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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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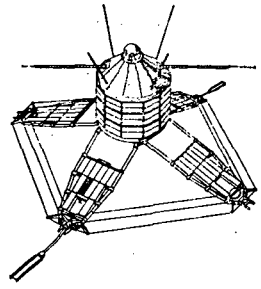

PROJECT: UK-4

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FOR RELEASE:

FRIDAY AMs
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BRITISH SATELLITE TO BE LAUNCHED

The National Aeronautics and Space Administration (NASA) will launch the fourth satellite in a cooperative program with the Science Research Council of the United Kingdom on a four-stage Scout rocket no earlier than Nov. 29 from the Western Test Range, Lompoc, Calif.

The British satellite will be called Ariel 4 after orbit is achieved. Weighing 99.6 kilograms (220 pounds), it will carry five scientific experiments provided by four British groups and for the first time in this series, an American experiment, from the University of Iowa.

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November

The region in which the satellite will operate -- the upper reaches of the Earth's ionosphere -- is where complex interactions between the plasma (an ionized gas), charged particle streams and electromagnetic waves occur. A better understanding of these complex mechanisms could lead to greater insights into apparently related phenomena occurring closer to Earth.

Data obtained from the UK-4 satellite should greatly expand our knowledge of the environment of the Earth's upper ionosphere especially when magnetic storms occur. Some of the observations to be made by its instruments involve the little-understood intense bands of radio noise found in this region and their relation to incoming charged particles.

The sensing instruments onboard the satellite will permit detailed correlative studies to be made of these phenomena on a global scale. In addition, special emphasis will also be placed on the study of the development of wave and particle events during magnetic storms and resultant changes in the magnetic field. A similar objective was part of the Ariel 3 mission. Only a few magnetic storms were observed, however. It is impossible to conduct such experiments on Earth because the large-scale phenomena cannot be reproduced in the laboratory. It is expected that observations of magnetic storms by UK-4 will be almost twice as numerous as those made by Ariel 3.

The five scientific experiments on the satellite are designed to study radio noise, low frequency radio waves, measure the temperature of electrons, and count low-energy charged particles.

The orbit planned for UK-4 is circular, 550 kilometers (about 340 statute miles) above the Earth with an inclination of 83 degrees to the equator. It will circle the Earth once every 96 minutes if the planned orbit is achieved. Its expected operational lifetime is at least one year.

The agreement between the Science Research Council and NASA for the fourth satellite in the UK-series cooperative program was signed in February 1969. It extended the fruitful cooperation developed in the Ariels 1, 2, and 3 satellite projects, and the "mutual interest in carrying out a fourth joint satellite project for peaceful scientific purposes."

Under the agreement, responsibilities of each agency were defined. The Science Research Council is responsible for:

* Designing, constructing, testing and transporting to the launch site the flight-qualified satellite and spare parts of critical subsystems and experiments;

* Integrating into the satellite a U.S. charged particles experiment;

* Supplementing NASA's tracking and data acquisition services with UK tracking and data acquisition facilities, as needed;

* Reducing and analyzing the scientific data received, participating with the U.S. investigators in comparison of data, and publishing results as soon as practicable.

NASA responsibilities include:

* The charged particles experiment;

* The Scout launch rocket and conduct of the launching;

* Heat shield and satellite tie-down and separation mechanisms;

* Tracking and data acquisition support services and data exchange.

The nine-year UK-US cooperative program commenced with the launching of the 59.7-kilogram (132-pound) Ariel 1 April 26, 1962, from Cape Kennedy, Fla. Ariel 1 was the first international satellite, and its six experiments carried out pioneering studies of the constituents of the ionosphere. It stopped transmitting Nov. 9, 1964.

Ariel 2, weighing 74.7 kilograms (165 pounds), was launched from Wallops Island, Va., March 27, 1964. Its basic mission, using three special sensors, was to measure the vertical distribution of ozone, study galactic radio noise and measure micrometeoroids from an elliptical orbit. It operated until November 1964.

Ariel 3, was launched into orbit from the Western Test Range on May 5, 1967. Weighing 90 kilograms (200 pounds), it carried five experiments designed to measure the vertical distribution of molecular oxygen in the Earth's atmosphere, map large-scale radio frequency noise sources, measure ionization density and temperature in the upper ionosphere, investigate very low frequency radiation and terrestrial radio noise. Its orbit ranged from a high point of about 595 kilometers (370 statute miles) to a low point of 489 kilometers (304 statute miles). It re-entered the Earth's atmosphere Dec. 14, 1970.

Once in its 83-degree, near-polar orbit, Ariel 4, will be tracked by the worldwide network of Space Tracking and Data Acquisition (STADAN) stations operated by the NASA Goddard Space Flight Center, Greenbelt, Md. United Kingdom tracking stations will augment STADAN operation.

