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National Aeronautics and
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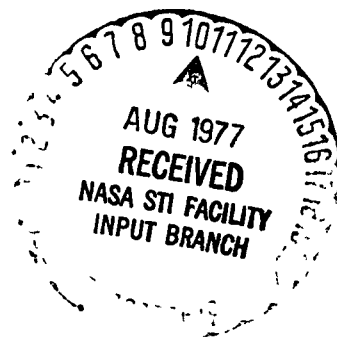
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For Release IMMEDIATE

Press Kit

Project SIRIO (Italy)

RELEASE NO: 77-152



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For Release

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

IMMEDIATE

Joseph McRoberts
Goddard Space Flight Center, Greenbelt, Md.
(Phone: 301/982-4955)

RELEASE NO: 77-152

NASA TO LAUNCH SIRIO COMMUNICATIONS SATELLITE FOR ITALY

The first Italian experimental communications satellite, SIRIO, is being readied for launch Aug. 17 from Launch Complex 17, Eastern Test Range (ETR) at NASA's Kennedy Space Center, Fla., on a Delta launch vehicle. The launch window is 7:40 to 9:00 p.m. EDT.

The satellite will be placed in synchronous orbit over the equator just south of the west coast of Africa at 15 degrees W. longitude. From this position it will be able to carry out various scientific experiments in the telecommunications field.

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The principal experiment is designed for study of the propagation characteristics of radio waves transmitted at super high frequencies (SHF) during adverse weather conditions including rain, snow and fog.

In addition to experimenting with various types of technical transmissions, the Italians will acquire expertise in advanced space technology while developing a low cost "bus" for future communications tests. A whole segment of Italian industry interested in space technology worked on the spacecraft and is expected to use the acquired experience in future international space programs. The name SIRIO, which is Italian for SIRIUS the dog star, is also an acronym for industrial research oriented Italian satellite -- Satellite Italiano Ricerca Industriale Orientata.

From its initial on-station position, SIRIO will transmit voice, data and television in the SHF range from Europe to North America. The use of the SHF frequencies is becoming necessary due to overcrowding of conventional frequency bands.

SIRIO is 1.4 meters (4.6 feet) in diameter, 2 m (6.5 ft.) in height including the apogee boost motor (ABM) and weighs 398 kilograms (880 pounds) including the ABM.

The Italian government research agency, Consiglio Nazionale della Ricerche (CNR), is sponsoring the project with coordination of the experiments under the direction of Centro Studi Telecomunicazioni Spaziali del Politecnico (CSTS), Milan. A memorandum of understanding dated March 13, 1970, governs the portions of the project which are the responsibility of the Italian government and those to be undertaken by NASA.

The Expendable Launch Vehicle Program Office in the Office of Space Flight at NASA Headquarters, Washington, D.C., manages the contract CNR has with NASA which stipulates the launch support services NASA will provide until the spacecraft is on station -- about 30 to 45 days after launch.

Launch support services include the Delta 2313 launch vehicle, launch from ETR and significant post-launch tracking and data acquisition support.

Overall responsibility for the satellite will pass to CNR as soon as the spacecraft has been separated from the launch vehicle although an Italian and American mission control center team at NASA's Goddard Space Flight Center, Greenbelt, Md., will actually handle operations until SIRIO is checked out.

The ABM which puts the satellite in near-synchronous orbit is scheduled to be fired at the fourth apogee of the transfer orbit approximately 39 hours after launch. After ABM firing, which will occur over the equator at approximately 63 degrees W. longitude, the spacecraft will be allowed to drift easterly until it arrives at its final station location of 15 degrees W. longitude. This drift phase should take 10 days. During this time spacecraft orbit and attitude maneuvers will be performed to slow it and place it on station. At the conclusion of on-station checkout, approximately 30 to 45 days after launch, all operational control of the satellite will be the responsibility of the SIRIO Italian Operation Control Center (SIOCC) located at the Telespazio facility at Fucino, Italy.

Direct responsibility for developing the spacecraft under the overall supervision of CNR was given to Compagnia Industriale Aerospaziale (CIASpA) in Rome. CIASpA used a number of subcontractors in the project including Aeritalia, Turin; CGE-Fiar, Milan; Galileo, Florence; Laben, Milan; OTE, Florence; OTO-Melara, Las Spezia; SNIA-Viscosa, Rome; and Selenia, Rome.

Goddard Space Flight Center directs the Delta project and McDonnell Douglas Astronautics Co., Huntington Beach, Calif., is the prime contractor. Kennedy Space Center is responsible to Goddard Center for management of launch operations over ETR.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS.)

STRAIGHT-EIGHT DELTA STATISTICS

The Delta launch vehicle project is under technical management of the Goddard Space Flight Center, Greenbelt, Md. McDonnell Douglas Astronautics Co., Huntington Beach, Calif., is the prime contractor. The two-stage Delta model 2313 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: 106,000 kg (230,250 lb.) or about 116 tons

Liftoff Thrust: 1,278,000 newtons (286,500 lb.) including strap-on solids

1,766,000 N (396,000 lb.) at 7+25 sec.

First Stage

(Liquid only): Extended long tank Thor produced by McDonnell Douglas Astronautics., engines produced by Rocketdyne Division of Rockwell International.

