P78-10049

NASA News

National Aeronautics and
Space Administration

Washington, D C 20546
AC 202 755-8370

For Release IMMEDIATE

Press Kit

Project INTELSAT IV-A(F6)

RELEASE NO: 78-42

Contents

Mailed:
March 20, 1978

NASA News

National Aeronautics and
Space Administration

Washington, D C 20546
AC 202 755-8370

For Release

David Garrett
Headquarters, Washington, D.C.
(Phone: 202/755-3090)

IMMEDIATE

Marilyn Edwards
Lewis Research Center, Cleveland, Ohio
(Phone: 216/433-4000 Ext. 415)

RELEASE NO: 78-42

SIXTH INTELSAT IV-A LAUNCH SCHEDULED

The sixth Intelsat IV-A commercial communications satellite will be launched by NASA aboard an Atlas Centaur rocket from Kennedy Space Center, Fla., no earlier than March 30, 1978.

The satellite, which weighs 1,480 kilograms (3,263 pounds) at launch, is intended for service in the Indian Ocean region.

-more-

Intelsat IV-A(F6) satellite will be placed in geo-stationary orbit over the Indian Ocean at 63 degrees East longitude, where it will provide international communications services to some 40 countries in the Indian Ocean region.

Intelsat IV-A(F3), launched Jan. 6, 1978, will be placed at 60 degrees E. longitude and serve as a backup to Intelsat IV-A(F6). Each satellite has a seven-year design life and the capacity to relay more than 6,000 simultaneous telephone calls and two television programs.

The Intelsat satellites are owned by the International Telecommunications Satellite Organization (INTELSAT). The Communications Satellite Corp. (COMSAT), the United States member, is also the management services contractor for the satellite system. NASA is reimbursed for all costs of the Atlas Centaur and launch services by COMSAT on behalf of Intelsat, under provisions of a launch services agreement.

The Atlas Centaur AC-48 launch vehicle is expected to place the Intelsat IV-A in a highly elliptical orbit of 548 by 35,788 kilometers (341 by 22,240 miles). After reorientation of the satellite, a solid propellant rocket motor aboard the spacecraft will be fired to circularize the orbit at synchronous altitude 35,788 km (22,240 mi.) over the equator.

-more-

At that altitude, because the speed of the spacecraft in orbit matches the rotational speed of the Earth, the satellite remains in position over one spot.

NASA's Lewis Research Center, Cleveland, Ohio, has management responsibility for the Atlas Centaur development and operation. NASA's Kennedy Space Center, Fla., is assigned vehicle checkout and launch responsibility once the vehicle reaches Cape Canaveral.

The Intelsat IV-A satellites, built by Hughes Aircraft Co., El Segundo, Calif., are 6.98 meters tall (about 23 feet) and weigh 1,480 kg (about 3,263 lb.) at liftoff and 825.5 kg (1,820 lb.) after apogee motor firing.

This Intelsat IV-A launch costs approximately $47 million -- $18 million for the satellite and $29 million for the Atlas Centaur launch vehicle and related services.

(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.

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, it became operational in 1966 with the launch of Surveyor 1, the first U.S. spacecraft to soft-land on the Moon's surface.

Since that time, both the Atlas booster and Centaur second stage have undergone many improvements. At present, the vehicle combination can place, 4,536 kg (10,000 lb.) in low Earth orbit, 1,882 kg (4,150 lb.) in a synchronous transfer orbit and 907 kg (2,000 lb.) on an interplanetary trajectory.

The Atlas Centaur, standing approximately 40.8 m (134 ft.) high, consists of an Atlas SLV-3D booster and Centaur D-1AR second stage. The Atlas booster develops 1,920 kilonewtons (431,300 lb.) of thrust at liftoff using two 822,920-newton (185,000-lb.) thrust booster engines, one 266,890-N (60,000-lb.) thrust sustainer engine and two vernier engines developing 2,890 N (650 lb.) thrust each. The two RL-10 engines on Centaur produce a total of 133,450 N (30,000 lb.) thrust. Both the Atlas and the Centaur are 3.048 m (10 ft.) in diameter.

Until early 1974, Centaur was used exclusively in combination with the Atlas booster. It was subsequently used with a Titan III booster to launch heavier payloads into Earth orbit and interplanetary trajectories.

The Atlas and the Centaur vehicles have been updated over the years. Thrust of the Atlas engines has been increased about 222,400 N (50,000 lb.) since its debut in the space program in the early 1960s.

The Centaur D1AR has an integrated electronic system that 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 and guidance tasks, controls pressurization and venting, propellant management, telemetry formats and transmission and initiates vehicle events. Most operational needs can be met by changing the computer software.

TYPICAL LAUNCH VEHICLE CHARACTERISTICS

Liftoff weight including spacecraft: 148,060 kg (326,419 lb.)

Liftoff height: 40.8 m (134 ft.)

