



A FLIGHT PROGRAMS AND PROJECTS DIRECTORATE QUARTERLY PUBLICATION
A Newsletter Published for Code 400 Employees

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Aura Successfully Launched

The Earth Observing System – Aura observatory was launched on July 15, 2004 at 03:01:59 PDT from Vandenberg Air Force Base aboard a Boeing Delta II 7920 expendable launch vehicle. The launch and separation from the vehicle went extremely well. Over the next hours and days after launch, all spacecraft bus avionics were turned on with no issues.



In addition, all four instruments were powered and are systematically being activated as dictated by on-orbit checkout procedures and contamination (“outgassing”) requirements. The Code 420 Aura Project Office has 90 days from launch to get the spacecraft and all four instruments fully operating, prior to handing daily operations over to Code 428, the ESMO

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New Mission to Mars

In the near future the National Aeronautics and Space Administration (NASA) anticipates a significant increase in demand for long-haul communications services from deep space to Earth. Distances will range from 0.1 to 40 Astronomical Units (AU), with data rate requirements in the 1’s to 1000’s of Mb/second. The near-term demand is driven by NASA’s Science Mission Directorate, which wishes to deploy more capable instruments onboard spacecraft and increase the number of deep space mis-

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Message from the Director Of

My message this month contains a lot of acknowledgements of things that have occurred recently.

First, we in code 400 warmly welcome our new Center Director, Dr. Ed Weiler. We look forward to working with him as he leads Goddard in the NASA transformation process. We also welcome Chris Scolese back into the Goddard fold, and expect soon that we'll reengage him in Goddard programs, projects and processes.

We offer best wishes to Bill Townsend, with many thanks for his dedication to the success of our mission and his support to all of us in the FPPD.

Hearty congratulations go out to the Aura team for the successful launch on July 15. Aura had more than its share of delays, including a few launch scrubs, but the payoff looks good. Checkout is proceeding very smoothly. Many thanks to Rick Pickering, Project Manager for the last few years, and leader of the final push to successful launch.

Congratulations also to the Swift team, led by Joe Dezio, whose integrated spacecraft arrived at Kennedy on July 29. We knew it could be done! We're looking forward to a smooth final push to an October launch.

Belated congratulations to the Explorer missions THEMIS and AIM, both confirmed in April. Best wishes as you move into implementation on a fast track (as always with Explorers) to launches in 2006.

Kudos to SDO and GOES who represented themselves and the Directorate well in the latest ISO audit.

Many thanks to all of you who supported Celebrate Goddard Day. As ever, the Code 400 booth was swamped with visitors, and the overflow Code 400 booth (IFMP, primarily) was just as busy. Special appreciation goes to the Explorer Program, who led our entry in the Karaoke contest. Your joint message that showed both what Code 400 does (implement missions), as well as the diversity of the community that works with us, was very nicely done. For those of you who missed the contest, you should know that Angela Conley is quite a comedienne!

Heartfelt appreciation to those of you who volunteered for Goddard Community Day. An estimated 11,000 people attended (!) and the tours and events were extremely well-received.

I'd like to also thank the Code 400 leaders who provided significant management effort for recent proposals for missions that Goddard proposes to manage. These included two SMEX Step 2 Concept Study (Phase A Study) Reports (submitted on June 18), and four Discovery Step 1 proposals (submitted on July 16).

Del Jenstrom (Code 490) ~ DUO (SMEX)

Gerry Daelemans (Code 460) ~ NEXUS (SMEX)

Hsiao Smith (Code 440) ~ EPIC (Discovery)

Ken Ford (Code 460) ~ MPF (Discovery)

Bob Caffrey (Code 490) ~ OOO (Discovery)

Bob Kozon (Code 428/581) ~ VESPER (Discovery)

In addition, Lauri Via of Code 403 is assigned to the New Opportunities Office and provides cost estimating guidance to all of Goddard's proposal teams.

Thanks to the many other people from Code 400 who have contributed to the development of the Center's proposals for these two AO's as well as the Mars Science Laboratory proposals through direct leadership of, consultation with, and serving on review teams for proposal and study teams.

Finally, it is with great sadness that I say farewell to Code 400. I thank all of you from the bottom of my heart for the support you've given me, and I give you my deepest appreciation for the privilege of working with such a committed, smart and innovative group of people. I will miss being with you on a day to day basis, but have every glad expectation that our paths will frequently cross as I take on my new responsibilities.

Thank you.
Dolly



PERSONALITY TINTYPES



Nate Wright

My career with NASA started in 1986 at the Kennedy Space Center following the Challenger accident. I



worked on the Space Shuttle rocket motor redesign team as a systems engineer and then went on to manage projects on the International Space Station, including Chief of the International Space Station Phase III Office. I transferred to Goddard in 1998 to manage Hubble Space Telescope Observatory Systems. I left Goddard for a brief time in 2000 to assume the position of Acting Director of Center Operations at Johnson Space Center. I also worked at NASA Headquarters for the Associate Administrator for Space Flight on a number of strategic alignment and resource allocation teams before returning to Goddard in 2002. I'm currently the Hubble Space Telescope (HST) Technical Officer for the Consolidated Hubble Associated Mission Products (CHAMP) contract.

