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John F. Kennedy Space Center

KSC 2000 launches a new era

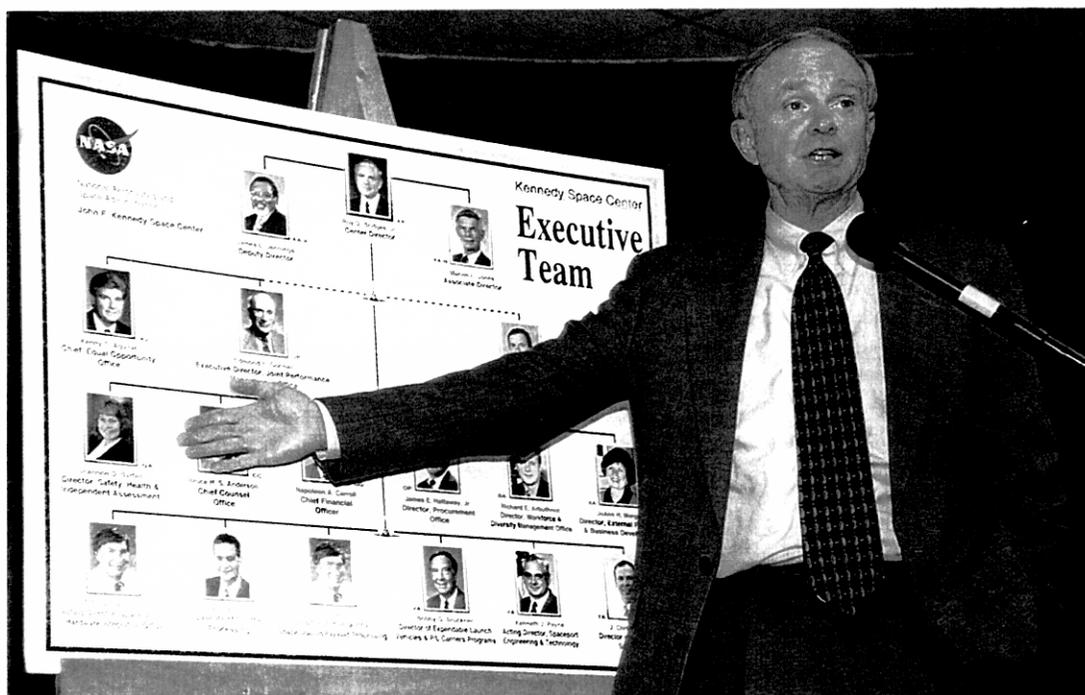
Realignment fits goals for future

After months of planning, the new organizational structure of Kennedy Space Center officially took effect on May 7. The structure replaces the previous 21 directorates with 15 organizations reporting to the Center Director.

At a press conference the day of the unveiling, Center Director Roy Bridges was asked about the driving force for the reorganization.

"There are several, not the least of which is the fact we've been an organization that's been in pretty much the same configuration for about 20 years," Bridges said. "The world has changed a lot in 20 years, and our role at the Center has changed, too. It's a way of catching up, and quite frankly we probably

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Center Director Roy Bridges displays a chart showing KSC's new organizational structure at a press conference.

Mission update STS-101

The launch of STS-101 was scheduled at press time to occur on May 18. The mission to the International Space Station had been delayed from late April, when unfavorable weather conditions forced the cancellation of launch attempts on three consecutive days.

STS-101 will carry a crew of seven, led by veteran commander James D. Halsell Jr. The primary purpose of the mission is to deliver supplies, perform a space walk and boost the Station to a higher orbit.

Center off to fast start in licensing

Kennedy Space Center, through the Technology Programs and Commercialization Office, leads all of NASA's field centers during the first part of 2000 in the licensing of technologies.

Gale Allen, associate director of the Technology Programs and Commercialization Office, emphasized, "Over the past four years, KSC has vigorously implemented (NASA Administrator Daniel) Goldin's Agenda for Change, which calls for increasing the number of partnerships with the commercial sector. A large factor in KSC's success is due to the excellent teamwork and commitment exhibited by the Commercialization Office."

Melanie Chan, licensing

"American and foreign companies have been taking a keen interest recently in our technologies ..."

**MELANIE CHAN,
KSC LICENSING MANAGER**

manager, pointed out that license agreements have been negotiated for a total of 10 patents and software copyrights so far this fiscal year. NASA Headquarters has already issued six of those licenses to U.S. companies.

