionization. Although the strontium experiment was not as efficient as the barium, on the solar system evolution scale of millions of years, this process could be

quite efficient and would produce the desired differentiation and energy transfer required to produce the conditions for planetary formation.

The Alfven - Arrbenius theory is an attempt to answer the question of why all the gas and dust from the solar nebula did not fall into the sun and why all the planets have differing compositions. Dr. Gustaf Arrhenius, Scripps Institution of Oceanography, University of California (San Diego), has collaborated with Alfven on this theory.

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For Release:
June 30, 1983

RELEASE NO: 83-12

NASA AWARDS $1.5 MILLION CONTRACT FOR REHABILITATION OF WALLOPS FACILITIES

A $1.5 million contract has been awarded to Lance J. Eller, Inc., of Tasley, Virginia, for rehabilitation of airfield facilities at NASA's Goddard Space Flight Center's Wallops Flight Facility, Goddard officials reported today.

The $1,532,619 fixed-price contract, which has a completion date of December 29, 1983, calls for the resurfacing of three asphalt runways and two asphalt taxiways.

The Wallops Facility, located at Wallops Island, Virginia, provides a wide spectrum of services to the aeronautical flight test and research community. Between 100 and 200 test operations are conducted there in a typical year in support of aeronautical research programs for NASA and other agencies.

Categories of flight research include terminal area operations, Advanced Transport Operating Systems (ATOPS), general aviation

- more -

stall and spin studies, aircraft noise programs, AV-8B (Navy Harrier aircraft) flutter and performance studies; as well as other R&D projects.

- END -

NASA News

National Aeronautics and
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For Release:
Wednesday,
July 6, 1983

RELEASE NO: 83-13

CHEMICAL CLOUDS TO BE VISIBLE ALONG EAST COAST

Bluish-yellow clouds will be formed high over the mid-eastern U. S. coast before dawn on two occasions during the next two weeks. The launch window is July 9 through July 23. The tests, scheduled to be conducted at least 24 hours apart, may be delayed from day to day because of operational constraints or cloud cover at the camera sites.

The National Aeronautics and Space Administration plans to launch a pair of rocketborne chemical vapor experiments from Wallops Island, Virginia, in a continuing investigation of neutral winds and convective electric fields in the upper atmosphere. Specific objectives are to evaluate the visibility and duration of trails formed by releases of small quantities of various chemical compounds.

The trails and clouds released from the two-stage Taurus-Orion rockets contain two consitiuents. One remains neutral and its glow enables wind motions of the upper atmosphere to be observed.

- more -

The other component is ionized by the Sun, and its motion is governed by electric and magnetic fields. Observation of these trails provides a technique for measuring winds and electric fields in space. These techniques will be candidates for use in later flights on Space Shuttle.

Launch time, beginning July 9, will be 4:44 a.m. EDT and will be about one minute later each day, should the launch be delayed. Clear skies are necessary for observation purposes. The primary source of data acquisition will be photographic data obtained from two tracking sites located at Raleigh, North Carolina, and Duck, North Carolina.

The chemicals will be released twice as the rockets ascend and once as the payloads descend. The first payload will release three clouds. The first cloud at 150 kilometers (94 miles) will appear red and blue from barium, strontium, lithium and copper oxide emissions. The second at 209 kilometers (130 miles) on the ascent and the third at 222 kilometers (139 miles) on the descent will appear blue-green. The second payload will release its three chemical trails at approximately the same altitude 24 hours later: first release comprised of barium, strontium lithium and copper oxide will appear red, blue and yellow; second release a mixture of barium and thermite; and the third release of barium, strontium, and thermite.

Although bright to an unaided eye, the amount of released material is quite small involving a total of only 23.24 pounds (10.54 Kg) of barium, 25.68 pounds (11.67 Kg) of strontium, .05 pounds (.024 Kg) of lithium, 26.2 pounds (11.9 Kg) of thermite , and 1.65 pounds

(.75 Kg) of copper oxide. The clouds will be dispersed by winds over thousands of miles and any ecological effects will be negligible.

The highest releases should be visible above elevation angles of 10 degrees from Boston to Savannah, Georgia, and west to Greenville, South Carolina. From Washington, D.C., they will appear 20-40 degrees above the horizon in the southeast.

The project is managed by the Goddard Space Flight Center's Wallops Flight Facility and Thiokol Corporation, Ogden, Utah, fabricated the payload.

Dr. James P. Heppner is the Project Scientist, Geoffrey L. Bland is the Payload Manager, and Dempsey B. Bruton, Jr. is the Project Engineer.

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For Release:
Wednesday,
July 20, 1983

RELEASE NO. 83-16

SECOND CHEMICAL CLOUD EXPERIMENT CONDUCTED FROM WALLOPS

NASA successfully conducted the second in a series of two chemical cloud experiments at dawn today from its Wallops Island Facility on the Eastern Shore of Virginia.

Liftoff of the two-stage Taurus-Orion sounding rocket occurred at 4:54 a.m. EDT. The first in this pair of similar experiments was successfully conducted on Friday, July 15, at 4:49 a.m. EDT. The two launches had been scheduled on a daily basis since July 9, during the 15-day launch window, awaiting proper optical conditions at the camera tracking sites in Raleigh and Duck, North Carolina.

The 174-pound payload released two chemical clouds as it ascended. The first cloud at an altitude of about 150 km (94 miles) appeared red and yellow from barium, strontium, lithium and copper oxide emissions. Then a blue-green barium and thermite cloud was released at 209 km (130 miles). A planned third release was not observed.

Observation of these chemical clouds provides a technique for measuring winds and electric fields in space.

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For Release:
September 12, 1983

RELEASE NO. 83-18

FAA VERTICAL SEPARATION PROGRAM

NASA and the Federal Avaiation Administration are cooperating in the first step toward a change in air traffic control system structure which has the potential of both substantial saving in annual domestic jet fuel costs and improving the efficiency of FAA operations.

The change under study is a reduction in the high-altitude vertical separation standard--or minimum vertical distance which must be flight planned between two aircraft which expect to be close together in the horizontal plane. Presently, 2,000 feet, both the FAA and airspace users would like to see a 1,000 foot standard implemented. Before such a reduction can take place, however, safe air traffic control system operation must be assured and system performance standards developed to support the change.

Key to the safety analysis and performance standards development is knowledge of how well aircraft currently maintain assigned altitude when flying at or above 29,000 feet, the height at which the current 2,000-foot minimum is required.

- more -

The FAA has a proposed methodology for collecting data on altitude maintenance which has been undergoing periodic testing and development at the Wallops Flight Facility since April of 1982. A five-week full-scale test of the procedure began on July 12th involving a specially equipped North American Sabreliner aircraft from the National Center for Atmospheric Research in Boulder, Colorado, the FAA's Washington Air Route Traffic Control Center in Leesburg, Virginia, and staff from the FAA Technical Center in Atlantic City, New Jersey.

The Sabreliner is tracked with a Wallops C-band precision radar while flying several altitudes on a jet route close to the Wallops Flight Facility, providing a relationship between barometric pressure altitudes, which aircraft fly, and their corresponding geometric heights, which vary with changing atmospheric conditions.

Certain aircraft on the jet route are selected for tracking by an FAA Technical Center air traffic controller stationed at Leesburg and their positions passed to C-band precision radars at Wallops for acquisition. Comparison of the geometric height of an aircraft with the Sabreliner track for the same pressure altitude allows real-time assessment of navigational performance from the Wallops Range Control Center.

Unexpectedly large vertical errors can be noted in real time and flight crews asked for possibly clarifying information through the Washington Center while still being tracked.

The FAA technical Center will conduct a thorough analysis of test results during the coming months.

Future plans for methodology development anticipate a continued level of Wallops involvement. A possible short-term follow-up of this summer's test is tentatively scheduled this fall at the Wallops Flight Facility. Also under active consideration is a three-week field data collection in the Denver-Boulder, Colorado area this winter using one of the Wallops mobile C-band radars. Further large-scale data collections are planned for the Facility in fiscal years 1984 and 1985 once the methodology is fully developed.

Wallops Project Manager and Test Director is Raymond D. Atkins of the Wallops Project Management and Operations. Branch. FAA Technical Center Program Manager is Brian Colamosca and FAA Headquarters Program Manager is Jerry W. Bradley.

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NASA News

National Aeronautics and
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For Release:
Wednesday,
September 28, 1983

RELEASE NO. 83-19

OPEN HOUSE AT WALLOPS ON SUNDAY, OCTOBER 9

In observance of NASA's 25th Anniversary, the Wallops Flight Facility will be open to the public on Sunday, October 9, 1983, from 10:00 a.m. until 5:00 p.m. EDT.

The Main Base, one half mile north of Route 175 between U.S. 13 and Chincoteague, will be open as well as the Visitor Center located on Route 175 about four miles from the Wallops main gate.

On the Main Base, the Range Control Center will be open and a simulated rocket launch will be conducted every 30 minutes during the day. The Sounding Rocket Environmental Lab and the Applications Wave Tank Facility will depict testing of rockets and scientific payloads and wave research. The Wallops Electra will be available for walk-through; the Skyvan and the Langley Research Center's Spin aircraft which operates at Wallops will be on display. A 35-foot Aerovan which contains aeronautical exhibits will be on loan from Langley Research Center for walk-through. Sounding rockets, scientific payloads, demonstrations

- more -

of special computer programs, video shows, and other exhibits depicting NASA and the Goddard Space Flight Center will be on display. NASA and Wallops souvenirs will also be on sale.

A telemetry van and a radar van will be on display. The radar van will be operating and visitors will be invited to walk through. Both the Navy's F-18 (Hornet) and AV-8 (Harrier - V/STOL) aircraft have operated out of and been supported by Wallops in various testing programs and the two aircraft are on display. A model rocketry contest will be conducted in the morning at 10:30 a.m. EDT.

In the auditorium, the NASA Spacemobile Lecture/Demonstrations depicting the total NASA program are scheduled at 11:00 a.m., 1:00 p.m., and 3:00 p.m. EDT (50-minute programs).

Snacks and restrooms will be available in the Base cafeteria.

A moon rock and an Apollo space suit can be viewed at the Visitor Center on Route 175. Here also, full scale sounding rockets and satellites are on display. Video shows depicting programs at Wallops and special 50-minute video presentations on NASA's 25th anniversary will be shown at this location during the day.

This is the first Wallops open house in more than 10 years and everyone is invited to share in NASA's 25th anniversary celebration.

Special Events Schedule:
10:30 a.m. - Model Rocketry Contest
11:00 a.m., 1:00 p.m., and 3:00 p.m. - Spacemobile Lecture-Demonstration in Auditorium.

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For Release:

October 12, 1983

RELEASE NO: 83-20

NASA AWARDS CONTRACT FOR OPERATION OF AIRCRAFT AT WALLOPS

The National Aeronautics and Space Administration has awarded to Management Services Company, Huntsville, Alabama, a cost-plus-fixed-fee contract in the amount of $1,695,351.83 for Operation and Maintenance of Government Owned Aircraft at Goddard Space Flight Center's Wallops Flight Facility.

The contract which became effective on October 1, 1983 is for a basic and two one-year option periods and will be administered by the Wallops Flight Facility, Wallops Island, Virginia.

The Wallops Facility provides a wide spectrum of services to the aeronautical flight test and research community. Between 100 and 200 test operations are conducted here in a typical year in support of aeronautical research programs for NASA and other agencies.

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NASA News

National Aeronautics and
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Office of Public Affairs

For Release:
Tuesday,
October 25, 1983

RELEASE NO. 83-21

NASA'S WALLOPS FACILITY TO LAUNCH THREE VAPOR EXPERIMENTS

Three rocketborne chemical vapor experiments will be conducted in the skies above Goddard Space Flight Center's Wallops Flight Facility during a 19-day period, beginning October 31, officials at the National Aeronautics and Space Administration (NASA) center reported today.

The experiments, to be conducted for the U.S. Air Force and the Brazilian Air Force, will take place over the Atlantic Ocean just east of the Wallops Island, Virginia facility. Unlike previous chemical vapor releases, which have brightened the skies, these experiments will be barely visible, if at all, to viewers along the East Coast, officials said.

The tests will be conducted during evening and early morning hours during the period October 31 through November 18. Scheduled to be conducted 24 hours apart, delays could occur due to operational constraints or cloud cover at the camera sites.

- more -

The test most likely to be visible will be the launch scheduled for dusk, at 5:30 p.m. EST, October 31. The other two are planned during darkness, at 8 p.m. and 1 a.m.

Purpose of the tests is to investigate a portion of the upper atmosphere between 185 and 350 kilometers (115 to 217 statute miles). The specific objective is to conduct studies of ionospheric modification by means of chemical cloud techniques to improve communications with satellites.

A Nike-Tomahawk launch vehicle with a chemical release module plus two Brazilian Sonda III rockets, each equipped with an ion mass spectrometer and two chemical release modules, will be launched on separate days from the Wallops Facility. The chemicals will be released in the ionosphere, and the resultant disturbances will be measured by ground-based and airborne ionosondes, radars, and optical sensors. Ground-based and airborne receivers also will record satellite transmissions through the disturbances from locations from North Carolina to Massachusetts.

The Nike-Tomahawk is 27 feet long and 16½ inches in diameter, and the Sonda III is 21 feet long and 22 inches in diameter.

Three different chemicals--sulfur hexafluoride, samarium, and trifluoromethyl bromide--will be used in these tests. The chemicals, which create blue and pink clouds, will be released at 357 kilometers (222 miles) on the ascent and at 185 kilometers (115 miles) during the descent.

The experiments are being conducted for the Air Force Geophysics Laboratory, Hanscom AFB, Massachusetts, in cooperation with the Brazilian Aerospace Technical Center (CTA). Dr. Rocco Narcisi is the Air Force project scientist, William T. Burns is the Wallops project engineer, and Colonel Lauro Eduardo de Souza Pinto is the Brazilian operations coordinator.

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NASA News

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For Release:
Monday,
November 21, 1983

RELEASE NO. 83-22

NASA CONDUCTS PLASMA PHYSICS EXPERIMENTS FROM WALLOPS ISLAND, VA.

A series of three rockets and a meteorological balloon were launched Saturday (November 19) to conduct wave-plasma experiments and to compare measurements and techniques for studying electric fields in the Earth's middle atmosphere.

Both objectives are designed to further our knowledge about how various parts of the atmosphere interact with one another, particularly between altitude 20 kilometers (12 miles) and 100 kilometers (62 miles).

The specific objective of the wave-plasma experiments will be to detect triggering of high energy electron precipation in the Earth's upper atmosphere caused by a ground-based very low frequency (VLF) radio transmitter operated by the Navy and located in Annapolis, Maryland. The electric field study is designed to simultaneously measure the electric fields and other relevant parameters that can cause variations in the fields within the atmosphere.

- more -

Such measurements will help develop our understanding of the coupling between the upper and lower atmospheric electrical environment, which includes the electric fields in the ionosphere and those related to thunderstorms. Detailed electric field measurements within the Earth's middle atmosphere are just beginning to occur through programs of this type, and scientists consider them essential to increase our knowledge about interactions between various parts of the atmosphere.

A secondary objective is to compare the various measurement techniques commonly used to obtain this kind of information.

Liftoffs of the rocketborne and balloonborne experiments were:

Rawinsonde Balloon at 3:49 a.m. EST
Super-Loki at 4:45 a.m. EST
Nike-Orion at 5:41 a.m. EST
Nike-Orion at 5:46 a.m. EST

The Super-Loki and the small weather balloon obtained meteorological data to be correlated with the electric field measurements obtained by the other rocket payloads.

The balloon is about eight feet tall and five feet in diameter.

The Super-Loki and the Super Arcas rockets are about 10 feet long and 5 inches in diameter. The Nike-Orions are two stage rockets about 30 feet (8 meters) long and 17 inches in diameter.

The first Nike-Orion payload launched at 5:41 a.m. EST was recovered successfully in mid-air by the Wallops Skyvan aircraft. This scientific experiment package will be refurbished and reflown on future research flights.

Dr. Richard A. Goldberg of the NASA Goddard Space Flight Center in Greenbelt, Maryland, is the project scientist for the Nike-Orion mission which was coordinated with the VLF transmitter. Dr. Nelson C. Maynard, also of Goddard, is the project scientist for the electric field measurement carried on the other Nike-Orion flight. Francis J. Schmidlin is the Wallops project scientist for the Super-Loki flight. The complete scientific team for the series is made of the following: Professor James Barcus, University of Denver; Dr. Leslie C. Hale, Penn State University; Professor Michael Kelly, Cornell University; and Professor John Mitchell, Penn State University. The Wallops payload managers are: Geoffrey Bland, Dave Kotsifakis, Dave Moltedo, and Mendel Silbert. Wallops project engineers are: Dempsey B. Bruton, Jr., Robert J. Frostrom, and Debra Messamore.

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NASA News

National Aeronautics and
Space Administration

Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

Joyce B. Milliner
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For Release:
Thursday,
December 15, 1983

Release No. 83-23

NEW SOUNDING ROCKET CONFIGURATION LAUNCHED AT WALLOPS

A new three-stage solid propellant sounding rocket, the Taurus-Nike-Tomahawk (TNT), was launched at 2:57 p.m. EST yesterday (December 14) from Wallops Island, Virginia. The purpose of the launch was to flight test this new vehicle configuration for future use in the NASA sounding rocket program.

A secondary purpose was to conduct an experiment for the Utah State University to test a new technique for measuring the electron density and temperature of the earth's ionosphere.

This three-stage sounding rocket is being developed to provide a low-cost, high-flight platform. It consists of three off-the-shelf motors currently used in various two-stage configurations. Low cost is realized by using surplus military rocket motors for two of the three motors (Taurus and Nike). The addition of the TNT combination to the sounding rocket family provides capability to carry lightweight payloads 30-40 kg (60-80 pounds) to an altitude of around 700 km (435 miles). This is approximately 200 km (125 miles) higher than the distance attainable with the existing Taurus-Tomahawk two-stage vehicle. In addition to cost effectiveness, the TNT

-more-

will be capable of carrying relatively long, bulbous payloads. The Taurus-Nike-Tomahawk configuration is 13 meters (42 feet) long; the first stage is about 58 cm (23 inches) in diameter.

NASA GSFC Wallops Flight Facility payload manager is Bobby J. Flowers and the project engineer is Robert T. Long. Dr. Carl Howlett is the Utah State University project scientist for the "piggy-back" experiment.

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NASA News

National Aeronautics and
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For Release:
Thursday,
February 23, 1984

RELEASE NO. 84-1

NASA CONDUCTS PLASMA PHYSICS EXPERIMENTS FROM WALLOPS ISLAND, VA.

A series of three rockets were launched today to obtain measurements of the atmosphere's electric field and of the ion density and conductivity.

Each of the rocket vehicles carried instruments to measure the electric fields in the middle atmosphere, the region between approximately 20 and 100 kilometers (about 12-62 miles). Two of the rocket vehicles also carried instruments to measure conductivity. Such measurements will help develop our understanding of the coupling between the electrical environment, the ionosphere and the lower atmosphere electrification which is related to thunderstorms. Detailed electric field measurements within the Earth's middle atmosphere are just beginning to be made through programs of this type, and scientists consider them essential to increase our knowledge about interactions between various parts of the atmosphere.

A secondary objective is to compare the various measurement techniques commonly used to obtain this kind of information.

- more -

Liftoffs of the rocketborne experiments were:

Viper-Dart at 7:00 a.m. EST

Nike-Orion at 7:10 a.m. EST

Super-Arcas at 7:34 a.m. EST

The Super-Arcas is about 10 feet long and 4½ inches in diameter, the Viper Dart is 14 feet long and 4½ inches in diameter, and the Nike-Orion is a two stage rocket vehicle about 30 feet (8 meters) long and 17 inches in diameter.

Similar experiments were conducted from the Wallops range last fall during the pre-dawn hours. Data obtained from the current post-dawn flights will be correlated with the previous pre-dawn measurements.

Dr. Nelson C. Maynard of the NASA Goddard Space Flight Center in Greenbelt, Maryland, is the project scientists for the Viper-Dart and the Nike-Orion mission and Dr. Leslie C. Hale, Penn State University, University Park, Pennsylvania is the project scientist for the Super Arcas experiment. The Wallops payload managers are: Geoffrey Bland, Dave Kotsifakis, and Dave Moltedo. Wallops project engineers are: Robert Frostrom and Debbie Messamore.

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NASA News

National Aeronautics and
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Joyce B. Milliner
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James Elliott, 301/344-5566

For Release:
February 23, 1984

RELEASE NO. 84-2

NASA GSFC/WFF SELECTS CONTRACTOR FOR THE REPLACEMENT OF THE GSFC/WFF DATA PROCESSING CENTER

NASA's Goddard Space Flight Center/Wallops Flight Facility, Wallops Island, Virginia, has selected the Datacom of Fort Walton Beach, Florida, to negotiate a firm fixed price contract for the Replacement of the GSFC/WFF Data Processing System.

The contract, expected to be effective on April 15, 1984, will consist of purchase of five computer systems having independent operational capabilities while at the same time being networked. These systems will provide data processing support for aeronautical, space and environmental research experimentation as well as administrative data processing support.

The total proposed price for this effort is $4,359,000.

In addition to the above computer system, the contract will provide a real-time interface and display system, a real-time system program, hardware/software training, services of one hardware systems engineer, service of two software systems analysts, and maintenance of the above systems for a 1-year period after acceptance of each system.

- more -

Five companies submitted proposals, consisting of the following:

Datacom, Inc.; Fort Walton Beach, FL
DBA Systems, Inc.; Fairfax, VA
International Computer Equipment, Inc.; Fredericksburg, VA
Simulation Associates, Inc.; Newport News, VA
Systems and Applied Sciences Corporation; Riverside, MD

- END -

NASA News

National Aeronautics and
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For Release:
March 29, 1984

James Elliott, 301/344-5566

RELEASE NO. 84-3

NASA SUPPORTS FAA STUDY OF AIRCRAFT ALTIMETER ACCURACY

NASA's Goddard Space Flight Center/Wallops Flight Facility at Wallops Island, Virginia, provided support to the Federal Aviation Administration (FAA) for several weeks in Colorado recently studying whether commercial jets and other aircraft could safely fly with closer vertical spacing at high altitudes.

A Wallops mobile C-band radar van and a trailer containing the antenna and mount was transported to the Longmont, Colorado, Municipal Airport January 3 to track overflying aircraft and collect data for the study. This high precision tracking radar was used to assist the FAA specialists and atmospheric scientists in their three-week study to determine whether commercial jets and other aircraft could safely fly with only 1,000 feet vertical separation at higher altitudes. According to these scientists, a positive finding from the overall study could save U.S. airlines alone as much as $100 million a year in fuel costs.

FAA regulations now require aircraft flying above 29,000 feet to be vertically separated by at least 2,000 feet of airspace. Below the 29,000-foot altitude, aircraft are allowed to be as close as 1,000 feet apart. The

- more -

FAA as well as the airlines would like to use the smaller spacing at all altitudes up to 40,000 feet, primarily because it would save fuel.

However, because of deviations in air pressure over mountainous areas like the Rockies, the FAA is unsure of how safe the smaller vertical distances would be. The agency needs to know how closely pilots can stick to their assigned altitudes.

Aircraft altimeters--instruments measuring altitudes--use air pressure to determine altitude. Raymond D. Atkins, NASA Project Manager for the FAA Vertical Separation Program, said results from previous tests indicate that deviations in air pressure can cause aircraft to be off as much as 600 feet. The eastern slope of the Rockies was selected for this part of the study because of the deviations in air pressure over the mountains.

During this recent project the scientists focused upon a 50 by 80-mile rectangle of airspace bracketing the Continental Divide. Daily during the three-week period NASA personnel tracked all types of aircraft recording their altitudes.

In addition to NASA two other organizations supported the Colorado study: the Boulder-based National Center for Atmospheric Research (NCAR) and the National Oceanic and Atmospheric Administration (NOAA) environmental research laboratories also located in Colorado. Throughout the study, the FAA's Denver Air Route Traffic Control Center at Longmont coordinated airspace activity.

A NCAR twin-engine Sabreliner research aircraft flying daily through the rectangle at altitudes from 29,000 to 38,000 feet recorded its pressure altimeter readings. During these flights, the plane was observed by the

NASA precision tracking radar and the aircraft's geometric--or real--altitude was recorded for correlation with the aircraft readings. Simultaneously, scientists from NOAA's Environmental Research Laboratory monitored atmospheric activity such as winds, mountain airflow, gravity waves and other events believed to affect the accuracy of pressure altimeters. Also normal air traffic was tracked through the study area while the Air Route Traffic Control Center recorded altimeter readings of the individual aircraft for later comparison with the radar weather readings.

Returning to Virginia with the other three Wallops personnel and the equipment the second week in February, Ray Atkins said, "All indications are that FAA considers this a highly successful project."

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NASA News

National Aeronautics and
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James Elliott
301/344-5566

For Release:
April 3, 1984

RELEASE NO. 84-4

NASA AWARDS CONTRACT FOR OPERATION AND MAINTENANCE OF THE NATIONAL SCIENTIFIC BALLOON FACILITY IN PALESTINE, TEXAS

The National Aeronautics and Space Administration has awarded to the University Corporation for Atmospheric Research, Boulder, Colorado, a cost-plus-fixed fee contract in the amount of $7,076,741 for Operation and Maintenance of the National Scientific Balloon Facility (NSBF) in Palestine, Texas.

The contract which became effective on April 1, 1984, is for a basic and two one-year option periods and will be administered by the Goddard Space Flight Center's Wallops Flight Facility at Wallops Island, Virginia.

The contractor will provide the personnel, materials, supplies and services to manage, operate, and maintain the NSBF, to include flight program operation, engineering activities and research and development. Sixty to seventy scientific balloon flights are conducted from NSBF annually.

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NASA News

National Aeronautics and
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For Release:
May 3, 1984

RELEASE NO. 84-5

WALLOPS FLIGHT FACILITY OBSERVES SMALL BUSINESS WEEK

By Presidential Proclamation, the week of May 6 has been designated as Small Business Week. During this week, the Nation pays tribute to small business concerns for their contributions to our economic well-being.

To further implement the objective of the Small Business Program, all small concerns or interested individuals are urged to contact the Small Business Specialist at the National Aeronautics and Space Administration, Goddard Space Flight Center, Wallops Flight Facility, Wallops Island, Virginia 23337. Interested parties can submit their capabilities and can obtain advice pertaining to contracting or subcontracting opportunities by contacting Elton R. Scott, Small Business Specialist, Room 211, Building E-107, telephone (804) 824-3411, extension 542.

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NASA News

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For Release:
May 10, 1984

RELEASE NO. 84-6

NASA AWARDS $4.2 MILLION CONTRACT FOR REPLACEMENT OF THE GSFC/WALLOPS DATA PROCESSING SYSTEM

A $4.2 million contract has been awarded to Datacom, Inc. of Fort Walton Beach, Florida, for the replacement of the data processing system at NASA's Goddard Space Flight/Wallops Flight Facility, Goddard officials reported today.

The $4,242,538 fixed-price contract, which has a completion date of November 8, 1986, calls for the purchase of five computer systems having independent operational capabilities while at the same time being networked. These systems will provide data processing support for aeronautical, space and environmental research experimentation as well as administrative data processing support.

In addition to the above computer system, the contract will provide a real-time interface and display system, a real-time system program, hardware/software training, and systems maintenance.

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National Aeronautics and
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For Release:
May 10, 1984

James Elliott, 301/344-5566

RELEASE NO. 84-7

NASA CONTINUES PLASMA PHYSICS EXPERIMENTS FROM WALLOPS ISLAND, VA.

A two-stage sounding rocket was successfully launched today from Virginia's Eastern Shore to conduct a wave-plasma experiment in the Earth's upper atmosphere.

The primary objective of this flight is to study magnetospheric plasma/ wave particle instabilities induced by ground-produced VLF radiowaves produced in the troposphere--20 kilometers (12 miles) up to 100 kilometers (62 miles). The source of these waves was a high intensity transmitter located in Annapolis, Maryland, and operated by the Navy.

This experiment, and similar tests conducted during the past several years, are designed to further our knowledge about the near-Earth environment.

Liftoff of the Nike-Orion sounding rocket occurred at 4:57 a.m. DST. The 227-kilogram (500-pound) payload reached a peak altitude of 89 kilometers (52 statute miles). The Nike-Orion is about 8 meters (30 feet) long and 17 inches in diameter.

Rocket instrumentation included a VLF receiver, geiger counter, x-ray detector, a Gerdien probe, electric field sensors, and a two axis magnetometer. The payload was programmed to descend on a parachute to increase

- more -

sampling time on a stable platform in the critical region of interest.

Dr. Richard A. Goldberg of the NASA Goddard Space Flight Center in Greenbelt, Maryland, is the project scientist; Dempsey B. Bruton, Jr., is the Wallops project engineer; and Charles E. Manion is the Wallops payload manager.

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NASA News

National Aeronautics and
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For Release:
July 24, 1984

RELEASE NO. 10

NASA CONTINUES PLASMA PHYSICS EXPERIMENTS FROM WALLOPS ISLAND, VA.

A series of four rockets were launched today, July 24, 1984, from NASA's Wallops Island, Virginia, Facility to study electrical fields, aerosol particles and conductivity in the Earth's middle atmosphere, particularly between 40 kilometers (24 miles) altitude and 90 kilometers (54 miles).

These rocketborne experiments, and similar tests conducted during the past several years, are part of a continuing study of middle atmosphere electrodynamics.

The purpose of the multi-rocket series is to investigate whether aerosol particles play a role in the generation of large electrical fields that have been observed in the middle atmosphere from previous rocketborne studies.

A "mother/daughter" experiment was carried onboard the largest rocket in the series, a Black Brant VB. The 614-kilogram (1354-pound) payload was programmed to separate into two sections called "mother" and "daughter." After nose cone ejection and the booms were unfolded, the "daughter"

- more -

was separated at 95 kilometers (59 miles) as the rocket ascended This section contained instrumentation to measure electric fields and conductivity. The "mother" was ejected at 98 kilometers (61 miles), near apogee.

The "daughter" section continued to free fall and landed in the Atlantic Ocean. The "mother" descended on a 46-foot cross-shaped parachute and was recovered in mid-air by the Wallops Skyvan aircraft. The scientific experiment package on the mother will be refurbished and reflown on future research flights. In today's series three other scientific probes were conducted--one prior to the Black Brant VB launch and two following. A small Super Arcas rocket (about 10 feet and 5 inches in diameter), containing instruments to ascertain whether significant electrical field activity was occurring in the middle atmosphere, was launched prior to conducting the "mother/daughter" experiments.

A small Super Loki Sphere was launched to obtain meteorological data 48 minutes after the "mother/daughter" probes, and then another Super Arcas was lofted to collect additional electric field and conductivity data which will be correlated with the other experiments.

Both payloads on the small Super Arcas rockets descended on parachutes which were snatched in mid-air and returned to Wallops.

Liftoffs of the rocketborne experiments were:

Super Arcas at 6:29 a.m. EDT
Black Brant VB at 6:40 a.m. EDT
Super Loki Sphere at 7:28 a.m EDT
Super Arcas at 7:56 a.m EDT

The Black Brant VB vehicle is about 32 feet long (9.8 meters) and 17 inches in diameter.

The series was scheduled to occur in late July when there are prevailing easterly winds in the middle atmosphere and a significant meteoric input is occuring in the region. The launch window opened on July 18 and the experiments were postponed daily awaiting the proper upper atmospheric conditions. Two Super Arcas experiments were launched prior to the series --one on Friday, July 20, at 6:03 p.m. EDT and one on Monday, July 23, at 6:52 a.m. EDT to make these preliminary measurements.

The flight data is being analyzed to determine whether all mission requirements were met. Scientific results will be published later.

Dr. Nelson Maynard, Goddard Space Flight Center, is the project scientist for the Black Brant VB mission and Dr. Leslie C. Hale is the project scientist for the Super Arcas experiments. Also participating in these investigations are Dr. David Rees of University College, London (UK), Dr. George Witt of Kiruna Geophysical Observatory (Sweden), and Drs. Jack Mitchell and Charlie Croskey of Penn State. The Wallops payload managers are Dave Kotsifakis and Dave Moltedo and the Wallops project engineers are Robert Frostrom and Debbie Frostrom.

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NASA News

National Aeronautics and
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For Release:
August 1, 1984

RELEASE NO. 84-11

NASA LAUNCHES SPACE PHYSICS EXPERIMENT FOR BOSTON UNIVERSITY

A three-stage sounding rocket carrying a scientific experiment to investigate chemical and dynamical properties of the ionosphere was launched today at 12:18 a.m. EDT from Goddard Space Flight Center's Wallops Island, VA, Flight Facility.

According to officials at the National Aeronautics and Space Administration (NASA) center, this rocketborne probe was part of continuing space science research to study the structure and dynamics of the Earth's upper atmosphere. This particular investigation was an "active" experiment; meaning, the ionosphere was modified artificially under tightly controlled and monitored conditions with the resulting changes being measured from the ground.

Taurus-Nike-Tomahawk (TNT), a three-stage solid propellant sounding rocket is a relatively new rocket configuration developed at Wallops to provide a low-cost, high-flight platform to serve scientists interested in investigating the near Earth environment. It consists of three off-the-shelf motors currently used in various two-stage

- more -

configurations and the low cost is realized by using surplus military rocket motors for two of the three motors (Taurus and Nike). The TNT configuration is 13.4 meters (42 feet) long; the first stage is about 58 cm (23 inches) in diameter.

At peak altitude, about 423 kilometers (263 statute miles) 90 pounds of sulfur hexafluoride were released into the ionosphere to create a negative ion plasma, enabling the scientists to study the dynamical, chemical (including photochemical), radio reflecting and instability properties of space plasmas. Sulphur hexafluoride is a chemical used to retard flames and presents no environmental hazard. The chemical gas or vapor attached electrons to itself thereby causing a temporary decrease in the number of electrons in the ionosphere. This "ionospheric hole" was measured by several methods from different locations. The negative ions produced by the sulfur hexafluoride also caused a glow that was not visible to the naked eye but was photographed by special optical instruments located on the ground.

The launch was timed to occur about 10 minutes prior to a Global Positioning System (GPS) satellite overpass to permit measurements of the number of electrons between the satellite and the ground.

The 150-ft. Millstone Hill radar at Westford, MA, operated by the Massachusetts Institute of Technology's (MIT) Haystack Observatory was used to obtain several types of ionospheric measurements which will be correlated with radio and optical data recorded at various sites. These included a complete mobile ionospheric observatory from Boston University located near Millstone Hill, a set of equipment from the Los Alamos National Laboratory, located at

Laurel Mountain, near Pittsburgh, PA, and a GPS portable receiving system from the Air Force Geophysical Laboratory (AFGL) in Bedford MA, located at the launch site.

The window began on July 24, and the experiment was postponed daily because clear weather conditions were required for the optical measurements. The post-midnight launch schedule was moved ahead four minutes each day to coincide with the satellite overpass.

Dr. Michael Mendillo is the Boston University project scientist for the SPINEX ("Space Plasma Negative Ion Experiments") Program. Co-investigators included Jeffrey Baumgardner (Boston University), George Loriot (Haystack Observatory), John Klobuchar and Gregory Bishop from AFGL and Paul Bernhardt from Los Alamos. The Wallops payload manager is Jay Brown, and the Wallops project engineer is Dempsey Bruton.

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NASA News

National Aeronautics and
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For Release:
August 7, 1984

RELEASE NO. 84-12

NASA LAUNCHES PLASMA PHYSICS EXPERIMENT FOR CORNELL UNIVERSITY

A two-stage sounding rocket was successfully launched last night, at 9:00 p.m. EDT (August 6) from NASA Goddard Space Flight Center's Wallops Flight Facility on Virginia's Eastern Shore.

The primary objective of this flight is to measure the electric field, plasma density, and electron temperature of the mid-latitude electrojet during nighttime conditions at 105-115 kilometers (65-71 statute miles).

Electrojet instabilities desired for the rocketborne measurements were monitored by two ground observation sites prior to the launching. Observations of the mid-latitude electrojet (E-region) were made by the Cornell University Portable Interferometer Radar (CUPIR) based at the Coast Guard Base near Fort Macon, North Carolina, and the Wallops Flight Facility based Ionosonde.

This payload weighs about 227 kilograms (500 pounds) including ballast, is approximately 12 1/2 feet long, and the basic diameter is 14 inches. It has been flown, recovered and refurbished three times previously.