The HST Program is now preparing for an exciting and challenging Servicing Mission.

An HST Robotic Servicing and De-orbit Mission (HRSDM) is being planned as an alternate method to extend the life of Hubble and prepare the Telescope for a safe de-orbit. Efforts to robotically service Hubble were prompted by public response to the announcement of the cancellation of HST Servicing Mission 4 (SM4). The HRSDM will not only achieve improved science, but will make significant advances in the space exploration initiative.

(Wright Tintype Continued on page 20)

Wanda Harrell

Wanda Harrell is the recently selected Financial Manager for the Solar Dynamics Observatory (SDO) Program. Earlier, she was the Mission Business Manager for SDO.



Born: Verdun, France

Education: Graduated from Summerville High School in South Carolina. Received her Bachelor of Science degree in Accounting and Management from the University of Maryland.

Life before SDO: Wanda worked at the Defense Investigative Service (DIS) in Alexandria, Virginia for a year before moving back to South Carolina to work at the Charleston Naval Shipyard. She started her career at Goddard in 1986 on the Hubble Space Telescope (HST) Operations Project. In 1990, Wanda worked in the Public Affairs Office during a very busy time supporting the launch of the HST for a year before returning to the HST on the Servicing Mission Project. She then worked as the secretary for the Deputy Project Manager/Resources in the Project Office of the HST Project where she started gaining her resources experience. She continued to work as a secretary until she was selected as a Project Support Specialist in 1997 after graduating with her degree, in the resources office of the HST Servicing Mission, Code 442. In 1999, Wanda started working as a resources analyst on Triana until it was put into storage in 2001. In the fall of 2001, she moved to Explorers Program supporting the CINDI Mission, TWINS Mission, and the Swift Project. In 2002, Wanda was

(Harrell Tintype Continued on page 20)

FEEDBACK

GSFC Resident Office at KSC

- Kennedy Space Center (KSC) celebrated the launch of Apollo 11, on July 16, 1969. Thirty five years ago NASA astronaut Neil Armstrong set foot on the Moon, helping America accomplish its goal of landing a man on its surface before the end of the decade. Apollo's small steps became giant leaps for technology. In 2008 the first missions to the moon are scheduled using a robotic orbiter. These robotic missions will pave the way for manned future landings.
- SWIFT payload arrived at Cape Canaveral Air Force Station (CCAFS) 29 July and processing began in AE Hangar. Swift is an international mission in the NASA Explorer program. Scientific goals are to determine the origin of gamma-ray bursts and to use bursts to probe the distant universe. SWIFT is managed by GSFC in collaboration with lead university partner Penn State and institutions in the United Kingdom and Italy. Launch is scheduled for 7 October 2004 from Delta PAD 17, CCAFS.
- The "Carrier" team from Orbital Science, SWALES and Associates, and GSFC/NASA attended meetings at KSC. Badging was accomplished and many stopped by to use our office facilities while they were at the Center.

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Mark Domen, Jim Lohr, Glenn Jackson, Kathy McIntyre, Andrea Razzaghi, John Loiacono

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Project Office.

Rick Pickering, Code 424 Aura Project Manager exclaimed: "From what we have seen so far, satellite performance appears very solid. Also, the performance of the entire operations team has been tremendous. Not only are all the team members inherently sharp and well-trained, many of them have extensive experience with Aqua, which is paying great dividends."

With the mission going quite well at this early stage, it's worthwhile to look back at how the Aura observatory was successfully completed culminating in the successful launch and early activation without major issues so far. First some background on what the prime organizations contributed to the mission.

The Aura spacecraft bus was developed by North-

rop Grumman Space Technologies (NGST) in Redondo Beach, California and, is a copy (except for a few interface differences) of the one NGST developed for the EOS Aqua mission that launched in May 2002. However, Aura's instrument suite is completely different because its science objectives are focused on measuring the chemistry of the earth's atmosphere.

The four instruments on the Aura observatory are: the High Resolution Dynamics Limb Sounder (HIRDLS), supplied by the University of Colorado, Oxford University, and Rutherford Appleton Laboratory; the Microwave Limb Sounder (MLS) and the Tropospheric Emission Spectrometer (TES) developed by JPL; and the Ozone Monitoring Instrument (OMI) supplied by the Netherland's Agency for Aerospace Programs (NIVR) and Finnish Meteorological Institute.

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Aura's suite of instruments is designed to study issues related to air quality, stratospheric ozone, and climate change. The Aura mission will measure the atmosphere's natural variability and its response to human activity so that we can better predict changes in the Earth system. These are contemporary topics that concern us all. Mainly, how is the Earth's atmosphere changing and what are the consequences for life on Earth?

Aura's instruments measure five of the six EPA criteria pollutants (all except lead). Results from this mission could influence our agreements with other countries and could change how we live our daily lives. For example, Aura will allow scientists to trace air pollution events back to local and regional sources and allow for intercontinental tracking of the movement of pollution. Data from Aura is sure to spur difficult discussions and decisions from our world leaders.