"American and foreign companies have been taking a keen interest recently in our technologies that were developed to solve a Center or mission need," Chan said. "These space-based

technologies can be further developed and adapted into marketable products that boost a company's current market focus."

NASA also has 14 patents pending based on KSC technologies.

Highlights of licensed KSC technologies include:

Jview — Netlander, Inc., a Florida/NASA Business Incubator tenant in Titusville, has been developing and marketing this high-powered, Web-based, data distribution, software system as "JTouch" for one year. NetLander is adapting the technology for use in commercial manufacturing, telemedicine, and finance. The company envisions the product as

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Offices in KSC's new organization

Office of the Director

The director provides executive leadership and strategic direction for the Center and is assisted by a deputy director, who is responsible for resource allocation, and serves as the primary contact with the Inspector General and award fee determining official; and an associate director, who leads integration of NASA, USAF and commercial capabilities as the KSC representative for development of Cape Canaveral Spaceport. The center director manages the John F. Kennedy Space Center and the assigned programs and projects that are accomplished at Kennedy Space Center (KSC); Cape Canaveral Air Force Station (CCAFS), Florida; Vandenberg Air Force Base (VAFB), California; other NASA Centers; and Shuttle secondary landing sites. He serves as the NASA point of contact of CCAFS and VAFB.

EEO Office

This office is to ensure a progressive and effective Equal Opportunity program at the Kennedy Space Center that meets Center, Agency and Equal Employment Opportunity Commission goals and objectives.

Joint Performance Management Office (JPMO)

This office provides the contract management and administration for the Joint Base Operations and Support Contract (J-BOSC). The J-BOSC is a joint initiative between NASA/KSC and the 45th Space Wing for the furtherance of cost efficiencies, customer satisfaction, and marketability of joint resources.

NASA Office of Inspector General

The KSC OIG serves as an independent and objective audit and investigative organization to assist NASA by performing audits and investigations. The OIG prevents and detects fraud, waste and abuse and assists NASA

management in promoting economy, efficiency, and effectiveness in its programs and operations.

Shuttle Program Integration Office

Responsible for the engineering management and technical director of pre-flight, launch, landing and recovery activities for all space shuttle vehicles and integration of payloads.

Safety, Health & Independent Assessment

This office provides the Chief Safety Officer, policy and assessment of implementation; coordinates with Code Q for S&MA activities (including CoFR); validation of NASA and contractor supplied data, S&MA consulting (risk management, surveillance, policy investigations, etc.), Agency Range Safety Management, NSRS management, Safety and Mission Assurance research management (strategy and requirements); and serves as the KSC Safety Ombud.

The area of the Agency Occupational Health Program assures the program elements are functioning at all NASA centers to promote the health and well-being of its employees (constituent areas include Occupational Medicine and Environmental Health, Occupational Medicine encompassing workers' comp, EAP, Health Education, cafeterias and food sanitation, physical fitness, emergency and preventative medicine, and nutrition).

Reviews and validates the activity of each center Medical Review Office, occupational health research management, Code U interface for Agency Occupational Health.

The Systems Management Office performs independent assessment of high risk, high cost center projects and delegated programs, and reports results to KPPMC; advises and consults center program/project managers on formulation and implementation processes/best practices; identifies and advocates program/project management tools, techniques, and

training; serves as member and secretariat to KPPMC; manages and owns the 7120.5 B process; coordinates with Headquarters AE and LaRC IPAO; KSC Chief Engineer.

The KSC Business Systems Management office is responsible for the business systems management policy and requirements, business systems management tools, systems, and techniques; facilitates development of an integrated management system; coordinates audit integration and external audits; and conducts internal audits of business systems and business system assessment process.

Chief Counsel

The Chief Counsel provides professional legal counsel and assistance to the Center Director and KSC management officials. The legal staff reviews communications prepared for signature of the Center Director, counsels on procurement actions, provides advice and assistance to the U.S. Attorney in litigation matters involving KSC, processes claims for bodily injury and property damage, and reviews other matters for their possible legal implications.

Chief Financial Officer

The NASA CFO Council has been established to improve financial and resources management, strengthen communications, improve coordination, and promote professional development. The Council is specifically directed to advise and coordinate the activities of the Agency on such matters as development and implementation of financial and budget systems, improved quality of financial and resources information, financial data and information standards, management controls, professional development standards, and any other matters that will facilitate financial and resources management excellence and related support for NASA's mission.

