National Aeronautics and Space Administration

LAGNIAPPE

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Budget announced for fiscal year 1999

During a press conference Feb. 2, NASA Administrator Daniel Goldin announced the space agency's budget for fiscal year 1999. The following are excerpts from his remarks:

Each year, when I stand before you to present the proposed NASA budget, I am extremely confident we will meet our commitments. And I am confident of the work we will do.

But — because it is the always risky and often dangerous nature of exploring the unknown — I can't predict just how astonishing that work will be.

What an incredible year we just had! At NASA, we dared to dream. We imagined what could be possible. And then we went to work.

Thanks to the brave women and men of our astronaut corps who risk their lives to benefit humankind . . . and thanks to our contractors and all of the dedicated NASA employees. . . this past year was marked by successful shuttle mission after successful shuttle mission.

Each brought back sound science and made possible the continuing historic preparations for the International Space Station, the largest peacetime scientific and technological project ever.

The budget proposal which I present to you today provides the resources required to do that.

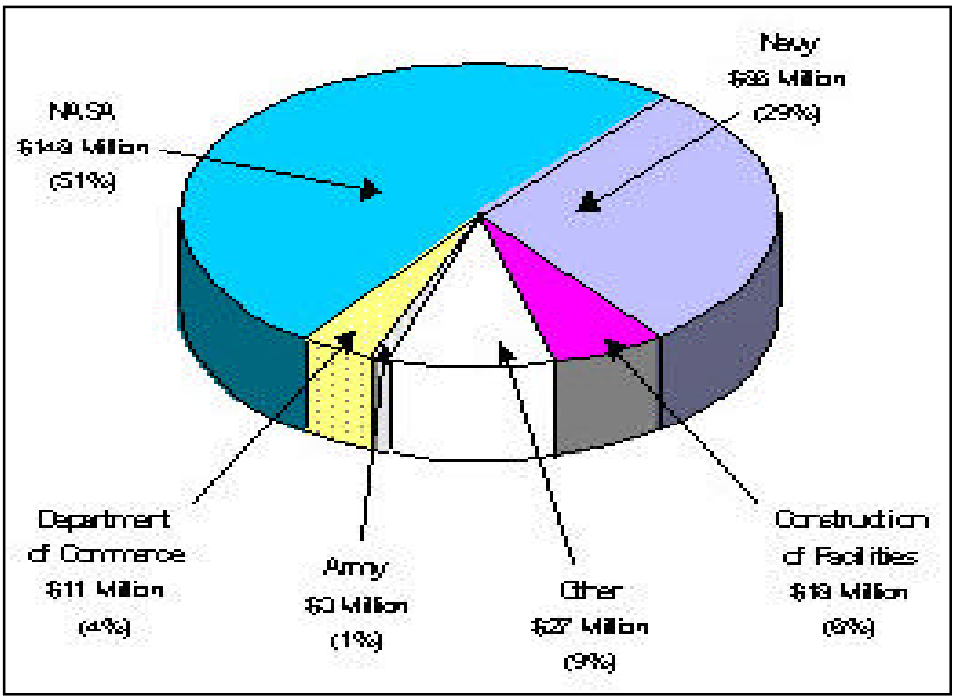
Human Exploration and Development of Space

In 1998, we at NASA, along with 15 other nations, are on target to begin the assembly of the International Space Station. Our budget fully funds the ambitious research program for the station.

However, as we continue to prepare for the International Space Station and whatever comes next, the highest priority of the human space flight program continues to be the safe launch, operation and return of the Space Shuttle and its crew.

Over the next two years, Space Shuttle operations will continue the transition to a single prime contractor.

See BUDGET, Page 6



Stennis Economic Impact study released

The results of a study by Mississippi State University that shows the Stennis Space Center's economic impact on surrounding communities were released at a news conference hosted by Partners for Stennis Feb. 19 following their monthly meeting.

Partners for Stennis is a group of Mississippi and Louisiana community leaders that support and enhance the development of agencies and programs at Stennis Space Center.

The report estimates that area employment would have been reduced by 17,349 jobs if Stennis Space Center had not been in operation in fiscal year 1997. The estimate takes into account the direct and indirect effects within a 50-mile radius of the space center. The area includes Hancock, Harrison and Pearl River counties in Mississippi and St. Tammany Parish, La.

NASA gathers its yearly economic impact information and compiles it with economic information from 30 other agencies and eight contractors at Stennis. The information is provided to Dr. Charles Campbell, professor of economics at Mississippi State. Campbell analyzes the information and provides an assessment of the center's total economic impact.

The report also shows that—if the space center had not been in operation in fiscal year 1997—personal income would have been reduced by more than $546 million. Retail sales would also have been reduced by $295 million.

Estimates are that Stennis Space Center had a tax revenue impact of $44 million on local government revenues.

Also detailed in the report is the residential distribution of Stennis Space Center's 3,747 employees: 1,002 lived in Pearl River County, Miss.; 822 in St. Tammany Parish, La.; 758 in Harrison County, Miss.; 722 in Hancock County, Miss.; 227 lived elsewhere in Mississippi; 167 lived elsewhere in Louisiana; and 49 employees lived in states other than Mississippi or Louisiana.

