



Spaceport News

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John F. Kennedy Space Center

Expo to introduce employees to IFMP

The Integrated Financial Management Program (IFMP) is a NASA-wide effort to modernize the agency's financial and administrative systems and processes.

Kennedy Space Center and other NASA centers now use the IFMP modules for NASA Staffing and Recruitment System (NASA StARS) and Position Description Management, and are preparing to implement Core Financial and Travel Manager in February 2003.

"Many of our existing business procedures are under review to prepare for the implementation of the Core Financial and Travel Manager modules," said N.A. Carroll, KSC chief financial officer.

KSC's IFMP Steering Committee and Implementation Support Team are sponsoring a Centerwide Expo Sept. 5 in the KSC Training Auditorium from 10 a.m. to 2 p.m. to familiarize employees with the upcoming changes in business practices.

There will be module presentations, software demonstrations,



"The Integrated Financial Management Program (IFMP) will significantly enhance our business processes and how we, at KSC and other Centers, collect and process information to make our business decisions. The concept of 'One NASA' can become a reality through the implementation of IFMP."

JIM JENNINGS
KENNEDY SPACE CENTER DEPUTY DIRECTOR

handouts and souvenirs.

A second Expo will be held Sept. 6 at the Launch Control Center, Room 1R29, from 11 a.m. to 1 p.m.

To learn more about IFMP, what changes are coming, how you will be affected and whom to contact for more information, attend one of the Expos. You can get involved and acclimated with the demos and presentations and meet people who can answer your questions about IFMP.

By instituting IFMP, NASA will ensure that all centers have timely and consistent data and improved



business practices.

The program is based upon implementing a series of new enterprise software systems and business processes that will help improve employee productivity, operations efficiency, and also increase NASA's fiscal and management accountability.

"The Integrated Financial Management Program (IFMP) will

significantly enhance our business processes and how we, at KSC and other Centers, collect and process information to make our business decisions," said James Jennings, KSC Deputy Director. "The concept of 'One NASA' can become a reality through the implementation of IFMP.

"Not too long ago, the very idea of managers across the Agency having access to and using one source of information for financial management decisions was a

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Commission studies aerospace

Bob Walker shares preview of innovative recommendations

Several hundred Cape Canaveral Spaceport and community leaders heard highlights of the preliminary recommendations of the Federal Commission on the Future of the U.S. Aerospace Industry during a Florida Business Roundtable luncheon Aug. 14.

The recommendations shared by Commission Chairman Bob Walker at the DoubleTree Hotel in Cocoa Beach were sweeping, visionary concepts that excited the imagination and hopes of many of the listeners.

"I think the commission is bringing more focus to the space program and we could benefit from many of the recommendations," said Marv Jones, KSC associate director. "I am glad to hear they are trying to get the



From left, Bob Walker, chairman of the Commission on the Future of the U.S. Aerospace Industry, speaks with Command and Control Technology's William Collins and KSC Associate Director Marv Jones.

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Recognizing Our People

Awards

Gold Dollar Awards

United Space Alliance Orbiter Vehicle Optics Alignment Team

Dave Chambers
Philip Dickey
Robin Floyd
Steve Jurlina
Mike McClure
David Moore
Charles Parrish
John Seaman
Dave Sheriff
David Trenn
Kurt Van Dyke
Vern Walker

Dept. of Justice

Brian Smith

NASA

Dudley Cannon, OP
Douglas
Hendriksen, CC
Ambert Hufft, CC
Jeff Lamke, OP
Roger MacLeod, OP
Bernie Roan, NASA
HQ
Tracy Lee
Crittenden, CC
Art Beller, TA
David Robertson,
PH
Hung Nguyen, PH

SFA Leadership Awards presented

Kennedy Space Center Director Roy Bridges Jr. presented the SFA Leadership Award to Jeanne O'Bryan of Spaceport Services and Shawn Quinn of Space Shuttle Processing Aug. 1.

The SFA Leadership Award was initiated in approximately 1997 and recognizes outstanding leaders who exemplify those characteristics necessary for success.

There are 10 characteristics that must be demonstrated to receive this award: loyalty, empowerment, accountability, diversity, excellence, respect, sharing, honesty, integrity and being proactive. This is the first time that NASA/KSC has presented this award.

