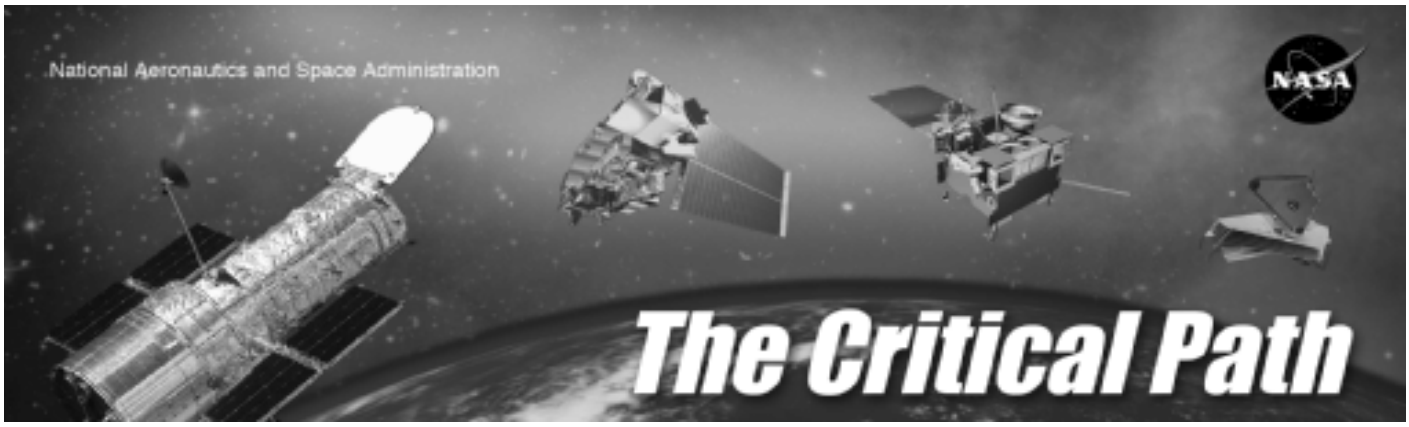


A Flight Projects Directorate Publication
A Newsletter Published for Code 400 Employees

Volume 14 number 3
2006 Fall/Winter

INSIDE THIS ISSUE:

One More Visit to Upgrade Hubble

Hubble Space Telescope is getting a new lease on life. On October 31, 2006, NASA Administrator Michael Griffin visited Goddard and announced that astronauts will make one final house call to Hubble in a mission to extend and improve the observatory's capabilities through 2013. The mission is scheduled for no earlier than May 2008.

NASA Administrator Michael Griffin makes the historic announcement.

"We are going to add a

(Hubble Continued on page 4)

James Webb Space Telescope Development is Moving Out

The James Webb Space Telescope (JWST) is the next flagship astrophysics mission for NASA and is planned for launch in 2013. JWST is a large, infrared-optimized observatory that

(JWST Continued on page 8)

Message from the Director Of

Greetings:

2006 continues to be a most productive and successful year for the GSFC and the Flight Projects Directorate (FPD). The SOLAR B and STEREO missions were successfully launched with initial check-out results most positive. The skill and leadership of our management teams have again been demonstrated through the successful completion of challenging development, test and launch activities. Our string of successful missions is only possible through the teamwork and the positive relationships our managers routinely establish with the science customer and contractor communities.

We like to talk about what makes Goddard a unique management organization; looking at the way our people step up to each challenge, and find the optimum way to solve each problem, provides the best examples of what sets us apart from the norm. We celebrate our successes, while never forgetting that the work we perform so routinely is both difficult and unforgiving. We must always learn from both our successes and our "diving catches".

In addition to this year's launch successes, and the continuing great work on our missions in implementation – including HST, SDO, LRO, Glory, GOES, POES, IBEX, and NPP- we have been fortunate to have received HQ's approval to initiate or continue activities on JWST, MMS, LDCM, TDRS-L/M, and the Geospace Radiation Belt Storm Probe. These are all vital "new starts" for Goddard, and each represents a significant area of growth. We were selected to lead these missions because of the depth and skills of our employees; our selection further validates the capabilities of the FPD and our ability to take on challenging assignments and bring them to fruition.

Goddard also received notification that two of our Discovery Mission proposals, VESPER and OSIRIS, have been selected for step 2 study over the next seven months. We now have two of the three Discovery missions, from which a single mission will be selected for implementation. These wins are a concrete demonstration of the depth of our science, engineering, and management capabilities, and represent an incredible breakthrough in our continuing journey to become

(Message from the Director Of Continued on page 11)

PERSONALITY TINTYPE

Mike Comberiate

Mike serves as a special assistant to the Director of Flight Projects (Code 400) and is managing a number of special project activities for various missions.

Born: Washington, D.C.

Education: BSEE & MSEE, Univ. of Maryland

Life Before Goddard: Mike actually started his long US Gov't. career as a GS1/1, working for the U.S. Capitol Architect in 1965. Later, he worked in electrical engineering at the U.S. Naval Research Lab.

Life at Goddard: Mike, who came to GSFC in 1969 as a design engineer, has designed and built electronics for spacecraft and related ground systems. He has served as Integration and Test Engineer and Manager, Instrument Manager, Observatory Manager, Ground System Manager, and System Manager on a dozen different flight projects, including: RAE-B; IUE; IMP-8; DE-A&B; ISEE-A&C; COBE; HRSO; OSL; TOMS-EP; POES; GOES, and Aqua.
Mike's passion for traveling worldwide began in 1980, when the first Frequent Flyer program was started. In 30 days, he traveled around the world twice and to six continents. Now, however, he's most associated with Antarctica and other very cold places. That passion began in 1983 with

(Comberiate Tintype Continued on page 28)

Linny Dyson

Linny is the Administrative Specialist for the Flight Projects Directorate. She has held this title since returning to Goddard in November 2004.

Born: Washington, DC

Life at Goddard: Linny was an outside hire by Keiji Tasaki in November 1991, to support the old Code 532, Network Control Systems Branch, where she worked for four years before going to support Dick Harris in the old Code 501, Mission Management Office. Surviving the reorganization of Codes 501 and 530 to create Code 450, Linny supported Dennis Vander Tuig (for about two weeks - right Dennis?) and was then reassigned to Diane Williams in Code 400, Flight Programs & Projects Directorate. After supporting Codes 400 & 403 for 16 months, Linny left Code 400 and joined the Applied Engineering & Technology Directorate to work for Rick Obenschain. Two and a half years later, Linny switched directorates again, this time going to support the Center Director, Al Diaz in Code 100. Then Linny lost her marbles and decided to go with Al to Headquarters. It only took four months, four very long months, for Linny to realize that Goddard is definitely the greatest place to work. With that, Linny came back to Goddard in November 2004, where she is happy as a clam!!

On Family: Linny FINALLY got married on

(Dyson Tintype Continued on page 28)

(Hubble Continued from page 1)

Shuttle servicing mission to the Hubble Space Telescope to the Shuttle's manifest to be flown before it retires," Griffin said in his historic announcement in Goddard's Building 8 auditorium. With that, the room erupted in thunderous applause and a standing ovation.

"I'm enormously proud of the team that for much of the last 18 months since I've been Administrator has been studying this mission and trying to figure out a way to get to 'yes,'" Griffin added.

Joining Griffin at the podium was Maryland Senator Barbara Mikulski. "It's a great day for science, it's a great day for discovery, it's a great day for inspiration— because that's one of the things that Hubble has meant to so many people—and it's a great day for science education!" Milkuski said.