Of the 3,747 employees at Stennis Space Center, 43 percent were involved in scientific and engineering fields; 28 percent were technicians or were involved in crafts or production; 13 percent worked as business professionals; and 16 percent held clerical or other positions.

Among civil service and military employees, 7 percent held doctorate degrees; 21 percent had master's degrees; 35 percent had bachelor's degrees; and 10 percent had associate's degrees.

LAGNIAPPE **Commentary**

Americans prepare for spaceflight

Last month, the focus of the commentary was the birth of NASA–the events leading up to its formation and its first day of business. We continue this 40th anniversary capsule history of NASA with the Agency's initial plans and early ventures into space.

With the new space agency in operation on Oct. 1, 1958, the magnitude of its forthcoming assignments were still not known. NASA's first assignment was to develop plans for methodical, one-step-at-a-time programs to launch Americans into space.

Even before the Agency was formed, the military services had plans for rocketing Americans into space. The Air Force called its program Man in Space Soonest. The program was a four-part plan to land humans on the moon by the end of 1965 using existing military boosters at the bargain price of $1.5 billion.

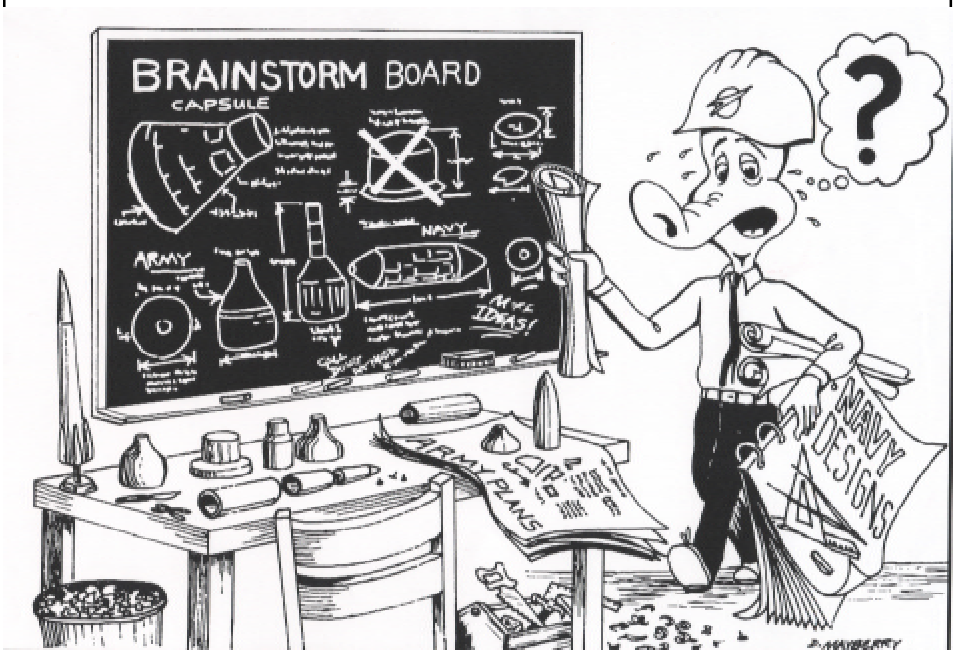
The Navy proposed an unusual spacecraft. Their vehicle was planned as an inflated glider with a rigid nose cone that was comprised of a cylinder with spherical ends that would telescope into a delta wing. Called Manned Earth Reconnaissance, the program was doomed to failure because of its use of extremely expensive hardware.

Project Adam, the Army's plan, devised by Wernher von Braun and his German rocket team in Huntsville, Ala., was a comparatively simple program. Von Braun wanted to utilize a modified Redstone booster to launch a pilot in a sealed capsule along a steep ballistic suborbital trajectory. After briefly touching the fringes of space, the capsule would splash down into the Atlantic Ocean east of Cape Canaveral, Fla.

Although von Braun proposed the plan in complete seriousness, Dr. Hugh L. Dryden, NACA's director of research, said the Army project had "about the same technical value as the circus stunt of shooting the young lady from a gun..." These early military proposals were abandoned when NASA was formed and given the mission by the President to put an American in space. Elements of some of the various military programs, however, lived on and were later adopted by NASA.

The first name tagged on America's man-in-space project was Project Astronaut. Shortly after, the United States human spaceflight effort was renamed Project Mercury. Management was given to the Space Task Group at the Langley Aeronautical Laboratory under the leadership of Dr. Robert Gilruth. This relatively small group of engineers initiated work on a piloted spacecraft in the spring of 1958.

M.R.H.



NASA NEWSCLIPS

Safety will not be affected by USA contract---NASA's Space Shuttle managers have reviewed the process that space flight operations contractor United Space Alliance (USA) will use to lower operating costs and have determined that safety will not be compromised.

NASA's Safety and Mission Assurance Risk Assessment team concurs with the process USA used to determine reductions in its work force.