The SFA Leadership Trophy has an Endeavour Flag embedded in it that was flown on STS-88, December 4-15, 1998.

O'Bryan was recognized for her outstanding leadership skills, which ensured that quality ODIN services were provided to the NASA Office of Space Flight



Kennedy Space Center Director Roy Bridges presents SFA Leadership Awards to Jeanne O'Bryan and Shawn Quinn.

Centers. She consistently displayed a "can-do" attitude that promoted excellent communications and trust between NASA and the Contractor Team.

Her excellent mentoring skills encourage individual personal growth and development.

Quinn was recognized for his working in putting together a team to develop a replacement for the Front End Process.

Not only did he put together a diverse team of individuals, he put together a loyal group that had

very few turnovers. He informed the team of his expectations and empowered them to do their assigned tasks as they deemed best.

Because of his technical abilities and understanding of both Ground and Flight systems, he provided clear direction in designs, while emphasizing key elements in systems integration.

Shawn was nominated by a group of NASA and Contractor employees.

Shuttle Logistics Depot recertified

The NASA Shuttle Logistics Depot (NSLD), under the leadership of United Space Alliance (USA), has recently achieved OSHA VPP Re-Certification as a "STAR" site. The effort and support displayed by all members of the VPP Team, including volunteers from NASA, USA, and the Boeing Co., contributed to achieving this award.

The results of the re-certification audit were impressive. The OSHA VPP Audit Team identified eight "best practices" in their out-brief on June 20. Generally, if an evaluated site receives two "best practices" it is considered noteworthy, but to have eight areas of excellence distinguishes the NSLD as a Star of Stars. Fewer than 700 sites in the United States and only 20 within Florida have achieved "STAR" certification recognition.

"All involved employees and their companies deserve a hearty 'thank you' for developing this outstanding safety program for other sites to emulate," said Charlie Murphy, assistant program manager for the NSLD. "To assemble a team that could achieve this goal reflects great credit upon themselves and gives true meaning to the phrase 'Team Work.'"



From left, United Space Alliance's NSLD VPP Team are Moe Ledoux, Jim Fiske, Roger Hathaway (NASA), Andy Kenney, Carol Roberts, Doug Snider, Lily Fredericks, Theresa Chestnut (Boeing), Dudley Kenney, Jim LaRocque, Sherri Nickell, Carol Rose, Paul Batastini, Rob Raphaele, Barbara Austin, Pam Cooley, Norm Murphy, and Sam Newman. Rita Roberts and Karen Kuether are not shown.

KSC engineers share sensor developments

Engineers from Kennedy Space Center's Command, Monitor and Control branch of the Spaceport Engineering and Technology Directorate presented their latest sensor and data acquisition developments to companies seeking new technologies to commercialize and market.

The forum for the presentations was the NASA Advanced Sensors Symposium held July 29-30 at the Marriott Inner Harbor Hotel in Baltimore.

New developments in sensor systems and devices related to America's space program were presented by leading researchers and program managers from various NASA centers. NASA develops advanced sensors suitable for harsh air, space and terrestrial applications.

The group of 130 attendees, which included corporate business leaders and senior technologists from large and small companies, learned about sensor developments at NASA and the opportunities for acquiring or developing new sensor technologies through partnership with NASA.

Organized by Langley Research Center and chaired by Rheal Turcotte, the symposium featured six sessions of presentations.

KSC-NASA engineer Jose Perotti presented a KSC Sensor and Data Acquisition Overview during the opening session, "NASA Sensor



At left, Jose Perotti (left) and Dr. Tim Griffin work with a Vacuum-Jacket sensor. Above, Richard Deyoe (left) and Dr. Pedro Medelius discuss the newly developed External Tank Centering tool, designed to assist in the mating of the External Tank to the Orbiter.

"The symposium offered us a great opportunity both to share our technologies with industry and to learn about industry's needs."

DR. TIM GRIFFIN
NASA ENGINEER

Objectives and Direction."

Later, all the KSC participants presented their individual technologies in the "Systems Monitoring" session chaired by Dynac's

Anthony Eckhoff.