Mission Overview

The Hubble servicing mission is an 11-day flight, currently planned on the Space Shuttle Discovery. On the third day, the Shuttle will rendezvous with the telescope. The Shuttle's mechanical arm will pluck Hubble from orbit and place the telescope on a work platform in the cargo bay. Five separate spacewalks will be needed to accomplish all of the mission objectives.

This is actually the fifth visit to Hubble. The First Servicing Mission took place in December 1993, the Second Servicing Mission in February 1997, Servicing Mission 3A in December 1999,

Servicing will extend Hubble's life until at least 2013.

(Hubble Continued on page 5)

(Hubble Continued from page 4)

and Servicing Mission 3B in March 2002. (Servicing Mission 3 was split due to a critical need to replace gyroscopes in 1999.)

Servicing Mission 4 was originally planned for 2004, but the Columbia Space Shuttle tragedy in 2003 led to its postponement and eventual cancellation due to safety concerns. But following three successful Shuttle flights, significant improvements in the Shuttle, and a re-examination of the servicing mission risks, NASA considers it safe to fly the Shuttle to Hubble.

With each mission, Hubble's astronaut-friendly, modular design enables the telescope to be reborn with the installation of cutting edge instruments and advanced capabilities. On Servicing Mission 4, four Extravehicular Activity (EVA) astronauts will work in pairs on alternating days to fit Hubble with two new instruments, the Wide Field Camera 3 (WFC3) and the Cosmic Origins Spectrograph (COS). They will replace all six of the Telescope's gyroscopes, a fine guidance sensor and Hubble's six batteries.

The EVA crew will add new thermal coverings to Hubble's exterior and, in preparation for the de-orbit mission at the end of Hubble's life, they will attach a capture mechanism to Hubble's aft bulkhead. They will also attempt to repair the Space Telescope Imaging Spectrograph (STIS), which was installed on Hubble in 1997 but ceased operations in August of 2004 due to an electronics failure.

"This next servicing mission can be likened to those extreme makeover reality shows on TV that are so popular today," explained Preston Burch, Associate Director of Flight Projects for the Astrophysics Projects Division. "Servicing Mission 4 is going to give Hubble another extreme makeover. This makeover will be the best one yet, because we will fit Hubble with the most powerful and advanced imaging and spectrographic instruments available, and we will extend Hubble's operating lifetime five additional years, which should keep us operating till 2013, and possibly longer."

These improvements will not only keep Hubble operational until at least 2013, but they will also greatly enhance Hubble's discovery power. Both COS and WFC3 contain advanced technology that far surpasses what has been available on Hubble to date. Engineers expect improvement factors of 10 to 70 times in certain key performance areas.

Burch added, "Servicing Mission 4 will be the heaviest servicing mission to date. It will be carrying approximately 22,000 pounds of hardware onboard to do Servicing Mission 4. We'll be using four carriers inside the Shuttle cargo bay to carry all the new science instruments, replacement hardware, tools for the astronauts, and to attach Hubble to the Shuttle while the astronauts are working on it. One of these carriers utilizes an advanced design and composite materials to save weight so we can carry more to orbit."

(Hubble Continued on page 6)

(Hubble Continued from page 5)

The Crew

Griffin also announced the astronaut crew for Servicing Mission 4 during this historic event. They include Hubble veterans and first-time fliers.

Spacewalking astronauts will upgrade and service Hubble again in 2008.

Commander Scott "Scooter" Altman (Captain, USN) is a veteran of three previous flights, including serving as Commander on the STS-109 Hubble servicing mission in 2002. A native of Pekin, Ill., he was also the pilot on STS-90 in 1998 and STS-106 in 2000.

Pilot Gregory C. Johnson (Captain, USNRC), is a Seattle native and former Navy test pilot and NASA research pilot. He was selected as an astronaut in 1998 and will be making his first spaceflight.

EVA Astronaut Dr. Andrew Feustel, a native of Lake Orion, Mich., was an exploration geophysicist in the petroleum industry at the time of his selection by NASA. This is his first flight.

EVA Astronaut Michael Good (Colonel, USAF) graduated from the Air Force Test Pilot School and has logged more than 2,100 hours in 30 different types of aircraft. He is from Broadview Heights, Ohio and is making his first flight.

EVA Astronaut Dr. John Grunsfeld will be making his third trip to Hubble and his fifth spaceflight. He performed a total of five spacewalks to service the telescope on STS-103 in 1999 and STS-109 in 2002. He also flew on STS-67 in 1995 and STS-81 in 1997. A Chicago native, Grunsfeld is an astronomer.

EVA Astronaut Dr. Michael Massimino, from Franklin Square, N.Y., will be making his second trip to Hubble and his second spaceflight. He performed two spacewalks to service the telescope during the STS-109 mission in 2002.

Shuttle Arm Operator Dr. K. Megan McArthur was born in Honolulu but considers California her home state. An oceanographer and former chief scientist at the Scripps Institution of Oceanography, she is making her first spaceflight.

Launch on Need

Griffin also discussed the scenario of "launch on need." Should the Servicing Mission 4 crew encounter some problem that is not repairable and requires a rescue flight, a second Shuttle will be standing by on Pad 39 B at the Kennedy Space Center, Fla. during the mission. If it is not used for a rescue flight, that same Shuttle will then be outfitted with Space Station equipment and will fly to Space Station after this mission.

(Hubble Continued on page 7)

(Hubble Continued from page 6)

The following sections describe the EVA tasks in greater detail:

Wide Field Camera 3 (WFC3)

WFC3 is a new camera that is sensitive across a wide range of wavelengths (colors), including infrared, visible and ultraviolet light. The powerful WFC3 is a next-generation imaging instrument that builds on the capabilities of its predecessors, Wide Field and Planetary Cameras 1 and 2 (WFPC1 and 2), as well as Hubble's Near Infrared Camera and Multi-Object Spectrometer (NICMOS) and Advanced Camera for Surveys (ACS).

This instrument was originally conceived to only replace the capabilities of an aging WFPC2. But during the later phases of study, it became clear with the advancement of technologies and careful planning, WFC3 could substantially enhance Hubble's abilities by adding a second channel (in the near-IR range). Adding a second channel of this type is almost like adding another instrument to Hubble.

WFC3 will study early and distant galaxies that are beyond Hubble's current reach, as well as galaxies in our cosmic neighborhood. It will help astronomers understand more about galactic evolution and star formation. This instrument will also unlock secrets about the planets in our solar system and will probe the mysteries of dark energy. WFC3's key feature is its ability to span the electromagnetic spectrum from the near ultraviolet (NUV), through the optical and into the near infrared (NIR). WFC3 is the only Hubble instrument with this panchromatic capability.

This new science instrument is superior to WFPC2 in resolution and field-of-view. Its "UVIS" detector—sensitive to NUV and optical light—will provide a 35 times improvement in discovery efficiency (the product of the field of view times the optical throughput) in NUV and blue light over the current ACS instrument. The NIR detector will provide a 15 to 20 times improvement in discovery efficiency over the current NICMOS instrument. WFC3's strengths complement those of ACS. Working as a team, these instruments will usher in an exciting new era of Hubble discoveries.

The Cosmic Origins Spectrograph (COS)

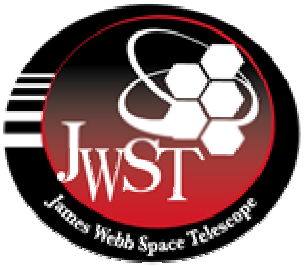
COS will study the large-scale structure of the universe and how galaxies, stars and planets formed and evolved. It will also help determine how elements such as carbon and iron, which are needed for life, first formed. As a spectrograph, COS will break up light into its individual components. Any object that absorbs or emits light can be studied with a spectrograph to determine its temperature, density, chemical composition and velocity.

