JSC chisels footholds for exploration in 1991
Casts eyes to future with shuttle research, space station development

By James Hart

The STS-42 crew poses for its official portrait along the shore of one of JSC’s central quadrangle ponds. From left are Pilot Steve Oswald, Payload Specialist Roberta Bondar, Payload Commander Norm Thagard, Commander Ron Grabe, Mission Specialist Dave Hilmers, Payload Specialist Mitch Maldoff and Mission Specialist Bill Reedy. The enhanced photo is a combination of two images manipulated on a Kodak Premier Workstation being tested by JSC’s Imaging Sciences Division. Two photos negatives were digitized, then combined and manipulated on videotape. The videotape was converted back to film. Mark Sowa took the crew photograph conceived by Scott Wickes, and Kim Murray manipulated the images.

Crew sees flight as forerunner for cooperation

By Kelly Humphries

An excited STS-42 crew says it is looking forward to the first International Microgravity Mission as a forerunner of future space projects that will break important ground both technologically and politically. "You can look at this flight as sort of a forerunner of the way that we’re going to do operations in the space station era," Commander Ron Grabe said, “both from the standpoint of the way we’re conducting the experiments on orbit and by the international cooperation of the crew and the payload experiments."

The lessons learned during the preparation and execution of the seven-day mission also will be applicable to international cooperation that will be helpful in any effort to mount a human expedition to Mars, said Payload Specialist Roberta Bondar of Canada and Ulf Mardal of the European Space Agency. "The Mars program is another program that offers us the tremendous resources of all the countries participating in these types of ventures that we can pool our resources together to provide answers that any one of us alone could not do," Bondar said.

"It is also a beginning," Morford said. "The space station is planned as an international space station and I think everything now leads also to this new trend, to the new future, with a permanent manned system in orbit. I think we can all learn how to cooperate and how to help each other."

Power restored to Discovery on launch pad

By James Hartfield

Power was restored to the shuttle's three main engines following a two-hour interruption Sunday for KSC and a dress rehearsal of the launch countdown Monday and Tuesday. Discovery remains on schedule for launch Jan. 25, and shuttle managers plan to meet at KSC on Thursday for a final review of mission preparations and to set an official launch date. Power to Discovery had been shut off Dec. 20 and remained off through the holidays, as was power to Atlantic, currently in Bay 5 of KSC's processing hangar.

By Janis Fletcher

Fletcher’s two terms combine for longest tenure

James C. Fletcher, who in two terms served longer than any other NASA administrator, died of cancer Friday, Dec. 22 at Georgetown University Hospital in Washington, D.C. Fletcher, 72, led the agency from April 1971 to May 1977, and returned as its top official from March 1988 to April 1989.

Fletcher was named deputy director of NASA’s Lyndon B. Johnson Space Center in Houston, Texas, in April 1971. After two years, he was named director of the center.

Fletcher’s tenure also included the final years of NASA’s Apollo program, including the Apollo 11 moon landing and Apollo 12 mission. He later served as director of NASA’s Ames Research Center in Moffett Field, Calif., which had been established as a research and development facility for the Apollo program.

Later, Fletcher was named deputy director of NASA’s International Space Station program, overseeing the construction and operation of the station.

James Fletcher

Eight JSC projects among SBIR winners

NASA has selected 70 research proposals—eight managed by JSC—for immediate negotiation of Phase I contracts in NASA’s Small Business Innovation Re- search Program. The proposals were chosen from 650 submissions in 19 high technology firms in 21 states. Selections were chosen competitively from among the applicants, with the total value is about $33 million. Shubert said NASA is designed to stimulate technological innovation in the United States by using small businesses, including minority and disadvantaged firms, to help meet federal and national goals and serve important needs and to encourage commer- cial applications of federally funded research.

parking, all appli, FPL, blinds, fan, pat bath, 680 sq ft, $28K. Chris, 534-3046. Tandy 1000, 384K, two 360K FD, mono land, assumption. Joe Guerrero, (903) H 280-5801 or 326-2221. / $595 mo. Minh, 333 i g. 333-4917. cond, 75K mi, $8.9K. Bill, x39980, adult spayed fem mo/ldg. 2. No phone or Fax ads accepted. '83 Ford Escort, 60K mi Roundup Swap Shop, Code AP3, or deliver Each ad must be submitted on a separate dr, auto, wht w <

cond, 1990. JS Exchange Gift Store from 10 a.m.-2 p

h Lease: Barringer Way, 2-1, W e: Sant ing hills, live spring, all util, 2

rs -- Marti l B Country western dance -- Beginning and intermed

ness is $20 per couple, squash, buttered spinach. 

