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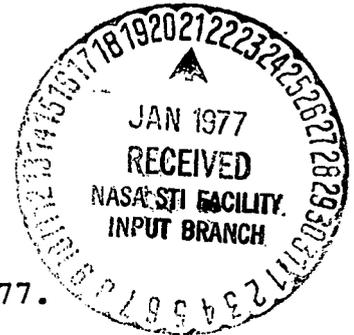
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NASA 1977 LAUNCH SCHEDULE



NASA has scheduled 23 space launches for 1977.

Of these, 17 launches will be for paying customers other than NASA. They include NATO, Indonesia, European Space Agency, National Oceanic and Atmospheric Administration, COMSAT Corp., U.S. Navy, Japan, Italy, RCA and the United Kingdom.

These customers will reimburse NASA for the costs of the launch vehicles and associated launch services.

The 1977 schedule compares with NASA's 16 launches in 1976 of which 12 were in the reimbursable category.

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The 1977 launch schedule also indicates the continued emphasis on using space for the direct benefit of the people on Earth. Seventeen of the 23 planned missions are in the applications satellite category -- communications, geodetic, environmental, navigation, meteorological and Earth resources.

The first 1977 launch will be NATO-3B, a North Atlantic Treaty Organization communications satellite, late in January from NASA's Kennedy Space Center (KSC), Fla. The launch, atop a Delta booster, was originally scheduled in December 1976, but was postponed to provide additional time for testing of the spacecraft at the manufacturer's plant in California.

Palapa-B (Palapa-2 when successfully launched), second of two communications satellites to be launched by NASA from KSC for the Indonesian government, is scheduled for launch on a Delta in March. The satellite will expand Indonesia's domestic communications system initiated by Palapa-1, which is on station over the Pacific Ocean providing television, radio, telephone and data communications between the capital city and Indonesia's 26 provinces.

The first of three High Energy Astronomy Observatories (HEAO), on an Atlas Centaur, is scheduled for launch in April from KSC. Using a combination of charged particle detectors and the Earth's magnetic field as a mass spectrometer, HEAO will separate the isotopes of cosmic rays and obtain information on the origin of the rays and how they are changed as they propagate through instellar space. Additional HEAO launches are scheduled in 1978 and 1979.

GEOS/ESA (Geodynamic Experimental Ocean Satellite-D) will be launched on a Delta for the European Space Agency (ESA) from KSC in April. The satellite will test the effectiveness of newly developed instruments in monitoring ocean topography and observing sea state.

GOES-B/NOAA, a Geostationary Operational Environmental Satellite-B, will be launched on a Delta in May from KSC. The National Oceanic and Atmospheric Administration satellite, carrying improved instrumentation for monitoring weather patterns, will join sister satellites SMS-1, SMS-2 and GOES-1 in geosynchronous orbit.

OTS/ESA (Orbital Test Satellite) will be launched at KSC on a Delta in June. The spacecraft, carrying advanced experimental communications systems, will be inserted into geosynchronous orbit over the equator at 10 degrees East longitude for the European Space Agency. A backup satellite can be readied for December launch.

Intelsat IV-A communications satellite, the first of two launches for the International Telecommunications Satellite Organization, is scheduled in June from KSC. The launch vehicle will be an Atlas Centaur. A second Intelsat launch is scheduled for October.

Navy-19 is the first of two Scout launches from the Western Test Range at Vandenberg Air Force Base, Calif. This and Navy 20, planned for call-up in December, will place navigational satellites in Earth orbit.

GMS/Japan (Geostationary Meteorological Satellite) will be launched on a Delta from KSC for the Japanese Space Agency in July. The spacecraft will become the Japanese portion of a global network of environmental satellites.

Sirio/Italy, an experimental communications satellite, will be launched for the Italian government on a Delta at KSC in August. It will be inserted into a geosynchronous orbit at 15 degrees West longitude.

Meteosat/ESA, the European Space Agency's first meteorological satellite, is scheduled for launch on a Delta in August at Kennedy.

Two Mariner Jupiter Saturn (MJS) launches are scheduled at Kennedy in August. The launch vehicles will be Titan Centaurs. The two spacecraft will be instrumented to obtain data on the environments and atmospheres of Jupiter and Saturn, with emphasis on the latter's rings. Flight time to Jupiter will be more than one and one-half years, and the trip to Saturn will require over three and one-half years.

Landsat-C, scheduled for launch from the Western Test Range on a Delta in September, is NASA's third Earth resources satellite to expand worldwide collection of Earth resources data.