Procurement

This office has the overall Center responsibility for procurement, acquisition management, and contract management.

Workforce & Diversity Management

This office provides advisory services on Human Resources and Diversity Management. The W&DMO is responsible for centralized management and integration of, as well as consulting and advisory services for, a variety of human resources programs. These programs include, but are not limited to, recruitment and relocation, awards and recognition, training and career development, knowledge management, position classification, labor and employee relations, benefits, drug testing, FS 41 budget and FTE labor distribution programs, workforce planning, assessment and information systems.

External Relations & Business Development

This directorate is responsible for education programs, internal and external public communication, guest services and special events, government relations, customer assurance, joint business planning and Spaceport technology business development.

Space Station Hardware Integration Office

Responsible for the management and integration of the overall ground process for all U.S. launched elements, from Assembly & Checkout through Verification & Launch.

Space Shuttle Processing

The Shuttle Processing Directorate is responsible for overall management, planning, technical direction, and insight of Space Shuttle processing. The directorate manages all aspects of Space Shuttle processing at KSC, including preflight, launch, landing, and recovery activities. The organization provides logistic

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Offices ...

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services that ensure flight hardware, ground support equipment, materials, and associated planning are in place to meet all Shuttle processing milestones. The directorate holds the overall responsibility for safe and reliable execution of Space Shuttle turnaround and preparation for launch.

International Space Station/ Payload Processing

The ISS/Payload Processing Directorate is responsible for the direction and management of preflight assembly, test, checkout, and integration of Space Station and Space Shuttle Payload elements. It provides ground processing expertise for International Space Station, Shuttle Payloads, flight and ground

engineering and operations, Experiments & Utilization operations, Safety, Mission Assurance and Logistics. It is also responsible for serving as the primary agent for the management and integration of overall ground processes for all U.S.-launched ISS elements from manufacture and assembly through verification and launch, and provides technical support to on-orbit operations.

Spaceport Engineering & Technology

This office is responsible for planning, managing, directing and implementing engineering and technology programs at KSC and related KSC activities at other locations.

Expendable Launch Vehicles and Payload Carriers

The Expendable Launch Vehicle

(ELV) program is a Human Exploration and Development of Space (HEDS) enterprise, Lead Center Program, responsible for managing and acquiring ELV launch services for NASA and its customers. Fundamental objectives include provision of safe, reliable and cost-effective launch services for NASA payloads; maximizing probability of launch success for all NASA missions; and assuring customer launch services are provided within budget. It also is responsible for providing payload carriers and support to NASA and its customers. Fundamental objectives include providing expertise, facilities, and associated flight and ground hardware to prepare and integrate a wide variety of spacecraft and space experiment payloads for flight; providing payload/payload carrier/launch vehicle integration analysis to meet customer and vehicle requirements; and leading the research, design,

development, and supply of payload carrier upgrades to existing hardware or new carriers to meet future customer demands.

Spaceport Services

The Spaceport Services Directorate is responsible for the overall management and direction of Center activities and functions associated with Information Technology, Facilities, Facilities Services, Occupational Health, Medical Operations, Environmental Programs, Institutional Safety, Protective Services, and Support Services. Also included are NASA Aircraft Operations, Export Control, the Worker's Compensation Program, the Individuals with Disabilities Program, and Astronaut Crew Quarters. In addition, it provides partnering support with 45SW and JPMO for consolidated activities in support of the Cape Canaveral Spaceport vision.

KSC 2000 ...

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should have done this a lot earlier."

The organization includes several entirely new offices: Safety, Health and Independent Assessment; Workforce and Diversity Management; External Relations and Business Development; Spaceport Engineering and Technology; and Spaceport Services.

Bridges added that the old structure didn't reflect the realities of the KSC workforce.

"At one time in the past we were 2,600-strong here," Bridges said. "An organization that was made to run well with 2,600 people doesn't necessarily work well with 1,650. ... You might say we cleaned up the yard a little bit to let our customers know where to find what they need."

The Center Director pointed out ways in which the new organization is more streamlined. He said direct reports to the Center level have been reduced by 25 percent.

A reduction of 37 percent in the supervisor level brings the Center in line with the NASA-directed goal of a ratio of 11 employees per supervisor.