NASA asked USA to ensure that the flight rate for 1999 and beyond can be safely supported after the efficiencies are carried out.

Both NASA and USA understood that work force reductions would be part of the space flight operations contract to reduce costs.

The space flight operations contract was awarded to USA at the beginning of the 1996 fiscal year.

International Space Station agreements signed---The International Space Station marked an important milestone on January 29 as senior government officials from 15 countries met in Washington, D.C., to sign agreements to establish the framework for cooperation among the partners on the design, development, operation and utilization of the station.

Three bilateral memoranda of understanding were signed by NASA Administrator Daniel Goldin separately with his counterparts: Russian Space Agency General Director Yuri Koptev, ESA Director General Antonio Rodota and Canadian Space Agency President William Evans.

These new agreements supercede previous space station agreements between the U.S., Europe, Japan and Canada and reflect changes to the space station program resulting from significant Russian participation and program design changes undertaken by the original partnership in 1993.

Led by the United States, the station will be the largest, most complex international cooperative science and engineering program ever attempted.

Mission to Planet Earth Enterprise gets a new name

NASA has renamed the Mission to Planet Earth enterprise the Earth Science enterprise. The Earth Science enterprise is one of the four strategic enterprises of the Agency, responsible for a long-term, coordinated research effort to study the total Earth system and the effects of natural and human-induced changes on the global environment.

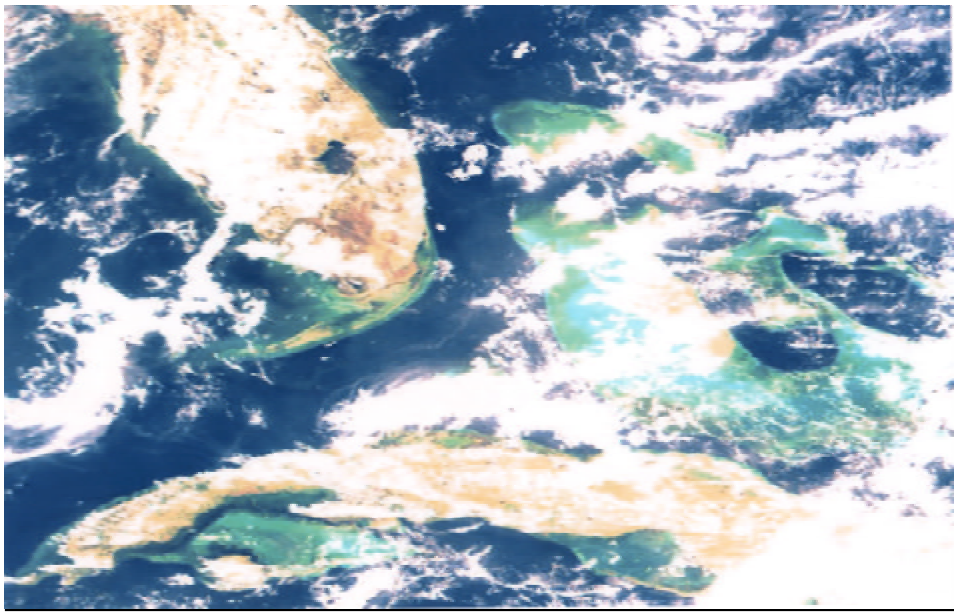
In announcing the change of name, Acting Associate Administrator for Earth Science William Townsend said, "We feel that 'Earth Science' more clearly conveys to the American people the goals of our program, and more directly focuses on the research that we're conducting. 1998 will include several major launches in the enterprise, including the first Earth Observing System missions, and we are pleased to enter this era with the new name."

The goals of the Earth Science enterprise are to expand scientific knowledge of the Earth system using NASA's unique vantage points of space, aircraft, and in situ platforms, creating an international capability to forecast and assess the health of the Earth system; to widely disseminate information about the Earth system; and to enable the productive use of Earth science results and related technology in the public and private sectors.

The title "Mission to Planet Earth" originated ten years ago in a report on future directions for the U.S. civil space program.

NASA has organized its activities into four strategic enterprises, including Human Exploration and Development of Space, Aeronautics and Space Transportation, and Space Science.

The name change will affect two programs at Stennis Space Center—the Commercial Remote Sensing Program and the Earth System Science Office. The Commercial Remote Sensing Program enhance United States economic competitiveness through development of remote sensing technologies. The Earth System Science Office conducts research to better understand the biological, chemical, geological and physical processes that are crucial to the vitality of Earth's ecosystems. Both program offices, through their efforts, contribute to the goals of the Earth Science enterprise.



This image of the Straits of Florida was taken on Sept. 25, 1997 by the Sea-viewing Wide Field-of-view Sensor (SeaWiFS) satellite. The satellite gathers information about the quantity of phytoplankton in the world's oceans. The satellite's sensors measure the reflectance of sunlight by pigments in the phytoplankton, the more light reflected back, the more phytoplankton is present. The SeaWiFS Mission is a part of NASA's Earth Science enterprise, which is designed to look at our planet from space to better understand it as a system in both behavior and evolution.

