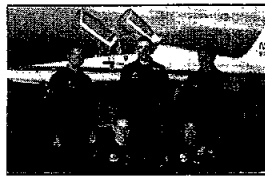




NMA award winners

JSC Deputy Director Paul Weitz and two other center employees were honored by the National Management Association. Story on Page 4.



Dawn's early light

The STS-41 crew uses a Texas sunrise as the backdrop for its official crew portrait. Photos on Page 4.

Space News Roundup

Vol. 29

July 20, 1990

No. 29

Class of '90 begins year of training

By Jeff Carr

Twenty-three of America's finest reported here for duty this week as the astronaut class of 1990 began a year of candidate training and evaluation for what some have called the best job in the world.

The reinforcements are a welcome relief as NASA resumes Shuttle flight operations with an active schedule ahead, according to Chief Astronaut Dan Brandenstein. Since the last selection, three years ago, the astronaut roster has dwindled from 98 to 84.

At an informal reception on Monday to introduce the candidates to news media, Brandenstein called them his "Excedrin group."

"These guys are going to relieve a lot of my headaches," he said.

Selected from nearly 2,000 qualified applicants earlier this year, the group consists of seven pilot and 16 mission specialist candidates. Among five women selected are three military officers, including the first woman to be named as a pilot candidate, and the first Hispanic woman to be selected. There are 11 civilians and 12 military officers total.

After being introduced by their new boss, the candidates mingled and talked with national and local news correspondents about joining the ranks of the astronaut corps, particularly at a time when NASA has

Please see **TRAINING**, Page 4



JSC Photo

Chief Astronaut Dan Brandenstein introduces the astronaut class of 1990. From left to right are, first row, William Gregory, Daniel Bursch and Carl Walz; second row, Richard Searfoss, Donald Thomas, Nancy Sherlock and Ronald Sega; third row, James Halsell, Eileen Collins, James Newman and Leroy Chiao; fourth row, Charles Precourt, Michael Clifford, Ellen Ochoa and Kenneth Cockrell; fifth row, Janice Voss, William McArthur, Susan Helms and Peter Wisoff; and last row, Thomas Jones, David Wolf, Bernard Harris and Terrence Wilcutt.

Atlantis test to determine launch schedule

By Kyle Herring

A third liquid hydrogen tanking test on *Atlantis* is scheduled Wednesday to either prove that the leak discovered on the flange of the 17-inch disconnect is repairable on the pad or that the vehicle must be returned to the Vehicle Assembly Building for repair.

If the leak proves to be fixable on the launch pad, *Atlantis* and its Department of Defense payload could be launched on the STS-38 mission as early as Aug. 10, according to Associate Administrator for Space Flight William Lenoir.

If the leak can not be repaired on the pad or is determined to be out of flight specifications, *Atlantis* will be returned to the VAB and *Columbia* will take its place on launch pad 39A for preparations leading to launch on the STS-35 Astro-1 mission in late August or early September.

Columbia is now outfitted with the 17-inch disconnect from *Endeavour*, NASA's newest shuttle currently under construction in California. *Columbia*'s external tank also is outfitted with a new disconnect

umbilical.

In analyzing launch scheduling, Lenoir said Tuesday there is one sequence of events that permits two flights to be launched prior to the STS-41 mission on Oct. 5.

"It requires some luck on our part" to fly the STS-38 and STS-35 missions first, he added.

If STS-38 launches about Aug. 10, *Columbia* could be in position to carry out its Astro-1 mission postponed from June around the

second week of September. The team charged with finding and fixing the hydrogen leaks discovered on *Columbia* in May and *Atlantis* in June is closer to wrapping up its investigation of the problem, Lenoir said.

"Not only do we see the light at the end of the tunnel, but I believe we are out of the tunnel. And that we are out in the daylight ourselves," he said.

In preparing for Wednesday's tanking test on *Atlantis*, plans continued this week to further understand the leakage detected during the

Please see **ATLANTIS**, Page 4



Total Quality Management targets excellence

By Kelly Humphries

JSC Director Aaron Cohen is ready to shoot for a tenfold increase in the quality of JSC's products, services and processes by 1995 using a new weapon called Total Quality Management, or TQM.