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"The Cornell portable radar system in North Carolina sends a series of pulses which reflect from plasma waves in the ionosphere," said Dr. Michael Kelly, Cornell University's project scientist. "When the proper radar signatures are obtained we will launch." He explained, "We're taking similar measurements at the equator (Peru last year), at mid-latitude here at Wallops, and in Greenland (arctic region) next year -- all within a two-year period. This will allow comparison between the sources and properties of these waves over the entire hemisphere."

The two-stage, solid propellant sounding rocket used to boost the experiment was a Taurus-Orion vehicle about 11 meters (37 feet) long, including the payload.

Dr. Kelley leads a team that includes: Robert Pfaff and Bob Green from Cornell and Kay Baker and Carl Howlett from Utah State University. Geoffrey Bland is the Wallops payload manager, and Dempsey Bruton is the Wallops project engineer.

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NASA News

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For Release:
August 23, 1984

RELEASE NO. 84-13

PLASMA PHYSICS EXPERIMENTS CONDUCTED BY NASA FROM WALLOPS ISLAND, VA.

A series of three rockets was successfully launched today (August 23) from Virginia's Eastern Shore to conduct wave/plasma experiments and to compare measurements and techniques for studying electric fields in the Earth's upper atmosphere.

Both objectives are designed to further our knowledge about how various parts of the atmosphere interact with one another.

The specific objective of the wave/plasma experiments is to study interactions in the magnetosphere by stimulating this area with coded VLF radio waves from a transmitter in Annapolis, Md., operated by the Navy. The scientists are attempting to detect electron precipitation induced by the radio waves. The concept is to detect the electron precipitation by remote sensing X-rays produced when the particles collide with the Earth's atmosphere. This experiment (onboard the Nike-Orion) was coordinated with a Japanese satellite (EXOS-C) over-pass to provide insitu measurements for comparison with the data received.

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The electric field study is designed to simultaneously measure atmospheric electric fields and other relevant parameters that can cause variations in these fields. Such measurements will help develop our understanding of the coupling between the upper and lower atmospheric electrical environment, which includes the electric fields in the ionosphere and those related to thunderstorms. Detailed electric field measurements within the Earth's middle atmosphere are just beginning to occur through programs of this type, and scientists consider them essential to increase our knowledge about interactions between various parts of the atmosphere. A second objective of this continuing program is to compare the various measurement techniques commonly used to obtain this kind of information.

Liftoffs of the rocketborne experiments were:

Nike-Orion at 5:11 a.m. EDT

Super-Loki Datasonde at 5:27 a.m. EDT

Orion at 6:05 a.m. EDT

The Super Loki Datasonde, a small meteorological rocket, collected meteorological data in the Earth's middle atmosphere for correlation with the scientific experiment.

The experiment packages launched by the Nike Orion and the Orion were successfully recovered in mid-air by the Wallops Skyvan aircraft. These scientific experiments will be refurbished and reflown on future research flights

Rocket instrumentation onboard the Nike-Orion included an x-ray detector, a VLF receiver, a Gerdien probe, geiger counter, electric field sensors, and a two axis magnetometer. The payload was programmed to descend on a parachute to increase sampling time on a stable platform in the critical region of interest.

Dr. Richard A. Goldberg of the NASA Goddard Space Flight Center in Greenbelt, Md., is project scientist with a team of other scientists that includes: Dr. J. R. Barcus, University of Denver; and Drs. L. C. Hale and J. D. Mitchell, Penn State University. Dr. H. Oya of Tohku University, Sendai, Japan, is coordinating the EXOS-C satellite activities. Dempsey B. Bruton, Jr. and Debbie Frostrom are the Wallops project engineers and Charles E. Manion and Dave Moltedo are the Wallops payload managers.

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NASA News

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For Release:
October 3, 1984

RELEASE NO. 84-14

BLACK BRANT SOUNDING ROCKET CONTRACT INCREASED

Negotiations have been completed between the NASA Goddard Space Flight Center's Wallops Flight Facility and the Canadian Commercial Corporation of Ottawa, Ontario, Canada, for an increase in the original contract for rocket motor assemblies for the Black Brant V sounding rocket.

A contract amendment of $5,044,203 ($6,305,254 Canadian) was signed on September 25 to add to the existing contract of $4,862,490 ($5,368,503 Canadian). The contract has been amended to include additional rocket motors, igniters, igniter housings and fin assemblies. The original contract provided for Black Brant V rocket motor assemblies and associated hardware.

The fixed price contract with Canadian Commercial Corporation, will be sub-contracted to Bristol Aerospace Limited, Winnepeg, Manitoba, Canada and completed by March 1, 1987.

The Black Brant V rocket vehicle is a solid rocket booster used in the NASA sounding rocket program to loft scientific experiments in suborbital trajectories. In addition to being used as a single stage rocket, it is also used as a two-stage vehicle with a Nike motor or a Terrier motor as boosters as well as a three-stage vehicle called the Black Brant X.

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NASA News

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For Release:

October 12, 1984

RELEASE NO. 84-15

WALLOPS SIGNS CONTRACT FOR ELECTRICAL SERVICE FROM DP&L

The NASA GSFC/Wallops Flight Facility has awarded a contract for electrical power service for the Facility to the Delmarva Power and Light (DP&L) Company of Virginia, Salisbury, Maryland.

The fixed price contract for $1,105,000 is for one year and was effective October 1, 1984.

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NASA News

National Aeronautics and
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For Release:
November 27, 1984

RELEASE NO. 84-17

ROLM CORPORATION SELECTED TO NEGOTIATE TELECOMMUNICATIONS CONTRACT WITH NASA

The Rolm Corporation of Tysons Corner, Virginia, has been selected by NASA's Goddard Space Flight Center to negotiate a fixed-price contract for the purchase of two telephone systems for use at the Greenbelt Center and at its Wallops Flight Facilitiy on Virginia's Eastern Shore.

The contract, consisting of a two-year basic period with four one-year options, is expected to cost $14 million for the six-year period.

The contract will provide for the complete installation and maintenance of the voice and digital telecommunications at Goddard's Greenbelt location and at Wallops. Currently, the two sites use different systems. The contract will develop a single system.

The systems changeover is expected to take one year from the date of the contract, expected to be signed in late December.

In addition to the Rolm Corporation, other companies submitting for the work were AT&T Communications, Silver Spring, MD; Bell Atlanticom Systems, Inc., Silver Spring, MD; GTE Communications Systems, McLean, VA; and Northern Telecommunications, Inc., Vienna, VA.

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NASA News

National Aeronautics and
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James C. Elliott
Office of Public Affairs
301-344-5566

For Release:
December 3, 1984

RELEASE NO. 84-18

NASA GODDARD SELECTS CONTRACTOR FOR ENGINEERING SUPPORT AND RELATED SERVICES

NASA's Goddard Space Flight Center in Greenbelt, Maryland, has selected the Computer Sciences Corporation of Falls Church, VA, to negotiate a a Cost Plus Award Fee for Engineering Services.

The Contract, expected to be effective on April 1, 1985, will consist of a two-year basic period with three one-year hard options. Additionally, a separate Fixed Price phase-in contract of 45 days duration will be negotiated.

The total proposed (estimated cost and fees) for the basic two-year period and three one-year firm option periods are $9.8 million and $15.7 million, respectively.

The contract will provide 166 personnel to support the Suborbital Projects and Operations Directorate at Wallops Flight Facility in the performance of

- more -

Instrumentation Systems, Mechanical Systems, Avionics and Launch Vehicles Analysis, Safety Analysis, Technical Liaison and Project Management, Technical Editing, Management Data, Facilities Engineering, Applied Science, Automatic Data Processing, and Metal Trades and Instrumentation Construction.

Four Companies submitted proposals consisting of: Chesapeake Applied Technologies, Inc., Parksley, VA: Computer Sciences Corporation, Falls Church, VA (Incumbent); Joule' Engineering Corporation, Orange, NJ (Incumbent); and Kentron International, Inc., Hampton, VA.

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NASA News

National Aeronautics and
Space Administration

Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

Joyce B. Milliner
(Telephone: 804/824-3411, x579)

For Release:

January 8, 1985

RELEASE NO. 85-3

WALLOPS LISTS CONTRACT AWARDS

During Fiscal Year 1984, GSFC/Wallops Flight Facility, Wallops Island, Virginia awarded contracts valued at $50,000 or greater to firms in 13 states and the District of Columbia. The contracts went to firms in states and cities as follows:

ALABAMA: Huntsville - Management Services, Inc. - $542,096, Operations and Maintenance of aircraft

ARIZONA: Tempe - Space Data Corporation - $78,390, Rocket motors
Space Data Corporation - $142,237, Dart bodies

CALIFORNIA: Northridge - Space Vector Corporation - $284,886, Attitude control system fabrication.
Space Vector Corporation - $153,879, Standard gyro assembly
Space Vector Corporation - $262,460, Aft skirt flame shield and motor adapter.

Santa Barbara - Sentran Company - $95,610, Photometers

So. El Monte - Paranetics, Inc. - $127,915, Inspect and repair parachutes

COLORADO: Boulder - University Corporation of Atmospheric Research - $7,076,741, Operate and Maintain National Scientific Balloon Facility

CONNECTICUT: Middletown - Raymond Engineering Corporation - $115,200, Spring driven timers.

Plainfield - BST Systems, $72,819, Batteries.

DELAWARE: Laurel - Continental Service Co. - $555,693, Structural and airport firefighting and plant security. (Renewal)

- more -

DISTRICT of COLUMBIA: Sam Gonzales, Inc. - $250,823, Repair roofs.
Sam Gonzales, Inc. - $287,220, Repair roofs.

FLORIDA: Fort Walton Beach - Datacom, Inc. - $4,242,538, Replacement of data processing system.

MARYLAND: Elkton - Morton Thiokol - $375,000, Tomahawk rocket motors
Pocomoke City - Mervin L. Blades - $131,168, Rehab of building N-159
Mervin L. Blades - $364,065, Rehab rocket storage building
Mervin L. Blades - $387,000, Rehab buildings A-1, U-70, X-85 and launch pad Y-30.

Salisbury - Enterprise Mechanical, Inc. - $359,885, Repair of N-162 HVAC
Rogers Refrigeration - $292,753, Modification to Central HVAC system
Enterprise Mechanical Inc. - $61,169, Modification to building D-8

NEW JERSEY: Edison - Tiger Maintenance - $373,323, Services for operation of steam generating plant. (Renewal)
Tiger Maintenance - $960,840, Services to provide facilities Maintenance (Renewal)

New Brunswick - M/A Com Laser Diode, Inc. - $99,723, Semiconductor laser

Orange - Joule' Technical Corporation - $1,508,046, Services to provide metal trades support. (Renewal)
Joule' Technical Corporation - $1,974,351, Services for operations and maintenance of radar systems, telemetry and communications equipment. (Renewal)

NEW YORK: Huntington - Michael C. Avino - $257,700, Modificatiuon of Launch Area 5

PENNSYLVANIA: Havertown - Lynch Machinery - $58,635, Three axis machinery system

TEXAS: San Antonio - Southwest Research Institute - $167,917, Participation in project MAIMIK
Southwest Research Institute - $74,890, Balloon strain gage study

VIRGINIA: Chincoteague - E. R. Stephens - $62,840, Repair of airfield

Falls Church - Computer Sciences Corporation - $3,483,507, Engineering support and related services, (Renewal)

Greenbush - Greenbush Service Co. - $964,889, Logistics management support

New Church - Contract Maintenance, Inc, - $271,449, Grounds Maintenance (Renewal)

Onancock - Seeltech Services - $90,903, Operation of radar systems (Renewal)

Parksley - Wharton Worldwide Services - $364,865, Janitorial services (Renewal)
W. L. Taylor Construction - $480,100, Rehabilitation of Building F-160
W. L. Taylor Construction - $473,700, Rehabilitation of Buildings X-15, X-35 and construct storage facility
W. L. Taylor Construction - $170,000, Rehabilitation of Building N-162
W. L. Taylor Construction - $499,999, Rehabilitation of first and second floors, Building E-105

Virginia Beach - Newbill and Beale Associates - $155,771, A&E final design technical buildings

Wallops Island - Chemal, Inc. - $164,052, Operation of switchboard, teletype and reproduction facilities
Chemal, Inc. - $145,230, Operation of chemistry and bioscience laboratory. (Renewal)

NOTE: The following two contracts, issued outside the continental United States were not included in the above.

Canadian Commercial Corporation, Ottawa, Ontario, Canada - $525,266, Fabricate, test and deliver Black Brant hardware.

Canadian Commerical Corporation, Ottawa, Ontario, Canada - $333,556, Black Brant hardware.

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NASA News

National Aeronautics and
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Goddard Space Flight Center
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For Release:
January 14, 1985

Release No. 85-5

INTERNATIONAL RESEARCH PROGRAM GETS UNDERWAY IN GREENLAND

An international space science campaign of sounding rocket research is being conducted in Greenland this winter to gather new knowledge about the solar-Earth relationship, officials at NASA/Goddard Space Flight Center's Wallops Flight Facility reported today.

The campaign, which includes studies of polar cap turbulence and electrodynamics, auroral zone electrodynamics, auroral electrojet turbulence, neutral atmosphere coupling and polar ionospheric irregularities, is being conducted by the NASA Wallops Island, VA, facility in cooperation with the Air Force Geophysics Laboratory (AFGL) in Hanscom AFB, MA, and the Danish Meteorological Institute (DMI) in Copenhagen, Denmark.

The 1985 Cooperative Observations of Polar Electrodynamics (COPE) Project will consist of scientific rocket and ground-based measurements, officials said. Greenland, they explained, is unique for these scientific investigations

-more-

because of its access to the Auroral Oval, Polar Cap and Polar Cusp; existing rocket range at Greenland; support from the Søndre Strømfjord incoherent scatter radar; support from the Hi Lat Spacecraft; support from the extensive array of scientific ground observing stations in Greenland, Scandanavia and North America; and a broad choice of launch azimuths.

NASA personnel from the GSFC/Wallops Flight Facility spent some weeks during this past summer at the site in Greenland installing additional launchers and related ground support equipment, radar, telemetry and communications systems, and erecting vehicle and payload assembly structures, and otherwise introducing improvements and expanding the Danish launch facility existing at Søndre Strømfjord. Personnel returned in late December to make the final preparations for implementing the launch phase of the program scheduled to start in mid January.

Nine suborbital rockets are scheduled for launch from the Danish Meteorological Institute's Søndre Strømfjord Rocket Launch Facility. Payload experimenters are from NASA, AFGL, DMI, Cornell University, University of California, Utah State University, University of New Hampshire, University of Minnesota, and University of Bergen, Norway .

Two of the rocketborne experiments will release chemicals creating artificial vapor clouds above 250 km which will be visible over a 500-mile radius from the launch site.

NASA has seven flights--two Black Brant X's, two Terrier-Malemutes, a Taurus-Orion, a Nike-Tomahawk, and a Taurus-Tomahawk. AFGL has two missions, one with a Black Brant VIII and the other a Black Brant IX.

(END OF GENERAL RELEASE -- Launch schedule, background information, and Project COPE personnel listing are attached)

PROJECT COPE (GREENLAND CAMPAIGN) LAUNCH WINDOWS

No.	Agency	Launch Windows	Vehicle	Experiment	Experimenter (Organization)
1	NASA	Jan. 12 - Feb. 3	Terrier-Malemute	Polar cap Turbulence	Cornell U./ Utah State U./ U. of California, S.D.
2	NASA	Jan. 12 - Feb. 3	Black Brant X	Polar Cusp Electrodynamics	U. of California, Berkeley & San Diego
3	NASA	Feb. 8 - Feb. 28	Black Brant X	Topside Probe of the Auroral Zone (TOPAZ)	U. of New Hampshire/ U. of Minnesota/ U. of Bergen, Norway/ Marshall Space Flight Center
4	NASA	Feb. 8 - Feb. 28	Terrier-Malemute	Auroral Electrodynamics	U. of New Hampshire/ U. of Minnesota/ Cornell U.
5	NASA	Feb. 26 - March 30	Taurus-Orion	Auroral Electrojet Turbulence	Cornell U./Utah State U./U. of Calif., S.D.
6	NASA	March 8 - March 23	Nike-Tomahawk	Ionosphere chemical releases	Cornell U./Danish Meteorological Inst.
7	NASA	March 8 - March 23	Taurus-Tomahawk	Ionosphere chemical releases	Cornell U./Danish Meteorological Inst.
8	AFGL	March 8 - March 24	Black Brant VIII	Polar Ionosphere Irregularities	AFGL/Danish Meteorological Inst.
9	AFGL	March 8 - March 24	Black Brant IX	Polar Ionosphere Irregularities	AFGL/Danish Meteorological Inst.

SCIENTIFIC OBJECTIVES AND PAYLOADS

The Terrier-Malemute/Cornell University payload includes experiments from University of California, San Diego, and Utah State University. This payload to be carried on a Terrier-Malemute rocket will make measurements of AC and DC electric fields, plasma density, electron temperature and charged particles. The 140-kg payload is scheduled to be carried to an altitude of 490 km and will be launched simultaneously with the Black Brant X/University of California at Berkeley and San Diego.

The Taurus-Orion/Cornell University payload includes experiments from Utah State University and University of California, San Diego. This payload will be lofted on a Taurus-Orion to study the changing spectrum of electric field and plasma density irregularities in the auroral-polar electrojet generated by the two stream and gradient drift instabilities. The flight will be coincident with plasma drift measurements being taken at the Stanford Research Institute's (SRI) backscatter radar site at Søndre Strømfjord and the Cornell portable VHF radar to be located at Narassarssauq, Greenland. Also, the experiment will seek to determine if the electrojet waves create enhanced electron heating using the SRI radar and flight experiment measurements of electron temperature and soft particles. A parachute recovery system will be flown with this payload and recovery will be attempted.

The University of California, Berkeley, payload to be carried on a Black Brant X will carry instruments to measure ion composition, ion and electron energy, DC and AC electric fields and thermal plasma density and temperature.

This 108-kg payload will be launched to an altitude of 900 km eastward along the morning auroral oval, so as to transverse the polar cusp. This payload will be launched simultaneously with the Terrier-Malemute/Cornell payload which has similar instrumentation. Measurements will be made with the goals of furthering our understanding of electrostatic shocks, the sources and acceleration mechanisms of auroral particles, and the injection of solar wind particles directly into the polar cusp.

The Black Brant X/University of New Hampshire/University of Minnesota payload also includes experiments from the University of Bergen, Norway, and the NASA Marshall Space Flight Center. This payload to be carried on the Black Brant X will consist of a full complement of plasma wave, DC field, and neutral gas sensors which will be flown to approximately 900 km over the auroral zone. The Topside Probe of the Auroral Zone experiment (TOPAZ) will provide an instrumented platform for study of the low altitude part of the ion acceleration region supplying ionospheric ions to the magnetosphere.

The Terrier-Malemute/University of New Hampshire/University of Minnesota payload also includes experiments from Cornell University. The Auroral Rocket for Controlled Studies experiments (ARCS) will be launched across one or more auroral arcs during the presence of an eastward electrojet. The major scientific emphasis of the ARCS experiment will be upon diagnosing the ambient plasma response (during the presence of a quiet auroral arc) to the injection of man-made ion beams into the upper ionosphere from the sub-payload.

The ARCS payload will fly together with TOPAZ. The trajectories of both main payloads and the ARCS sub-payload on the upleg will move along the same magnetic field lines, providing the opportunity to study the possible generation or stimulation of conics by the sub-payload accelerator. With TOPAZ and ARCS above the ion accelerator, scientists will be able to diagnose the effects of the injection of ions into the upper atmosphere. The main payload includes a parachute recovery system and has been recovered once previously. Recovery will be attempted on the ice cap after this flight.

The Cornell University/Danish Meteorological Institute payloads will be joint chemical release experiments to measure the three-dimensional variations of the neutral wind in the auroral zone. The altitude range covered will be from 80 to 300 km. The horizontal coverage will include 3° in the meridional direction and approximately 1 to 1-1/2 hours of local time in the zonal direction. To measure variations in the zonal direction would ordinarily pose a problem since the characteristic scale size is much larger in this direction than in the meridional direction. Greenland may be the only place in the world where it is possible in practice to separate two trails by one or two hours in local time. At the same universal time, a third trail can be deployed along the magnetic meridians with a separation of 200 to 300 km.

The meridional chemical trails will be deployed from a Nike-Tomahawk vehicle. The payload is to consist of an upleg TMA (tri-methyl-aluminate) trail released between 80 km and 180 km altitude, a Barium cloud doped with

Strontium and a downleg TMA trail released in the same latitude range as the upleg TMA. The Barium cloud will be deployed near apogee at an altitude of 300-350 km. The horizontal separation between the upleg and downleg TMA trails will be about 250 to 300 km. Total chemical weights on this payload are 5 kg of TMA and 2 kg of Barium (BA Sr).

The Taurus-Tomahawk vehicle launched in the zonal direction will release one Barium cloud and a downleg TMA trail. The Barium will be released at 250 km altitude on the downleg, and the TMA will be released between 80-180 km. Total chemical weights in this payload are 2.5 kg of TMA and 2 kg of Barium.

The principal data for these experiments will be obtained photographically from a minimum of two tracking stations located within a range of 300 km. Since these two launches require optical data, clear weather conditions will be required at the optical stations. The colorful--blue, white and green--vapor trails will be visible for about a 500-mile radius from the launch site.

AFGL SCIENTIFIC OBJECTIVES AND PAYLOADS

The scientists are interested in measuring the fluxuations of the ionosphere. They will be measuring the irregularities in the ionosphere that can cause interference in radio and radar signals. The ionosphere above the aurora area is the most disturbed region and is ideal for obtaining additional information about these interferences.

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SOUNDING ROCKET LAUNCH VEHICLE INFORMATION

Terrier-Malemute -- 2-stage, solid propellant vehicle
11 meters (36 ft.) long
18 inches (1st stage booster) in diameter
Weighs 1640 kg (3600 lbs.) at liftoff

Taurus-Orion -- 2-stage, solid propellant vehicle
11 meters (36 ft.) long
23 inches (1st stage booster) in diameter (second stage 14")
Weighs 2000 kg (4400 lbs.) at liftoff

Nike-Tomahawk -- 2-stage, solid propellant vehicle
9 meters (30 ft.) long
16 1/2 inches in diameter (second stage 9")
Weighs 910 kg (2000 lbs.) at liftoff

Taurus-Tomahawk -- 2-stage, solid propellant vehicle
10 meters (33 ft.) long
23 inches (1st stage booster) in diameter (second stage 9")
Weighs 1680 kg (3700 lbs.) at liftoff

Black Brant VIII -- 2-stages (Nike, Black Brant VC), solid propellant vehicle
11 meters (35 ft.) long
17 inches in diameter
Weighs 2090 kg (4600 lbs.) at liftoff

Black Brant IX -- 2-stages (Terrier, Black Brant VC), solid propellant vehicle
11 meters (37 ft.) long
18 inches in diameter
Weighs 2300 kg (5100 lbs.) at liftoff

Black Brant X -- 3-stages (Terrier, Black Brant VC, & Nihka), solid propellant
about 14 meters (46 ft.) long
18 inches (1st stage booster) in diameter
Weighs about 2730 kg (6000 lbs.) at liftoff

PROJECT COPE PERSONNEL:

Robert Long, NASA Project Manager
John Parks, NASA Safety Officer
Jim Hardin, NASA Facilities Coordinator
Geoffrey Bland, NASA Payload Manager
Jay Brown, NASA Payload Manager
Bobby Flowers, NASA Payload Manager
David Kotsifakis, NASA Payload Manager

Roy Walters, AFGL Systems Manager
Cpt. Michael Ryan, AFGL Payload Manager
Christopher Krebs, AFGL Payload Manager

Lt. Col. F. Valeur, DMI Range Safety Officer
Maj. Jens Berthelsen, RDAF Danish Liaison Officer

Col. William Stice, USAF Sondre Stromfjord Base Commander
Lt. Col. Phillip Williams, USAF Søndre Strømfjord Deputy Commander

Payload Experimenters:

Dr. Michael Kelley, Cornell University (Scientific Coordinator for Project COPE)
Dr. Paul Kintner, Cornell University
Dr. Robert Phaff, Cornell University

Dr. Kay Baker, Utah State University

Dr. F. Mozer, University of California, Berkeley
Dr. Charles Carlson, University of California, Berkeley

Dr. Larry Cahill, University of Minnesota

Dr. Roger Arnoldy, University of New Hampshire

Dr. Finn Soraas, University of Bergen, Norway

Dr. Tom Moore, NASA Marshall Space Flight Center

Dr. Miguel Larsen, Clemson University

Dr. Roy Tolbert, University of California, San Diego

Dr. William Vickery, Air Force Geophysics Laboratory
Dr. Herbert Carlson, Air Force Geophysics Laboratory
Dr. Ed Weber, Air Force Geophysics Laboratory

Dr. Steen Mikkelsen, Danish Meteorological Institute

-END-

NASA News

National Aeronautics and
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Goddard Space Flight Center
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(Telephone: 804/824-3411, x579)

For Release:
January 23, 1985

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Dwayne C. Brown
Headquarters, Washington, D.C.
(Phone: 202/453-1758)

RELEASE NO. 85-6

FINAL AEROBEE SOUNDING ROCKET LAUNCHED

NASA's successful launch of an Aerobee liquid-fueled sounding rocket from White Sands Missile Range, New Mexico on January 17, marked the end of that rocket series. Introduced officially on September 25, 1947 with the first range launch, this month's firing of Aerobee 1058 was the last of the oldest continous rocket firing program.

Since 1959, NASA's Sounding Rocket Division has launched 536 Aerobees, 504 sucessfully - a 94 percent success rate. The Aerobee series was one of the first rockets developed for scientific research in the U.S. Because of its reliability, Aerobee became the "workhorse" vehicle for high altitude studies. "Virtually everything that's been done in space research can be attributed to sounding rocket technology", according to Maury Dubin, a Goddard physicist who worked extensively in the early sounding rocket program. "The Aerobee and other sounding rocket research precipitated the rise of many disciplines, from astronomy to the upper atmosphere."

The Aerobee program began in 1946, when Applied Physics Laboratory (APL), John Hopkins University, Baltimore Maryland suggested to noted scientist Dr. James Van Allen that he determine what existing rockets were available for scientific research, specifically for augmenting high atmospheric studies. Other rockets were available, but were deemed too small for the anticipated space research.

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Aerojet Engineering Corp. won a contract from the U.S. Navy to develop new scientific sounding rockets; APL was assigned technical direction, and Dr. Van Allen became director of the project. He derived the name Aerobee from the combination of Aerojet and APL's series of Navy missiles, the Bumblebees.

Aerobees were used extensively during the International Geophysical Year (IGY, July, 1957-December 31, 1958). They were among the more than 300 instrumented sounding rockets launched from sites around the world and made discoveries regarding the atmosphere, cosmic radiation, auroras and geomagnetism. The IGY was largely an investigation of the natural enviroment.

The rockets carried instruments into the upper atmosphere for investigations and gathered data from as high as 250 km (155 miles). They also flight tested instruments to be used in satellites. Sending instruments in the high atmosphere was one of the principal motives for 20th century rocket development, according to the early rocket design studies of Dr. Robert Goddard, called the Father of American Rocketry.

The Aerobee rockets consisted of five in a series; 100, 150, 170, 200, and 350. Each rocket carried as many as six different experiments. Cameras, vacuum bottles, mirrors, grids, sensing devices, lenses and many other mechanical units were flown and returned to earth. Most of the data collected involved transmitting telemetry from the rocket to ground stations during flight and recording data simultaneously.

The final Aerobee payload tested a new spectrograph before it will be flown on Astro; a NASA ultraviolet astromony mission. This spectrograph will record extreme ultraviolet Dayglow emissions in the earth's upper atmosphere.

Although the demise of the small, liquid-fueled sounding rocket is imminent, there always will be a need for sounding rockets in general, according to George Kraft, head Goddard Flight Support Section. "The small, liquid fueled rockets aren't economically feasible anymore, compared to their solid-propelled counterparts," Kraft said. "But sounding rockets always will continue to be an important element in NASA's support of the scientific community. They're virtually the only vehicles that can conduct studies in the 40 km (25 miles) to 200 km (125 mile high) zone of the atmosphere. "Balloons can go only as high as 50 km (31 miles) and satellites are ineffective lower than 200 km (125 miles).

The NASA Sounding Rocket Program is managed by Goddard's Wallops Flight Facility, Wallops Island, Virginia where the Suborbital Projects and Operations Directorate is located.

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NASA News

National Aeronautics and
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For Release:
January 28, 1985

RELEASE NO. 85-7

NASA MOVES TRACKING STATION TO WALLOPS

NASA's Goddard Space Flight Center has announced plans for the transfer of all orbital satellite tracking/telemetry operations from its Greenbelt tracking station to the Wallops Flight Facility by early 1986. These satellite tracking operations will be combined with the existing aeronautics and sounding rocket tracking/telemetry operations currently provided by the Wallops Facility. The realignment is part of a Goddard program to streamline tracking network facilities as the need for ground stations diminishes with the advent of the new space-borne Tracking and Data Relay Satellite System (TDRSS).

Most of the other tracking stations in Goddard's current ground network will be phased out or transferred to NASA's Deep Space Network (DSN) as the TDRSS becomes operational.

The orbital operations which are being transferred to Wallops are those in support of: the International Ultra-violet Explorer Satellite (IUE), the Inter-planetary Monitoring Platform Satellite (IMP-8), the Nimbus-7 Meteorological Research Satellite and the future Cosmic Background Explorer Satellite (COBE). Support of some launch operations from other ranges will also be provided. For various reasons these satellites are not compatible with the TDRSS and will continue to require ground tracking/telemetry support.

In order to handle the additional workload, several tracking antenna systems and the associated command and receiving equipment will be relocated to Wallops from the Greenbelt tracking station and from other tracking stations, which are being phased down.

High Speed Data transfer to Goddard/Greenbelt from Wallops will be provided by a new satellite communications link currently being installed. Detailed plans for the transfer are being developed and installation of antennas and equipment should start in late summer with completion in January 1986.

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Estimates are that 44 jobs will be created at Wallops by this transfer. Most of these will be electronic technicians with a few mechanical technicians. Personnel will be supplied by Wallops Range Support Contractors. Combining the two operations at Wallops is expected to save NASA in excess of $300,000 a year.

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NASA News

National Aeronautics and
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Goddard Space Flight Center
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For Release:
February 22, 1985

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RELEASE NO. 85-8

WALLOPS HOSTS INTERNATIONAL METEOROLOGICAL COMPARISON TESTS

Technical/scientific teams from four countries--Australia, India, Finland, and the United States--are meeting at the NASA Goddard Space Flight Center's Wallops Flight Facility in Virginia to compare radiosonde instruments used worldwide. This meeting, which began February 4, will continue for six weeks.

The radiosonde is a low-cost, mass produced instrument designed for measuring atmospheric pressure, temperature, relative humidity and wind while ascending on a small balloon. It is a small device, measuring only a few inches square and weighing less than two pounds.

Measurements are generally made between the Earth's surface and approximately 25 kilometers (15 miles) above the Earth, although an increasingly large number of measurements are now exceeding 30 kilometers (18 miles) altitude. These data are used by worldwide weather services for forecasting, as an aid to aviation, and for research.

Currently, there are 17 manufacturers of radiosondes, including the United Kingdom, France, the USSR, and others, in addition to those now making tests at Wallops Island. Because differences occur occasionally in the measurements made from these instruments, comparisons are desirable from time to time.

In November 1982, a Working Group concerned with the quality of meteorological data met at the World Meteorological Organization's (WMO) Headquarters in Geneva, Switzerland, and agreed that two tests, or phases, because of the large number of potential participants, were necessary. The United Kingdom Meteorological Office hosted the first phase in 1984. During that meeting, held at Beaufort Park, United Kingdom, 106 balloons were released which

- more -

obtained comparisons of the radiosondes of the United Kingdom, Finland, Federal Republic of Germany and the United States. Participants at Wallops Flight Facility launch four balloons a day, five days a week, weather permitting, for Phase 2 of the tests. Each balloon will carry four or more instruments. About 100 balloon flights are anticipated, and the data received are to be related with Phase I results.

The Project Leader for the Wallops phase is Francis J. Schmidlin. Other leaders are Robert J. Frostrom and Dempsey Bruton, site preparation and operational scheduling, and Riley Bull, balloon preparation and launch.

Data preparation and preliminary analysis is the responsibility of Bill Michel, of the University of Dayton Research Institute, and Ronald Taylor and E. Thomas Northam, of EG&G Washington Analytical Services Center, Inc.

The team leaders for the four countries participating are: J. Stickland, Bureau of Meteorology, Melbourne, Australia; V. Antikainen, Helsinki, Finland; N. Seshadri, India Meteorological Dept., New Delhi, India; and W. Winkert, National Weather Service, Washington, DC

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NASA News

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For Release:
April 26, 1985

Release No. 85-10

NASA SOUNDING ROCKET PROGRAM FEATURED AT THE WALLOPS VISITOR CENTER

Sounding rockets will be the topic of a special presentation at 2:30 p.m. every Saturday and Sunday during May at the NASA Wallops Visitor Center.

"A Look at Wallops: Sounding Rockets" will examine NASA's sounding rocket program and the GSFC Wallops Flight Facility's role in this important method of scientific research.

Sounding rockets are rockets that fly near vertical trajectories carrying scientific instruments to altitudes from 40 to several thousand miles.

Through the use of audio visual materials and actual flight hardware the presentation will look at the rockets used in the program, the parts of the rockets, and their uses and advantages in scientific research.

The Wallops Facility manages NASA's sounding rocket program, which includes the launching of about 50 sounding rockets per year from sites throughout the world.

The sounding rocket presentation is the first in a four-part series looking at NASA Wallops' activities. Future topics to be covered are Wallops' scientific balloon, aeronautical, and tracking and data acquisition activities.

The series is a part of the Wallops Flight Facility's program celebrating its 40th Anniversary. The celebration will be highlighted with a public open house from 10 a.m. to 5 p.m. on Saturday, June 29.

The NASA Wallops Visitor Center, located on Route 175 about 6 miles from Route 13 and 5 miles from Chincoteague, is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For additional information or clarification, please call (804) 824-5833 or 824-3411, Ext. 584.

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NASA News

National Aeronautics and
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For Release:
May 2, 1985

RELEASE NO. 85-11

WALLOPS FLIGHT FACILITY OBSERVES SMALL BUSINESS WEEK

By Presidential Proclamation, the week of May 5 has been designated as Small Business Week. During this week, the Nation pays tribute to small business concerns for their contributions to our economic well-being.

To further implement the objective of the Small Business Program, all small concerns or interested individuals are urged to contact the Small Business Specialist at the National Aeronautics and Space Administration, Goddard Space Flight Center, Wallops Flight Facility, Wallops Island, Virginia 23337. Interested parties can submit their capabilities and can obtain advice pertaining to contracting or subcontracting opportunities by contacting Elton R. Scott, Small Business Specialist, Room 211, Building E-107, telephone (804) 824-3411, extension 542.

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For Release:
May 13, 1985

RELEASE NO. 85-12

NASA AWARDS $5.08 MILLION CONTRACT FOR SOUNDING ROCKET FIELD AND ANALYTICAL ENGINEERING SUPPORT

A $5.08 million contract has been awarded to the New Mexico State University/ Physical Science Laboratory of Las Cruces, New Mexico, for field and analytical engineering support at the White Sands Missile Range for NASA's Goddard Space Flight Center/ Wallops Flight Facility's Sounding Rocket Program, Goddard officials reported recently.

The three-year, cost (level-of-effort) type contract has provisions for two additional one-year options of $1.86 and $1.94 million, extending the contract period of performance through April 30, 1990. Specific task assignments detailing the required support will be issued to the contractor in such areas as telemetry data collection, electrical engineering design, applied antenna design, attitude control system support and other applications sounding rocket support.

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Wallops Island, Virginia 23337

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For Release:
May 28, 1985

RELEASE NO. 85-13

NASA WALLOPS VISITOR CENTER FEATURES TAC JAZZ ENSEMBLE

"An Evening of Jazz" with the U.S. Air Force Tactical Air Command Jazz Ensemble will be held from 6:30 to 8 p.m. on Friday, June 7, at the NASA Wallops Visitor Center.

The free public concert will be held on the grounds of the Visitor Center, which is located on Route 175 about five miles from Route 13 and five miles from Chincoteague, Virginia.

