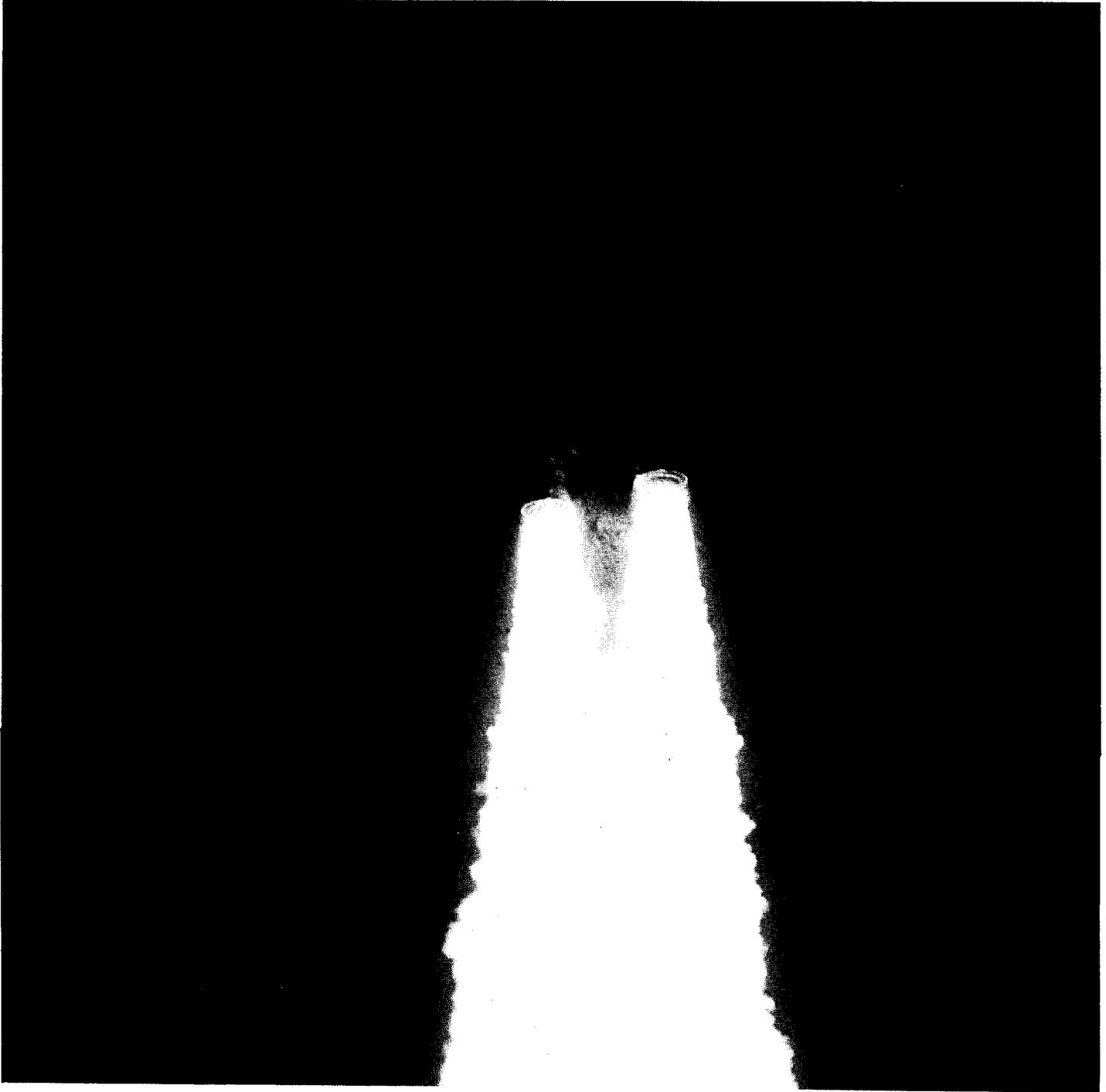


# GODDARD NEWS

Goddard Space Flight Center, Greenbelt, Md.

Vol. 28 no. 23 December 15, 1981

## Space Shuttle Columbia flies again



*STS-2 story and pictures of Goddard events  
.....see pages 2-3*

## *Space Shuttle Columbia makes second trek*

The Space Shuttle Columbia blasted off from Cape Canaveral Thursday, November 12, and became the first manned space vehicle ever to return to orbit. The mission proved that the craft can be reused as a means for regularly and inexpensively delivering payloads into orbit and can serve as a space observing platform in its own right.

