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For Release IMMEDIATE

Press Kit

Project RCA-Satcom-A

RELEASE NO: 75-301

Contents

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COMMUNICATIONS SATELLITE LAUNCH SCHEDULED

NASA will launch the RCA Corporation's first commercial domestic communications satellite on board a Delta launch vehicle from Cape Canaveral, Fla., no earlier than Dec. 12, 1975. Once in orbit the satellite will be called RCA-Satcom-1.

The RCA-Satcom system will consist of three satellites placed in geostationary orbits to serve the contiguous United States, Hawaii and Alaska with television, voice channels and high-speed data transmissions.

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Presently RCA Global Communications, Inc., and RCA Alaska Communications, Inc., have direct management responsibility for the system. The first spacecraft is expected to be placed at 36,000 kilometers (22,300 miles) altitude, 119 degrees W. Longitude or due south of Los Angeles at the equator. NASA's Goddard Space Flight Center, Greenbelt, Md., manages the Delta launch vehicle. All NASA costs including the rocket and launch services are reimbursed by the RCA companies.

Earth stations are located near New York City, San Francisco and Los Angeles and at Anchorage, Juneau, Nome, Bethel, Valdez and Prudhoe Bay in Alaska. Later, other cities in the United States are expected to be added after the two additional spacecraft are launched one at 99 degrees and the other at 129 degrees W. Longitude over the equator.

The RCA spacecraft weighs 867.7 kilograms (1,913 pounds) at launch, but after firing its onboard apogee motor, which places the spacecraft in final synchronous orbit after separation from the Delta, it will weigh only 463 kg (1,021 lb.). Firing of the apogee motor is expected to place RCA-Satcom in synchronous orbit on the seventh apogee of the 35,786 km (22,241 mi.) transfer orbit in response to a signal transmitted from Vernon Valley, N.J.

The satellite then will drift west at the rate of 1.0 degrees a day to its permanent position at 119 degrees W. Longitude.

The satellite is box-shaped, 1.6 meters (5.3 feet) by 1.2 m (4.1 ft.) by 1.2 m (4.1 ft.) with two rectangular solar panels extending out from the spacecraft on short booms. The 6.7 square meters (71.5 square feet) of silicon solar cells will be continuously oriented toward the Sun to power the satellite.

The Model 3914 vehicle used for the RCA-Satcom-A mission is a new Delta configuration with nine large Thiokol Castor IV solid-propellant strap-on motors. The configuration requires structural improvements to the booster, and modification to the solid motor mounting hardware and firing and dropping sequence.

The new Castor IV strap-on motors are 11.1 m (36.6 ft.) in length and about 1 m (40 in.) in diameter with a maximum total thrust of 329,200 newtons (74,000 lb.) each.

Five of the rockets will fire at liftoff. The remaining four will ignite 64 seconds after liftoff. The rockets will be ejected in groups of three.

Launch operations management is the responsibility of NASA's Kennedy Space Center, Fla. Goddard is responsible, in addition to Delta management, for the tracking network required to accurately place RCA-Satcom in orbit. McDonnell Douglas Astronautics Co., Huntington Beach, Calif., is the prime contractor for Delta vehicle hardware and launch services. RCA Astro-Electronics Division built the spacecraft.

The launch window is from 8:46 to 9:02 p.m. EST, Dec. 12.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS.)

LAUNCH OPERATIONS

The spacecraft will be launched from Complex 17 A at NASA's Kennedy Space Center, Eastern Test Range, Fla., by a three-stage Delta launch vehicle.

First Stage

The first stage is a McDonnell Douglas modified Thor booster incorporating nine strap-on Thiokol solid-fuel rocket motors. The booster is powered by a Rocketdyne engine using liquid oxygen and liquid hydrocarbon propellants. The main engine is gimbal-mounted to provide pitch and yaw control from liftoff to main engine cutoff (MECO).