A primary science objective for COS is to measure the structure and composition of the ordinary matter that is concentrated in what scientists call the "cosmic web"--long, narrow filaments of galaxies and intergalactic gas separated by huge voids. COS will use scores of faint distant quasars as "cosmic flashlights," whose beams of light have passed through the cosmic web.

Absorption of this light by material in the web will reveal the characteristic spectral fingerprints

(Hubble Continued on page 12)

(JWST Continued from page 1)



will complement and extend the discoveries of the Hubble Space Telescope, with longer wavelength coverage and greatly improved sensitivity. The longer wavelengths enable the JWST to look much closer to the beginning of time and to hunt for the unobserved formation of the first galaxies, as well as to look inside dust clouds where stars and planetary systems are forming today.

Much has happened in the past year as the pace of the project picks up. Pam Sullivan, ISIM Project Manager, reports that the Project passed a major milestone in October as the Integrated Science Instrument Module (ISIM) successfully completed its preliminary design review (PDR). Members from all of the partner organizations were in attendance. The review team concluded unanimously that the objectives of the PDR had been satisfied. The completion of the ISIM preliminary design phase gives high confidence that the proposed design will meet its performance requirements.

ISIM is one of three elements of the Webb Observatory - the others being the Telescope and Spacecraft - and is the first to reach this milestone. ISIM contains some of the most challenging design aspects of the Observatory, including cryogenic optics and structures, ultra-low-noise infrared detectors, and high-rate data systems.

ISIM is comprised of the four JWST Science Instruments: the Near-Infrared Camera (NIRCam), the Near-Infrared Spectrograph (NIRSpec), the Mid-Infrared Instrument (MIRI), and the Fine Guidance Sensor/Tunable Filter (FGS/TF). ISIM also includes critical subsystems needed to support the Instruments such as the structure that aligns the Instruments to the Telescope and the electronics that retrieve the science data from the Instruments

The JWST Project manages ISIM development, and is responsible for overall design, integration, and test. Instruments are provided by the University of Arizona and Lockheed Martin (NIRCam), the European Space Agency (NIRSpec), the Canadian Space Agency (FGS/TF), and a team of JPL and a European Consortium of space agencies (MIRI).

ISIM now moves into the final, critical design phase. Key to this phase of the program is the development of engineering test unit hardware, which will validate performance predictions and manufacturing techniques in order to reduce technical and schedule risk.
Lee Feinberg, Optical Telescope Element Manager, reports that it has been a busy and successful period in the development and manufacturing of the lightweight primary mirror segments for JWST.

This past June, the final step towards mirror flight readiness (or “TRL-6” in NASA-speak) was achieved, a critical element in the technology readiness plan leading to the NASA Headquarters’ Technology portion of the Non Advocate Review (T-NAR) in January 2007. A flight mirror was exposed to 3-axis loads that enveloped the predicted flight vibro-acoustic levels and meas-

(JWST Continued on page 9)

(JWST Continued from page 8)

urements indicated the mirror did not distort within the test's very small measurement error.

JWST has completed test and data collection on the Backplane Stability Test Article (BSTA). The BSTA is a section of the flight back plane design containing three full scale primary mirror bays, and is approximately 2.5m by 2.8m in size. The BSTA was tested at cryogenic temperatures in the X-ray Calibration Facility (XRCF) chamber at the George C. Marshall Space Flight Center from August to October 2006. The test is to measure deformation which will be compared to predictions to show the predictability of the backplane. Predictability is a key element in making the case for the technological readiness of the flight backplane.

The test consisted of multiple cycles over the flight backplane operational temperature range from 30-60K. The out-of-plane distortions of the BSTA were measured and recorded by an Electronic Speckle Pattern Interferometer (ESPI). The measurement resolution for the motions was of the order of ones of nanometers over this very large structure.

The JWST architecture includes a 6.5 meter diameter telescope having a segmented primary mirror deployed after launch. To perform like a single monolithic mirror, a wave front sensing and control subsystem is required to detect and correct any errors in the optics. Demonstrating

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the wave front sensing and control subsystem algorithms to flight-readiness on NASA's technology readiness scale, is a key requirement. Ball Aerospace has engineered a scaled telescope test bed so wave front sensing and control can be developed and demonstrated in a high-fidelity environment.

Each of the 9 distinct alignment processes – the algorithms – needed to align the deployed telescope into a high-performance astronomical telescope have been designed and demonstrated on the test bed. Sequentially applying this set of algorithms is the *Commissioning Process*. The final technology development step is to systematically step through each process and compare the final results to predefined criteria. The last process is the *Fine Phasing* algorithm, the outcome of which produces a sharp, clear image or, in NASA jargon, a coherent point spread function that is near the diffraction limit.

The tests include 3 critical measurements. The first compares the fine phasing algorithm results to a calibrated interferometer – the industry standard in measuring optical systems. The second compares the completion of the 9 contiguous commissioning steps to the best possible test bed performance; and the third measures the algorithm's capability to get sharp imaging over its entire large field of view, critical to the 4 instruments sharing that field of view. The tests started in mid-October and will finish by early December 2006. Results to-date suggest that this will be very successful.

Manufacturing work on the flight segments continues to go well. Axsys Technologies made great progress on the light-weighting and front surface machining of the flight mirror segments. In fact, 14 of the 18 flight segments have now completed machining at Axsys Technologies and 13 of these have been delivered to L-3 Communications/SSG-Tinsley in Richmond, California for grinding and polishing (one is at Ball Aerospace for vibro-acoustic testing).

Six flight mirrors are in early stages of grinding at Tinsley and the Engineering Design Unit (EDU) is nearly complete with the grinding phase and will soon be ready for polishing. The EDU continues to serve as a process pathfinder and EDU lessons learned are being applied to flight mirrors. In addition, process improvements made on the EDU during the grinding phases were highly successful and the Project is optimistic that the flight mirrors can be made ahead of schedule at least during those same grinding phases.

At the January 2007 AAS meeting in Seattle, NGST, GSFC, and the JWST Science Working Group have organized presentations on JWST's scientific promise and technology challenges. These will include introductions by Alexis Livanus, NGST President, and Ed Weiler, GSFC Director. John Mather, JWST Senior Project Scientist, will speak on Lessons Learned from COBE and the scientific promise of JWST. Bob Giampoli, NGST Chief Engineer, will describe the challenges of deploying the JWST optics and sunshield. Mark Clampin, Observatory Project Scientist, will present the status of the key enabling technologies.

NASA and the Space Telescope Science Institute (STScI) are hosting an international confer-

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ence on the science of JWST, ALMA, and other major approved facilities and instruments in the next decade. The conference will be held at the Starr Pass Marriott in Tucson Arizona on September 24-27, 2007. Approximately 30 invited speakers will discuss the observational and theoretical questions that will be addressed by these powerful new capabilities. More information is available at http://www.jwst.nasa.gov including presentations on JWST, cool animations, images of technology development in progress, exposure time calculators and much more. STScI also maintains an archive of the HST newsletters, which have regular discussions of the JWST progress. These are available at http://sco.stsci.edu/newsletter/.

JWST Staff

((Message from the Director Of Continued from page 2)

even more competitive in the Science mission selection process. We are anxiously awaiting the announcement of selected step 2 missions for MARS Scout and are aggressively pursuing Earth Science Mission concept studies in support of SMD. We are committed to bringing the most advanced and exciting missions to Goddard. Our work on these wins only shows we're on the right track.