TQM is not just another productivity improvement "buzzword," nor is it another acronym to rattle off, according to proponents that include NASA Administrator Richard Truly and other top managers. It is, however, a set of principles, processes and techniques that is working for other world-class organizations and can help make a good NASA organization better.

Companies that have made significant quality

improvements through TQM in recent years include Xerox, which achieved 13 times fewer production line defects; Motorola Inc., which achieved tenfold reductions in defects three times in 10 years; and Westinghouse Commercial Fuel Division, which achieved a reliability rate of 99.9995 percent in its 30 plants.

According to its NASA proponents, TQM eventually will personally involve every civil service and contractor employee. There won't be many big changes, but many small changes will deeply affect individual workers.

If TQM works, everyone will be carefully planning their work, listening to each other, working together, receiving special training,

systematically searching for ways to improve, measuring their performance and developing an esprit de corps that comes from feeling appreciated. Each of these factors will build on the others and be guided by a shared vision of what's important.

"At the very core of TQM is the continual striving for excellence. You can't slack off, you've got to keep after it," said JSC Associate Director Dan Nebrig, who has been assigned by Cohen to lead the center's implementation working group. "It really gets down to every employee having to embrace and strive for implementing the principles of TQM."

And the pressure is on for employees to jump

on the TQM bandwagon, because Truly has targeted 1991 as the year NASA will try to win the President's Award for Quality and Productivity.

The President's Council on Management Improvement and the Office of Management and Budget are urging all federal agencies to implement TQM.

"With the efforts already under way and a renewed thrust, NASA can become a 'model agency' for TQM as already signified by Lewis Research Center and Johnson Space Center's receipt of the OMB Quality Improvement Prototype Award," Truly stated in a recent letter.

Please see **TQM**, Page 3

Apollo-Soyuz crews to reunite 15 years after space rendezvous

By Billie Deason

American and Soviet crew members of the Apollo-Soyuz Test Project (ASTP) will return to the Johnson Space Center on July 24 for a reunion observing the 15-year anniversary of their historic mission.

Astronauts Tom Stafford and Deke Slayton, both now retired, and Cosmonauts Alexey Leonov and Valery Kubasov will join in a tour of three NASA centers to celebrate history's first international joint space mission. Astronaut Vance Brand, commander of upcoming Shuttle mission STS-35 and a member of the ASTP crew, will participate in the JSC events if schedules permit.

Spouses and family members of the crew also will take part in the reunion activities.

The party will arrive Tuesday morning at Ellington Field where Center Director Aaron Cohen will

welcome them.

Employees who worked on ASTP and who can be spared from their regular duties are invited to form a welcoming group in the breezeway between Building 2 administration wing and the Visitor Center. Participants should be in place by 10:30 a.m. Tuesday.

A press conference will be held at 10:45 a.m. in the JSC press briefing room, building 2, room 135. Following the press conference, the ASTP crews and their families will be guests of Stafford and Cohen for a luncheon at the Gilruth Center.

In the afternoon, the group will tour the Weightless Environment Training Facility, Mission Control, the Shuttle trainer and the Space Station Freedom full-scale mockups.

At 3:45 p.m., the party will return to the press briefing room for the signing of a letter of agreement between the Soviet Soyuz All-Union

Aerospace Youth Society, acting on behalf of Gosteleradio (USSR television), and the producers of Houston Public Television's new PBS children's space science series, "The Spacewatch Club." The agreement finalizes arrangements for two television projects to be jointly produced by the Soyuz Society, Gosteleradio, PBS and Spacewatch.

Kubasov will sign for the Soyuz Society and James S. Miller, executive producer of "The Spacewatch Club" series, will sign for Houston Public Television.

An evening reception sponsored by the Space Foundation will be at the Lunar and Planetary Institute adjacent to Johnson Space Center. The group will depart Ellington Field Wednesday morning for a reunion celebration at the Marshall Space Flight Center in Huntsville, Alabama.

Please see **ASTP**, Page 4



NASA Photo

Astronaut Thomas A. Stafford and Cosmonaut Aleksey A. Leonov pass photographic equipment through the Apollo Docking Module during their historic two-day link-up.