Perotti discussed the Smart Current Signal Sensor, a sensor system that can monitor its own electrical and mechanical health. Richard Deyoe of Dynacs presented the Remote Pressure Transducer Health Check, a device and process for remotely checking various parameters of a pressure transducer on board a satellite. Dr. Pedro Medelius and Dr. Chris Immer, also of Dynacs, discussed the Signal Conditioning Amplifier, a data acquisition system and the Multisensor Array, respectively.

NASA's Dr. Tim Griffin gave a presentation on KSC's mass spectrometer and its use for monitoring and detecting poisonous, gaseous leaks that would harm

living organisms. Dr. Griffin gave examples of successful use of the mass spectrometer on the Space Shuttle to detect hydrogen leaks during the "Homeland Security" session.

"The symposium offered us a great opportunity both to share our technologies with industry and to learn about industry's needs," Dr. Griffin said.

Future NASA-industry partnering, which was fostered during the symposium, could include sensor development, testing, application development, commercial introduction, and/or licensing of patented technology.

A medical device symposium is planned for November in Philadelphia.

5 KSC employees receive QASAR Awards

Five NASA and contractor employees of Kennedy Space Center were honored this quarter with the Quality And Safety Achievement Recognition (QASAR) Award.

The QASAR recognizes individuals who have displayed exemplary performance in contributing products and services and a safe environment and processes for NASA.

The QASAR Award is sponsored by NASA Headquarters' Office of Safety and Mission Assurance.

The director of KSC's Safety, Health and Independent Assessment Directorate makes the final

selection of QASAR recipients at the space center.

The honorees:

Ayman Abdallah, NASA, was selected for his efforts uncovering a flaw in the SciSAT Coupled Loads Analysis that resulted in the CLA being invalidated.

As a result of his findings, Orbital Science Corp. instituted new safety measures ensuring mission success.

Gary Bergstrom, Space Gateway Support, Comprehensive Health Services Inc., was selected for his efforts in ensuring a Web site was developed concerning Heat Stress issues.

Additionally, his contributions actively support the safety initiatives of the Center and its programs.

John Dollberg, NASA, was selected for his outstanding leadership, contributions, cost savings, and improvements to the Kennedy Space Center's Ground Safety Review Panel, which ensures the continued safe processing of the International Space Station and Space Shuttle Payloads.

Ron Gillett, NASA, was selected for his outstanding leadership in contributing to the safety and mission goals of NASA Headquar-

ters and Kennedy Space Center.

Specifically his contributions in the area of risk management, coordinating new projects and training, have impacted and empowered employees in the Spaceport Engineering and Technology organization.

Mike Harrison, NASA, was selected for his outstanding leadership in contributing to the safety and mission success of KSC and NASA, and for the development of high quality flight hardware and experiments in support of KSC's mission of providing world-class spaceport technologies for current and future space vehicles.

INSIDE SRB Ret

The Space Shuttle’s solid rocket booster (SRB) casings and associated flight hardware are recovered at sea after each launch and recycled in order to reduce the cost of launches.

The expended boosters are disassembled, refurbished and reloaded with solid propellant for reuse.

The two NASA retrieval ships which perform the SRB recovery, the *Liberty Star* and *Freedom Star*, were specifically designed and constructed for this task. Built at Atlantic Marine Shipyard, Fort George Island, near Jacksonville in 1980 and 1981, the ships are 176 feet in length, 37 feet in width, and draw 10 -12 feet of water.

Each ship is designed to retrieve one booster. Each ship’s complement includes a crew of ten, a nine-person SRB retrieval team, a retrieval supervisor, and observers. The maximum complement is 24 persons.

“The biggest challenge we face during retrieval is weather,” said Joseph Chaput, manager of United Space Alliance Marine Operations and captain of the *Liberty Star*. “We might have to wait out there for days if the weather is too rough. We can’t retrieve the SRBs in 20-foot seas.”

When the weather cooperates, the team conducts a visual assessment of the flight hardware upon arrival. The pilot parachutes and main parachutes are the first items to be brought on board. With the chutes and frustum recovered, attention turns to the SRB. The dive team prepares for booster de-watering.

