NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FOR RELEASE:
On Receipt

PROJECT: INTELSAT IV

RELEASE NO: 74-305

PRESS KIT

contents

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FOR RELEASE:
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SPACE AGENCY TO LAUNCH SIXTH IN COMMUNICATIONS SATELLITE SERIES

The sixth in a series of INTELSAT IV commercial communication satellites will be launched by NASA for the Communications Satellite Corporation (COMSAT) aboard an Atlas-Centaur rocket from the John F. Kennedy Space Center, Fla. about Nov. 21. The launch window is 6:44 p.m. to 7:16 p.m. and 7:48 p.m. to 8:16 p.m. EST.

The 1,406 kilogram (3,100 pound) satellite will be positioned on the equator over the Pacific Ocean. This second INTELSAT IV to be emplaced over the Pacific is needed to take care of the rapidly increasing international telephone, television and data transmissions over the Pacific.

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The Atlas-Centaur (AC-32), which was developed and is launched under the direction of NASA's Lewis Research Center, Cleveland, Ohio, will be place the satellite in a highly elliptical orbit ranging from approximately 537 to 35,880 kilometers (334 to 22,300 miles). After checkout and orientation of the spacecraft, a solid propellant rocket motor aboard the spacecraft will be fired by COMSAT to circularize the orbit and position the satellite at synchronous altitude of 35,880 km (22,300 mi.). At that altitude, the speed of the spacecraft in orbit matches the rotational speed of the Earth so the satellite appears to hover over one spot.

The new satellite, like others in the global commercial communication system, is owned by the International Telecommunications Satellite Consortium, called INTELSAT. COMSAT, the United States member, acts as manager on behalf of the other 86 nations in the organization. NASA is reimbursed for all costs of the launch and associated services by COMSAT on behalf of INTELSAT, under provisions of the Communications Satellite Act of 1962.

The INTELSAT IV F-8 spacecraft is 2.38 meters (93.7 inches) in diameter and 5.28 m (208 in.) high over all, 2.82 m (111 in.) being the height of the solar panel. After the onboard apogee motor has been fired, the satellite will weigh 700 kg (1,544 lbs.).

The INTELSAT was originally scheduled for launch on July 18 of this year but was postponed when failure of integrated circuits for flight computers was discovered during acceptance testing. The vibration testing caused a failure of the attachment of the semi-conductor chips to the substrate. Epoxy bonding of integrated circuits was put into production and passed all qualification acceptance testing. The same system will be used on all future Centaur vehicles.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS).

ATLAS-CENTAUR LAUNCH VEHICLE

The Atlas-Centaur is NASA's standard launch vehicle for intermediate weight payloads. It is used for the launch of Earth orbital, Earth synchronous and interplanetary missions. More Atlas-Centaur launches now are used and paid for by other government agencies and by private corporations than by NASA.

Centaur was the nation's first high energy, liquid-hydrogen/liquid-oxygen propelled rocket. Developed and launched under the direction of NASA's Lewis Research Center, Cleveland, Ohio, it became operational in 1966 with the launch of Surveyor I, the first U.S. spacecraft to soft land on the Moon's surface.

The Atlas-Centaur, standing approximately 39.9 m (131 ft.) high, consists of an Atlas SLV-3D booster and Centaur D-1A second stage. The Atlas booster develops 1,918 kilonewtons (431,300 lb.) of thrust at liftoff using two 822,880-newtons (185,000-lb.) thrust booster engines, one 266,880 N (60,000 lb.) thrust sustainer engine and two vernier engines developing 2,891 N (650 lb.) thrust each. The two RL-10 engines on Centaur produce a total of 131,000 N (30,000 lb.) thrust. Both the Atlas and Centaur are 3.048 m (10 ft.) in diameter.

Up to early 1974, Centaur was used exclusively in combination with the Atlas booster. Now it is also used with a Titan III booster to launch heavier payloads into Earth orbit and onto interplanetary trajectories.

The Centaur D-1A has an integrated electronic system which performs a major role in checking itself and other vehicle systems before launch and also maintains control of major events after liftoff. The new Centaur system handles navigation, guidance tasks, controls pressurization, propellant management, telemetry formats and transmission and initiates vehicle events. Most operational needs can be met by changing the computer software.

INTELSAT LAUNCH WINDOWS

The primary factor determining the launch window for INTELSAT spacecraft is the angle of the Sun. It is desirable for the solar cells on the spacecraft to receive the maximum possible exposure during the transfer orbit. The Sun angle is at its best twice a day at noon and midnight GMT or 7 a.m. and 7 p.m. EST. Because of the greater convenience for launch crews and tracking operations, the 7 p.m. period is generally chosen. The launch window for AC-32 is 6:44 p.m. - 7:16 p.m., and 7:48 - 8:16 p.m. on Nov. 21, 22 (split window). The window is divided into two segments to avoid Sun interference with spacecraft Earth sensors.