I cannot end my message without speaking to our ongoing efforts to improve professional growth opportunities of all FPD personnel. We continue to examine our training strategies to better align training with identified skill enhancement areas that our folks require to allow them to assume greater levels of responsibility. Through the development of Individual Development Plans (IDP's) we can develop individual roadmaps for growth. I urge every FPD employee to assess the benefits of an IDP and to discuss their growth aspirations with either their immediate supervisor or a member of the FPD senior management staff. We need folks to step up to our FPD management and leadership positions; this can only be accomplished if our employees and supervisors work together to ensure that necessary training and work experiences are completed.

Rick

(Hubble Continued from page 7)

The Cone Nebula as seen by the Hubble Space Telescope.

of that material. This will allow Hubble observers to deduce its composition and its specific location in space. Such observations across vast distances and back in time will help uncover both the large-scale structure of the universe and the progressive changes in chemical composition of matter as the universe has grown older.

COS has two channels, the Far Ultraviolet (FUV) and the Near Ultraviolet (NUV). A key feature of COS—the one which makes it unique among Hubble spectrographs—is its maximized efficiency, or "throughput." Each bounce of a light beam off an optical surface within an instrument takes some of the light away from the beam, reducing the throughput.

This is a problem that is especially acute in the UV, so the COS FUV channel was designed specifically to minimize the number of light bounces. The incoming FUV beam makes one bounce off a selectable light-dispersing grating, and goes directly to the detector. An additional advantage within COS is the very low level of scattered light produced by its light-dispersing gratings.

Hubble's other spectrograph, STIS, which was installed in 1997 during Servicing Mission 2, is highly complementary to COS in its capabilities. STIS is a highly versatile, "all purpose" spec-

(Hubble Continued on page 13)

(Hubble Continued from page 12)

trograph. By design, the COS does not duplicate all of STIS's capabilities, but by having more than 30 times the sensitivity of STIS for FUV observations of faint objects such as distant quasars, COS will enable key scientific programs which would not be possible with STIS. If STIS repair is successful, the two spectrographs working together will provide a full set of spectroscopic tools for astrophysical research.

Batteries

Astronauts will replace all six of Hubble's original 125-pound nickel hydrogen batteries. These batteries provide all the electrical power to Hubble during its nighttime to support the telescope's functions. During Hubble's 98-minute orbit, about 62 minutes are in sunlight and 36 minutes are in the Earth's shadow. Throughout Hubble's sunlight or daytime period, the solar arrays provide the electrical power. They also charge the spacecraft's batteries, so that the batteries can support the spacecraft during Hubble's night.

All six batteries are normally used at the same time. Now 16 years into the mission, Hubble's nickel hydrogen batteries have lasted more than 11 years longer than their design orbital life—longer than those in any other low Earth orbit spacecraft. This was possible partly because the batteries are built to very exacting standards using an extremely robust design. Nickel hydrogen battery chemistry is very stable and is known to exceed on-orbit performance for long duration missions.

Another reason for the batteries' longevity is the careful, daily, on-orbit management by Electrical Power System engineers at Goddard to ensure long-term on-orbit performance. This requires closely monitoring the amount of current that flows into the batteries and their temperature during each charging cycle. Due to aging and cycling, the batteries are showing a slow loss in capacity**.** If not replaced, they wil**l** eventually be unable to support Hubble's science mission during the orbit night. However, the current batteries should have enough capacity to last at least through 2009, allowing ample time to conduct the next servicing mission.

Like the ones they replace, the six new batteries reside in two 460-pound modules, each containing three batteries. The replacement batteries are superior to the old ones in several ways. The new batteries are made using a process called wet slurry, which makes them physically stronger and better performing than the dry sinter batteries they replace. Each new battery also has the added safety feature of a battery isolation switch that electrically dead faces each connector. "Dead face" means no electrical power is present at the connectors while the switch is in the "off" position. This creates a safer environment for astronauts installing the battery modules.

NASA uses nickel hydrogen batteries because they are highly reliable and are able to handle deep discharging better than other types of batteries. Nickel hydrogen batteries also can store more energy than other types of the same sized batteries. They perform very well over long missions in low Earth orbit and have been used on many NASA missions in the past decade.

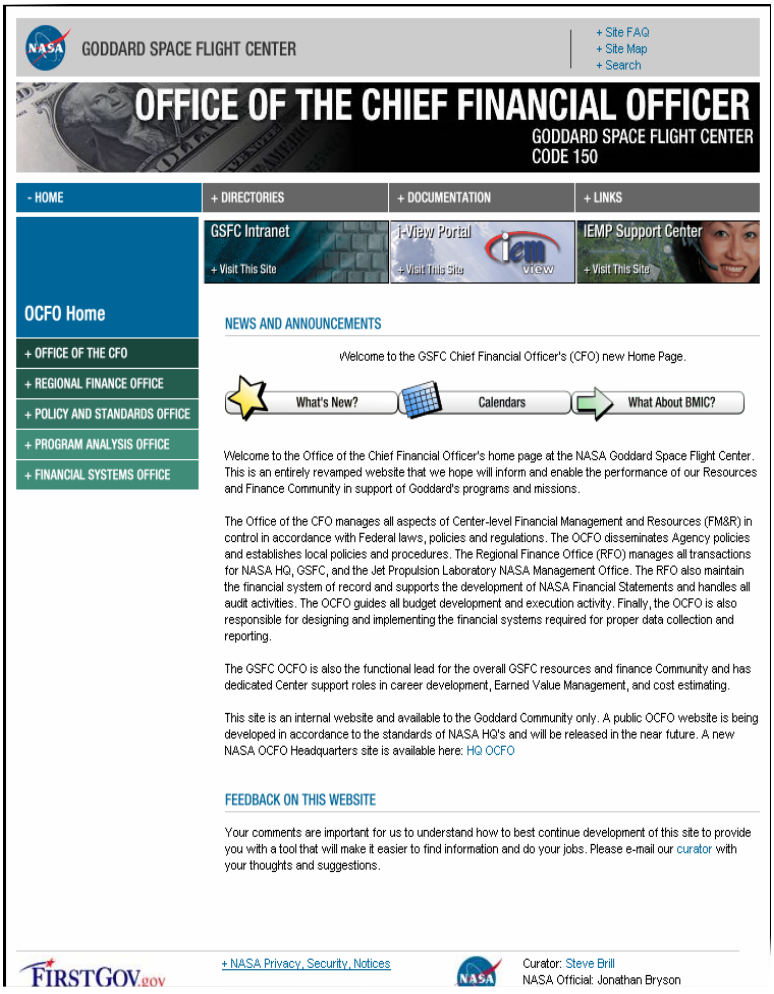
(Hubble Continued on page 18)

New Resources Website Released

This Office of the Chief Financial Officer (OCFO) launched a totally revamped website http://cfo.gsfc.nasa.gov on November 1, 2006. This website combines the best content and navigation from three websites: the previous Chief Financial Officer (CFO) site, the Regional Finance Office (RFO) site, and the Business Management Information Center (BMIC). There is an emphasis on keeping the site lean and navigating to a location where information is stored and maintained. For example, you can quickly hop to the GSFC Intranet page, IEM Support Center, HQ NODIS library and other sites in quick fashion.

A quick tutorial is available at http://cfo.gsfc.nasa.gov/doc/screenSlides_rev2.ppt

The new OCFO website is arranged by function and by organization and will provide official information on organizations, policies, points of contact, and links for traditional OCFO functions and business. Paired with the i-View myCenter page which should be familiar now to Core Financial and other IEM users, these new sites should provide a wide of range of resources and financial information.and functions.