The jazz ensemble blends today's contemporary sounds with the swing of the big band era. Their repertoire includes such big band hits as Sammy Nestico's "Satin Doll," Tom Pomeroy's "Pennsylvania 6-5000," and Joe Garland's "In the Mood."

The 18-member jazz band performs about 65 concerts before more than 50,000 people per year in the eastern United States. The Wallops' performance will be the final concert of a week-long tour on the Delmarva Peninsula.

The NASA Wallops Visitor Center is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For additional information or clarification, please call (804) 824-5833.

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NASA News

National Aeronautics and
Space Administration

Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

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For Release:
June 5, 1985

RELEASE NO. 85-15

NASA AWARDS $1.3 MILLION CONTRACT FOR REFURBISHMENT OF THREE BUILDINGS

A contract in the amount of $1,359,574,00 has been awarded to the W. L. Taylor Construction Company of Parksley, Virginia, for the rehabilitation of Buildings E-104, E-105, and E-107 located on the Wallops Main Base.

According to officials at the NASA GSFC/Wallops Flight Facility, Wallops Island, Virginia, the work under this fixed-price construction contract is scheduled to be completed by July 23, 1986.

The work includes new exteriors and new windows for all three buildings; a new elevator in Building E-105; a complete refurbishment of the third floor of building E-105; and minor mechanical work and partition changes throughout Building E-107. All of these buildings have three floors.

Building E-104 houses NASA's Management Education Center on the first floor; the second and third floors will be used for additional classrooms and dormitory space. Building E-105 will house the Wallops Technical Library on the first floor and administrative offices for the Procurement and Fiscal Branches on the second and third floors. Building E-107 will house the technical and engineering staff for the Sounding Rocket and Balloon Projects offices.

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NASA News

National Aeronautics and
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For Release:
June 13, 1985

RELEASE NO. 85-16

GSFC/WALLOPS FLIGHT FACILITY'S 40TH ANNIVERSARY CELEBRATION

Part of the celebration commemorating the 40th Anniversary of the NASA Goddard Space Flight Center, Wallops Flight Facility, Wallops Island, Virginia, will be an Open House scheduled for Saturday, June 29, 1985. The events planned are in recognition of the scientific and technological achievements that have emanated from 40 years of aerospace research. One of the oldest ranges in the world, Wallops has been conducting rocketborne experiments since mid-1945.

The first research rocket, a 17-foot Tiamat, was launched from the Island facility on July 4, 1945. The Island obtained its name about three hundred years ago from John Wallop who was appointed Deputy Surveyor of Virginia by Col. Edmund Scarburgh in the 17th Century and was granted a patent in 1672. Formerly the Island had been called "Keeckotank," "Accocomoson," or "Occo comoson," which were names used by the local Indians.

Today the NASA facility, in addition to the Island, includes the Mainland area in back of the Island and the Main Base, (formerly the Chincoteague Naval Air Station) about seven miles northwest. All three areas, including the Visitor Center on Route 175, will be open to the public on Saturday, June 29, from 10:00 a.m. - 5:00 p.m. Visitors may begin their self-guided tours and walkthroughs at any of the three areas. Historical information, maps with directions to all of the facilities, and a schedule of events will be available at the entrances of the Main Base, the Island Launch Areas, and the Visitor Center. NASA personnel will be located at each facility and viewing area to assist visitors in finding an appropriate parking space.

One of the highlights of the day's events will be an Air Force F-15 aerial demonstration at 2:00 p.m. This aircraft, from the Tactical Air Command (TAC) at the Langley Air Force Base in Hampton, Virginia, is one of our country's current family of advanced technology aircraft. One of the F-15 pilots will be on the ground, in touch with the airborne pilot via radio, giving a running commentary on the aerial performance.

- more -

Schedule of special events include:

11:00	Crash/Fire/Rescue Demonstration	Runway near Bldg. F-10
11:30	Space Sciences Lecture-Demonstration	Auditorium, Bldg. D-10
12:00	Model Rocketry Launchings	Near Bldg. N-159 Ramp
12:30	Space Sciences Lecture-Demonstration	Auditorium, Bldg. D-10
1:00	Radio Controlled Model Airplane Demonstration	Near Bldg. N-159 Ramp
1:30	Space Sciences Lecture-Demonstration	Auditorium, Bldg. D-10
2:00	Air Force/Langley F-15 Aerial Demonstration	Near Bldg. N-159 Ramp
2:30	Space Sciences Lecture-Demonstration	Auditorium, Bldg. D-10
3:00	Model Rocketry Launchings	Near Bldg. N-159 Ramp
4:00	Radio Controlled Model Airplane Demonstration	Near Bldg. N-159 Ramp

Historical movies will be shown in the Auditorium, Bldg. D-10, between the scheduled lecture-demonstrations. Refreshments will be on sale in the Wallops Cafeteria in Building E-2 directly across the street from the auditorium. Souvenirs of the space program, Wallops and the 40th Anniversary will be on sale at the Visitor Center Gift Shop. Exhibits depicting Wallops mission and history will be displayed in the N-159 hangar. Additionally, NASA and Navy aircraft from Patuxent River, Maryland will be exhibited.

Facilities open to the public on the Wallops Main Base include the Range Control Center where simulated rocketborne satellite launches will be scheduled every half-hour, the wave tank facility, and the Attitude Control System Laboratory all located in Building N-159. For the first time, the sounding rocket payload fabrication and integration laboratories in Building F-10 on the Main Base, the FPQ-6 radar precision tracking radar on the Mainland, and Blockhouse 3 on the Island (if launch schedule permits) will be open. NASA staff members will be on hand in all of these areas to answer questions during the day.

The Wallops launch range is one of the Nation's unique facilities where large sounding rockets are launched and satellites are orbited. One of the events which received a great deal of news media attention was the suborbital flight of SAM, the Rhesus monkey, successfully launched in a Mercury capsule 55 miles into space and recovered safely in December 1959. Many other important scientific achievements have taken place at this "little-known" facility on the Eastern Shore of Virginia.

Since its origin as a scientific research range, Wallops has launched approximately 13,000 rocket propelled research vehicles and conducted thousands of aeronautical and aircraft tests in the quest for information on aircraft and spacecraft flight characteristics, and for the purpose of increasing the Nation's knowledge of the upper atmosphere and the near space environment. This research has led to major contributions to this country's aeronautical and space programs. The breakthroughs to supersonic flight by aircraft and to hypersonic flight by rocket systems were largely attributed to fundamental aerodynamic research that was conducted at Wallops by the use of aerodynamic models propelled by multiple stage rocket systems. Technologies for measuring atmospheric structure and the space environment such as temperature, pressure and density, and micrometeorite densities, electric fields, energetic particles and radiation levels were developed on sounding rockets and formed the basis for developing design criteria for

scientific satellites and manned spacecraft. Technology development for the manned program, such as manned capsule escape techniques and maximum dynamic pressure tests for the Mercury Program were conducted at Wallops. Component development was conducted for sophisticated scientific satellites. Scientific discoveries which later led to synoptic measurements by satellites were made by sounding rockets, many of which were launched from Wallops or from remote locations by Wallops teams. Small satellites and space probes have been launched from Wallops Island. Large balloons have also been used as platforms.

Wallops is now known as a center for the NASA Suborbital Programs. Sounding rockets, balloons and aircraft are used to conduct space science and aeronautical research missions at Wallops and various other locations. The NASA Sounding Rocket and Balloon Program efforts are managed at Wallops. The

GSFC/ Wallops Flight Facility management invites everyone to visit Wallops on Saturday, June 29, and participate in the Wallops 40th Anniversary Celebration.

END

NOTE TO NEWS MEDIA: Wallops' historical black and white photographs are available in the Office of Public Affairs. You can obtain these by calling 804/824-3411, Extension 579 or 584.

NASA News

National Aeronautics and
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Goddard Space Flight Center
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For Release:
June 14, 1985

RELEASE NO. 85-17

NASA SCIENTIFIC TEAM MAKES ROCKETBORNE OZONE MEASUREMENTS IN SOUTH AMERICA

NASA operations science team has completed studies of the atmospheric ozone profile at Natal, Brazil. The purpose of the joint U.S./ Brazil mission was to acquire ozone profile data from 9 to 40 miles at an equatorial site using the improved "A" version, ROCket OZonesonde (ROCOZ-A).

Seven profiles were taken during ozone measuring satellite overpasses to compare the profile data from the ROCOZ-A with other satellite data for the same time and place. The primary mission was to support the SAGE II ozone measurements acquired by the ERBS/SAGE II satellite. Support data also were gathered for comparison with the Solar Backscatter Ultraviolet spectrometer on the Solar Mesopheric Explorer (SME) satellite.

The studies were conducted by a team from the Goddard Space Flight Center's Wallops Flight Facility (WFF) on the Eastern Shore of Virginia.

Each individual ROCOZ-A launch mission included the supporting launch of a Super-Loki Datasonde Dart (a small meteorological rocket) to collect temperature data from 9 to 43 miles, and an Electrochemical Concentration Cell (ECC) balloon-launched ozonesonde to collect lower atmospheric (below 18 miles) ozone, temperature and pressure data. These supporting data are used to define the atmosphere at the site for comparison with the appropriate satellite.

Chester L. Parsons is the NASA Project Manager and Alfred C. Holland is the NASA Project Scientist. At the Brazilian site, Dr. Robert A. Barnes of Chemal, Inc., was mission scientist; Robert J. Frostrom, NASA, was the Field Operations Manager; Prentiss Moore and John McAllen, Joule', collected the all-important telemetry data using the WFF mini-tracker; Oliver C. (Crip) Taylor, NASA, prepared the Datasondes for flight and assisted in the rocket launchings; Malcolm A. Glovier, NASA, checked out and installed the explosive devices including the Datasonde and ROCOZ--A tail fuses and the rocket motors; and Arthur P. Grothouse, Computer Sciences Corporation,

- more -

assisted Dr. Barnes with the loading of the ROCOZ-A payloads. Transportation of hardware and personnel from Wallops Island, Virginia, to the Natal, Brazil, site was provided by the Aeronautics Programs Branch in the Wallops Electra aircraft. The team included both NASA and contract personnel from Wallops.

The team provided ROCOZ-A coverage during five dual and two single satellite overpasses. There were at least two ROCOZ-A profiles for each satellite with four profiles for the NOAA-9.

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NASA News

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For Release:
June 17, 1985

RELEASE NO. 85-18

NASA AWARDS $9.7 MILLION CONTRACT FOR ENGINEERING SUPPORT AND RELATED SERVICES AT THE GSFC/WALLOPS FLIGHT FACILITY

Officials at Goddard Space Flight Center's Wallops Flight Facility have selected Computer Sciences Corporation (CSC) of Falls Church, Virginia, to supply engineering support and related services at the Wallops Island, Virginia site.

The contract was awarded June 4, 1985, and services will begin July 1, 1985. The agreement calls for the support of several organizational elements at Wallops in a variety of disciplines required to aid sounding rocket, balloon and aeronautical programs and launch range activities.

The total cost of the basic two-year, cost-plus-award-fee contract is $9,783,267 and has three one-year options, amounting to an additional $15,655,409.

Specifically, services under the contract will provide support for for flight and ground systems at Wallops, including instrumentation systems, mechanical systems, avionics and launch facility analysis, safety analysis, project management, automatic data processing, facility engineering, and metal trades and instrumentation construction.

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NASA News

National Aeronautics and
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For Release:
June 28, 1985

RELEASE NO. 85-19

NASA LAUNCHES EXPERIMENTS TO MEASURE THE DAYTIME MID-LATITUDE IONOSPHERE

A pair of two Nike-Orion sounding rockets was launched successfully from the NASA Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, Virginia, at 1:46 p.m. EDT on June 24 and 1:46 p.m. EDT on June 26. Purpose of these experiments is to investigate the daytime mid-latitude ionosphere between 96 and 241 statute miles above the earth.

Specific mission objectives are: (1) to investigate differential absorption of radio waves, (2) to determine the electron density profile, and (3) to investigate the irregular structure of the electron density profile in terms of neutral turbulence, plasma instabilities in the mid-latitude region and gravity wave effects.

The scientific data received from this mission will be correlated with information from a similar study of the daytime Equatorial Ionosphere, conducted as part of Project CONDOR in Peru in March 1983. These two experiments are nearly identical to the pair launched from South America more than two years ago.

The 120 pound payloads reached peak altitudes of 110 statute miles. Preliminary results indicate that all instrumentation performed satisfactorily and good data were obtained. The Nike Orion is a two-stage, solid propellant, unguided sounding rocket about 30 feet long.

These launches were conducted for the University of Illinois. According to Dr. L. G. Smith, University of Illinois project scientist, "These studies are important because turbulence is the major unsolved problem of the atmosphere and ionosphere."

Wallops project personnel were: Debra L. Frostrom, project engineer, and R. Paul Buchanan, payload manager.

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For Release:
July 9, 1985

RELEASE NO. 22

NASA AWARDS TWO CONTRACTS FOR PLANT OPERATIONS AT THE GSFC/WALLOPS FLIGHT FACILITY

Officials at the Goddard Space Flight Center's Wallops Flight Facility have selected Wharton Worldwide Service Company, Inc., a small business concern in Parksley, VA., to supply services and materials necessary to provide custodial, pest control and entrance/exit mat services at the Wallops Island, Virginia site.

The recently-awarded contract began service on July 1, 1985, and employs a total of 20 employees at the Wallops site. The total cost of the basic one-year negotiated contract is $377,660.20 with two one-year option periods amounting to an additional $763,928.30; this contract also has provisions for two additional unpriced option periods. The total amount for three years will be $1,141,588.50

Tiger Maintenance Corporation of West Orange, NJ, was also selected to provide the personnel, materials and facilities necessary for the operation and maintenance of facilities and equipment at the GSFC/Wallops Flight Facility.

Services under this fixed price service contract also began on July 1, 1985. General requirements are to provide non-personal services for equipment and building trades support essential for the continuous operations and maintenance of all facilities and equipment, including air conditioning/refrigeration, utility services steam and electrical distribution systems, a complete steam generating plant, two complete water plants, two wastewater plants, all their connecting distributary systems; approximately 37 independent boilers and furnaces, 9 personnel elevators, and obstruction lights on high antennas and towers at Wallops.

A total of 57 employees will work under this contract at the Wallops site. The total cost of the basic one-year contract is $1,363,058 with two three-month option periods amounting to a total of $2,126,126 for eighteen months.

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NASA News

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For Release:
August 26, 1985

RELEASE NO. 85-25

SHARP PROGRAM ENDS

Five academically-gifted high school students recently completed an 8-week summer employment program at Goddard Space Flight Center's Wallops Flight Facility.

Northampton and Accomack Counties in Virginia, and Worcester County in Maryland were represented in the 1985 Summer High School Apprenticeship Research Program (SHARP). The program provided both educational and social opportunities for the participants.

Working under the guidance of professional and technical mentors from the NASA facility, the students performed tasks and assignments which suited their career interests and aptitudes. The mentors provided hands-on experience in technical environments, and the students combined questioning enthusiasm and persistence to make this year's program a success.

The students took several field trips, including tours of Goddard Space Flight Center and Langley Research Center. They also heard a lecture on NASA's Space Program. The SHARP "VIP Night" on Thursday, August 15, closed the program with student presentations and award ceremonies.

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This summer was the second and final year for Jackie Collins and Steve Norman, and the first summer for students Tyeast Pettit, Danny Santiano, and Perdita Savage.

Jacqueline (Jackie) Collins, a graduate of Chincoteague, High School, was assigned to Dr. Dave Oberholtzer in the Space and Earth Sciences Directorate. Her task was to collect data from a transmissometer, an instrument measuring air aerosol content, and then plot the information on an existing computer program that Collins herself had modified. She also helped compile census data to be used by the Balloon Projects Branch to determine possible future balloon landing sites.

Steve Norman, a graduate of Arcadia High School, was again assigned to John Murrell in the Chemistry Lab. Norman's project was to run samples of JPS jet fuel into a gas chromatograph to determine the content of etheline glycol monomethyl ether (EGME). The analysis of EGME is critical for efficient engine operations.

Tyeast Pettit, a junior at Arcadia High School, was assigned to Randy Odom, Plant Operations and Management Branch. Pettit's project was centered in the area of work documentation software systems supporting the Plant Operations and Maintenance Branch. Pettit worked on a Q-1 Microlite Computer to implement color graphic plots depicting a job code breakdown for Wallops electricians (based on current information stored in the work order data base). The data outputs will be sent to Goddard Space Flight Center for use in future management analyses and budgeting.

Danny Santiano, a junior at Pocomoke High School, was assigned to Wayne Wright, Space and Earth Sciences Directorate. With the Laser Physics Program, Santiano worked on the ground testing of lasers using the laser retroflector to determine the effectiveness of the lasers. From schematic diagrams, Santiano constructed a laser simulator used to test existing laser equipment. This equipment is used by Wallops to investigate the application of lasers in remote sensing. Santiano also learned Programming Language C, which he used to augment an existing catalog system and imput files for all of the office computer disks.

Perdita Savage, a junior at Northampton High School, was assigned to Dr. John Gerlach and the NASA Storm Hazards Project. This project investigates the nature and characteristics of severe electrical storms. Savage worked with a computer program extracting information on storm areas, lightening-struck points, and lightening hit frequency. This information she then input on the IMB computer for storage. This data is part of the on-going research conducted by NASA.

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For Release:
September 10, 1985

RELEASE NO. 85-26

WALLOPS ROCKETS PROBE NIGHTTIME THUNDERSTORM

A coordinated series of rocketborne experiments was conducted from the NASA Goddard Space Flight Center's Wallops Flight Facility at Wallops Island, Virginia, Monday, September 9, to study effects of lightning in the Earth's troposphere.

The lightning measurements were made by simultaneous data collection aboard three rocket payloads in the air at different altitudes. Coordinated measurements also were made from a series of ground-based instruments designed to detect the location and characteristics of lightning.

A meteorological data sonde on a small rocket also was launched following the three rocket series to determine the meteorological characteristics in the upper atmosphere near the time of the other measurements. A meteorological rocket--Super Loki Datasonde--was launched at 9:39 p.m. EDT.

The three sounding rockets were launched in about two minutes. The single-stage Orion sounding rocket was launched at 8:01 p.m. EDT. Seventy seconds later, the two-stage Taurus-Orion was launched followed 57 seconds later, by the Nike-Orion. All three are solid propellant sounding rockets.

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The Taurus Orion lofted its 297-pound payload to a peak altitude of 120 statute miles and the Nike-Orion carried its 303-pound payload to a peak altitude of 71.5 statute miles. The Taurus-Orion experiment package contains a water recovery system--using an eight foot parachute with flotation bag, flashing strobe light and recovery beacon.

The search aircraft, the Wallops P-3, located the Taurus-Orion payload package Monday evening at 9:45 p.m., about 40 miles offshore and the Coast Guard Cutter "Point Brown" out of Oregon Inlet accomplished recovery about 6:30 a.m. EDT. today, Tuesday, September 10. Two commercial fishing vessels, the Christy and Christy Lee assisted in the recovery by sighting the package and standing by until the Point Brown arrived on the scene.

The scientific payload was returned to the Wallops Flight Facility for refurbishment and future space flights.

The three sounding rockets used in this series were the Nike-Orion, 16 1/2 inches in diameter and 28 feet long; the Taurus-Orion, 23 inches in diameter and 36 and 1/2 feet long; and the Orion, 14 inches in diameter and 16 feet long (all including payload section).

Dr. Richard Goldberg is the NASA Goddard Space Flight Center principal investigator and Charles Manion is the Wallops payload manager for the experiments carried on board the Taurus-Orion. Supporting Project Scientists include Dr. Les Hale, Penn State University; Dr. Jim Barcus, University of Denver and Carl Siefring, Cornell University. Dr. Goldberg is also the Project Scientist for the Nike Orion. Dave Kotsifakis is the Wallops payload manager for the Nike-Orion. Dr. Les Hale is the project scientist for the Penn State University experiment carried on the Super Arcas and David Moltedo is the Wallops payload manager. Wallops project personnel include Dempsey Bruton and Robert Frostrom, project engineers, and Robert Long, recovery director.

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For Release:
September 27, 1985

RELEASE NO. 85-27

NASA WALLOPS VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket launch will be held at 1 p.m. Saturday, October 5, at the NASA Wallops Visitor Center, Wallops Island, Virginia.

About 20 rockets, ranging in height from one to three feet, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical and present rockets, such as the Mercury Redstone, the Nike-Ajax, the Gabriel, and the Cruise Missile.

The public is invited to watch the launch, or bring one's own rockets and join the fun. The event will last about one hour.

The NASA Wallops Visitor Center, located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia, is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information or clarification, please call (804) 824-5833.

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For Release:
October 2, 1985

RELEASE NO. 85-28

FIRE PREVENTION EXHIBIT AT THE NASA WALLOPS VISITOR CENTER

Fire fighting equipment from the NASA Wallops Flight Facility will be on display from 10 a.m. to 4 p.m., October 5 and 7 at the NASA Wallops Visitor Center.

Fire trucks and equipment used in fighting structural and aircraft fires will be shown as part of the Visitor Center's National Fire Prevention Week exhibit.

National Fire Prevention Week is October 6 through 12.

The Visitor Center, located on Route 175 about 6 miles from Route 13 and 5 miles from Chincoteague, Virginia, is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For additional information or clarification, please call (804) 824-5833.

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RELEASE NO. 85-32

For Release:
October 25, 1985

NASA WALLOPS VISITOR CENTER HOLDING MODEL ROCKET LAUNCH AND HALLEY'S COMET LECTURE

A model rocket launch will be held at 1 p.m. Saturday, November 2, at the NASA Wallops Visitor Center, Wallops Island, Virginia.

About 20 rockets ranging in height from one to three feet, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical and present rockets such as the Mercury Redstone, the Nike Ajax and the Cruise Missile.

The public is invited to come out and watch the launch, or if you're a model rocket enthusiast, bring your own rockets and join the fun. The event will last about one hour.

Following the model rocket launch at 2 p.m. Dr. Stephen Maran, from the NASA Goddard Space Flight Center, Greenbelt, Maryland, will give a lecture on Halley's Comet.

Maran will explore the rich lore of ancient and modern observations of Halley's Comet and offer tips for viewing the comet.

The NASA Wallops Visitor Center, located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia, is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information or clarification, please call (804) 824-5833.

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For Release:
November 6, 1985

RELEASE NO. 85-33

ARTIFICIAL CHEMICAL CLOUDS TO BE VISIBLE AT DAWN ALONG EAST COAST

A rocketborne scientific experiment which is programmed to create chemical clouds at high altitudes is scheduled for launch during mid-November from NASA Goddard Space Flight Center's Wallops Flight Facility on Virginia's Eastern Shore.

A large three-stage, suborbital rocket--a Taurus-Nike-Tomahawk-is scheduled for a pre-dawn flight from Wallops Island during a launch window November 13 through November 22. The launch window lasts about 15 minutes each morning, starting about 5:10 a.m EST. Since the data will be obtained optically, clear weather conditions are required at the ground observing sites. Delays could occur due to operational constraints or cloud cover at the ground-based camera sites so the launch will be scheduled on a day-to-day basis.

The objective of this experiment is to provide baseline data on expected yields, vapor expansion velocities and other parameters for the chemical release canisters for the Combined Release and Radiation Effects Satellite (CRESS)

- more -

scheduled to be launched in July 1987 from the Space Shuttle. Three types of reaction chemistry will be tested on this flight: a titanium-boron-barium mixture, a titanium-boron-lithium mixture, and a barium-cupric-oxide mixture. The barium and lithium vapor will scatter sunlight at specific optic wavelengths (or colors) and will be visible from the ground in the predawn sky.

The chemical releases will be visible, cloud-cover permitting, from all areas of the United States east of the Mississippi River.

The payload is approximately 90 inches (2.3 meters) long and weighs 151 pounds (68.5 kilograms). It will contain three separate chemical canisters. The release altitudes for each canister will simulate, as closely as feasible, the CRRES release altitudes.

The flight will release the titanium-boron-barium chemical at the 370 km (230 statute miles) point on the upleg, the titanium-boron-lithium chemical at 523 km (325 statute miles) and the barium-cupric-oxide chemical at the 370 km (230 statute miles) point on the downleg portion of the trajectory. The barium clouds will appear from the ground as greenish-white balls that rapidly expand while ejecting barium ions along the magnetic field to form a visible streak more than 62 miles (100 km) in length. The lithium cloud will be red and will expand to a diameter of several hundred kilometers in less than a minute. The chemical clouds will be visible until the twilight sky becomes too bright to see, about 15-20 minutes.

Dr. David L. Reasoner of the NASA Marshall Space Flight Center is the principal investigator for this mission. The data will be taken by ground-based optical systems provided by Dr. J. Heppner, NASA Goddard Space Flight Center;

Dr. P. Bernhardt, Los Alamos National Laboratory; Dr. G. Haerendel, Max Planck Institute, Germany; and Dr. S. Mende, Lockheed Palo Alto Research Laboratory. These ground-based optical systems will be distributed among four optical sites in North Carolina, Virginia, Maryland and West Virginia. Ground observations will also be conducted with the Millstone Hill Radar at MIT and two portable radars in the Bahamas.

Other scientists who may participate in the observations include Dr. M. Mendillo, Boston University and Dr. H. Carlson, Air Force Geophysics Laboratory.

Ball Aerospace Systems Division, Boulder, Colorado, is the prime contractor for the chemical canisters as well as the entire CRRES and has contracted with Franklin Research Center, Elverson, Pennsylvania, to manufacture a major portion of the rocket payload and the titanium-boron canisters for flight. Dr. G. Haerendel from Max Planck has responsibility for the barium-cupric-oxide canister.

This flight mission, as part of the NASA Sounding Rocket Program is managed at Wallops. Jay F. Brown is the Wallops Payload Manager and Debbie Frostrom is the Wallops Project Engineer for this flight.

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NASA News

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For Release:
November 5, 1985

RELEASE NO. 85-34

UMES PROFESSOR TO LECTURE ON HALLEY'S COMET AT NASA WALLOPS VISITOR CENTER

Halley's Comet will be the topic of a lecture by Dr. Kuldip Chopra, Visiting Professor of Physics at the University of Maryland, Eastern Shore, at 2 p.m. November 9 and 10 at the NASA Wallops Visitor Center, Wallops Island, Virginia.

Dr. Chopra will discuss the rich lore associated with Halley's Comet and offer tips for viewing the comet.

Halley's Comet, named for English Astronomer Edmund Halley, passes by the Earth every 76 years as its orbit takes it around the Sun.

The comet is visible with binoculars from December 1985 to May 1986 and visible with the naked-eye in March and April, with the best viewing times for Delmarva residents being the second and third week of March.

Dr. Chopra has conducted research in the areas of urban environment, island-induced atmospheric and oceanic circulations, aviation turbulence and cometary and planetary physics.

- more -

Dr. Chopra received his doctorate in physics from the University of Delhi, India, and has written numerous articles on his research.

Dr. Chopra's lecture will be the second in a series of lectures on Halley's Comet in November at the NASA Wallops Visitor Center. All lectures begin at 2 p.m. and will last about 30 to 45 minutes.

The other lectures are: November 16 and 17 -- Dr. Andrew Pica, Assistant Professor of Physical Sciences, Salisbury State College; and November 23 and 24 -- Mr. Tony Goodyear, Coordinator and Instructor, Parkside Planetarium, Parkside High School.

The NASA Wallops Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. For further information or clarification, please call (804) 824-5388. The Visitor Center is open from 10 a.m. to 4 p.m. Thursday through Monday.

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NASA News

National Aeronautics and
Space Administration

Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

Joyce B. Milliner
(Telephone: 804/824-3411, x579)

For Release:
November 18, 1985

RELEASE NO. 85-37

SARSAT VAN FEATURED AT NASA VISITOR CENTER

The use of satellites in aiding search and rescue operations will be featured in a special exhibit, NASA's SARSAT van, from noon to 4 p.m., November 23 and 10 a.m. to 4 p.m. November 24 at the NASA Visitor Center, Wallops Island, Virginia.

The search and rescue satellite-aided tracking project (COSPAS/ SARSAT) is an international cooperative program between the United States, Canada, France (SARSAT) and the Soviet Union (COSPAS). The U. S. program includes NASA, the National Oceanic and Atmospheric Administration (NOAA), the Coast Guard and the Air Force.

The goal of the program is to demonstrate the effectiveness of satellites in reducing the time required to rescue air and maritime distress victims and to increase significantly the possibility of saving lives.

The SARSAT van, a walk-through display, features six exhibits. SARSAT lecturer Albert Jones will also be available to answer any questions. Of particular interest are the highlights of four "rescues" aided by satellite intervention. One of these rescues involved the NOAA ground station at Wallops Island.

- more -

The rapid detection and location of a downed aircraft or a ship in distress is of great importance to the potential survivors.

Studies have shown that even those who survive an initial aircrash have less than 10 percent chance of survival if the rescue is delayed beyond two days. In contrast, if the rescue can be accomplished within eight hours, their chance of survival increases to better than 50 percent.

In addition, rapid location can reduce both search and rescue costs significantly and lower the length of exposure of search and rescue teams to hazardous conditions frequently encountered during these operations.

In 3 years of operations, the COSPAS/SARSAT program has helped save the lives of more than 500 people throughout the world, and in most cases, rescue times and costs were reduced dramatically.

When a marine or aviation accident occurs, an emergency radio beacon is automatically activated. The marine device is called the Emergency Position-Indicating Radio Beacon (EPIRB), and the aircraft device is called the Emergency Locator Transmitter (ELT).

The signal from the beacon is received by the SARSAT and/or COSPAS satellites, which retransmits the signal to a ground receiving station. This signal is processed, and the location of the aviator or mariner in distress is recorded.

The location information is then sent to the U.S. Mission Control Center at Scott Air Force Base, Illinois, which in turn sends the information to the proper land or sea Rescue Coordination Center--the Air Force or the Coast Guard.

In the rescue involving the NOAA station at Wallops Island, a Belgian race driver suffered a fractured skull when his four-wheeldrive vehicle rolled over several times and threw him out of the vehicle in a remote area of Somalia, Africa, where there were no communications or medical facilities.

The signal from an emergency radio beacon, which his co-driver activated, was first picked up by the NOAA-9 weather satellite and transmitted to the Wallops Island station.

The signal was analyzed in the United States and the information was sent to search and rescue authorities in Toulouse, France. The French authorities were notified of the distress signal just one hour and 19 minutes after the beacon had been activated. An hour later, the French station picked up a similar signal from the Soviet satellite COSPAS 1.

The French authorities informed French diplomats in Africa, and a doctor was flown to the injured race driver.

The NASA Visitor Center at the Wallops Flight Facility is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, VA. The Center is open from 10 a.m. to 4 p.m. Thursday through Monday. It will be closed Thanksgiving Day. For further information or clarification, please call (804) 824-5833.

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NOTE TO EDITORS: Bert Jones, the SARSAT lecturer, will be available for interviews while the SARSAT van is at the Visitor Center. A 3/4" video tape describing the COSPAS/SARSAT program will also be available.

NASA News

National Aeronautics and
Space Administration

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For Release:
November 19, 1985

RELEASE NO. 85-38

NASA AWARDS CONTRACT TO OPERATE POKER FLAT, ALASKA, RESEARCH RANGE

Officials at Goddard Space Flight Center's Wallops Flight Facility (GSFC/WFF) have selected the University of Alaska's Geophysical Institute to provide, operate and maintain a launch range at Poker Flat Alaska.

Awarded October 31, 1985, the cost-type contract totals $2,264,301 for the basic two-year period of performance, with two additional one-year unpriced options.

Under the Wallops Project Management and Operations cognizance, the University will provide launch support services for a variety of sounding rocket missions at the range. The GSFC/WFF has been responsible for assuring this support since 1979. About eight to ten sounding rockets are launched from this Alaska range each year to study scientific phenomena unique to northern latitudes.

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NASA News

National Aeronautics and
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For Release:
November 25, 1985

RELEASE NO. 85-40

NASA WALLOPS VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket launch will be held at 1 p.m. Saturday, December 7, at the NASA Wallops Visitor Center, Wallops Island, Virginia.

About 20 rockets ranging in height from one to three feet, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical and present rockets such as the Mercury Redstone, the Nike Ajax and the Cruise Missile.

The public is invited to come out and watch the launch, or if you're a model rocket enthusiast, bring your own rockets and join the fun. The event, which will last about one hour, is dependent on the weather.

The NASA Wallops Visitor Center, located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia, is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information or clarification, please call (804) 824-5833.

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NASA News

National Aeronautics and
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For Release:
November 25, 1985

RELEASE NO. 85-41

NASA AWARDS CONTRACT FOR LAUNCH RANGE SYSTEMS OPERATION AND MAINTENANCE

The Goddard Space Flight Center's Wallops Flight Facility (WFF) has awarded a contract to the Joule' Technical Corporation, Orange, New Jersey, to provide services to operate and maintain radar, telecommunications, and photographic systems and provide meteorological forecasting for Wallops and various sites around the world.

Awarded November 19, 1985, the contract calls for 117 employees, primarily electronic technicians, to operate and maintain launch range equipment at the Wallops Facility, a tracking site in Poker Flat, Alaska, and mobile telemetry and radar systems carried around the world to provide range support for sounding rocket and balloon launches. The company will also operate the orbital tracking station at Wallops beginning in the Spring.

Value of the fixed price for the basic 1-year period is $4,038,142. There are four optional periods of 1 year each. The total contract value for the basic period and all optional periods is $20,739,098.

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NASA News

National Aeronautics and
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Goddard Space Flight Center
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For Release:
February 25, 1986

RELEASE NO. 86-5

NASA SUB-ORBITAL ROCKET OBSERVES COMET HALLEY

A sounding rocket was successfully launched just before dawn Monday from the White Sands Missile Range in New Mexico carrying scientific experiments above the Earth's atmosphere to observe Comet Halley.

The Black Brant IX, a two-stage, rocket was launched at 6:53 a.m. EST reaching a peak altitude of 194 miles (312 kilometers). This is a solid propellant rocket which is 46 feet (14 meters) long.

A second rocket, carrying experiments for the John Hopkins University also to observe Comet Halley, was postponed 24 hours due to high winds.

The experiment package descended on a parachute and was recovered from the desert. NASA plans to refurbish this rocket payload in the field and refly it in about two weeks at the time of the encounter of Halley by the European spacecraft Giotto. This refly effort was recently added due to the loss of other planned Halley observations on the Space Shuttle.

This rocketborne mission, managed by the NASA Goddard Space Flight Center's Wallops Flight Facility in Virginia, carried experiments for scientists from the Naval Research Laboratory (NRL) Washington, D.C.; and University of Texas, Austin.

- more -

The objective of this rocket flight was to obtain far-ultraviolet (far-UV) images of Comet Halley. The scientific payload consists of two electrographic (film recording) Schmidt cameras of the type flown on Apollo 16, Skylab 4 and on several rockets including a rocket observation of Comet Kohoutek. The smaller of the cameras is designed to obtain images of Comet Halley. The second camera is pointed at a grating to obtain objective spectra of Comet Halley.

The far UV spectra of the coma of Comet Halley contains the intense resonance lines of atomic hydrogen, oxygen and carbon images. These resonance lines can be analyzed to determine production rates of gas from the frozen nucleus, velocity distributions of the atoms around the nucleus, and the lifetimes of the atomic constituents. Other species with resonant or fluorescent emissions in the spectral range which should be detectable include carbon monoxide, sulphur and ions of carbon monoxide and carbon. Images of the ions should show an ion tail and provide information about the interaction of Comet Halley with the solar wind.

At the time of the rocket observation, Comet Halley was approximately 28 degrees from the Sun as viewed from the earth. On February 9, Comet Halley passed through perihelion and since has been moving away from the Sun. To observe the Comet without the contamination of sunlight, launch occurred just before dawn with the Comet above, and the sun below the horizon at rocket apogee.

Dr. Robert P. McCoy of NRL is the principal investigator; co-investigators are Drs. George R. Carruthers and Robert R. Meier, NRL, and Chet B. Opal, University of Texas. NASA/Wallops project manager is Mendel N. Silbert.

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For Release:
February 28, 1986

RELEASE NO. 86-8

NASA AWARDS PLANT PROTECTION CONTRACT

The Goddard Space Flight Center's Wallops Flight Facility (WFF) has awarded a contract to Continental Service Company, Rt. 13 North, Laurel, Delaware, to provide the personnel, materials and facilities for the protection of facilities and equipment at Wallops.