Total Quality Management

Holistic effort to provide tools for improvement



JSC Electronic Photo

(Continued from Page 1)

At the heart of TQM are policies and techniques that mobilize each individual in an organization toward excellence as a common goal.

"I'm concerned that our systems and procedures are aging," Cohen said. "If we are to continue to have a high performance organization, it won't just happen, we will have to work at it."

TQM is the brainchild of Dr. W. Edwards Deming, one of the world's foremost quality gurus since 1941 and credited with inspiring Japan's world-renowned management style. Charles Harlan, JSC's director of safety, reliability and quality assurance, arranged for Deming to teach a 3 1/2-day course in TQM for JSC and contractor managers this week at the Hobby Airport Holiday Inn.

"Since it's based on common-sense logic, proven practice sorts of things, it's very easy to accept, not just as the buzzword of the day, week or month, but something that, for a change, is going to be worthwhile in a real, practical sense," said Max Engert, deputy director of Engineering and a member of the TQM working group.

Nebrig said JSC is about a fourth of the way into the TQM implementation process. Several seminars have acquainted top managers with the terms, process and philosophy behind TQM, and the implementation team is forming its recommendations to Cohen on how to involve the rest of JSC's senior staff. The next move is to communicate the importance of TQM to employees and train them how to use TQM to improve the quality of their work product.

Les Sullivan, chief of JSC's Management Analysis Office, said TQM is a way to integrate JSC's existing quality and productivity improvement efforts. All of these efforts—Team Excellence, strategic planning and culture surveys—ultimately were designed to improve the overall quality of the work product at JSC. TQM will help coordinate those efforts.

Sullivan said large companies such as Xerox, which began its productivity improvement efforts in 1978, are five years ahead of JSC in beginning their TQM efforts and are now beginning to reap significant benefits. With JSC's workload expanding to accommodate new programs and the

budget increasing only marginally, the effort to increase quality by simultaneously working to drive costs down and productivity up must begin now, Sullivan said.

"We've got to change because our business is changing," he said. "We've got to do the right thing right the first time."

Management can't blindly legislate TQM principles on the organization, though. That's not the way it works.

"You have to lead everyone to an understanding and a belief in the principles and then it has to be adaptable to their particular work situation," Nebrig said.

That means adapting TQM to program and business management, flight operations and engineering, which can be done most effectively by letting each directorate decide how they will implement it as long as they follow some guidance and agree to measure their progress, Nebrig added.

NASA will try to learn from those who have begun implementing TQM, particularly those with similar jobs such as the Department of Defense and aerospace companies.

"If we can achieve even partial success in some of the things that our contractors and other government agencies have achieved, it will be a great boon to what we are doing here," Nebrig said.

Concurrent engineering is one of the TQM tools best suited to the kind of projects in which JSC is involved, Nebrig said.

"Concurrent engineering means that from the very start of the design process, you plan not only the design but the development, the manufacturing and the field employment of the product that you're designing," Nebrig said.

Engert said concurrent engineering will help his

organization develop robust designs for vehicles and systems that will help NASA achieve the country's space exploration goals. Robust designs are those that allow systems to work together and stand up to the tests of reliability, flexibility and adaptability. They are easy to produce, test and maintain, he said.

Other than that, the primary elements of TQM are things that relate to how efficiently the organization works, Engert said. A multitude of processes are involved in doing the jobs that need to be done, and the TQM approach is to analyze processes, develop quality measurements and

use them to make the processes more efficient.

Engineering already has begun developing flow charts of vehicle processing. One example is the orbital maneuvering system (OMS) subsystem manager's shuttle tur-

naround activities. Charts of just one chunk of the highly complex process can cover a whole room, but will allow managers to reveal and reduce bottlenecks, and change designs so that turnaround is easier and faster. This process eventually may be expanded to encompass all turnaround activities.

"Eventually to make this sort of thing effective, engineering has to work with the program office, MOD and our contractors. We're all involved in this process and we all need to work together to see how we can make it more efficient," Engert said.

TQM also urges cultural changes that involve wiping out turf barriers among organizations and individuals. Everyone must think of the people they deliver work to as customers that need to be satisfied. And they must think of the people who provide their raw materials or data as suppliers who can only be counted on if they

understand what is expected of them.