Each of Aura's four instruments is designed to survey different aspects of Earth's atmosphere. Aura will survey the atmosphere from the troposphere, where mankind lives, through the stratosphere, where the ozone layer resides and protects life on Earth. The troposphere is the lowest layer of the atmosphere extending from the ground to about 7 to 10 miles altitude. The stratosphere is above it extending out to about 35 miles.

Taken together, data from the instruments on Aura will provide a rich new source of information on the worldwide distribution of key atmospheric pollutants and greenhouse gases and how these distributions evolve and change over time.

We last published an article in *The Critical Path* in January 2003. At that time, the spacecraft was fully assembled and undergoing functional checkout. Also, OMI, MLS and HIRDLS (three of the four instruments) were just delivered and integrated to

the spacecraft. We were in the midst of an alignment issue with the optics in TES that was ultimately resolved by inserting Shape Memory Alloy (SMA) washers between the optics bench and the instrument structure. This reduced the stresses applied to the optics bench since the SMAs shrink when cooled, reducing the preload on the fasteners holding the bench to the instrument structure. There were key lessons learned from solving this problem that we will be documenting in our EOS Aura Lessons Learned document.



The Aura Project Scientist - Mark Schoeberl, flanked by the Aura Deputy Project Scientists - Anne Douglass and Ernie Hilsenrath, all

Even with this time consuming problem in early 2003, we were able to rework the I&T schedule to maintain what was then a January 15, 2004 launch date for Aura. Two activities were pursued that reduced the risk of delivering TES late. First, the TES Engineering Model (EM), along with all of the other EM instruments, had undergone early integration test activities with the spacecraft EM. Second, we integrated the TES EM with the flight spacecraft for early compatibility tests with the other flight instruments. These activities paid great dividends because once the TES flight unit was integrated

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Technology Corner



Modular, Reconfigurable, Rapid (MR²): Shifting Our Approach to Space Technology

Revolutionary transformational improvements in the architecture, design, and processes involved in the production of current flight systems (hardware and software) are essential to achieving the goals set forth in the National Vision for Space Exploration, and critical across-the-board in any space-bound exploratory, scientific, or commercial endeavor. To reach this Vision: we must find ways to reduce system complexity; reduce design, build, and test times; reduce cost; increase flexibility to satisfy multiple functions, and still maintain systems that are practical for widespread human and robotic exploration. Goddard Space Flight Center (GSFC) has proposed a paradigm-shifting technology, addressing the way space assets of all sizes are designed, manufactured, integrated, tested, and flown.

Modular, Reconfigurable, Rapid (MR²) space systems is a system-of-systems technology based on an end-to-end system architecture that includes such elements as life-cycle process changes (design, manufacturing, integration, test, and launch processes), modular/reconfigurable systems, and interface standards. Specific functional areas are mechanical (including thermal, propulsion and fluids), electrical (including C&DH avionics, attitude control electronics, attitude control sensors/actuators, power, communications, harness), flight software (including attitude control algorithms), ground systems and networks, and, flight operations. Under the joint auspices of GSFC's Internal Research and Development (IRAD) program (contributing roughly 80%), and the Office of Exploration Systems (contributing roughly 20%), MR² has seen important progress in FY04, with deliverables that include a modular structural design prototype, an Ethernet-based avionics emulator, modular software elements, and a software-based Virtual Modeling and Simulation (VMS) Environment.

MR² is particularly germane to Intelligent Modular Systems, but in principle is relevant to all Human & Robotic Technology (H&RT) programs. For Intelligent Modular Systems, this technology can generate systems that are capable of "thinking" - either as single units or as a collection of units - to carry out larger or more complex tasks. Both modularity and reconfiguration are key. As system technology is developed, its use of plug-and-play interfaces will make it uniquely suited to integrate and validate sensors, software and computing for smooth operation and rapid adaptability of future exploration vehicles, and systems of systems. Modular space systems will be based on applications such as Local Area Networks (LAN) of varying topologies, which lend themselves to wired or wireless intra-vehicle communications, as well as external networks.

Demonstrations of this technology show great potential in the development and validation of major systems-of-systems level innovations related to traditional platform functions for spacecraft, UAVs, and other aerial and surface vehicles. This technology addresses a number of promising new approaches for sustainable, reliable and effective human and robotic exploration.

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The objective questions to answer at project's end in FY08 are: Did we create the right components and interfaces for unexpected applications? Does modularity, as defined, support internal and external system re-configurability? Can we reconfigure modules into systems in an efficient and rapid manner? Is the system sustainable, reliable, and effective?

Jaime Esper, Code 590



Hello and Good Bye

The Flight Programs and Projects Directorate welcomes new Center Director Dr. Ed Weiler to Goddard and bids farewell and best wishes to its Deputy Center Director Bill Townsend. Good luck to our new Deputy Center Director Chris Scolese.

HST Update

At press time, Administrator O'Keefe announced to HST personnel at the Center that they should begin to plan a robotic servicing mission to update Hubble's equipment. More on the progress of this mission in ensuing issues of The Critical Path.

