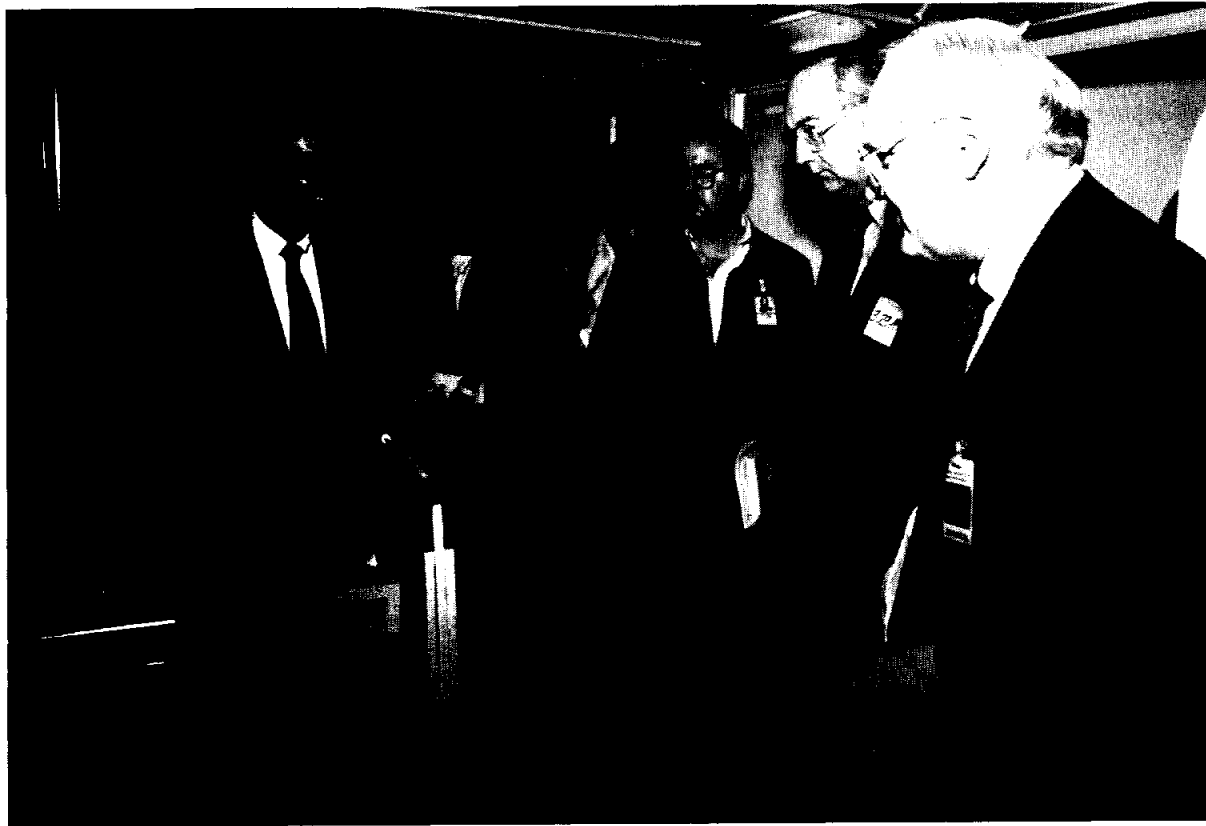


Space News Roundup

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No. 13



JSC Director Aaron Cohen, left, responds to questions from Sen. Phil Gramm, during a space station briefing last week. Clarke Covington, right, technical assistant to the director, also accompanied Gramm on the tour.

Gramm predicts 'make or break' year for space

This is a "make or break year" in Congress for America's space program, according to Sen. Phil Gramm, who toured the Space Station *Freedom* mockup in JSC's Bldg. 9A last week.

Gramm, D-Texas, met with JSC Director Aaron Cohen and other NASA officials March 23 in preparation for upcoming hearings of the Senate appropriations subcommittee that deals with NASA funding.

"If we are going to keep the Shuttle flying, we need to move ahead with full funding. If we're going to build a space station and build it on a timely and efficient basis, we need to begin this year with full funding," said Gramm.

"Our problem politically is a very simple one, and that is that investments in the next election are always popular in Congress; investments in the next generation are not always equally popular," he added.

