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For Release IMMEDIATE

Press Kit

Project INTELSAT IV-A

RELEASE NO: 76-8

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For Release:
IMMEDIATE

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SECOND INTELSAT IV-A COMMUNICATIONS SATELLITE SET FOR LAUNCH

The second INTELSAT IV-A commercial communications satellite will be launched by NASA aboard an Atlas/Centaur rocket from Kennedy Space Center, Fla., no earlier than January 29.

The satellite, which weighs 1,500 kilograms (3,330 pounds) at launch, is intended for service in the Atlantic Ocean region.

This second INTELSAT IV-A supplements the first INTELSAT IV-A satellite launched Sept. 25, 1975 and the INTELSAT IV worldwide network of seven operating satellites.

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Presently there are three INTELSAT IV satellites over the Atlantic Ocean, two over the Pacific and two over the Indian Ocean.

The INTELSAT satellites are owned by the International Telecommunications Satellite Organization (INTELSAT). The Communications Satellite Corporation (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.

An INTELSAT IV-A satellite is able to carry approximately 6,250 two-way telephone conversations and television.

The Atlas/Centaur-37 launch vehicle is expected to place the INTELSAT IV-A in a highly elliptical orbit ranging from approximately 459 to 35,880 kilometers (341 to 22,300 miles). After re-orientation of the satellite, a solid propellant rocket motor aboard the spacecraft will be fired to circularize the orbit at synchronous altitude 35,880 km (22,300 mi.) over the equator. 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.

The launch of INTELSAT spacecraft aboard Atlas/Centaur rockets requires the coordinated efforts of a large government and industry team. NASA's Lewis Research Center, Cleveland, has management responsibility for the Atlas/Centaur development and operation. NASA's John F. Kennedy Space Center, Fla., is assigned vehicle checkout and launch responsibility once the vehicle reaches Cape Canaveral.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS.)

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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 4,530 kg (10,000 lbs.) in low Earth orbit, 1,880 kg (4,150 lb.) in a synchronous transfer orbit and 900 kg (2,000 lb.) on an interplanetary trajectory.

The Atlas/Centaur, standing approximately 40.8 meters (134 feet) 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. Now it is also 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 D-1AR 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.

The Centaur D-1AR also incorporates a redundant hydrogen peroxide attitude control system that is tolerant of a peroxide "engine out" situation.

Typical Launch Vehicle Characteristics

Liftoff weight including spacecraft 147,885 kg (326,030 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 and 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 small hydrogen peroxide thrusters.
Velocity	8,970 kmph (5,574 mph) at booster engine cutoff (BECO), 12,987 kmph (8,070 mph) at sustainer engine cutoff (SECO).	33,336 kmph (20,714 mph) at spacecraft separation.
Guidance	Preprogrammed profile through BECO. Switch to inertial guidance for sustainer phase.	Inertial guidance.

NASA's John F. Kennedy Space Center and its Unmanned Launch Operations Directorate play key roles in the preparation and launch of Atlas/Centaur-36 carrying the INTELSAT IV-A spacecraft into orbit.

The Atlas and Centaur stages were erected on Pad B at Launch Complex 36 at the Cape Canaveral Air Force Station during mid-October.

In providing launch operations, KSC handles scheduling of test milestones and review of data to assure that the launch vehicle has met all its test requirements and is ready for launch.

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	Earth Relative Velocity		Range		Altitude	
	Seconds	KM/HR	MPH	Kilometers/Miles		Kilometers/Miles	
Liftoff	0	0	0	0	0	0	0
BECO	139.3	8,970	5,574	80.1	49.8	57	35.4
Booster Jettison	142.4	9,069	5,635	87.2	54.2	60.1	37.3
Insulation panel jettison	184.3	10,285	6,391	191.5	89.9	97.7	60.7
SECO/VECO	247.1	12,988	8,070	383.8	238.5	144.3	89.7
Centaur separation	249.0	12,990	8,072	390.2	242.5	145.6	90.5
Centaur MES (1)	258.6	12,934	8,037	423.5	263.2	151.7	94.3
Nose Fairing jettison	270.6	13,141	8,165	547.7	340.3	158.6	98.5
Centaur MECO (1)	620.6	28,029	17,416	2,274.4	1,413.2	189.2	117.5
Centaur MES (2)	1,493.0	26,542	16,492	8,604.9	5,346.9	558.2	346.9
Centaur MECO (2)	1,578.3	33,866	21,043	9,245.5	5,744.9	626.1	389.0
Spacecraft separation	1,713.3	33,336	20,714	10,360.9	6,438.0	804.6	500.0
Reorient Centaur	1,718.3						
Start blowdown	1,883.3						
End blowdown	2,133.3						

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NASA 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. Bruce T. Lundin	Director
Dr. Seymour C. Himmel	Associate Director for Flight Programs
Andrew J. Stofan	Director of Launch Vehicles
Henry O. Slone	Atlas/Centaur Project Manager
Vernon J. Weyers	INTELSAT Mission Project Engineer
Frank L. Manning	Launch Vehicle Project Engineer

Kennedy Space Center

Lee R. Scherer	Director
George F. Page	Director, Unmanned Launch Operations
John D. Gossett	Manager, Centaur Operations
Ralph S. Lotspeich	INTELSAT Spacecraft Coordinator

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INTELSAT TEAM

COMSAT

Dr. Joseph V. Charyk	President
Martin J. Votaw	Vice President, INTELSAT Management Division
Eugene T. Jilg	Assistant Vice President, Engineering
Allan M. McCaskill	Manager, Launch Vehicle Systems

Hughes Aircraft Co.

A. T. Owens	INTELSAT IV-A Project Manager
Don Thompson	INTELSAT IV-A Spacecraft Manager

INDUSTRY TEAM

Prime Contractors	Responsibility
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 Northridge, Calif.	Digital computer unit/PCM telemetry

January 16, 1976