Two small Ambar boats, with nine retrieval divers aboard, are deployed. The job of the first dive team is to install an Enhanced Diver-Operated Plug (EDOP) in the nozzle of the booster. The EDOP is launched from the ship and towed to the booster by one of the small boats. Once dive preparations are complete, the dive team enters the water for EDOP insertion. The EDOP is 22 feet in length and weighs 1,100 pounds. It is slightly buoyant in water, meaning it just floats and is easily guided to the aft skirt at a depth of about 110 feet by the divers. A quick inspection of the nozzle is conducted. The EDOP is then inserted into the booster nozzle. Once the EDOP legs are locked in place and the nozzle sealed, an air hose is attached, which is deployed from the ship.

The second team double-checks the aft skirt and EDOP installation to ensure there are no problems. After the second dive is completed, dewatering operations begin. Air is pumped from the ship through the EDOP and into the booster, displacing water within the casing.

As the process continues, the booster rises in the water until it becomes top-heavy. It falls horizontally, like a log in the water. Air pumping continues until all water is expelled from the empty casing. The final step in the ocean retrieval procedure is to connect the ship’s tow line. Once the tow connection is made, the divers return to the ship and the trip to NASA’s Hangar AF on Cape Canaveral Air Station begins.

The ships enter Port Canaveral, where the booster is changed from the stern tow position to a position alongside the ship, the hip tow position, to allow greater control. The ships then pass through a drawbridge, Canaveral Locks, and transit the Banana River to Hangar AF. They are lifted from the water with a straddle-lift style crane and placed on rail cars to begin the disassembly and refurbishment process.

In 1998, the Solid Rocket Booster recovery ships took on a new service for NASA. Space Flight Operations contractor United Space Alliance (USA) streamlined efforts for the Space Shuttle program by taking over the towing of the Shuttle’s External Tanks from Louisiana to Florida using the *Liberty Star* and the *Freedom Star*.

Well-suited for their role supporting Space Shuttle operations, the *Liberty Star* and *Freedom Star* also have proven themselves in other operations. Over the years, both vessels have seen service in side-scan sonar operations, cable-laying, underwater search and salvage, drone aircraft recovery, as platforms for robotic submarine operations and numerous support roles for other government agencies.

“The retrieval vessels are one of the significant tools used to provide reusable hardware and controlled costs for manned space flight,” said USA SRB Operations Director Jim Carleton.



Above, at Hangar AF, in one of the final steps of the retrieval, where straddle-lift cranes can lift it from the water and place it in a hip tow position, the ship passes through a drawbridge and



rieval



al process, the booster is released from the ship and towed to a position
e it on rail cars for disassembly. Below, with a booster alongside in the
l Canaveral Locks to the Banana River on its way to Hangar AF.



Above and below, the ship locates the booster and prepares for retrieval.



Above, divers separate the chutes. Below, divers
attach tow lines to the floating booster.



SRB Retrieval on the Web

Do you think you're familiar enough with the SRB retrieval process to try it yourself? The KSC Simulation Team will soon release an online SRB Retrieval Simulation including video. Players will choose the proper order for the steps to complete the retrieval. Look for it in late September at <http://imedia.ksc.nasa.gov>. Several other simulations and tours are already available at that site and in the Fun Space section of the KSC Public Web site, <http://www.ksc.nasa.gov/fun>.

Educators given tools to inspire students

Educators have an influence on NASA'S future by preparing scientists, engineers, astronauts and management leaders.

Kennedy Space Center's Education Programs and University Division team is helping prepare these influential mentors.

NASA, the University of Central Florida (UCF), and the Brevard Schools Foundation have been selected to operate the NASA/UCF Aerospace Institute for the U.S. Department of State's Division of Overseas Schools American and/or Embassy Schools from around the world.

A total of 30 educators were involved in this program, 24 of whom were selected by the Director of the Division of Overseas Schools in Washington, D.C., and the remaining five from Brevard County. All came to KSC.

JoAnn Morgan, director of External Relations and Business Development, welcomed the group to Kennedy Space Center. Aerospace Technologist William McQuade and Shuttle Main Engine Avionics Engineer Maggi Dutczyk talked about their roles at KSC.

Applications came from K-12 educators in countries including Mexico, the Netherlands, Italy, Israel, Guatemala, Ecuador, Kenya, Singapore, Burma and China.