Gramm, who noted that this will be the first time in 20 years that a Texan has sat on the subcommittee that deals with NASA funding, said he will be involved in the space program budget debate three times this year, when it is considered by the subcommittee, the full committee and the full Senate. He said the space station decision now becomes political rather than technological.

"We have developed the technology needed to build the space station and we're now down to a decision as to whether we're going to go ahead

and do it," he said. "I think we've come down to a moment of truth. Are we going to move ahead with the space station? Are we going to reassert our position of world leadership? Or, are we going to limp along with halfway measures?"

"We have now had two presidents, in a very tight budget year, that have proposed full funding. It's now up to the Congress, it seems to me, to meet that challenge, and I'm hopeful that we can do it," he said, adding that the decision is important to JSC and Texas.

Cohen said that any congressional cuts in the "bare bones" NASA budget proposed by President Bush will result in fewer new jobs.

"I think if we do get a cut, it really is going to be a significant revamping of our total program, which will really stop the momentum," Cohen said. "The \$300 million we are to spend on space station is about 3,300 jobs."

"When you're talking about investing in the future of America, you're talking about making investments in Texas," Gramm said. "Certainly, that's true with the \$2.1 billion proposed for the space station. It's true for the 22 percent increase in funding for NASA in general in the president's budget."

"The budget we have set out is a budget that we need if we go at an efficient rate," Gramm added. "One of the problems with slowing things down and stretching things out is that costs go up and not down. Ultimately the taxpayer pays more."

Vice president to visit JSC

Vice President Dan Quayle will visit JSC today, making the center his first official stop at a NASA facility since the election. Quayle, head of the National Space Council, will arrive this morning.

He plans to tour the facilities, attend a series of NASA management briefings, and hold a short press conference. The vice president also plans to address JSC civil service and contract employees in the Bldg. 2 Teague Auditorium at the end of his visit. His remarks, planned for 1:15 p.m., will be

aired on the JSC television system.

The all-hands briefing originally set for 2:30 p.m. Friday, has been rescheduled due to the visit of Vice President Quayle. The new date for the briefing featuring JSC Director Aaron Cohen and other JSC managers will be April 6 from 2:30-4 p.m. in the Bldg. 2 Teague Auditorium.

The vice president will be welcomed to the center by Cohen, outgoing NASA Administrator James C. Fletcher and Deputy Administrator

Dale Myers. He will hear a NASA overview by Fletcher, and briefings by Rear Adm. Richard Truly, associate administrator for space flight, on the National Space Transportation System; on Space Station *Freedom* by James Odom, associate administrator for space station; and on space science and Magellan by Dr. Lennard Fisk, associate administrator for Space Science and Applications, and the STS-30 crew.

Please see **QUAYLE**, Page 4

Hauck plans to leave agency

Aaron heads Space Station Projects Office

Three-time space flight veteran Frederick "Rick" Hauck, commander of the return-to-flight Space Shuttle mission, has announced he will leave NASA next month to serve as director of the Navy Space Systems Division at the Pentagon.

Hauck, a Navy captain, will be moving from the Clear Lake area to Washington to accept his new post on the staff of the chief of Naval Operations in late May.

In another key executive move at the center, John Aaron, former manager of the Lunar and Mars explo-

ration activity at NASA Headquarters and special assistant to JSC Director Aaron Cohen, has been appointed manager of JSC's Space Station Projects Office. He succeeds Clarke Covington, who becomes technical assistant to the director.

Aaron has held key positions in engineering and space station activities since joining JSC in 1964, including deputy and acting manager of the office he will now manage. He previously served as assistant chief and, later, chief of the spacecraft software division, from 1979 to 1984.

A 27-year JSC veteran, Covington's experience also falls within the areas of engineering and space station. In his new assignment, he will provide the center director with added capability to conduct technical and management reviews of center programs and organizations. He will help shape the JSC organization as the center enters a new phase of space station, and as new programs develop.

Hauck was selected as an astronaut in January 1978. He made his

Please see **HAUCK**, Page 4



Rick Hauck



John Aaron

Next mission opens new era for agency

The next Space Shuttle mission will begin a new era for NASA, combining the talents of the agency's manned and unmanned programs for the first time, according to Milt Heflin, flight director for Magellan deployment.

"We are beginning a very scientifically exciting era for the agency," Heflin said Monday as STS-30 project managers and crew members met the press at JSC. "The use of the orbiter to deploy (Magellan) ... is the first time that the manned and unmanned programs have locked arms."

