

JSC's fleet of T-38 training aircraft receives an in-house upgrade. Story on Page 3.



The agency's Associate Deputy Administrator spends time at JSC. Photo on Page 4.

Space News Roundup

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Kraft to lead independent review team

Independent group to make maintaining safety its top priority

Former JSC director Christopher Kraft will form and lead an external independent team to evaluate the resources and the requirements being expended on human space flight.

The team will review the findings of the Space Shuttle Functional Workforce Review, initiated in September 1994, and make recommendations to Administrator Daniel Goldin for implementation.

Kraft's team, which will be formed by next week, is charged with evaluating the current processes and procedures for conducting shuttle operations at the Johnson, Kennedy, Marshall and Stennis Space Centers and related contractor activities with the intent of recommending a new and more optimum operating structure—with program safety the first priority.

Kraft's team also will provide rec-

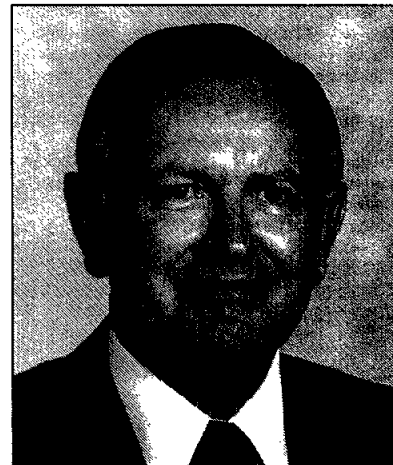
ommendations on a plan to transition to any new organizational structure. Initial efforts will focus on KSC operations. As part of his charter, Kraft will review the management and contractual relationships for the operation of the space shuttle program.

Kraft's team will review related space station activities, as required, to ensure the necessary shuttle support of the international station.

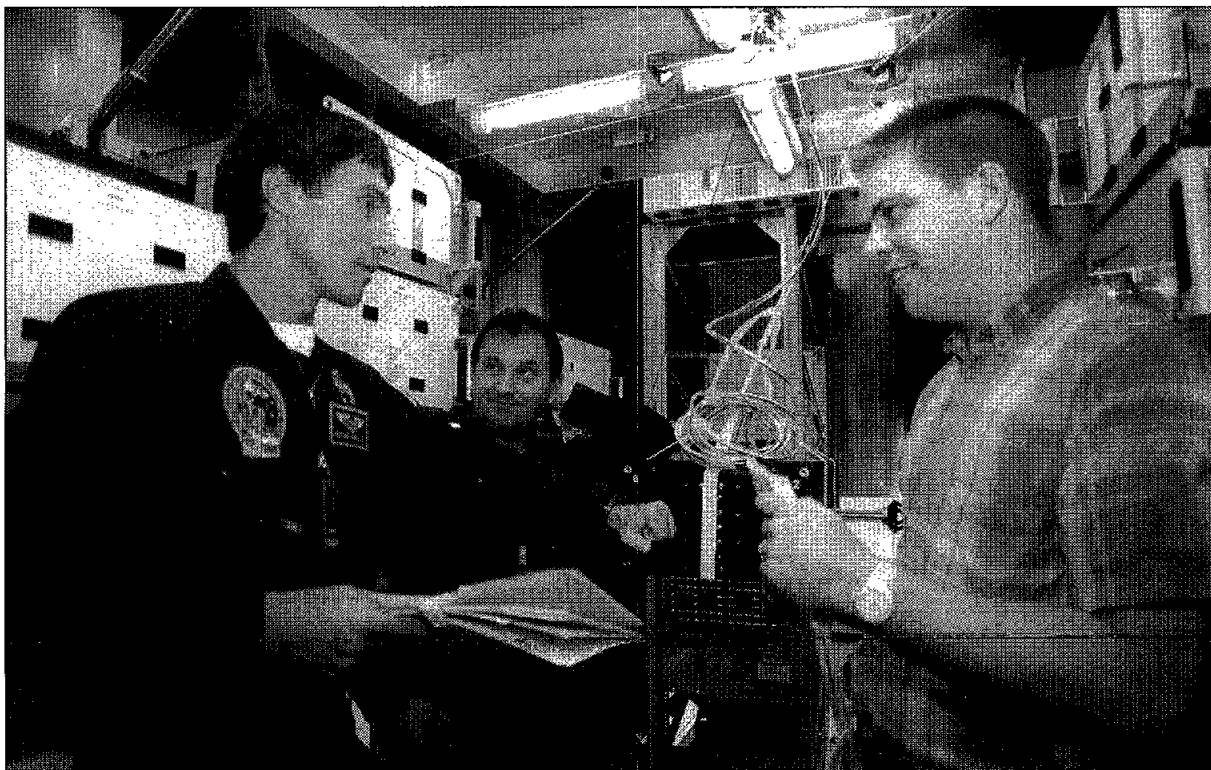
Kraft's team is expected to complete its work by March 15, 1995.