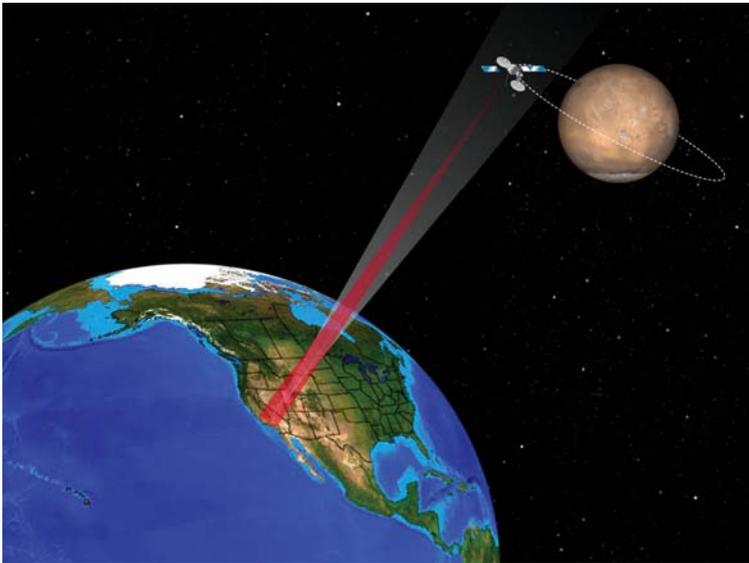
Code 400 Annual Peer Award Picnic/Ceremony

Don't forget - it's coming up soon. Wednesday, September 1, 2004 is just around the corner, and that's the date of the Code 400 Annual Peer Award Picnic/Ceremony at the Rec. Center. A picnic lunch is scheduled for 11:30 and the Peer Awards Ceremony for 12:30. Cost for lunch is only \$5.00 and should be turned in to your project secretary by Wednesday, August 25, just about the time you'll be reading this article. Most of you have probably already signed up, but those who haven't as yet should get on the phone right away and indicate your interest.

As always, tickets will be handed out at the door for Door Prizes. And perhaps you'll be a winner as well from among your peers.

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sions. The long-term demand is filled with extreme communications challenges such as very high data rates from the outer planets, supporting sub-surface exploration, or supporting NASA's Space Operations Mission Directorate beyond Earth orbit.



Mars Laser Communication Demonstration Mission - Artist's Sketch

One possible solution to NASA's future long-term communication needs is free-space laser communications. In this context, a laser sends information using a beam of light and optical elements, such as telescopes and optical amplifiers, rather than Radio Frequency (RF) signals, amplifiers, and antennas. Laser communication should enable bandwidth-intense instruments, such as hyper-spectral imagers, synthetic aperture radar (SAR) and instruments with high definition in spectral, spatial or temporal modes to be used in deep space exploration. To this end, OSS directed a laser communication mission be established from Mars.

In May of 2003, a Phase II feasibility study of laser communication from Mars was completed.

At that time a budget was approved to create the Mars Laser Communication Demonstration (MLCD) project. MLCD consists of a flight laser communication terminal called the Mars Lasercom Terminal (MLT), on-board the Mars Telecommunications Orbiter (MTO), a terrestrial-based optical receive system and a mission operation system. The MTO mission is managed by JPL and is scheduled to launch in the fall of 2009.

The MLCD demonstration will provide a continuous data link of between 1 and 30 Mbits/second from Mars to Earth, depending on the instantaneous distance and atmospheric conditions. This is a significant performance improvement over today's RF systems. MLCD is planning to use ground terminals capable of receiving the encoded laser beam and transmitting an uplink beacon laser to the flight terminal, for active tracking and pointing control of the narrow laser beam. Critical technologies for receiving the deep space signal include low-cost large collection apertures and low-noise photon-counting detectors. MLCD will provide much needed engineering insight by the end of this decade.

The Mars Laser Communication Demonstration project consists of three partnering organizations: NASA's Goddard Space Flight Center (GSFC), NASA's Jet Propulsion Laboratory (JPL) and the Massachusetts Institute of Technology Lincoln Laboratory (MIT/LL). The MLCD Project is newly formed as Code 455 within the Space Communications Program Office (Code 450) of the Flight Programs and Projects Directorate at GSFC. MLCD is led by Project Formulation Manager Rick Fitzgerald, along with Financial Manager Laurey Adkison. Other key GSFC personnel include Flight Terminal Manager Bernie Edwards, Instrument Systems Engineer Mark Flanagan, Systems Engineering Manager Chi Wu, and Co-Investigator Dr. Mike Krainak, all from AETD. Newly appointed Resources Analyst Donna Montgomery (Code 455) is also key to success of the project. The MLCD Deputy Project Manager is Dr. Steve Townes from JPL.

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Since its inception last year, the MLCD Project successfully completed a Concept Review in January 2004 and is headed toward a Systems Requirements Review in October of this year. In between, the project was forced to descope portions of the ground system, in order to maintain a healthy management reserve. After a short Phase B, the project will hold its Preliminary Design Review on January 2005. Delivery of the laser instrument to MTO is scheduled for February 2008.