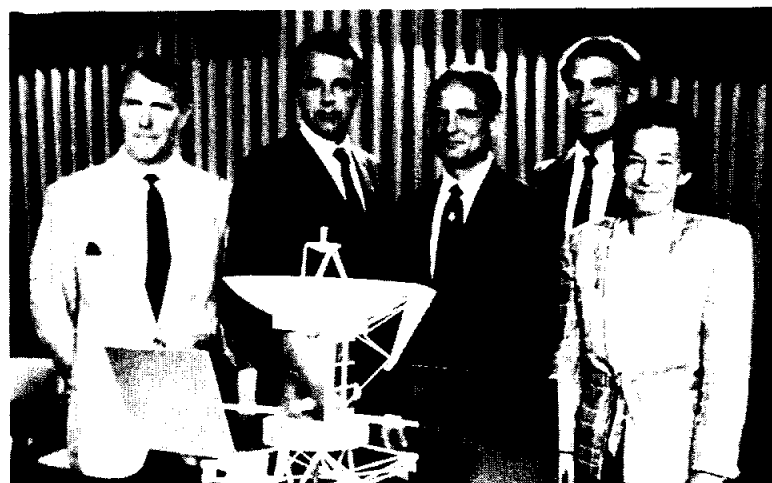
"It's been 12 years since NASA

had a planetary launch," agreed John Gerpheide, JPL's Magellan project manager, "and that was Voyager, which is still an ongoing mission ... expected to pass by Neptune this summer. Twelve years is a long time."

STS-30 Commander Dave Walker restated the importance of the mission in scientific terms and said, for him personally, "I believe manned and unmanned interplanetary mission combine to do the same thing."

Heflin will lead the Orbit 2 flight team during deployment of the

Please see **STS-30**, Page 4



STS-30 crew members, who briefed the news media on their upcoming mission last week, are pictured beside a model of Magellan. From left are Commander Dave Walker, Pilot Ron Grabe, and Mission Specialists Norman Thagard, Mark Lee and Mary Cleave.

STS-29 crew 'charms' president, first lady

The crew of STS-29 presented President George Bush with a U.S. flag carried aboard *Discovery* on what Commander Michael Coats described as "the first flight of this administration" at a White House ceremony in Washington last Friday.

Coats also presented first lady Barbara Bush with a gold Shuttle charm carried in space, which the crew first promised to bring her during a presidential phone call on Day 4 of the mission. That promise netted a White House invitation from Bush "to give it to her in person."

"This voyage of the shuttle *Discovery* is over, but its spirit lives, linking the majesty of outer space with the greatness of America," Bush told the crew and their spouses at a morning

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Project management: JSC's heritage and challenge

[Editor's note: JSC Director Aaron Cohen wrote one of the keynote articles in the first publication of a new quarterly agency journal entitled "Issues in NASA Program and Project Management." He was cited as one of NASA's "premiere program/project managers." The following are excerpts from his article.]

By Aaron Cohen

Project management is one of the most trying jobs anyone can have, but it's also one of the most gratifying. As the director of the Johnson Space Center, I'm involved in project management decisions concerning the Space Shuttle and the fledgling Space Station every day. Earlier, I had the marvelous opportunity to manage two of the most challenging projects of my career—development of the Apollo Command and Service Modules and the Space Shuttle Orbiter.

Now it's my duty to pass along some of the things I've learned about project management over the years:

- "Hands-on" experience is a prerequisite to effectively, efficiently dealing with the three classical elements of project management—performance, cost and schedule.

- Performance is not everything—cost and schedule are very important. Schedule drives cost, and cost drives what you can produce. Don't ever let anyone tell you otherwise.

- Patience, communication, honesty and treating people fairly are necessary elements of project management. You must be people oriented.

- Contract management and project control are as important to project management as technical expertise.

- You must do more than make decisions. You must make timely decisions.

- Compromise is acceptable and an important component of success.

- Better is the enemy of the good. You can never solve all of the problems

JSC's organization is designed to produce solutions—through project management—to the technical problems that stand in the way of safe, productive manned spaceflights Project management is the business of creating—through a sensible sequence of efforts that utilize to best advantage the resources available—a product that achieves the objective.