The new organization includes

new faces in senior leadership positions, including Richard E. Arbuthnot as director of the Workforce and Diversity Management Office, Shannon D. Bartell as director of the Safety, Health and Independent Assessment office and J. Chris Fairey as director of the Spaceport Services office.

"We tried to provide continuity of leadership in some of our processing organizations," Bridges said. "We did have a high number of returnees in those organizations. But 60 percent of our senior executive service personnel have significantly new assignments, so we have made some changes at the top.

"I tried to balance the need to have continuity in some operations organizations with the need to move people around and give them broader experience," Bridges added. "With the senior staff, we tried to balance out the talent these folks had as well as look downstream at some succession planning."

One of the objectives of the reorganization has been to make the Center more efficient in pursuing technology development. Bridges said the organization will enable KSC to continue such technology projects as the cryogenics testbed

and a new life sciences laboratory planned for construction near the KSC Visitor Complex.

"Our focus here at Kennedy was to make sure we didn't become just contract managers or stewards for what our contractors did," Bridges said. "We wanted to have a core element of our mission that focused on technology. Part of this reorganization was to institutionalize this concept within the new engineering and technology organization. So when we go out recruiting we can talk about some of the cutting-edge technology we're doing. Before, that was kind of buried in our organization."

Planners of the new organization also put emphasis on making it easier for customers to reach the right people. Bridges said the newly created directorate of External Affairs and Business Development will serve that purpose.

Bridges said that he met May 8 with contractor representatives to brief them on the new organization and that their collective reaction was positive.

About 650 employees will relocate as a result of the new organization, the Center Director said. Plans call for most of the moves to be completed by May 29.

Visitor Complex extends Brevard Pass promotion

Due to popular demand, the Kennedy Space Center Visitor Complex is extending the new Brevard Resident 12-Month Pass promotion throughout the summer to NASA's biggest fans — the local community.

With proof of residency, until September 4, 2000, Brevard County residents can purchase a 12-month pass to Kennedy Space Center Visitor Complex at a discounted rate of \$36 for adults and \$22.50 for children 3-11. The regular prices are \$59.95 and \$39.95, respectively.

The 12-month pass allows guests to the Visitor Complex to enjoy all-inclusive access to the KSC bus tour and attractions, IMAX films, Robot Scouts, Universe Theater, Exploration in the New Millennium, Early Space Exploration, Astronaut Encounter and various outside exhibits.

The 12-month pass is available at the ticket booths located at the main entrance to the Visitor Complex.

For more information, call (321) 449-4444.

Testbed yields partnerships for KSC

A walk through the Cryogenics Testbed Facility at KSC shows that construction is not yet entirely complete. In other ways, though, work at the facility already is in full swing.

Several partnerships have either been completed or are in the works.

Big Horn Valve, Inc. of Sheridan, Wyo., has become the first commercial customer for the Cryogenics Testbed at the Kennedy Space Center. Big Horn Valve has developed a Venturi Offset (VOST) valve technology and they have contracted with Dynacs, Inc., and the Cryogenics Testbed to look at applying the VOST technology to the cryogenics industry and especially Liquid Oxygen for space and ground support applications.

Other joint development partners and customers of the Cryogenics Testbed include Air Products and Chemicals, Inc., the University of Florida, the Department of Energy's Oak Ridge National Laboratory, the NASA Marshall Space Flight Center, and Cabot Corp. in Illinois. These customers are negotiating work agreements with the Cryogenics Testbed.

The Cryogenics Testbed Facility was officially unveiled at a ribbon breaking ceremony on April 14. The event drew several distinguished guests, including Brian E. Chase, district director for U.S. Congressman Dave Weldon; Susan Fleming, Operations and Management consultant of the State of Florida's Department of Community Affairs/Florida Energy Office; Frank Kinney, executive director of the Technological Research and Development Authority (TRDA); Dr. Norman Fitz-Coy, professor of aerospace engineering, mechanics, and engineering science at the University of Florida; Thomas Portland, vice president of gases and equipment for Air Products and Chemicals, Inc.; Dr. Ramen P. Singh, president and CEO of Dynacs, Inc.; and Randy Ball of the Florida House of Representatives.

Potential customers of the Cryogenics Testbed traveled from across the country to attend the event. A ribbon fashioned from Tygon tubing was frozen in liquid nitrogen. KSC Director Roy Bridges broke the ribbon with a hammer.