Dr. Kraft joined the National Advisory Committee for Aeronautics in 1945. He was instrumental in developing Project Mercury and served as Flight Director for all Mercury missions and many Gemini missions.

He is an honorary fellow of the American Institute of Aeronautics and Astronautics.



Christopher Kraft, Jr.



Developer Clark Thompson, left, discusses the operation of the Charlotte robot in the Spacehab training mockup at Kennedy Space Center with STS-63 Mission Specialist Vladimir Titov, center, and fellow Russian astronaut Sergei Krikalev. Charlotte, named for the clever spider in the children's book, is a robotic device that will perform simple tasks such as servicing experiments and remote video observation during its first flight on the upcoming STS-63 mission.

NASA Photo

Discovery sets sights on first flight of 1995

Discovery continues to take aim at an early February launch that will see the orbiter and its six-member crew rendezvous with Russia's Mir space station.

The spacecraft remains in place at Kennedy Space Center's Orbiter Processing Facility as technicians prepare the vehicle for flight. Tuesday, the Spacehab module and Spartan-204 payload were installed in Discovery's payload bay. Earlier this week, technicians completed a check of the forward reaction control system and water spray boilers.

Today, work will begin to replace a yaw actuator controller in main engine number 2 after a bent pin was discovered. The actuator controller gathers data from the main engine controllers during ascent allowing the engines to be gimbaled to steer the orbiter during the final 6 1/2 minutes of powered flight. The

work will not affect the launch processing schedule.

The STS-63 crew—Commander Jim Wetherbee, Pilot Eileen Collins, Payload Commander Bernard Harris, and Mission Specialists Janice Voss, Mike Foale and Vladimir Titov—is set to participate in a final countdown dress rehearsal for the launch in mid-January.



Discovery remains on track for a Jan. 9 rollout to Launch Pad 39B.

Technicians also continue to ready Endeavour for its planned 16-day mission carrying the ASTRO-2 payload.

Work in progress includes functional checks of the orbital maneuvering system pods and electrical testing of the extended duration orbiter pallet. Stacking of Endeavour's solid rocket boosters continues in the Vehicle Assembly Bldg.

The ASTRO payload will be moved. Please see **ASTRO**, Page 4

Commander, pilot, flight engineer fill out STS-73 crew

By Kyle Herring

The remaining astronauts have been named for the second United States Microgravity Laboratory mission that will equal the longest flight in space shuttle history and continue laying the foundation for microgravity research in space.

Ken Bowersox and Kent Rominger, both Navy commanders, will be the commander and pilot, respectively, and Michael Lopez-Alegria, a Navy lieutenant commander, will serve as a mission specialist and flight engineer on the scheduled for launch in the fall aboard Columbia.

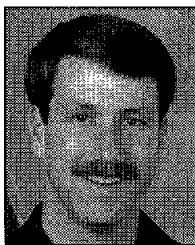
The three astronauts will join Payload Commander Kathy Thornton, Mission Specialist Cady Coleman, and Payload Specialists Fred Leslie and Albert Sacco Jr.



Bowersox

The 16-day mission follows the first U.S. Microgravity Laboratory flight, STS-50, flown in June and July 1992.

The mission will continue the series of shuttle flights dedicated to study-



Rominger

ing microgravity materials processing technology over extended durations in space through research sponsored by government, industry

and academia. The mission will focus on materials science, biotechnology, combustion science, the physics of fluids and many other scientific experiments to be housed in the pressurized Spacelab module.

Bowersox, 38, will be making his third flight aboard the shuttle and his first as mission commander. He flew on the first USML mission aboard Columbia and most recently was a member of Endeavour's STS-61 crew that serviced the Hubble Space Telescope in December 1993.



Lopez-Alegria

Rominger, also 38, is a member of the astronaut class of 1992 and will be making his first flight aboard the shuttle. He was born in Del Norte, Colo., and received a bachelor of science degree in civil engineering from Colorado State University in 1978. His masters degree in aeronautical engineering from the U.S. Naval Postgraduate School was earned in 1987.

Lopez-Alegria, 36, was born in Madrid, Spain, and considers Madrid and Mission Viejo, Calif., his hometowns. He earned a bachelor of science degree in systems engineering from the U.S.

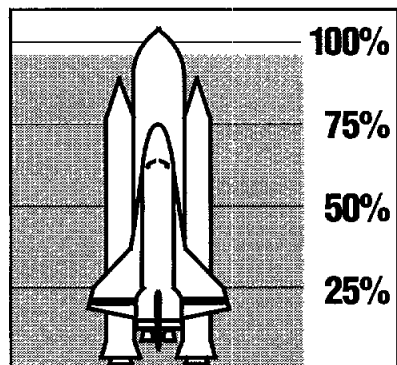
Please see **ADDITIONS**, Page 4

CFC donations still coming in

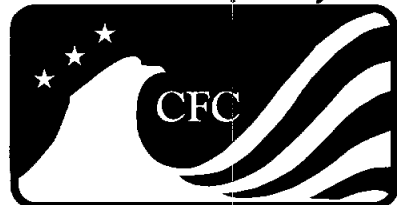
The Combined Federal Campaign came very close to its 1995 goal as the campaign closed last week.

