NASA News

National Aeronautics and
Space Administration.

Washington, D.C. 20546
AC 202 755-8370

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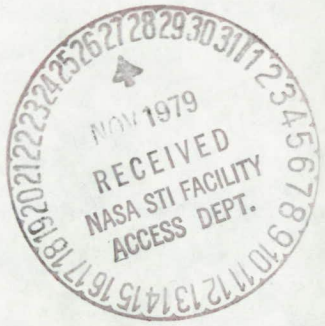
Press Kit

Project RCA SATCOM-C

RELEASE NO: 79-158



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November 23, 1979

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RCA SATCOM LAUNCH TO BE 150TH FOR DELTA

The 150th launch of NASA's Delta rocket is scheduled for Dec. 6 from Cape Canaveral, Fla., when it will place a domestic communications satellite in Earth orbit.

The milestone launch by the "workhorse" of NASA's stable of expendable launch vehicles is scheduled for between 8:35 and 8:47 p.m. EST. Dating back to May 1960, 137 of 149 Delta launches have been successful, a 92 percent success record.

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When the RCA American Communications, Inc., 24-channel SATCOM-C is in geosynchronous orbit, it will provide television, voice communications and high-speed data transmissions to all 50 states. It will primarily serve the cable TV industry.

The Delta 3914 launch vehicle will boost the 895-kilogram (1,974-pound) spacecraft into an elliptical transfer orbit ranging in altitude from 167 kilometers (104 miles) to 35,786 km (22,223 mi.).

Approximately three days after launch, an apogee kick motor aboard the satellite (designated RCA SATCOM-3 in orbit) will be fired and the spacecraft will be placed into a geosynchronous orbit 35,786 km (22,223 mi.) above the equator. At this altitude the speed of the spacecraft in orbit matches the rotational velocity of the Earth and allows the satellite to hover over the equator at its assigned location of 132 degrees west longitude.

The Delta project is managed by NASA's Goddard Space Flight Center, Greenbelt, Md., for NASA's Office of Space Transportation System Operations in Washington, D.C.

The RCA SATCOM system is managed by RCA American Communications, Inc. Launch operations will be conducted by the NASA Kennedy Space Center with all launch costs reimbursed by RCA American Communications.

RCA Astro-Electronics Division, Princeton, N.J., built the satellite. McDonnell Douglas Co., Huntington Beach, Calif., is prime contractor for the Delta launch vehicle.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS.)

THE "WORKHORSE" DELTA

Launch of the RCA SATCOM-C satellite will mark the 150th launching of a NASA Delta.

During its 19-year history, the Delta launch vehicle has been dubbed NASA's "workhorse" rocket because of the number and frequency of its launches.

Its versatility, economy and reliability have kept the Delta in continuous demand by domestic and foreign users for communications, scientific and meteorological satellites.

Of the 150 launches between 1960 and 1979, 51 have been reimbursible missions for non-government users. This use of the Delta rocket by commercial and foreign concerns is credited with helping to ease the U.S. balance of payments by approximately $458 million.

History

The first Delta launch attempt on May 13, 1960, was unsuccessful. Its second launch on Aug. 12, 1960, successfully placed the Echo 1 passive communications satellite into a 1,600 km (1,000-mi.) orbit around the Earth.

Between 1960 and the end of 1965, most of the 35 Delta launches were for NASA scientific and communications missions. These included the first Pioneer to orbit the Sun; the first active communications satellite including AT&T's famous Telstar and NASA's Relay; NASA's Syncom which was placed in the first geosynchronous orbit, demonstrating the feasibility of today's multi-million dollar commercial communications satellite industry; and the Communications Satellite Corp.'s Early Bird.

From 1966 to 1969, there were 39 Delta launches including an increasing number for foreign and commercial users on a reimbursible basis. During this period, the National Oceanic and Atmospheric Administration of the Department of Commerce, used Delta to place nine meteorological satellites into orbit for operational weather information.

From 1970 to 1975, there were 43 Delta launches, 26 of which were for non-NASA users, raising the number of non-NASA users to about 60 percent of the total. Nineteen of these missions were for commercial or foreign use and seven were for the National Oceanic and Atmospheric Administration.