Aikido -- Marti l B

low-impact classes m

ei -- Special: pep-

ls and athletic activit

s, 482-2138. w en. 20 $300. Bob, x32193 or 326-3984. Space Harrier, Phelios, Arrow Flash, etc, 480-4918. Monte Carlo, Cutlass, etc, $40. x34790.

lingle pickup, $50. Tom, x31710 or 538-1581. Designer wedding gown, Ilissa by Te P

Liv

e O

Rm. 129. Binder will dis- Brainbusters Model A

59K mi, loaded, femaJe, all shots. Matt x31409 or 488

 Two stereo speakers, 3-w

l, 512K, 3.5 FD, modem, semi van, $50; ceramics and d

ric, carseat

rs under roof. Ed Volick, New Hotpoint washer, used 4 TO, $175 $10; Little Tykes Jr activity gym, ex cond, 326-4991.

Roundup Swap Shop, Code AP3, or deliver Each ad must be submitted on a separate dr, auto, wht w <

cond, 1990. JS Exchange Gift Store from 10 a.m.-2 p

h Lease: Barringer Way, 2-1, W e: Sant ing hills, live spring, all util, 2

rs -- Marti l B Country western dance -- Beginning and intermed

ness is $20 per couple, squash, buttered spinach. 

Aikido -- Marti l B

low-impact classes m

ei -- Special: pep-

ls and athletic activit

s, 482-2138. w en. 20 $300. Bob, x32193 or 326-3984. Space Harrier, Phelios, Arrow Flash, etc, 480-4918. Monte Carlo, Cutlass, etc, $40. x34790.

lingle pickup, $50. Tom, x31710 or 538-1581. Designer wedding gown, Ilissa by Te P

Liv

e O

Rm. 129. Binder will dis- Brainbusters Model A

59K mi, loaded, femaJe, all shots. Matt x31409 or 488

 Two stereo speakers, 3-w

l, 512K, 3.5 FD, modem, semi van, $50; ceramics and d

ric, carseat

rs under roof. Ed Volick, New Hotpoint washer, used 4 TO, $175 $10; Little Tykes Jr activity gym, ex cond, 326-4991.

Roundup Swap Shop, Code AP3, or deliver Each ad must be submitted on a separate dr, auto, wht w <

cond, 1990. JS Exchange Gift Store from 10 a.m.-2 p

h Lease: Barringer Way, 2-1, W e: Sant ing hills, live spring, all util, 2

rs -- Marti l B Country western dance -- Beginning and intermed

ness is $20 per couple, squash, buttered spinach. 

Aikido -- Marti l B

low-impact classes m

ei -- Special: pep-

ls and athletic activit

s, 482-2138. w en. 20 $300. Bob, x32193 or 326-3984. Space Harrier, Phelios, Arrow Flash, etc, 480-4918. Monte Carlo, Cutlass, etc, $40. x34790.
January 3, 1992

Space News Roundup

1991: Another Year of Progress

JANUARY — A new state-of-the-art computer-driven projector was installed behind the 10-by-20 screen in the Mission Control Center. Project manager Adrienne Blume, left, and Marty Kuddlar, right, discussed the installation with Hughes Aircraft technician Bruce Ahrns.

FEBRUARY — JSC's Leo Monford, developer of a new precision method of aligning the shuttle's robot arm — the Targeting and Reflective Alignment Concept — was honored as NASA's Inventor of the Year.

MARCH — JSC Director Aaron Cohen received the National Space Trophy, presented by the Rotary National Award for Space Achievement Foundation. NASA Administrator Richard Truly congratulated him and admired the Steuben Glass lead crystal trophy.

APRIL — Students from across the country communicated with Atlantis astronauts through the Space Shuttle Amateur Radio Experiment. Local-area students who made contact with the STS-37 crew included, from left, Joey Kramer, Tracy Singleton, Kyle Beasley and Steven White. Public Services Branch Chief Chuck Biggs, far right, helped coordinate the local contacts.

MAY — America’s newest space shuttle, Endeavour, was welcomed by an estimated 10,000 people during a stop-over at Ellington Field.

JUNE — Five members of the House Subcommittee on Space visited JSC, getting a close-up look at progress being made on the new Space Station Control Center and voicing support for Freedom during a time of critical budget debates.

JULY — JSC employees got a chance to look at a nearly total eclipse of the Sun. The JSC Astronomical Society set up telescopes outside the Visitor Center for safe viewing of the rare event.