"Contributions are still being tallied," said Teresa Sullivan, manager of exchange operations. "We expect to be closer to the 100% mark."

To date total contributions are \$450,419.40, which is 97% of the goal of \$463,300. Sixty-seven percent of civil service employees participated in the campaign serving hundreds of volunteer agencies. Contributions should be directed to CFC coordinators. The winners of the final week airline ticket were Greg Oliver of the Systems Division in the Mission Operations Directorate, and Kathy Thornton of the Astronaut Office.



1994 GOAL: \$460,500



NASA signs agreement to fly Ukrainian welding tool on shuttle

NASA has signed a contract with the Paton Welding Institute in Kiev, Ukraine, to develop a plan for flying a space welding tool aboard the space shuttle in October 1997.

The \$36,000 contract is for the definition phase of the project. Specialists from the Institute will work with NASA engineers to design a flight experiment and conduct the required safety reviews.

The Ukrainian Universal Hand Tool is an electron-beam welding device developed at the institute. In 1984 and 1986, Salyut 7 cosmonauts performed the first electron beam welding in space experiments

during extravehicular activities—space walks—using the UHT.

While full details remain to be worked out with Ukraine, as currently envisioned the experiment would involve a U.S. astronaut conducting sample welds on a variety of materials mounted in the cargo bay during a spacewalk. These sample welds would demonstrate the ability of the UHT to perform contingency or emergency repairs to simulated elements of the International Space Station. Ukrainian specialists will be extensively involved in all phases of the flight experiment.