Other features of the new website include:

- calendars including the OCFO Training and Workshop calendar;
- recent communications such as Resources Forum minutes and OCFO Flashes (see the Communications section of the Office of the CFO Page);
- a Documentation page and links that range from OMB down to our internal documents and forms;
- a Links page that includes links to a whole set of ”one-stop-shop” webpages that serves as gateways to a wealth of information;
- information or links on CADRe, EVM and similar topics; and
- a repeat of critical Financial Systems Office/Code 156 IEM operations messages.

We are just getting started on adding training content and some materials to the RFO and Program Analysis Office areas.

Many kudos go to Steve Brill (Code 152) and Eric Anderton and Barbara Carlson (Code 722) for their efforts on this site. Steve and Eric developed a whole new approach for allowing the site

owner to manage their content directly which will likely become a GSFC standard. Thanks also to many folks who have offered inputs or suggestions.

Folks are also encouraged to sign onto the i-View portal to get the latest IEM information and access. Over time, we will be combining some current websites into this site. RFO and BMIC will remain available for the foreseeable future..

Please contact us if you see any feature or information missing or have recommended additions to either the new OCFO page (Jonathan.G.Bryson@nasa.gov) or the i-View my Center page (carla.e.connor.1@gsfc.nasa.gov).

Jonathan Bryson, Chief Policy and Standards Office, Code 152

SAP Version Update and Contract Management Module Released

The SAP Version Update (SVU) and the new Contract Management Module (CMM) system have been released! These changes to IEM systems are intended to keep the Agency current with the SAP software, improve many functions, and support other changes to the General Ledger and associated systems.

At the time of this article, SVU and CMM had gone live on November 15, 2006 for PY06 and prior funding and was anticipated to go live for November 20, 2006 for FY07 funding. After go-live, the Competency Center immediately began the process of bringing up the interface systems. The Funds Control System is expected to go live on November 27, 2006. Many Agency and Center personnel worked very diligently to successfully bring up the upgraded and new systems. Thanks to all who took the time to participate in this process, from requirements to testing to training; your efforts were noticed and appreciated.

With the rollout of SVU, CMM and an updated Funds Control System, the users are required to take course(s) based on their roles. Individual users are being emailed the course(s) that they are required to take based on their roles in SAP. The vehicle used for SAP training has been the new Agency training software system, SATERN. All users must register for training courses in SATERN, and Job Aids for registering can be found on i-View under the myCenter tab. The Job Aids can be found in the IEM Documentation box, selecting the GSFC Job Aids folder and then the SATERN Job Aids folder.

If you have any questions regarding training or any other current question, please contact the IEM Support Center at 301-286-4IEM for support. Information from the IEM Support Center is also accessible through the i-View MyCenter page (https://iview.ifmp.nasa.gov/irj/portal) or OCFO website (cfo.gsfc.nasa.gov).

Joanne Sprunk, Chief Financial Systems Office, Code 156

Code 400 Peer Award Winners for 2006

Boundless Energy:

David Littman – 599/423
"In recognition of your outstanding leadership of the ECHO Project."

Colleen Ponton - SGT/442
"For the cheerful, helpful, resourceful and enthusiastic way you juggle multiple customers, assignments, and responsibilities, you are most deserving of this boundless energy award."

Jennifer Brill - SGT/420
"She is a keep-to-her-self kind of worker, but don't be fooled. She works hard and Artsy with NASA's vision in her heart. She can produce a project logo faster than you can draw a stick man."

Mission Impossible

Craig Tooley - 431
"For the successful achievement of the LRO confirmation, despite extra reviews, two major design changes, change in program office, two changes in management at Headquarters, and a nearly impossible schedule."

Patrick Crouse - 444
"In recognition of your extraordinary dedication, service and support to the Space Science Mission Operations Project Office."

Mike Brainard - Orbital/442
"For your dedication, commitment and perseverance in ensuring that the Super Lightweight Integrated Carrier (SLIC) would be ready for Hubble Space Telescope (HST) Shuttle servicing, despite many obstacles and two changes of mission direction."

Steady Helm

Arthur Unger - 401
"In admiration of a job well done, thank you for keeping the Rapid Spacecraft Development Office on course."

Gregory Manfra – 441
"For your tireless efforts in providing focused, dependable, and dedicated financial support to the HST Operations and Space Science Mission Operations Projects."

Russell Werneth - 442
"For serving his high-performance Extravehicular Activity (EVA) team, which he was instrumental in preserving after the Columbia Accident, as a creativity and effectiveness catalyst, delivering on-schedule, on-budget Return-to-Flight (RTF) hardware under extreme pressures, and continuing to overcome obstacles and meet all EVA requirements for HST servicing missions."

(Awards Continued on page 17)

(Awards Continued from page 16)

Edward Shade - Lockheed/442
"For your rare ability to resolve problems calmly, and for your leadership, dedication and expertise in the development of Hubble Space Telescope's COS Instrument, you are most deserving of the Steady Helm Award."

Michael Scott - QSS/464
"For your unwavering dedication in managing SDO's AIA and HMI Instruments along their successful development paths."

Samidha Manu - REI Systems/408
"For her steadfast leadership of the REI Systems contractor team supporting NASA's SBIR/STTR programs, outstanding teamwork with NASA personnel across the agency, and ever present "can-do" attitude and professional demeanor in successfully fulfilling requirements at less cost."

Rookie of the Year

Lisa Kelleher - 441
"In recognition of your outstanding contributions and positive influences in the management of Hubble Space Telescope Operations Project resources."

Gibran McDonald - 441
"For your dedication, hard work, and overall outstanding support to the Hubble Space Telescope Operations Project and to the Space Science Mission Operations Project in your first year as a government employee."

Joel Acree/SGT - 403
"He may be a rookie to the 400 Directorate Office, but this individual is no rookie when it comes to providing IT Support. Behind that silent face at the back of the keyboard possesses someone with every quality of a "PRO"fessional."

Unsung Hero

Glenn Stewart - 210/424
"Recognizing the outstanding support given to the POES Project and the GOES-N Project, we honor you with this award."

Janet Osterman - 210.1/401
"With thanks of a grateful Rapid Spacecraft Development Office, we bestow the title, Heroine Extraordinaire!"

Ruth Wright - 210/444
"She is dedicated and devoted to supporting 105 active tasks within the Mission Operations and Management Services (MOMs) Contract. She is a MAJOR asset to our team and we appreciate everything she does for us!"

(Awards Continued on page 27)

(Hubble Continued from page 13)

Gyroscopes

Hubble uses gyroscopes as part of the system that allows it to point at stars, planets and other celestial targets. Six gyros are onboard, but the Telescope was designed to use three at a time, with the other three held as spares. All of the current gyros were installed in December 1999, and all are approaching the end of their limited lifetimes. Four gyros are still operational. After thorough analysis and testing, engineers determined that Hubble could conduct science on two gyros.

With new control modes added to Hubble's main computer, and major changes made to Hubble's planning and scheduling system, two-gyro operations began in 2005. By operating on only two gyros—with the other two working gyros turned off and held in reserve— Hubble is expected to continue science operations through the end of 2008. Astronauts will install a fresh set of six new gyros during Servicing Mission 4 to keep the Telescope in peak condition through 2013.

Fine Guidance Sensor (FGS)

Along with the gyros, the FGSs are part of Hubble's pointing control system. The FGSs and gyroscopes together produce extraordinary stability—0.007 arcseconds of "jitter"—which is like holding a laser beam on a dime 350 miles away. The FGSs also provide capability for astrometry—the detailed study of stellar dynamics and motions—enabling the detection of close binary stars and star-planet systems.

Hubble holds three FGS units, and astronauts have been replacing them with refurbished units one at a time in "round robin" fashion. Currently, two FGSs are degrading. A refurbished unit returned from the 1999 mission will replace one of these, giving Hubble two healthy FGSs. Two units are all that are needed for pointing Hubble; the third FGS provides additional target pointing efficiency and redundancy.