Our product at the Johnson Space Center is putting men and women into space, keeping them alive and productive while they're there and returning them safely to Earth. We design, develop and operate manned spacecraft and train the crews that use them. We conduct scientific and medical experiments that help us understand how space affects our astronauts and spacecraft

The people working at JSC must be able to solve some very difficult and complex technical problems in order that we may achieve these ambitious program goals. They are supported by an organization and management process uniquely suited to the challenge of solving the problems, achieving the goals and integrating the many separate projects that make up the overall programs

Toward that end, JSC nurtures an environment and culture that motivate our people to strive for technical excellence above all else. The environment and culture also encourage open, effective communication at all levels on the premise that no surprise is a good surprise when it comes to human-rated systems

I was project manager for the Apollo Command and Service Modules (CSM) from 1968 to 1972, and for the Space Transportation System from 1972 to 1988. Throughout both projects, one of my principal responsibilities was to constantly make trades between performance, schedule and cost. Today's project managers are making similar trades.

While the need to make these trades is a constant characteristic of project management, the priority each assumes in relation to the other can change drastically. These priorities are driven by both internal and



JSC Photo

Dr. Robert Gilruth, former director of Johnson Space Center, visits with Center Director Aaron Cohen. Gilruth served as the center's first director throughout the Apollo program. He left JSC in 1972 for another Nasa post.

external forces that establish a goal, a mission and a management philosophy for each program. They are rarely black and white

As I managed the CSM project, the priorities that normally held were performance first, schedule second and cost third. Our first challenge was to achieve the goal—to build the Apollo spacecraft, train the crews and fly the missions that would perform the feat of putting men on the surface of the Moon and returning them safely to Earth. Our second most pressing challenge was to do it on schedule. The element that received the least overall emphasis was cost.

At the height of the Apollo Program, nearly 4 percent of the national budget went to NASA. By contrast, NASA receives less than 1 percent of the national budget today as we are working on the Space Shuttle and Space Station programs. During Apollo, there were no starts and stops on the production lines. As we built the Space Shuttle Orbiter, we repeatedly had to assess which subsystems could wait to be produced and which could not because of variations in budgetary commitments to the space program

The order of priorities that normally held for the Space Shuttle Orbiter was performance first, cost second and schedule third. NASA was still required to achieve the desired level of performance, but because of budgetary constraints, cost requirements had to take precedence over schedule achievements in the early stages of the Shuttle Program.

I am not going to say that one program was easier to manage than the other, but the facts are that the programs of the 1970s placed a much greater emphasis on cost than the programs of the 1960s. This was not all bad because it forced us to pay closer attention to cost-effective technical solutions, and to keep in mind the goal of providing a less expensive means of access to space. And I don't mean to infer that safety and reliability can be sacrificed. As I mentioned earlier, performance was always the number one consideration. You can still obtain a successful product in terms of performance, cost and schedule, but when cost takes precedence over schedule the ability to make the right decision the first time becomes more important. More productivity and innovation are needed to solve problems of equal or

greater complexity with less money

There is no exact project management formula or equation for making performance-cost-schedule trades. But the lessons I have learned from people like Robert Gilruth, Max Faget, Chris Kraft and George Low—and from my own experience—tell me that there are several important principles in maximizing the probability of success

First, you must fearlessly base your decisions on the best information available. As a project manager you will have many different considerations with regard to each programmatic issue. Simply by making a decision, you ensure that you probably will be right more than half the time.

Many times during the life of a project, a project manager will be faced with decisions that need to be made in a timely fashion and ... the time and effort spent in trying to obtain additional information may not be worthwhile. A specific example of this occurred during the early design phase of the Orbiter. The avionics system was being formulated and a microwave scanning beam landing system (MSBLS) was being considered as a navigation aid. At the time, the MSBLS was pushing the state-of-the-art. The question before me: Should I use current, proven technology or should I try to push the state of the art and wait for such an advancement in the technology? I based my decision to push for the new technology on the data I had and the desire of my team to use the system. We made a decision, and it proved to be correct.

Second, you must make decisions in a timely manner. If you are decisive early and are wrong, you can still correct your error. During the Orbiter design, development, test and evaluation phase ... I was reviewing thermal system structural test requirements that contained a number of articles such as parts of wings, parts of the mid and forward fuselage and their thermal protection systems. The technical team needed to test all of the articles, but they were too large to test all at once and I had a limited budget. After spending a full Saturday in review of all the test articles, I eliminated several despite the extreme concern of several of the technical experts ... Several weeks later they came back and argued

their point of concern again. This time, their point struck home and I reversed myself ... By making a timely decision, I had given myself a chance to correct an error.