Services under this fixed-price service contract will begin on March 1, 1986. The general requirements are to provide non-personal services for structural and airport crash/Fire/Rescue, Mail delivery, traffic control, plant security and related services at Wallops. Approximately 70 employees will be required to perform these services.

The total cost of the basic nine-month contract is $979,319.75, with two one-year options. The total aggregate amount is $3,670,845.75.

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NASA News

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For Release

March 11, 1986

NOTE TO EDITORS/PROGRAM DIRECTORS

There will be a press briefing on two rocketborne scientific experiments to investigate Dr. Hannes Alfven's Critical Velocity Effect Theory, which has been used to explain details in the early formation of the solar system. The briefing is scheduled at 10 a.m. on Monday, March 24, at the NASA Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, Virginia, in Building E-2. (See news release attached.)

Hannes Alfven, Professor Emeritus, Electrical Engineering and Computer Science University of California, only person ever to receive Nobel Prize in Physics for work in Plasma Physics, will be at Wallops to participate in press briefings, along with other project personnel.

For additional information, call or write:

Joyce Milliner
Office of Public Affairs
NASA GSFC/Wallops Flight Facility
Wallops Island, VA 23337
(Phone: 804/824-3411, Ext. 579)

or

Jim Elliott
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Goddard Space Flight Center
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NASA News

National Aeronautics and
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Goddard Space Flight Center
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For Release

March 11, 1986

RELEASE NO. 86-9

MULTI-COLORED ARTIFICIAL CLOUDS TO BE VISIBLE AT DAWN ALONG EAST COAST

Two rocketborne scientific experiments which are programmed to create artificial clouds at high altitudes are scheduled for launch during early May from NASA Goddard Space Flight Center's Wallops Flight Facility on Virginia's Eastern Shore.

These colorful releases will be visible, cloud cover permitting, along the east coast from Montreal to Jacksonville and as far west as Ohio.

The scientific missions are part of the overall NASA Sounding Rocket Program which is managed at Wallops. This program consists of approximately 40 to 45 sounding rockets a year that are launched from various worldwide locations.

The large three-stage, suborbital rockets--a Black Brant X (BBX) and a Taurus-Nike-Tomahawk (TNT)--are scheduled for pre-dawn flights from Wallops Island during a launch window May 5 through May 20. They are scheduled to be conducted 10 minutes apart.

- more -

The objectives of these launches are to investigate Nobel prize winner Dr. Hannes Alfven's proposed Critical Velocity Effect Theory, which has been used to explain details in the early formation of the solar system. These experiments duplicate conditions that existed in the early solar system by using conical-shaped charges (high explosive canisters which are detonated).

The Black Brant payload will contain two canisters of barium which will be ejected and detonated -- one as it ascends and one as it descends -- near the apogee altitude 267 statute miles (430 kilometers) altitude. The barium will appear as whitish yellow with a possible bluish green trail which will turn green or violet and be visible for about 15 minutes.

The Taurus-Nike-Tomahawk payload will contain strontium which will appear from the ground as a deep blue ball that grows rapidly to about twice the size of the Moon. It will remain visible for about 15 minutes, slowly fading and then disappearing as the Sun rises.

These experiments are conducted at dawn when the Earth's surface is in darkness but with sunlight at the experiment altitude (which ionizes the chemicals and makes them visible to the naked eye.)

In 1954, Professor Alfven proposed that, if an element in a nearly neutral plasma became ionized when it attained a flow velocity which depended on its ionization potential, then several facets of the structure of the solar system could be explained. Namely, he could explain the differing chemical compositions of the planets and the regularity of their orbits. For his efforts in plasma physics and its application to astrophysics, Professor Alfven received the Nobel Prize in Physics in 1970.

Although Alfven's critical velocity effect has been the subject of several laboratory studies, there remains great interest in investigating the phenomena in a space plasma. Plasma parameters in a space environment are so different from those obtainable in the laboratory that there has been doubt as to whether the critical velocity effect would occur in space at all. The absence of containing walls, for example, could drastically alter the process. Besides those revelant to the origin of the solar system, other applications include the formation of plasma close to comets, and the ionization of interstellar gas penetrating the heliosphere. When the releases occur, any ground observer using even a small pair of binoculars can determine whether the effect occurs. In that case, the cloud should split into two well delineated jets of gas in the first few seconds.

The Black Brant X payload is one of the most complex and longest sounding rocket payloads ever built at the the Wallops Facility. The payload is 17 ft. (5 meters) long and after its flight, the main section is to be recovered from the Atlantic Ocean, about 300 miles offshore.

The Taurus-Nike-Tomahawk configuration is a 3-stage rocket, 42 feet (13 meters) long and 23 inches (58 cm) in diameter (first stage). The Black Brant X is also a 3-stage rocket, 56 ft. (17 meters) long, and 18 inches (46 cm) in diameter. Both are solid propellant vehicles.

Experimenters are from several universities, both U.S. and foreign: University of Alabama, Huntsville; University of California, San Diego; Max Planck Institute for Extraterrestrial Physics in Munich, West Germany; University of Alaska; Cornell University, New York; Utah State University; and the Royal Institute of Technology in Sweden.

There will be three primary ground observation sites. Two will be manned by the University of Alaska and one by the Max Planck Institute at Duck Island, NC; Eastville, VA (near WFF); and a site near Cape May, NJ, respectively. Ground observer locations include Los Alamos National Observatory, New Mexico; Stanford Research Institute, California; Millstone Hill Radar at the Massachusetts Institute of Technology in Massachusetts, and two portable radars in the Bahamas.

Dr. Roy Torbert of the University of Alabama in Huntsville and the University of California, San Diego, is the principal investigator for the Black Brant X. Other experimenters are: Professors Gerhard Haerendel, Michael Kelley, Eugene Wescott, C. G. Falthammer, Carl Howlett, Kay Baker, John Foster and Alfven. Dr. Eugene Westcott, Geophysical Institute, University of Alaska, Fairbanks, is the principal investigator for the Taurus-Nike-Tomahawk. NASA GSFC/ Wallops Flight Facility Project Managers are Paul Buchanan (Black Brant X) and Jay Brown (Taurus-Nike-Tomahawk). WFF Project Engineers are Bob Long (Black Brant X) and Rob Frostrom (Taurus-Nike-Tomahawk).

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NASA News

National Aeronautics and
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For Release
March 17, 1986

RELEASE NO. 86-10

DELMARVA PENINSULA "COMET WATCH" RESCHEDULED

The Delmarva Peninsula "Comet Watch" has been rescheduled for 4 a.m. to 5 a.m., Saturday and Sunday, March 22 and 23, at the Chincoteague Wildlife Refuge on Assateague Island.

Originally scheduled for March 15 and 16, the Halley's Comet observation program was cancelled due to unfavorable weather.

"Comet Watch" is sponsored by the NASA Visitor Center at the Wallops Flight Facility of the Goddard Space Flight Center, the National Park Service, the U. S. Fish and Wildlife Service and the Department of Physical Sciences at Salisbury State College.

Professional and amateur astronomers will be on the beach adjacent to parking lot three to aid the public in viewing the historic comet.

Viewers are asked to park their automobiles at parking lot two and walk to the viewing area. This will reduce any unwanted light.

For up-to-date information on the program's status, a pre-recorded message will be available after 5 p.m. March 21. Call (301) 543-6480 or (804) 824-5833.

- more -

When viewing the comet, people should plan to allow at least 10 minutes for their eyes to adapt to darkness. The comet will be visible with the naked eye. However, viewers should bring binoculars for best viewing.

March 22 and 23 should offer some of the best viewing of Halley's Comet from the Delmarva Peninsula during this 30th recorded appearance of Comet Halley.

After March 24, the Moon interferes with viewing and the comet begins to dip below the horizon. It will be visible on the Peninsula again in late April, but much more difficult to locate.

For further information or clarification, please call the NASA Visitor Center at (804)824-5833 from 10 a.m. to 4 p.m. Thursday through Monday.

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NASA News

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For Release:
April 10, 1986

Release No. 86-13

WEATHER FORECASTING FEATURED AT NASA VISITOR CENTER

Weather forecasting will be the topic of a special lecture at 2 p.m. April 19 and 20 at the Wallops Flight Facility's Visitor Center, Wallops Island, Va.

Carl Boettger, staff meteorologist at the Wallops Flight Facility, will make a 30-minute presentation on how weather forcasts are developed.

Boettger, currently employed by Joule' Technical Corp., has been a weather forecaster at Wallops since 1964. He previously was employed by the National Weather Service.

The lecture is part of the Visitor Center's April program featuring weather forecasting. In addition to the lecture, the films "The Weather Watchers" and "Hurricane Below" are shown daily on the hour and half hour.

The special program topic in May will be "Living and Working in Space."

The NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Va. The Center is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For additional information, please call (804) 824-5833.

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NASA News

National Aeronautics and
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Goddard Space Flight Center
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For Release:
April 28, 1986

RELEASE NO. 86-16

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket launch will be held at the NASA Visitor Center, Wallops Island, Virginia, Saturday, May 3 at 1 p.m.

Approximately 20 model rockets, from one to three feet tall, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical as well as modern rockets such as the Mercury Redstone, the Honest John and the Space Shuttle.

The public is invited to watch the launch. Model rocket enthusiasts can bring their own rockets and join the fun. The event, which will last about one hour, is dependent on the weather.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information or clarification, please call (804) 824-5833.

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NASA News

National Aeronautics and
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For Release:
May 2, 1986

RELEASE NO. 86-18

"TEACHER IN SPACE" FINALIST TO TALK AT NASA VISITOR CENTER

"Teacher in Space" finalist Mike Metcalf will present a special one-hour program titled "Continue the Quest" at 2 p.m. Sunday, May 11, at the NASA Visitor Center, Wallops Island, VA.

The program, which is suited for all individuals seven years old and above, will examine the future of the "Teacher in Space" program following the tragic accident of the Space Shuttle Challenger on January 28, 1986. Teacher in Space participant Christa McAuliffe was a member of the Challenger's seven person crew.

Metcalf, a social studies instructor at Hazen Union School, Hardwick, Vermont, was selected as one of the ten finalist from about 10,000 applicants in the Teacher in Space Project, part of NASA's Space Flight Participant Program. He is currently on assignment for one year at the NASA/Goddard Space Flight Center, Greenbelt, Maryland.

- more -

Plans to make a teacher the first private citizen to fly on the Space Shuttle were announced by President Ronald Reagan on August 27, 1985.

Metcalf's presentation is part of the NASA Visitor Center's special program in May on the Space Shuttle. Two 25-minute films, "Shuttle Life in the World of Weightlessness" and "Eating and Sleeping in Space" are shown daily on the hour and half hour, respectively. Both films are suitable for all ages.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, VA. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-5833.

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For Release:
May 30, 1986

RELEASE NO. 86-22

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket launch will be held 1 p.m., Saturday, June 7 at the NASA Visitor Center, Wallops Island, Virginia.

Approximately 20 model rockets, from one to three feet tall, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical as well as modern rockets such as the Mercury Redstone, the Honest John and the Space Shuttle.

The public is invited to watch the launch. Model rocket enthusiasts can bring their own rockets and join the fun. The event, which will last about 45 minutes, is dependent on the weather.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information or clarification, please call (804) 824-5833.

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NASA News

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For Release:
May 30, 1986

RELEASE NO. 86-23

NASA VISITOR CENTER - SUMMER ACTIVITIES

Flight. It has fascinated mankind for ages. However, soaring through the air defying gravity has been a struggle. Only in recent history has mankind made great strides in this struggle to achieve the realm of flight.

Visitors to Delmarva have the opportunity to explore this fascination with flight at of one of the world's oldest rocket launch facilities and one of the major centers in flight research.

The NASA Visitor Center at the Wallops Flight Facility of the Goddard Space Flight Center showcases the world of flight of the past, present and future.

The Visitor Center's facilities immediately grabs one's attention as one drives along Virginia Route 175 toward the islands of Chincoteague and Assateague.

Full-scale rockets reach toward the sky as if they await the countdown to T-minus zero: the 70-foot Scout rocket, largest of the rockets launched from the Wallops' launch complex; the Little Joe, the test vehicle for the Mercury space capsule; a reentry test vehicle for studying phenomena associated with

- more -

high speed reentry through the Earth's atmosphere, and the Nike-Cajun sounding rocket, which is one of many sounding rockets that have been used at Wallops to carry scientific payloads studying Earth's atmosphere.

The grounds of the Visitor Center give one a chance to experience high-tech while still admiring the beauty of the unspoiled marshlands for which the area is known. Across Route 175 from the Visitor Center, research aircraft are often seen on the runways of the Wallops Flight Facility. Large tracking antennas from the National Oceanic and Atmospheric Administration can be viewed. These antenna are used for tracking the polar and geosynchronous orbiting weather satellites.

A clearing below the main building on the grounds allows one to view the marshlands and the wildfowl that often take refuge there. The area also offers a clear view of the town of Chincoteague and Wallops Island, the site of the Flight Facility's launch complex.

Entering the Visitor Center, one first travels through "The Milestones of Flight." Displays take a person on a journey through time: from ancient Chinese and Greek stories of flight, through the early 1900's and the start of powered flight, to the modern era culminating with the first flight of the Space Shuttle.

As one ventures through the building, he or she finds a moon rock sample brought back to Earth from the Apollo 17 mission, and the practice suit of Apollo 9 lunar module pilot Russell Schweickart. Scale models of space probes, satellites and aircraft are found throughout the Center.

Other displays focus on research activities conducted at the Wallops Flight Facillity and other NASA centers. One area looks at sounding rockets, instrument-carrying research vehicles that fly in nearly vertical trajectories to heights of 20 to several hundred miles, then fall back to Earth.

Another looks at the NASA Balloon Program. These balloons, which reach a diameter of over 100 yards when fully inflated, carry scientific instruments for as long as 40 hours at altitudes up to 30 miles.

Aeronautical and applications displays provide up-to-date information on research being conducted in these areas. Finally, there is a look at current and future space programs, such as the Space Shuttle and Space Station.

One of the more popular exhibits is a "hands-on" display that allows one to carry out such tasks as preparing a Space Shuttle for launch or performing the operations of the Space Shuttle astronauts from countdown to orbit.

In addition to the displays, films on space and aeronautical subjects are shown daily on the hour and half hour. Also, special programs such as model rocket launches, are held monthly. The model rocket launches are held at 1 p.m. on the first Saturday of every month and also the third Saturday in June, July and August. The model enthusiasts are invited to bring their own model rockets to launch. All launches are dependent on the weather.

Special programs for school, civic, or tour groups also can be arranged. These programs range from viewing special films and lectures to tours of the launch complex on Wallops Island. All special group programs must be arranged in advance. To schedule a group program, call (804) 824-5833 or 824-3411, Ext. 584.

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NASA News

National Aeronautics and
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Goddard Space Flight Center
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For Release:
June 13, 1986

RELEASE NO. 86-25

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket launch will be held 1 p.m., Saturday, June 21 at the NASA Visitor Center, Wallops Island, Virginia.

Approximately 20 model rockets, from one to three feet tall, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical as well as modern rockets such as the Mercury Redstone, the Honest John and the Space Shuttle.

The public is invited to watch the launch. Model rocket enthusiasts can bring their own rockets and join the fun. The event, which will last about 45 minutes, is dependent on the weather.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information or clarification, please call (804) 824-5833.

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NASA News

National Aeronautics and
Space Administration

Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

Joyce B. Milliner
(Telephone: 804/824-3411, x579)

For Release:
June 27, 1986

RELEASE NO. 86-26

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket launch will be held 1 p.m., Saturday, July 5 at the NASA Visitor Center, Wallops Island, Virginia.

Approximately 20 model rockets, from one to three feet tall, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical as well as modern rockets such as the Mercury Redstone, the Honest John and the Titan.

The public is invited to watch the launch. Model rocket enthusiasts can bring their own rockets and join the fun. The event, which will last about 45 minutes, is dependent on the weather.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information or clarification, please call (804) 824-5833.

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For Release:
June 27, 1986

RELEASE NO. 86-27

SARSAT VAN FEATURED AT NASA VISITOR CENTER

The use of satellites in aiding search and rescue operations will be featured in a special exhibit, NASA's SARSAT van, from 10 a.m. to 4 p.m., July 5 and 6 at the NASA Visitor Center, Wallops Island, Virginia.

The search and rescue satellite-aided tracking project (COSPAS/SARSAT) is an international cooperative program between the United States, Canada, France (SARSAT) and the Soviet Union (COSPAS). The U. S. program includes NASA, the National Oceanic and Atmospheric Administration (NOAA), the Coast Guard and the Air Force.

The goal of the program is to demonstrate the effectiveness of satellites in reducing the time required to rescue air and maritime distress victims and to increase significantly the possibility of saving lives.

The SARSAT van, a walk-through display, features six exhibits. SARSAT lecturer Albert Jones will also be available to answer any questions. Of particular interest are the highlights of four "rescues" aided by satellite intervention. One of these rescues involved the NOAA ground station at Wallops Island.

- more -

The rapid detection and location of a downed aircraft or a ship in distress is of great importance to the potential survivors.

Studies have shown that even those who survive an initial aircrash have less than 10 percent chance of survival if the rescue is delayed beyond two days. In contrast, if the rescue can be accomplished within eight hours, their chance of survival increases to better than 50 percent.

In addition, rapid location can reduce both search and rescue costs significantly and lower the length of exposure of search and rescue teams to hazardous conditions frequently encountered during these operations.

In 3 years of operations, the COSPAS/SARSAT program has helped save the lives of more than 575 people throughout the world, and in most cases, rescue times and costs were reduced dramatically.

When a marine or aviation accident occurs, an emergency radio beacon is automatically activated. The marine device is called the Emergency Position-Indicating Radio Beacon (EPIRB), and the aircraft device is called the Emergency Locator Transmitter (ELT).

The signal from the beacon is received by the SARSAT and/or COSPAS satellites, which retransmits the signal to a ground receiving station. This signal is processed, and the location of the aviator or mariner in distress is recorded.

The location information is then sent to the U.S. Mission Control Center at Scott Air Force Base, Illinois, which in turn sends the information to the proper land or sea Rescue Coordination Center--the Air Force or the Coast Guard.

In the rescue involving the NOAA station at Wallops Island, a Belgian race driver suffered a fractured skull when his four-wheeldrive vehicle rolled over several times and threw him out of the vehicle in a remote area of Somalia, Africa, where there were no communications or medical facilities.

The signal from an emergency radio beacon, which his co-driver activated, was first picked up by the NOAA-9 weather satellite and transmitted to the Wallops Island station.

The signal was analyzed in the United States and the information was sent to search and rescue authorities in Toulouse, France. The French authorities were notified of the distress signal just one hour and 19 minutes after the beacon had been activated. An hour later, the French station picked up a similar signal from the Soviet satellite COSPAS 1.

The French authorities informed French diplomats in Africa, and a doctor was flown to the injured race driver.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, VA. The Center is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday.

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NOTE TO EDITORS: Bert Jones, the SARSAT lecturer, will be available for interviews while the SARSAT van is at the Visitor Center.

NASA News

National Aeronautics and
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Goddard Space Flight Center
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For Release:
July 7, 1986

RELEASE NO. 86-28

NASA TESTS ADVANCED WEATHER OBSERVING SYSTEMS

A team of scientists from two NASA centers, two other federal agencies and several universities are cooperating this summer at the Goddard Space Flight Center's Wallops Flight Facility to test new sensors for observing weather and clouds.

The experiment, called the Satellite Precipitation and Cloud Experiment (SPACE), will use high altitude aircraft as a platform for new instruments that will provide a better understanding of the atmospheric processes leading to precipitation and severe storms.

The SPACE project is part of a larger meteorological field experiment called COHMEX--the Cooperative Huntsville Meteorological Experiment, being conducted by NASA's Marshall Space Flight Center in Huntsville, Alabama; the University of Chicago and the Federal Aviation Administration in the Tennessee Valley. COHMEX is the combination of three independent atmospheric projects--SPACE, the Microburst and Severe Thunderstorms (MIST) experiment, and the FAA-Lincoln Laboratory Operational Weather Studies (FLOWS).

- more -

Crucial observations for SPACE are being obtained from three high altitude aircraft with nine experimental remote sensing systems measuring visible, infrared, and microwave radiation.

This is the first time that such a complete complement of atmospheric instruments has been operated together. Four of the instruments have been developed at the Goddard Space Flight Center in Greenbelt, Maryland, for cloud and precipitation observations. These include two microwave radiometers, the microwave precipitation radiometer and advanced microwave moisture sensor. An additional Goddard instrument is a unique laser radar system.

The Marshall Space Flight Center is operating two lightning sensor packages for studying the relationship between lightning and storm intensity, and both Goddard and Marshall are employing mapping radiometers for cloud and moisture distribution.

Two university research groups--the University of Wisconsin and the Massachusetts Institute of Technology--have provided advanced temperature sounding systems for studying pre-storm and storm weather conditions.

Data received from the SPACE project will be correlated with data received from the GOES and NOAA weather satellites.

Principal scientists at Wallops for the SPACE project are Dr. Richard Blakesly of Marshall and Dr. James Spinhirne of Goddard.

The three NASA Ames Research Center's aircraft--two U-2s and one ER-2-- will operate from the Wallops Flight Facility. The aircraft will fly in the Huntsville and Wallops areas, selected because of the facilities available

and the weather--violent microbursts and thunderstorms that occur in May, June and July. Other advantages include the lack of heavy aircraft traffic which might restrict research aircraft operations and the rolling farmland which reduces the clutter seen by radar.

The high altitude flights at Wallops also are being correlated with two sounding rocket launches scheduled during a night thunderstorm. In addition, numerous ground stations will be used for correlative measurements.

The National Science Foundation (NSF) is sponsoring the University of Chicago component of the COHMEX experiment, MIST, which is concerned with the structure of microbursts from thunderstorms. The FAA experiment, FLOWS, is concerned with the development and testing of automatic algorithms for wind shear detection using pulse Doppler weather radars. The results from FLOWS will be used to develop the next generation of weather radars for the FAA Terminal Doppler Radar (TDR). The NASA experiment will provide correlative data for the MIST and FLOWS programs but will also make use of results from the NSF and FAA experiments.

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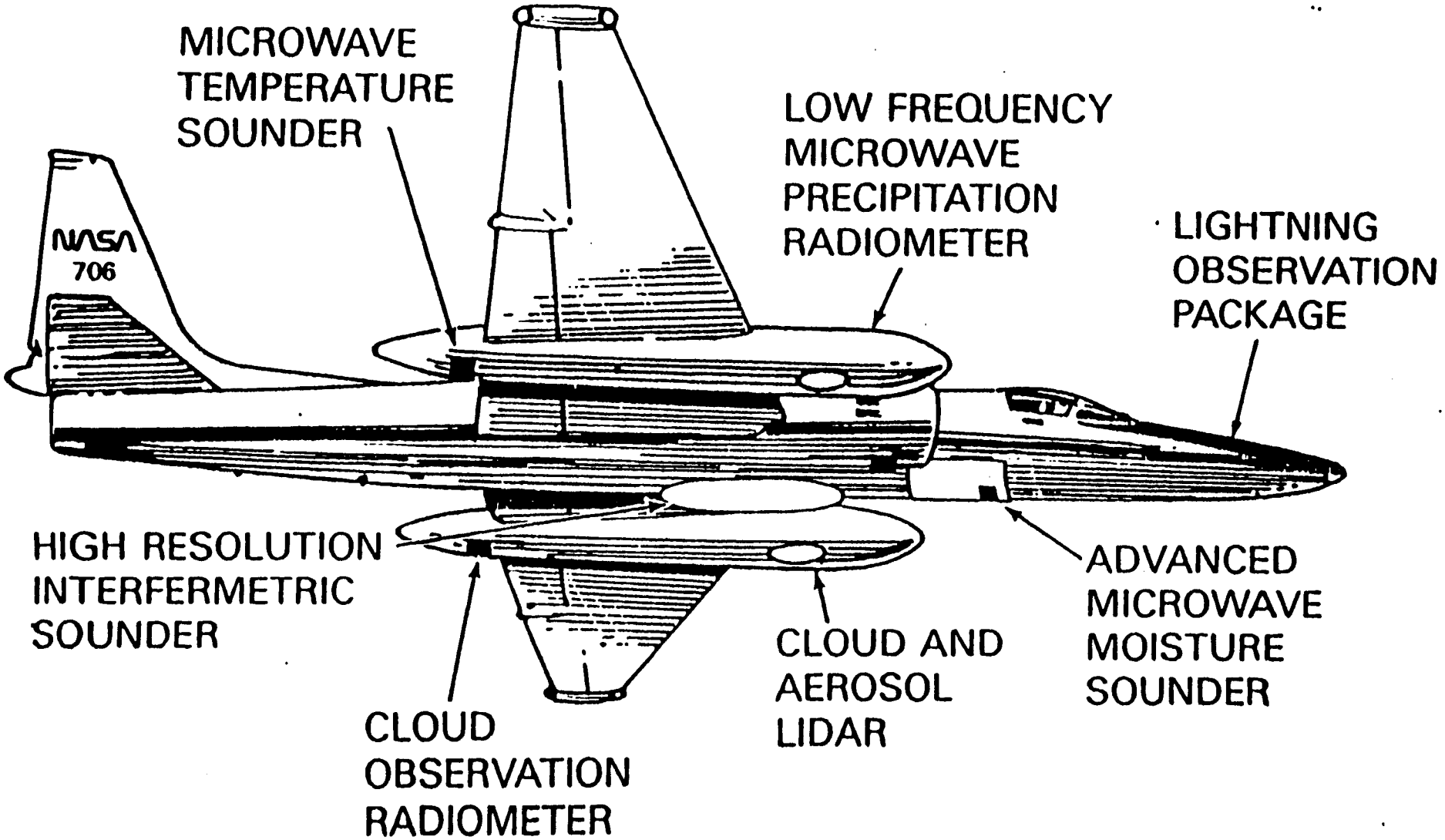

MULTI-SENSOR ATMOSPHERIC OBSERVATION EXPERIMENT

ON THE NASA ER-2 AIRCRAFT

NASA News

National Aeronautics and
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Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia 23337

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For Release:
July 11, 1986

RELEASE NO. 86-29

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket launch will be held 1 p.m., Saturday, July 19 at the NASA Visitor Center, Wallops Island, Virginia.

Approximately 20 model rockets, from one to three feet tall, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical as well as modern rockets such as the Mercury Redstone, the Honest John and the Titan.

The public is invited to watch the launch. Model rocket enthusiasts can bring their own rockets and join the fun. The event, which will last about 45 minutes, is dependent on the weather.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information or clarification, please call (804) 824-5833.

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NASA News

National Aeronautics and
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Goddard Space Flight Center
Wallops Flight Facility
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For Release:
July 22, 1986

RELEASE NO. 86-30

NEW BALLOON MATERIAL BEING TESTED IN HIGH ALTITUDE FLIGHTS

A series of test flights with high altitude balloons made of new material continues for NASA's scientific Balloon Program. Launches from the National Scientific Balloon Facility (NSBF) at Palestine, Texas, have recently utilized newly developed material that is proving to be a most promising alternative to existing balloon film used for many years.

The acquisition of new material and improved manufacturing processes for the balloons followed a series of failures occurring over the past three years.

The balloon failures have been investigated by a Balloon Program Special Study Team and other groups appointed by the Goddard/Wallops Flight Facility.

A new balloon material, designated Astrofilm "E", developed by Raven Industries, Inc., of Sioux Falls, South Dakota, has been used in two recent successful flights. One carried a 3000-pound payload to an altitude of 130,000 feet, while the other carried a 4300 pound-payload to 120,000 feet. They were the fifth and sixth successful launches of heavy lift balloons since

- more -

the start of the recovery program. Five flights have carried scientific instrument packages. One of the four previous flights in this effort, using existing film, was unsuccessful.

Winzen International, Inc., of Sulphur Springs, Texas, producer of Stratofilm balloon material used for the past 20 years, is also studying a new material as part of the effort to improve balloon reliability. Two Winzen-made balloons employing film provided by CNES, the French space agency, were recently flown successfully with a 4800-pound payload.

The NASA Balloon Program provides support for approximately 50 flights per year for studies primarily in High Energy Astrophysics, Astronomy, and Upper Atmospheric Research.

Scientific payloads ranging from 100 to 6000 pounds are carried aloft to altitudes from 15 to 30 miles. The balloons vary in volume from less than one million cubic feet to 50 million cubic feet and can provide flight durations as long as two days, although 12 hours is more typical. The balloon material is 0.0008 inch thick. Large balloons can measure over 400 feet in diameter.

The balloon is a unique flight tool for the scientific community in that it provides an in-situ platform between aircraft and satellite altitudes, making it particularly attractive for atmospheric research. Because of its weight carrying capacity and flight duration, it is an important element in infrared astronomy research as well as cosmic ray and gamma ray investigations.

Most United States balloon flights originate at the Palestine site, but alternate sites for NSBF launches have included Ainsworth, Nebraska; Greenville, South Carolina; Malden, Missouri; Kuaii, Hawaii, and international sites in Canada, Australia, Italy, and Brazil.

The balloon program is managed by the Goddard/Wallops Flight Facility for the Office of Space Science and Applications, NASA Headquarters, Washington, D.C.

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NASA News

National Aeronautics and
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Goddard Space Flight Center
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For Release:
July 23, 1986

RELEASE NO. 86-31

AEROSPACE PROGRAM SCHEDULED AT NASA VISITOR CENTER

Past, present and future projects of NASA will be the topic of a special program at 11 a.m. and 1 and 3 p.m. Thursday, July 31, and Friday, August 1, at the NASA Visitor Center, Wallops Island, VA.

The program, geared towards the general public, will describe the principles of aeronautics, rocketry, communications, remote sensing and astronomy in relation to NASA projects.

The 50-minute lectures will be presented by Michael Caterina, Aerospace Education Specialist from the Goddard Space Flight Center, Greenbelt, MD.

Caterina is part of the NASA Aerospace Education Services Project, a national program of free services to teachers, students and the general public. The goal of the program is to increase awareness and understanding of scientific research and technological development in the world.

- more -

Caterina, a native of Vineland, New Jersey, has lived and worked in the Baltimore-Washington area for the past 16 years.

He is a member of the National Science Teachers Association, the Maryland Association of Science Teachers, and the Maryland Association of Biology Teachers. He has taught chemistry at the University of Maryland and secondary science and mathematics in Baltimore City and County.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, VA. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-5833.

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NASA News

National Aeronautics and
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For Release:
July 24, 1986

RELEASE NO. 86-32

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket launch will be held 1 p.m., Saturday, August 2 at the NASA Visitor Center, Wallops Island, Virginia.

Approximately 20 model rockets, from one to three feet tall, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical as well as modern rockets such as the Mercury Redstone, the Honest John and the Titan.

The public is invited to watch the launch. Model rocket enthusiasts can bring their own rockets and join the fun. The event, which will last about 45 minutes, is dependent on the weather.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-5833.

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NASA News

National Aeronautics and
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For Release:
August 7, 1986

RELEASE NO. 86-33

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket launch will be held 1 p.m., Saturday, August 16 at the NASA Visitor Center, Wallops Island, Virginia.

Approximately 20 model rockets, from one to three feet tall, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical as well as modern rockets such as the Mercury Redstone, the Honest John and the Titan.

The public is invited to watch the launch. Model rocket enthusiasts can bring their own rockets and join the fun. The event, which will last about 45 minutes, is dependent on the weather.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-5833.

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NASA News

National Aeronautics and
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Goddard Space Flight Center
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Wallops Island, Virginia 23337

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For Release:
September 3, 1986

RELEASE NO. 86-36

HIGH SCHOOL STUDENTS PARTICIPATE IN SUMMER APPRENTICESHIP PROGRAM

Five academically-gifted high school students recently completed an 8-week summer employment program at the Wallops Flight Facility, a part of NASA's Goddard Space Flight Center.

Both Northampton and Accomack Counties were represented in the 1986 Summer High School Apprenticeship Program (SHARP). This is a competitive program designed to help alleviate a national shortage of minority/female students interested in pursuing a career in engineering and science. Students are selected on the basis of strong academic and extracurricular backgrounds. They work directly under the supervision of a NASA professional and technical mentor and perform tasks and assignments related to their career interests.

As apprentices, the students learn and earn. During their apprenticeship, the students complete designated assignments, prepare written reports, make oral presentations, and participate in a variety of enrichment activities. Each student is placed at a worksite based upon his or her academic background and interests. While the worksite may not reflect a final career choice, it sometimes opens "doors" that had not previously been considered.

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Local students who participated were: Sharon Fletcher, a junior at Chincoteague High School; Tyeast Pettit, a senior at Arcadia High School; Perdita Savage, a senior at Northampton High School; Sandra Spady, a junior at Northampton High School; and Ryan Turner, a senior at Arcadia High School.

Sharon was assigned to Wayne Wright in the Observational Science Branch where she worked on the Airborne Oceanographic Lidar (AOL) Project.

Tyeast worked with Keith Koehler, the Wallops Visitor Center Manager, on computer programs for a Space Shuttle tutorial and quiz on the Sony and Atari hands-on exhibit at the Visitor Center.

Perdita worked with Dr. John Gerlach in the Instrumentation Engineering Branch, Radar and Optical Systems Section on a project to determine whether lightning strikes to the NASA F-106B aircraft were from cloud-to-cloud or intracloud lightning.

Sandra was assigned to Dr. Steve Long in the Observational Science Branch where she assisted in setting up laboratory data processing programs designed to study the flow structure of air over water waves in a laboratory facility.

Ryan was assigned to the Information Processing and Analysis Branch to work with William Landon on a project which supported a task designed to provide a history of radar calibration data.

The SHARP "VIP" night on August 14 closed the program with student presentations and award ceremonies.

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NASA News

National Aeronautics and
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For Release:
September 5, 1986

RELEASE NO. 86-37

AERONAUTICS WEEKEND SCHEDULED AT VISITOR CENTER

A weekend of aeronautics programs, including a special exhibit, lecture and films, will be held Saturday and Sunday, September 13 and 14 at the NASA Visitor Center, Wallops Island, VA.

The weekend will include NASA's AEROVAN -- a large traveling exhibit, a lecture on the United States' aerospace plane program and films on aeronautics.

NASA's AEROVAN will be on display from 10 a.m. to 4 p.m. September 13 and 14. This large, walk-through trailer features nine exhibits that focus on current aeronautics research in safety, energy efficiency, environmental compatibility and improvements in passenger comfort and convenience. Other exhibits present NASA's role in America's national security, future directions in aeronautics and how NASA's aeronautics research benefits the United States economy.

AEROVAN lecturer Dal C. Christensen also will answer questions.

The National aerospace plane program will be the topic of a lecture at 2 p.m. on September 13. The lecture will be presented by Keith Henry, public affairs specialist with the NASA-Langley Research Center, Hampton, VA.

- more -

Henry will explore potential concepts for the plane and give an overview of the joint NASA-Department of Defense research program. If this new research program is successful in demonstrating the new technologies, an entirely new family of aerospace vehicles will be possible early in the next century.

Conceptually, a future aerospace plane would be able to cruise within the upper atmosphere at hypersonic speeds or ascend directly into orbit. Its potential capability to fly from the United States to Japan in about 2 hours has been characterized by President Reagan as the "Orient Express," a next generation commercial transport. A similar subsonic flight today takes more than 10 hours.

As a space launch vehicle operating from conventional runways, the fully reusable and single stage aspects of the plane are believed to produce very large reductions in the cost to place payloads into orbit.

Finally, throughout the weekend, films on aeronautics will be shown daily on the hour and half hour. The films will focus on the history of powered flight.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, VA. The Center is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-2298 or 1344.

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NOTE TO EDITORS: Interviews with Chris Christensen of the AEROVAN and Keith Henry from the NASA-Langley Public Affairs Office can be arranged by calling the NASA Visitor Center or Wallops Public Affairs Office (804-824-1579). Also photographs and a videotape on the National Aerospace Plane can be made available if notified in advance.

NASA News

National Aeronautics and
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For Release:
September 10, 1986

RELEASE NO. 86-38

MODEL ROCKET CONTEST SCHEDULED AT NASA VISITOR CENTER

Model rocket enthusiasts are invited to participate in a model rocket contest from 1 to 3 p.m., Saturday, September 20, at the NASA Visitor Center, Wallops Island, VA.

The contest, open to all area model rocket enthusiasts, will include streamer spot landing and streamer duration competition. The public is invited also to come out and watch the competition.

The rain date for the contest is Sunday, September 21.