With an aggressive schedule and a cutting-edge technology development in front of it, the MLCD project is faced with a difficult challenge. The project, however, is staffed with many of the world's leading experts in free-space laser communication. The MLCD team has already made steady progress and is willing to take on this new mission to Mars!

Richard Fitzgerald
Project Formulation Manager, Code 450

To the folks in Code 400,

It has been an absolute privilege to be a part of the FFPD team for the past two years. When I left to join a private firm in 2000, the thing I missed most was the loyal, talented, passionate and professional people of Goddard. I was fortunate to be given the opportunity to return to Goddard in 2002 and coming to Code 400 was a dream come true. While here, not once did I ever agonize about getting up in the morning to come to work. Not once was I ever bored or under challenged. I learned something from each and every person that I interacted with. I loved this job. Thank you for the amazing work that you do and for helping me be a part of it

Krista

We've already mentioned several changes in top management at the Center, but we just got the word (literally on the way to the print shop) that Code 400's own Dolly Perkins and Krista Paquin are both moving up to Code 100 early in September. Dolly will become Deputy Center Director-Technical, and Krista will become Associate Center Director. Replacing Dolly as head of Code 400 will be Rick Obenschain. Best of luck to all three in their new positions.

TCP Staff

Quotes of the Quarter



"Victory has a hundred fathers and defeat is an orphan."

- John F. Kennedy (1917—1963) -

"Good judgment comes from experience, and a lot of that comes from bad judgment."

- Will Rogers (1879—1935) -

"Every man has a right to be wrong in his opinions. But no man has the right to be wrong in his facts."

- Bernard Baruch (1870—1965) -





AURA STREAKING INTO ORBIT

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with the spacecraft, no major issues arose with integrating TES. TES was integrated with the spacecraft in early May 2003, and we set our sights on a January 2004 launch for Aura.

However, maintaining our launch date was about to change. When evaluating data from the pre-thermal vacuum observatory level Comprehensive Performance Test in late July 2003, the HIRDLS instrument team discovered an increase in the noise from the detectors after observatory vibration testing. The noise source was traced to a shorted winding in the counterbalancer motor: one of four motors in the HIRDLS cryocooler. Even though science requirements could still be met with the shorted winding, loss of any of the other motors in the cryocooler would mean loss of HIRDLS. While we reviewed various options to resolve this issue, in parallel, we progressed into observatory thermal vacuum testing.

During T/V testing, another problem occurred with the HIRDLS cryocooler when the cryocooler stopped operating after a couple weeks under T/V conditions. This problem was fixed by correcting a circuit board layout issue in the electronics that control the cryocooler.

While the cryocooler electronics were being repaired, we formally briefed GSFC Center Management and the AA of HQ/Code Y in two thorough reviews in December 2003 and January 2004 on the issues with the HIRDLS cryocooler. In response to GSFC and HQ requests, we presented options for repairing the HIRDLS cooler counterbalance motor, along with the risks involved in that repair, versus the risks of using the cryocooler as-is. After weighing the options and in consultation with his staff, Dr. Asrar (NASA HQ Associate Administrator for Earth Science), provided us direction to proceed toward launch with the HIRDLS cryocooler counterbalance motor "as-is". As a result, a June 20, 2004 launch date was assigned to Aura. (As an update, we recently commanded current to flow through the windings of the three cryocooler motors in HIRDLS on-orbit, giving the first positive indication that no short has occurred in these motors since launch. In mid-August, we plan to fully activate the cryocooler.)

Aura was shipped to VAFB from NGST in Redondo Beach, CA on April 1, 2004, and, after the pre-launch processing, we placed the observatory into the container (AKA the "can") to transport it to the pad for a June 20 launch. Because of a launch vehicle valve problem, that required a new valve to be welded into the 2nd stage while at the

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pad, our launch date slipped to July 10.

Also in the first week of June, an electronics part advisory was issued on lead whisker growth that happens over time in Ultra-Stable Oscillators (USO), causing the part to lose stability or fail completely. Without a stable time reference, science data taking, commanding, and our guidance, navigation, and spacecraft control would be negatively affected. In response, we quickly developed a workaround to compensate for all failure scenarios and the workarounds were tested in the SDVF facility at NGST. Contingency procedures are being generated so that they can be invoked by the flight operations team should the failure occur during the life of the mission.

With the valve replaced and the USO issue resolved with a workaround, the spacecraft was shipped to the pad, and stacked on top of the launch vehicle at the end of June. The launch vehicle fairing was installed prior to the July 4th weekend, and we were ready for launch on July 10.

Over the 4th of July weekend, while maintaining a trickle charge on the spacecraft battery, an NGST QA engineer happened to inventory an NGST toolbox and immediately noticed a wrench was missing. The last time the wrench was used was just prior to fairing installation. On July 6th, at the Flight Readiness Review, it was decided to initiate a level by level inspection of the pad along with inventorying all toolboxes.

