NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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PROJECT: ESRO-1B

P R E S S K I T

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NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (202) 962-4155
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FOURTH ESRO SATELLITE TO BE LAUNCHED

A 176-pound satellite carrying eight experiments to study the polar ionosphere, the Northern Lights and related phenomena, is scheduled to be launched by a four-stage Scout rocket from the Western Test Range, Calif., no earlier than Oct. 1, 1969.

Called ESRO-1B, the European designed and built satellite is the fourth in a cooperative program between the European Space Research Organization (ESRO) and the National Aeronautics and Space Administration (NASA).

The program is carried out under terms of an agreement signed by the two organizations in December 1966, relating to providing ESRO with launching and associated services.

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ESRO-1B is a duplicate or backup version of ESRO I-Aurorae, a cooperative ESRO/NASA project, which was successfully launched into a highly elliptical near polar orbit by NASA on October 3, 1968, and is still operating.

The same complement of eight experiments--a series of high-latitude particle detectors, auroral photometers, and Langmuir probes--is being carried on board ESRO-1B.

The experiments were provided by the Technical University of Denmark; Kiruna Geophysical Observatory, Sweden; the Radio and Space Research Station, Slough, England; the University of Oslo, Norway; the University of Bergen, Norway; the Norwegian Defense Research Establishment; and the University College, London, England.

The orbit planned for ESRO-1B is near-polar, inclined 86 degrees to the Equator, with an apogee of 435 kilometers (about 270 statute miles) and a perigee of 400 kilometers (about 248 statute miles). Orbit period will be 92 minutes.

Scientific measurements made by the ESRO-1B will be concentrated over Northern Europe to enable correlation between ground-based polar ionosphere observations and measurements made simultaneously with sounding rockets launched from the ESRO launch site at Kiruna, Sweden.

Once injected into orbit, the ESRO-1B will be de-spun by means of a yo-yo system to about 1 RPM. Final stabilization will occur about 10 days after launch when the spacecraft locks onto the Earth's magnetic field. This stabilization is achieved by means of a pair of magnets inside the satellite. To minimize oscillations, slender magnetic rods are also mounted inside the satellite.

Like its predecessor, ESRO-1B was built by the Laboratoire Central de Telecommunications, Paris, France in association with Contraves A.G., Zurich, and Bell Telephone Manufacturing Company, Antwerp, under the direction of the European Space Technology Center (ESTEC), located at Noordwijk, Holland.

The satellite will be tracked and interrogated by the European Satellite Tracking, Telemetry and Telecommand Network (ESTRACK). Tracking assistance will be provided by NASA's world-wide Space Tracking and Data Acquisition Network (STADAN) operated by the Goddard Space Flight Center, and by the Centre National Etudes Spatiales (CNES), in France.

ESRO is a ten-nation-member organization consisting of Belgium, Denmark, France, the Federal Republic of Germany, Italy, the Netherlands, Spain, Sweden, Switzerland, and the United Kingdom. Its headquarters is located in Paris.

This will be the fourth satellite launched in the ESRO program. ESRO-IIA, designed to measure solar and cosmic radiation was launched from the Western Test Range on May 29, 1967. However a failure of the Scout rocket occurred during the launch phase and the satellite did not achieve orbit.

ESRO-IIB, a backup to ESRO-IIA, was successfully launched from the Western Test Range on May 17, 1968, and as indicated, ESRO I was launched last year.