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In addition, 19 of the 26 spacecraft were placed in geosynchronous orbit and one was placed in lunar orbit.

Since 1975, there have been 30 launches, excluding the RCA SATCOM-C. Twenty-eight of these were successful, bringing the overall success record to 137 out of 149 attempts or a 92 percent success rate. Of these last 30 launches, seven were for NASA, three were for the North Atlantic Treaty Organization, three were for the National Oceanic and Atmospheric Administration, six were for domestic commercial use and 11 were for foreign governments.

Delta's future launches are expected to extend through the year 1982 with seven missions already slated and the possibility of 10 additional back-up missions for the Space Shuttle.

Growth of Delta

Since the first Delta in 1960, this versatile rocket has undergone many configuration changes to accommodate the larger and heavier payloads. During this period, Delta's capability of placing spacecraft into geosynchronous orbit grew from 45 kg (100 lb.) to 907 kg (2,050 lb.), and the maximum spacecraft diameter it could accommodate increased from 1.5 meters to 2.4 meters (5 feet to 8 feet).

DELTA 3914 LAUNCH VEHICLE STATISTICS

The RCA SATCOM-C will be launched by a three-stage Delta 3914 launch vehicle. The Delta 3914 has the following general characteristics:

Height: 35.4 m (116 ft.) including fairing

Diameter: 2.4 m (8 ft.) without attached solids

Liftoff Weight: 190,972 kg (421,021 lb.)

Liftoff Thrust: 2,062,671 newtons (463,709 lb.) includes main engine plus five Castor IV strap-on solid rockets

First Stage

Liquid portion consists of an extended long-tank Thor, produced by McDonnell Douglas Corp. The RS-27 engines are produced by the Rocketdyne Division of Rockwell International Corp.

Height: 21.3 m (70 ft.)

Diameter: 2.4 m (8 ft.)

Propellants: RP-1 kerosene fuel and liquid oxygen (LOX) oxidizer

Initial Thrust: 911,800 N (205,000 lb.)

Strap-on solids consist of nine solid-propellant Castor IV rockets produced by the Thiokol Chemical Corp.

Height: 11.3 m (37 ft.)

Diameter: 1 m (3.3 ft.)

Average Thrust: 407,000 N (91,520 lb.) per solid

Second Stage

The second stage is produced by McDonnell Douglas Astronautics Co. The major subcontractors for the vehicle are TRW, Inc., for the TR-201 rocket engine and General Motors Corp., Delco Products Division, for the guidance computer.

Height: 7 m (23 ft.)

Diameter: 1.4 m (4.6 ft.)

Propellants: Liquid, consisting of Aerozine 50 fuel and nitrogen tetroxide oxidizer

Thrust Average: 43,398 N (9,756 lb.)

Third Stage

The TE-364-4 solid propellant motor is produced by Thiokol Chemical.

Height: 1.8 m (6 ft.)

Diameter: 0.95 m (3.1 ft.)

Thrust: 66,656 N (14,985 lb.)

LAUNCH OPERATIONS

The NASA Kennedy Space Center's Deployable Payloads Operations Directorate plays a key role in the preparation and launch of the thrust-augmented Delta rocket.

Delta 150, carrying RCA SATCOM-C, will be launched from Pad A at Complex 17, Cape Canaveral Air Force Station.

During the first week in October, the Delta first stage and interstage were erected on Pad A, the nine solid strap-on rocket motors were mounted in place around the base of the first stage and the second stage was mated with the first stage.

On Nov. 5, the RCA SATCOM-C spacecraft underwent its initial checkout in Hangar AE. It was moved to the Delta Spin Test Facility for final processing and mating with the Delta third stage on Nov. 14.

At Complex 17, the spacecraft and third stage assembly will be erected atop the Delta and the payload fairing which will protect it during its flight through the atmosphere will be emplaced.