ATLAS/CENTAUR FLIGHT HISTORY

TYPE	NUMBER	YEAR
R & D	7	1963 - 1966
OPERATIONAL	24	
7 SURVEYORS		1966 - 1968
3 OAO		1968 - 1972
2 ATS		1968 - 1969
2 MARINER MARS FLY-BY		1969
5 INTELSAT IV		1971 - 1973
2 MARINER MARS ORBITERS		1971
2 PIONEER		1972 - 1973
1 MARINER VENUS - MERCURY FLY-BY		1973

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Typical Launch Vehicle Characteristics

Liftoff weight including spacecraft: 147,750 kilograms (325,732 pounds)

Liftoff height: 39.9 meters (131 feet)

Launch Complex: 36B

	Atlas Booster	Centaur Stage
Weight (with propellants):	128,639 kg (283,600 lb.)	17,708 kg (39,040 lb.)
Height:	21.3 meters (70 ft.)	18.6 meters (61 ft. with payload fairing)
Thrust:	1,919 kilonewtons (431,300 lb.) (sea level)	133,447 newtons (30,000 lb. vacuum)
Propellants:	Liquid oxygen & RP-1	Liquid oxygen & liquid hydrogen
Propulsion:	MA-5 system (2 - 822,921 N (185,000 lb.) thrust booster engines, 1 - 266,893 newton (60,000 lb.) thrust sustainer engine 2 - 2,891 N (650 lb.) thrust vernier engines)	Two 66,723 N (15,000 lb.) thrust RL-10 engines. 14 small hydrogen peroxide thrusters.
Velocity:	9004 kilometers per hour (5,595 mph) at BECO; 13,029 kilometers per hour (8,096 mph) at SECO.	33,191 km per hour (20,624 mph) at spacecraft separation.
Guidance:	Pre-programmed profile through BECO. Switch to inertial guidance for sustainer phase.	Inertial guidance.

TYPICAL LAUNCH SEQUENCE FOR INTELSAT IV

Flight Events	Program Time	Earth Relative Velocity		Range		Altitude	
	Seconds	MPH	KM/HR	Miles	Kilometers	Miles	Kilometers
BECO	138.9	5,595	9,004	49.6	79.9	35.4	57
Booster jettison	142.0	5,656	9,103	52.9	85.1	37.3	60.1
Insulation panel jettison	183.9	6,407	10,311	118.7	191.0	60.9	98.0
SECO/VECO	247.1	8,096	13,029	238.3	383.5	90.8	146.2
Centaur separation	249.1	8,091	13,021	242.6	390.5	91.7	147.6
Centaur MEIG (1)	258.6	8,024	12,915	263	423.3	95.6	153.9
Nose fairing jettison	270.6	8,152	13,119	289	465	100.1	161.1
Centaur MECO (1)	621.5	17,632	28,376	1,420.7	2,286.4	117.5	189.1
Centaur MEIG (2)	1,501.9	16,659	26,810	5,444	8,761.3	364.6	586.8
Centaur MECO (2)	1,578.9	21,011	33,814	5,803.5	9,339.9	411	661.4
Spacecraft separation	1,713.9	20,624	33,191	6,490.4	10,445.3	542.3	872.7
Reorient Centaur	1,718.9						
Start blowdown	1,883.9						
End blowdown	2,133.9						

INTELSAT TEAM

COMSAT

Dr. Joseph V. Charyk	President
George P. Sampson	Senior Vice President, Communication System Mgt.
Martin J. Votaw	Assistant Vice President, Engineering

Lewis Research Center

Bruce T. Lundin	Director
Dr. Seymour C. Himmel	Associate Director for Flight Programs
Andrew J. Stofan	Director of Launch Vehicles
Henry O. Stone	Atlas-Centaur Project Manager
Vernon J. Weyers	INTELSAT Project Engineer

Industry Team

Prime Contractors	Responsibility
Hughes Aircraft Company Sunnyvale, Calif.	INTELSAT IV spacecraft
General Dynamics/Convair San Diego, Calif.	Atlas-Centaur launch vehicle
Honeywell, Aerospace Division St. Petersburg, Fla.	Centaur guidance inertial measurement group
Pratt & Whitney West Palm Beach, Fla.	Centaur RL-10 engines
Teledyne Northridge, Calif.	Digital computer unit/PCM telemetry

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