While the ceremony marked a beginning, it also reflected years of effort on the part of a group of KSC employees to bring the testbed concept to reality.

In October 1996 the cryogenics test laboratory was started for the purpose of thermal insulation development to support future launch vehicles and spaceports. NASA's Office of Space Flight provided seed funding for this lab in April 1997. In December, 1998, Dynacs Engineering Co. was awarded funding under the Florida Department of Community Affairs program titled "Investment Initiative for Energy Technologies," administered by the



The Cryogenics Testbed Facility offers world-class laboratories for industry and academic partners.

Technological Research and Development Authority (TRDA).

NASA, Air Products and Chemicals, Inc., (with several facilities in Florida), and the University of Florida partnered with Dynacs Engineering Co. in setting up the Cryogenics Testbed. The State of Florida invested \$750,000 for facility design and construction. NASA invested \$1.56 million for test support equipment.

Dynacs invested \$20,000 for start-up and marketing. Air Products and Chemicals, Inc., assisted with the proposal effort and is a customer of development and testing services.

The University of Florida has pledged analysis support for customers desiring such support. TRDA may provide funding to Florida for-profit companies to benefit Florida's economy and promote energy conservation and efficiency by assisting Florida companies with the commercialization of energy-related technologies and related new or advanced products and services, the creation of new jobs, and the replenishment of program funds.

James Fesmire with NASA/KSC Spaceport Engineering and Technology has been working since 1989 on projects involving cryogenics technologies and was the one who first came up with the vision that led to what KSC today is doing in the area of cryogenics. Fesmire credits John Poppert, chief of the Development Testing Laboratory, for housing the Cryogenics Laboratory for all these years and for the help each and every person in John Poppert's group has given to the Cryogenics Lab.

Eric Ernst began performing component test and development activities with Fesmire since 1996. This work led to new advances in cryogenic test and measurement technologies. James also credits Mike Ynclan of Dynacs who first helped Fesmire get the initial laboratory going.

Another key individual is Dr. Stan Augustynowicz, a world-renown cryogenics expert who joined KSC as a Dynacs employee in February 1998. It was Stan's long hours of hard work and dedication that advanced the Testbed vision at the international level and brought about technical credibility for the laboratory.

Through his work in thermal insulation systems many new advances were made in design and testing technologies.

Zoltan Nagy first worked with Fesmire 10 years ago on cryogenics work when an employee of Wiltech at KSC. Zoltan joined Dynacs in May 1998 and has been instrumental in setting up a liquid nitrogen flow testing area and in playing a major role in getting the new facility off the ground.

Key individuals within NASA who served key roles in making the vision a reality are Karen Thompson, Maria Littlefield, and Eric Ernst. The creativity and persistence of these individuals led to the pioneering activity of cross-cutting technology development that we now enjoy for future Spaceport technology areas. Steve Sojourner and Dennis Lobmeyer — both of Dynacs, Inc. — have also had key roles.

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Licenses ...

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the basis for a near real-time, Internet, remote monitoring product. With its modular design, engineering experts could use the software to monitor and troubleshoot systems in industrial plants around the globe from a single physical locale. NetLander was just awarded exclusive rights to market the technology in the United States. KSC's development team included Steve Beltz, Charles Goodrich, John Dockendorf, Kevin Gillet, Mark Long, Will Riddle and Ryan Stansifer.

Water-Soluble Electrically Conducting Polymer — An Ohio company is commercializing the NASA-patented technique to produce superior corrosion control coatings, conductive inks, and anti-static applications, to name just a few. GeoTech Chemical Company of Tallmadge, Ohio, is marketing products under the Catize™ name and is merging their patented corrosion control system with the NASA Lignosulfonic Acid-Doped Polyaniline (Ligno-Pani) technology, an inherently conductive polymer. Products will be available to the entire coatings industry in the form of an additive. Sole inventor for this work that was performed under a NASA grant with the University of Arkansas at Little Rock is Dr. Tito Viswanathan, Chemistry Department head.