Repairing STIS

Installed on Hubble in 1997, the Space Telescope Imaging Spectrograph (STIS) became known as "the Black Hole Hunter" before it ceased operations August of 2004 due to an electronics failure. STIS also holds the honor of having been the first instrument to directly detect and measure the atmosphere of a planet orbiting another star.

Preston Burch explains, "The attempt to repair STIS will be the first time on Hubble that we will open up a complex piece of hardware to fix it in situ. This will be a very intricate piece of work, and the team has built some clever and unique tools to meet the challenges of this task."

Key to fixing STIS is the on-orbit replacement of one electronics board inside the main electronics box. The Hubble Program and NASA astronauts have been working together to develop manual techniques that astronauts would use to change out the board in orbit.

(Hubble Continued on page 19)

(Hubble Continued from page 18)

New Thermal Coverings

Astronauts will add new, stainless steel sheets to various locations on Hubble's exterior to help control the Telescope's internal temperature. Called the New Outer Blanket Layer (NOBL), these thermal sheets will cover existing multi-layer insulation that has slowly degraded over time due to exposure to the harsh environment of space.

Soft Capture Rendezvous System

When Hubble reaches the end of its life, NASA plans to safely de-orbit it using a next-generation vehicle that will replace the Space Shuttle. To prepare for this mission, engineers developed the Soft Capture and Rendezvous System, which will enable the future rendezvous, capture, and safe disposal of Hubble. This system will significantly reduce the cost and risk for a future vehicle to safely de-orbit the Telescope. The Soft Capture and Rendezvous System is comprised of the Soft Capture Mechanism (SCM) system and the Relative Navigation Sensor (RNS) system.

The SCM is a ring-like device that attaches to Hubble's aft bulkhead. It provides a Low Impact Docking System (LIDS) interface and associated relative navigation targets for future rendezvous, capture, and docking operations. The SCM will launch attached to a turntable-like piece of equipment called the Flight Support System (FSS), which serves as the berthing platform for Hubble and provides all electrical interfaces between the Shuttle and the telescope while Hubble is docked.

About 72 inches in diameter and 2 feet high, the SCM will sit inside the FSS berthing and positioning ring without affecting the normal FSS-to-Hubble interfaces. It will be fitted onto the telescope by three sets of jaws. The astronauts will drive a gearbox, and the jaws will release the SCM from FSS and clamp onto Hubble's berthing pins. Because it launches in position, it can be transferred to Hubble at any time during the mission. Astronauts will transfer only the SCM—not the RNS system—from the FSS to Hubble during Servicing Mission 4.

The RNS system consists of optical and navigation sensors, as well as supporting avionics and processors. It will collect data on Hubble during capture and deployment. This information will be used for developing the navigation systems of the spacecraft that will de-orbit Hubble when the Telescope reaches the end of its useful life.

The RNS system will be mounted on the Multi-Use Lightweight Equipment (MULE) Carrier, which will also carry Crew Aids and Tools (CATs) for spacewalks, a spare Rate Sensor Unit (RSU), and a contingency Electronic Control Unit (ECU).

At the Apex of Its Capabilities

"Up to this point, Hubble has not approached the limits of what it's capable of doing, explained Dr. David Leckrone, Hubble Project Scientist. "After SM4 is over, Hubble will literally be at the

(Hubble Continued on page 20)

(Hubble Continued from page 19)

apex of its capabilities. There will not have been a time in its history when it will be as capable as it will be at that moment. For one thing, it will have on board—we hope—six fully functioning scientific instruments (including a fine guidance sensor for astrometry) for the first time since 1993."

Leckrone added, "The Hubble is a general-purpose public facility observatory, and it takes a whole toolbag full of instruments to tackle all kinds of astronomical problems, and that is one thing that has made it so successful: its versatility. Two of those six instruments will be the 'crown jewels' at the end of this mission, the Cosmic Origins Spectrograph and the Wide Field Camera 3. The Cosmic Origins Spectrograph is the most sensitive ultraviolet spectrograph we've placed behind Hubble optics. It's the most sensitive scientific spectrograph ever flown in space.

"The Wide Field Camera 3 will enhance our survey capabilities on Hubble. Today we have a wonderful camera, the Advanced Camera for Surveys, but it is limited primarily to visible and red light, light that you can see with your own eyes. Wide Field Camera 3 will take that same surveying power and efficiency and extend it all the way from the ultraviolet out through the near-infrared."

Frank "Cepi" Cepollina, Deputy Associate Director for Exploration and Operational Systems explained, "Hubble is about the history of the universe. It's also about the history of Man's attempt to repair and upgrade space machines in orbit. As history has repeatedly shown, establishing logistics infrastructure has always been necessary for opening new frontiers. NASA, and Goddard in particular, is leading the way in space logistics with the servicing of the Hubble Space Telescope."

Dr. Ed Weiler, GSFC Center Director, summed it up this way: "The President gave us a vision to Mars and beyond. It is clear that hopefully within my lifetime I'm going to see people walking on the Moon and hopefully walking on Mars. The trouble is 'beyond' is a big place and we're probably not going to put people in 'beyond' too soon. The thing that Hubble does, and its successor JWST (See Article—page 1), is that it allows us to take our spirits to the 'beyond.' And that's what this program is about."

Senator Barbara Mikulski offered her perspective on Hubble, "Whether you are a child in South Africa or South Baltimore or Southern California, the Hubble belongs to you. It belongs to every teacher who wants to inspire that next generation in science and engineering. It belongs to every child who wants to know, 'What is the universe beyond my village, my town?'

"This," continued Mikulsi, "is what we are about—discovery, innovation. It's in the very core of the culture of the United States of America."

Ann Jenkins, Code 442/SGT, Inc.

Successful STEREO Launch

Go STEREO! Go Delta!

NASA's STEREO mission got off to a spectacular start as the rocket carrying the twin satellites blazed through the starry sky after lifting off on October 25, 2006, at 8:52 p.m. EDT from Cape Canaveral Air Force Station, Fla. Racing into space on the 12 flaming engines of a Boeing Delta II rocket, the spacecraft are on their way to investigating the origin of special solar storms erupting from the sun. Known as "coronal mass ejections," these storms travel at nearly 1 million mph and can knock out power on the ground. The rocket is delivering the STEREO spacecraft to opposite sides of Earth. There STEREO will map the structure of the storms in 3-D as they leave the sun and flow around the planet.

Congratulations to the STEREO Team!

We will have more on STEREO's activities in the next issue of The Critical Path.

Happy Thanksgiving

Goddard has learned that it has been selected to manage the Vesper and Osiris missions. The Vesper mission is a Venus chemistry and dynamics orbiter that would advance our knowledge of that planet's atmospheric composition and dynamics. The Origins Spectral Interpretation, Resource Identification and Security (OSIRIS) mission would survey an asteroid and provide the first return of asteroid surface material samples to Earth.

NASA's Earth Observing System (EOS) Program, the world's most advanced and comprehensive capability to measure global climate change, received the American Institute of Aeronautics and Astronautics Space Systems Award on September 20, 2006. EOS is composed of a series of Earth-observing satellites,an advanced data system, and teams of scientists who study the data. Goddard's Terra, launched in late 1999, was the first of a series of EOS dedicated satellites already launched in this program.

Goddard scientist John C. Mather won the 2006 Nobel Prize for Physics for producing the first tangible evidence that the universe began billions of years ago with the long theorized big bang. John was the Principal Investigator for the groundbreaking Cosmic Background Explorer (COBE) satellite and experiments in 1989. He shared the prize with George F.Smoot of the Lawrence Berkley National Laboratory.