Third, if you can fix a problem by making a decision, do it. During the checkout of Apollo 11, the Inertial Measurement Unit (IMU) of the lunar module was slightly out of specifications in gyro drift. The analysis showed that you could accept a little more degradation and still perform the mission. The questions before management: Do we understand the reason for the gyro drift and could this lead to a greater degradation and threaten the success of the mission? Changing an IMU out of the lunar module on the pad was not an easy task, and we would be risking major damage to the fragile structure of the lunar module if one of the heavy instruments were dropped during a pad change-out. A group of us discussed this problem with George Low, then Apollo program manager. We strongly recommended to him that we should not change out the IMU. His comment was: "If you can fix a problem by making a timely decision, do it." We replaced the IMU.

Fourth, always remember that better is the enemy of the good. You can never solve all of the problems. If you have obtained an acceptable level of system performance, any "improvements" run the risk of becoming detriments. Right now, we are struggling with this very situation as we try to improve the design of the solid rocket motors and add emergency egress systems to the Orbiter. Each improvement brings with it a price in terms of weight. Each additional pound reduces the margin we have in the amount of thrust available to reach orbit. We have had to ask ourselves, "At what point do these new safety features become liabilities?"

Fifth, don't forget how important good business and contract management are to the successful operation of a contract. A project manager must realize that when he manages a contract he should do his best to be fair to both the government and the contractor. In order to do this, he needs strong project controls on his budget, schedule and configuration ... The first signs of project management failure are budget overruns and schedule slips

Last, and most important, you must be people oriented. It is through people that projects get done. This is extremely difficult for many project managers who have an engineering background and are more comfortable working with an algorithm than explaining how to use one. Good project managers surround themselves with talented people who will speak up when they believe they are right. They make themselves available to their bosses and to the people who support them. They listen when people express their concerns, and make people want to express their concerns ... They accept criticism without being defensive and are able to reverse their decisions when they are wrong.

One of the most vivid and memorable experiences I've had in this regard happened during the preparation for Apollo 8 in early December 1968 ... about two weeks before the flight I was told by the contractor, North American Aviation, and JSC propulsion subsystem managers that we had a potentially serious problem with the service propulsion system (SPS). We had just finished some tests in the configuration that we were going to use for lunar orbit insertion.

Apollo 8 was going to place the CSM on a free-return trajectory, which meant that if we did not perform an SPS burn behind the Moon the spacecraft would automatically return to Earth. The SPS fuel injector was fed by a pair of redundant systems. We wanted both of them to be active during the lunar orbit insertion burn so that if one feeder line malfunctioned, the other would get propellant to the SPS. The tests we had just finished were in this configuration, but it was the first time they had been used and both lines had been dry before the test. The tests showed that if we started the burn with both lines dry, a pressure spike occurred that could cause a catastrophic failure in the SPS. If both lines were wetted, however, the pressure spike would not occur.

I got very upset when I was told this, but the test engineers stood their ground. They told me very firmly that the problem had to be addressed, and they presented a good solution. By firing the SPS on a single system out-of-plane burn during translunar coast—which would not disturb the free-return trajectory—we have both systems wetted by the time we needed to use them together and hence avert the high pressure spike.

Now it was my job to call my boss and let him know what I knew and how to fix the problem. I had no qualms about doing this because my boss, George Low, had taught me several important things by his actions and words: get out and touch the real hardware; pay attention to detail; when things go wrong, look for innovations, the unusual solutions, or try to meet your commitment no matter what; and have great respect for your fellow human beings

Project management is the heart of NASA's success. NASA in its relatively short lifetime has made some spectacular manned spaceflight accomplishments ... all have claimed the attention of a world that is inspired and challenged by technological advancement.

NASA's product has been the formulation, management and execution of projects that put men, women and unmanned craft into space and allow them to do useful scientific research and work. All of these NASA endeavors are accomplishable because of NASA's utilization of project management

I am confident we can meet the challenges today and in our future through the judicious use and continued refinement of our project management techniques. There is no simple formula for the success of project management, but the rewards of a job well done and witnessed by the whole world are well worth the effort.