The wrench was found in a Boeing toolbox and the launch was not delayed. However, this raised questions on tool control at the pad, since NGST didn't realize they lost the tool for several days, and Boeing didn't know they had an extra tool for several days. In response to this mishap, Bill Townsend (GSFC Deputy Center director) instructed George Morrow (Deputy Director Code 400) to see what changes needed to be made in tool control at the

pad so that future GSFC missions can avoid this from happening. A small group has been formed and they are addressing the lessons learned from Aura.

In parallel with the lost wrench, another issue arose based on an alert that was issued as a result of two transistors failing in hardware on an Atlas launch vehicle. The suspect transistor types were installed in the launch vehicle and the Observatory. By thoroughly reviewing the testing these parts had undergone, their application in Aura and the launch vehicle, and the 0.04% probability of failure estimated by the GSFC Parts, Packaging and Assembly Technologies Office [Code 562], we convinced ourselves and the senior launch management team that the risk to the mission was low. However, the time it took to look into this transistor alert caused a one day slip in our launch date to July 11.

Two days before our July 11th launch date, the launch vehicle team discovered a problem in the fairing ordnance connector, requiring some repair and retesting to occur. This problem caused our launch date to slip to July 13.

Also two days before our July 11th launch, we discovered that an NGST engineer had been missing a flashlight since the fairing was installed at the end of June. As with the missing wrench, all toolboxes at the pad were searched, as well as all office spaces and pre-processing work areas. The flashlight was not found, but we convinced ourselves and the senior launch management team that the flashlight was not on the spacecraft using photographs, timelines, and by interviewing all personnel who had access to the pad. This included a phone call to an instrument technician at home at 2 am local time in the Netherlands. Needless to say he was pretty groggy, but when he heard what we were looking for, he became very alert and helped us immensely in providing additional information about this flashlight on the night it was lost. The lessons learned here

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Mercury Messenger Lifts Off

Designed and built at the Applied Physics Laboratory, whose instruments include a laser altimeter and small magnetometer from GSFC, the Mercury Messenger successfully lifted off from Cape Canaveral Air Force Station on August 3. Messenger's 7 1/2 year mission will make two flybys of Venus as well as three of Mercury, and will attempt to discover how Mercury was formed, why it is so dense, measure its mineral composition, map its craters, plains, and cliffs, and determine whether it might contain ice at its shaded poles. To do so Messenger's components must withstand temperature variations from 800 degrees Fahrenheit to 240 degrees below zero.

Former Goddard Project Manager and now NASA's Director of solar system exploration Orlando Figueroa stated that "Messenger will help us understand the forces that have shaped the least-explored and innermost of the terrestrial planets." Mercury is denser than Earth, Mars and Venus, has no significant atmosphere, and like Earth has a magnetic field.

Unlike Mariner 10 flybys in 1973 and 1974, Messenger will have to slow down to go into an orbit of Mercury, extending the trip from 3 1/2 months to 7 1/2 years by using the gravity of three planets to apply the brakes to do so. APL Messenger Mission Manager, and former Goddard Project Manager, Bob Farquhar noted that "we wouldn't have to slow down if we didn't want to go into orbit."

After a planned journey of nearly 5 billion miles, Messenger will descend into a near polar orbit of Mercury in March 2011 coming at times within 125 miles of its surface.

The Editor

Space Telescope Science Institute Head to Step Down

Steven Beckwith, Director of the Space Telescope Science Institute in Baltimore since 1998, will step down at the end of his term in September 2005. His decision came shortly after a National Academy of Sciences report was issued asking NASA not to rule out a shuttle mission to service the Hubble Space Telescope. That study was commissioned by NASA Administrator Sean O'Keefe.

The Institute has been managing Hubble's scientific programs since before its launch in 1990, and last year signed a contract with NASA to similarly manage the James Webb Space Telescope, Hubble's successor, scheduled for launch in 2011. Beckwith's deputy, Mike Hauser, was former Chief of the Laboratory for Astronomy and Space Physics at Goddard Space Flight Center.

The Editor

Man's Best Friend(s) Working at Goddard

In order to enhance the security and safety of GSFC and its employees, the Security and Safety and Environmental Divisions have recently instituted canine programs. The Security canine program involves detection and prevention, while the Safety and Environmental program addresses geese management.

The canines associated with the Security initiative are Belgian Malinois named Sultan and Quick. Both handlers and animals have completed extensive detection training programs, and they will be used to conduct random vehicle inspections, building walk-throughs, parking lot inspections, assistance at the warehouse in inspecting delivery vehicles, and as an added security measure during special events and times of increased security.

The Safety and Environmental Division canines have been working on Center since 2001, and have helped to resolve many of our geese conflicts over the years. Cheryl and Isabella are Border Collies whose objective is to move geese to other areas of the Center where there will be fewer conflicts with people. They do not touch or harm the geese, and have even helped rescue a gosling on occasion. They especially work hard during nesting season of March through May to keep geese and nests away from our office space.

Although the canines are not trained to be aggressive, they are very protective of their Handlers. Therefore, for your safety, please do not approach the animals from their blind side and/or attempt to pet without the Handler's permission. With these initiatives, the Security and Safety and Environmental Divisions are continuing their efforts to make Goddard a safer environment for both employees and guests. Should you have any further questions please contact the Security Division at 6-7233 or the Safety and Environmental Division at 6-7442.