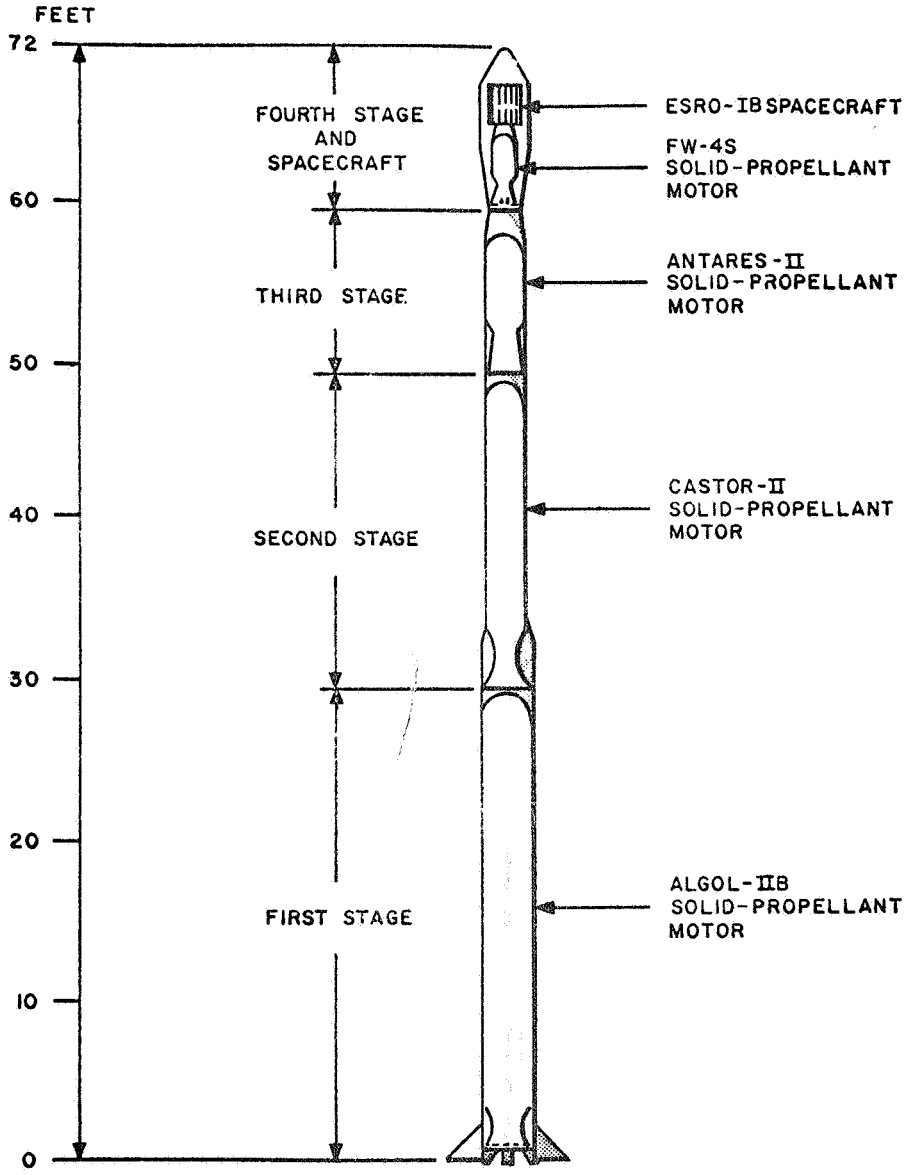
The third spacecraft in the series, HEOS A-1, was launched from Cape Kennedy, Fla., by a Delta rocket on December 5, 1968. Its mission is to study the Earth's magnetic field from a highly elliptical orbit ranging up to 139,000 miles above the Earth.

Joint NASA/ESRO projects are directed by the Office of Space Science and Applications, and the Office of International Affairs, NASA Headquarters, Washington, D.C.

The NASA Goddard Space Flight Center, Greenbelt, Md., is charged with coordinating the project for NASA.

The NASA Kennedy Space Center, Western Test Range, Calif., will provide the launching services in coordination with the Scout project office of NASA's Langley Research Center, Hampton, Va. The Scout rocket is built by Ling-Temco-Vought, Inc., Dallas, Texas.

(END OF GENERAL RELEASE: BACKGROUND INFORMATION FOLLOWS)