The Mission Operations Directorate (MOD) is one of the "customers" Engineering must serve. MOD Deputy Director John O'Neill said TQM is just a more systematic way of encouraging good engineering and management practices.

MOD had already begun considering flight preparation activities as a specific kind of process. Because of the bottoms-up reevaluation of the shuttle program after the *Challenger* accident, the shuttle process is well defined, O'Neill said. But he plans to see how TQM can further refine and improve it.

Concurrent engineering, which emphasizes including the eventual users of systems in the development cycle, should be especially helpful in the development of space station-era facilities such as the space station mission control center and training facility, he said. It will help designers see the life-cycle process going from requirements, design, development, test and checkout through sustaining engineering and operations.

TQM's requirement for changing the organization's culture should fit well with MOD's openness to new technology and processes.

"The idea of having an even more focused way to build in quality in those tools and processes will naturally have appeal to our people," he said. "I don't think it's going to change our basic culture because it's always been one where we're trying to maintain a solid foundation and at the same time have the flexibility to respond to new challenges and opportunities," O'Neill said.

"We don't plan to make TQM a separate initiative but will instead stress the management learning process and educate our people so that it becomes an inherent part of the way we do business."

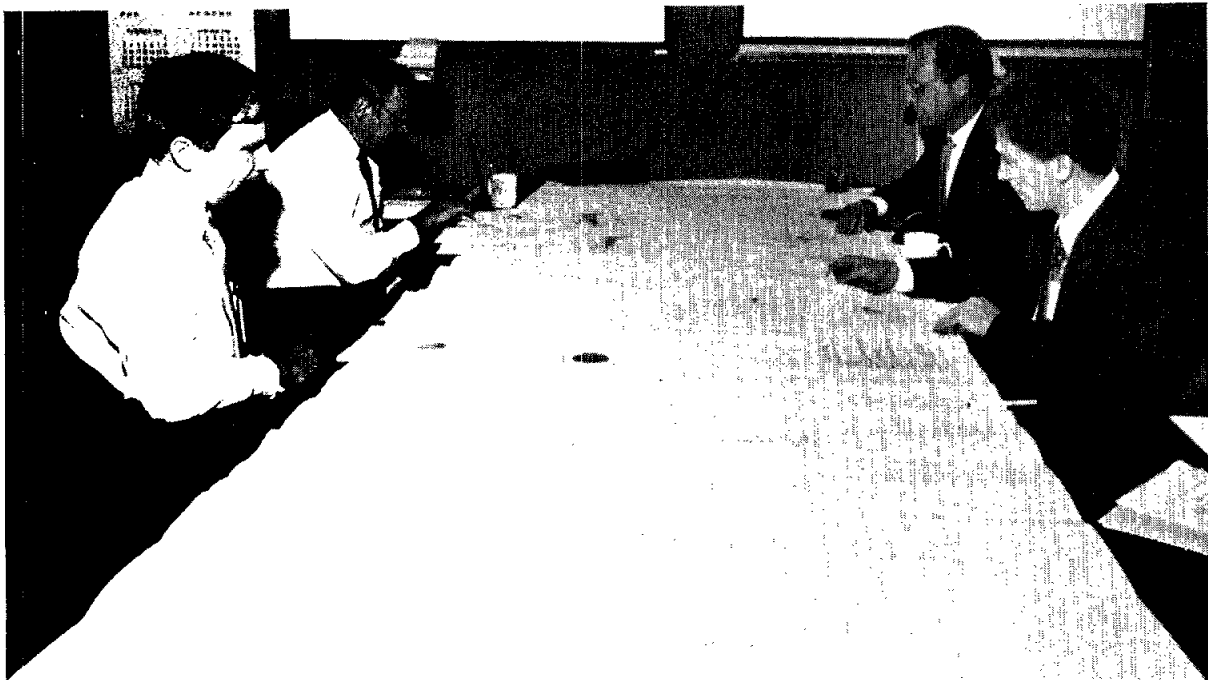
Once JSC's TQM strategy is complete, Nebrig said, JSC management will be in position to train people who want to employ its principles, offer the encouragement of entire management chain and empower individuals to use TQM principals by making the system work with them.

"There's too much success in industry and government elsewhere to ignore it," Nebrig said. "It's paying off handsomely, so there has to be a payoff for us as well."