Ray Rubilotta, Assistant Director, Code 200



Security dogs Sultan and Quick with their handlers



Border Collies Cheryl and Isabella taking a break

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are being included in the work of the tool control group mentioned above.

With the repair of the fairing ordnance problem, and our resolution of the flashlight issue, our launch date slipped to July 13 at 3am PDT. On July 13, we had to abort our first launch attempt less than an hour before launch due to an out of limit telemetry reading on the spacecraft. The out of limit reading turned out to be a feature of our solid state recorder, not an anomaly. After numerous meetings, and not much sleep, we recycled the launch vehicle and spacecraft for launch on July 14 at 3am PDT. On July 14, we had to abort our second launch attempt with less than four minutes to launch due to a low current reading from a launch vehicle power supply. Upon further review, this turned out to be expected based on the configuration for our launch, so the launch vehicle was ready to try a third attempt in three days. We also modified the charging method of our spacecraft batteries in preparation for a third attempt.

There must be a charm, as the Aura Liftoff occurred at 3:01:59 am PDT on July 15, 2004. As one looks back at the many problems encountered during the week just prior to launch, we made prudent and wise decisions to take the time to understand each issue fully; make necessary changes to correct the problem(s), or show why we were justified to proceed as-is.

The July 15 launch date occurred six months to the day after our January 15, 2004 assigned launch date. Although this is a considerable schedule slip, the challenges we encountered, mainly with our instruments, were difficult to overcome. As one may have noticed from descriptions of the issues we had on Aura during our I&T activities, we maintained a philosophy of making progress by performing as much new ground as possible while working a problem in parallel. This way, we were able to retire risks and identify new issues while a major problem was being worked. We have the GSFC Instrument and Spacecraft Managers, their support staffs, and the entire instrument and spacecraft development teams to thank for continuously developing innovative ways during I&T that allowed us to complete as many required tasks as possible while a problem was worked. The results show it really paid off!

John Loiacono
Aura Deputy Project Manager, Code 424

(FeedBack Continued from page 3)

- The annual event, "Take Our Children To Work Day" occurred on July 27th. This event encourages children to experience the working environment where the parents participate daily. Children are allowed to experience some education outside the classroom and become familiar with KSC and hopefully inspire the next generation to become space pioneers.
- Some of the Security issues that have changed since 9/11 are those affecting Foreign Nationals coming to KSC/CCAFS. Forms for GSFC payloads Foreign Nationals must be filled out completely and sent to the GSFC Resident Office at KSC. The Resident Office then takes them to KSC and CCAFS Security requesting permission for each Foreign National needing entry to participate in the processing of a GSFC payload. Approval must be acknowledged thirty days before entry is granted and according to each VISA, Green Card, and/or VISA Waiver

The Solar Terrestrial Probes/Living With a Star Education and Public Program

The Solar Terrestrial Probes (STP)/Living With a Star (LWS) Education and Public Outreach (EPO) Pro-



gram represents a unique opportunity to involve both the public and the educational community in an important long-term program that will investigate complex science issues, the results of which affect each and every one of us in our daily lives. The Sun is the engine that drives our solar system, fuels our planet, and



has created an environment conducive to the evolution of life. Therefore, the main

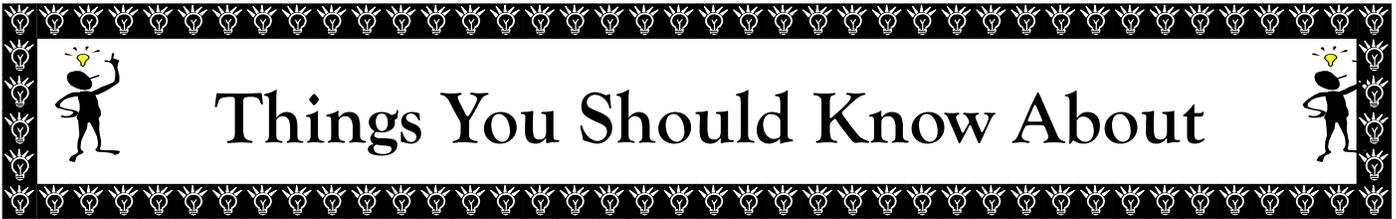
goal of the STP/LWS Education and Public Outreach program is to provide the tools and means necessary to enhance public awareness and knowledge of the Sun, its affect on the Earth, and consequently its affect on all aspects of human life, and to communicate the realization that the Sun-Earth connection is vital to the continuance and quality of their future.

Each of the STP/LWS missions implements an Education and Public Outreach program. To facilitate the coordination effort, each Project Manager and each Instrument Principal Investigator designates a single point of contact responsible for EPO activities. The EPO mission lead collaborates with mission scientists and engineers to generate EPO products pertinent to their mission's science and to promote visibility of their mission with the general public. The mission coordinator works closely with the program level EPO Manager to share resources and avoid duplication of effort.