Piloted by astronauts Joe Engle (Commander) and Richard Truly (Pilot), the second of the four developmental test-flights of the Columbia proved exciting from start to finish: a mixture of problems and triumphs which included a smooth launch, in-orbit loss of one of three fuel cells, abbreviation of the flight from 84 orbits to 38, and a perfect landing.

The launch story opened on November 4, with lift-off scheduled for 7:30 a.m. EST. As excitement built with the countdown, few people could have guessed that at T-minus 31 seconds, just a little over half a minute from the irrevocable ignition of the solid rocket boosters, the count would suddenly be frozen. The problem turned out to be related to the Auxiliary Power Units which supply hydraulic power to move the craft's aerodynamic surfaces, gimbal the engines during flight, and lower the landing gear. The specific concern was the pressure of the lubricant oil: it was theorized that either hydrazine or water had mixed with the lubricant oil in the months since the last Shuttle flight, causing a waxy substance to form which had clogged the filters in the system.

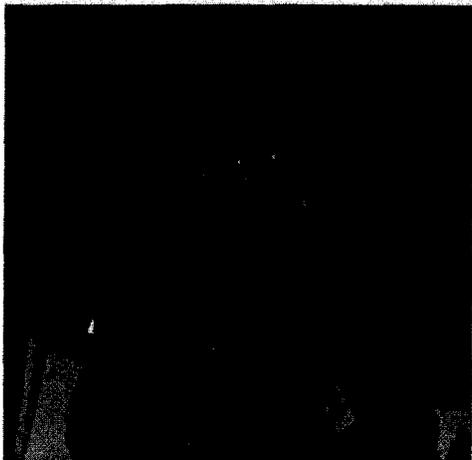
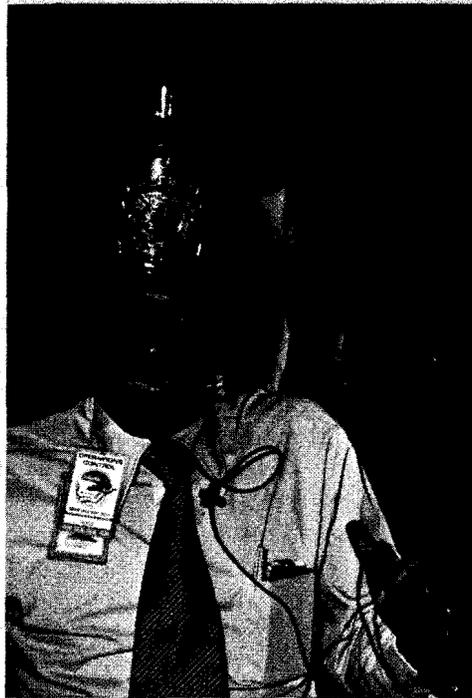
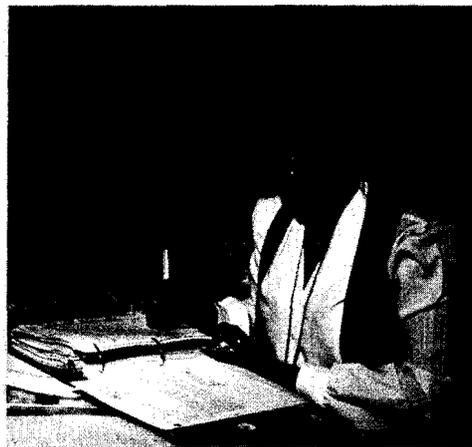
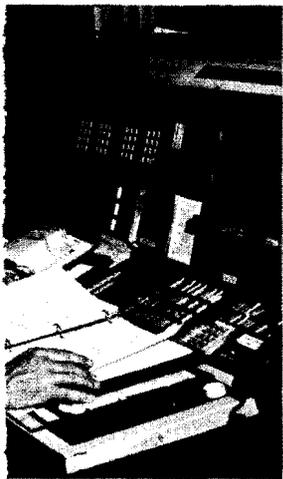
By the morning of November 12, the Shuttle countdown was back on track and at 10:10 EST the moment of truth arrived. Just as once before in April, Columbia rose on a billow of smoke. Commander Engle's heart rose to an average 110 (with a high of 120), Pilot Truly's to 86 (high of 94). The spaceship took off on what was described, once again, as an exceptionally smooth ride, and within 9 minutes and 40 seconds had made its first burn toward a 137 nautical mile high orbit.