Second Stage

The second stage is powered by a TRW liquid-fuel, pressure-fed engine that also is gimbal-mounted to provide pitch and yaw control through second-stage burn. A nitrogen gas system uses eight fixed nozzles for roll control during powered and coast flight, as well as pitch and yaw control during coast and after second-stage cutoff. Two fixed nozzles, fed by the propellant-tank, helium-pressurization system, provide retro-thrust after third stage separation.

Third Stage

The third stage is the TE-364-4 spin-stabilized, solid-propellant Thiokol motor. It is secured in a spintable mounted to the second stage. The firing of eight solid-propellant rockets fixed to the spintable accomplishes spin-up of the third stage spacecraft assembly.

Injection Into Synchronous Orbit

The Delta vehicle will inject RCA-Satcom into a transfer orbit with an apogee of 136,150 km (22,460 mi.). The apogee boost motor (APM) will be fired to place the spacecraft in synchronous orbit on the seventh apogee.

KSC Unmanned Launch Operations

The Kennedy Space Center's Unmanned Launch Operations Directorate plays a key role in the preparation and launch of the thrust-augmented Delta rocket carrying Satcom-A.

Delta 118 will be launched from Pad A at Complex 17, Cape Canaveral. This will be the second launch from Pad A -- northermost of Complex 17's two pads -- since modifications began following the launch of OSO-7 in September, 1971, and the first involving the flight of a Delta with the new Castor IV solid strap-on rocket motors.

During those modifications, the Mobile Service Tower was extended to a new height of 50 m (167 ft.) to accommodate the long-tank Delta first stage and pad structures were modified to handle the Castor IV solid motors, approximately 3 m (10 ft.) longer and 25 cm (10 in.) larger in diameter than the Castor II's used on previous missions.

The modifications were completed this past summer and Pad A was used for the first time since 1971 for the launch of Symphonie-A on Aug. 26.

Completion of the Pad A modifications once again provides KSC's Delta facility with the flexibility of a two-pad launch complex.

STRAIGHT EIGHT DELTA FACTS AND FIGURES

The Delta has the following general characteristics:

Height: 35.4 m (116 ft.) including shroud

Maximum diameter: 2.4 m (8 ft.) without attached solids

Liftoff weight: 190,743 kg (420,516 lb.)

Liftoff thrust: 1,876,202 N (421,789 lb.) including strap-on solids

First Stage: (Liquid only) consists of an extended long-tank Thor, produced by McDonnell Douglas. The RS-27 engines are produced by the Rocketdyne Division of Rockwell International. The stage has the following characteristics:

Diameter: 2.4 m (8 ft.)

Height: 21.3 m (70 ft.)

Propellants: RJ-1 kerosene as the fuel and liquid oxygen (LOX) as the oxidizer

Thrust: 912,000 N (205,000 lb.)

Burning time: About 3.48 minutes

Weight: About 93,200 kg (205,500 lb.) excluding strap-on solids

Strap-on solids consist of nine solid propellant rockets produced by the Thiokol Chemical Corp., with the following features:

Diameter: 1.016 m (40 in.)

Height: 11.1 m (36.6 ft.)

Total weight: 97,520 kg (215,000 lb.) for nine
10,840 kg (23,900 lb.) each

Thrust: 2,963,000 N (666,000 lb.) for nine
329,200 N (74,000 lb.) each

Burning time: 57 seconds

Second Stage: Produced by McDonnell Douglas Astronautics Co., using a TRW TR-201 rocket engine; major contractors for the vehicle inertial guidance system located on the second stage are Hamilton Standard, Teledyne and Delco.

Propellants: Liquid, consists of Aerozene 50 for the fuel and Nitrogen Tetroxide (N_2O_4) for the oxidizer

Diameter: 1.5 m (5 ft.) plus 2.4 m (8 ft.) attached ring

Height: 6.4 m (21 ft.)

Weight: 6,180 kg (13,596 lb.)