These educators presently teach science, math, technology, and social studies at the middle and high school levels, and all content levels for the elementary grades.

From July 22 through August 2, PreK-4 educators from 14 states also came to KSC's Center for Space Education (CSE) for a series



Educators participating in the NASA/UCF Aerospace Institute gather at the KSC Visitor Complex.

of NASA Educational Workshops (NEW).

The 25 participants spent two weeks of the summer at KSC. The International Technology Education Association, the National Council of Teachers of Mathematics and the National Council for Geographic Education are collaborators with NASA and the National Science Teacher Association for this program.

The educators used KSC facilities, human resources and other programs to enhance their knowledge and skills in science, mathematics, technology, and geography.

Educators also explored the biodiversity of different estuary species along the shoreline of Eddy Creek at Canaveral National

Seashore.

KSC's Deputy Center Director Jim Jennings and Morgan welcomed the participants. Former astronaut Sam Durrance shared his experiences from his two shuttle missions.

Coordinating the administrative responsibilities for the NASA workshops were Birdette Brown, Educator Resource Center (ERC) project coordinator, and Barbara Wentworth, Aerospace Education Services Program (AESP) administrative assistant.

"These educators are responsible for our future engineers, technicians, and even astronauts," said Brown. "It is important to provide them with unique opportunities to excite students, and encourage them in the hard work

necessary to be the best."

The workshops were hosted under the direction of Pam Biegert, chief, and Steve Dutczyk, K-12 Education lead from the Education Programs and University Research Division.

Coordinating the NSTA participation were NEW Program Manager Deborah Daniels and NEW Facilitator Ellen Holmes.

NASA Education Specialists Laura Colville, Jim Gerard, Les Gold and Damon Talley led the participants through educational workshops, activities and site briefings utilizing NASA's unique resources.

ERC support staffers Laura Baker, Lori DeSouza, and Lina Rosado were the distribution coordinators of NASA educational materials.

IFMP ...

(Continued from Page 1)

dream. Now all across the Agency we are managing the change process to prepare our workforce for their new roles, to use new tools, and to create and implement new processes."

Richard Arbutnot, KSC Human Resources director, added, "The Center and the Agency are embarking on a journey of change especially in the way we manage

our business systems. We are likely to see more change in the next two years than in the last decade."

Why do we need IFMP? Currently, financial information must be consolidated at NASA Headquarters through cumbersome techniques.

Using existing technology for these processes provides the Agency with the opportunity to resolve current problems and strategically plan for the future.

The ultimate beneficiaries are the agency program and project managers.

IFMP will enable "One NASA" with 10 interdependent Centers.

NASA Administrator Sean O'Keefe has quickly embraced the concepts behind IFMP and made the program one of the highest priorities of the Agency.

He emphasizes that IFMP's success is critical to restoring credibility to NASA's financial management processes.

The capabilities that will be derived from the IFMP fit well with the five goals embodied in the President's Management Agenda, specifically the goal of "Improved Financial Performance," another key component of O'Keefe's vision for NASA.

For more information visit the following Web sites: <http://www.ifmp.ksc.nasa.gov>, <http://corefinancial.ifmp.nasa.gov>, <http://ipo.ifmp.nasa.gov>, or <http://www.ifmp.nasa.gov>.

KSC scientists transform wastewater

When you flush a toilet, do you know where the water goes?

It's not something most of us think about. But NASA and Dynamac scientists are evaluating a method that may cost effectively clean water containing human waste before it ever reaches local groundwater.

The work is a natural extension of the research team's efforts to develop closed, bioregenerative life support systems for long duration space missions.

In most residential areas without central sewerage systems, wastewater enters a leach field or drain field from a septic tank system. However, in areas with increased development and limited land, such as coastal areas with overly porous soil or impermeable rock strata, wastewater often finds its way into the groundwater and nearby surface water.

"It's a widespread problem in Florida, where the soil is very porous," said Dr. John Sager, a NASA scientist and principle investigator on the wastewater research project. "That can lead to pollution, both in coastal areas and in the many freshwater lakes up the spine of the state."