The object of the streamer duration is to see whose rocket can have the longest flight using a single (National Association of Rocketry (NAR) classification 1/2A engine.

The object of the spot landing competition is to land one's model closest to a predetermined marked spot on the ground. All models in this competition will use a single (NAR classification) A8-3 engine.

Each event will be flown in two age divisions: one is for those 16 years and older and the other is for those 15 years old and younger.

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Prizes will be awarded for the first through third place finishers in each event for both divisions. Each modeler will receive a certificate of participation for the contest.

Further information on the contest, including rules and judging, is available at the Arts and Crafts Shoppe in the Twilley Centre, Salisbury, MD; The Kite Koop, Chincoteague, VA; and the NASA Visitor Center at the Wallops Flight Facility.

The contest is sponsored by the Wallops Flight Facility's NASA Visitor Center through the Office of Public Affairs and in cooperation with local model rocket enthusiasts.

For further information, please call the NASA Visitor Center at (804) 824-2298 or 824-1344 from 8:30 a.m. to 4 p.m. Thursday through Monday.

The NASA Visitor Center is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. It is located on Route 175 about six miles from Route 13 and five miles from Chincoteague.

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NASA News

National Aeronautics and
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824-1584

For Release:
September 22, 1986

RELEASE NO. 86-39

NASA AWARDS CONTRACT FOR UPDATING FPQ-6 RADAR AT WALLOPS

The Goddard Space Flight Center's Wallops Flight Facility (WFF) has awarded a contract to Vitro Services, Fort Walton Beach, Florida, to modernize the FPQ-6 radar which was constructed about 25 years ago. The contract calls for replacing the current 4101 computer and associated equipment with a new computer and associated equipment. Also included is the addition of a new graphic display system, new TV tracker system, new optics and an automatic weather system.

Awarded on September 12, 1986, the value of the firm, fixed-price contract is $1,119,156 and is to be completed by January 31, 1988.

The FPQ-6 radar is a long-range, high precision tracking radar with an antenna which is 29 feet in diameter. It is used to track rockets launched from Wallops Island and the Eastern Space and Missile Center (ESMC), orbiting spacecraft and the aircraft utilized in the various aeronautical programs supported at Wallops.

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NASA News

National Aeronautics and
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For Release:
September 22, 1986

RELEASE NO. 86-40

NASA AIRCRAFT MAKES ATMOSPHERIC MEASUREMENTS

A NASA Electra aircraft recently has completed a successful atmospheric research project over the western United States.

On September 5, 1986, personnel from the Aeronautical Programs Branch of the NASA GSFC/Wallops Flight Facility in Virginia returned from a deployment to Ames Research Center, California, where nine research flights were conducted in support of NASA's Global Tropospheric Experiment - Chemical Instrumentation Test and Evaluation Program (CITE II).

The experiment was designed to validate through individual field tests and multi-investigator comparisons, the capability to make reliable measurements of concentrations of nitrogen species in the atmosphere. Individual flights were planned to make measurements in a variety of air masses including clean maritime, tropical maritime, maritime/continental, and continental to enhance the opportunities for making comparative measurements.

CITE I, which was conducted in 1984, focused on carbon monoxide (CO), nitric oxide (NO), and hydroxyl (OH). CITE II focused on the comparison of measurements of nitrogen dioxide (NO_2), nitric acid (HNO_3), and peroxyacetyl nitrate

- more -

(PAN). Additional instruments were on the Electra to measure CO, ozone (O_3), and hydrocarbons. A second objective of CITE II was the nitrogen budget experiment to determine the abundances of and the partitioning among the major reactive nitrogen species in the continental and remote oceanic tropospheres.

The CITE II program represents the largest complement of instruments ever assembled on a Wallops aircraft, and it is the first time that such an extensive array of nitrogen species measuring instrumentation has been installed on an airborne platform. Including the transit data flights, 65 hours of data collection flight time were accumulated during the program.

Project participants include scientists from NASA's Ames Research Center, Langley Research Center and Goddard Space Flight Center; National Center for Atmospheric Research; National Oceanic and Atmospheric Administration, State of Virginia; York University of Toronto (Canada); Colorado College, Stanford Research Institute, and the Georgia Institute of Technology.

The Global Tropospheric Experiment is managed by Dr. Robert J. McNeal of NASA Headquarters. The CITE II project manager is James Hoell of the Langley Research Center, the project scientist is Dr. Daniel Albritton of NOAA, and the project engineer is Roger Navarro of the Wallops Flight Facility.

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NASA News

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For Release:

September 25, 1986

RELEASE NO. 86-41

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held 1 p.m., Saturday, October 4 at the NASA Visitor Center, Wallops Island, Virginia.

Approximately 20 model rockets, from one to three feet tall, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical as well as modern rockets such as the Mercury Redstone, the Space Shuttle and the Titan.

The public is invited to watch the launch. Model rocket enthusiasts can bring their own rockets and join the fun. The event, which will last about 45 minutes, is dependent on the weather.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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NASA News

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824-1584

For Release:
September 25, 1986

RELEASE NO. 86-42

NASA AWARDS CONTRACT FOR OPERATION AND MAINTENANCE OF AIRCRAFT

The Goddard Space Flight Center's Wallops Flight Facility (WFF) has awarded a contract to Management Services, Inc., Huntsville, Alabama, to provide support services for operation and maintenance of the Wallops aircraft complement.

Awarded on September 22, 1986, the cost-plus-fixed-fee contract is in the amount of $882,284 for the first year basic period. With the four one-year hard options (total of five years), the value will be about $4.7 million.

Services under the service contract will begin on October 1, 1986. The general requirements are to furnish the necessary personnel, management, material, and equipment for operation, maintenance, repair, and other incidentals necessary for operations of all assigned GSFC/WFF aircraft, including any which may be assigned during this contract period; operating an airport control tower to provide line services, including fueling, to authorized visiting aircraft; and to operate and maintain the WFF Fuel Farm, including fuel trucks and other related equipment.

Approximately 25 employees will be required to perform these services.

Aircraft at Wallops are used as platforms for research up to 40,000 feet altitude in support of NASA's aeronautical and space science programs.

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NASA News

National Aeronautics and
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For Release:
September 26, 1986

RELEASE NO. 86-43

NASA SELECTS FACILITIES MAINTENANCE SERVICES CONTRACTOR

NASA's Goddard Space Flight Center in Greenbelt, MD, has selected the Klate Holt Company, Langley Air Force Base, VA, to negotiate a cost-plus-award-fee contract for facilities maintenance services at Goddard's Wallops Flight Facility (WFF), Virginia.

The contract, expected to be effective January 1, 1987, will consist of a 1-year basic period with four 1-year hard options. Additionally, a separate fixed-price phase-in contract of 30-45 days duration will be negotiated.

The total proposed, estimated cost and fees for the basic 1-year period and four 1-year options are $1.96 million and $9.14 million, respectively.

The contract will provide 66.5 man years of services to support the Management Operations Directorate at Wallops Flight Facility in the continuous operation/maintenance of all facilities and equipment, including air conditioning/refrigeration, utility services, steam and electrical distribution systems, a steam generating plant, water plants, wastewater plants, and their connecting distribution systems, all independent boilers and furnaces, all personnel and equipment elevators and obstruction lights. In addition, the contract includes furnishing

- more -

all labor, certain tools, equipment and services required or incidental to the satisfactory completion of minor alteration to existing buildings and small construction tasks at WFF.

Seven companies submitted proposals as follows: BAMSI, Inc., Titusville, FL; Chemal, Inc., Wallops Island, VA; ERA Services, Inc., Arlington, VA; FEMCOR, Woodbridge, VA; Klate Holt Company, Langley AFB, VA; Pylon, Inc., Silver Spring, MD; Tenco Services, Inc., Ambler, PA.

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NASA News

National Aeronautics and
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For Release:
October 1, 1986

RELEASE NO. 86-44

NASA BALLOON LAUNCH CONTINUES STUDY OF UNIVERSE FORMATION

NASA has successfully conducted the fourth in a series of balloon flights, designed to continue the investigation of antimatter from interstellar space. Scientists believe that information gained from this research will assist in determining the origin of the universe.

The 23.3 million cubic feet balloon, made from the new Astrofilm-E material developed by Raven Industries, Sioux Falls, South Dakota, was launched late Friday, September 26, from Ainsworth, Nebraska. The 4,300-pound payload performed perfectly during its 15-hour mission, at a float altitude of 120,000 ft. The payload package was successfully recovered near Rochester, Minnesota.

According to Dr. Robert Golden, principal investigator, New Mexico State University, the payload carried high energy astrophysics experiment for continuation of studies associated with the origin of the universe. The mission utilized a superconducting magnet, chilled by liquid helium, to analyze cosmic rays. Previous investigations revealed that the age of cosmic rays can be determined by measuring the radioactive decay of some elements, such

- more

as beryllium-10. The instrument concentrated on antiprotons, positrons and deuterium nuclei, to provide better understanding of the origin and history of these rare particles. This mission is part of a continuing program of particle astrophysics research at the New Mexico State University.

This latest balloon flight followed another successful Raven balloon launch on September 15, from Palestine, Texas. The 3,000-pound payload flew in excess of 10 hours, at a float altitude of 129 feet.

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NASA News

National Aeronautics and
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For Release:
October 15, 1986

RELEASE NO. 86-45

NASA SUCCESSFULLY CONDUCTS ROCKETBORNE SOLAR PHYSICS EXPERIMENT

NASA successfully launched a rocketborne telescope to measure the physical properties of the Sun's corona from the White Sands Missile Range (WSMR) in New Mexico today at 1:10 p.m. EDT (11:10 a.m. local time).

The two-stage sounding rocket lofted a 661-pound (300-kilogram) scientific payload to an altitude of 189 statute miles (304 kilometers).

The instrument is an extreme ultraviolet telescope and spectrograph designed to study the physical properties of the solar corona. It is similar to one flown in 1983. Because the radiation to be measured is absorbed high in the Earth's atmosphere, the Sun was close to the zenith at the time of launch.

The experiment team which developed the instrument is located at the Goddard Space Flight Center. The control system used to execute a predetermined pattern of observations on the solar disk was developed by the Lockheed Missiles and Space Company, Sunnyvale, CA, under NASA contract.

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This scientific mission is part of the overall NASA Sounding Rocket Program which is managed at the GSFC/Wallops Flight Facility in Virginia. This program consists of approximately 40-45 sounding rockets a year that are launched from various worldwide locations.

The two-stage, solid-propellant Nike-Black Brant is approximately 45 feet long and 17 inches in diameter. The payload was recovered from the desert 90 minutes after launch.

Dr. Werner Neupert, NASA Goddard Space Flight Center, is the principal investigator; Richard Rakoff, Lockheed Missiles and Space Company, is the mission coordinator, and Frank Lau, NASA Wallops Flight Facility, is the project manager.

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NASA News

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For Release:
October 21, 1986

RELEASE NO. 86-46

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held 1 p.m., Saturday, November 1 at the NASA Visitor Center, Wallops Island, Virginia.

Approximately 20 model rockets, from one to three feet tall, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical as well as modern rockets such as the Mercury Redstone, the Space Shuttle and the Titan.

The public is invited to watch the launch. Model rocket enthusiasts can bring their own rockets and join the fun. The event, which will last about 45 minutes, is dependent on the weather.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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For Release:
October 16, 1986

RELEASE NO. 86-47

TWO NASA SCIENTIFIC BALLOON FLIGHTS LAUNCHED SUCCESSFULLY FROM TEXAS

Two 23.3 million cubic feet balloons have been launched sucessfully from NASA's National Scientific Balloon Facility in Palestine, Texas, over the past few days, officials at Goddard Space Flight Center's Wallops Flight Facility reported today.

The flights were the sixth and seventh consecutive successful test flights for the new Raven Astrofilm "E" balloons, according to a spokesman at the Virginia facility.

Both flights carried 4,300-pound payloads to an altitude of 120,000 feet (393,700 meters) and remained aloft for more than 20 hours.

The first balloon, launched October 10, had a payload consisting of diagnostic test equipment and an experiment for Dr. Joe Waters of NASA's Jet Propulsion Laboratory in Pasadena, California. Dr. Waters' experiment was designed to measure thermal radiation to determine the concentrations of ozone, peroxide, and chloric oxide. The balloon remained aloft for 21 1/2 hours, and its payload was successfully recovered near Mineral Wells, Texas.

- more -

The second balloon was launched October 15, and it carried a diagnostic test package and an experiment for Dr. Tom Prince of the California Institute of Technology, also in California. Dr. Prince's experiment measured the movement of energy spectra of galactic and extragalactic sources. The flight remained aloft for about 29 hours, and the payload came down near Greenville, Mississippi.

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NASA News

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For Release:
October 23, 1986

RELEASE NO. 86-48

NASA SUCCESSFULLY CONDUCTS ROCKETBORNE SOLAR PHYSICS EXPERIMENT

NASA successfully launched a rocketborne telescope to measure solar X-ray emissions from the White Sands Missile Range (WSMR) in New Mexico yesterday at 4 p.m. EDT.

The two-stage sounding rocket lofted a 740-pound (336-kilogram) scientific payload to an altitude of 168 statute miles (270 kilometers). The experiment is a new concept in X-ray imaging that is called a Normal Incidence X-ray Telescope (NIXT). This telescope is used to obtain very high resolution X-ray images from the Sun. Multi-layer coatings make the mirror reflect the X-rays like a normal visible light mirror instead of focusing them from the inside of a cylinder mirror at a shallow grazing angle.

This experiment is a joint collaboration between the Smithsonian Astrophysical Observatory, the IBM Watson Research Center, Yorktown Heights, NY, and Harvard University.

This scientific mission is part of the overall NASA Sounding Rocket Program which is managed at the Goddard Space Flight Center's Wallops Flight Facility. This program consists of approximately 40-45 sounding rockets a year that are launched from various worldwide locations.

- more -

The two-stage, solid-propellant Nike-Black Brant is approximately 45 feet long and 17 inches in diameter. The payload was recovered from the desert two hours after launch.

Dr. Leon Golub of the Smithsonian Astrophysical Observatory (SAO) is the principal investigator. Co-investigators are Drs. Eberhard Spiller and Janusz Wilcaynsk of IBM and Dr. Robert Rosner of Harvard. Dr. Spiller developed the methods for coating the mirrors, and Dr. Wilczynsk fabricated the mirrors. Don Paterson is the Wallops Project Manager.

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For Release:

November 5, 1986

RELEASE NO. 86-51

"JOURNEY THROUGH OUR SOLAR SYSTEM" SCHEDULED AT NASA VISITOR CENTER

Take a journey through our solar system at 2 p.m. Saturday and Sunday, November 15 and 16 at the NASA Visitor Center, Wallops Island, VA.

Dr. Andy Pica, an Assistant Professor of Physical Sciences at Salisbury State College, will lead participants on a guided tour of our Sun and neighboring planets as seen through the "eyes" of NASA's planetary spacecraft.

This 45-minute program, geared towards all ages, will take a close look at the planets, both the similarities and differences, as seen by such spacecraft as Viking, Mariner and Voyagers 1 and 2.

Dr. Pica has taught at Salisbury State since 1982. He received his doctorate degree in astronomy from the University of Florida in Gainesville.

- more -

This is the second program Pica has presented at the NASA Visitor Center in the past year. In November 1985, he gave two lectures on Halley's Comet and, in March 1986, he was involved with the "Comet Watch" program at the Chincoteague Wildlife Refuge providing assistance to viewers of the comet and other celestial objects.

The Wallops Flight Facility's NASA Visitor Center is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. It will be closed Thanksgiving Day. It is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, VA. For further information, please call (804) 824-1344 or 3398.

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NASA News

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For Release:
November 20, 1986

RELEASE NO. 86-52

NASA CONTINUES PLASMA PHYSICS EXPERIMENTS FROM WALLOPS ISLAND, VA.

A single-stage Orion rocketborne experiment was conducted from the NASA/Goddard Space Flight Center's Wallops Flight Facility at Wallops Island, Virginia, successfully today to measure naturally occurring turbulence in atmosphere ionization. A secondary objective of this mission is to provide further measurements of electric field currents.

Liftoff of the Orion occurred at 5:15 a.m. EST. The 90-pound payload reached a peak altitude of 54 statute miles (87 kilometers). The Orion is about 16 feet long and 14 inches in diameter. The experiment package carried onboard the Orion was recovered in a mid-air snatch of the parachute by the Wallops Skyvan aircraft. The scientific payload was returned to the Wallops Flight Facility for refurbishment and future space flights.

This scientific mission is part of the overall NASA Sounding Rocket Program which is managed at the GSFC/Wallops Flight Facility in Virginia. This program consists of approximately 40-45 sounding rockets a year that are launched from various worldwide locations.

- more -

Dr. Les C. Hale of Penn State University is the principal investigator; David Moltedo is the Wallops payload manager; Debbie Frostrom is the Wallops engineer, and Robert T. Long is the recovery director.

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NASA News

National Aeronautics and
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For Release:
December 15, 1986

RELEASE NO. 86-54

NASA SUCCESSFULLY LAUNCHES UPPER ATMOSPHERE EXPERIMENT

NASA successfully launched a two-staged Terrier-Black Brant VC sounding rocket from the White Sands Missle Range in New Mexico today.

The launch, which occurred at 2:35 p.m. EST, carried a 750 pound Goddard Space Flight Center payload, consisting of three sets of instruments, to an altitude of approximately 200 statute miles.

Goddard's James Mentall, the principal investigator for this flight, said that two sets of instruments will measure the total amount of energy emitted by the Sun. The objective of these experiments is to measure how much the Sun changes on a year to year basis and during its 11 year solar cycle.

In addition to the two solar irradiance experiments, the payload carries an ultraviolet (UV) scanning spectrometer to measure the flux of the Sun's UV rays and a solar spectral irradiance experiment which slides out two side doors to measure UV flux variability.

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This experiment package is flown periodically to measure the long term variations in solar UV irradiance because its chemistry affects the ozone layer. This payload was flown successfully twice before, on December 10, 1984 and March 7, 1986. Each time, it was recovered and refurbished for the next flight.

Another scientific objective of this payload is to accurately measure the total solar irradiance so as to provide a reference for monitoring the solar experiments of the Solar Maximum Mission, NIMBUS 7 and TIROS satellites.

This scientific mission is part of the overall NASA Sounding Rocket Program which is managed at the Goddard Space Flight Center's Wallops Flight Facility in Virginia. The program consists of approximately 40-45 sounding rocket launches a year from worldwide locations.

The two-stage, solid-propellant Terrier-Black Brant VC is approximately 50 feet long and 18 inches in diameter. The payload was recovered after launch.

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For Release:
December 23, 1986

RELEASE NO. 86-55

NASA WALLOPS TO CONDUCT PUBLIC TOURS

The general public will be able to get a closer look at the operations of the Wallops Flight Facility, Wallops Island, VA., through weekday tours offered during January by the NASA Visitor Center.

The free public tours will be conducted at 10:15 a.m. and 1 and 2:30 p.m. every Monday, Thursday and Friday from January 5 through 30. The one hour and 15 minute tours will include an overview of the history and current operations of the Flight Facility as well as a drive-by of the Facility's launch complex on Wallops Island.

Each tour will be limited to a maximum of 11 people. Therefore, reservations should be made at least five days in advance by calling the Visitor Center (804) 824-2298 or 824-1344.

The Wallops Flight Facility's NASA Visitor Center is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. It is located on Virginia Route 175 about six miles from Route 13 and five miles from Chincoteague, VA.

- more -

Located on Virginia's Eastern Shore, Wallops is one of the oldest launch facilities in the world. The first research rocket was launched from Wallops Island on July 4, 1945.

In the early years the research aim was to obtain aerodynamic data at very high speeds as part of the effort to penetrate the sound barrier. The focus of the research at Wallops has changed with the evolution of aerospace research. Today, Wallops' rockets, balloons, and aircraft carry experiments through which scientists world-wide are gaining an understanding of phenomena related to the Earth and its space environment.

Part of NASA's Goddard Space Flight Center, Wallops is a special facility for suborbital research. Wallops' rockets, balloons and aircraft provide relatively simple, flexible and inexpensive methods of conducting scientific research. A NASA launch range and research airfield are operated as part of the facility. The Wallops Flight Facility is a true asset not only to the Delmarva Peninsula but to the entire United States.

- END -

NASA News

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For Release:
December 23, 1986

RELEASE NO. 86-56

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held 1 p.m., Saturday, January 3 at the NASA Visitor Center, Wallops Island, Virginia.

Approximately 20 model rockets, from one to three feet tall, will be launched up to 1,000 feet in altitude. Many of these rockets are scale models of historical as well as modern rockets such as the Mercury Redstone, the Space Shuttle and the Titan.

The public is invited to watch the launch. Model rocket enthusiasts can bring their own rockets and join the fun. The event, which will last about 45 minutes, is dependent on the weather. The demonstration will be cancelled if the temperature is below 40 degrees or if winds exceed 20 mph.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175 about six miles from Route 13 and five miles from Chincoteague, Virginia. It is open free to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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For Release:
January 16, 1987

RELEASE NO. 87-1

NASA PLANS TWO AROUND-THE-WORLD BALLOON FLIGHTS

Officials at NASA's Goddard Space Flight Center, Greenbelt, MD, today announced plans to launch two large, unmanned balloons on around-the-world flights. The flights are expected to be launched during January and February from a site in Alice Springs, Australia.

The balloons will carry instruments to examine newly-discovered high energy x-ray microflares and flare plasmas being emitted by the sun. Microflares were discovered to occur more frequently than the classic solar flare. Because of this, energy produced by these microflares is now believed to be significant and may explain some phenomenon like the heating of the sun's corona. The heating of the sun's corona is not well understood. Results of these studies may be very useful to an understanding of the micro-scale structure of the sun and other similar stars.

- more -

The balloons are expected to circle the globe in about 15 days and return to the launch site in Australia, which was selected for the launch because of several factors including its situation in the southern hemisphere and the stability of its summertime winds.

If favorable weather prevails, the first balloon could be launched as early as January 19. The second balloon will be released no less than 3-4 days later to minimize any potential operational interference between the two flights.

In case of weather delay, the launches could be accomplished anytime within the next month.

The helium filled, 28 million-cubic-feet volume balloons are taller than the Washington Monument and will carry payloads, weighing 3,000 pounds, to an altitude of 130,000 feet. These are the first balloons manufactured from a newly developed material, called "Astrofilm," to be used in a global application.

According to Harvey Needleman, chief, Balloon Projects Branch, Goddard-Wallops Flight Facility, Wallops Island, VA, "The southern hemisphere is about the only place that we can conduct long duration flights of this type."

"To circumnavigate the globe, the balloons require strong, persistent winds to maintain proper latitude with minimum deviation. We expect that the flights will experience winds between 50 and 75 knots enabling the balloons to circle the Earth in 12 to 18 days," he continued.

The flights are being conducted by NASA for the University of California (U. of Calif), Berkeley and San Diego branches, and carry a joint experiment by Louisiana State University (LSU) and the University of Washington.

Dr. Robert Lin is principal investigator for the U. of Calif. experiment, studying microflares and solar flares. The principal investigator for the experiment flying on the second balloon is Dr. John Wefel of LSU. His experiment will utilize an emulsion chamber that will be exposed to the primary cosmic rays to study nuclear interactions and cosmic ray composition.

In addition to the scientific experiments, each balloon will carry electronic instrumentation developed to meet the special requirements of long duration flight. The electronic system will be powered by batteries with daily recharging provided by arrays of solar cells.

Satellites play important roles in the success of both flights. Two U.S. polar-orbiting satellites, carrying French ARGOS instruments, will track the balloon flights. A signal transmitted by the balloons every 45 seconds will be relayed by the satellites to a ground station in Toulouse, France, where the positions will be calculated. The information then will be relayed to tracking facilities in the U.S.

Four meteorological satellites, orbiting over the equator at different longitudes, will be used to relay to the ground the data acquired by the U. of Calif. flight.

Two of the satellites are U.S.-operated GOES satellites, the others belong to the European Space Agency and Japan.

The balloons will circumnavigate the Earth at about 23 degrees south latitude. The flights are not expected to vary from that course by more than 5 degrees.

Countries along the 23rd parallel south have been notified about the flights, including New Zealand, Chile, Peru, Argentina, Bolivia, Paraguay, Brazil, Botswana, Zambia, South Africa, Zimbabwe, Mozambique and Madagascar.

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When each balloon nears the end of their around-the-world flight, technicians in Australia will terminate the flight by radio signal to effect land recovery in a safe location during daylight hours. When transmitted, the signal will fire a charge that releases the payload from the balloon, allowing the payload to descend by parachute.

Once recovered, the payloads will be prepared for shipment back to the U.S. where they will be refurbished for future flights.

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NASA News

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For Release:
January 27, 1987

RELEASE NO. 87-2

NASA WALLOPS VISITOR CENTER TO HOLD SCALE MODEL ROCKET WORKSHOP

A scale model rocket building workshop will be held from 1:00 to 2:30 p.m. on Sunday, February 1, 1987, at the NASA Wallops Visitor Center, Wallops Island, Virginia.

Children eight years old and older are asked to bring their own scale model rockets to the workshop where tips on model building and painting will be given.

A short film on rockets will be shown and all participants are encouraged to tour the Visitor Center at the conclusion of the workshop.

The NASA Wallops Visitor Center is located on Route 175, approximately six miles east of Route 13, and five miles from Chincoteague, Virginia. It is open from 10:00 a.m. to 4:00 p.m., Thursday through Monday. For further information, please call 804-824-1344.

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NASA News

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For Release:
January 27, 1987

RELEASE NO. 87-3

PUBLIC TOURS OF WALLOPS FLIGHT FACILITY EXTENDED THROUGH FEBRUARY!

Tours of the Wallops Flight Facility will be extended through the month of February. Tours will be conducted Monday, Thursday and Friday at 10:15 a.m., 1:00 p.m. and 2:30 p.m. Tours will be limited to 11 people, and advance reservations must be made. To reserve a seat, please call the NASA Wallops Visitor Center at (804)-824-1344

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For Release:
January 27, 1987

RELEASE NO. 87-4

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A scale model rocket launch will be held on Saturday, February 7, at 1 p.m. at the NASA Visitor Center, Wallops Island, Virginia.

Altitudes of 1000 feet will be reached by some of the approximately 20 rockets that will be launched. The rockets are scale models of past and present NASA rockets such as the Nike Apache, Black Brant, Mercury Redstone, and the Space Shuttle.

Model rocket enthusiasts may bring their own rockets. The public is invited to join in this event which will last approximately 45 minutes. In the event that temperatures are below 40° F, or the winds exceed 20 mph, the event will be cancelled.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, six miles east of Route 13, and just seven miles west of the Assateague Island National Seashore. The NASA Visitor Center is open to the public with free admission, Thursday through Monday, 10 a.m. to 4 p.m. Further information may be obtained by calling (804) 824-1344.

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NASA News

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For Release:
January 30, 1987

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RELEASE NO. 87-5

NASA LAUNCHES UNIVERSITY OF PITTSBURGH EXPERIMENT

NASA's Goddard Space Flight Center successfully launched a sounding rocket carrying a University of Pittsburgh (U of P) experiment for studying the atmosphere from the White Sands Missile Range at 2:15 p.m. EST on January 28, 1987.

The two-stage Terrier-Black Brant lofted the scientific payload weighing 1,044 pound (473 kilograms) to an altitude of 159 statute miles (255 kilometers). The payload consisted of a multipurpose platform containing 11 instruments designed to study airglow and ionospheric processes in the Earth's atmosphere.

"The basic scientific objective of the launch is to try to understand how the Sun affects the Earth's environment," said Dr. Edwart Zipf of the U of P, the principal science investigator for the mission.

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The payload's instruments represent an airborne laboratory. On this mission, they investigated three areas: how the Sun modifies the ionosphere between 30 miles (50 kilometers) and 250 miles (400 kilometers) above the Earth; what happens to radiation in the upper atmosphere; and how the energy and chemistry of upper atmosphere are influenced by the lower atmosphere.

This experiment package was successfully flown a year ago, recovered, and refurbished for Wednesday's flight.

This scientific mission is part of the overall NASA Sounding Rocket Program which is managed at the Goddard Space Flight Center's Wallops Flight Facility in Virginia. This program consists of approximately 40-45 sounding rockets a year from various worldwide locations.

The two-stage, solid-propellant Terrier-Black Brant VC is approximately 50 feet long (15 m) and 18 inches (45 cm) in diameter. The payload was recovered later from the New Mexico desert following the suborbital flight which lasted almost 14 minutes.

Dr. E. C. Zipf of the University of Pittsburgh was the Science Investigator for this flight mission. Co-experimenters were Dr. P. Erdman and T. Prokop, also from the University of Pittsburgh. The Wallops Project Manager was Paul Buchanan.

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NASA News

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For Release:
February 12, 1987

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Michael Braukus
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-5565)

RELEASE NO: 87-6

SECOND EXTENDED-DURATION BALLOON FLIGHT LAUNCHED

An unmanned balloon, launched Monday, Feb. 9, from Alice Springs, Australia, on an extended-duration flight to gather data about the sun, is traveling westward over the Indian Ocean at 69 miles per hour, attaining altitudes between 100,000 and 130,000 feet, NASA announced today.

The flight--the second of two in the project--is carrying an experiment from the University of California, Berkeley and San Diego branches. The payload is studying the new solar phenomena of hard X-ray microflares and super hot, flare plasma from a variety of active regions of the sun.

The payload from the first extended-duration balloon flight was recovered on Friday, Feb. 6. The instrument appeared to be in good working order. The flight is considered a success based on the extensive data that was gathered,

- more -

The flight is considered a success, on the basis of the extensive data that was gathered, although it was hoped that the balloon would circumnavigate the globe. "The fact that the balloon went down unexpectedly doesn't mean that the flight was a failure," said Harvey Needleman, Head, Balloon Project Branch at Goddard's Wallops Flight Facility. "With the experiment getting seven days of data, there is all the reason to believe this was a successful flight."

The flight was automatically terminated on Feb. 1, near Concepcion, Paraguay, when the balloon passed over an extensive thunderstorm. When the air cooled, the balloon altitude fell below 60,000 ft., which caused the pressure-operated release device to deploy the payload by parachute.

Since accurate weather predictions can not be made far enough in advance to avoid the effects of adverse weather conditions on long-duration balloon flightslasting up to two to three weeks, premature cut-downs are not considered unusual.

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For Release:
February 13, 1987

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RELEASE: 87-7

INTERNATIONAL SPACE RESEARCH PROGRAM GETS UNDERWAY IN GREENLAND

An international space science research program, named the 1987 Greenland-II Cooperative Observations of Polar Electrodynamics (COPE), will conduct launch operations from Søndre Strømfjord, Greenland, between Feb. 15 and early April.

The program objective is to better understand the sun's outer atmosphere and how it affects the near-space environment of Earth, as well as the Earth's atmosphere. Scientists expect to gather new knowledge about sunEarth relationships and fundamental plasma processes in Earth's space environment. The program will employ scientific rockets and airborne and groundbased measurement systems.

Officials at NASA's Goddard-Wallops Flight Facility, Wallops Island, Va., say the research effort includes studies of polar cap turbulence and electrodynamics, auroral zone electrodynamics, polar cap and theta aurora (a circular auroral light region), neutral atmosphere coupling (interaction of neutral and charged particles) and polar ionospheric irregularities.

- more -

The program is being conducted by NASA in cooperation with the Air Force Geophysics Laboratory (AFGL), Hanscom AFB, Mass., the Danish Meteorological Institute (DMI), Copenhagen, Denmark, and the National Science Foundation (NSF), Washington, D.C.

Ten suborbital rockets are scheduled for launch. Five rocketborne experiments will release chemicals, creating artificial vapor clouds above 155 miles altitude visible over a 500-mile radius from the launch site.

NASA has eight flights -- three Taurus-Nike-Tomahawks, two Terrier-Malemutes, a Taurus-Tomahawk, a Nike-Tomahawk and a Black Brant IX. AFGL has one with a Black Brant VIII and another with a Black Brant IX. Program officials explained that COPE I was conducted January-March 1985 with nine rockets launched.

Greenland is considered unique for these scientific investigations because of its access to the auroral oval, polar cap and polar cusp; the existing rocket range at Greenland; support from the Søndre Strømfjord incoherent scatter radar; support from the HiLat and Polar Bear spacecraft; support from the extensive array of scientific ground observing stations in Greenland, Scandinavia and North America; and a broad choice of launch azimuths.

Wallops personnel spent several weeks during the past summer at the Greenland site installing additional launchers and related ground support equipment, radar, telemetry and communications systems. Vehicle and payload assembly structures were erected and the Danish launch facility at Søndre Strømfjord was expanded and improved. Final preparations for implementing the program's launch phase were made in December.

Payload experimenters represent NASA, AFGL, DMI, Cornell University, Danish Space Research Institute, Utah State University, University of Alaska, University of Alabama-Huntsville, Clemson University, Naval Research Laboratory, Southwest Research Institute and Franklin Research Center. Ground-based scientists represent Stanford Research Institute International, Boston University, Cornell University, Lockheed Corporation, the University of Michigan and Technology International Corporation.

(END OF GENERAL RELEASE -- Launch schedule, background information, and Project COPE personnel listing attached)

PROJECT COPE (GREENLAND CAMPAIGN) LAUNCH WINDOWS

No.	Agency	Launch Window	Vehicle	Experiment	Experimenter (Organization)
1.	NASA	Feb. 15 - Mar. 6	Terrier-Malemute	Ionosphere Chemical Releases	U. of Alaska
2.	NASA	Feb. 15 - Mar. 6	Terrier-Malemute	Ionosphere Chemical Releases	U. of Alaska
3	NASA	Feb. 15 - Mar. 6	Taurus-Nike-Tomahawk	Polar Cap Electro-dynamics	Utah State U./ U. of Alabama
4.	NASA	Feb. 15 - April 3	Nike-Tomahawk	Ionosphere Chemical releases	Clemson U./DMI
5.	NASA	Feb. 15 - April 3	Taurus-Tomahawk	Ionosphere Chemical Release	Clemson U./DMI
6.	NASA	March 15 - April 4	Black Brant IX (or VC)	Polar cap Turbulence	Cornell U./ U. of Alabama/DSRI
7.	NASA	March 15 - April 4	Taurus-Nike-Tomahawk	Polar Cap Turbulence	Cornell U./Utah State U./ U. of Alabama
8.	NASA	March 15 - April 4	Taurus-Nike-Tomahawk	Polar Cap Turbulence	Cornell U./Utah State U./ U. of Alabama
9.	AFGL	Feb. 14 - Mar. 6	Black Brant VIII	Ionosphere Chemical Releases	AFGL/DMI/FRC
10.	AFGL	Feb. 18 - Feb. 28	Black Brant IX	Polar ARC Electro-dynamics	AFGL/NRL/DSRI SWRI

SCIENTIFIC OBJECTIVES AND PAYLOADS

Black Brant IX/Taurus-Nike Tomahawk/Cornell University payloads include experiments from University of Alabama at Huntsville, Danish Space Research Institute and Utah State University. The payloads will make measurements of AC and DC electric and magnetic fields, plasma density, electron temperature and charged particles. All three are scheduled to be carried to an apogee altitude region of 250 to 310 miles (400 to 450 km) and will be launched nearly simultaneously.

The Clemson University/Danish Meteorological Institute payloads will be joint chemical release experiments to measure the three-dimensional variations of the neutral wind in the auroral zone. The altitude range covered will be from 50 to 185 miles (80 to 300 km). The horizontal coverage will include 3° in the meridional direction and approximately 1 to 1-1/2 hours of local time in the zonal direction. To measure variations in the zonal direction ordinarily would pose a problem because the characteristic scale size is much larger in this direction than in the meridional direction. Greenland may be the only place in the world where it is possible in practice to separate two trails by one or two hours in local time. At the same universal time, a third trail can be deployed along the magnetic meridians with a separation of 125 to 185 miles (200 to 300 km).

The meridional chemical trails will be deployed from a Nike-Tomahawk vehicle. The payload includes approximately 22 pounds (10 kg) of TMA (tri-methyl-aluminum) for up leg and down leg continuous trails and intermittent puffs. The trails will nominally be from 50 to 110 miles (80 km to 180 km) altitude. TMA puffs will be released up to 175 miles (280 km) altitudes. The horizontal separation of the TMA trails is to be 155 miles (250 km). This experiment also will release approximately 11 pounds (5 kg) of a Neodymium-based mixture. This experimental puff is used to evaluate this chemical for use in wind measurements. The Neodymium deployment will be at 115 miles (185 km).