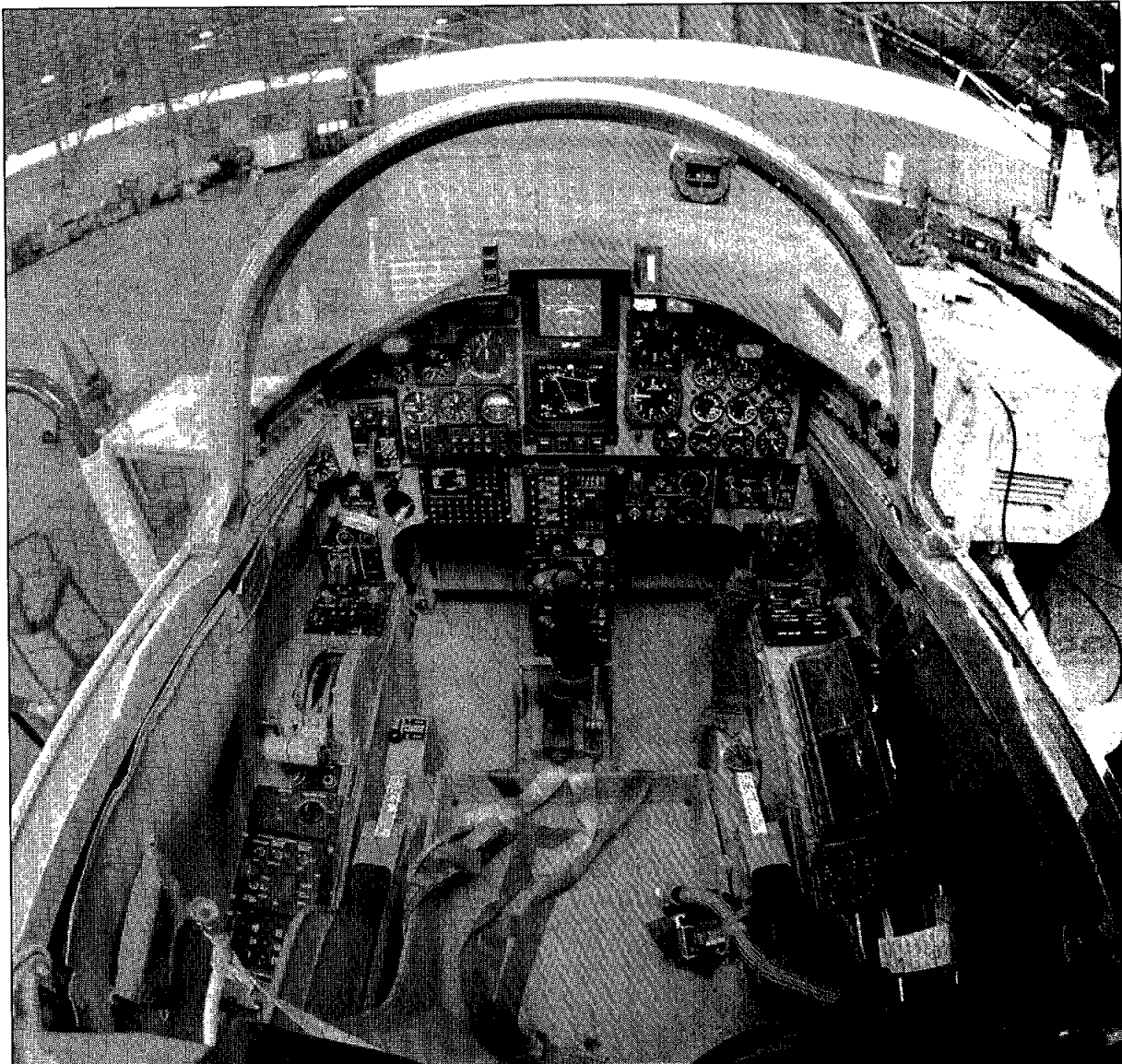
"When you consider the life span

of some of our vital space assets, like the space station, being able to repair structures in orbit is an important capability," said George Levin, space welding experiment program manager at NASA Headquarters. "We will need the capability to conduct welding in space, and the Ukrainian technology is the state of the art in space welding."

The definition phase contract ends in June 1995. A separate contract will be awarded for the flight phase of the project. Marshall Space Flight Center, has been given project management of the welding tool flight demonstration.

Avionics upgrade a first

Program will gain several advantages



By Karen Schmidt

In a bold move on the part of JSC managers, a major modification to JSC's fleet of T-38 aircraft has begun.

The modifications include an update to the avionics system, cockpit configuration and communications systems. NASA 960 is the first production aircraft of the T-38s to receive the new cockpit and other avionics upgrades and is meeting all expectations of doing the work in-house.

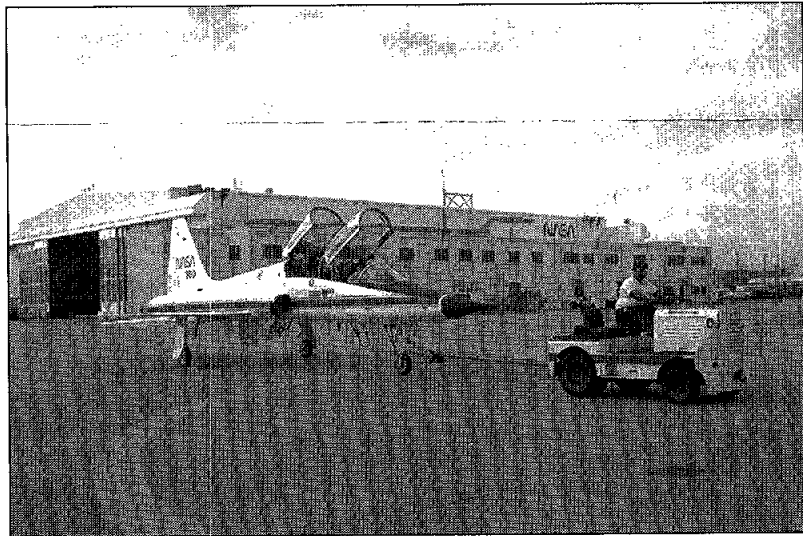
"This program is making changes to the way the Aircraft Operations Division maintains its aircraft," said Dave Leestma, director of Flight Crew Operations Directorate. "The program provides a lot of advantages in the long run. We will not only save dollars, but turn-around time and aircraft availability as well."

The T-38 upgrades include a complete change to the way the aircraft is maintained.

"Major components, structural redesign and repairs, or small subsystems work now will be done in-house. We used to rely on outside contractors for this kind of expertise on a large project such as the avionics upgrade," Leestma said. "This time, we have pooled our resources to get the best of both the maintenance contractor and civil service engineering support." NASA 960 is the first aircraft in

the production phase of the program that will modify the remaining 25 T-38s.

In-house production required coordination by several organizations including Manufacturing, Materials, and Process Technology Division who manufactured



all the mechanical piece parts and the wiring harnesses for the modification; DynCorp Johnson Support Division who are modifying the T38s in Hangar 990 at Ellington Field; and Loral Space Information Systems who is editing the flight manual and sections of the maintenance manual to reflect the changes made in the avionics upgrade configuration.

When Aircraft Operations took delivery of a prototype of the up-

graded avionics in 1991, plans were to evaluate the changes and develop a request for proposal and accept bids for completing the project. A team of managers including Leestma made a decision in Spring 1992 to consider the in-house effort and begin a

pre-production phase.

"This was to see if we really could handle the work," Leestma said.

The pre-production phase included the modification of two aircraft and took place from April 1993 to May 1994. This phase finalized the design and developed the production engineering. The decision to go into final production and modify the remaining T38s was made in June.

"The modification will maximize quality, control cost, and retain the benefits of knowledge acquired during the modification for future aircraft support," said Al Manson, project manager.

Manson notes this is a big step towards completing the T-38 updates. With this first production plane under its belt, Aircraft Operations can move quickly to complete this second phase.