This problem is all too familiar to residents and health officials in areas such as the Florida Keys. As the Keys continue to grow in



Dynamac scientist Neil Yorio checks a wastewater drain field project behind Hangar L.

population, the amount of land becomes more and more limited, leading to the pollution of nearby seawater. As a result, beaches in more-developed areas are often closed due to wastewater intrusion until the pollution subsides.

The solution to this problem is to make sure wastewater is treated before it is released into the groundwater. Although there are some treatment methods currently used, they are complex, time-consuming and can be expensive.

In the method proposed, plants will use the phosphorus and nitrogen, or nutrients, in the wastewater for their own nutrition

and growth. The pathogens will be held in the soil and ultimately deactivated. The remaining clean water will be released through the plants' leaves in a process known as transpiration.

Behind Hangar L, four large white boxes are topped by an attractive array of common Florida plants, including several varieties of palms and philodendrons. Each box acts as a contained drain field, receiving five gallons of simulated wastewater per day, or half the amount of wastewater created by one person.

Dynamac scientists Neil Yorio and Jay Garland pointed out that in

a residential yard, the box would be buried, revealing only the thick stand of plants. The plants in use are salt-, flood- and drought-tolerant, making them well-suited for this tropical environment. A barrier hidden under a layer of mulch keeps rainwater from directly entering the soil.

Phase One of the three-phase project began in November 2001 and concluded in March 2002. After 105 days of testing, the plants thrived, showing no sign of toxicity to the high nutrient concentrations and bacteria in the water. Although the plants transpired less water during winter months than expected, this is not abnormal, especially when plants are still becoming established.

The team has seen a more rapid transpiration rate during the first three months of Phase Two, which began in April and will run for about a year. During Phase Three, the system will be tested in a real environment, although site selection is still in the planning stage.

"It's exciting to use the expertise we have developed for NASA to address a terrestrial problem," said Dr. Garland, a microbial ecologist. "The goal of developing sustainable human habitation systems is a transcendent challenge for Earth and space."

PREVIEW ...

(Continued from Page 1)

National Academy of Sciences to take a look to see what actions are taken as a result of the commission's report."

Walker, who formerly served as chairman of the U.S. House of Representatives Committee on Science, applauded U.S. Rep. Dave Weldon, R-Palm Bay, for his efforts in pushing for the creation of the commission.

"This commission exists because of Weldon's leadership," he said.

Among the commission's innovative ideas:

- NASA and the U.S. Air Force's aging spaceport infrastructure could be addressed through setting

up a "quasi-federal entity" at federal spaceports that would lease land and direct proceeds toward capital improvements. Aging spaceport utilities could be sold to private companies, which would invest in needed upgrades.

- Aerospace could be funded as an entity rather than in pieces of various federal agencies, which would create better program continuity and investment by commercial industry.

- Investment in new propulsion system research could result in technology that would allow humans to reach Mars in weeks vs. years. Human exploration of space could go beyond the solar system.

"If we could reach Mars in three weeks rather than three years, we

would have a mandate to go there and beyond," Walker said.

- Creation of a satellite-based air traffic control system could set the stage for future increases in air travel, such as that predicted for the air-taxi business. Europe is already looking at such a system.

- Reforming export control of aerospace technology would allow U.S. companies to profit from their innovations overseas. While national security must be protected, many technologies now prohibited from export pose no threat to national security.

- The educational system could be reformed to make use of the latest computer-assisted learning techniques to cope with the increasing need for students with

science and math training and degrees to support the aerospace industry. Students could have computed-based math and science lesson modules tailored to their individual interests.

"Investments have to be made now so we will be ready for the future," Walker said. "Otherwise we will lose our lead position."

The commission was established by federal law in 2001 to study the future of the U.S. aerospace industry in the global economy, particularly in relationship to national security. Its final report and suggestions for public policy reform will be issued in November. Several preliminary reports have been issued.

For more information, visit <http://www.aerospacecommission.gov/>.

35 years ago: 4 rockets launched within 18 days

In 1967, in a period of 18 days between July 14 and Aug. 1, the KSC Unmanned Launch Operations Directorate launched four spacecraft, using four different vehicles, from launch pads on two coasts.