Asrar named Associate Administrator for Earth Science

Dr. Ghassem Asrar has been selected as the new NASA Associate Administrator for Earth Science, Administrator Daniel Goldin announced.

Asrar currently serves as the chief scientist for the Earth Observing System in the Office of Earth Science at NASA Headquarters. In this position, he has led an international team developing the scientific priorities and measurements to be obtained from a series of advanced Earth-orbiting satellites that promise fundamental new insights into the connections between Earth's land, oceans, atmosphere, ice and life.

"Dr. Asrar brings first-class interdisciplinary research skills and the respect of the scientific community to this challenging position," Goldin said. "Our Earth Science program is poised to enter a new era with the launch of the first Earth Observing System mission this summer. This is an ideal time for Dr. Asrar to assume the leadership of this key NASA enterprise." Asrar's appointment is effective immediately.

Asrar has authored more than 70 peer-reviewed scientific papers, primarily in the fields of land surface studies and biosphere/atmosphere interactions, and has edited several remote sensing reference books. He conducted research and trained undergraduate and post-graduate students for nine years in academia prior to joining NASA as a senior scientist in 1987. He has continued his interest in developing the next generation of Earth scientists by establishing the NASA Earth System Science Fellowship Program, which has trained more than 400 young scientists to date. Prior to his research career, he earned graduate degrees in civil engineering and environmental physics from Michigan State University, East Lansing.

Asrar is an active member of several professional societies, including the American Geophysical Union, the American Meteorological Society, and the Geoscience and Remote Sensing Society. He has received numerous awards and honors, including the Distinguished Visiting Senior Scientist Award from NASA's Jet Propulsion Laboratory in 1991 and a NASA Exceptional Performance Award in 1997.

Endeavour glides in for a smooth and flawless landing

The Space Shuttle Endeavour glided to a smooth landing on Jan. 31 at the Kennedy Space Center, Fla., to wrap up a nine-day, 3.6 million-mile mission to deliver the final U.S. astronaut to the Russian Mir Space Station. Commander Terry Wilcutt landed Endeavour on time at 4:35 p.m. CST, less than a half-hour before sunset.

Astronaut Dave Wolf was in Endeavour's mid deck. Wolf returned to Earth after 128 days in space, of which he served 119 days as a crewmember aboard Mir.

Replacing Wolf on the orbiting Russian outpost is astronaut Andrew Thomas. Thomas began his four-month research mission as the final American to live and work on the 12-year-old station.

Earlier in the day, Thomas and Mir 24 crewmates Commander Anatoly Solovyev and Flight Engineer Pavel Vinogradov greeted a new crew of cosmonauts following the successful docking of a Soyuz TM-27 craft with the station.

Mir 25 commander Talgat Musabayev and flight engineer Nikolai Budarin began a three-week handover with Solovyev and Vinogradov while French researcher Leopold Eyharts and Thomas press ahead with their scientific experiments.

Eyharts returned to Earth Feb. 19 with Solovyev and Vinogradov.

Returning to the Kennedy Space Center were Wilcutt, Wolf, pilot Joe Edwards and mission specialists Jim Reilly, Bonnie Dunbar, Mike Anderson and Salizhan Sharipov.

Wolf began a series of postflight medical tests at the outset of several weeks of physical rehabilitation following his long stay in weightlessness.

It was the 13th consecutive shuttle landing at Kennedy and the 20th in the last 21 missions.

The next shuttle mission is scheduled to launch at 12:19 p.m. CST April 2 at Kennedy Space Center.

The primary payload of the Space Shuttle Columbia will be Neurolab, which consists of human and nonhuman scientific experiments and associated hardware in a Spacelab long module and the orbiter mid deck.

Andrew Thomas flew aboard STS-89 to join the crew of the Mir for a four-month stint. Thomas is the last American to live and work inside Mir. He replaced Dave Wolf who spent a total of 119 days aboard the 12-year-old Russian Space Station Mir.

Employees can benefit from tech transfer

Most Stennis employees probably know of the NASA Technology Transfer Office located have on site. Some may know what the main mission of the office is, but there are few who know how this office can benefit them.

Technology transfer is the process of taking technology that has been developed by one office or agency and offering it to U.S. business and industry for commercial use. Many NASA employees and contractors develop new and innovative techniques or equipment in the course of their daily work to help them accomplish the specific mission of their office or agency.

What these employees may not realize is their innovations might be of benefit to someone outside of their organization who is searching for that same technique or equipment in order to fulfill their mission's goals. This is where the Technology Transfer Office enters the picture.

"Technology transfer starts with the engineers and scientists that innovate and invent," said Kirk Sharp, NASA technology transfer officer. "Few work related activities are as satisfying or pay financial dividends like participating in the tech transfer program, which finds commercial use for NASA technology."

New technology innovations can be discoveries, tools, algorithms or software programs—anything that is new or unique and could have the potential for additional uses beyond the innovation's original intended purpose. Whether employees think their ideas may have value to other organizations, they should report them anyway.