At the very core of TQM is the continual striving for excellence. You can't slack off, you've got to keep after it.'

—JSC Associate Director Dan Nebrig



JSC Photo

Top: TQM originator Dr. W. Edwards Deming, right, autographs a copy of his book for Joseph D. Atkinson, chief of the Equal Opportunity Program, at this week's TQM training seminar. Bottom: One of the Total Quality Management techniques being tried by the Engineering Directorate is making detailed flow charts of space shuttle subsystem turnaround processes. Above from left John Hooper, deputy chief of the Propulsion and Power Division's Systems Branch, Max Engert, deputy director of Engineering, and Bill Nash and Peter Lange of KPMG Peat Marwick go over the flow chart for just part of the orbital maneuvering system (OMS) turnaround process.

TQM's pathway to quality

- Provide top management leadership, personal involvement and long-term commitment.
- Promote team goals for world-class levels of quality and performance.
- Support new technology and modernization.
- Create an innovative and challenging team climate.
- Use participative management techniques to increase individual/team contributors.
- Develop effective communication among employees, contractors and customers.
- Stimulate and promote individual involvement.
- Commit resources to education and training.
- Develop and implement means to evaluate and measure team performance.
- Focus on the customer.

Blanchard new Solar System chief

Douglas P. Blanchard, Ph.D., has been appointed chief of the Solar System Exploration Division in the Space and Life Sciences Directorate. Blanchard, who has been chief of the Planetary Science Branch for the past nine years, replaces Michael Duke, who is now chief scientist for the Lunar and Mars Exploration Program Office.

Blanchard has more than 17 years of experience as a geochemist and planetary scientist in the division, including seven years as lunar sample curator and manager of the

Planetary Materials Laboratory. He is JSC project scientist for the Mars Rover Sample Return mission

JSC

People

planning activity, chair of the Mars Science Working Group, and a member of the Lunar and Planetary Sample Team, the Antarctic Meteorite Working Group and the Cosmic

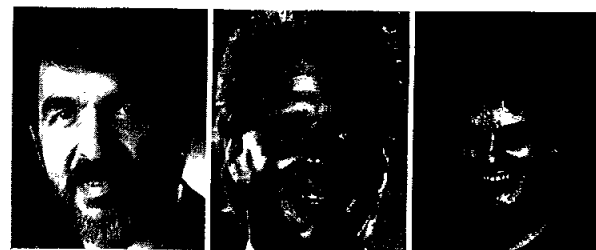
Dust Committee.

Arbuthnot accepts Washington job

Richard E. Arbuthnot, special assistant for external affairs in the JSC Comptroller's Office, has accepted a one-year assignment to serve as the NASA liaison to Sen. Robert Byrd, D-W.Va.

Arbuthnot, who joined JSC in 1985, will move to Washington, D.C., and assist Byrd in all space program matters. He will work with Martin

Kress, acting assistant administrator for legislative affairs at NASA Headquarters.



Blanchard

Arbuthnot

Fox

Fox receives honor

Elizabeth A. "Ann" Fox, secretary to the director of Safety, Reliability and Quality Assurance, recently received the Marilyn J. Bocking Award for Secretarial Excellence.

Fox, lead secretary for an organ-

ization made up of numerous divisions and staff offices, was commended for her keen awareness of policies regarding technical and managerial matters and her knowledge of protocol, procedures and correspondence formats.

Task force to study future

An independent task force to be appointed by NASA Administrator Richard Truly will study the future direction of the national space program.

The yet-to-be-named task force is being established in response to a request from Vice President Dan Quayle as chairman of the National Space Council.

"Space continues to be a top priority for this administration," according to a statement released by the Office of the Vice President Monday. "We all want the best ideas on how we can move into the next century maintaining our leadership in space."

The task force does not represent a White House investigation of NASA, the statement said.

During subsequent appearances on "The MacNeil-Lehrer Reports" and "Good Morning America," Truly said he would actively seek leaders from both government and the private sector to be a part of the task force.

"I'm pleased the vice president has expressed his confidence in NASA, as he has many times in the past," Truly said in response to the directive. "NASA will continue to work closely with the Space Council in pursuit of the president's remarkable vision for America's space destiny."