Diameter: 2.4 m (8 ft.)

Height: 21.3 m (70 ft.)

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

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

Burning Time: About 3 minutes and 48 seconds.

Weight: Approximately 84,700 kg (93 tons) excluding strap-on solids.

Strap-on Solids: Three solid propellant rockets produced by the Thiokol Chemical Corp.

Diameter: 0.8 m (31 in.)

Height: 6.0 m (19.8 ft.)

Total Weight: 13,410 kg (29,568 lb.)
4,470 kg (9,850 lb.) each

Thrust: 693,950 N (156,000 lb.) total for three
231,317 N (52,000 Lb.) each

Burning Time: 38 seconds

Second Stage

Produced by McDonnell Douglas Astronautics Co., utilizing a TRW engine. Major subcontractors for the vehicle inertial guidance system located on the second stage are Hamilton-Standard Division of United Technologies Corp., Windsor Locks, Conn.; and Teledyne, Inc., Los Angeles.

Propellants: Liquid -- Aerozene 50 for the fuel and nitrogen tetroxide (N₂O₄) for the oxidizer.

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

Height: 5.2 m (17 ft.)

Weight: 6,210 kg (6.8 tons)

Thrust: About 42,300 N (9,500 lb.)

Total Burning Time: 335 seconds

Third Stage

Thiokol Chemical Corp. TE-365-3 motor.

Propellant: Solid

Height: 1.09 m (43 in.)

Diameter: 1 m (3 ft.)

Weight: 718 kg (1,582 lb.)

Thrust: 42,169 N (9,480 lb.)

Burning Time: 44 seconds

LAUNCH OPERATIONS

The Kennedy Space Center's Expendable Vehicles Directorate plays a key role in the preparation and launch of the thrust-augmented Delta rocket carrying SIRIO.

Delta 133 will be launched from Pad B, southernmost of the two launch pads at Complex 17, Cape Canaveral Air Force Station, Fla.

The Delta first stage and interstage were erected on Pad B July 20. The three solid strap-on rocket motors were mounted in place around the base of the first stage and the second stage was erected July 21.

The SIRIO spacecraft was received at Kennedy Center June 30 and underwent initial processing in the Satellite Assembly Building. It was later moved to the Delta Spin Test Facility and mated with the Delta third stage. The third stage/spacecraft assembly is to be moved to Pad B and mated with Delta 133 Aug. 10. The payload fairing which is to protect the spacecraft on its flight through the atmosphere is to be put in place Aug. 16.

MAJOR DELTA SIRIO FLIGHT EVENTS

<u>Event</u>	<u>Time</u>
Liftoff	0 sec.
Solid Motor Burnout	38 sec.
Solid Motor Jettison	1 min. 10 sec.
Main Engine Cutoff (MECO)	3 min. 48 sec.
First/Second Stage Separation	3 min. 56 sec.
Second Stage Ignition 1	4 min. 1 sec.
Fairing Jettison	4 min. 55 sec.
Second Engine Cutoff 1 (SECO-1)	8 min. 54 sec.
Second Stage Ignition 2	21 min. 45 sec.
Second Engine Cutoff 2 (SECO 2)	22 min. 8 sec.
Third Stage Spin-Up	23 min. 7 sec.
Second/Third Stage Separation	23 min. 9 sec.
Third Stage Ignition	23 min. 51 sec.
Third Stage Burnout	24 min. 35 sec.
Third Stage/Spacecraft Separation	25 min. 47 sec.

CNR MANAGEMENT

CNR Headquarters

Prof. Ernesto Quagliariello	President
Dr. Ernesto Mango	Secretary General
Prof. Francesco Scandone	Director of Space Activity Service

DELTA/SIRIO LAUNCH TEAM

CNR

Dr. Massimo Macchia	SIRIO Project Manager
Prof. Francesco Carassa	Program Scientist
Ing. Stefano Trumpy	Flight Operations Manager
Dr. Giangrende Barresi	Launch Operations Manager

NASA Headquarters

John F. Yardley	Associate Administrator for Space Flight
Joseph B. Mahon	Director of Expendable Launch Vehicle Programs
Peter T. Eaton	Manager, Delta Program

Goddard Space Flight Center

Dr. Robert S. Cooper	Director
Dr. William C. Schneider	Director of Project Management
Robert C. Baumann	Acting Delta Project Manager
William R. Russell	Deputy Delta Project Manager, Technical

Goddard Center (cont'd.)

Robert Goss	Chief, Mission Analysis and Integration Branch, Delta Project Office; NASA Manager for SIRIO
E. Michael Chewning	Delta Mission Integration Manager
Thomas C. Moore	Mission Operations Manager
Edward Lowe	Network Support Manager
John Walker	Network Operations Manager

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
Hugh A. Weston, Jr.	Chief, Delta Operations Division
Bert L. Grenville	Complex 17 Operations Manager
David Bragdon	Spacecraft Coordinator

CONTRACTORS

Compagnia Industriale Aerospaziale SpA, Rome	Spacecraft
McDonnell Douglas Astronautics Co. Huntington Beach, Calif.	Delta Launch Vehicle
Telespazia SpA, Rome	Ground Support