'Project management is the business of creating—through a sensible sequence of efforts that utilize to best advantage the resources available—a product that achieves the objective.'

— Aaron Cohen

First commercial rocket launch successful

Houston-based company's vehicle carries NASA-sponsored tests

The first private commercial spacecraft was launched Wednesday by Houston-based Space Services Inc. (SSI), carrying a NASA-sponsored payload of microgravity experiments.

SSI's two-stage, solid-fueled Starfire 1 rocket lifted off from the White Sands Missile Range in New Mexico at 9:41 a.m. CST, transporting the payload owned by the Consortium for Materials Development in Space at the University of Alabama-Huntsville 187 miles high and 50 miles down-range for a suborbital flight of 14 minutes 11 seconds.

Former astronaut and Flight Crew Operations chief Donald K. "Deke" Slayton, now president of SSI, said the launch of the 625.45-inch rocket couldn't have been any better.

Jim Davidson, an analyst for SSI, said the launch was noteworthy not only because it was the first commercial launch in the U.S., but also because it was launched on time and a day ahead of schedule.

The 630-pound payload contained six experiments designed to investigate the effects of microgravity on electroplating, dispersion of molecules, polymer foam production and

polymer separation. The experiments experienced 7 minutes 6 seconds of near-weightlessness. The materials development consortium is one of 16 commercial space development centers sponsored and funded by NASA.

The payload's parachute deployed perfectly and the full payload was recovered, Davidson said. It is in the process of being shipped back to Huntsville for evaluation by the principal investigators.

"There was a considerable amount of surprise and pleasure on the part of one principle investigator

at the results of the foam experiment," Davidson said. When the payload canister was opened, an apparently perfect sphere of the foam was discovered, exactly as had been expected, he explained.

While there have been previous small private launches, this was the first payload large enough to require licensing by the Department of Transportation (DOT). Eight more commercial launches are scheduled this year, according to the DOT.

The launch represented a major boost to the commercial launch industry, which hopes to be able

to support as many as 100 suborbital and 40 orbital launches every year.

SSI launched a dummy payload in 1982 from Matagorda Island after obtaining clearances from numerous government agencies because no private space launch had been attempted up to that point. This launch was the first under the National Space Policy created by President Reagan in February 1988 in an effort to encourage the commercial utilization and exploitation of space following the Challenger accident.

Quality award nominations due April 15

Nominations for the spring 1989 JSC Quality Partnership Award, to be presented by JSC's Safety, Reliability and Quality Assurance Office (SR&QA), will be accepted until April 15.

The quarterly award is designed to recognize professionals who do not work in the quality field, but who make significant contributions to quality.

Nominations, including the name of the individual and a brief summary listing the areas of outstanding contributions, should be forwarded to T.J. Adams, chief of the Quality Assurance and Engineering Division, Code ND.

Nominees must be employed by NASA, NASA contractors, or involved with NASA-related contracts at JSC; they must not be employed in the Safety, Reliability, or Quality Assurance field, and must have contributed to quality at JSC within a year of the presentation month.

Achievements that are the result of a team effort may be recognized by a group award.

Nominations must include the name of the nominee, the name address and phone number of the nominator, a brief summary of the person's contributions and any applicable quantitative or background data.