By participating in this program, employees and contractors are eligible to benefit in many ways. These include receiving monetary rewards, peer recognition, publishing the technology, patents and licenses and having the satisfaction of contributing to the nation's economic advancement.

Monetary rewards can range from $150 to $500. NASA innovators are also eligible to share in any royalties generated by new technologies; the first $2,000 of royalties and 25 percent of royalties over $2,000 per year are possible.

To report an innovation or for more information on how you can participate in the technology transfer program, call the Stennis Space Center Technology Transfer Office at (228) 688-1929.

CRSP at Stennis is taking the lead and helping the people of the state

You may not think a Gulf fisherman, a farmer in upstate Mississippi, or your local television weatherman have any connection to the space program, but they do—they all can use remote sensing to do their jobs better, faster and easier.

Remote sensing uses sensors on aircraft or satellites to observe and take highly detailed images of the Earth's surface. These images can be used to produce accurate maps, which can be used to find prime fishing grounds, determine the health of crops, or show what weather is coming your way in the next few days.

What connects the fisherman, the farmer and your weatherman together is the Commercial Remote Sensing Program Office at Stennis.

David Brannon is the program manager for the Commercial Remote Sensing Program, and Stennis is the lead center for commercial remote sensing activities within NASA's Earth Science enterprise.

As program manager, Brannon and his lead center team work with the new remote sensing industry.

"Our job is to work closely with companies, universities and other government agencies to bring space remote sensing technologies down to Earth," Brannon said. "We work with farmers, weather forecasters, road builders and fishermen to show them new ways to do their job and save them money."

David Brannon, program manager of the Commercial Remote Sensing Program at Stennis

According to Brannon, the newest project is the use of new private sector data that provides very detailed pictures from airplanes and space.

"These pictures are very valuable to real estate developers, construction engineers and city planners who need to look closely at the Earth's surface to design new projects and protect the environment," Brannon said.

Brannon's office recently installed a new satellite ground receiving station capable of obtaining large amounts of information quickly.

"We are working on real-world uses of satellite data and the real world needs information immediately," Brannon said.

"Coast residents want as much warning as possible about hurricane conditions and potentially affected areas. We need to know before it hits, not a week after it's gone," Brannon said.

SSC Employee Profile

He believes one of the program's most important efforts is working with educators to develop the next generation of scientists, engineers, technicians and resource managers who are going to use remote sensing technologies on the job.

The Gulf Coast Education Initiative and the Commercial Remote Sensing Workforce Development Initiative are two education programs supported by the remote sensing program at Stennis.

The office is working closely at the state level on the Mississippi Space Commerce Initiative. This partnership between NASA and the state resulted from a challenge issued by NASA Administrator Dan Goldin for Mississippi to become the nation's leader in remote sensing research, product development and services. The initiative, expected to be announced later this year, is designed to bring remote sensing companies to Mississippi to work with NASA and to create a 21st century information industry with Mississippi as its home.

NASA's Speakers Bureau at SSC keeps area informed and aware

NASA's Speakers Bureau Program at Stennis Space Center is made up of scientists, engineers and other employees available for lectures and presentations to civic groups, schools, professional organizations and other groups along the Mississippi Gulf Coast and throughout Southeast Louisiana. Speakers provide presentations appropriate for every audience, from the most inquisitive child to the busiest executive.

During fiscal year 1997, Stennis Space Center personnel participated in 46 programs, reaching a total of 8,896 people from Mobile, Ala., to Jackson, Miss., to New Orleans, La., and all along the Gulf Coast.

Speakers Bureau topics include: an overview of Stennis Space Center, Space Shuttle Main Engine Testing, the Reusable Launch Vehicle Program/X-33, Aerospace Engineering, Propulsion Systems Technology, Remote Sensing Applications, Technology Transfer, Space Benefits/spinoffs, Doing Business with NASA, Earth System Science, NASA Education Programs, Stennis Space Center Economic Impact, Careers in NASA, and Women's Career Issues.

The Speakers Bureau Program has been established to share how space program technology affects the lives of all Americans.

For more information or for a more detailed list of Speakers Bureau topics, call the Public Affairs Office at Stennis at (228) 688-3341, or Mississippi and Louisiana residents may call 1-800-237-1821.

Requests for a speaker should be submitted in writing, preferably six to eight weeks prior to the proposed speaking engagement.

NASA's Eric Ross gives a presentation to a group of Gulf Coast students.

NASA's Mike Dawson, right, explains the testing technology used at Stennis Space Center's E-1 complex to U.S. Air Force Major Jay Cossentine, with the Pentagon. Cossentine was among members of the National Rocket Propulsion Test Alliance that visited Stennis this month. During the visit, members of the test alliance discussed future cooperative propulsion test projects between NASA and the Department of Defense. Dawson, chief of lead center development at Stennis, is also the co-chair of the test alliance.

BUDGET...

(continued from Page 1)

And this budget will allow us to complete the major shuttle upgrades already under way as well as maintaining the funding for future upgrades.