SATCOM MISSION DESCRIPTION

The SATCOM system employed by RCA American Communications, Inc., is designed to fulfill three primary mission requirements:

- Communications coverage for all 50 states;
- Capability of operating all 24 transponder channels at specified power throughout the minimum eight-year life;
- Compatibility with the Delta 3914 launch vehicle (2000 pound useful transfer orbit).

The spacecraft antenna assembly directs all 24 channels to all states except Hawaii, where a spot beam couples 12 of the channels to the communications circuitry.

SPACECRAFT DESCRIPTION

The RCA SATCOM-C weighs 895 kg (1,794 lb.). It consists of a fixed, four-reflector antenna assembly and lightweight transponder of high-efficiency traveling-wave-tube amplifiers and low-density microwave filters, plus four spare amplifiers to extend satellite life expectancy. Structurally rigid mounting of the antennas preserves alignment and eliminates the risks of deployment.

Approximate dimensions of the spacecraft are 120 centimeters (47 inches) by 162 cm (64 in.) for the base-plate and 117 cm (46 in.) for the main body height. Each bifold solar array is 155 cm (61 in.) by 226 cm (89 in.) overall. The solar panels fold against the transponder body when stowed for launch.

The satellite is three-axis stabilized using momentum bias and magnetic attitude control.

MAJOR DELTA/RCA SATCOM-C FLIGHT EVENTS

Event	Time	Altitude Kilometers	Altitude Miles	Velocity Km/Hr	Velocity Mph
Liftoff (Five Solid Motors Ignition)	0 sec.	0	0	0	0
Five Solid Motor Burnout	57.2 sec.	9.9	6.1	1,663	1,033
Jettison Three Solid Motor Casings	1 min. 4 sec.	12.3	7.6	1,603	995
Four Solid Motor Ignition	1 min. 4 sec.	12.3	7.6	1,603	995
Jettison Two Solid Motor Casings	1 min. 5 sec.	12.6	7.8	1,636	1,016
Four Solid Motors Burnout	2 min. 2 sec.	42.4	26.3	7,051	4,379
Jettison Four Solid Motor Casings	2 min. 7 sec.	46.4	28.9	7,378	4,582
Main Engine Cutoff (MECO)	3 min. 45 sec.	107.3	66.6	19,610	12,179
Stage II Ignition	3 min. 58 sec.	114.2	70.9	19,629	12,189
Jettison Fairing	4 min. 28 sec.	127.6	79.2	20,145	12,510
First Cutoff - Stage II	8 min. 15 sec.	157.0	97.5	26,687	16,573
Restart Stage II	20 min. 12 sec.	163.1	101.2	26,660	16,556
Final Cutoff - Stage II (SECO-2)	21 min. 4 sec.	162.5	100.9	28,618	17,772
Fire Spin Rockets	22 min. 4 sec.	163.3	88.2	28,630	15,453
Stage II/III Separation	22 min. 6 sec.	163.4	88.2	28,630	15,453
Stage III Ignition	22 min. 47 sec.	167.0	90.2	28,615	15,445
Stage III Burnout	23 min. 31 sec.	175.8	95.0	35,372	19,092
Stage III/SATCOM Separation	24 min. 40 sec.	216.4	116.9	35,235	19,018
Transfer Orbit Apogee	5 hrs. 38 min.	35,786	19,323	6,260	3,379

NASA/RCA SATCOM LAUNCH TEAM

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Joseph B. Mahon	Director of Expendable Launch Vehicle Systems
Peter T. Eaton	Manager, Delta Program

Goddard Space Flight Center

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John Boeckel	Acting Director, Project Management
Paul Mowatt	Associate Director for Project Management
David W. Grimes	Delta Project Manager
William R. Russell	Deputy Delta Project Manager, Technical
Robert Goss	Manager, Delta Mission Analysis and Integration
Philip Frustace	RCA SATCOM-C Mission Integration Manager
William Hawkins	Mission Operations and Network Support Manager
Ray Mazur	Mission Support

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Joseph Elko	Manager, Spacecraft Engineering

CONTRACTORS

RCA Astro-Electronics Division Princeton, N.J.	Spacecraft
McDonnell Douglas Astronautics Co. Huntington Beach, Calif.	Delta launch vehicle

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