AUGUST — Construction began on Space Center Houston, the new $70 million visitor center being built by the Managed Space Flight Education Foundation. National and local elected officials had joined with JSC and MSFEFI officials in breaking ground for the project earlier in the year.

SEPTEMBER — Two JSC workers were ousted from their Bldg. 2 office when a water line broke, flooding the building and requiring workers to dig a 6-foot deep hole through their office floor. Kyle Herring, left, and James Hartfield, returned to their office when repairs were completed in several weeks.

OCTOBER — Project Manager Scott Reagan showed off Flight Crew Operations' prototype for upgrades to NASA's fleet of T-38 astronaut training aircraft. The "glass cockpit" is expected to make flying safer with weather and other flight information upgrades.

DECEMBER — STS-44 crew members returned home to a warm welcome. Mission Specialist Story Musgrave got a big hug from his son, Lane.
NASA has successfully tested a new method to measure surface pressure on airplanes during flight that could replace the sensing devices traditionally used to gather such data.

Aerospaces experts hail the pressure-sensitive paint as revolutionary because it could lead to large areas of a test aircraft being studied all at once. The light paint is quick and easy to apply and the entire test surface can be "mapped." Plus, an airplane does not have to be airborne, is being test, and it is not consuming fuel. It is also cheap and reliable, providing for a new way to conduct wind-tunnel testing needed for a conventional data collection system, although video or photo cameras and ultraviolet light systems are required.

Pressure-sensitive measurements give engineers information on the strength of an aircraft's wings and tail, knowledge that lets them certify or improve the plane's design.

The NASA tests used paint that becomes luminous under ultraviolet light. The intensity of the light radiated by the paint results from the pressure it receives in flight. Researchers use videos or photographs taken in ultraviolet light to study the pressure patterns.

Data from pressure-sensitive paints on an F-104 aircraft at Ames-Dryden Flight Research Facility show that "surface pressure measurements from the luminous paint are comparable to those collected the conventional way," said Dr. Blair McLaughlin, Project Scientist at NASA Ames Research Center.

More laboratory work to improve the paint's characteristics will be done before the next series of flights.

Surface pressure is normally measured with sensors and small openings that are part of a data collection system on the aircraft. This method produces data only from single points on the aircraft and the systems are expensive and time-consuming to install. To measure large areas such as the entire wing, hundreds of sensors are needed and the pressure readings do not represent 100 percent of the test surface.

The luminous paint test is based on a concept called optical quenching. The paint "senses" the amount of oxygen on the surface and responds by varying the light it emits. As surface pressure increases, the oxygen concentration also rises and the light emitted by the luminous molecules decreases. The resulting light pattern can be photographed and processed to produce a map of pressures across the test surface.

The NASA F-104 carried the paint experiment in a belly-fight test pylons where a video system recorded the pressure variations. The paint was applied on a new 10-foot section of a wing, which was placed into a wind tunnel in a 40-foot module. The test wind tunnel was operated at a speed of 300 feet. The luminous paint development is part of a cooperative project between the chemistry department of Stanford University and the Fluid Mechanics Laboratory at Ames Research Center. The effort is being managed with NASA Ames wind tunnel tests at Ames in 1988.

NASA manager manages the project. Lisa Bank is the Project Flight Test Engineer at Ames-Dryden.

White Sands council also picked

Fifteen members chosen to serve on Exchange Council

Fifteen JSC employees have been selected for the NASA Exchange Council-JSC, said Jackie D. Bondar, JSC Deputy Associate Administrator for Human Resources and Education.

The Magellan spacecraft has radar mapped nearly the entire surface of Venus.

Three new members on the JSC council are:

- Michael G. Roper, director of the shuttle program.
- Donald R. Crippen, named director of the shuttle program replacing Crippen in December 1993.
- Morey Nation, director of the Kennedy Space Center's Operations Directorate.

Thirteen council members are

- James H. Powell, chairman, NASA Exchange-WSTF.
- William E. Waldrep, deputy director of the KSC Operations Directorate.

The council members will expire Jan. 31, 1993.

1991 was year of milestone, change for NASA and JSC

NASA, which faced an uncertain future in the early 1990s, will leave behind 1991 as a year of major milestones, and change for the agency.

The man-made, 207-foot, 8-inch sculpture by James Turrell, known as "Mars on Mosaic" will be installed at the Space Shuttle Atlantis landing site at the Dryden Flight Research Facility, Edwards, Calif., the next day.