In sum, I am proud that the Space Shuttle team is delivering on its promise: we meet our flight rate; we have less and less in-flight hardware problems; we're flying for less money; and we are safer today than ever before.

Space Science

Our 1999 budget fully funds all of our major space science missions, including Origins, Discovery and Explorer. And as the mission operations budget continues to go down...our mission load will continue to go up.

In his State of the Union address, President Clinton announced the 21st Century Research Fund for path-breaking scientific inquiry.

I am pleased that the fund calls for a four percent increase in Space Science and a $700 million increase over the next five years.

Earth Science
(formerly Mission to Planet Earth)

We need to better understand the total Earth system and the effects of natural and human induced changes on the global climate.

That's why we want to continue to use a fleet of spacecraft and various instruments to help us — hopefully — develop predictive environmental, climate, natural disaster and natural resource models.

You will notice that the Earth Science budget is lower in its five year projection than last year.

There's a good reason for that —a reason we are very proud of.

We now have lower cost spacecraft that meet—or exceed—our toughest requirements.

And this lower budget not only fully funds our current programs—Earth Observing Systems and Earth probes.

It also provides the funding for two new programs and complements a third. We will start the QuickSCAT program and the LightSAR program as long as we get commercial sponsorship for LightSAR.

The Earth Science group is doing more with less.

Aeronautics and Space Transportation and Technology

The upcoming budget continues NASA's commitment to the strategic technology goals we announced last year.

This budget also allows us to forge ahead on development of advanced launch vehicles—the X-33 and the X-34—that will revitalize the American launch industry.

This budget will enable us to keep up the important work of opening the air and space frontiers and enriching the lives of all Americans.

I would like to thank President Clinton and his Administration for recognizing NASA's promise...for making us a priority...and for committing to us the resources we need to pioneer the future.

What This Means to Stennis

The areas of the NASA budget that are important to Stennis, such as propulsion and remote sensing are looking robust and busy.

In the propulsion test area there are hundreds of millions of dollars for Space Shuttle upgrades and newly developed hardware.

Increased emphasis is also being placed on remote sensing and the budget reflects that in terms of applications development and the recent data buy.

"Over the past several years, there have been threats to severely reduce the NASA budget," Stennis Deputy Director Mark Craig said. He added that credit needs to be given to our Mississippi and Louisiana senators and congressmen for helping deflect that threat and leveling the budget rather than continuing the decline.

The institutional services portion of the budget is very tight, however, Craig said that he feels that Stennis can do the job within the budget figures currently seen.

"For this year we have what we need. We have a lot of work to do to meet our customers' needs. There will continue to be significant pressure to do more with the money that we have and to look for efficiencies working between agencies. This environment continues to value what Stennis is good at, but we need to get even better. We need to stay on top of what we are doing and take nothing for granted," Craig said.

For complete information concerning the NASA budget for 1999, see the NASA home page at www.nasa.gov.

Stennis enters second phase of Multicultural Education Program

NASA at Stennis Space Center has begun the second phase of the Multicultural Education Program (M-CEP II).

Diversity Dialogue Groups (DDGs) will be the core for this phase. The DDGs consist of a small heterogeneous group of voluntary employees meeting on a regular basis and led by a trained facilitator to discuss workplace issues.

Employees who would like to participate with the groups in any way should contact the members directly. Contact Pam Covington at Ext. 2079 for general questions or information regarding DDGs or the process. Input is needed and solicited as the groups explore approaches to creating a work environment that provides opportunities for all employees to achieve their maximum potential and contribute to the attainment of the Stennis Space Center mission.

The DDGs will be an important resource for the center's Pathworks process by generating effective approaches to dealing with issues identified in various surveys conducted during the past five years. One survey was the recent Agencywide employee and customer satisfaction survey and the M-CEP I training.

The objectives of the DDGs focus on the concept that through dialogue individuals can: actively participate in the solution process; create synergy and work force productivity; remove barriers created by misperceptions, stereotypes, and erroneous assumptions; learn to interact with people different from themselves; work more effectively and cooperatively with one another; learn appropriate communication skills; and, establish a network of diverse individuals.

The DDGs will initially involve three groups concurrently dialoguing for the next five months.

The topic for Group I is Understanding Overall Organizational Operations. Members include Florence Kailiwai-Barnett, Terry Jones, Karen Lee, Ron Magee, Mary Lou Matthews and Mark

(See Multicultural, page 10)

Staff members of the House Space Subcommittee, the House Science Committee and of Congressional leaders who represent Mississippi, Montana, Louisiana, Tennessee and Kansas visited Stennis Space Center to receive updates on the center's ongoing programs and activities. The staffers were given an overview of the center and toured Commercial Remote Sensing Program facilities. Following the briefings, staff members toured the propulsion test complex and viewed a test firing of a Space Shuttle Main Engine on the B-1 test stand.

Black History program to be held Feb. 26

The Association for Cultural Awareness will host Stennis Space Center's 19th annual Black History Month program Feb. 26 in the Visitors Center auditorium.