Norden E. Huang, a Goddard scientist won one of 10 annual Service to America Awards, the Science and Environmental Medal, for pioneering research to test and improve NASA spacecraft, medicines, and submarines, earthquake-proof buildings, and bridges.

A 2006 Presidential Rank Award For Distinguished Senior Professionals went to Goddard's Dolly Perkins, former Director of Flight Projects and now Center Deputy Director-Technical.

A 2006 Presidential Rank Award For Meritorious Senior Professional went to Krista Paquin, former Deputy Director For Resources of Flight Projects and now Center Associate Director. Effective November 27 Krista has accepted a new position as Deputy Director, Office of Program and Institutional Integration (OPII), Executive Office of the Associate Administrator at NASA Headquarters.

Goddard's Michael King also won a Meritorious Senior Professional Award. Nancy Abell was in receipt of a 2006 Presidential Rank Award For Meritorious Executive. Congratulations to all!.

Things You Should Know About

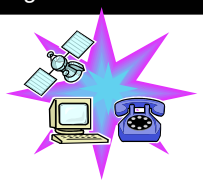
Attendee registration has begun for the Fourth Annual NASA Project Management Challenge Conference ("Knowledge Sharing") to be held February 6-7, 2007. Hosting the conference will be the Moody Gardens Hotel and Conference Center, Galveston, Texas. Registration for this widely popular conference that exceeded 1,000 participants in 2006, will conclude on January 15, 2007.

For additional information please go to the Conference Website at: http://pmchallenge.gsfc.nasa.gov. Conference Co-Chairs are Flight Project Directorate's Dorothy Tiffany and Walter Majerowicz.

"Cultural Tidbits"

Did you know … that the name Cheyenne comes from the Sioux word sahiyela or sahiyena and means "alien speaker"?. In their own Cheyenne language, however, the name is Tsitsistas

Do you have a cultural tidbit to share? Send it to the Code 400 Diversity Council c/o Andrea Razzaghi @ andrea.i.razzaghi@nasa.gov and we'll publish it in a future issue.



Technology Corner

Build It and They Will Come
Advanced Manufacturing Branch Adds New Capability

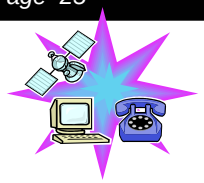
Goddard's ability to machine and assure the accuracy of specialty parts for spacecraft and scientific instruments has advanced to the next level of sophistication now that the Center has acquired a high-precision optical-measuring machine. The machine is housed in a Class-100 clean room, according to Garcia Blount, Head of Goddard's Advanced Manufacturing Branch.

The machine, the Smartscope Quest 600, adds a new dimension to what his organization can offer in the way of machining components, checking their accuracy, and retooling them if necessary, Blount said. "Our main goal is to not only make specialty parts, but to make sure that they're accurate. With this machine and the high-speed machining center we acquired more than a year ago, we can do all these things within a day."

James Webb Space Telescope First Customer

The James Webb Space Telescope project will be the first to use the Smartscope when verification testing begins on the project's microshutter arrays, an enabling technology for the telescope's Near-Infrared Spectrograph, said Greg Woytko, manager of the Instrument Development Lab.

Each microshutter array is made up of 62,415 tiny shutters — each the width of a human hair. Precisely aligned on a silicon grid, they open or close to allow or prevent starlight from entering the spectrograph. However, astronomers will need to know the precise position of each shutter so that they know which shutters to open or close to get a particular field of view. Ultimately, the spectrograph will require eight arrays — four for the actual instrument and four for backup.



Technology Corner

"The Smartscope is just the right tool to verify the location of each shutter," said Scott Schwinger, the lead mechanical engineer on the microshutter project. And because it is capable of detecting alignment problems that are thousands of times smaller than the width of a human hair, the Smartscope also will help technicians precisely align the arrays onto the silicon grid. "Verification will be included in the assembly process," he said.

Without Smartscope, Schwinger and his colleagues would have had to verify the arrays optically. "We'd have to choose three or four data points, but with this machine, we can see each shutter panel," he said.

Other Specialty Equipment

George Bertholdt, a quality assurance expert who will operate the Smartscope, expects the machine to get heavy use in the months ahead — especially when used in conjunction with the MIKRON high-speed machining center housed nearby. With the MIKRON, technicians can make tiny parts from all types of materials, including aluminum and inconel, a nickel-based superalloy that resists corrosion even at high temperatures. "We basically have people lining up. As they say, if you build it, they will come," he said.

Other special equipment the branch offers is the StereoLithography Apparatus, which uses liquid resins to create parts for prototypes. This way, engineers know if their designs will work before spending the time and money building hardware, Woytko said. "We're just trying to meet the needs of our customers and position ourselves to meet their future needs," he said, adding that potential customers should visit the group's Web site, http://web547.gsfc.nasa.gov/amb, to learn more about the facility's upgrades and services.

Lori Keesey
Code 502

Comings & Goings

Comings:

Willie Blanco joins 466/GeoSpace/RBSP Project Observatory Manager
Laurie Kleppin joins 480/POES Project Observatory Manager
Robert Menrad joins 450.3/Constellation Support Office Project Manager
Robin Pfister joins 417/GOES-R Operations Project Deputy Project Manager/Technical
Barb Vargo joins 441/HST Operations Project Financial Manager

Goings:

Diane Bittner to 201/Business Management Officer
David Jones to 426/GLORY Resident Manager at Santa Barbara Research Center, CA
George Komar transferred to Deputy Associate Administrator for Technology at NASA Headquarters
Ed Lowe Retires from 454/TDRS Project Deputy Project Manager/Technical and Acting Project Manager
Steve Xander transferred to Langly Research Center

(Awards Continued from page 17)

Mindy Deyarmin - 440
"For your outstanding dedication and excellent support to the Hubble Space Telescope team members, and the Project's many educational outreach efforts."

Wild Card

Edward Macie - 428
"For dedication, perseverance, and commitment to the vital task of helping the victims of Hurricanes Katrina and Rita."

Benjamin Reed - 541/442
"For your technical excellence, exceptional management skills, outstanding work ethic, exemplary cooperation, and critical contributions to the success of the Hubble Space Telescope Program and the Return to Flight Program."

Dan Mackenzie - Orbital/442
"For your hard work, leadership, and courage to stand up for your convictions and follow a problem through to its logical conclusion. You are an ideal example of the type of young engineer NASA needs to implement the Agency's Exploration Initiative."

Laura Rocchio - SSAI/427
"For providing outstanding support of Code 427 through completely redesigning the Landsat Website, creating hundreds of Landsat images, and coordinating the Landsat Legacy project. Frequently heard from team management: "What would we do without Laura Rocchio?"

Mentor Award

Dr. Evelina Felicite-Maurice - SSAI/460
"For believing in every member of the STP/LWS EPO team and providing many opportunities for professional growth throughout the institutes, workshops and conferences, Dr. Evelina Felicite-Maurice deserves the Mentor Peer Award."

Special thanks to the Peer Awards Committee from left Kathy Shifflett (420), Dena Butler (403), Priti Vasudeva (444), Del Jenstrom (427)

(Comberiate Tintype Continued from page 3)

his first trip to the South Pole. He found a very special niche in the system applying NASA's Space Age technologies to resolve long-standing problems in remote corners of the world. Many of these special project activities have been related to historic firsts in communications. He is featured in Ripley's Believe It or Not and in the Guinness Book of World Records for the first phone calls via satellite from the South Pole and from the North Pole. He also brought some of the first real computers to the continent of Antarctica and established the first satellite communications link at the geographic South Pole. Mike also was the innovator for the first Long Duration Balloon flight in Antarctica (AFGL), and then instrumental in convincing NASA to begin what is now a routine operation out of McMurdo.