Corrosion Resistant Coatings — Developed by KSC employees Cole Bryan and Karen Thompson and two Los Alamos National Laboratory scientists, the patent describes a method of protecting a metal substrate like alloy steel, nickel, or aluminum from corrosion. A conductive layer of polyaniline is applied to the surface, and a topcoat layer is then added to provide a physical barrier over the conductive layer. NASA's new licensee, Rohm and Haas Company (headquartered in Philadelphia) is one of the world's largest manufacturers of specialty chemicals and became even larger during its recent merger with Morton Chemical.

Process and Equipment for Nitrogen Oxide (NOx) Waste Conversion to Fertilizer — The newly issued U. S. patent has an

environmental twist. The concept was devised by Clyde Parrish of Dynacs, Inc., the Engineering Development Contractor (EDC) at KSC, in response to a request from NASA to eliminate the hazardous waste stream from its NOx wet scrubbers that are used to capture NOx vapors from nitrogen tetroxide and nitrogen dioxide spacecraft propellant oxidizers. This new scrubber converts NOx into potassium nitrate, a primary fertilizer material. The system reduces emissions to less than 10 percent of previous levels, an accomplishment on which Phoenix Systems International, Inc., of McDonald, Ohio, the new licensee, wanted to capitalize. The company anticipates using the NASA technology to apply to at least 40 percent of the country's coal-, oil-, and gas-fired boilers, and also wants to establish a joint technology with a sulfuric dioxide scrubber manufacturer. Inventors listed on the patent are Dale Lueck and Parrish, both now NASA employees.

Standing Wave Reflectometer — A license was issued to Eclipse International Corporation of Ontario, Calif., a company that produces electronic test equipment. This non-intrusive electrical cable tester determines the nature and location of a discontinuity in a cable through application of an oscillating signal to one end of the cable. The frequency of the oscillating signal is varied in increments until a minimum or almost zero voltage is measured at a signal injection point, which indicates minimum impedance. The inventor on this and the following two patented technologies is Dr. Pedro Medelius, Dynacs scientist.

Non-Intrusive Cable Tester — The development goal was to provide a reliable, portable method of verifying the conditions of cables inside the Space Shuttle Orbiters. This hand-held, cable scanner allows for checking cable continuity without disconnecting the cable. Exclusive patent rights have been transferred to Cyrospace Technologies of Houston, Texas, a tech transfer and commercialization company located adjacent to the Johnson Space Center. Howard Simpson is also an inventor on the patent.

Accurate Location of Lightning Strikes — Consumer Lightning Products, Inc., of Asheville, N.C., plans to commercialize this technology for all industrial and commercial applications, including aviation, industrial, and sports facilities and security. Acoustic and electric field sensors are combined into a network that ultimately can determine the locations of lightning strikes with accuracy of better than 5 meters, a significant achievement considering the 500-plus meter accuracy of some of the best systems already developed.

Gas/Liquid Supersonic Cleaning System — Three companies have now licensed this NASA innovation. CryCle Cryogenic Development of the Netherlands became the first foreign firm to license a NASA-patented invention. Preferred Engineering of Danbury, Connecticut recently licensed the system for use in nuclear power plants. Va-Tran Systems of Chula Vista, Calif., licensed the patent earlier. The system was originally developed as a cleanliness verification tool to replace freon solvents. NASA-KSC inventors Eric Thaxton, Raoul Caimi, and Gary Lin developed the technology for cleanliness verification of complex Space Shuttle mechanical and electronic parts.

KSC also is involved with Dual Use projects. Within the Dual Use program, NASA leverages industry dollars by joining with a

competitively selected industry partner to complete the joint development of a technology that is required to fulfill a mission need on the Center.

At the same time, the industry partner finishes with a marketable product, having saved substantial development dollars. The Center's primary cooperative agreements include:

The Aerospace Engineering Group of IDEA, LLC was selected by NASA to build the Active Particle Fallout Monitor with KSC. The Beltsville, Maryland company joined with NASA in January 1999 in a Cooperative Agreement to complete development of the KSC contamination detection system. The company also holds an exclusive license to commercialize the real-time, contamination monitoring system. Paul Mogan (NASA) and Chris Schwindt (Dynacs) are joint inventors on the patent.

The U.S. Department of Commerce, National Institute of Standards and Technology, is leading work on the completion of a Cryocooled Josephson Voltage Standard.

Air Products and Chemicals, Inc. introduced its technology to NASA and was selected to assist a KSC team on the Development of a Cold Gas Compressor System to Convert Liquid Helium to High Pressure Gas.