One program will be presented. Beginning at 1 p.m. and ending at 4 p.m., the guest speaker is Dr. Charles Beady Jr., president of Piney Woods School located in Florence, Miss.

Honored guest will be renown humanitarian Oseola McCarty of Hattiesburg, Miss. She will hold a book signing session immediately following the program.

This year's theme is "African Americans in Business: The Path Towards Empowerment." For more information, contact Denise Dedeaux at Ext. 3733.

Special Olympics to be held March 28

The 1998 Mississippi Area III Special Olympics is scheduled from 9 a.m. to 3 p.m., March 28 in front of Building 1100.

This year's games are being coordinated by the Naval Oceanographic Office. Stennis has been the site of the Mississippi Area III games since 1983, and each year NASA, resident agency and contractor employees play an active role in assisting with activities.

A special luncheon fund-raiser will be held for the event March 11 at the Cypress House. The cost will be $5 per person—drinks are extra—and will be catered by Montana's.

Volunteers and financial sponsorship of $15 per athlete are still needed for the field day. Those interested in assisting should contact Karen Donlon at Ext. 5882.

Education leaders from Gulf states and Mexico meet at Stennis

Members of the Gulf of Mexico Education Commission met at Stennis Space Center's Fibernet 2000 site for a two-day strategic planning conference Thursday and Friday, Jan. 29 and 30.

The purpose of the meeting was to develop strategies, goals, linkages, and programs that will establish distance learning between the United States and Mexico.

"The Gulf of Mexico Education Commission will be developing a strategic plan on how to maximize our collective resources to serve the students, educators, and communities in the five U.S. states, six Mexican states and the Canadian province," said Dr. David Powe, NASA's chief of education and university affairs at Stennis.

Commission participants of this meeting included representatives from the states bordering the Gulf of Mexico, as well as two observers from Ontario, Canada.

The commission hopes that distance learning will bridge the gap between students who have access to technology and students who do not, in both the United States and Mexico.

The education commission is part of the Gulf of Mexico Accord. The Accord, under the guidance of the North American Free Trade Agreement (NAFTA), calls for cooperative efforts between the United States and Mexico in six major areas: investment, communication and transportation, health, agriculture, tourism, and education and culture.

Members of the Gulf of Mexico Education Commission met at Stennis Space Center for a two-day strategic planning conference Jan. 29 and 30 to develop strategies, goals, linkages and programs that will establish distance learning between the United States and Mexico. The group also participated in tours and briefings of the many ongoing programs at Stennis Space Center. Pictured from left are: Dr. David Powe, NASA/SSC Education Office; Wanda DeMaggio, NASA/SSC Education Office; Marco Navarro; George Vrantsidis; Jay Ertel; Jose' Farias; Francisco Bertot; Jesus Amarro; Gilberto Romero; Rafael Pino; James Norman; William Olivera; and Kenna Noone.

In addition to the strategic planning sessions, the group participated in tours and briefings designed to demonstrate the type of technology available at Stennis Space Center.

Spring 1998 Educator Resource Center workshops

Introduction to Word
March 3, April 1, All teachers

Read Me Some Science
March 4, Teachers grades K-5

Mission to Mathematics
March 5, Teachers grades 3-8

Science and the Internet
March 5, March 18
Teachers grades 4-8

It's Simply Weather
March 10, Teachers grades K-5

GLOBE
March 11 through 13, All teachers

Home Page Development and HTML
March 17, April 21, All teachers

Capturing the Internet
March 19, April 16, All teachers

Introduction to Windows 95
March 26, April 7 and 29, All teachers

Teaching with the Internet
March 31, April 5, 6 or 7
Teachers grades K-6

Chemistry for Kids
April 8, Teachers grades 3-6

I Can Sense That
April 15, Teachers grades K-3

The Solution to Art
April 22, Teachers grades K-5

All workshops begin at 8:30 a.m. in one of three locations at Stennis: the Trend 2000 facility, the Li'l Red Schoolhouse or the Fibernet 2000 classroom. The workshops are offered at no charge. Reservations are required due to limited seating. To make reservations, call the NASA Educator Resource Center at 1-800-237-1821 (select option 2).

The center has been accepted as a sponsor for Continuing Education Units. For more information, contact the Educator Resource Center at the number listed above.

New strides being made in hybrid tests

Hybrid rocket motor testing at Stennis Space Center is making significant strides in technological development.

Personnel with NASA and Lockheed Martin Michoud Space Systems in New Orleans have developed a process in which they can manufacture the motors they need to test at Stennis.

The process has allowed the team to achieve results such as completing a 50-test series in just three days.

"The reason we started doing this is because the commercial source for those motors for Lockheed Martin to bring in here went away," said NASA's Robert Bruce, chief of the Test Projects Office at Stennis.

"It's one of the most efficient test operations at Stennis," said Bruce. "We're safe, but we're very streamlined."

The hybrid rocket motors use an environmentally safe rubberized fuel and a liquid oxidizer. The solid fuel forms the combustion chamber while the liquid oxygen is stored in a separate tank.