Truly and the task force will directly report their recommendations to the vice president.

NASA, OSC sign contract

NASA's efforts to foster a strong commercial space industry took another step forward with the recent signing of an Orbital Sciences Corporation (OSC) of Fairfax, Va., agreement for support of the firm's Pegasus and Taurus commercial launch vehicle programs.

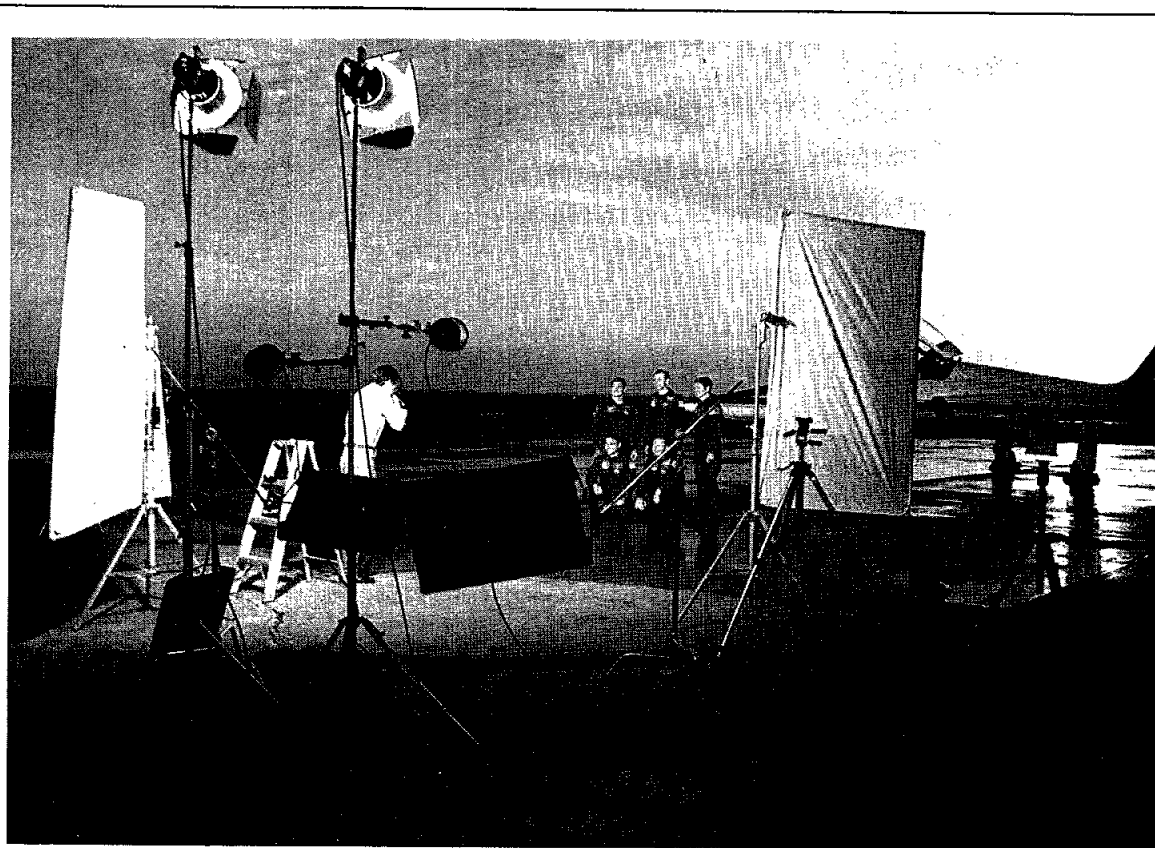
Terms of the five-year agreement allow OSC to enter into specific sub-agreements with NASA installations wherein NASA will provide, on a cost-reimbursable basis, access to agency launch support property and services.

As part of NASA's effort to promote the commercial launch vehicle industry, government property and services are made available to the private sector, on a reimbursable basis, when such property/services cannot be provided by commercial sources.

Similar agreements have been negotiated with General Dynamics, McDonnell Douglas, Martin Marietta and LTV Corp. NASA also is conducting discussions with other U.S. expendable launch vehicle firms for possible support agreements.