The zonal TMA trails will be deployed by a Taurus-Tomahawk launch vehicle to a range of approximately 217 miles (350 km) at altitudes from 110 to 50 miles (180 km to 80 km) during the descent. Additional TMA puffs will be released along the vehicle trajectory at altitudes up to 174 miles (280 km).

The optical/photographic sites are to be located at Dye 2 and Dye 3 DEW-line radar stations. These are located for observation of the chemical releases.

AFGL SCIENTIFIC OBJECTIVES AND PAYLOADS

The scientists are interested in measuring the electrodynamics of the polar cap ionosphere. They will be measuring the irregularities in the ionosphere that can cause interference in radio and radar signals. The ionosphere within the aurora is a highly disturbed region and is ideal for obtaining additional information about these interference phenomena. In conjunction with the NASA launches, the most complete three dimensional measurement to date will be made.

Terrier-Malemute/University of Alaska payloads will inject three barium-shaped charges in the ionosphere above a polar cap arc. The velocity history of these tracer ions will reveal the altitude at which the auroral electrons are accelerated. A very complete picture of polar cap electrodynamics should emerge.

Taurus-Nike-Tomahawk/Utah State University payload will combine with one of the University of Alaska payloads to yield detailed measurements across a polar cap arc while the shaped charges map out the altitude structure. This is one of the SUPER (Small University Plasma Electrodynamics Rockets) payloads and is nearly identical to the two being flown by Cornell University.

SOUNDING ROCKET LAUNCH VEHICLE INFORMATION

Terrier-Malemute -- 2-stage, solid propellant vehicle
11 meters (36 ft.) long
18 inches (1st stage booster) in diameter

Weighs 1640 kg (3600 lbs.) at liftoff

Nike-Tomahawk -- 2-stage, solid propellant vehicle
9 meters (30 ft.) long
16 1/2 inches in diameter (second stage 9")
Weighs 910 kg (2000 lbs.) at liftoff

Taurus-Tomahawk -- 2-stage, solid propellant vehicle
10 meters (33 ft.) long
23 inches (1st stage booster) in diameter (second stage 9")
Weighs 1680 kg (3700 lbs.) at liftoff

Black Brant VIII -- 2-stages (Nike, Black Brant VC), solid propellant vehicle
11 meters (35 ft.) long
17 inches in diameter
Weighs 2090 kg (4600 lbs.) at liftoff

Black Brant IX -- 2-stages (Terrier, Black Brant VC), solid propellant vehicle
11 meters (37 ft.) long
18 inches in diamter
Weighs 2300 kg (5100 lbs.) at liftoff

Taurus-Nike-Tomahawk -- 3-stages (Taurus, Nike, Tomahawk), solid propellant vehicle
13 meters (42 ft.) long
23 inches in diameter
Weighs 2210 kg (4900 lbs) at liftoff

PROJECT COPE PERSONNEL:

Robert Long, NASA Project Manager
John Parks, NASA Safety Officer
Jim Hardin, NASA Facilities Coordinator
Geoffrey Bland, NASA Payload Manager
Jay Brown, NASA Payload Manager
Anel Flores, NASA Payload Manager

Roy Walters, AFGL Systems Manager
Lt. Barry Lineberger, AFGL Payload Manager
Lt. Al Locker, AFGL Payload Manager
Christopher Krebs, AFGL Payload Manager

Lt. Col. F. Valeur, Controlling Danish Liaison and Range Safety Officer
Maj. Jorgen Svender, Danish Range Safety Officer
Maj. Prebem Holmer, RDAF Liaison Officer

Col. Albert Harrman, USAF Søndre Strømfjord Base Commander
Lt. Col. Charles Pooarems, USAF Søndre Strømfjord Deputy Base Commander

Payload Experiments

Dr. Michael Kelley, Cornell University (Scientific Coordinator for Project Cope)
Mr. Greg Earle, Cornell University

Dr. Kay Baker, Utah State University

Dr. Miguel Larsen, Clemson University

Dr. Roy Tolbert, University of Alabama, Huntsville

Dr. William Vickery, Air Force Geophysics Laboratory
Dr. Herbert Carlson, Air Force Geophysics Laboratory
Dr. Ed Weber, Air Force Geophysics Laboratory
Dr. John Ballenthin, Air Force Geophysics Laboratory

Dr. Steen Mikkelsen, Danish Meteorological Institute

Dr. Fritz Primdahl, Danish Space Research Institute
Dr. Eigel Ungstrup, Danish Space Research Institute

Dr. Eugene Wescott, University of Alaska
Dr. Hans Nielson, University of Alaska

Dr. James R. Sharber, Southwest Research Institute

Dr. Paul Rodriguez, Naval Research Laboratory

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NASA News

National Aeronautics and
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Goddard Space Flight Center
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824-1584

For Release:
February 20, 1987

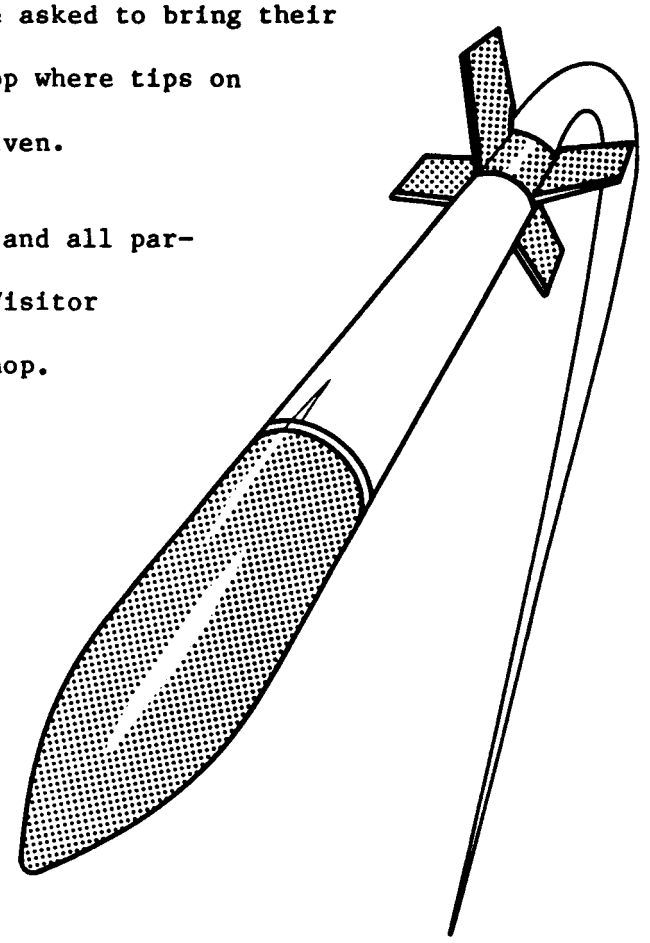
RELEASE NO. 87-8

NASA WALLOPS VISITOR CENTER TO HOLD SCALE MODEL ROCKET WORKSHOP

The workshop will be held from 1:00 to 2:30 p.m. on Sunday, March 1, 1987, at the NASA Visitor Center, Wallops Island, Virginia.

Children eight years old and older are asked to bring their own scale model rockets to the workshop where tips on model building and painting will be given.

A short film on rockets will be shown and all participants are encouraged to tour the Visitor Center at the conclusion of the workshop.



The NASA Wallops Visitor Center is located on Route 175, six miles east of Route 13, and five miles from Chincoteague, Virginia. It is open from 10:00 a.m. to 4:00 p.m., Thursday through Monday. For further information, please call 804-824-1344.

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NASA News

National Aeronautics and
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For Release: February 20, 1987

Leon N. Perry
Headquarters, Washington, DC
(Phone: 202/453-1548)

James Elliott
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-6256)

RELEASE NO: 87-9

NASA SUCCESSFULLY LAUNCHES PLASMA PHYSICS EXPERIMENT

NASA's Goddard/Wallops Flight Facility, VA. (GSFC/WFF), successfully launched a rocketborne experiment on Tuesday, Feb. 17, at 4:55 p.m., from the White Sands Missile Range (WSMR), New Mexico. The mission objective was to continue study of the mesosphere, that portion of the atmosphere extending 50-90 kilometers above the Earth.

A two-stage, solid-propellant Taurus-Orion sounding rocket, approximately 38 feet long and 23 inches in diameter, carried aloft the 374-pound (170 kilogram) payload containing an experiment from the University of Michigan, to an altitude of 111 statute miles (179 kilometers). The payload was recovered successfully from the desert 1 1/2 hours after launch.

This was the second successful flight for the experiment package, which was previously launched from WSMR in October, 1984.

- more -

Dr. William Sharp, University of Mich., was principal investigator and Anel Flores,Jr., (GSFC/WFF), was project manager. The flight's purpose was to determine the abundances of hydroxyl molecule (OH), dioxygen (02), ozone (03), and monoxygen (0) and the temperature in the midlatitude mesosphere. The study of space plasma physics is important in understanding the global physical and chemical processes that occur in the atmosphere. These studies play a fundamental role in understanding how the energy of ultra violet radiation, charged particles (plasma) and fields coming from the Sun are transported and deposited into the atmosphere, modifying its chemistry and radiative properties.

Dr. Sharp's research work will enhance our understanding of such interactions between the inflow of energy and the atoms and molecules which compose the atmosphere and which ultimately affects the formation and variability of special regions in the atmosphere including the ozone layer.

This scientific mission is part of the overall NASA Sounding Rocket Program, managed at Goddard Space Flight Center's Wallops Flight Facility (GSFC/WFF) in Virginia. The sounding rocket program consists of approximately 40-45 sounding rockets a year, launched from various worldwide locations.

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National Aeronautics and
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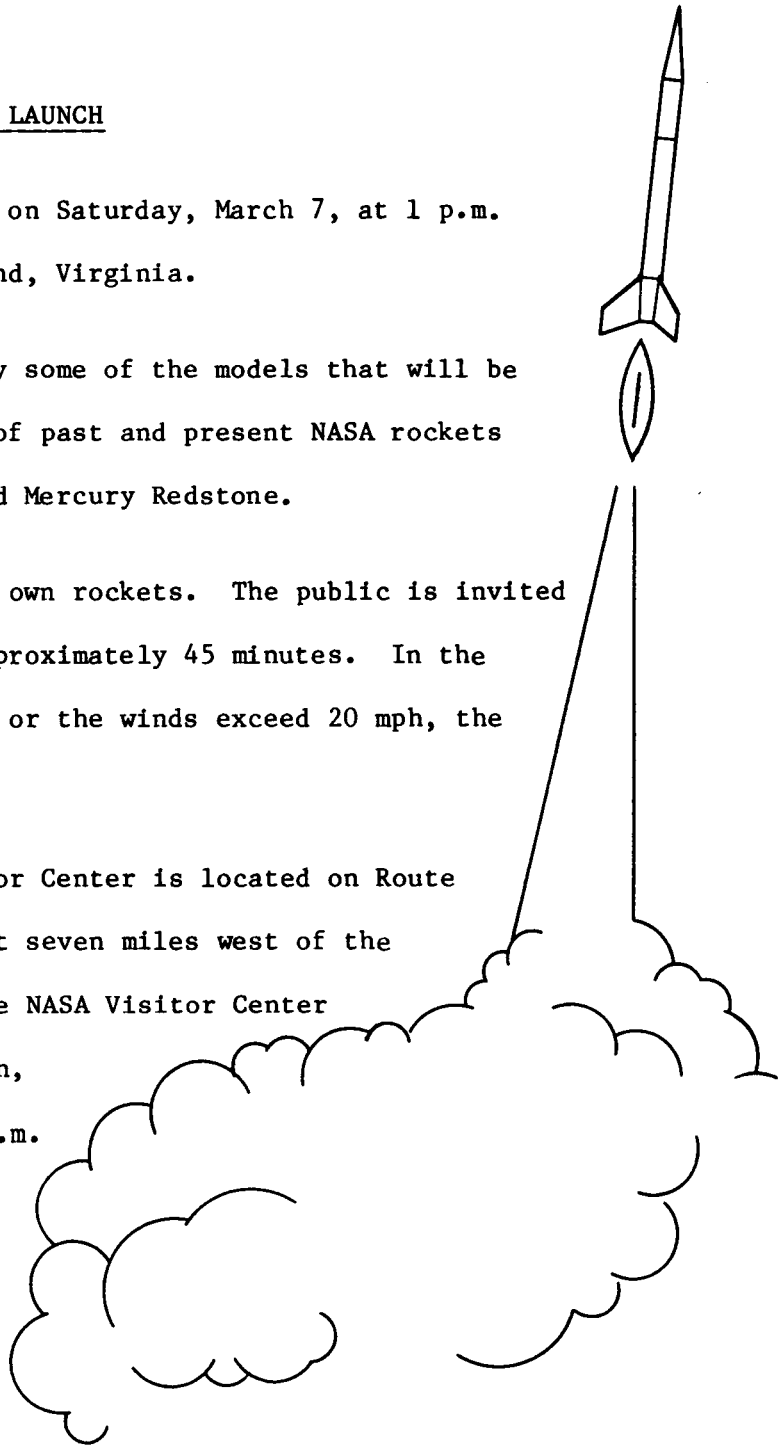
For Release:
February 27, 1987

RELEASE NO. 87-10



NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A scale model rocket launch will be held on Saturday, March 7, at 1 p.m. at the NASA Visitor Center, Wallops Island, Virginia.

Altitudes of 1000 feet will be reached by some of the models that will be launched. The rockets are scale models of past and present NASA rockets such as the Nike Apache, Black Brant, and Mercury Redstone.

Model rocket enthusiasts may bring their own rockets. The public is invited to join in this event which will last approximately 45 minutes. In the event that temperatures are below 40° F, or the winds exceed 20 mph, the event will be cancelled.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, six miles east of Route 13, and just seven miles west of the Assateague Island National Seashore. The NASA Visitor Center is open to the public with free admission, Thursday through Monday, 10 a.m. to 4 p.m. Further information may be obtained by calling (804) 824-1344.

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For Release:
February 26, 1987

Leon N. Perry
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David Thomas
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(Phone: 301/286-8956)

RELEASE NO: 87-11

NASA COMPLETES LONG-DURATION BALLOON FLIGHTS, PAYLOADS RECOVERED.

The second of two long-duration ballon flights was terminated by NASA officials on Saturday, Feb. 21, because of low balloon altitude and waning winds.

The latest flight began in Alice Springs, Australia, on Feb. 9, and ended in Brazil near Talochino. NASA contract technicians in Brazil, with the cooperation of the Instituto De Pesquisas Espaciais (INPE), the Brazilian space agency, terminated the balloons' flight by radio signal to effect a land recovery in a safe location during daylight hours. The transmitted signal fired a pyrotechnic device that released the payload and recovery parachute.

The first balloon was launched from the Australian site on January 25 and landed seven days later near Concepcion, Paraguay, when the flight was automatically terminated because of adverse weather conditions.

- more -

Both scientific payloads carried by the balloons have been successfully recovered in good condition, for return to the U.S., where they will be refurbished for future flights.

The first balloon carried a joint experiment by Louisiana State University (LSU) and the University of Washington to study nuclear interactions and cosmic ray composition.

The second balloon carried an experiment from the University of California, Berkeley and San Diego branches, to study the new solar phenomena of hard X-ray microflares and super hot flare plasma from a variety of active regions of the Sun.

The helium-filled balloons are taller at launch than the Washington monument and expand to 28 million cubic feet in volume when fully inflated at float altitude. They carried the 3,000pound payloads to original float altitudes of 130,000 feet.

The two balloons were the first to be used for extended duration flight application that are manufactured of a newly developed balloon material called Astrofilm. These balloons and payloads represented the largest and heaviest ever attempted in this mode of operation.

Balloon tracking and data acquisition was accomplished through the use of satellites. Two polar orbiting French Argos satellites tracked the balloon flights. Signals transmitted from the balloons every 45 seconds were relayed through the satellites to a ground processing station in Toulouse, France, where the positions were calculated. The position data was relayed to tracking facilities here in the U.S. Four meteorological GOES satellites parked

over the equator at different longitudes, were used to relay operational and scientific data from the second balloon.

Preliminary expectations are that both scientific missions were successful, however the final assessment is pending further data analysis by the scientists. It will be several months before the scientific data is published.

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For Release:
March 24, 1987

RELEASE NO. 87-12

NASA SUCCESSFULLY LAUNCHES EXPERIMENT TO STUDY UPPER ATMOSPHERE TURBULENCE

A rocketborne plasma physics experiment was successfully launched today at 1:30 p.m. EST by NASA's Goddard/Wallops Flight Facility (GSFC/WFF) from Wallops Island, Virginia.

The primary objective of this flight is to investigate gravity waves and turbulence in the lower ionosphere (D region) about 50 to 120 km altitude and their effects on the ionization distribution. Specifically, the payload investigated how the velocity of the atmosphere affects ionization gradients to produce the distinctive signatures of finer structure, down to one meter dimensions, as seen on previous flights.

A secondary objective is to verify the engineering design of the new drag sensor, first flown in June 1985. Any revisions in the design will be incorporated in three payloads scheduled to be launched later this year from Andoya, Norway, as part of the Middle Atmosphere Cooperation-EPSILON (MAC-EPSILON) Campaign.

- more -

The 175-pound payload carried on a Nike-Orion rocket reached a peak altitude of 110 statute miles (177 kilometers). Preliminary results indicate that all instrumentation performed satisfactorily and good data was obtained. The Nike-Orion is a two-stage, solid-propellant, unguided sounding rocket about 30 feet long and 16 inches in diameter.

This launch was conducted for the University of Illinois. According to Dr. Sidney Bowhill, U. of Ill. project scientist, "These studies are important because turbulence is the major unsolved problem of the atmosphere and ionosphere. We believe that waves from the ground travel up into the D-region, where they 'break' like ocean waves on the shoreline. We are interested in how this 'surf' region of turbulent air can affect radio transmission and reentry of space vehicles."

This scientific mission is part of the overall NASA Sounding Rocket Program which is managed at the GSFC/Wallops Flight Facility in Virginia. This program consists of approximately 40-45 sounding rockets a year that are launched from various worldwide locations.

Wallops project personnel were: Debra Frostrom, project engineer, and R. Paul Buchanan, payload manager.

-END-

NASA News

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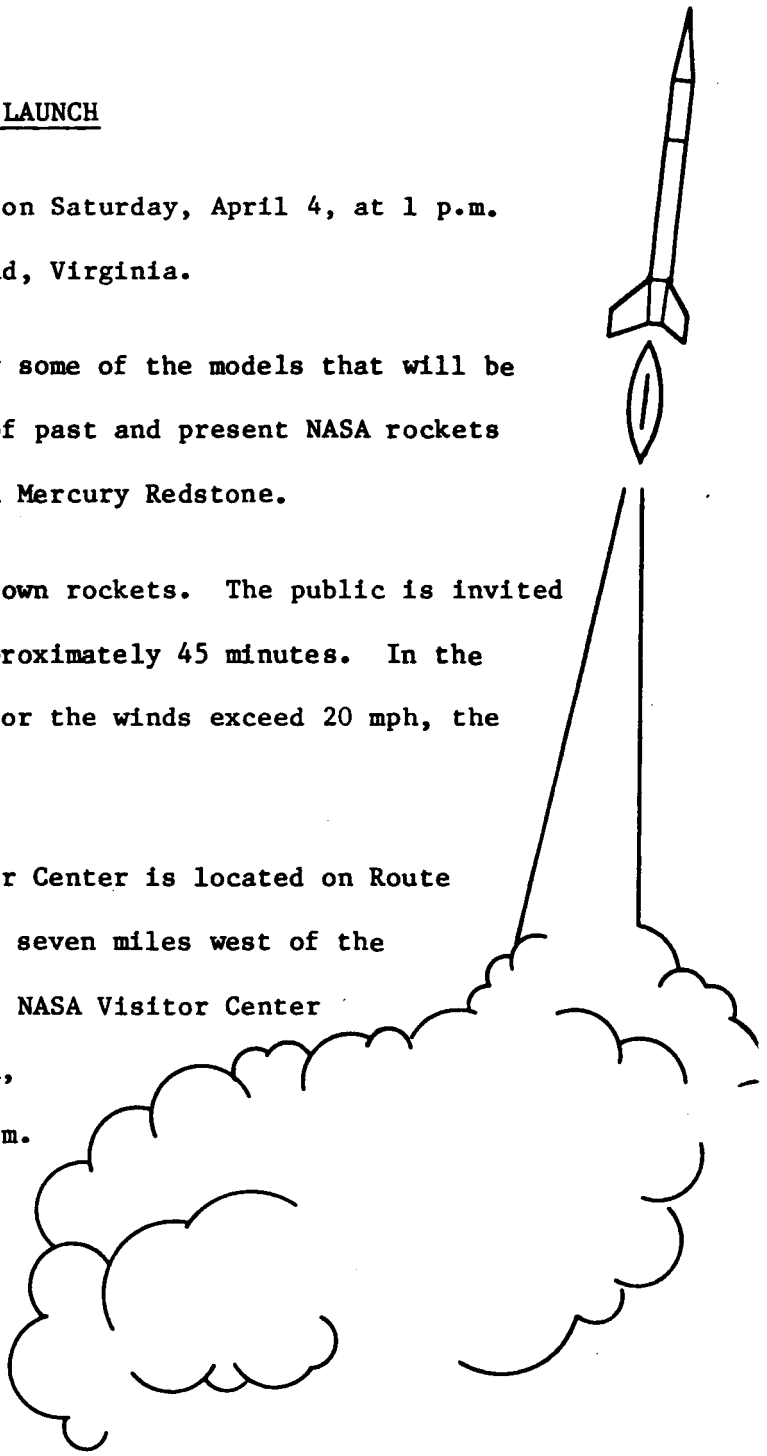
For Release:
March 27, 1987

RELEASE NO. 87-14



NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A scale model rocket launch will be held on Saturday, April 4, at 1 p.m. at the NASA Visitor Center, Wallops Island, Virginia.

Altitudes of 1000 feet will be reached by some of the models that will be launched. The rockets are scale models of past and present NASA rockets such as the Nike Apache, Black Brant, and Mercury Redstone.

Model rocket enthusiasts may bring their own rockets. The public is invited to join in this event which will last approximately 45 minutes. In the event that temperatures are below 40° F, or the winds exceed 20 mph, the event will be cancelled.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, six miles east of Route 13, and just seven miles west of the Assateague Island National Seashore. The NASA Visitor Center is open to the public with free admission, Thursday through Monday, 10 a.m. to 4 p.m. Further information may be obtained by calling (804) 824-1344.

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Headquarters, Washington, D.C.
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For Release:
April 3, 1987

RELEASE NO. 87-15

NASA COMPLETES SUCCESSFUL SCIENTIFIC ROCKET LAUNCHES IN GREENLAND

NASA successfully launched three suborbital research rockets within 11 seconds Tuesday, March 31, concluding a highly successful international scientific campaign of Sounding Rocket Research conducted from Søndre Strømfjord, Greenland. During the past month, ten rockets have been launched from this remote location to investigate the complex interactions between the solar wind and the Earth's atmosphere in the polar cap region where brilliant aurora (northern lights) occur.

This scientific research campaign is the second to be conducted from Greenland during the last three years between NASA, the U.S. Air Force Geophysics Laboratory (AFGL), the Danish Meteorological Institute (DMI) and the National Science Foundation (NSF). In addition to using high-altitude rocket payloads carrying various scientific instruments, aircraft and ground-based observations were included. Five of the rocketborne payloads released harmless chemicals which created artificial ionized clouds up to 300 miles high which were observed by ground observation sites. Of the 10 total rocket launchings, eight were sponsored by NASA and two by the Air Force.

- more -

The three NASA rockets launched Tuesday, included a Black Brant IX, which lifted off at 2:47 a.m. Greenland time; a Taurus-Nike-Tomahawk, launched five seconds later and another Taurus-Nike-Tomahawk, which lifted off six seconds after the second launch. Scientific collaborators for the three rocket flights were from Cornell University; University of Alabama, Huntsville; Utah State University; Danish Space Research Institute; and the Royal Institute of Technology, Stockholm.

Warren Gurkin, head, sounding rockets projects branch at NASA's Goddard/ Wallops Flight Facility said experimenters were elated with the results. "We received good data from all three payloads, which reached altitudes of nearly 300 miles," In fact, all ten rocket flights in the campaign were successful." He explained that mobile tracking equipment had to be established in Greenland to support these rocket flights.

NASA program officials said the auroral oval is one of the most turbulent near-Earth plasma, and is an excellent location for this type of space science research. Suborbital rocket vehicles are often used to place scientific payloads where and when required for the scientists to make measurements in the vicinity of active aurora.

The experience gained from these measurements will be useful in other NASA and European programs involving satellites to study plasma turbulence in the near-Earth space environment using the same type of measurements of energetic particles and electric fields which were made by the suborbital rocket paylaods.

Other experiments involved in these rocket flights were from NASA, AFGL, DMI, University of Alaska, Clemson University, Naval Research Laboratory, Southwest Research Institute, and the Franklin Research Center. Groundbased experimenters included scientists from Stanford Research Institute, International; Boston University; Cornell University; Lockheed Corporation; the University of Michigan; and Technology International Corporation.

- END -

NASA News

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For Release:
April 23, 1987

RELEASE NO. 87-16

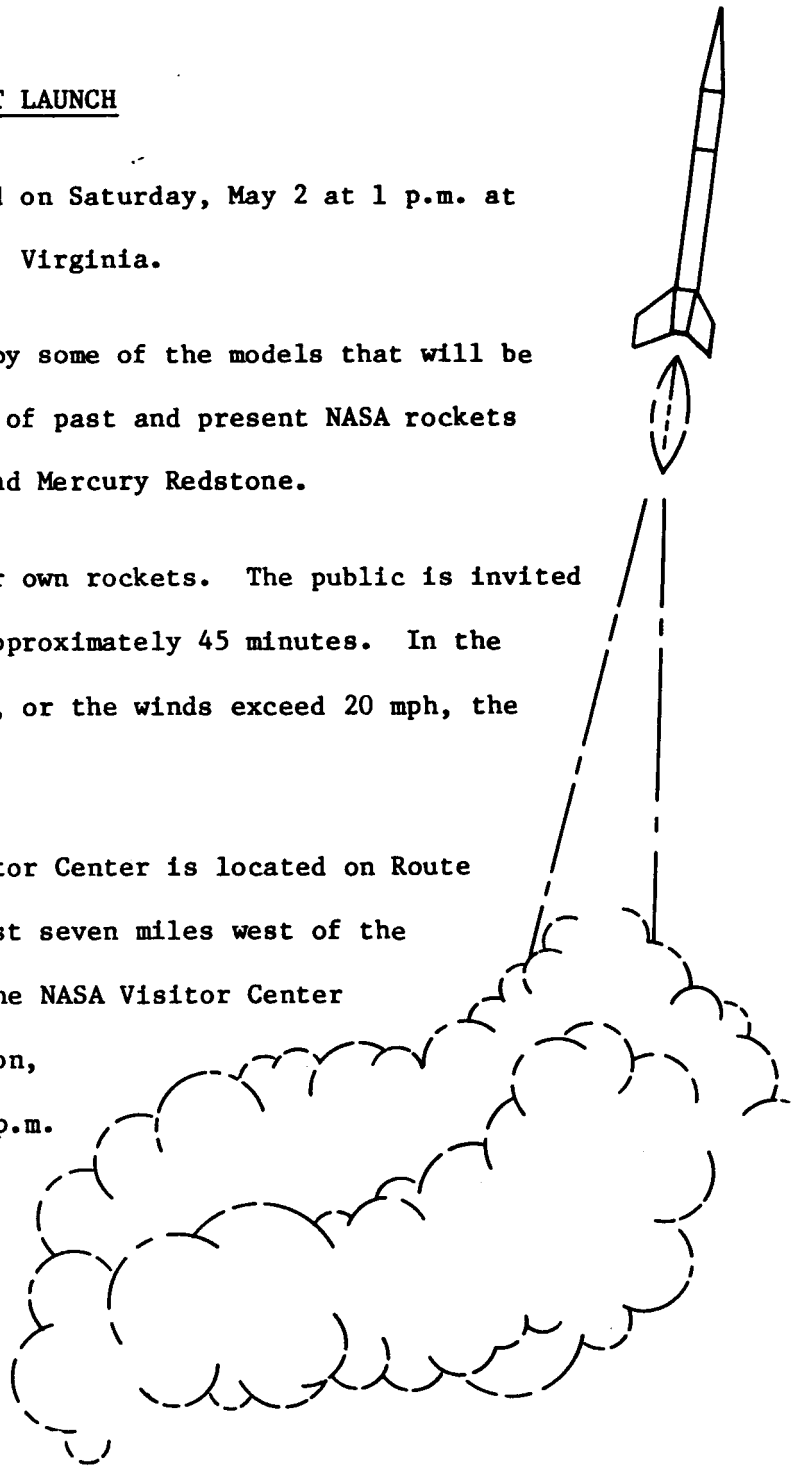
NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A scale model rocket launch will be held on Saturday, May 2 at 1 p.m. at the NASA Visitor Center, Wallops Island, Virginia.

Altitudes of 1000 feet will be reached by some of the models that will be launched. The rockets are scale models of past and present NASA rockets such as the Nike Apache, Black Brant, and Mercury Redstone.

Model rocket enthusiasts may bring their own rockets. The public is invited to join in this event which will last approximately 45 minutes. In the event that temperatures are below 40° F, or the winds exceed 20 mph, the launches will be cancelled.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, six miles east of Route 13, and just seven miles west of the Assateague Island National Seashore. The NASA Visitor Center is open to the public with free admission, Thursday through Monday, 10 a.m. to 4 p.m. Further information may be obtained by calling (804) 824-1344.



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For Release:
May 27, 1987

RELEASE NO. 87-17

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held at 1 p.m., Saturday, June 6 at the NASA Visitor Center, Wallops Island, Virginia. The scale models of past and present rockets, such as Mercury-Redstone and Space Shuttle, range from one to three feet in height and some reach flight altitudes of over 1,000 feet.

The public is invited to join in the event, which will last approximately 45 minutes, and model rocket enthusiasts are encouraged to bring their own rockets. Attendees are also advised to bring insect repellant.

Dates of future model rocket demonstrations are: June 20, July 4 and 18, and August 1 and 15. All events begin at 1 p.m.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, about six miles from Route 13 and five miles west of Chincoteague, Virginia. The Center is free and open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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NASA News

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For Release:
June 9, 1987

RELEASE NO. 87-18

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held at 1 p.m., Saturday, June 20 at the NASA Visitor Center, Wallops Island, Virginia. The scale models of past and present rockets, such as Mercury-Redstone and Space Shuttle, range from one to three feet in height and some reach flight altitudes of over 1,000 feet.

The public is invited to join in the event, which will last approximately 45 minutes, and model rocket enthusiasts are encouraged to bring their own rockets. Attendees are also advised to bring insect repellant.

Dates of future model rocket demonstrations are: July 4 and 18, and August 1 and 15. All events begin at 1 p.m.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, about six miles from Route 13, and five miles west of Chincoteague, Virginia. The Center is free and open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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For Release:

June 26, 1987

RELEASE NO. 87-19

NASA VISITOR CENTER CELEBRATING 5TH ANNIVERSARY

The NASA Visitor Center at the Wallops Flight Facility, Wallops Island, VA, will celebrate its 5th anniversary with several special events and exhibits from July 2 through 5.

Aerospace Specialist Bob Neal will conduct a 45-minute presentation at 11 a.m. and 1 and 3 p.m., July 2 and 3 and 11 a.m. and 3 p.m, July 4 in the Visitor Center's auditorium. The presentation, which is geared towards the general public, will look at NASA's past, current and future aeronautical and space programs.

NASA's Aerovan and SARSAT Van will be on display from 10 a.m. to 4 p.m. July 3 through 5. The Aerovan is a walk-through display featuring exhibits on current aeronautics research and NASA's role in America's national security, future directions in aeronautics and how NASA's aeronautics research benefits the United States' economy. Aerovan lecturer Chris Christensen will be available to answer questions on NASA's aeronautical programs.

The SARSAT Van is a walk-through display which explains the international cooperative program of using satellites in aiding research and rescue operations. The United States' program is sponsored by NASA, the National Oceanic and

- more -

Atmospheric Administration (NOAA), the Coast Guard, and the Air Force. Also, SARSAT Van lecturer Bob Buckley will be available to answer questions on the program. A model rocket demonstration will be conducted at 1 p.m. July 4.

During the demonstration over 20 scale models of past and present rockets will be launched to altitudes from 75 to over 1000 feet. Model rocket enthusiasts are encouraged to bring their own rockets.

A model airplane demonstration will be conducted at 1 p.m. July 5. Members of the Mid-Atlantic Radio Control Society will present a one-hour demonstration on flying radio controlled model airplanes.

Also, throughout the anniversary celebration, films on aeronautics and space topics will be shown daily on the hour and half-hour.

The NASA Visitor Center was established to educate and inform the residents and visitors of the Delmarva Peninsula of the programs conducted at Wallops and other NASA establishments. This has been accomplished through exhibits, special public programs, films and programs for education and civic groups.

Since July 1982, when its doors first opened, the Center has had over 240,000 visitors, far exceeding the expectations of those who supported the development of the facility. In its brief 5-year history, the Visitor Center has conducted special programs for nearly 500 groups totalling more than 18,000 people.

In addition to the programs at the Visitor Center, programs have been conducted offsite to education and civic groups throughout the Eastern Shore.

The Visitor Center has been a great asset to the Peninsula and the future looks bright. The Center is updating current exhibits to reflect changes in the field of aerospace research and plans are in the works for developing children's

programs.

Whatever changes occur, the Visitor Center will continue to focus on those interests that have made it a major participant in the education community and a major attraction to visitors to Delmarva -- attributes of personal attention, clear and concise exhibits and presentations, and a safe and congenial atmosphere.

Schedule of 5th Anniversary Events

Space Science Lecture/Demonstration	July 2 and 3 July 4	11 a.m., 1 & 3 p.m. 11 a.m. and 3 p.m.
SARSAT Van	July 3, 4, 5	10 a.m. to 4 p.m.
NASA Aerovan	July 3, 4, 5	10 a.m. to 4 p.m.
Model Rocket Demonstration	July 4	1 p.m.
Model Airplane Demonstration	July 5	1 p.m

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NASA News

National Aeronautics and
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For Release:
July 7, 1987

RELEASE NO. 87-20

NASA ANNOUNCES SOUNDING ROCKET CAMPAIGN IN NORWAY

Officials at NASA's Goddard Space Flight Center, Greenbelt, Maryland, today announced plans to launch four sounding rockets from Andenes, Norway, as part of the Middle Atmosphere Cooperation International Science Program.

The NASA launches are scheduled during the Summer In Northern Europe (SINE) campaign. Their launch window extends from July 6-19, 1987.

"The SINE campaign will study the general middle atmosphere circulation and temperature structure, as well as waves, turbulence and winds in high latitudes during summer solstice conditions," said Jay F. Brown, project manager, Goddard's Wallops Flight Facility, Wallops Island, VA.

"The U.S. experiments are part of a series of 64 meteorological rocket firings and ground-based observations by scientists from 12 countries including Australia, Canada, Czechoslovakia, Denmark, Finland, France, Norway, Russia, Sweden, United Kingdom, West Germany and the United States," Brown explained.

- more -

The four U.S. rockets will carry electron density probe experiments from Utah State University. The principal investigator is Dr. James C. Ulwick.

NASA will use single-stage Super Arcas rockets to carry the probes to an altitude of at least 59 miles (95 kilometers).

"These are high resolution probes that have the capability of looking at very small scale irregularities of electron density in the polar mesosphere," Ulwick said.

The study of electron density is important because of the problems it causes in communications.

These scientific experiments are part of the overall NASA Sounding Rocket Program which is managed at the Goddard Space Flight Center's Wallops Flight Facility in Virginia. The program consists of approximatley 40-45 sounding rocket launches a year from worldwide locations.

Manufactured by the Atlantic Research Corporation, the solid-propellant Super Arcas with their payloads are 4.5 inches in diameter and 105.5 inches in length.

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NASA News

National Aeronautics and
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For Release:
July 7, 1987

RELEASE NO. 87-21

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held at 1 p.m., Saturday, July 18 at the NASA Visitor Center, Wallops Island, Virginia. The scale models of past and present rockets, such as Mercury-Redstone and Space Shuttle, range from one to three feet in height and some reach flight altitudes of over 1,000 feet.

