NASA News

National Aeronautics and
Space Administration

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

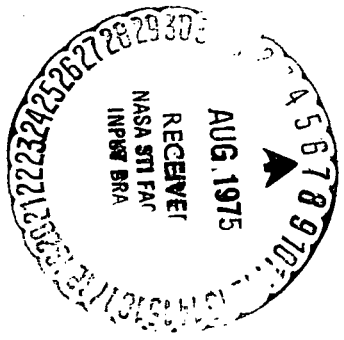
For Release:
IMMEDIATE

PRESS KIT

PROJECT: COS-B

RELEASE NO: 75-214

Contents



(NASA-News-Release-75-214) NASA TO LAUNCH EUROPEAN COSMIC RAY EXPERIMENTAL SATELLITE (NASA) 10 p CSCL 22D

N75-28094

Unclas
00/15 29862

NASA News

National Aeronautics and
Space Administration

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

For Release:
IMMEDIATE

Ann Weeks
Headquarters, Washington, D.C.
(Phone: 202/755-8370)

Jim Lacy
Goddard Space Flight Center, Greenbelt, Md.
(Phone: 301/982-5565

RELEASE NO: 75-214

NASA TO LAUNCH EUROPEAN COSMIC RAY EXPERIMENTAL SATELLITE

Europe's first observatory satellite, which is designed for extraterrestrial gamma radiation study, will be launched by NASA's Goddard Space Flight Center, Greenbelt, Md., on a Delta rocket for the European Space Agency (ESA). The launch is from the Air Force Western Test Range, Vandenberg Air Force Base, Calif., about Aug. 6.

A Delta 2913 vehicle will place the 275-kilogram (612-pound) COS-B (for COSMIC) into a highly elliptical orbit of 100,000 by 350 kilometers (62,000 by 217 miles) having an inclination of 90 degrees to the equator.

-more-

COS-B's mission has the following objectives:

- To establish the intensity of the average gamma-ray flux;
- To examine the large-scale nature of the radiation over angular regions corresponding to galactic features;
- To search for, and examine, sources of small angular size, especially those such as supernova remnants, quasars and other radio and x-ray sources;
- To measure the energy spectra of the radiations in all these categories;
- To search for time variations, both long term, as observed in certain x-ray sources, and of the very short periods characteristic of pulsars now observed in visible, x-ray and radio wavelengths.

NASA's responsibility ends at spacecraft separation after the spacecraft has been injected into the highly elliptical orbit approximately 53 minutes, 20 seconds after liftoff. The ESA will reimburse NASA for both the Delta launch vehicle and launch services.

The ESA ground stations in Belgium; Fairbanks, Alaska; and the ESA Control Center, Darmstadt, Germany, will be the prime sites for early orbit and normal operations. Tracking support by NASA Space Tracking and Data Network (STDN) stations will provide coordinated mission support until NASA and ESA orbit data agree. Ordinary procedure calls for the transmission of commands by ESA stations, although back-up commands may be requested from NASA between liftoff and three weeks thereafter.

After that date, NASA stations may be requested to provide emergency commands and special "long eclipse" operations in May 1976 and May 1977.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS.)

LAUNCH SUPPORT AND TRACKING OPERATIONS

The Goddard Space Flight Center has management responsibility for the Delta launch vehicle and limited tracking support.

PROGRAM MANAGEMENT

COS-B project management has been assigned by ESA Headquarters to the European Space Technology Center (ESTEC), at Noordwijk, Holland.

Project Manager responsible for all design, development, integration, testing and delivery of the COS-B satellite is G. Altman of ESTEC.

H. Bath of the European Space Operations Center (ESOC) Darmstadt, Germany, is the ESTRACK Network Director. He is responsible for its operations, which include the coordination of ground support activities with NASA and other agencies and the operation and control of the COS-B after launch.

THE COS-B SPACECRAFT

The satellite is cylindrical with a body of 140 centimeters (55 inches) diameter and 121 cm (47.5 in.) high. Four monopole antennas protrude 41.2 cm (20.1 in.) below the bottom of the spacecraft, giving it an overall height of 172.2 cm (67.6 in.). Two sensor units (ASU1 and ASU2) and the spin-rate adjustment thrusters are mounted approximately midway along the curved cylindrical surface, protrude approximately 3.5 cm (13.7 in.) and 1.5 cm (0.5 in.) respectively. Nine thousand and eighty solars cells, divided among 12 panels are mounted over the curved surface area of the satellite.