"Crazy Mike" has become renowned for doing 'weird', but pretty neat things. Activating the tumbling NOAA-13 satellite again after being dormant for two years, was another of his achievements. His team was able to use the light reflecting off the Antarctic Ice Cap to illuminate the solar arrays while they uplinked commands from the POES project, to restart the Transmitter. Somehow his out of the ordinary ideas have a habit of producing outstanding results for NASA and account for special commendations from US Senators, Congressmen, and such. The USGS named a Glacier in Antarctica after "NASA Mike" and NASA Administrator, Dan Goldin, sent him to the ice in his place to lead a VIP tour. Currently Mike is managing a special Robotics Effort where college seniors get 5 academic credits each towards their Engineering degree. To date, about 80 students have completed the course.

Perhaps the most significant contributions from this NASA dreamer, have been the many, many other individuals, who through his efforts have experienced some extraordinary adventure with him. Those special projects number nearly 100 at this point and each has been shared with a hand-picked team, who were instrumental in the mission success. They all pushed themselves beyond the norm just for the unique experiences they were getting. It's the stuff that helps make NASA the uniquely admired agency it is.

Hobbies: Designing, building, and remodeling houses. Master level Instructor in Martial Arts teaching here at GSFC since 1969. Traveling - around the world 23 times; North Pole 4 times; South Pole 7 times; over 100 countries. Jogging - over 40,000 miles in last 23 years. International Lecturer.

(Dyson Tintype Continued from page 3)

July 30, 2006 – YIPPEE!! Linny married Gary Dyson on the Grandeur of the Seas in Baltimore, Maryland, before sailing off to Bermuda for their honeymoon. Linny & Gary live in Hughesville, MD (or as Linny calls it Mayberry)!!! The Dysons live very close to both sides of the family and most everyone knows that Linny absolutely adores her five nieces.

Life outside Goddard: Linny bowls every Tuesday, and has for the last 12 years, in a Waldorf tenpin league. She's now in her second season of softball and is very proud of her 2-hit/2-catch game!! Yoga is Linny's new hobby but she has a long way to go, but will get there. Last but not least – every Sunday she cheers for the Redskins, where she had been a cheerleader in the early 1990's.

MARK YOUR CALENDARS, AND SPREAD THE WORD

Pat on the Back

"We wish to extend a sincere thank you for supporting our Project Management training curriculum entitled, "Special Topics in Project Management," by presenting the class titled, "Project Management and Procurement." From feedback we received from the class participants, your use of real world NASA examples helped to bring the issues to life. We would certainly consider including your presentation in any subsequent training that our organization would provide.

Training future Project Managers is critical for the success of the work that we are obtaining from the Agency. With the help of people like you, we have no doubt that we will be creating a cadre of Project Managers who will be world class. Again, we thank you for developing and presenting the material for this class."

Lesa B. Roe, Director, and John B. Herrin, Director, Exploration & Flight Projects Directorate, NASA Langley Research Center to John Baniszewski, ECANS Deputy Project Manager/Resources, Code 458.

The Critical Path

November 2006 marks the 14th anniversary of the establishment of the Code 400 Newsletter, The Critical Path. The newsletter initiated under the auspices of then Director of FPD Vern Weyers, has published 54 editions since its inception. Although intended to be an 8 to 12 page newsletter, it has never been less than 20 pages for many years, averages 24, and as you will note in this issue, a maximum of 32 pages. Although size doesn't mean quality, we hope that the two have always gone together for every issue.

Reviewing copies of the past several years, I note that there has been a dearth of voluntary contributions to the Newsletter from directorate employees about interesting items that they have participated in outside of the work environment. If you have an item of interest (don't worry about length), please let me know. Remember too that in addition to all Code 400 personnel and many others across the Center, more than 300 retirees receive The Critical Path as well as interested individuals from all NASA Centers, and many individuals in the private sector. Thank you.

Howard Ottenstein, Editor
Nancy White, Production Assistant/Photographer
Paula Wood, Editorial Assistant

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400 November 23, 1992

TO: 400 Civil Servants & Contractor Support Personnel

FROM: Flight Projects Directorate

SUBJECT: FPD Quarterly Newsletter

After some discussion, and a whole lot of enthusiasm and motivation, the Flight Projects Directorate (FPD) has decided to initiate a Quarterly Newsletter – “The Critical Path”. We hope that you will all share the same motivation and enthusiasm.

The publication has been designed to present happenings of interest to all FPD employees. We are aiming at a Newsletter of 8 to 12 pages that will have something for everyone: technical, managerial, personnel and social items. To achieve this goal, the editor needs your help. Let us know about anything you believe to be of interest to your peers. In fact, if you have personally achieved some particular goal (e.g. walking the Appalachian Trail this past summer) please write it up for us. We will make every effort to publish all submitted articles.

We are shooting to have this first issue in your hands about mid-February 1993 which isn’t

(TCP Continued on page 31)

(TCP Continued from page 30)

much time. So start sending in your information soon after you read this memorandum. Howard Ottenstein has accepted the job of editor and his Goddard mail address is HOTENSTEIN, Code 411, telephone extension x6-8583. For personnel comings and goings and training opportunities, Howard will be assisted by Mary Adkins (MADKINS, Code 400, telephone extension x6-7003). Cheryl Powell will prepare a social news page (e.g. marriages, births, and the like) (CPOWELL, Code 400, telephone extension x6-5895). All information should be to Howard no later than January 10, 1993.

Even though we are asking you all to participate, we ask each project to designate and advise us of a person as a single point of contact to send the editor copies of project news releases and, for those projects that publish a Newsletter, a copy of that also, along with any information believed to be of interest to other FPD employees. Many thanks for your cooperation and assistance in launching "The Critical Path" next February.

Richard G. Long
Assoc. Dep. Director of FPD
for HST Resources

Howard Ottenstein
Program Analyst

George Barth
TDRS Deputy Project
Manager for Resources

Note: The title "The Critical Path" was suggested by George Barth.

Quotes To Think About

Always do right. This will gratify some people, and astonish the rest.
- Mark Twain -

What is the grass? It is the handkerchief of the Lord, a scented gift.
- Walt Whitman -

If a man loses pace with his companions, perhaps it is because he hears a different drummer. Let him step to the music which he hears.
- Henry David Thoreau -

How wonderful it is that nobody need wait a single moment before starting to improve the world.
- Anne Frank -

You miss 100 percent of the shots you don't take.
- Wayne Gretzky -

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FUTURE LAUNCHES CALENDAR YEAR 2007	
THEMIS	FEB
AIM	APR
TWINS-B	JUN
GLAST	NOV

A Note of Thanks

The Critical Path (TCP) editorial staff wishes to thank Jay O'Leary 101.0 (SGT) for redesigning and updating the masthead for The Critical Path. His voluntary effort is also appreciated by senior managers of Code 400.

ATTENTION INTERNET BROWSERS:

We're on the WEB
http://fpd.gsfc.nasa.gov/news.html
Or via the New "Code 400" Homepage
http://fpd.gsfc.nasa.gov

The Critical Path

Published by the Flight Projects Directorate

— In April, August, and December —

Howard K. Ottenstein,
Editor

Nancy L. White,
Production Assistant/Photographer

Paula L. Wood,
Editorial Assistant

If you have a story idea, news item, or letter for The Critical Path, please let us know about it. Send your note to Howard Ottenstein via Email: hottenst@pop400.gsfc.nasa.gov, Mail: Code 403, or Phone: 6-8583. Don't forget to include your name and telephone number. Deadline for the next issue is March 23, 2007.