But the exhilarating successful second launch of Columbia was soon clouded by a worrisome development that afternoon: one of the three fuel cells which supply electricity and drinking water had begun mal-

Continued on Page 6



*This montage depicts Director Henry Iuliano, series, poses with Manager James Brooks, naut Tony England; Ne*



Some of the activities at Goddard during STS-2. Clockwise from top left: Networks Operations in the Network Operations Control Center (NOCC); David Prowse, Darth Vader in the Star Wars Management Operations Director Benita A. Sidwell, Center Director A. Thomas Young, and Center Deputy Troy; Documentation Coordinator Margaret Pierce updates some support procedures; Mission Control in fire hat, with Director of Networks Richard Sade looking on; Director A. Thomas Young; Astro-works Operations Support Team in NOCC; Channel 4's Larry Shainman interviews astronaut England.

## OSTA-1 first SHUTTLE PAYLOAD

The second flight of the Columbia carried the first scientific and applications payload to fly aboard the Space Shuttle. The payload consisted of five experiments for the NASA Office of Space and Terrestrial Applications (OSTA). The five experiments concerned remote sensing of land resources, environmental quality, ocean conditions and meteorological phenomena. The major objective of this experiments package was an evaluation of Columbia's ability to serve as a steady platform for Earth-viewing instruments.

The five experiments were the Ocean Color Experiment (OCE), managed by Goddard; the Shuttle Imaging Radar-A (SIR-A) and the Shuttle Multispectral Infrared Radiometer (SMIRR), managed by the Jet Propulsion Laboratory; and a Measurement of Air Pollution from Satellites (MAPS) and a Feature Identification and Location Experiment (FILE), managed by Langley Research Center.

Two experiments were carried in the crew compartment. The first was a Heflex Bio-engineering Test (with Project Scientist from the State University of New York at Albany), designed to prepare the way for a later Spacelab experiment in micro-gravity plant growth. The second was a Night/Day Optical Survey of Lightning (with Project Scientist from the University of Pennsylvania), an instrument for observing and recording lightning discharges from the vantage point of space.



*The OSTA-1 payload is shown here in the Operations and Checkout (O&C) building at the Cape before the second voyage of the Shuttle.*

## Quito tracking station shuts down

During the second mission of the Space Shuttle, Goddard's NASA Tracking Station in Quito, Ecuador, bade "adios" to the nation's space program, ending 25 years of service.



*Pictured above is a tracking antenna located atop Mt. Cotopaxi along with one of the office sites.*

Astronauts Joe Engle and Dick Truly expressed appreciation to the 75 personnel at the station atop Mt. Cotopaxi at 7:04 a.m. EST on Saturday, November 14, as they made their last pass over Quito.

Officials at Goddard also said farewell to the NASA personnel there. Words of thanks and praise went to the Quito crew from Ed Smylie, NASA's Associate Administrator for Tracking and Data Systems; Dr. John McElroy, Deputy Director at Goddard; Richard Sade, NASA's Director of Networks; Mike Stevens, the Shuttle Network Manager; Walt LaFleur, Deputy Director of Networks; and Daniel Spintman, Chief of Network Operations Division.

Quito first began its service to the space program in 1956. Budget restrictions and programmatic considerations for the future missions forced the closure. According to Networks Director Sade, the closing will save an estimated \$4 million annually. Also closed with this mission was the NASA Tracking Station at Tula Peak, just outside White Sands, New Mexico. An additional half-million dollars in savings will be realized by that closure, said Sade.

Equipment for both sites is being transferred to Dakar, in Africa, where the Tracking Station is entering into more extensive operations with the maturity of the Space Shuttle Program.

# ***STS-1 Honor Award ceremony held at Goddard***

To recognize those Goddard employees and contractors from across the Center and around the world who contributed so much to the success of the first Space Shuttle mission, a Joint NASA/Goddard STS-1 Honor Awards ceremony was held last month. The following individuals and groups received awards.