Launch Complex: 36B

	Atlas Booster	Centaur Stage
Weight (with propellants)	130,317 kg (287,300 lb.)	17,781 kg (39,200 lb.)
Height	21.3 m (70 ft.)	19.5 m (64 ft.) with payload fairing
Thrust	1,919 kn (431,300 lb.) at sea level	133,447 N (30,000 lb.) in vacuum
Propellants	Liquid oxygen and RP-1	Liquid oxygen Liquid hydrogen
Propulsion	MA-5 system two 822,921-N (185,000 lb.) thrust booster engines, one 266,893-N (60,000 lb.) thrust sustainer engine, two 2,891-N (650-lb.) thrust vernier engines.	Two 66,723-N (15,000-lb.) thrust RL-10 engines, 12 hydrogen peroxide thrusters.
Velocity	9,205 km/hr (5,720 mph) at booster engine cutoff (BECO) 13,061 km/hr (8,116 mph) at sustainer engine cutoff (SECO).	33,345 km/hr (20,720 mph) at spacecraft separation.
Guidance	Preprogrammed profile through BECO, switch to inertial guidance for sustainer phase.	Inertial guidance

-more-

LAUNCH OPERATIONS

The Atlas Centaur stages of the Atlas Centaur 48 launch vehicle arrived at Cape Canaveral Air Force Station Jan. 11, 1978, and were erected on Pad B, Complex 36, Jan. 25-26. Following completion of electrical, pneumatic, hydraulic, propulsion and guidance systems checkout and testing, a Terminal Countdown Demonstration Test (TCD) was performed March 8. The TCD demonstrated the integrity of the vehicle-to-ground systems interface in a cryogenic environment which duplicated launch countdown conditions.

The Intelsat IV-A(F6) spacecraft was received Jan. 18 and underwent systems checkout in Hangar AM. The spacecraft was moved to the Spacecraft Assembly and Encapsulation Facility March 14, where hydrazine loading and encapsulation of the payload fairing were completed.

The spacecraft/payload fairing assembly is scheduled for mating with the launch vehicle March 22 in support of the Combined Readiness Test March 23. Final countdown preparations for the planned March 30 launch will be initiated March 27.

All launch vehicle and pad operations during the launch countdown are conducted from the blockhouse at Complex 36 by a joint government-industry team.

TYPICAL LAUNCH SEQUENCE FOR INTELSAT IV-A

Flight Events	Program Time (Seconds)	Earth Relative Velocity (Km/Hr	Mph)	Range Kilometers/Miles		Altitude Kilometers/Miles	
Liftoff	0	0	0	0	0	0	0
BECO	140.4	9,205	5,720	82.2	51.1	57.8	36.0
Booster Jettison	143.5	9,306	5,782	89.5	55.6	61.0	37.9
Insulation Panel Jettison	185.4	10,363	6,439	194.8	121.1	98.7	61.4
SECO/VECO	242.5	13,061	8,116	386.5	240.2	144.9	90.1
Centaur Separation	249.5	13,059	8,114	393.4	244.4	146.3	90.9
Centaur MES (1)	259.0	12,997	8,076	426.4	265.0	152.3	94.6
Nose Fairing Jettison	271.0	13,205	8,205	468.5	291.1	159.2	98.9
Centaur MECO (1)	620.2	28,029	17,416	2,278.0	1,415.5	189.2	117.5
Centaur MES (2)	1,493.0	26,531	16,490	8,611.8	5,351.1	558.9	347.3
Centaur MECO (2)	1,529.0	33,862	21,041	9,256.9	5,751.9	627.5	389.3
Spacecraft Separation	1,714.0	33,329	20,710	10,371.2	6,444.4	806.9	501.4
Reorient Centaur	1,719.0						
Start Blowdown	1,824.0						
End Blowdown	2,134.0						

ATLAS CENTAUR/INTELSAT IV-A TEAM

NASA Headquarters

John F. Yardley	Associate Administrator for Space Flight
Joseph B. Mahon	Director of Launch Vehicle and Propulsion Programs
F. R. Schmidt	Manager, Atlas Centaur

Lewis Research Center

Dr. Bernard Lubarsky	Acting Director
Dr. Seymour C. Himmel	Associate Director
Lawrence J. Ross	Director of Launch Vehicles
Richard E. Orezechowski	Intelsat Mission Project Engineer

Kennedy Space Center

Lee R. Scherer	Director
Gerald D. Griffin	Deputy Director
Dr. Walter J. Kapryan	Director, Space Vehicles Operations
George F. Page	Director, Expendable Vehicles
John D. Gossett	Chief, Centaur Operations
Creighton A. Terhune	Chief Engineer, Atlas Centaur
Floyd Currington	Spacecraft Coordinator

-more-

COMSAT

Dr. Joseph V. Charyk	President
Eugene T. Jilg	Assistant Vice President Engineering
Allen M. McCaskill	Manager, Launch Vehicles

Hughes Aircraft Co.

A. T. Owens	Intelsat IV-A Project Manager

CONTRACTORS

General Dynamics/Convair San Diego, Calif.	Atlas Centaur launch vehicle
Honeywell Aerospace Division St. Petersburg, Fla.	Centaur guidance inertial measurement group
Pratt and Whitney West Palm Beach, Fla.	Centaur RL-10 engines
Teledyne Industries, Inc. Northridge, Calif.	Digital computer unit/PCM telemetry
Rocketdyne Division Rockwell International Corp. Canoga Park, Calif.	MA-5 propulsion systems

-end-