The public is invited to join in the event, which will last approximately 45 minutes, and model rocket enthusiasts are encouraged to bring their own rockets. Attendees are also advised to bring insect repellant.

Dates of future model rocket demonstrations are: August 1 and 15. All events begin at 1 p.m.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, about six miles from Route 13, and five miles west of Chincoteague, Virginia. The Center is free and open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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NASA News

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For Release:
July 15, 1987

RELEASE NO. 87-22

WALLOPS ROCKETS PROBE NIGHTTIME THUNDERSTORM

A sounding rocket experiment was conducted from the NASA Goddard Space Flight Center's Wallops Flight Facility at Wallops Island, Virginia, Tuesday, July 14, 1987, to study effects of lightning on the Earth's upper atmosphere.

These scientific missions are part of the overall NASA Sounding Rocket Program which is managed at Wallops. The program consists of approximately 40 to 45 sounding rockets a year that are launched from various worldwide locations.

The primary objective of this mission is to study how VLF radiowaves--emitted by the lightning flashes--propagate into the magnetosphere and cause high energy electrons to precipitate out into the upper atmosphere.

The two-stage Taurus-Orion rocket payload measured the energetic electrons and their effect on upper atmospheric electric fields and conductivity during a nearby thunderstorm. In addition a single-stage Super Loki Datasonde was launched a few minutes later to determine the meteorological characteristics in the upper atmosphere near the time of the other measurements.

The Taurus-Orion sounding rocket was launched at 9:55 p.m. EDT and the Super Loki Datasonde meterologoical rocket was launched at 10:23 p.m. EDT. Both are solid propellant rockets.

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The Taurus-Orion which lofted its 306-pound payload to a peak altitude of 110 statute miles also contained a water recovery system-using an eight-foot parachute with flotation bag, flashing strobe light and recovery beacon.

The search aircraft, the Wallops P-3, located the Taurus-Orion payload package Tuesday evening before 11:00 p.m., about 118 kilometers (64 nautical miles) offshore and the Coast Guard Cutter Point Holland out of Chincoteague accomplished recovery about noon EDT today.

The scientific payload was returned to the Wallops Flight Facility for refurbishment and future space flights.

The two rockets used in this series were the Taurus-Orion, 23 inches in diameter and 36 and 1/2 feet long; and the Super Loki Datasonde, 4 inches in diameter and 10 1/2 feet long (both including payload section).

A second series of similar experiments is scheduled later this month.

Dr. Richard Goldberg is the NASA/Goddard Space Flight Center principal investigator, Charles Manion is the Wallops payload manager and Dempsey Bruton is the project engineer for the experiments carried on board the Taurus-Orion. Other co-investigators include Dr. Les Hale, Penn State University; Dr. Jim Barcus, University of Denver; Carl Siefring, Cornell University, and Drs. K. Ogilvie and E. Sittler, Goddard Space Flight Center.

Frank Schmidlin is the principle investigator for the Super Loki Datasonde. Other Wallops project personnel are Robert Long, recovery director and John Parks, Range Safety Officer.

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For Release:
July 21, 1987

RELEASE NO. 87-23

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held at 1 p.m., Saturday, August 1 at the NASA Visitor Center, Wallops Island, Virginia. The scale models of past and present rockets, such as Mercury-Redstone and Space Shuttle, range from one to three feet in height and some reach flight altitudes of over 1,000 feet.

The public is invited to join in the event, which will last approximately 45 minutes, and model rocket enthusiasts are encouraged to bring their own rockets. Attendees are also advised to bring insect repellant.

Dates of future model rocket demonstrations are: August 15 and September 5. All events begin at 1 p.m.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, about six miles from Route 13, and five miles west of Chincoteague, Virginia. The Center is free and open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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For Release:
July 29, 1987

RELEASE NO. 87-24

NASA LAUNCHES ROCKETBORNE EXPERIMENT TO STUDY THE SUN

NASA launched a two-stage Nike-Black Brant VC sounding rocket carrying a University of Colorado solar physics experiment from the White Sands Missile Range, NM on July 27 at 11:27 a.m. MDT, according to officials at the Goddard Space Flight Center's Wallops Flight Facility.

The primary objective of this experiment was to use remote sensing to measure motions in the Sun's outer atmosphere. This experiment was also the first dedicated attempt to resolve the paradox of why the underlying layers of the Sun's outer corona show predominate motion downward when the outer corona is expanding outwards, according to University of Colorado Principal Investigator Dr. Gary Rottman.

To carry out the objectives, Colorado scientists have developed an extremely sensitive ultraviolet spectrograph having high spectroscopic resolution and stability. The basic data provided by this instrument are short selected sections of the solar spectrum obtained simultaneously with a multichannel detector consisting of 1024 channels.

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The spectrometer was evacuated prior to flight and then opened for observations during flight. The instrument appeared to open properly and the data is currently being studied at the University of Colorado, according to Rottman.

In the early 1960's, measurements from NASA spacecraft showed that the Sun's hot corona expands into interplanetary space causing a variable "solar wind" to blow past the Earth that strongly affects the Earth's magnetic field, upper atmosphere and space environment.

Previous flights of the University of Colorado rocket experiment succeeded in observing the regions directly on the Sun's surface where the outflow of the solar wind originates.

The two-stage, solid-propellant Nike-Black Brant VC is approximately 45 feet long and 17 inches in diameter. In additiion to the experiment, the sounding rocket carried a Solar Pointing Attitude Rocket Control System (SPARCS) on board.

The scientific payload weighed 518 pounds and was recovered from the desert for refurbishment and future flights.

Frank Lau is the NASA Wallops Project Manager for the experiment. University of Colorado personnel are Dr. Gary Rottman, Principal Investigator,and Rick Kohnert, Project Engineer. Carlos Martinez, Lockheed Missiles and Space Company/SPARCS is responsible for the attitude control system, and Richard Rakoff, also from Lockheed, is the mission coordinator.

This scientific mission is part of the overall NASA Sounding Rocket Program which is managed at Wallops. The program consists of approximately 40 to 45 sounding rockets a year that are launched from various world-wide locations.

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National Aeronautics and
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For Release:
July 29 1987

RELEASE NO. 87-25

NASA LAUNCHES PLASMA PHYSICS EXPERIMENTS FROM WALLOPS ISLAND, VIRGINIA

NASA successfully launched two suborbital rockets and three scientific balloons carrying plasma physics experiments on Sunday (July 26) and Monday (July 27) from the Goddard Space Flight Center's Wallops Island range in Virginia.

These experiments are part of the Wave Induced Particle Precipitation (WIPP) campaign, an integrated scientific effort involving sounding rockets, balloons, satellites and ground-based instrumentation.

Scientists from several universities and government agencies are conducting coordinated experiments during the campaign to study natural and manmade plasma waves and the resulting effects on the ionosphere. The primary source of the man-made waves was a Navy very low frequency transmitter, and the primary source of the natural waves was lightning.

Two balloon-borne payloads were launched at 4:53 p.m. and 6:01 p.m EDT Sunday, to study the effects thunderstorms and lightning have on the upper atmosphere, specifically the ionosphere. Drs. Ted Rosenberg of the University of Maryland and Robert Holzworth of the University of Washington are the principal investigators associated with the balloon launches. Dr. Rosenberg's payload included x-ray detectors for measuring wave induced electron precipatation bursts in the ionosphere. A photometer provided by Dr. George Parks of the University

- more -

of Washington was also part of the payload. Dr. Holzworth's payload measures the electric field and the electrical conductivity associated in and around a thunderstorm.

The Rosenberg package was flown on a three million cubic foot balloon at an altitude of 127,000 feet. Data were obtained for more than three hours prior. The Holzworth payload was launched on a 200,000 cubic foot balloon at an altitude of 103,000 feet. Data were recorded for five hours. Both payloads were tracked by ground-based telemetry systems.

Both payloads have been recovered and returned to Wallops. The Holzworth payload was recovered five miles north of Millers Tavern, VA (near Tappahannock) and the Rosenberg payload 15 miles southeast of Sprouses Corner, VA (central Virginia). A third balloon was launched Monday at 8:16 p.m. EDT. The three million-cubic feet balloon carried two payloads -- a second experiment for both Rosenberg and Holtzworth. Data period was in excess of four hours from an altitude of 124,000 feet.

The first rocket flight, a single-stage Orion rocket, was launched at 7:22 p.m. Sunday in conjunction with the two balloon flights. Dr. Les Hale of Pennsylvania State University was the project scientist and Dr. Jack Mitchell, co-investigator. The Orion payload measured electric fields, currents and conductivity above thunderstorms. The second rocket, a two-stage Taurus-Orion, was launched at 2:25 a.m. EDT Monday and a Super Loki Datasonde at 2:52 a.m. EDT. This datasonde determined the meteorological characteristics in the upper atmosphere near the time of the other measurements.

The primary objective of the Taurus-Orion mission was to study how very low frequency radio waves-emitted by the lightning flashes--propagate into the magnetosphere and cause high energy electrons to precipitate out into the upper atmosphere. This payload was recovered from the Atlantic Ocean and returned to the Wallops Flight Facility for refurbishment and future space flights.

The Taurus-Orion is 23 inches in diameter and 36 and 1/2 feet long; and the Orion is 14 inches in diameter and 16 feet long (both including payload section). The Taurus-Orion lofted its 306-pound payload to a peak altitude of 177 kilometers (110 statute miles), and the Orion carried its 90-pound payload to a peak altitude of 90 kilometers (56 statute miles.).

These scientific missions are part of the overall NASA Sounding Rocket Program which is managed at Wallops. The program consists of approximately 40 to 45 sounding rockets a year that are launched from various world-wide locations.

Other WIPP Campaign personnel include:
Dr. Umran Inan, Stanford University, coordinator of the WIPP Campaign and project scientist for gound-based experiments; Bill Burns, NASA GSFC/Wallops Flight Facility, operations manager for WIPP Campaign and project engineer for ground-based experiments; Debra Frostrom, NASA GSFC/Wallops Flight Facility, project engineer (balloons); Dempsey Bruton, NASA GSFC/Wallops Flight Facility, project engineer (rockets); Richard Bradford, NASA GSFC/Wallops Flight Facility, Project Manager (balloons); John Ingram, National Scientific Balloon Facility, launch director; Charles Manion, NASA GSFC/Wallops Flight Facility, payload manager (Taurus-Orion); Dave Moltedo, NASA GSFC/Wallops Flight Facility, payload manager (Orion); Mendel Silbert, NASA GSFC/Wallops Flight Facility, rocket payload manager; Dr. Jack Doolittle, Lockheed (ground-based photometer) Dr. Roger Arnoldy, University of New Hampshire (micropulsations); Dr. Paul Kintner, Cornell University (rocket VLF); and Dr. Paul Argo, Los Alamos Scientific Labs (ionosonde).

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For Release:
August 5, 1987

RELEASE NO. 87-26

NASA COMPLETES PROJECT WIPP CAMPAIGN AT WALLOPS ISLAND, VIRGINIA

NASA successfully launched the final WIPP Campaign balloon carrying a plasma physics experiment at 8:08 EDT Friday night, July 31, from Goddard Space Flight Center's range in Virginia, NASA officials reported today.

The balloon-borne experiment is part of the Wave Induced Particle Precipitation (WIPP) Campaign, a scientific effort involving sounding rockets, balloons, satellites and ground-based instrumentation.

During Project WIPP scientists from several universities and government agencies conducted coordinated experiments to study the role of natural and man-made disturbances in the radiation belt and the resulting effects on the ionosphere. The primary source of the man-made waves was a Navy very low frequency transmitter (VLF) and the primary source of the natural waves was lightning.

The Campaign window was from July 15 through August 3, 1987. Satellite and ground-based instrumentation were utilized to determine the potential for, and existence of, wave induced particle precipitation. When there was a high probability of the desired experimental conditions, the balloons were launched. The sounding rockets were scheduled when the required conditions actually existed.

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Ground-based instrumentation was located on the mainland. A Scientific Control Center (SCC) was established on the Main Base where all data was available for real-time evaluation by project scientists. Data transmission between the two sites was provided by the SPANDAR radar. The data acquired from the ground-based instrumentation was used in making GO/NO-GO decisions for the balloon and sounding rocket launches, as well as obtaining Campaign results. The ground- and balloon-based experiments were in cooperation with the National Science Foundation.

The WIPP Campaign launches began on Sunday, July 26 -- two balloons were launched at 4:53 p.m. and 6:01 p.m EDT, and an Orion rocket was launched at 7:22 p.m. EDT. A Taurus-Orion rocket was launched at 2:25 a.m. EDT on Monday, July 27 and a Super Loki Datasonde at 2:52 a.m. EDT. A third balloon was launched also on Monday at 8:16 p.m. EDT and two balloons on Tuesday, July 28 at 8:31 and 9:16 p.m. EDT, and a sixth balloon at 8:18 p.m. EDT on Thursday, July 30. The last rocket, a Terrier-Black Brant VC, was launched at 11:53 p.m. EDT, Thursday, July 30.

Purpose of the balloon-borne experiments is to study the effects thunderstorms and lightning have on the upper atmosphere, specifically the ionosphere. Two sizes of balloons were used -- 200,000 cubic feet and 3 million cubic feet balloons. The University of Washington experiments were carried on the smaller balloons and the University of Maryland experiments on the larger ones with payload weights about 95 and 150 pounds, respectively. These payloads were recovered and returned to Wallops.

The Orion rocket payload measured electric fields, currents and conductivity above thunderstorms. The primary objective of the Taurus-Orion mission was to study how very low frequency radio waves-emitted by the lightning flashes-propagate into the magnetosphere and cause high energy electrons to precipitate out into the

upper atmosphere. This payload was recovered from the Atlantic Ocean and returned to the Wallops Flight Facility for refurbishment and future space flights. The Super Loki Datasonde determined the meteorological characteristics in the upper atmosphere near the time of the other measurements.

The primary objective of the Terrier-Black Brant VC experiment was to measure electrons precipitated in the ionosphere by VLF waves generated either from lightning strokes (whistlers) or a Navy VLF transmitter. A secondary objective was a diagnostic experiment to investigate vehicle flight temperature profiles and plenum chamber performance characteristics.

The Terrier-Black Brant vehicle is about 44 feet long and 18 inches in diameter, the Taurus-Orion is 23 inches in diameter and 36 1/2 feet long, and the Orion is 14 inches in diameter and 16 feet long (all including payload section).

These scientific missions are part of the overall NASA Sounding Rocket Program which is managed at Wallops. The program consists of approximately 40 to 45 sounding rockets a year that are launched from various world-wide locations.

WIPP Campaign personnel include:
Dr. Umran Inan, Stanford University, Project Scientist for ground-based experiments
Dr. Paul Kintner, Cornell University, Project Scientist, Terrier-Black Brant VC experiment
Dr. Roger Arnoldy, University of New Hampshire, co-Scientist on Terrier-Black Brant
Dr. G. Parks, University of Washington, co-Scientist on Terrier-Black Brant
Dr. Robert Holzworth, University of Washington, co-Scientist on Terrier-Black Brant and Project Scientist on Balloons
Michael McCarthy, University of Washington, co-Scientist on Terrier-Black Brant
Phil Eberspeaker, GSFC/Wallops Flight Facility, T.A.P.E. Engineer
Mendel Silbert, GSFC/Wallops Flight Facility, Payload Manager, Terrier-Black Brant
William Burns, GSFC/Wallops Flight Facility, Project Engineer (overall & ground systems)
Debra Frostrom, GSFC/Wallops Flight Facility, Project Engineer (balloons)
Dempsey Bruton , GSFC/Wallops Flight Facility, Project Engineer (rockets)
Dr. Ted J. Rosenberg, U. of Maryland, Project Scientist, balloons
John Ingram, National Scientific Balloon Facility, launch director.

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NASA News

National Aeronautics and
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For Release:
August 3, 1987

Leon N. Perry
Headquarters, Washington, D.C.
(Phone: 202/453-1548)

James C. Elliott
Goddard Space Flight Center, Greenbelt, MD.
(Phone: 301/286-6256)

RELEASE NO. 87-27

NASA GODDARD SELECTS CONTRACTOR FOR NATIONAL BALLOON PROGRAM

NASA's Goddard Space Flight Center, Greenbelt, MD., has selected New Mexico State University's Physical Science Laboratory at Las Cruces, New Mexico, to negotiate a contract for the operation and support of the National Scientific Balloon Facility and for engineering support of NASA's balloon program.

The contract, expected to be effective October 1, will consist of a 3-year basic with two 1-year hard options. Additionally, a separate fixed-price, phase-in contract of 45 days will be negotiated.

The estimated cost for the basic 3-year option period is valued at $26.1 million. Costs for the two hard 1-year options are placed at $9.5 and $9.9 million respectively.

The contract covers operational support and quality control engineering at the National Scientific Balloon Facility, Palestine, Texas, and at remote sites around the world used by NASA to launch balloons, as well as for engineering

analysis and development in advanced balloon systems at Goddard's Wallops Flight Facility, Wallops Island, VA. It also calls for the contractor to possess an in-house engineering development and fabrication capability separate from Wallops Flight Facility and the National Scientific Balloon Facility.

In addition to New Mexico State University, other bidders included University Corporation for Atmospheric Research, Boulder, CO (incumbent); PRC Kentron, Hampton, VA; Computer Sciences Corporation, Falls Church, VA; The Bionetics Corporation, Hampton, VA; and Northron Services Inc., Glenn Dale, MD.

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For Release:
August 4, 1987

RELEASE NO. 87-28

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held at 1 p.m., Saturday, August 15 at the NASA Visitor Center, Wallops Island, Virginia. The scale models of past and present rockets, such as Mercury-Redstone and Space Shuttle, range from one to three feet in height and some reach flight altitudes of over 1,000 feet.

The public is invited to join in the event, which will last approximately 45 minutes, and model rocket enthusiasts are encouraged to bring their own rockets. Attendees are also advised to bring insect repellant.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, about six miles from Route 13, and five miles west of Chincoteague, Virginia. The Center is free and open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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For Release:

August 11, 1987

RELEASE NO. 87-29

NASA LAUNCHES ROCKETBORNE PLASMA PHYSICS EXPERIMENT FOR BOSTON UNIVERSITY

A two-stage sounding rocket carrying a scientific experiment to study upper atmosphere physics was launched Friday, August 7, at 11:02 a.m. EDT from the NASA GSFC/Wallops Island (VA) Flight Facility.

The rocketborne payload, known as Environmental Reactions Induced by Comets (ERIC), is part of a continuing space science research effort to address ionospheric/atmospheric studies. A single release of gaseous water, carbon dioxide, hydrogen, and particle matter (a "mini-comet-like" object) was used: first, to investigate the "UV (ultraviolet) holes" seen in Dynamics Explorer satellite images of the dayside Earth, and second, to make the first detailed investigation of a daytime "ionospheric hole". This particular type of investigation is called an "active experiment" in which the ionosphere (a region of the Earth's atmosphere containing ions and electrons) is modified artifically under tightly controlled and monitored conditions. In the ERIC experiment, the resulting changes are measured by cameras on the Polar BEAR and the Dynamics Explorer Satellites as well as by radio antennas on the ground at Wallops.

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According to Prof. Michael Mendillo, principal investigator from Boston University, "We are addressing two issues in the ERIC experiment -- one is to investigate the theory, proposed by scientists from the University of Iowa, that "small comets" impinging on the Earth's environment deposit a cloud of water vapor that absorbs or otherwise obscures the ultraviolet light normally scattered off the upper atmosphere. Project ERIC will conduct a small scale test of this hypothesis by releasing a "mini-comet" payload into the upper atmosphere just prior to two satellite-borne UV detector passes over the Wallops Island area."

"The second major objective of the ERIC experiment is the first comprehensive study of the formation and evolution of a daytime ionospheric hole. During the Spacelab-2 mission of July 1985 so-called ionospheric holes were created at night by small engine burns of the Space Shuttle Challenger which released exhaust clouds of water, carbon dioxide and hydrogen. The Wallops rocket payload released similar materials for an experiment during daytime when different results are expected."

During this experiment, at approximately three minutes 21 seconds after launch, when the rocket was at 268 km (166 miles) altitude, about 300 pounds of ammonium nitrate and fuel oil was detonated by command from ground control. A water vapor release was created by the detonation of this blasting agent which is a very stable commercial explosive (ANFO-HD) and presents no environmental hazards.

The data received from the satellites are expected to show whether the cloud of water vapor absorbed or otherwise obscured the ultraviolet light normally scattered off the upper atmosphere. The "ionospheric hole" produced will be diagnosed simultaneously by the ground-based radio antennas.

The gound-based observing methods included: an ionosonde from the Air Force Geophysics Lab located on Wallops Island and Boston University video systems mounted

on the roof of the Wallops Range Control Center on the Main Base and in the University's Observatory in Boston.

The two-stage, solid-propellant Nike-Black Brant VC is approximately 45 feet long and 17 inches in diameter. The scientific payload weighed 650 pounds.

NASA's Payload Manager at the GSFC/Wallops Flight Facility for the ERIC project is Anel Flores; Dempsey Bruton is the Project Engineer.

The scientific teams taking part in the program are:

(a) Boston University:

Prof. Michael Mendillo, Principal Investigator; Mr. JefferyBaumgardner; and Mr. Peter Sultan

(b) Millstone Hill Observatory Team:

Dr. John Foster, Dr. John Holt, Dr. David Tetenbaum and Mr. Robert Musgrove

(c) Air Force Geophysics Lab (AFGL) Polar BEAR Satellite and Ionosonde Team:

Dr. Robert Huffman, Dr. Richard Eastes, Mr. Francis Del Greco and Dr. Jurgen Buchau

(d) University of Iowa Dynamics Explorer Satellite Team:

Prof. Louis Frank, Dr. John Craven and Mr. John Sigwarth

(e) Franklin Research Center Payload Team (rocket payload):

Mr. Charlie Stokes and Mr. William Murphy

This mission is part of the overall NASA sounding rocket program which is managed at Wallops. This program consists of approximately 40-45 missions per year that are launched from world-wide locations.

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NASA News

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For Release:
August 14, 1987

Release No. 87-30

NASA LAUNCHES ROCKET-BORNE AIR FORCE IONOSPHERIC PHYSICS EXPERIMENT

A rocket-borne experiment to make precise measurements of the ionosphere was successfully conducted at 12:29 p.m. EDT today from NASA Goddard Space Flight Center's Wallops Island range in Virginia.

This suborbital experiment is part of the Air Force Geophysics Laboratory's (AFGL) Conductivity of the Lower D-Region (COLD R) Program. The primary objective is to measure the total conductivity of the atmosphere between 45 and 80 km (28 and 50 miles) altitude at a variety of latitudes under quiet and distrubed conditions in order to provide necessary data for theoretic models of VLF/ELF (very low frequency/extra low frequency) propagation processes.

Specifically, the experiment will measure the electron, positive ion, negative ion concentrations and mass distributions. This first flight will be a proof-of-concept test of a novel measurement technique; following flights will provide more refined measuring capabilities. AFGL plans to make eventual measurements from Greenland.

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The Nike-Orion sounding rocket was used to propell the experiment through the ionosphere. It is a solid-propellant, unguided rocket about 35 feet long and 14 inches in diameter. The scientific payload weighed 508 pounds at liftoff. Measurements were taken immediately prior to apogee (86 km) and during the parachuted descent phase until approximately 45 km.

AFGL principal investigator is Dr. John Ballenthin, AFGL systems manager is 2Lt Peter Hanlon, and NASA/Wallops project engineer is Debra Frostrom.

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NASA News

National Aeronautics and
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For Release:
August 18, 1987

RELEASE NO. 87-31

NASA LAUNCHES ROCKETBORNE SOLAR PHYSICS EXPERIMENTS FROM WHITE SANDS MISSILE RANGE, NEW MEXICO

A suborbital sounding rocket carrying scientific experiments to study the solar atmosphere was launched successfully by NASA from the White Sands Missile Range in New Mexico Saturday, August 15, 1987, at 1:25 p.m. EDT, according to officials at the Goddard Space Flight Center's Wallops Flight Facility in Virginia.

A part of a continuing solar astronomy program being conducted by NASA, the rocket carried an American Science and Engineering (A.S.&E.) experiment. The primary objective was to obtain high spatial resolution x-ray images of the solar corona. A series of full disk x-ray exposures was made through two broadband filters using photographic film to record the data.

The A.S.&E. instruments observed the high temperature material in the corona, which at this time in the solar cycle contains many small bright features called x-ray bright points. One of the questions the scientists are trying to answer is whether the ground-based and space observations of small scale solar structure are of the same or different phenomena. By correlating this data, scientists hope to increase our understanding of the source of coronal heating.

- more -

The A.S.&E. payload contained a Solar Pointing Attitude Rocket Control System (SPARCS) to orient the experiment for making the measurements.

The experiment was launched on a Black Brant IX rocket. The two-stage sounding rocket is 52 feet long and 18 inches in diameter. The payload which weighed 857 pounds contained a parachute recovery system and was recovered in good condition.

Project personnel include: Frank Lau and Don Paterson, both project managers for Wallops Flight Facility; Dr. Dan Moses, A.S.&E. principal investigator; and Dr. John Davis, NASA Marshall Space Flight Center A.S.&E. co-investigator.

This scientific mission is part of the overall NASA sounding rocket program which is managed at Wallops. The program consists of approximately 40 to 45 sounding rockets a year that are launched from various worldwide locations.

- end -

NASA News

National Aeronautics and
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For Release:
August 19, 1987

RELEASE NO. 87-32

PUBLIC LECTURE HIGHLIGHTING UNITED STATES' FUTURE SPACE MISSIONS PROGRAM

A public lecture on future space missions will highlight a special weeklong program on the United States' future in space August 27 through 31 at NASA's Wallops Flight Facility Visitor Center, Wallops Island, Va.

Dr. Stephen Paddack, Chief of the Advanced Missions Analysis Office at the NASA Goddard Space Flight Center, will give a 30-minute lecture geared towards the general public at 11 a.m. and 1 p.m. Thursday, August 27.

Paddack will discuss future space missions including the Hubble Space Telescope, the Upper Atmospheric Research Satellite (UARS), the Cosmic Background Explorer (COBE), and the Gamma Ray Observatory (GRO).

The Hubble Space Telescope will become a free-flying observatory when placed into orbit about 370 miles above the Earth by the Space Shuttle in the late 1980's. The telescope will improve our capabilities to observe celestial objects from the vantage point of space, giving us a clearer view and a capability to see very faint objects.

The UARS, planned for launch in the early 1990s, is a satellite designed to study the Earth's upper atmosphere physical and chemical processes and

- more -

provide a better understanding of weather, climate and the atmospheric effects of man-made pollutants.

The COBE, scheduled for launch in 1989, is a satellite which will investigate the "Big Bang" theory. Many astronomers believe the universe was formed by an explosion called the "Big Bang." COBE will study "cosmic background radiation" thought to remain from the explosion.

The Gamma Ray Observatory, also scheduled for launch in the 1990s, is designed to detect gamma rays, the most energetic form of radiation known. Information gathered from GRO will provide a better understanding of supernovas, pulsars, quasars and the character of the universe early in time.

Paddack has been with Goddard since 1961. His professional experience includes aeronautical and aerospace engineering, astrodynamics, scientific research in geophysics and planetology, and the project management of scientific spaceflight missions.

In his current position, Paddack studies, plans and analyzes future spaceflight missions at the Goddard Space Flight Center.

In addition to the public lectures, exhibits on the Space Station and space programs through the 1990s will be on display and the film "Pioneering the Space Frontier" will be shown daily on the hour.

The film gives an overview of the report issued by the Presidential National Commission on Space in 1986 which suggests space goals for the United States into the next century. Included in the film is a look at the National Aerospace Plane, the Space Station, development of a manned Moon base and manned and unmanned journeys to Mars.

The Visitor Center is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. It is located on Virginia Route 175 about six miles from Route 13 and five miles from Chincoteague, VA. Admission is free. For further information, please call (804) 824-1344.

- end -

NASA News

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For Release:
August 25, 1987

RELEASE NO. 87-33

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held at 1 p.m., Saturday, September 5 at the NASA Visitor Center, Wallops Island, Virginia. The scale models of past and present rockets, such as Mercury-Redstone and Space Shuttle, range from one to three feet in height and some reach flight altitudes of over 1,000 feet.

The public is invited to join in the event, which will last approximately 45 minutes, and model rocket enthusiasts are encouraged to bring their own rockets. Attendees are also advised to bring insect repellant.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, about six miles from Route 13, and five miles west of Chincoteague, Virginia. The Center is free and open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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NASA News

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For Release:
September 22, 1987

RELEASE NO. 87-34

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held at 1 p.m., Saturday, October 3 at the NASA Visitor Center, Wallops Island, Virginia. The scale models of past and present rockets, such as Mercury-Redstone and Space Shuttle, range from one to three feet in height and some reach flight altitudes of over 1,000 feet.

The public is invited to join in the event, which will last approximately 45 minutes, and model rocket enthusiasts are encouraged to bring their own rockets. Attendees are also advised to bring insect repellant.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, about six miles from Route 13, and five miles west of Chincoteague, Virginia. The Center is free and open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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NASA News

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For Release:
September 29, 1987

RELEASE NO. 87-35

NASA LAUNCHES ROCKETBORNE GALACTIC ASTRONOMY EXPERIMENT FROM WHITE SANDS MISSILE RANGE, NEW MEXICO

A suborbital sounding rocket carrying a scientific experiment to measure the density of helium in the interstellar medium (the extremely thin gas which fills the space between the stars), a measurement that has never been made before, was launched from White Sands Missile Range, New Mexico last night, according to officials at NASA's Goddard Space Flight Center, Greenbelt, Md.

A part of a continuing NASA study of our own Milky Way Galaxy, the rocket carried a university of California at Berkeley Telescope and an extreme ultraviolet spectrometer. Extreme ultraviolet radiation falls between visible light and the x-ray band and is strongly absorbed by the Earth's atmosphere; hence, any studies at these wavelengths must be carried out above the atmosphere.

The objective of the flight was to determine the density of helium in the interstellar medium and to compare this with the density of hydrogen in the same region. These two elements are the main components of the interstellar medium. Spectroscopic observations were made of a very hot star, the White Dwarf G191 B2B. According to Dr. Stuart Bowyer, principal investigator from

- more -

the University of California at Berkeley, "We know what the star is doing even though it is hundreds of light years away from us, and we are measuring the absorbing effects of the material between the star and our solar system. By carefully analyzing the character of the absorption, we can determine how much helium and hydrogen are present between the star and us."

The extreme ultraviolet spectrometer was launched aboard a NASA Nike Black Brant Sounding Rocket at 6:00 a.m. EDT today. The two-stage rocket is approximately 44 feet long and 17 inches in diameter. The 685-pound payload was recovered from the desert and will be refurbished for future experiments.

This scientific mission is part of the overall NASA sounding rocket program, which is managed by Goddard's Wallops Flight Facility, Wallops Island, VA. The program consists of approximately 40-45 sounding rockets a year that are launched from various worldwide locations.

In addition to Dr. Bowyer, the project team included: Jim Green, project scientist and graduate student at the University of California, and Dave Detwiler, Jr., NASA Goddard Wallops Flight Facility project manager.

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NASA News

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For Release:
October 2, 1987

RELEASE NO. 87-36

NASA AWARDS CONTRACT TO PURCHASE CANADIAN ROCKETS

NASA Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, Virginia, has awarded a $7.2 million contract to the Canadian Commercial Corporation, Ottawa, Ontario, Canada, for 50 Black Brant V sounding rocket motors and associated flight hardware.

The firm fixed-price contract, effective September 30, 1987, covers a three-year period and will be 100% subcontracted to Bristol Aerospace, Ltd., the rocket motor manufacturer.

The Black Brant rocket motors are utilized to configure various suborbital launch vehicles which constitute the sounding rocket family of 13 different launch vehicles used in NASA's suborbital research program. The NASA Sounding Rocket Program is managed by the Goddard Wallops Flight Facility and consists of approximately 40-45 missions a year from sites at a number of locations around the world.

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For Release:

October 8, 1987

RELEASE NO. 87-37

NASA GODDARD WALLOPS FLIGHT FACILITY AWARDS CONTRACT FOR NATIONAL BALLOON PROGRAM

NASA Goddard Space Flight Center's Wallops Flight Facility, Virginia, has awarded a $46.8 contract to the New Mexico State University, Physical Science Laboratory (PSL), located in Las Cruces, New Mexico, for the operation and maintenance of the National Scientific Balloon Facility (NSBF) and engineering support for the NASA Balloon Program.

The New Mexico State University was selected to negotiate the contract during July 1987. The contract covers management, personnel, materials, and other services as may by required at the NSBF, located in Palestine, Texas; providing technical and operational capability for balloon flight support at the NSBF, as well as semipermanent or temporary remote launch sites around the world; and providing engineering services at the NSBF and PSL to enhance that capability, and at Wallops to perform analysis and development of advanced projects in the NASA Balloon Research and Development (R&D) Program.

The award resulted from a Source Evaluation Board competetive process conducted by Wallops. The cost reimbursement contract began on October 1, 1987 and will operate for five years. The total contract is valued at approximately $46.8 million - the basic three-year period is valued at $26.6 million plus two one-year options at $9.6 million and $10.6 million, respectively.

- more -

The Wallops Flight Facility is responsible for managing NASA's suborbital programs, of which the balloon program is a part. Approximately 45 large scientific balloons are launched each year for the NASA Balloon Program. The balloons are made of thin polyethylene material about .8 mil thick and sizes range up to 30 million cubic feet in volume, when fully inflated at float altitude. Payloads up to 5,500 pounds can be accommodated by these balloons to altitudes of 130,000 feet, and flight durations may vary from a few hours to several days. The NASA Balloon Program offers unique capabilities and benefits to scientific research, according to NASA officials. Balloons provide a platform for measurements at altitudes and for lengths of time that are either impractical or impossible with satellites, sounding rockets and aircraft.

The NSBF has been in operation for approximately 25 years and NSBF personnel have conducted more than 2000 balloon flight operations at Palestine and at locations around the world. PSL has also been involved in scientific ballooning for many years, supporting the Air Force Geophysical Laboratory's ballooning activities as well as providing engineering and technical services to the NASA Balloon Program.

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NASA News

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For Release:
October 23, 1987

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RELEASE: 87-38

NASA TO CONTINUE SUPERNOVA STUDIES FROM AUSTRALIA AND NEW ZEALAND

Scientific studies of Supernova 1987a will be continued from Australia and New Zealand in the next few weeks, NASA officials announced in Washington today. Supernova 1987a is the brightest supernova since the invention of the telescope nearly 400 years ago.

"The studies, part of a continuing NASA campaign to investigate one of the most extraordinary astronomical events in modern times, will be carried out through a three dimensional effort. These studies will use sounding rockets, scientific balloons and one of NASA's research aircraft, a converted C141 jet cargo aircraft known as the Kuiper Airborne Observatory (KAO)," according to Guenter R. Riegler, supernova program manager at NASA Headquarters.

The purpose of the campaign is to develop a more thorough understanding of what happens following the explosion of a star. Supernova 1987a, which is 170,000 light years away -- a light year is 5,880,000,000,000 miles -- was discovered last Feb. 23 from observatories in the Southern Hemisphere. It is only visible in the Southern Hemisphere.

Shortly after the supernova's discovery, NASA's Astrophysics Division developed plans for a series of observations with instruments on existing satellites, as well as on rockets, balloons, aircraft and from the ground. The first balloon and airborne observations were made from Australia and New Zealand last May and June.

The three concurrent campaigns planned for October-November will include: a series of four balloon gamma-ray observations to search for signals from

-more-

the radioactive decay of heavy elements in the supernova; an x-ray and an ultraviolet observation of emission from the outer regions of the supernova; and infrared observation, from the research aircraft, of cool gas and dust in regions around the star and in the interstellar medium.

The four balloon launches will be conducted from Alice Springs, Australia, where activities will be supervised by Richard H. Bradford, of NASA's Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, Va. Bradford is NASA's Supernova 1987a balloon campaign manager. The launch window for the balloon flights opens Oct. 26 and closes Dec. 14.

NASA is planning two sounding rocket launches at Australia's Woomera Range, W. A. Brence, NASA's Supernova 1987a sounding rocket campaign manager, said the rocket team plans to launch its first payload on Nov. 12 and to launch its second payload on Nov. 18. Both payloads will be sent aloft on a Black Brant IX twostage, solid-fuel rocket.