## ***NASA Honor Awards***

### **Outstanding Leadership Medal**



**Director of Networks Richard Sade (l) and Head of the Networks Operations Control Branch Dale Call (r) received Outstanding Leadership Medals for their support in STS-1. They are shown here receiving the award from Center Director A. Thomas Young.**

### **Exceptional Service Medal**

William B. Dickinson  
 Anthony F. Grandi  
 Thomas M. Janoski  
 Robert L. Owen  
 Daniel A. Spintman  
 J. Michael Stevens

### **Certificate of Appreciation**

Thomas E. Butler  
 John E. Dowling  
 James A. Jackson  
 Leonard C. Manning  
 Robert D. Hudson  
 B. Harry McKeegan  
 Seaton B. Norman  
 Karl Peters  
 Severino Z. Santos

Curtis A. Schroeder  
 Albert B. Washburn, Jr.

### **Group Achievement Award**

Compatibility Test Team  
 DOD/NASA Network Support Team  
 NASCOM STS-1 Support Team  
 Operations Support Computing Team  
 Shuttle Simulations Team  
 STS-1 Network Support Committee

### **Public Service Group Achievement Award**

Bendix Field Engineering Corporation  
 Bendix NASCOM Project  
 Raytheon Service Company

## ***Goddard Honor Awards***

### **Exceptional Performance Award**

John R. Badger  
 Jack Balakirsky  
 Walter D. Bradley  
 Evmenios P. Damon  
 Walter J. Hensel  
 Blake T. Lorenz  
 Robert H. Plaumann  
 Larry W. Sapper  
 Vaughn E. Turner

### **Outstanding Service Award**

Donald G. Henry  
 Murray Weingarten--Bendix Field Engineering Corporation

### **Group Achievement Award**

Building 3/14 Mission Support Group  
 Guard Force  
 MOCF STS-1 Support Group  
 Office of Public Affairs  
 Security Branch  
 STDN Ranging Equipment (SRE) Support Group (Bendix)  
 Television Support Group (Bendix)



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 or call the Editor at

**344-5566**



Above: David Prowse (with book), Darth Vader in the Star Wars series, visited Goddard last month while in Washington to accept his designation as an official spokesman of the United Nations International Year of the Disabled Person. From l-r, Lynn Clark, Employee Advisory Committee on the Handicapped (EACH); Astronaut Tony England; sitting, Gabriel Toth, EACH; Prowse; Kent Potter, chairperson for EACH; Center Director A. Thomas Young; Management Operations Director Benita A. Sidwell; and Center Deputy Director John H. McElroy. Below: The Columbia makes a near perfect landing at Edwards AFB in California on November 14, 1981 after it's historic second voyage.



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### STS-2

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functioning and required shutdown. While the loss of one cell had no immediate effect on the operability of the orbiter (for it represented a redundancy), it did mean any additional system failures could seriously reduce the craft's data gathering ability. Rather than risk compromising temperature and aerodynamic tests slated for re-entry, Shuttle directors decided to reduce the Columbia's orbital time to "minimum mission," or just 54 hours (the duration of the first flight). The minimum mission schedule, drawn up months prior to the launch, insured completion of the highest priority tasks including exercising the new Remote Manipulator System (the orbiter's 50-foot long crane), and the operation of payload experiments (see OSTA-1 page 4).

The minimum mission activities proceeded through the flight without a hitch, and by the midpoint of the Columbia's second day in orbit, November 13, Shuttle Transportation System Operations Manager Glynn Lunney was predicting the craft and its experiment payload would obtain 90 percent of the data originally expected from the mission. The evening of the same day, President Reagan visited Houston Mission Control and called the astronauts, telling them that the world, and especially America, was following their mission with great pride.

At a speed of Mach 18, the orbiter re-entered the atmosphere November 14, and began its descent towards Edwards Air Force Base. The landing had originally been slated for runway 15 to check the aircraft's performance in wind conditions dissimilar to the first flight, but at the last minute, strong cross winds proved uncooperative, and the landing was moved back to strip 23, as before. Cameras picked up the ship as it was still 74 miles distant, and approaching in a long straight glide. The glide turned into a series of banking turns to reduce speed, then, at a velocity of Mach 2, the craft opened its split rudder tail and reduced speed to 227 mph for touchdown at 1:13 PST.

With the orbiter back from space a second time, work is already underway to launch the Space Shuttle a third time, now scheduled for March, 1982.