Scout Launch Vehicle

LAUNCH VEHICLE

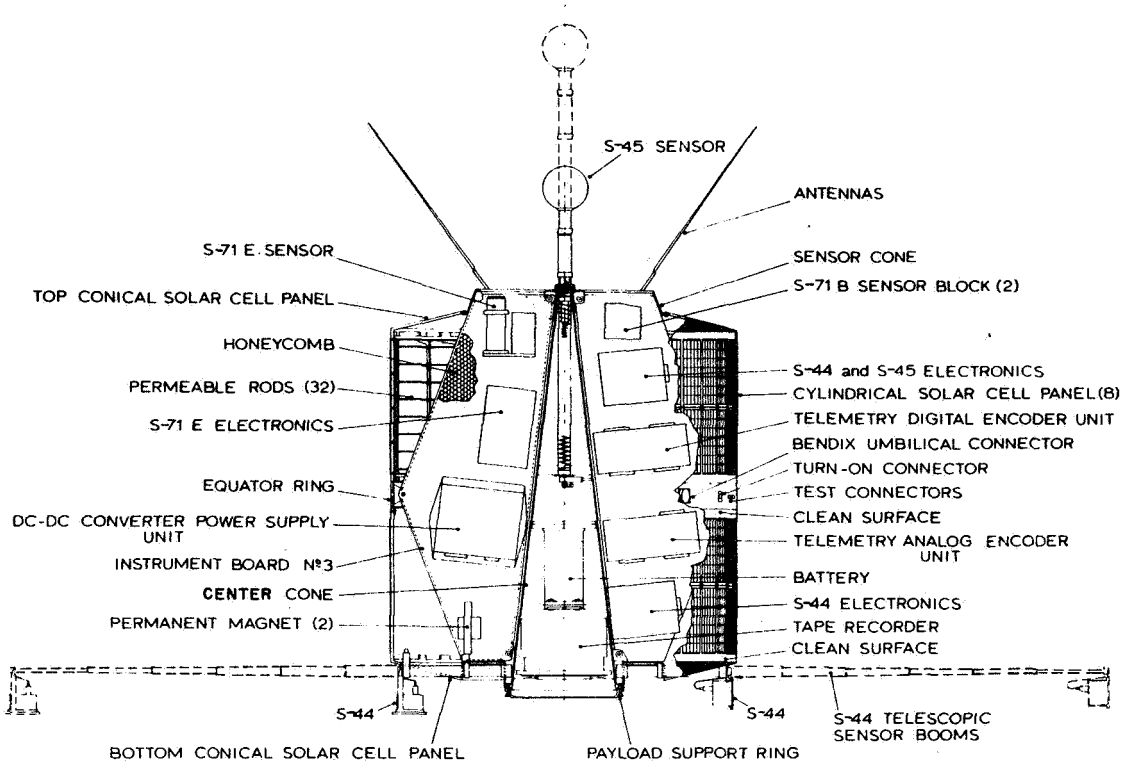
Scout is a four-stage solid fuel rocket system. Scout S-172 and the ESRO 1B spacecraft will be set on an initial launch azimuth of 177.216 degrees to obtain a retrograde orbit. The Scout program is managed by NASA's Langley Research Center, Hampton, Va.

The four Scout motors, Algol, Castor, Antares, and FW-4S are interlocked with transition sections that contain guidance, control, ignition, instrumentation system, separation mechanics, and the spin motors needed to stabilize the fourth stage.

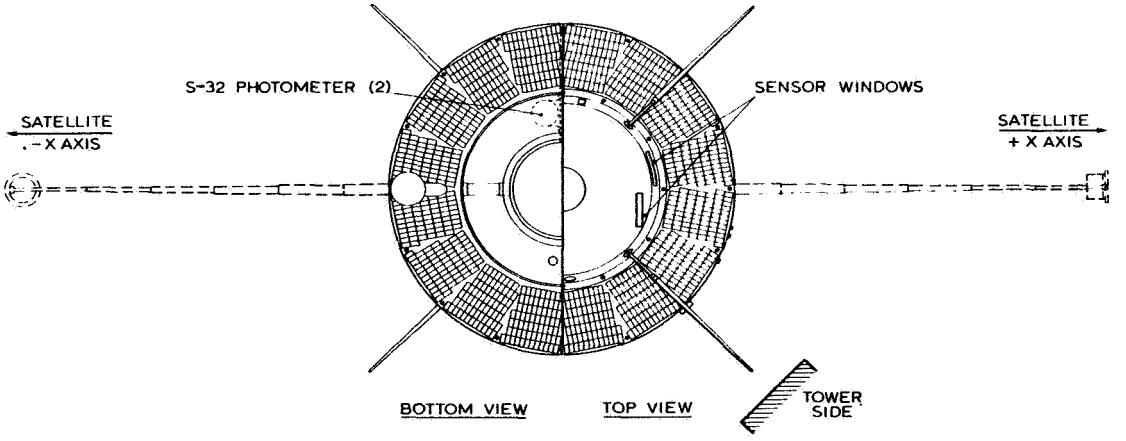
Guidance for Scout is provided by an autopilot and control achieved by a combination of aerodynamic surfaces, jet vanes and hydrogen peroxide jets. The launch vehicle is approximately 73 feet long and weighs about 40,000 pounds at liftoff.