After evaluation by the principal investigators and publication of major findings in the open literature, the scientific results from Ariel 4 will be deposited in the National Space Science Data Center, Greenbelt, Md., for use by the world scientific community.

Management of the U.S. portions of the joint program is directed by the Office of Space Science and Applications, NASA Headquarters. The Goddard Space Flight Center is responsible for satellite project management. The Scout launch rocket is managed for NASA by the Langley Research Center, Hampton, Va. The rocket is built by Ling-Temco-Vought, Aerospace Corp., Dallas, Tex.

(END OF GENERAL RELEASE: BACKGROUND INFORMATION FOLLOWS)

THE UK-4 SATELLITE

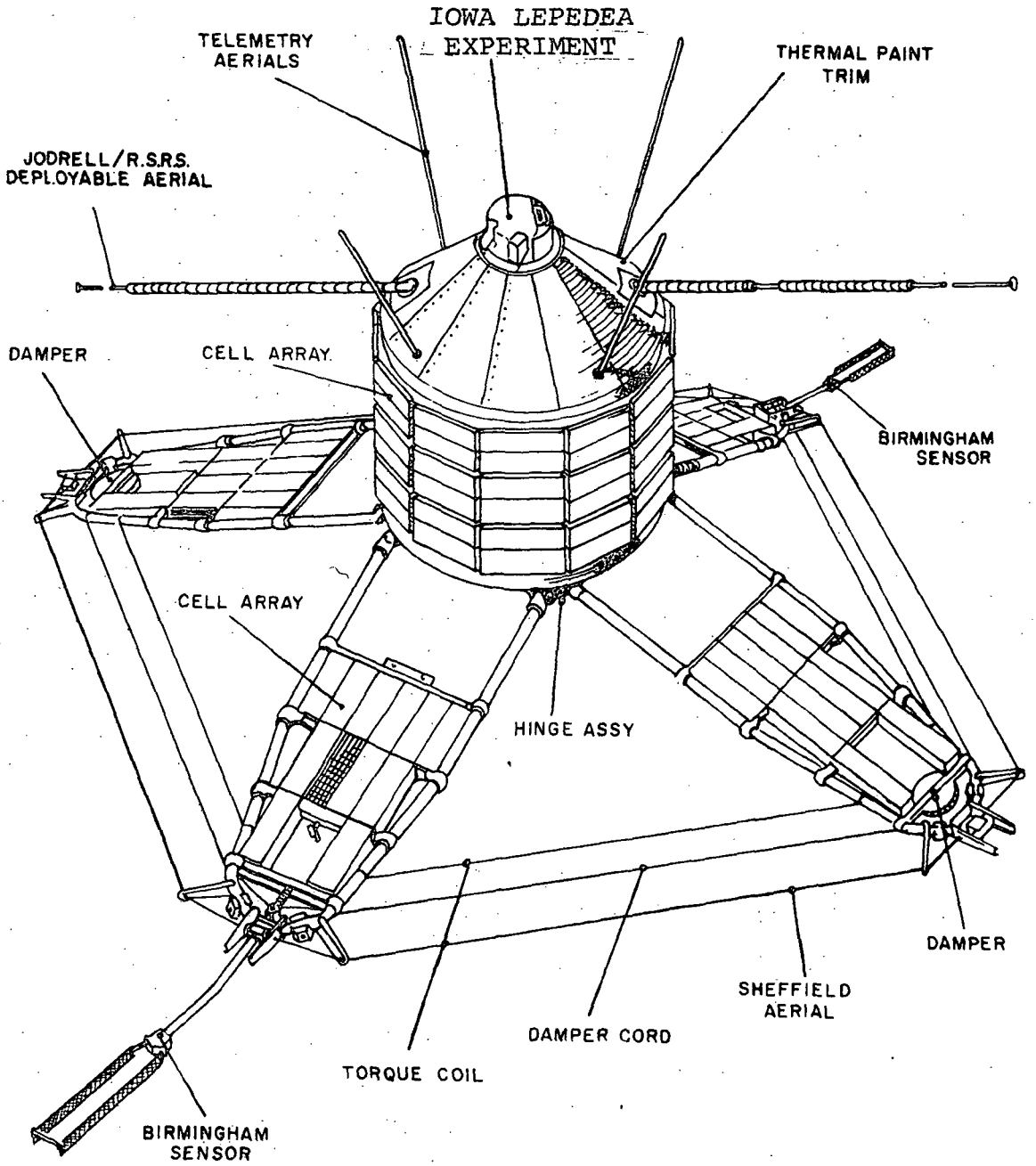
The 99.6-kilogram (220-pound) British-built UK-4 satellite structure is physically practically identical to Ariel 3.