NASA installations involved in specific sub-agreements with companies include the Kennedy, Lewis, Goddard and Marshall centers.

NASA is committed to facilitating and encouraging the commercial use of space by U.S. firms. The Commercial Space Act and its 1988 amendment, as well as the National Space Policy of November 1989, underscore the importance of government support to the emerging American commercial launch vehicle industry.



JSC photographers and the STS-41 crew met at Ellington Field at 4 a.m. to capture the dramatic backdrop of a Texas sunrise for the official crew portrait. Mark Sowa, shown above, took the portrait with the help of Scott Wickes and Sheri Dunnette. The STS-41 crew, left, which is scheduled to fly in October, is composed of pilot Robert Cabana and Commander Richard Richards, both kneeling, and, from left to right, mission specialists Bruce Melnick, Thomas Akers and William Shepherd.



NMA recognizes three JSC managers

JSC Deputy Director Paul J. Weitz and two other JSC officials recently were honored for their management and leadership skills by the JSC chapter of the National Management Association.

Weitz received the Manager of the Year Award while R. Wayne Young, deputy director of the Administration Directorate, was honored with the 1990 Silver Knight of Management Award and John Chisler, business manager for the Mission Operations Directorate, received the NMA Leadership Award.

The Manager of the Year Award is presented to an individual who is dedicated to the principles of the

American enterprise system; is a top manager in a business, industry, government or non-profit activity; has demonstrated community leadership in outside professional and civic activities; has a reputation as a fair, impartial and ethical manager; has demonstrated strong managerial leadership by applying generally recognized management principles to achieve success; and practices the NMA Code of Ethics in dealings with peers, subordinates and associates.

"Mr. Weitz is a major participant in the management of all of JSC's programs," wrote Norman Chaffee, 1989-90 NMA chapter president in his nomination letter. "His insight as

a former crew member has enabled him to suggest substantive improvements in vehicle design, system training, system processing, crew preparation and institutional support of JSC's programs."

The Silver Knight award presented to Young is the highest honor NMA chapters can bestow on an outstanding executive. The recipient must be a civic, business or industrial executive who is well-known to the members of an organization and whose example has stimulated and inspired them; who has demonstrated the highest qualities of leadership in business, community and industrial relationships; and who is well-known

for his/her efforts in the preservation of the competitive enterprise system.

Chisler's award was unusual in that four of the senior analysts that work with him submitted the nomination. The NMA Leadership Award is presented to a chapter members who has displayed outstanding leadership.

The local NMA chapter also recently selected 1990-91 officers. They are: Diane DeTroye, president; Grady McCright, vice president; Patsy Mitchell, secretary; and Monica Kruest, treasurer. Board members are Norm Chaffee, Wayne Draper, Marie McCright and Shayla Davidson.

Atlantis testing continues

(Continued from Page 1) second liquid hydrogen tanking test conducted last Friday.

A leak was found at the external tank flange that mates to its 17-inch disconnect. Managers want to determine if any leakage between baggies occurred during the test and if repairs can be made at the pad.

Earlier this week photographs of the aft compartment were taken and thorough inspections were made. Calibrations of the hazardous gas detection system are continuing and the flow rates of purges in the baggies

are being measured.

Preparations to remove auxiliary power unit number 3 aboard *Atlantis* were underway this week. Since *Atlantis* has been at the pad, the vendor has identified a time-life issue with this unit. The other two APUs are refurbished units.

Meanwhile *Discovery's* processing activities in the Orbiter Processing Facility for the Ulysses mission continue to go smoothly. A brake anti-skid test was conducted Thursday and technicians are continuing installation of heat shields around the three main engines.

Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

Editor Kelly Humphries
Associate Editors Pam Alloway
Kari Fluegel

ASTP crews hold reunion

(Continued from Page 1)

The Apollo-Soyuz Test Project mission resulted from a 1972 agreement between the United States and the Soviet Union to design a common docking system for future spacecraft.

Both the Soyuz and Apollo spacecraft were launched on July 15, 1975. The successful rendezvous and docking was completed on July 17, 1975, when the Apollo spacecraft docked with the orbiting Soyuz. The Soyuz landed on July 21, and Apollo landed July 24.

NASA-JSC