Flight Sequence

Event	Time (seconds)
Liftoff	-
First stage burnout	76.6
Second stage ignition	77.64
Second stage burnout	117.11
Third stage ignition	177.11
Third stage burnout	213.01
Spin-up	434.11
Third stage separation	435.61
Fourth stage ignition	440.11
Fourth stage burnout & orbital injection	474.35



TYPICAL SECTION (SATELLITE X AXIS)



ESRO-IB Spacecraft Configuration

ESRO-IB FACT SHEET

Launch Window:	30-minute window which changes only slightly from day to day. The window opens at 3:29 p.m., (PDT), October 1, 1969.	
Launch Site:	Western Test Range, Lompoc, California, Pad SLC-5.	
Launch Vehicle:	Four-stage solid fuel Scout rocket.	
Orbit:	Apogee:	435 km (about 270 statute miles)
	Perigee:	400 km (about 248 statute miles)
	Period:	92 minutes
	Inclination:	86 degrees
Stabilization:	Spacecraft is spin stabilized at about 148 rpm initially. Despun to one rpm by yo-yo mechanism and further despun by magnetic system which interacts with Earth's magnetic field. Stabilization thereafter will be provided by a passive system consisting of two permanent magnets.	
Spacecraft:	Weight:	176 pounds
	Structure:	Cylindrical body with truncated cones at each end. Overall height is 153 cm. (about 60 inches) and diameter is 76 cm. (about 30 inches).
	Appendages:	One experiment boom one-half meter (about 20 inches) long extending along the spin axis from top of spacecraft.
		Two experiment booms each one meter (about 39 inches) long extending from bottom of spacecraft perpendicular to spin axis.
		Four telemetry antennas extend- from top rim of spacecraft.

Power: 6,990 solar cells mounted on spacecraft surface supply an average of 23 watts to operate the spacecraft systems and to keep the battery (16-cell, three ampere-hour unit) charged.

Telemetry: (Low-Speed Data System) - This system has a low-power transmitter with an output of two-tenths of a watt in the 136.170 megahertz frequency range for continuous data transmission.
(High-Speed Data System) - This system uses a high-power transmitter with an output of one and two-tenths watts in the 136.950 mhz frequency range for high-speed, real-time, transmission. The system also will transmit data stored by the spacecraft's single tape recorder during one orbit (about 100 minutes). Playback time for this recorder is three minutes.

Spacecraft Control: Primary control of the ESRO-IB spacecraft is maintained at the European Space Operations Centre's (ESOC) control center in Darmstadt, Germany.

Tracking: The satellite will be tracked by the Redu, Belgium, station of ESRO's European Satellite Tracking and Telecommand Network (ESTRACK) as well as the Pretoria, South Africa station of the French Centre National d'Etudes Spatiales (CNES). NASA's worldwide Space Tracking and Data Acquisition Network (STADAN) will provide additional tracking support.

Data Acquisition: Scientific and spacecraft performance data will be acquired from the ESRO-IB by the following stations:

ESTRACK- Fairbanks, Alaska; Port Stanley, Falkland Islands; Redu, Belgium; and Ny-Alesund, Spitsbergen.

CNES- Pretoria, South Africa; Brazzaville, Congo; and Ouagadougou, Upper Volta.

Norway- Station at Tromso, Norway.

STADAN- Available stations will support ESRO-I. STADAN stations at Fort Myers, Florida; and Rosman, N.C., will relay spacecraft data in real-time to the Goddard Space Flight Center, Greenbelt, Md., during satellite's initial week in orbit.

ESRO PROGRAM PARTICIPANTS

European Space Research Organization

Professor Hermann Bondi	Director General, ESRO
Professor Werner Kleen	Director, European Space Research and Technology Center (ESTEC) Noordwijk, The Netherlands
Pierre Blassel	Deputy Director ESTEC, and Director, Satellites and Sounding Rocket Department, ESTEC
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John Plevin	Assistant Project Manager, ESTEC
Dr. Rudolph Jaeschke	ESRO I-B Project Scientist of the Space Science Department ESTEC, Noordwijk, The Netherlands

National Aeronautics and Space Administration

Herbert L. Eaker	ESRO-1B Project Coordinator Goddard Space Flight Center
H. L. Hoff	Tracking Scientist, Goddard
John R. Holtz	Explorers & Sounding Rockets Program Manager, NASA Headquarters
Paul E. Goozh	Scout Program Manager NASA Headquarters
Roland D. English	Head, Scout Project Office Langley Research Center
Joseph Talbot	Scout Payload Coordinator Langley