The avionics upgrade adds or changes 21 major systems in the T-38. The flight instruments include an Electronic Flight Information System or "Glass Cockpit"; a weather radar system to help pilots avoid severe weather; a fiber-optics gyro installed in the Attitude, Heading and Reference System, a new pitot static system with a new air data computer; a solid state altimeter; an altitude alerter with a minimum descent altitude warning and temperature indicator; a Flight Management System; and a Radio Management System.

"All the communication and navigation radios have been changed," Manson said. "And most of the aircraft wiring (almost 4,000 wires) was replaced during the modification." The wiring was scheduled to be replaced anyway, so this task was combined with the overall upgrade effort.

Aircraft Operations had a long road to walk to reach this point. The project began in 1988 with

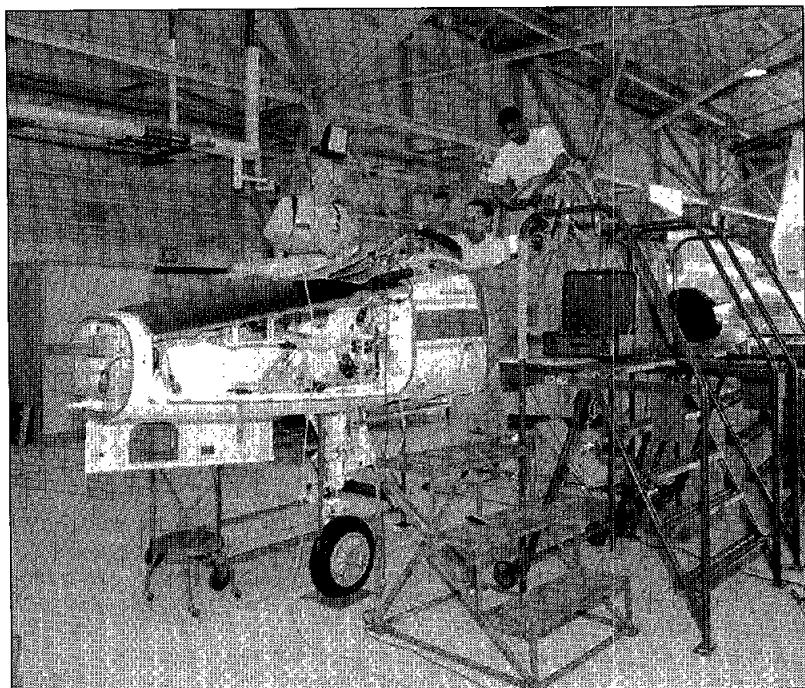
LTV Sierra being awarded a contract to develop the cockpit redesign.

"As early as 1987, we identified the need to modify or replace the T-38," Manson said. "The aircraft is more than 30 years old, it's avionics systems are outdated. The weather radar will improve the safety of flight operations as well. An Avionics Upgrade modification proved the best and most cost effective solution to this problem".

NASA 912 was sent to the Sierra Research Division of LTV as the upgrade prototype. JSC took delivery in July 1991. NASA 912 has been utilized as a test bed to correct design deficiencies and develop the final configuration. It is currently used for training.

"Astronauts are requesting the upgraded T-38s," said "Roc" Miles, the project pilot. "It is easier to fly and the safety enhancements are great. Turn-around time is reduced so the aircraft is more available than it has been in the past."

"The real success story here is the work done by all the team members, both civil service and contractor," Miles said. "They are taking personal pride in what they are doing. They have confidence that not only can they maintain the aircraft, but they can do it safely, effectively, and at a significant cost savings." □



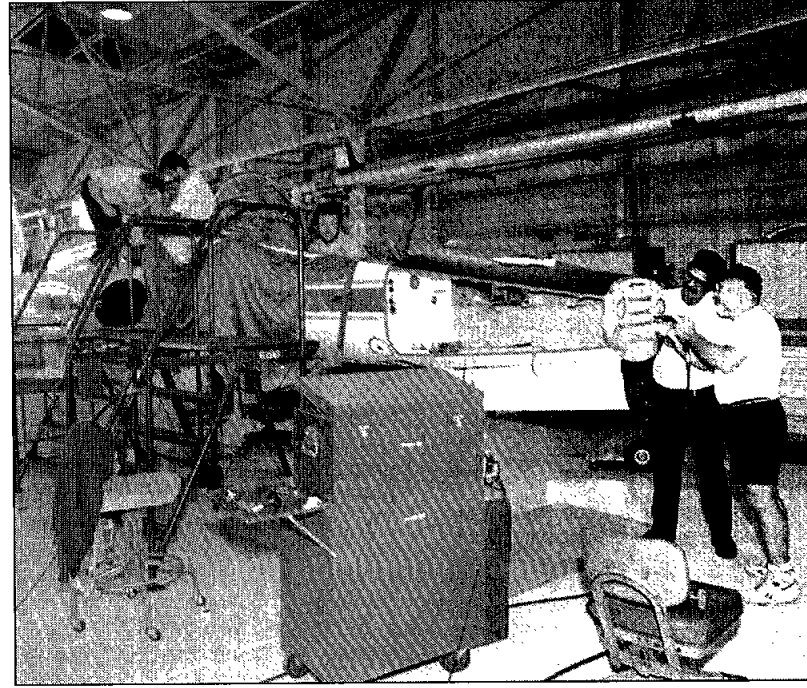
Left to right from top: NASA 912 sports an upgraded cockpit following refurbishment and maintenance work performed by civil service and contractor employees. The prototype aircraft is the first of the production T38s to receive the upgrades. The remaining 25 aircraft also will be upgraded during the in-house program.