The four launches were

- Surveyor 4, launched July 14 from Complex 36, Cape Canaveral;
- Explorer 35, launched July 19 from Complex 17, Cape Canaveral;
- the Polar Orbiting Geophysical Observatory – POGO – launched from Complex SLC-2 at Vandenberg Air Force Base in California on July 28; and
- Lunar Orbiter 5 launched August 1, from Complex 13, Cape Canaveral.

John Neilon, who was deputy director of the ULO at the time, explained the tight launch schedule was coincidental:

“The launches were all scheduled for these times ... and not for any planned agenda. With a few exceptions, each of the launches was independent of the others. There were generally separate NASA and contractor crews at each complex. Bob Gray (ULO director and launch director for the four missions) and I worked all launches as did one or two ULO staff members.

“Our telemetry lab and our Mission Director’s Center at the Cape were used for all the Cape launches and were able to turn them around to support them all. The Range was a busier place in those days than it is today so people were used to tight scheduling of tracking and other resources.

“The tightest scheduling was for those of us who were in California for the POGO launch to get back in time for the Lunar Orbiter prelaunch activities. Fortunately POGO got off on the first attempt and it was early enough in the day (6:21 a.m. PDT) so we could catch a plane back to Florida the same day.”

John Gossett, the Centaur Division chief,

Remembering Our Heritage



From left to right: John Neilon, former deputy director of ULO; Bob Gray, former director of ULO and launch director of all four missions; Joe Schwartz, then acting chief of the Western Test Range Operations Division, John Gossett, chief of the Centaur Operations Division; Harold Zweigbaum, chief of the Atlas Agena Operations Division, and Hugh Weston, chief of the Delta Operations Division.

recalled, “It seems that all launches always wound up wanting about the same launch dates in spite of every effort in the early planning phase to have them spaced so as not to interfere with one another. We were well aware of our existing launch schedule and of the unique opportunities that would be required to satisfy the many constraints and restraints required by particular spacecraft.

“One of the pleasures was working out the many ways and means to please our spacecraft customers. This planning was done by establishing a vehicle-spacecraft working group early on to identify needs from the trajectory to countdown sequence. But, invariably, problems with either the launch vehicle or the spacecraft or with the Range would begin to occur in such a manner as to cause competition for resources

Launch details

Surveyor 4 – An Atlas Centaur 11 placed the spacecraft into a trans-lunar trajectory; after a smooth flight the spacecraft impacted the Moon. After a flawless flight to the moon, radio signals from the spacecraft ceased during the terminal-descent phase, approximately 2.5 minutes before touchdown. Contact with the spacecraft was never reestablished.

Explorer 35 – a Delta 50 placed the IMP-E, the fifth Interplanetary Monitoring Platform spacecraft, into a lunar transfer orbit from which it was inserted into lunar orbit.

POGO – A Thor Agena 8 placed the POGO-4 spacecraft into a high-inclination Earth orbit.

Lunar Orbiter 5 – An Atlas Agena 24 placed the Lunar Orbiter 5 spacecraft into a trans-lunar trajectory from which it was inserted into a lunar orbit using spacecraft onboard propulsion.

and everybody eventually wanted the same launch date.”

Still, Harold Zweigbaum, who was chief of the Atlas Agena Operations Division, recalled that launching three rockets from the Cape in such a short time was relatively easy.

“Launches of orbiting satellites were not limited to specific dates, and each of the three was on a different pad,” he said.

Zweigbaum oversaw the Lunar Orbiter 5, last of the quad launches and last of the Lunar Orbiter group. “They were the most successful group of launches,” he said. “All five were on time, successful in attaining the goal of going to the Moon, and brought in under budget.”

Keep your Labor Day safe

Many people will spend more time outdoors over this Labor Day weekend. But we're still in our lightning season. Please practice good lightning safety over this Labor Day weekend. The deaths and especially life-long debilitating injuries from lightning are devastating. Use the "30 30 Rule." If 30 seconds or less occurs between lightning and its thunder, go inside. Stay inside for 30 minutes or more after hearing the last thunder. While inside, stay off corded telephones and away from electrical appliances and plumbing. If you can't go inside, a vehicle with a solid metal roof and sides offers some lightning protection. Lightning kills – play it safe!



John F. Kennedy Space Center

Spaceport News

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