Site construction for the liquid helium system is scheduled to begin in the spring of 2000.

Testbed ...

(Continued from Page 4)

The Cryogenic Test Laboratory at NASA Kennedy Space Center is the central part of the Cryogenics Testbed. The Testbed, a joint venture established in 1999 and operated by NASA and Dynacs Engineering Company, is a collaboration of industry, aerospace, and research partners focused on technology development.

The overlapping elements of research, development, design, engineering, testing, manufacturing, operations, and training are brought together, as appropriate, to meet the product development

needs of government and commercial customers.

The Cryogenic Test Laboratory has four technology focus areas: Thermal insulation systems (temperatures from 77K to 400K, cryostats for materials testing, test articles from 1-liter vessels to 20-meter pipelines), Cryogenic components (valves, pumps, sensors, vacuum, etc.), Propellant process systems (LO2 and LH2 loading concepts), and low-temperature applications (such as superconductivity, medical, general industry). Expertise includes experiment design and investigation, system design and prototypes, and engineering test and evaluation.

Coming soon: KSC's annual awards event

Kennedy Space Center's annual Honor Award Ceremony will take place on May 25. The event will be held in the IMAX 2 theater at the KSC Visitor Complex, with overflow seating in the IMAX 1 theater.

The ceremony, scheduled to run from 9 to 10 a.m., will be broadcast live throughout the Center on the NASA channel. The keynote speaker will be Nichelle Nichols, who played Lt. Uhura on the original "Star Trek" television series.

A reception will follow in the Debus Conference Center.

Look for coverage of this event, as well as a wrap-up of all major employee awards of the past year, in the next issue of *Spaceport News*.



The GOES-L spacecraft rises from Launch Complex 36-A at Cape Canaveral Air Force Station during a pre-dawn launch on May 3.

Perfect launch sends weather craft on way

A stirring launch in the pre-dawn darkness on May 3 successfully placed into space the fourth in a series of the most sophisticated weather spacecraft ever built.

The Geostationary Operational Environmental Satellite (GOES)-L spacecraft lifted off from Complex 36 Pad A at Cape Canaveral Air Force Station. The spacecraft was carried in space aboard a Lockheed Martin Atlas IIA rocket.

GOES-L was scheduled to reach geosynchronous orbit at 22,240 miles (35,788 kilometers) above the Earth's equator by May 20, at which point it will be officially designated GOES-11. The satellite will complete its 90-day checkout in time for availability during the 2000 hurricane season.

The weather satellites are a joint venture between NASA and the National Oceanic and Atmospheric Administration (NOAA). KSC provided government oversight for the launch operations and countdown activities.

NASA lists two options for Mars missions

In 2003, NASA may launch either a Mars scientific orbiter mission or a large scientific rover that will land using an airbag cocoon like that on the successful 1997 Mars Pathfinder mission. The two concepts were selected from dozens of options that had been under study. NASA will make a

decision on the options, including whether or not to proceed to launch, in early July.

Two teams, one centered at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, Calif., and the other at Lockheed Martin Astronautics in Denver, will conduct separate, intensive two-

month studies to further define the concepts. In the studies the teams also will evaluate risk, cost, and readiness for flight, allowing 36 months of development leading to a May 2003 launch date.

The reports will be submitted for review to Mars Program Director Scott Hubbard at NASA Headquarters, Washington, D.C. Dr. Ed Weiler, associate administrator for Space Science at NASA Headquarters, will make the final decision of which mission — if any — to launch in the 2003 opportunity. If selected, the cost of the 2003 mission will be about the

same as the successful 1997 Mars Pathfinder mission (adjusted for inflation).

"Our budget will support only one of these two outstanding missions for the 2003 launch opportunity, and it will be a very tough decision to make," said Dr. Weiler. "Following this decision, later in the year we will have a more complete overall Mars exploration program to present to the American public, which will represent the most exciting, most scientifically rich program of exploration we have ever undertaken of the planet Mars."

Her feathered friend



Gerri Hylander of the Audubon Birds of Prey Center gives audience members a close look at a bald eagle during the recent Environmental and Energy Awareness Week festivities at KSC. The event, held in commemoration of the 30th anniversary of Earth Day, featured more than 40 exhibits from groups that included Canaveral National Seashore and the Brevard Zoo. Approximately 1,650 employees attended the event.



John F. Kennedy Space Center

Spaceport News

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