Thrust: About 42,923 N (9,650 lb.)

Total burning time: 335 seconds

Third Stage: Thiokol Chemical Co. TE-364-4 motor

Propellants: solid

Height: 1.4 m (4.5 ft.)

Diameter: 1 m (3 ft.)

Weight: 1,160 kg (2,560 lb.)

Thrust: 61,858 N (13,900 lb.)

Burning time: 44 seconds

MAJOR DELTA/RCA-SATCOM-A FLIGHT EVENTS

Event	Time	Altitude Km	Altitude Mi.	Velocity Kmph	Velocity Mph
Liftoff (5 solid motors ignition)	0 sec.	0	0	0	0
Five Solid Motor Burnout	57.6 sec.	9.7	6	2,790	1,732
Jettison Three Solid Motor Casings	1 min. 4 sec.	12.0	7.5	2,786	1,730
Four Solid Motor Ignition	1 min. 4 sec.	12.0	7.5	2,786	1,730
Jettison Two Solid Motor Casings	1 min. 5 sec.	12.3	7.6	2,825	1,754
Four Solid Motor Burnout	2 min. 2 sec.	42.3	26.2	8,410	5,223
Jettison Four Solid Motor Casings	2 min. 7 sec.	46.1	28.6	8,691	5,397
Main Engine Cutoff (MECO)	3 min. 48 sec.	113.8	70.6	20,994	13,037
Stage II Ignition	4 min. 1 sec.	122.4	76.0	21,005	13,044
Jettison Fairing	4 min. 20 sec.	133.9	83.1	21,316	13,237
First Cutoff - Stage II (SECO)	8 min. 17 sec.	189.0	117.3	28,063	17,427
Restart Stage II	20 min. 35 sec.	185.4	115.1	28,070	17,431
Final Cutoff - Stage II (SECO-2)	21 min. 16 sec.	184.4	114.5	29,699	18,443

MAJOR DELTA/RCA-SATCOM-A FLIGHT EVENTS (Cont'd.)

Event	Time	Altitude Km	Altitude Mi.	Velocity Kmph	Velocity Mph
Fire Spin Rockets	22 min. 6 sec.	183.8	114.1	29,701	18,444
Stage II/III Separation	22 min. 8 sec.	183.8	114.1	29,702	18,445
Stage III Ignition	22 min. 49 sec.	185.3	115.0	29,694	18,440
Stage III Burnout	23 min. 33 sec.	192.3	119.4	36,888	22,907
Stage III/Satcom Separation	24 min. 46 sec.	232.6	144.4	36,756	22,825
Transfer Orbit Apogee	5 hrs. 38 min.	35,786	22,223	5,745	3,567

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RCA/SATCOM/DELTA TEAM

NASA Headquarters

John F. Yardley	Associate Administrator for Space Flight
William C. Schneider	Deputy Associate Administrator for Space Flight
Joseph B. Mahon	Director of Expendable Launch Vehicle Programs
Peter T. Eaton	Delta Program Manager
Isaac T. Gillam IV	Small Launch Vehicles and International Programs Manager

Goddard Space Flight Center

Dr. John F. Clark	Director
Dr. Robert S. Cooper	Deputy Director
Robert N. Lindley	Director of Projects
Robert Baumann	Associate Director of Projects for Delta
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Wayne McCall	Chief Engineer, Delta Operations
David Bragdon	Spacecraft Coordinator

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Eugene F. Murphy	President and Chief Operating Officer
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John Christopher	Director of Satcom Engineering and Production
Peter Plush	Manager of Launch Vehicle Procurement and Integration

Contractors

RCA Corp., Astro Electronics Division Hightstown, N.J.	RCA Satcom Spacecraft
McDonnell Douglas Astronautics Co. Huntington Beach, Calif.	Delta Launch Vehicle

For further information please contact the Public Affairs Office, RCA Global Communications, New York, N.Y.

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December 3, 1975