NASA 912 is towed from Hangar 990 at Ellington Field. The upgrade affected 21 major systems in the T-38, including an Electronic Flight Information System or "Glass Cockpit" and a weather radar system to help pilots avoid severe weather.

Technicians work in and around a T38 aircraft in Hangar 990 at Ellington Field. Work included replacing more than 4000 aircraft wires.

Sitting in the cockpit of the T38 aircraft, technicians successfully modify the 30-year-old aircraft with updated avionics systems.

JSC Photos



Holiday celebrations come in many shapes, sizes at JSC

The holidays will be celebrated in a variety of ways at JSC, from choir performances to dances to shopping specials.

Employees can reduce shopping stress by picking up items at the JSC Exchange Store or Space Center Houston.

Many items are available in the exchange store for holiday gift giving. Adult gifts range from gold jewelry to key rings. Prices start at \$1. For children, shoppers can pick up a variety of books and toys. Prices start at \$2.

Space Center Houston is in the holiday spirit with a two-for-one offer on tickets. Employees can purchase either an adult or child's ticket and receive an equivalent one free.

The JSC cafeteria and Public Affairs will host choir programs in December for JSC employees. The Lockheed Choir and Brass Band will perform sounds of the holiday season from 11:30 a.m.-noon Dec. 13 in the Bldg. 3 cafeteria. The fourth and fifth grade choir from McWhirter Elementary will sing carols from 12:30-1 p.m. Dec. 15 in Teague

Auditorium.

Space Center Houston will host choir performances beginning Saturday. Several choirs will perform for one hour beginning at noon-3 p.m. this Saturday, Dec. 9, and 10. There will be one performance at 1 p.m., Dec. 16, two at noon Dec. 17, and one at 1 p.m. Dec. 22. All performances are included in the regular price of admission.

The Employee Activity Association will hold its annual Christmas tree sale of fresh Virginia Pines from 9 a.m.-noon Saturday at the Gilruth

Center softball field No. 4. Santa will share refreshments with children and adults.

The annual EAA Christmas Dinner/Dance will be held Dec. 9 and 10. This year, four different bands will perform in two different rooms at the Gilruth Center on two nights. The evening of Dec. 9, "Jimmy Luke & the Midnite Flyer Band" will play real Texas rhythm and blues with horns in the ballroom, and the "Quick-Get-Away Band" will play country/southern rock in the gym. On Dec. 10, "Rhythm Mission

Band" will perform swing, big band, bossa nova, jazz and easy listening in the ballroom, while "Toonz Band" will play classic rock in the gym. Social hour begins at 7:30 p.m. and a dinner of prime rib will be served at 8 p.m.

The JSC cafeteria will offer its Christmas dinner from 11 a.m.-2 p.m. Dec. 14 in both the Bldg. 3 and 11 cafeterias. For \$3.30, employees can enjoy turkey and dressing, Waldorf salad, giblet gravy, cranberry sauce, Italian green beans almondine, candied yams, rolls and tea.

Training aids emergency response team

For the first time since training, the Emergency Response team responded to a fire in Bldg. 45. According to observers the emergency was handled more efficiently than before.

"I was very pleased in the way the incident command system operated," said Keith McQuary, Incident Commander, on the scene.

"Because of recent training, we performed very well as a team. We each did our job, and the individual members performed extremely well."

"Response was quick and well coordinated by the Incident Commander," said Bob Gaffney, a member of the response team.

The incident command system is a coordinated effort by emergency responders to resolve emergencies and prevent them from becoming more serious. The system is mandated by and the Occupational Health and Safety Administration and recommended by National Fire Protection Association.

The Emergency Response team consists of members from Center Operations Emergency Management, Plant Engineering, Environmental Services and Security, Public Affairs, Safety Reliability and Quality Assurance Institutional Safety and Quality Division, and Occupational Health

The certified training in the incident command set up by the safety office helped us prepare for this type of emergency," Gaffney said.

Members of the team went through a rigorous 40 hour training session with mock emergencies to prepare for incidents of this type. Training was conducted by members of the Houston Fire Department Hazardous Materials Firefighters.

Hazardous Awareness training also enhanced the emergency. A first responder assisted a injured worker, notified the dispatcher there was an emergency, and directed individuals away from the hazardous area.

The short-circuit and flash fire in Bldg. 45 interrupted electrical power to portions of the building. Two contractors who were in the area did receive burns on their faces and hands. They were transported by Houston Fire Department's ambulance stationed at JSC, to Hermann Hospital for further examination.