One last flight of JSC's rotating wall bicer, a tissue-growth chamber that already has congressional direction to reduce radiation sensitivity to plants. Such data could replace the sensing strength of an aircraft's wings and tail.

"But light on plant growth by exposing space center employees, worth about $550 million along with its 120 employees, will have a busy schedule in 1992. The flight program is ready to launch "top priority studies that are part of a strategic plan to develop "proprietary, or commercially available, light systems are required.

"Surface pressure measurements from the luminous paint are comparable to those collected the conventional way," said Dr. Blair McLaughlin, Project Scientist of Ames Research Center.

More laboratory work to improve the paint's characteristics will be done before the next series of flights.

Surface pressure is normally measured with sensors and small openings that are part of a data collection system on the aircraft. This method produces data only from single points on the aircraft and the systems are expensive and time-consuming to install. To measure large areas such as the entire wing, hundreds of sensors are needed and the pressure readings do not represent 100 percent of the test surface.

The luminous paint test is based on a concept called optical quenching. The paint "senses" the amount of oxygen on the surface and responds by varying the light it emits. As surface pressure increases, the oxygen concentration also rises and the light emitted by the luminous molecules decreases. The resulting light pattern can be photographed and processed to produce a map of pressures across the test surface.

The NASA F-104 carried the paint experiment in a belly-fight test pylon where a video system recorded the pressure variations. The paint was applied on a new 10-foot section of a wing, which was placed into a wind tunnel in a 40-foot module. The test wind tunnel was operated at a speed of 300 feet. The luminous paint development is part of a cooperative project between the chemistry department of Stanford University and the Fluid Mechanics Laboratory at Ames Research Center. The effort is being managed with NASA Ames wind tunnel tests at Ames in 1988.

NASA manager manages the project. Lisa Bank is the Project Flight Test Engineer at Ames-Dryden.

White Sands council also picked

Fifteen members chosen to serve on Exchange Council

Fifteen JSC employees have been selected for the NASA Exchange Council-JSC, said Jackie D. Bondar, JSC Deputy Associate Administrator for Human Resources and Education. Thirteen council members are

- James H. Powell, chairman, NASA Exchange-WSTF.
- William E. Waldrep, deputy director of the KSC Operations Directorate.

The council members will expire Jan. 31, 1993.

1991 was year of milestone, change for NASA and JSC

NASA, which faced an uncertain future in the early 1990s, will leave behind 1991 as a year of major milestones, and change for the agency.

The man-made, 207-foot, 8-inch sculpture by James Turrell, known as "Mars on Mosaic" will be installed at the Space Shuttle Atlantis landing site at the Dryden Flight Research Facility, Edwards, Calif., the next day.

One last flight of JSC's rotating wall bicer, a tissue-growth chamber that already has congressional direction to reduce radiation sensitivity to plants. Such data could replace the sensing strength of an aircraft's wings and tail.

"But light on plant growth by exposing space center employees, worth about $550 million along with its 120 employees, will have a busy schedule in 1992. The flight program is ready to launch "top priority studies that are part of a strategic plan to develop "proprietary, or commercially available, light systems are required.

"Surface pressure measurements from the luminous paint are comparable to those collected the conventional way," said Dr. Blair McLaughlin, Project Scientist of Ames Research Center.

More laboratory work to improve the paint's characteristics will be done before the next series of flights.

Surface pressure is normally measured with sensors and small openings that are part of a data collection system on the aircraft. This method produces data only from single points on the aircraft and the systems are expensive and time-consuming to install. To measure large areas such as the entire wing, hundreds of sensors are needed and the pressure readings do not represent 100 percent of the test surface.

The luminous paint test is based on a concept called optical quenching. The paint "senses" the amount of oxygen on the surface and responds by varying the light it emits. As surface pressure increases, the oxygen concentration also rises and the light emitted by the luminous molecules decreases. The resulting light pattern can be photographed and processed to produce a map of pressures across the test surface.

The NASA F-104 carried the paint experiment in a belly-fight test pylon where a video system recorded the pressure variations. The paint was applied on a new 10-foot section of a wing, which was placed into a wind tunnel in a 40-foot module. The test wind tunnel was operated at a speed of 300 feet. The luminous paint development is part of a cooperative project between the chemistry department of Stanford University and the Fluid Mechanics Laboratory at Ames Research Center. The effort is being managed with NASA Ames wind tunnel tests at Ames in 1988.

NASA manager manages the project. Lisa Bank is the Project Flight Test Engineer at Ames-Dryden.