LAUNCH OPERATIONS

The spacecraft will be launched from the Western Test Range, Vandenberg AFB, Calif., by a three-stage Delta launch vehicle.

First Stage

The first stage is a McDonnell Douglas extended long-tank Thor booster incorporating nine strap-on Thiokol solid-fuel Castor II 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.

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-364-3 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.

Spacecraft Separation

Approximately 1 1/2 minutes after third stage burnout, COS-B separates from the Delta third stage at a planned altitude of 222 km (139 mi.) at which time ESA ground tracking and command facilities take over.

STRAIGHT-EIGHT DELTA FACTS AND FIGURES

Height: 35.4 meters (116 feet) including shroud

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

Liftoff weight: 133,180 kilograms (293,000 pounds)

Liftoff thrust: 1,741,475 newtons (391,343 lbs.) including strap-on solids

First Stage -- (liquid only) consists of an extended long tank Thor, produced by McDonnell Douglas. The RS-27 engines, produced by the Rocketdyne Division of Rockwell International, have 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 as the oxidizer

thrust -- 912,000 N (205,000 lbs.)

burning time -- about 3.48 minutes

weight -- about 84,000 kg (185,000 lbs.) excluding strap-on solids

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

diameter -- 0.8 m (31 in.)

height -- 7 m (23.6 ft.)

total weight -- 40,300 kg (88,650 lbs.) for nine

4,475 kg (9,850 lbs.) each

thrust -- 2,083,000 N (468,000 lbs.) for nine

231,400 N (52,000 lbs.) each

burning time -- 38 seconds

Second Stage -- Produced by McDonnell Douglas Astronautics Co., utilizing 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. Characteristics are:

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 lbs.)

propellants -- liquid, consisting of Aerozene 50 for the fuel and Nitrogen Tetroxide (N_2O_4) for the oxidizer

thrust -- about 42,923 N (9,650 lbs.)

total burning time -- 335 seconds

Third Stage -- Thiokol Chemical Co. TE-364-3 motor:

propellants -- solid

height -- 1.4 m (4.5 ft.)

diameter -- 1 m (3 ft.)

weight -- 730 kg (1,600 lbs.)

thrust -- 41,500 N (9,320 lbs.)

burning time -- 44 seconds

MAJOR COS-B/DELTA FLIGHT EVENTS

Event	Time	Altitude	
	Minutes/Seconds	Kilometers	Miles
Liftoff	0:00	0	0
Six Solid Motors Burnout	0:38	5	3
Three Solid Motors Ignite	0:39	6	4
Three Solid Motors Burnout	1:17	22	14
Jettison Nine Motor Casings	1:27	26	16
Main Engine Cutoff (MECO)	3:48	107	66
Vernier Engine Cutoff (VECO)	3:54	113	70
Stage I/II Separation	3:56	115	71
Stage II Ignition Signal	4:01	120	75
Jettison Fairing	4:31	144	89
Stage II Cutoff (SECO I)	8:51	224	139
Fire Spin Rockets	50:27	346	215
Stage II/III Separation	50:29	346	215
Stage III Ignition	51:10	352	219
Stage III Burnout	51:55	363	226
Stage III/Spacecraft Separation	53:07	413	257

-more-

THE COS-B/DELTA TEAM

NASA Headquarters

Dr. Noel W. Hinners	Associate Administrator for Space Science
Joseph B. Mahon	Director, Launch Vehicle and Propulsion Program
I. T. Gillam IV	Manager, Small Launch Vehicles and International Programs
Peter T. Eaton	Manager, Delta
Gerald M. Truszynski	Associate Administrator for Tracking and Data Acquisition
Arnold W. Frutkin	Assistant Administrator for International Affairs

Goddard Space Flight Center

Dr. John F. Clark	Director
Robert N. Lindley	Director, Projects Directorate
Robert C. Baumann	Associate Director of Projects for Delta
Robert J. Goss	NASA Support Manager
Raymond Mazur	Mission Support Manager
Ambrose J. Yudd	Network Support Manager

-more-

Kennedy Space Center

Lee R. Scherer	Director
John J. Neilon	Director, Unmanned Launch Operations
Henry R. Van Goey	Manager, KSC Western Launch Operations Division
Wilmer "Bud" Thacker	Chief, Delta Operations, Launch Vehicle Engineering Branch
Carl Latham	COS-B Spacecraft Coordinator

July 29, 1975