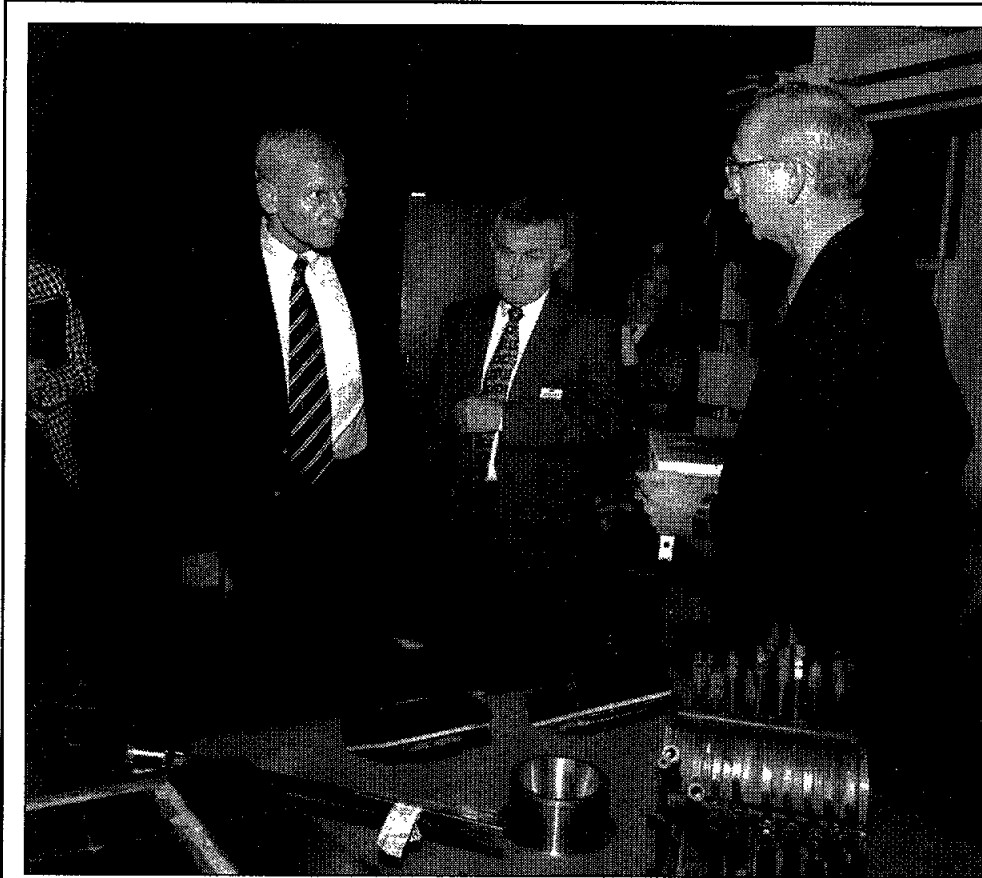


Photo by Benny Benavides

TOP LEVEL VISIT—Jim Milhoan, right, facility manager of the JSC Engineering Directorate's Thermal Branch, explains the operations of the Arc Test facility in bldg. 222 to John Dailey, Acting Deputy Administrator, left, as Engineering Director Leonard Nicholson and Sue Garman, executive assistant to JSC Director Dr. Carolyn Huntoon, look on. Shown are several test articles including an electrode and part of an electric arc heater, which are used to test thermal reentry.

Unique NASA wind tunnel restoration complete

Construction crews are putting the finishing touches on a \$115 million restoration of a unique NASA wind tunnel at Langley Research Center that began operating nearly 50 years ago.

Built in 1946, the 12-foot Pressure Wind Tunnel at Ames' Moffett Field, Calif., facility has tested models of most U.S. commercial aircraft in service over the past half century, including the Boeing 737, 757 and 767; Lockheed L-1011; and McDonnell Douglas DC-9 and DC-10.

"This has been one of Ames' workhorse wind tunnels," said Harry Gobler, acting project manager. "There's no other facility in the country that duplicates the testing it does. No other tunnel has such excellent air flow quality."

The new wind tunnel replaces the original, which due to extensive use, gradually suffered a deterioration of its pressure shell. By 1986, cracks in the tunnel walls had eliminated its pressurization capability. "The shell's structural steel began cracking after 41 years of service," Gobler said. "Essentially, it just wore out."

Reconstruction began in 1990 and included the complete rebuilding of the closed-loop pressure vessel and installation of an innovative air lock system around the test section. The new air lock system allows access to the test section without depressurizing the entire tunnel, thereby significantly increasing its productivity.

Engineers will spend the next 11 months testing the wind tunnel's new mechanical, automated controls and data acquisition sys-

tems. "We're going to conduct more than 50 unique tests to make sure they operate properly," Gobler said.