Hauck to go to Pentagon

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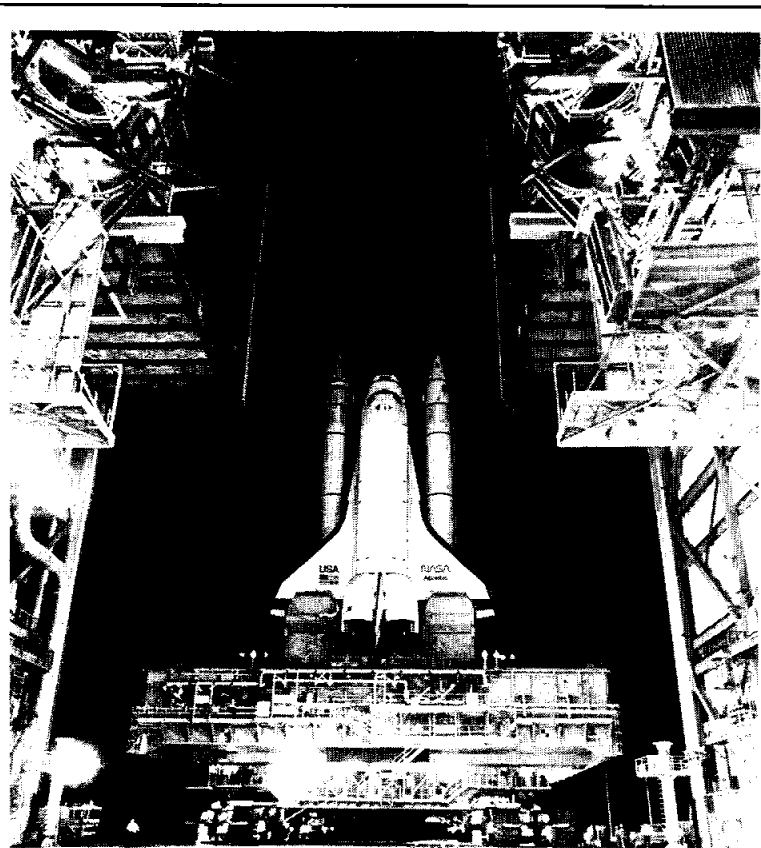
first Shuttle flight as pilot of mission STS-7 in June 1983. That mission featured the deployment of two communications satellites, the first deployment and retrieval demonstration of the National Space Transportation System, and the first formation flying of the Orbiter with a free-flying satellite, SPAS-01.

In November 1984, Hauck served as commander of mission STS-51A. He and the crew retrieved and returned to Earth the Palapa B-2 and Westar VI communications satellites after deploying two others, Anik D-2, LEASAT-1.

Following the Challenger accident, he was appointed associate administrator for external relations at NASA Headquarters. He returned to the astronaut office at JSC in February 1987 when selected to command STS-26.

Launched in late September 1989, NASA's "return to flight" mission featured the deployment of the Tracking and Data Relay Satellite (TDRS-C) and operation of 11 mid-deck experiments. With the completion of his third space mission, Hauck has logged more than 436 hours in space.

"My 11 years with NASA have been extremely rewarding," Hauck said. "I'll miss JSC, where I had such an enjoyable time, working on exciting projects, with the finest people in the world. I am looking forward, however, to continuing my career in the Navy and to the new challenges it provides."



NASA Photo

Atlantis is rolled out of the Vehicle Assembly Building at Kennedy Space Center on its way to Launch Pad 39-B, where it is undergoing final preparations for an April liftoff.

STS-30 mission marries exploration programs

(Continued from Page 1)

Magellan Venus radar mapper 6 hours and 18 minutes after liftoff.

Gerpheide explained the 8,000-pound satellite must be launched between April 28 and May 23 to make its interplanetary window. "Earth and Venus will not be in the proper alignment again for two years," he said.

"Magellan will be deployed in a 160 mile high orbit about six hours into the flight," he said. "The inertial upper stage (IUS) will fire about an hour later to start the probe on its 15-month journey to Venus."

The spacecraft, equipped for a complete radar mapping of Earth's sister planet, should arrive at its target in August 1991.

Magellan will map the planet continuously for 243 days, the length of one Venusian day. By the end of that period, up to 90 per cent of the planet will be mapped. Scientists plan to extend the mission to fill in the gaps in mapping coverage at that time, if additional funding for the project is approved.

Gerpheide said the "riskiest" part of the Magellan mission will be the insertion into the orbit of Venus, but he appeared confident of the outcome. "It's a smart spacecraft," he said. "It can heal itself of any problems."

In addition to the satellite deploy, the STS-30 crew plans to perform several mid-deck experiments, including the Fluids Experiment Apparatus (FFA) and the Mesoscale Lightning Experiment (MLE), Heflin said. MLE requires nighttime photography of violent weather systems on Earth from space (should they occur during the mission) to learn

more about lighting.

Pilot Ron Grabe said he was "very pleased we've been able to stay within the manifest." Mission Specialist Norm Thagard added he was not surprised, since most of our problems were taken care of prior to the STS-26 launch.

Mission Specialist Mark Lee, the crew's sole rookie, will be responsible for the satellite deploy, a procedure Lee explained "will be almost exactly like TDRS."

Mission Specialist Mary Cleave, responsible for secondary payloads and photography, explained there would be no IMAX camera on board, but that an extra supply of 70 millimeter film would be used to "look closely at the environment, geology, and volcanology."