Its shape is cylindrical with a conical top structure. It has six major subsystems: structure, attitude control, solar-cell arrays, power supply, data handling, and radio frequency subsystem for telemetry and command functions. The main structure is made from fabricated aluminum alloy.

Four solar-cell arrays, folded during the launch phase, protrude from the main body of the satellite. Four short antennas are affixed to its conical top, and two slim, long booms are extended from the conical structure, after orbit is achieved.

Its space battery system consists of 12 ceramic nickel-cadmium cells.

The data handling system consists of a high speed encoder, a low speed encoder and tape recorders, a programmer, and a command pulse conditioner. This system is identical to that flown on Ariel 3. Telemetry transmissions will operate in the 136 to 138 MegaHertz (MHz) band.



ARTIST'S CONCEPT
UNITED KINGDOM RESEARCH SATELLITE
(UK-4)

UK-4 EXPERIMENTS AND INVESTIGATORS

1. Radio Noise Measurements. Provided by Jodrell Bank Observatory of the University of Manchester (Prof. F. G. Smith) in collaboration with the Science Research Council's Radio and Space Research Station. A set of receivers measures galactic noise in the MHz bands using two 6-meter (19.6-foot) monopoleantennae located in the conical portion of the satellite which are deployed after orbit is achieved.

2. Electron Density and Temperature Measurements. Provided by Birmingham University with Prof. J. Sayers as the principal investigator. The instrumentation is an improved version of the electron density and temperature sensor flown on Ariel 3.

3. Very Low Frequency/Extremely Low Frequency (VLF/ELF) Emission Measurements. Provided by Sheffield University, with Dr. K. Bullough, as principal investigator, is an improved version of a similar experiment carried onboard Ariel 3. Its range has been increased by the addition of additional receivers to cover a wider portion of the spectrum.

4. Very Low Frequency Impulse Measurements. Provided jointly by Sheffield University and the Science Research Council, the device employs an impulse counter to count VLF impulses. It uses the same receivers as the VLF/ELF experiment.

5. Low-Energy Charged Particle Measurements. Provided by the University of Iowa, with Dr. L. A. Frank as principal investigator, the Low Energy Proton and Electron Differential Energy Analyzer (LEPEDEA) is designed to measure the energy of protons and electrons in the energy range of from five electron volts to 50,000 electron volts, and their temporal and angular distribution. It employs an array of electrostatis analyzers, two analyzers each for proton and electron intensities and a series of continuous channel multipliers.

SCOUT LAUNCH VEHICLE

Scout is NASA's only solid propellant launch vehicle with orbital capacity. The first development Scout was launched July 1, 1960. The UK-4 mission will be the 78th Scout launch. Since the Scout was recertified in 1963, the launch vehicle has attained a 94 per cent success record.

Scout is a four-stage solid propellant rocket system. The launch vehicle and the spacecraft will be set on an initial launch azimuth of 90 degrees.

The four Scout motors -- Algol II, Castor II, Antares II, and Altair III -- are interlocked with transition sections that contain guidance, control, ignition, and instrumentation systems, separation mechanisms, and the spin motors needed to stabilize the fourth stage. Control is achieved by aerodynamic surfaces, jet vanes and hydrogen peroxide jets.

The launch vehicle is approximately 22.25 meters (73 feet) long and weighs about 17,144 kilograms (38,000 pounds) at liftoff.

The Scout Program is managed by NASA's Langley Research Center, Hampton, Va. The launch vehicle is built by LTV Aerospace Corp., Dallas, Tex.

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SEQUENCE OF EVENTS

Event	Time (sec.)
Liftoff	0.00
First stage burnout	80.08
Second stage ignition	81.91
Second stage burnout	120.91
Third stage ignition	143.43
Third stage burnout	180.11
Spin-up	543.24
Third stage separation	544.7
Fourth stage ignition	549.59
Payload separation	874.74

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UK-4 KEY PERSONNEL

UNITED KINGDOM SCIENCE RESEARCH COUNCIL

Program Manager - John F. Smith
Project Scientist - Robert Dalziel
Spacecraft Project Manager - Ron Maurice

NASA HEADQUARTERS

Program Manager - Raymond Miller
Program Scientist - Dr. Erwin Schmerling
Scout Program Manager - Paul Goozh

NASA GODDARD SPACE FLIGHT CENTER

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Project Scientist - Dr. George E. Pieper
Project Coordinator - Wilbur C. Nyberg
Missions Operations Systems Manager - William F. Mack
Resident Business Manager - Curtis E. Cullison

NASA LANGLEY RESEARCH CENTER

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Assistant Head, Scout Project Office - Samuel J. Ailer
Operations Engineer - Rodney L. Duncan
Electrical Systems - Ralph P. Parks
Mechanical Systems - Grover C. Collie
Control Systems - W. Lee Sullivan
Payload Coordinator - Joseph B. Talbot

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