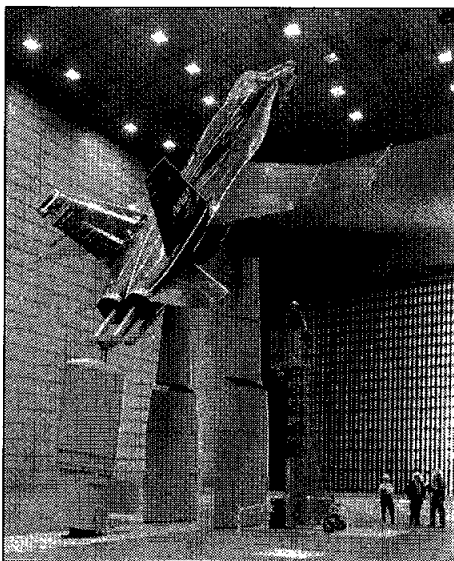
The tests will be conducted in five phases. First, the tunnel will be pressurized to test its air compressor and pressurization safety systems. In phase two, engineers will operate the main drive compressor to check out operating systems as wind is pushed through the tunnel.

The third and fourth phases will test the tunnel's aerodynamic performance, model supports and automated control systems under simulated operating conditions. The final test phase will calibrate the data acquisition system by performing simulated aerodynamic tests using standard models with well-known aerodynamic properties.

"It's an unusual tunnel," Gobler said. "It has race track turns rather than mitered corners, and an outstanding turbulence reduction system which produces outstanding airflow quality and very reliable aerodynamic data."

The new tunnel is about 300 feet long and about 100 feet wide, with the diameter ranging from the 12-foot test section to a maximum of 68 feet in the settling chamber. Powered by a 15,000-horsepower synchronous electric motor, the tunnel is designed to test aircraft models at airspeeds up to Mach 1 (the speed of sound).

"We're essentially finished with construction," Gobler said. "We'll complete landscaping in the spring and have a dedication ceremony next summer." The new wind tunnel will begin normal operations in September 1995.



Huntoon will address AIAA annual meeting

Center Director Dr. Carolyn Huntoon will present a "State of JSC" address at the American Institute of Aeronautics and Astronautics' annual director's reception Thursday.

The dinner meeting will be held in the Gilruth Center ballroom. The evening's activities being with a social hour at 5:30 p.m. followed by dinner at 6:30 p.m. and the program at 7:30 p.m.

Cost to attend is \$11 members, \$12 non-members, and \$5 for students and unemployed members.

For reservations and additional information, call ext. 31175, 333-6277 or 282-3160.



Huntoon

Astro mission on track

(Continued from Page 1)

to the OPF for installation into *Endeavour's* payload bay in mid-December.

The STS-67 crew—Commander Steve Oswald, Pilot Bill Gregory, Payload Commander Tammy Jernigan, Mission Specialists John Grunsfeld and Wendy Lawrence, and Payload Specialists Ron Parise and Sam Durrance—will work in two separate shifts providing 24-hour support to the compliment of telescopes that comprise the ASTRO payload.

Launch currently is planned for late February or early March.

Space News Roundup offices make move

The offices of the Space News Roundup, Daily Space Fax Roundup and telephone Employee Information Service are in a new location.

The move is part of a JSC Public Affairs Office reorganization that has shifted employee communications responsibilities from the renamed News and Information Branch into the new Education and Information Services Branch, Mail Code AP2. The News and Information Branch has become the News and Media Services Branch, Mail Code AP3.

The Roundup office is now in Bldg. 2, Rm. 181, and the mail code has changed from AP3 to AP2. The main Roundup telephone number remains x38648, and the fax number is still x45165.

Electronic mail messages should be sent to the editor, Kelly Humphries, at khumphri@gp301.jsc.nasa.gov or the associate editor, Karen Schmidt, at kschmidt@ssf1.jsc.nasa.gov.

Story ideas and calendar items may be sent by fax or E-mail, but Swap Shop ads must be sent by interoffice mail or delivered in person.

NASA, SOLE team up

NASA headquarters and the Society of Logistics Engineers recently signed a memorandum of agreement to participate in development of logistics and support solutions for space applications.

"SOLE will be able to provide their expertise to NASA logistics managers," said L.J. Graham, director for local SOLE district.

SOLE's first project is to produce a professional development program for logisticians. A compressed logistics management specialist career track will be developed.

Employees interested in participating in the program development or interested in a logisticians career are asked to call Graham at x30913.

Additions round out crew

(Continued from Page 1)

Naval Academy in 1980 and a master of science degree in aeronautical engineering from the Naval Postgraduate School in 1988. STS-73 will be his first shuttle mission and he, too, is a member of the astronaut class of 1992.

Thornton will be making her fourth shuttle flight, while Coleman, Leslie and Sacco all will be making their first.

Space News Roundup

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Dates and Data submissions are due Wednesdays, eight working days before the desired date of publication.

Swap Shop ads are due Fridays, two weeks before the desired date of publication.

Editor Kelly Humphries
Associate Editor Karen Schmidt