Launch preparations for STS-30 continue to proceed smoothly at Kennedy Space Center for an April 28 launch.

Work this week included precautionary closing of the payload bay doors for propellant loading operations. Remaining electrical connections between Magellan and Atlantis, scheduled to be completed after propellant loading, have all now been established ahead of schedule. Testing to verify those connections and other spacecraft readiness checks are scheduled for Monday and Wednesday of next week.

In other work at the pad the inertial measurement units, part of the guidance system of the Orbiter, were calibrated and the number two main engine oxidizer turbopump connections were completed. The number three pump was scheduled to arrive yesterday and be installed on Atlantis on Saturday.

Symposium to consider technology development needs for 21st Century

By Pam Alloway

To ensure man's continued presence in space during the next century, scientists and engineers must develop new technologies to accommodate longer stays farther from humans' home planet.

Engineers, scientists, astronauts and senior NASA managers will discuss the development of such technologies April 7 when the American Astronautical Society's (AAS) Southwest Section meets at JSC's Gilruth Recreation Center.

Dr. Carolyn Huntoon, director of Space and Life Sciences, chairs the society's Southwest Section, which includes the Houston area.

Following a welcome by JSC Director Aaron Cohen and Huntoon, the day-long symposium will begin at 8 a.m. with panel meetings on such topics as space medicine, life support and space exploration. This year's theme is "Humans in Space in the 21st Century."

The afternoon session, which begins at 1 p.m., will feature Dr. Antonio Guell, manager of the Space Medicine Program at the Centre National

d'Etudes Spatiales' (CNES) Department of Space Biology and Medicine in Toulouse, France. Guell will speak on cooperative space investigations with the Soviet Union.

In his research, Guell has emphasized the study of countermeasures that could be used in space, and the physical and mental workloads. He participated in French investigations conducted on the Soviet Salyut and Mir space stations and on the U.S. Space Shuttle.

Guell is a graduate of the Medical School of Toulouse and is a full visiting professor at the Toulouse Medical School University Hospital where he developed a clinical space medicine program. He is the author of 250 publications in the fields of neurology and aerospace medicine, and is a member of several international space medicine working groups.

Other speakers include: Dr. Arnaud Nicogossian, director of the Life Sciences Division at NASA Headquarters; Joseph Allen, president of Space Industries Inc. and a NASA astronaut for 18 years; and John Aaron, newly appointed manager of JSC's Space Station Projects Office and former special assistant to Cohen.

The symposium is open to the public. There is a \$4.35 charge for lunch. For more information call Dr. Howard Schneider at x32380.



Guell

Bush hosts Discovery crew

(Continued from page 1)

ceremony. "And we're going to forge even stronger links as we reaffirm our commitment to the Shuttle program, as our science missions open up new horizons of knowledge and as Space Station Freedom symbolizes the promise of man."

Coats told the president, "We deeply appreciate your words of support for our country's space program. We represent thousands of people that work very hard to get that Shuttle off the ground each time, and the encouragement you've shown is deeply appreciated."

Other guests at the ceremony included retiring NASA Administrator James C. Fletcher; Deputy Administrator Dale Myers; Rear Adm. Richard Truly, associate administrator for space flight; Don Puddy, director of JSC's Flight Crew Operations; NASA senior staff members, STS-29 student experimenters John Vellingger and Andrew Fras and their sponsors, National Space Council members and the White House staff.

The crew plans to return to the nation's capital in April to meet individually with members of Congress.

Quayle to visit

(continued from Page 1)

After concluding the initial round of briefings with a JSC overview by Cohen, Quayle and his entourage will leave for a mission control briefing and tour by Mission Operations Director Eugene Kranz and Ron Berry, director of Mission Support. A short press conference will be held in front of the space station mock-up in Bldg. 9B, before a tour of that facility with Clarke Covington, technical assistant to the director, and Astronaut Mike Lounge.

After the space station tour, Quayle will be briefed by Dr. Carolyn Huntoon, director of Space and Life Sciences; and Henry Pohl, director of Engineering. A tour of the space shuttle mock-ups will then be conducted by Don Puddy, director of Flight Crew Operations, and Dan Brandenstein, chief of the Astronaut Office. The employee address is to follow in Teague.

For information regarding the visit, call the JSC Employee Information Service at 483-6765.

Space News Roundup

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