What's unique about the manufacturing process at Stennis is that engineers can build different sizes of rockets and pour the amount of fuel into the reusable combustion chambers. The fuel then hardens into a rubber-like compound and forms the combustion chamber.

The liquid oxygen is first injected into the combustion chamber. Once combustion is established, the hot vapor flows through the combustion chamber where it heats and vaporizes additional rubber fuel. The motor is then self-sustaining, as long as oxygen is available to continue combustion.

The geometry of the combustion chamber and the method of introducing the liquid oxygen determine the performance characteristics of the system.

"That was an outstanding test period…even beyond outstanding," said Steve Jones, principal investigator of Lockheed's hybrid propulsion technology at Michoud. "Scott Dracon and his team have done an incredible job for us."

NASA's Scott Dracon is the test conductor for hybrid rocket motor testing at Stennis.

NASA and Lockheed Martin are conducting the hybrid test project through a Space Act agreement, a partnership where both parties bring resources to the arrangement and both benefit from the project.

Louisiana Congressman Bob Livingston spoke to a group of approximately 50 representatives last week from St. Tammany Parish and other Louisiana communities about technology transfer opportunities at Stennis Space Center. The Small Business Technology Seminar, sponsored by the Slidell Chamber of Commerce, gave area businesses an opportunity to find out how federal technology could help them in their day-to-day operations.

New turbopump testing to begin by midyear

Pratt & Whitney is running a series of development tests at Stennis on its new high-pressure fuel turbopump for the Space Shuttle Main Engine and expects to begin certification testing in May.

"We're anxious to complete this phase and move into certification," said Earl White, resident manager of Pratt & Whitney at Stennis. "Two pumps that we will use for certification are scheduled to arrive here at the end of April."

The 22-test series is on a pre-certification configuration turbopump and represents the final development milestone before certification testing begins.

The new turbopumps for the three liquid-fueled engines are among several improvements NASA is making to the shuttle fleet.

Turbopumps are the essential elements of main engines. They are extremely high-powered components that boost the pressure of the liquid hydrogen and liquid oxygen.

The propellants burn in the engines' main combustion chamber to provide about 475,000 pounds of thrust—the equivalent of 47 million horsepower.

NASA contracted with Pratt & Whitney to replace the main engines' high-pressure turbopumps that entered service 16 years ago.

The first engine upgrades to the shuttle were Block I engines, which powered the shuttle from July 1995 through 1997. Pratt & Whitney's high-pressure oxidizer turbopumps were the key improvements of these engines.

The next step was to upgrade to Block II engines, which would use Pratt & Whitney's oxidizer turbopump as well as a new fuel turbopump built by the company. However, NASA opted for a Block IIA design as an intermediate step between the Block I and Block II engines.

The Block IIA design incorporates the large throat main combustion chamber and uses the Rocketdyne fuel turbopump until the Pratt & Whitney pumps are accepted for flight.

The recent STS-89 mission of the Space Shuttle was the first shuttle mission to use three Block IIA main engines.

Safety Corner

Information provided by NASA's Safety Reliability and Quality Assurance Office

New standards set for head protection

ANSI has recognized a new American National Standard for Industrial Head Protection, ANSIZ89,1-1997. The new standard, which revised and updates the previous 1986 standard, was developed by the Industrial Safety Equipment Association's head Protection Group.

The standard reclassifies protective helmets into Type I and Type II, with performance requirements added for Type II on impact energy, off-center penetration resistance, and chin strap retention. The standard also changed the classifications applied to electrical insulation from Classes A, B and C to Class G (General), Class E (Electrical) and Class C (Conductive).

The Industrial Safety Equipment Association is offering copies of the standard for $30 each, with discounts available for bulk orders. Call (703)525-1695 or write to ISEA, 1901 N. Moore St., Suite 808, Arlington, Va. 22209.

Penny Parker, left, and Don Walter were crowned Lifesaver Queen and King of the "Krewe of Lifesavers" at a blood drive held last week at Stennis Space Center. Approximately 234 Stennis employees donated blood at the blood drive, which was sponsored by The Blood Center.

QUICK LOOK

■ **The NASA Environmental Office at Stennis** will hold a public poster session from noon to 2 p.m., Tuesday, March 17, in the Gainesville Room of Building 1100. The session will focus on two of the hazardous waste cleanup sites at SSC. All employees are invited.

■ **Free membership is available through Keesler Federal Credit Union.** For additional information on how Stennis employees and their family members can enjoy free membership, call Beth McGregor at Ext. 3478.

MULTICULTURAL...

(continued from Page 6)

McCalman.

The topic for Group II is Consistent Application of Management Policies. Members are Clyde Dease, Edna Gibson, Jenette Gordan, Ken Human, Elizabeth Messer and Wanda Trollinger.

The topic for Group III is Relationship of Promotions and Awards to Merit and Performance**.** The members are Rhonda Foley, Shawn Keller, Larrie Kelly, Patrick Kelly and Nancy Sullivan.

LAGNIAPPE

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