The first two of three International Sun Earth Explorers (ISEE), jointly sponsored by NASA and ESA, will be launched on a Delta from KSC in November. ISEE-A is a NASA spacecraft and ISEE-B was developed by ESA. Shortly after launch, ISEE-B will separate from ISEE-A and become active. The two spacecraft will be inserted into an orbit with an initial perigee of about 1,290 kilometers (800 miles) and an apogee of 23 Earth radii, or about 146,450 km (91,000 mi.). The ISEE-B spacecraft will be successively maneuvered to fixed distances of about 96,965 and 4,830 km (60,600 and 3,000 mi.) from ISEE-A, remaining in each orbit from one to three years. During their multi-year missions the two spacecraft will investigate solar-terrestrial relationships at the outermost boundary of the Earth's magnetosphere and examine solar wind near Earth and the shock wave which forms the interface between the solar wind and the Earth. ISEE-C is scheduled for launch in 1978.

FLTSATCOM-A (Fleet Satellite Communications-A), the first of five geosynchronous orbiting satellites for a U.S. Navy worldwide communications satellite system, is scheduled for launch on an Atlas Centaur from KSC in September.

CS/Japan, a Japanese geosynchronous communications satellite to provide domestic telephone and color television transmissions, will be launched on a Delta in November from KSC.

IUE-A, a NASA interplanetary spacecraft to measure ultraviolet radiation, is scheduled for launch aboard a Delta rocket from Kennedy in December.

Two more launches are tentatively scheduled for 1977. The first is the UK-6. This high energy physics and astronomy satellite would be launched by a Scout rocket from the Wallops Flight Center, Va., for the United Kingdom. The second is RCA-C, a third domestic communications satellite which would be launched in September if called for by RCA.

1977 PLANNED LAUNCH SCHEDULE

<u>Date</u>	<u>Payload</u>	<u>Launch Vehicle</u>	<u>Launch Site</u>	<u>Reimbursable</u>	<u>Remarks</u>
January	NATO III-B	Delta	Kennedy Space Center (KSC)	Yes	Communications satellite for NATO
March	Palapa-B	Delta	KSC	Yes	Indonesian communications satellite
April	HEAO-A	Atlas Centaur	KSC	No	High Energy Astronomy Observatory
April	GEOS/ESA	Delta	KSC	Yes	Geodynamic Experimental Ocean Satellite for European Space Agency
May	GOES-B/NOAA	Delta	KSC	Yes	Geostationary Operational Environmental Satellite for National Oceanic and Atmospheric Administration
June	OTS/ESA	Delta	KSC	Yes	Orbital Test (communications) Satellite for European Space Agency
June	Intelsat IV-A/C	Atlas Centaur	KSC	Yes	Communications Satellite for COMSAT Corporation
June	Navy-19	Scout	Vandenberg	Yes	Navigation satellite for Navy
July	GMS/Japan	Delta	KSC	Yes	Geostationary Meteorological Satellite for Japanese Space Agency

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Date	Payload	Launch Vehicle	Launch Site	Reimbursable	Remarks
August	SIRIO/Italy	Delta	KSC	Yes	Experimental Communications satellite for Italy
August	Meteosat/ESA	Delta	KSC	Yes	Meteorological satellite for European Space Agency
August	MJS-A	Titan Centaur	KSC	No	Mariner Jupiter Saturn spacecraft
August	MJS-B	Titan Centaur	KSC	No	Mariner Jupiter Saturn spacecraft
September	Landsat-C	Delta	Vandenberg	No	Earth resources satellite
September	RCA-C C/U*	Delta	KSC	Yes	Communications satellite for RCA
October	Intelsat IV-A-D	Atlas Centaur	KSC	Yes	Communications satellite for COMSAT Corporation
October	ISEE-A/B	Delta	KSC	No	International Sun-Earth Explorer for NASA/ESA
October	FLTSATCOM	Atlas Centaur	KSC	Yes	Fleet Satellite Communications for Navy
October	UK-6**	Scout	Wallops Island	Yes	High energy physics and astronomy satellite for United Kingdom

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Date	Payload	Launch Vehicle	Launch Site	Reimbursable	Remarks
November	CS/Japan	Delta	KSC	Yes	Geosynchronous communications satellite for Japan
December	OTS/ESA B/U*	Delta	KSC	Yes	Orbital Test (communications) Satellite for ESA. Unlikely if OTS-A succeeds.
December	IUE-A	Delta	KSC	No	Interplanetary ultraviolet probe
December	Navy-20*	Scout	Vandenberg	Yes	Navigation satellite for Navy

* Callup/Backup Missions

** Tentative

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