The KAO will operate from Christchurch, New Zealand, according to Louis C. Haughney, NASA's KAO expedition manager. The four-engine jet is expected to arrive in New Zealand Nov. 2 and remain there until Nov. 28. Four teams of scientists will make two flights each on the aircraft for a total of eight flights.

Theoretical models predict emerging x-ray and gamma-ray emissions in late 1987 and early 1988. Hard x-ray emissions have, in fact, already been detected by both the Japanese Ginga satellite and German and Soviet instruments on the Soviet Mir space station.

"The instruments, which have been selected for the three observation campaigns, have unique capabilities which are not matched by any other observations," according to Riegler.

The sensitivity or gamma-ray line detection of the balloon instruments is up to a factor of 10, better than the only orbiting gamma-ray instrument which is on NASA's Solar Maximum Mission spacecraft, launched in 1980. The x-ray telescopes scheduled for November and subsequent rocket flights have higher spectral and spatial resolution than any other rocketborne or orbiting instruments.

The infrared spectrometers on the KAO are designed to cover the wavelength range from 4 microns to 200 microns, including important wavelength bands which cannot be observed from groundbased observatories.

The balloon payloads scheduled for the fall campaign include:

1. Gamma-ray telescope, with a rotating aperture mask, from the California Institute of Technology (Cal Tech) at Pasadena, Calif. Principal investigator is Dr. Thomas A. Prince, associate professor of Physics at Cal Tech.

2. A combined high-resolution gamma-ray and hard x-ray experiment from NASA's Marshall Space Flight Center, Huntsville, Ala., and the Lockheed Palo Alto Research Center, Palo Alto, Calif. Principal investigators are Dr. G. J. Fishman, of Marshall, and Dr. W. G. Sandie, of Lockheed.

3. A gamma-ray compton telescope to observe medium energy gamma rays from the University of California, Riverside. Principal investigators are Dr. R. S. White, Dr. A.O. Zych and Dr. O.T. Tumer, all from the Riverside campus.

4. A high-resolution gamma-ray detector from the Jet Propulsion Laboratory (JPL), Pasadena, Calif. Principal investigator is Dr. W.A. Mahoney of JPL.

The first sounding rocket flight, set for no earlier than Nov. 12, is designed to study x-ray emissions from the supernova. That mission will use a charged-coupled device imaging spectrometer and x-ray telescope. Dr. Gordon Garmire, Pennsylvania State University, is the principal investigator. Co-investigators are John A. Nousek and David N. Burrows from Penn State and Andy Collins and Guenter Riegler from JPL.

The second sounding rocket flight, scheduled for no earlier than Nov. 18, will observe supernova emissions in the 900-1240 Angstrom band, a band not covered by any other instrument in the campaign. The principal investigator is Dr. Webster Cash, University of Colorado, Boulder.

Subsequent series of sounding rocket launches might be scheduled for December if x-ray and ultraviolet emissions increase to significant levels.

The KAO provides a unique and regular opportunity for infrared astronomers to observe at altitudes above 95 percent of the atmosphere's water content. Water vapor is nearly opaque to infrared emissions in a key region of the spectrum associated with the supernova. To measure infrared energy, astronomers must use the KAO to fly above the obscuring portion of the atmosphere.

NASA has a number of agreements with the Australian Government to support scientific activities. This most recent agreement allows Goddard's Wallops Flight Facility to stage balloon missions from Alice Springs. The agreement was signed on Sept. 1, 1987. The U.S. Ambassador to Australia, Laurence Lane, and the Australian Minister for Science and Light Industry, Barry Jones, exchanged diplomatic notes which designate NASA and the Australian Department of Industry, Technology and Commerce as the cooperating agencies representing the governments. The agreement covers a 10-year period.

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NASA News

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For Release:
October 28, 1987

RELEASE NO. 87-39

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held at 1 p.m., Saturday, November 7, at the NASA Visitor Center, Wallops Island, Virginia. The scale models of past and present rockets, such as Mercury-Redstone and Space Shuttle, range from one to three feet in height and some reach flight altitudes of over 1,000 feet.

The public is invited to join in the event, which will last approximately 45 minutes, and model rocket enthusiasts are encouraged to bring their own rockets. Attendees are advised to bring insect repellant. The launch will be be cancelled if the winds exceed 20 mph.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, about six miles from Route 13, and five miles west of Chincoteague, Virginia. Admission is free and the Center is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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For Release:
October 29, 1987

RELEASE NO. 87-40

SUPERNOVA OBSERVATIONS BEGIN FROM AUSTRALIA

NASA and American scientists successfully launched the first of four balloon-borne investigations from Alice Springs, Australia, today in a three-dimensional campaign to study Supernova 1987a (SN 1987a), an exploding star 170,000 light years from Earth.

The 28.4 million cubic foot helium-filled balloon lifted up at 4:21 a.m. (EST) today and rose to 130,000 feet, carrying a 1500-pound scientific instrument package that might detect the first gamma ray line emissions from SN 1987a.

The payload, a joint effort of the Lockheed Palo Alto Research Center, Calif., and NASA's Marshall Space Flight Center (MSFC), Huntsville, Ala., is equipped with nine highly-advanced gamma ray and two large x-ray detectors. The principal investigators are Dr. William Sandie, Lockheed, and Gerald J. Fishman of MSFC.

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The Lockheed/MSFC scientists form one of four teams that will conduct NASA-sponsored experiments from Alice Springs between now and December.

Today's launch of the giant balloon was conducted by a team of specialists, led by project manager Bob Kubara from the National Scientific Balloon Facility, Palestine, Texas, which operates under a contract with Goddard's Wallops Flight Facility, Wallops Island, Va.

The favorable meteorological conditions of today's launch will allow the balloon to remain aloft for 20-40 hours, according to Richard H. Bradford, NASA's balloon campaign manager at Alice Springs.

The second balloon-borne experiment, from CalTech, Pasadena, Calif., was undergoing final ground checks at Alice Springs today. Bradford indicated that the CalTech payload, which also looks for gamma rays, probably will be launched either Oct. 31 or Nov. 1.

NASA also plans to launch x-ray and ultraviolet experiments on sounding rockets from Woomera, Australia, about 600 miles south of Alice Springs, and to conduct infrared experiments from NASA's Kuiper Airborne Observatory (KAO), a converted C-141 jet cargo plane, from Christchurch, New Zealand, in November.

The KAO is scheduled to arrive in New Zealand, November 2. Expedition manager Louis Haughney, of NASA'S Ames Research Center, Calif., has planned eight flights during the campaign, scheduled to end November 28.

Pennsylvania State University's sounding rocket experiment designed to search for x-ray emissions arrived at Woomera Oct. 28. Barring unforseen obstacles, it will be launched November 12, according to W. A. Brence, the sounding rocket campaign manager for NASA at Woomera.

The balloon, sounding rocket and airborne campaign is a continuation of a 2-year program to study SN 1987a, which began in May and ended in June. In April the KAO conducted observations of the supernova during flights from

Christchurch and scientists at Alice Springs launched three successful balloon missions. At that time, scientists verified theorical models which predicted x-rays and gamma rays still were being contained within the outer part of the star.

Since then, instruments aboard the Japanese satellite Ginga and aboard the Soviet space station Mir, have detected hard xrays from the supernova. As a result, scientists have theorized that gamma rays should begin to emerge from the supernova.

SN 1987a was discovered Feb. 23 this year from an observatory in Chile, with major confirmation from the Australian observatories at Siding Spring and Parkes and from NASA's International Ultraviolet Explorer satellite.

The investigations are being conducted in Australia and New Zealand because the supernova is only visible in the southern hemisphere.

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NASA News

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For Release:
November 4, 1987

RELEASE NO. 87-41

NASA HAS 25 SUCCESSFUL ROCKET LAUNCHES IN A ROW

From launch sites in Greenland and Norway and New Mexico and Virginia in the United States, NASA's Wallops Flight Facility, Wallops Island, VA. has a "25 for 25" record for suborbital rocket launches.

This string of 25 successful flights began March 21 at the Søndre Strømfjord, Greenland launch site with the flight of a Taurus-Tomahawk sounding rocket carrying a plasma physics research payload for Clemson University.

Four other rocket-borne experiments were launched from Greenland during March, concluding a successful international scientific campaign to investigate the complex interactions between the solar wind and the Earth's atmosphere in the polar cap region where brilliant aurora (northern Lights) occur.

During this seven-month period, upper atmosphere, solar physics and galactic astronomy experiments were also conducted. The suborbital rockets used to loft these experiments ranged from single stage to three stage vehicles.

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The vehicles included the Super Arcas, Nike-Tomahawk, Nike-Black Brant V, Orion, Nike-Orion, Taurus-Orion, Taurus Tomahawk, Black Brant IX, and Taurus-Nike-Tomahawk.

The principal investigators involved in this space research are from universities and industry as well as NASA. Included are Clemson University, University of Illinois, Cornell University, Utah State University, Penn State University, University of Colorado, University of New Hampshire, Boston University, University of California/Berkeley, Stanford University, American Science and Engineering, Inc., and NASA Goddard Space Flight Center.

The last six rockets in the series of 25 were launched from the Andoya Rocket Range in Andenes, Norway as part of the Middle Atmosphere Cooperation International Science Program (MAC Epsilon Campaign). This campaign which started October 15, 1987, is studying middle atmosphere turbulence using instrumented sounding rockets and meteorological rockets in conjunction with groundbased radar measurements. Countries participatig included Norway, Sweden, United Kingdom, West Germany, Czechoslovakia, the Soviet Union and the United States.

Upcoming rocket-borne experiments are scheduled to be conducted from Woomera, Australia, to study Supernova 1987a, the brightest supernova since the invention of the telescope nearly 400 years ago.

The "Sounding Rocket Program" is a very active part of NASA's space science program managed by the Goddard/Wallops Flight Facility in Virginia. This program uses low-cost, sub-orbital vehicles to place scientific instruments in space for brief but often highly productive time intervals. The Sounding Rocket Program currently supports approximately 40-45 launches each year. Approximately 2500 missions have been conducted since 1959 with an 86% mis-

sion success rate for that period; and an 89% mission success rate was achieved for over 200 missions in the past five years. The program is, by design, a low cost, quick response activity as compared to Agency orbital missions. The program makes use of surplus military rocket motors and has had a 97% vehicle success rate for the last five years.

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For Release:
November 9, 1987

RELEASE NO. 87-42

NASA SUBORBITAL ROCKET OBTAINS SPECTACULAR SOLAR DATA

A suborbital sounding rocket carrying a scientific experiment to study the Sun's coronal regions with unique x-ray optical systems was successfully launched from White Sands Missile Range, New Mexico on Friday, October 23, 1987, according to officials at NASA's Goddard Space Flight Center's Wallops Flight Facility in Virginia.

This instrument uses multilayer coated optics to enable x-ray reflection at near normal incidence and to provide narrow band energy discrimination. Since multilayer coated optics is a relatively new technology, a primary goal of this experiment was to demonstrate the ability of multilayer optics to provide greatly improved imaging in the soft x-ray regime compared to more conventional techniques.

In addition to the multilayer cassegrain telescope, the payload contained a more conventional grazing incidence telescope and also utilized multilayer mirrors to magnify and improve the images produced by the grazing incidence telescope at selected narrow bandpasses in the soft x-ray and extreme ultraviolet regions. These high resolution images were produced on a new tabular grain photographic emulsion (similar to T-Max 100) provided by Eastman Kodak.

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The payload obtained images at several distinct wavelengths from 8A to 250A, corresponding to solar plasma temperatures of 8 million K to 50,000 K. High resolution solar images such as these will allow a better understanding of the structure and dynamics of the sun.

The telescope was launched aboard a NASA Nike Black-Brant VC sounding rocket at 12:05 p.m. MDT (2:05 p.m. EDT). The two-stage, solid-propellant rocket is approximately 45 feet long, and 17 inches in diameter. The 600-pound payload was recovered from the top of a 8,000-ft. mountain peak called North Oscura.

The project team included Professor Arthur B. C. Walker, Jr., Stanford University, Principal Investigator; Richard Hoover, NASA Marshall Space Flight Center, cooperating scientist; Joakim Lindblom, Stanford University, cooperating scientist; Dr. Troy Barbee, Jr. Lawrence Livermore Laboratory, cooperating scientist and Donald Paterson, NASA/GSFC/Wallops Flight Facility, payload manager.

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National Aeronautics and Space Administration

GSFC/**Wallops Flight Facility**
Wallops Island, Virginia 23337

For Release: November 1987

Photo No.:

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DESCRIPTION OF ENCLOSED 173 A

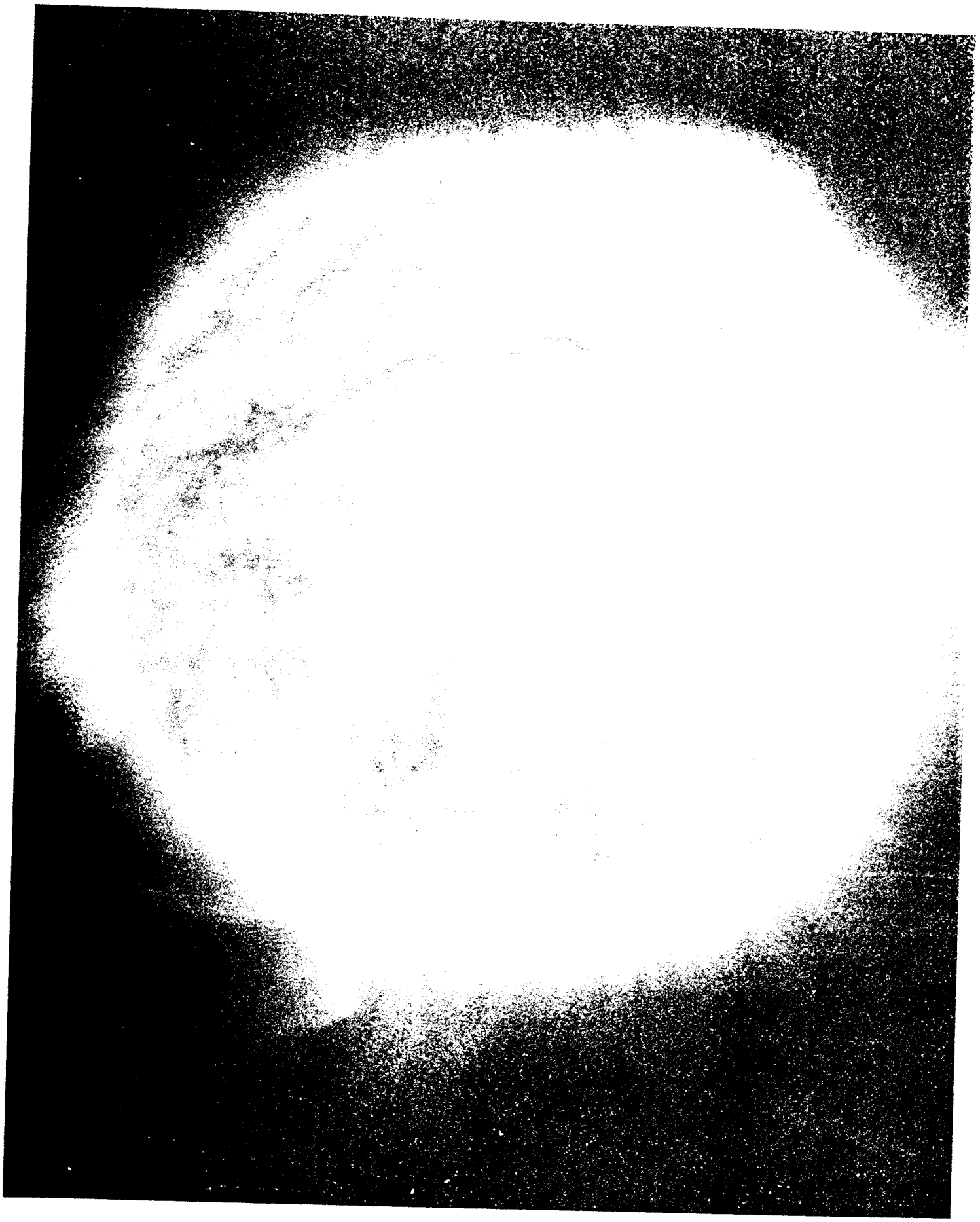
IMAGE OF THE SUN:

Stanford/MSFC Rocket X-4ay Telescope
Flight 27.093, Oct. 23, 1987, 18:08 UT

Prof. A. B. C. Walker, Jr.
Richard B. Hoover
Joakim F. Lindblom
Troy W. Barbee, Jr.

First high resolution x-ray image of the Sun taken with a cassegrain multilayer x-ray telescope operating at normal incidence. This image was recorded on a special Kodak T-Grain emulsion produced for high sensitivity in the soft x-ray/XUV spectral region. Exposure time was 64 seconds. This image shows the sun at one million degrees centigrade.

PHOTO CREDIT: NASA or National Aeronautics and Space Administration



NASA News

National Aeronautics and
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For Release:
November 12, 1987

Michael Braukus
Office of Public Affairs
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RELEASE NO. 87-43

NASA CONDUCTS ROCKETBORNE EXPERIMENTS FROM NORWAY

During mid-October, NASA began a five-week international sounding rocket campaign from the Andoya Rocket Range in Andenes, Norway as part of the Middle Atmosphere Cooperation International Science Program (MAC EPSILON Campaign) officials at Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, Virginia, announced today.

Eight sounding rockets and eight meteorological rockets carrying upper atmosphere and plasma physics experiments were launched successfully by NASA during this campaign, according to Larry J. Early, Chief of the Sounding Rocket and Balloon Projects Office at Wallops.

The campaign studied middle atmosphere turbulence by using instrumented sounding rockets and meteorological rockets in conjunction with ground-based radar measurements. It was a joint North American/European/Asian campaign. Countries participating included Norway, Sweden, United Kingdom, West Germany, Czechoslovakia, the Soviet Union and the United States.

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"A better knowledge of turbulence in this region of the atmosphere is important because it may pose a hazard to Space Shuttle reentry, as well as to reentries made by the aerospace plane and aero-assisted orbital transfer vehicles," according to Professor Sidney Bowhill, principal investigator for the experiments conducted by the University of Illinois.

The principal objective of the NASA launches was the investigation of small-scale turbulence in the region from 30 to 75 miles (50-120 kilometers) above the Earth. There also was a study of a reflecting layer of the upper atmosphere (mesophere) between 30 and 50 miles (50 and 80 kilometers) as well as measurements of electron activities above 60 miles (100 kilometers). Meteorological falling spheres were launched before and after each launch sequence to determine mesopheric density, temperature and wind profiles. A falling sphere is a three-foot inflatable metallic balloon which can be tracked on radar.

NASA sounding rockets were launched with European sounding rockets in three different salvos, two during nighttime and one during daytime, plus a single night launch. Each salvo included four or five sounding rockets and seven meteorological rockets. One major NASA rocket was launched independently of the salvos.

The scientific aims of the campaign required the observations to be concentrated in time and space which meant the sounding rockets in each salvo had to be launched nearly simultaneously. The meteorological rockets were launched in a time sequence before and after the main salvos.

The NASA rockets included five two-stage Nike Orions, three single stage Orions and eight stretched Super Loki vehicles with falling sphere payloads. An Orion, a Nike-Orion and two Super Lokis were launched on October 15; an Orion, two Nike-Orions and two Super Lokis on October 21; one Nike Orion and two Super Lokis on October 28 and an Orion, a Nike-Orion and two Super Lokis on November 12, 1987.

In addition to the 16 rockets, Wallops transported an expandable telemetry van, four telemetry antennas, two rocket launchers, a C-band radar unit and power converters to Norway.

U.S. scientific personnel included: Professor Sidney Bowhill, principal investigator, University of Illinois; Dr. Leslie Hale, principal investigator, with co-investigators Dr. John Mitchell and Dr. Charles Croskey, Pennsylvania State University; Dr. Richard Goldberg, principal investigator, with Dr. Fred Herrero, co-investigator, NASA Goddard Space Flight Center; Dr. James Barcus, co-investigator, University of Denver; and Frank Schmidlin, project scientist for meteorology, NASA Goddard/Wallops Flight Facility.

The Wallops project engineer was Debra Frostrom. David Kotsifakis, Geoffrey Bland, and Dave Moltedo were Wallops payload managers.

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NASA News

National Aeronautics and
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For Release:
November 16, 1987

RELEASE NO. 87-44

NASA WALLOPS TO CONDUCT PUBLIC TOURS OF RESEARCH FACILITIES

The general public will be able to get a closer look at the operations of the NASA Wallops Flight Facility, Wallops Island, VA., through weekday tours offered during December by the NASA/WFF Visitor Center.

The free public tours will be conducted at 10:30 a.m. and 12:30 and 2:30 p.m. every Monday, Thursday and Friday during December. The tours will include an overview of the history and current operations of the Flight Facility as well as a drive-by of the Facility's launch complex.

Other areas of the Facility which may be visited, depending on research projects in progress, include the range control center, the aeronautics hangar and the sounding rocket payload fabrication, assembly and testing sections. Each tour will last 90 minutes maximum.

Tours will be limited to a maximum of 11 people. Therefore, reservations should be made at least five days in advance by calling the Visitor Center at (804) 824-2298 or 8124-1344.

Admission is free and the Wallops Flight Facility's NASA Visitor Center is open to the public from 10 a.m. to 4 p.m. Thursday through Monday except

- more -

Thanksgiving, Christmas and New Year's Day. It is located on Virginia Route 175 about six miles from Route 13 and five miles from Chincoteague, VA. The Visitor Center is only 50 minutes from Salisbury, MD and 90 minutes from the Chesapeake Bay Bridge-Tunnel.

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Part of NASA's Goddard Space Flight Center, Wallops is a special facility for suborbital aeronautical and space research. Wallops' rockets, balloons and aircraft provide relatively simple, flexible and inexpensive methods of conducting scientific research. A NASA launch range and research airfield are operated as part of the facility.

Located on Virginia's Eastern Shore, the facility consists of three parcels of land -- Wallops Island, the Mainland across from the island, and the Main Base -- covering over 6,000 acres.

One of the oldest launch facilities in the world, the first research rocket launch from Wallops was conducted on July 4, 1945. In the early days, the research aim was to obtain aerodynamic data at very high speeds as part of the effort to penetrate the sound barrier.

The focus of the research at Wallops has changed with the evolution of aerospace research. Today, Wallops' flight vehicles carry experiments through which scientists worldwide are gaining an understanding of phenomena related to Earth and its space environment.

The suborbital rockets launched by Wallops personnel are part of NASA's Sounding Rocket Program. These rocket vehicles, which range in length from 6 to over 40 feet, fly near vertical trajectories carrying scientific instruments to altitudes of 30 to several hundred miles.

Under the NASA Sounding Rocket Program, which is managed by Wallops, 40 to 45 of these solid-fuel rockets are launched each year at Wallops and at sites around the world. High reliability, low cost and payload recovery and reuse are just a few of the features that make sounding rockets very useful in scientific investigations.

The Wallops Flight Facility also manages the NASA Balloon Program, which includes the management of the National Scientific Balloon Facility in Palestine, Texas.

Scientific balloons can carry payloads up to 30 miles altitude. The material used in these balloons is a thin plastic, similar in thickness to a garment bag. When fully inflated, the balloons can expand to nearly 600 feet in diameter (large enough to hold a football field) with a volume of more than 50 million cubic feet.

These helium-filled balloons can carry payloads of 6,000 pounds for flights lasting up to 40 hours. From 40 to 45 scientific launches are conducted each year for the balloon program.

Wallops operates several aircraft that are used in a variety of programs. These aircraft are flying scientific platforms that allow scientists to conduct low altitude research focusing on Earth resources and ocean and atmospheric conditions.

A variety of NASA aeronautical research programs are supported by Wallops' research airport facility which is the only airport totally owned by NASA that controls its adjoining airspace. These programs include airport terminal area research, runway traction and water ingestion studies, aircraft noise abatement studies and general aviation stall/spin experiments.

Wallops is one of NASA's satellite tracking stations. In this capacity, it provides tracking and data acquisition activities for spacecraft and satellites in addition to rocket, balloon and aeronautical projects.

Earth and ocean physics, ocean biological, and atmospheric science field experiments; satellite and correlative measurements; and developmental projects for new remote sensor systems are planned and conducted by Wallops personnel. The main thrust of this effort is by the Laboratory for Oceans program under NASA-Goddard.

Nearly 900 dedicated Wallops personnel from across the Delmarva Peninsula support these quality programs, a valuable part of the United States aerospace research.

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Photographs are available to accompany this news release by calling the Public Affairs Office at (804) 824-1579 or 1548.

Range Control Center WI-83-192-11
Aerial View of Wallops Main Base WI-87-401-12
Aerial View of Wallops Island WI-81-401-18
Sounding rocket launch WI-83-325
Balloon Launch WI-79-159-4
Satellite tracking system WI-87-295-18

NASA News

National Aeronautics and
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For Release:
November 18, 1987

RELEASE NO. 87-45

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held at 1 p.m., Saturday, December 5, at the NASA Visitor Center, Wallops Island, Virginia. The scale models of past and present rockets, such as Mercury-Redstone and Space Shuttle, range from one to three feet in height and some reach flight altitudes of over 1,000 feet.

The public is invited to join in the event, which will last approximately 45 minutes, and model rocket enthusiasts are encouraged to bring their own rockets. Attendees are advised to bring insect repellant. The launch will be be cancelled if the winds exceed 20 mph or the temperature is below 40° F.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, about six miles from Route 13, and five miles west of Chincoteague, Virginia. Admission is free and the Center is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. For further information, please call (804) 824-1344.

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NASA News

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For Release:
November 23, 1987

RELEASE NO. 87-46

U.S./AUSTRALIAN TEAM LAUNCHES FIRST SUPERNOVA CAMPAIGN ROCKET

A team of U.S. and Australian scientists and technicians at Woomera, Australia, successfully launched a sounding rocket-borne x-ray experiment, in a three-dimensional effort, to study Supernova 1987A (SN1987A) -- an exploding star.

The x-ray detector experiment, launched by NASA's Goddard/Wallops Flight Facility, Wallops Island, VA, team at 9:10 a.m. EST, Saturday, November 14, was recovered in a desolate area 114 miles from Woomera after a 14-minute flight. According to research scientists at the site, the instrument operated normally and preliminary analysis is underway. Detailed analysis of the data should be completed within the next few months.

W. A. Brence, NASA's sounding rocket campaign manager at Woomera, said a second rocket launch, with instrumentation to study ultraviolet emissions, is planned for later in the week. The last of the rocket launches is scheduled for November 23.

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A second NASA-sponsored balloon mission also was launched from Alice Springs, Australia. The payload is a gamma ray experiment from the California Institute of Technology in Pasadena, California. Flight time is expected to be approximately 10-14 hours.

The third phase of NASA's three-part SN1987A campaign, the Kuiper Airborne Observatory (KAO), is operating from Christchurch, New Zealand, under the direction of NASA's Ames Research Center, Mountain View, California. The KAO, a modified U.S. Air Force C-141 jet transport, is scheduled to fly eight missions between November 2 and 28 for the detection of any infrared emissions from SN1987A.

The November 14 solid-fueled Black Brant X rocket launch is the first of three rocket launches planned by NASA from the Woomera range and the second from the Woomera range in 8 years. A German rocket, also studying SN1987A, was launched there in August. NASA previously launched sounding rockets from Woomera between 1961 and 1977. The current launches are the first under a 10-year U.S./Australian agreement signed last September.

SN1987A was discovered February 23, 1987, from an observatory in Chile. Major confirmation of the discovery came from the Australian observatories at Siding Spring and Parkes, as well as from the International Ultraviolet Explorer spacecraft managed for NASA by Goddard.

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NASA News

National Aeronautics and
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For Release:
December 9, 1987

Carter Dove
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-5566)

RELEASE NO. 87-47

GODDARD LAUNCHES EXPERIMENTS TO STUDY EXPLODING STAR

In what could be termed a virtual scientific "saturation" effort, NASA is continuing to conduct a three-phased campaign -- including balloon and sounding rocket missions managed by the Goddard/Wallops Flight Facility (WFF) -- to observe the century's most significant astronomical event: Supernova 1987A, an exploding star.

SN1987A -- discovered February 23 this year in a nearby galaxy, the Large Magellanic Cloud-- is 170,000 light years from Earth. (A light year is the distance that light travels at 186,000 miles per second).

From balloon facilities at Alice Springs and rocket facilities at Woomera, Australia, Wallops teams launched three balloons and three rocket missions - six in all-- to observe the remnants of the exploding star with gamma, x-ray and ultraviolet experiments.

- more -

In the first launch, October 29, the 28.4 million cubic foot, helium-filled balloon lifted experiments -- a joint payload of the Lockheed Palo Alto Research Center, CA and the NASA/Marshall Space Flight Center, AL -- to an altitude of 130,000 feet. The balloon was aloft for 43 hours, 9 minutes.

On November 14, the first of the rocket launches carried an x-ray experiment from Pennsylvania State University, PA on a successful 14-minute flight. The second launch on November 18 suffered rocket attitude control system (ACS) and experiment malfunctions which voided its ultraviolet observations.

However, the same day at Alice Springs the balloon team successfully launched a 3000-pound experiment from the California Institute of Technology, Pasadena, to observe gamma radiation produced by the exploding star. The payload of this second balloon launch landed 320 miles west of Alice Springs, near Lake Mackay.

The final sounding rocket in the fall campaign was successfully launched on December 4. It carried an x-ray experiment for Columbia University, NY.

On December 6, the last balloon was launched with the Jet Propulsion Laboratory's gamma-ray experiment on board. The 29.47 million cubic foot balloon carried a 2,000-pound payload and had a suspended weight of 3,000-pounds. It was airborne for 12 hours 3 minutes and landed 500 nautical miles west of Alice Springs.

NASA's balloon campaign manager at Alice Springs is Richard H. Bradford of WFF. The rocket campaign manager at Woomera is W. A. Brence, also of WFF.

The third part of NASA's three-dimensional SN1987A effort, the Juiper Airborne Observatory (KAO), was scheduled to fly eight missions from Christchurch, New Zealand during November 2-28 under the direction of NASA/Ames Research Center,

CA. The KAO, a modified U.S. Air Force C-141 jet transport, observed SN1987A in the infrared spectrum.

The balloon, sounding rocket and airborne campaign is a continuation of a two-year program to study SN 1987A. Last May and June, the KAO conducted a number of studies out of Christchurch, and scientists at Alice Springs launched three successful balloon missions.

At that time, scientists were able to collect little information because the x- and gamma rays still were being contained within the outer part of the star. Since that time, instruments aboard the Japanese satellite, Ginga, and aboard the Soviet space station, MIR, have detected hard x-rays. As a result, scientists have theorized that gamma rays should start to escape at any time.

NASA's supernova campaign in Australia will resume in 1988 with balloon launches in January and sounding rocket launches in February.

The current investigations by NASA of SN 1987A are being conducted in Australia and New Zealand because the exploding star is only visible in the southern hemisphere.

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NASA News

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For Release:

December 11, 1987

RELEASE NO. 87-48

NASA LAUNCHES ROCKETBORNE SOLAR PHYSICS EXPERIMENTS FROM WHITE SANDS MISSILE RANGE, NEW MEXICO

Two suborbital sounding rockets carrying scientific experiments to study the solar atmosphere were launched successfully by NASA from the White Sands Missile Range in New Mexico today at 1:15 p.m. EDT and 1:45 p.m. EDT, according to officials at the Goddard Space Flight Center's Wallops Flight Facility in Virginia.

A part of a continuing solar astronomy program being conducted by NASA, the joint rocketborne experiments carried American Science and Engineering (A.S.&E.) and Naval Research Laboratory (NRL) experiments. The primary objective was to map the Sun and its atmosphere with near simultaneous observations at different wavelengths to see if there is a correlation between features observed in soft x-rays and in ultraviolet light.

The fine structure of the underlying low temperature layers of the solar atmosphere is well-known from visible light ground-based observations.

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However, high temperature phenomena, like the upper atmosphere transition zone and corona, are not accessible to the ground-based observer because the associated radiation is absorbed by the Earth's atmosphere. The observation of the fine structures of these layers is cosidered fundamental to understanding the dynamics of the solar atmosphere. The NRL instruments make measurements in the layer of the solar atmosphere located above the photosphere (the visible surface of the Sun) where the temperature increases rapidly to a million degrees. In this layer they observe material which is moving upward and outward from the solar surface into the hot corona at very high velocities.

The A.S.&E. instruments observe the high temperature material in the corona, which at this time in the solar cycle contains may small bright features called x-ray bright points. One of the questions the scientists are trying to answer is whether these two observations are of the same or different phenomena. By correlating the data from the two flights, scientists hope to make a step in our understanding of the source of coronal heating.

The comparison of highly dynamic features in the transition zone with x-ray emission in the corona is of fundamental interest to astrophysics because there is speculation that x-rays on the Sun are produced in a magnetohydrodyanamic process where changing magnetic fields generate electrical fields which accelerate electrons and protons to high enough energies to produce x-rays. Such a process must be responsible for the generation of x-rays not only in the solar corona, but also in flares, stellar coronae, cosmic rays and such exotic objects as remnants of supernovae.

The A.S.&E. flight was conducted first, with the NRL launch following in 30 minutes. Each of the payloads contained a Solar Pointing Attitude Rocket Control System (SPARCS) to orient the experiments for making their measurements.

Both experiments were launched on Black Brant IX rockets. These two-stage sounding rockets are 52 feet long and 18 inches in diameter. The payloads weighed 857 pounds and 885 pounds, respectively. Both payloads contained parachute recovery systems and were recovered in good condition.

Ground-based observations were made from Kitt Peak Observatory, Tucson, AZ; Big Bear Observatory, Pasadena, CA; Sacramento Peak Observatory, Sunspot, NM; the MSFC Solar Magnetograph Facility; and the Very Large Array, Socorro, NM.

Project personnel include: Frank Lau and Don Paterson, both project managers for Wallops Flight Facility; Dr. Dan Moses, A.S.&E. principal investigator; Dr. John Davis, NASA Marshall Space Flight Center A.S.&E. co-investigator; Dr. Guenter Brueckner, NRL principal investigator; and Dr. John-David Bartoe, NRL Project Scientist.

These scientific missions are part of the overall NASA sounding rocket program which is managed at Wallops. The program consists of approximately 40 to 45 sounding rockets a year that are launched from various worldwide locations.

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For Release:
December 21, 1987

RELEASE NO. 87-49

NASA VISITOR CENTER HOLDING MODEL ROCKET LAUNCH

A model rocket demonstration will be held at 1 p.m., Saturday, January 2, at the NASA Visitor Center, Wallops Island, Virginia. The scale models of past and present rockets, such as Mercury-Redstone and Space Shuttle, range from one to three feet in height and some reach flight altitudes of over 1,000 feet.

The public is invited to join in the event, which will last approximately 45 minutes, and model rocket enthusiasts are encouraged to bring their own rockets. The launch will be be cancelled if the winds exceed 18 mph or the temperature is below 40° F.

The Wallops Flight Facility's NASA Visitor Center is located on Route 175, about six miles from Route 13, and five miles west of Chincoteague, Virginia. Admission is free and the Center is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. It will be closed January 1 and 18. For further information, please call (804) 824-1344.

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For Release:
December 21, 1987

RELEASE NO. 87-50

NASA WALLOPS TO CONDUCT PUBLIC TOURS OF RESEARCH FACILITIES

The general public will be able to get a closer look at the operations of the NASA Wallops Flight Facility, Wallops Island, VA., through weekday tours offered during January by the NASA Visitor Center.

The free public tours will be conducted at 10:30 a.m. and 12:30 and 2:30 p.m. Thursday through Monday during January, except January 1, 2, and 18. The tours will include an overview of the history and current operations of the Flight Facility as well as a drive-by of the Facility's launch complex.

Other areas of the Facility which may be visited, depending on research projects in progress, include the range control center, the aeronautics hangar and the sounding rocket payload fabrication, assembly and testing sections. Each tour will last 90 minutes maximum.

Tours will be limited to a maximum of 11 people. Therefore, reservations should be made at least five days in advance by calling the Visitor Center at (804) 824-2298 or 824-1344.

Admission is free and the Wallops Flight Facility's NASA Visitor Center is open to the public from 10 a.m. to 4 p.m. Thursday through Monday. The

- more -

Center will be closed, January 1 and 18. It is located on Virginia Route 175 about six miles from Route 13 and five miles from Chincoteague, VA. The Visitor Center is only 50 minutes from Salisbury, MD and 90 minutes from the Chesapeake Bay Bridge-Tunnel.

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