KSC, Unmanned Launch Operations - Western Test Range

William D. Hinshaw	Head, Langley Mission Support Office, WTR
Henry R. Van Goey	Manager, KSC, ULO, WTROD
C. R. Fuentes	KSC, ULO, WTROD - ESRO-18 Coordinator

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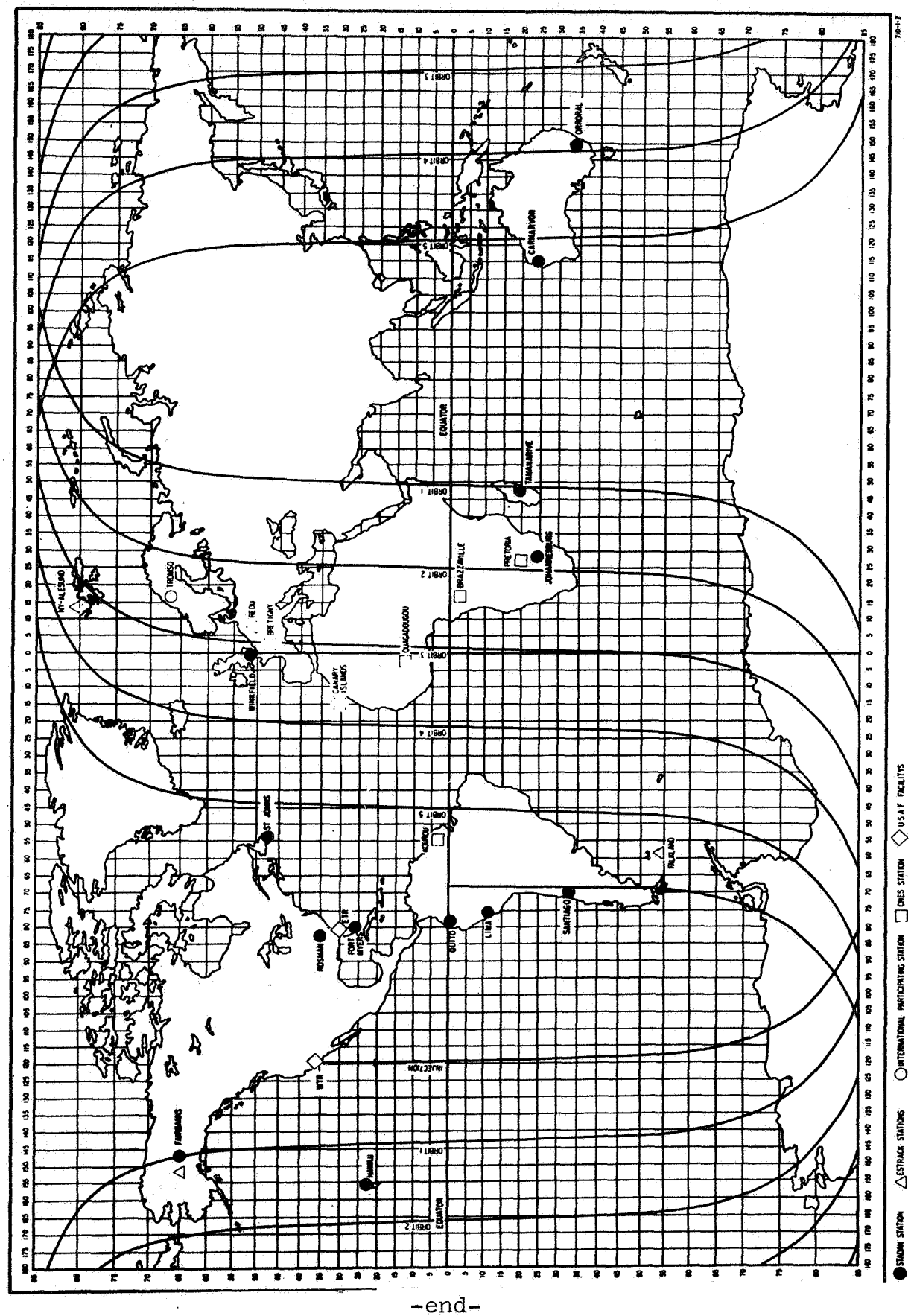

ESRO-IB Subsatellite Plot