During the past three years the STP/LWS EPO program has developed several major activities for educators, scientists, EPO leads and the general public. These activities are as follows:

- Our Star the Sun Summer Institute is designed for k-16 and pre-science educators, administrators and education college professors from the mainland and Puerto Rico. The Institute conducts a wide variety of educational workshops related to the Sun-Earth Connection Theme, Oceanography, Meteorology, Science, Technology, Engineering and Math aligned with the science, math and technology national content standards.
- STP/LWS Engineering and Space Science Intern Program is an internship program that encourages young women and men to consider a career in engineering and physics. The internship provides many elements (mentors-intern relationship, partnership with high schools, universities, scientists and engineers). The program includes a span of several years, encouraging students to develop a close relationship with GSFC scientists and engineers.
- STP/LWS Star Partners Conference. Numerous professional development workshops were organized for the 2004 Star Partner conference in Anchorage, Alaska. All participants worked on Sun-Earth connection activities based on the ancient ruins observatories theme.

(STP/LWS Continued on page 22)



Things You Should Know About

Federal Dental Insurance?

It may be coming sooner than you think, but probably not for at least two more years. And it will cost you 100% of the premium, although you would be getting the best group rate available for a potential pool of 9 million current and retired Federal employees and their families. Key congressional law makers have asked the Federal Employee Health Plan managers at OPM to request Federal health providers to come up with this (and a vision services) plan for congressional review. When all the reviews and negotiations conclude, an approval by Congress is anticipated. Depending on the time of year when the legislation is passed and signed, a special Open Season may be held.

Federal Employee Government Life Insurance (FEGLI)

And speaking of Open Seasons, FEGLI is holding an Open Season from September 1 through 30, 2004 in celebration of its 50th anniversary. This is the first Open Season for FEGLI since 1999. Most readers already have this insurance, but if you do not, it provides a rare opportunity to either sign up or increase their coverage without any physical. It doesn't matter that you have serious medical problems or pre-existing medical conditions. For those with possible retirement in view, five years with FEGLI is required to take various options of coverage with you into retirement. Note that it will take until September 1, 2005 for these changes to be implemented.

NASA Employees Benefit Association (NEBA)

Meanwhile, NASA's own insurance program, which was initiated before FEGLI was created, will be presenting its members with a seventh straight annual return of premium (refund) later this year. Open Season has never been an issue with NEBA as you can join any day of the year. Those who take advantage of this low cost life insurance for Civil Servants at Goddard, can also cover their spouses, children under 19 (free), and enable those children to convert to a minimal cost plan of their own at age 19. Other features include triple indemnity, accidental death and dismemberment insurance and an accelerated life benefit. Optional insurance of up to \$250,000 can be taken with him/her by the employee when they leave the Center and continues in force until age 70. The NEBA Board of Directors is currently in the process of preparing an RFP to select another carrier to ensure the best possible service, premium cost, and coverage for its 6,000 members throughout the Agency.

Federal Employee Health Plan (FEHP) and Flexible Saving Account (FSA)

Continuing with Open Seasons, the FEHP Open Season for 2004 will be from November 8 through December 6. You can probably count on a premium increase in most plans effective January 2005. OHR will keep you apprised of all required actions (none if you remain with the same plan) on your part. Those interested in signing up for the FSA program may do so, separate from FEHP, but during the same time window November 8 through December 6.

Thrift Savings Plan (TSP)

The Senate has just passed S02479, a bill that would eliminate Open Seasons. In this case, it's a better deal for Federal employees. Under the unanimously approved bill that has the support of the White House, any Federal employee can modify their plan at any time, and new employees can join when they please, rather than only during Open Seasons. The House is considering a similar bill. Meanwhile, there will be (probably the last) a TSP Open Season, October 15 through December 31, 2004.

In another change that has recently gone into effect, the Federal ThriftLine has made available a toll-free number to respond to any Thrift Savings Plan questions that you might have. The new number is: 1-(877)-847-4385. Hours to use this number have also been expanded to: Monday through Friday, 7:00 a.m. - 9:00 p.m. eastern time.

The Editor

Project Management Challenge — 2005

Work is well underway in preparation for Project Management (PM) Challenge 2005, the Second Annual NASA Project Management Conference established to further teamwork, knowledge sharing, training and lessons-learned in the areas of project management within the Agency to be held March 22-23, 2005. Many of you, including 700 attendees, are still lauding the first “Meeting the PM Challenge,” NASA’s first ever Agency-wide conference on PM at the University of Maryland in March 2004.

Rollout of NASA’s 7120.5C will be a central theme of the conference. It is open to all NASA stakeholders who are passionate about the contribution of project management to mission success at NASA, and who desire to enhance their understanding of, and share their experiences in, this important area. This conference, sponsored by NASA’s Academy of Program and Project Leadership (APPL), is an important component of the “One NASA” initiative.

In addition to the exciting program summarized below, 30 exhibitors will showcase the state-of-the-art in project management tools and resources. Most importantly, you, the participant, will get a chance to renew old acquaintances and make new ones from your colleagues throughout NASA and its industry partners. If it has to do with project management at NASA, PM Challenge 2005 is the place to be!

Tracks:

Back to Basics - introductory training for those new to project management, or those who would like a refresher

Keep Control! - engaging topics in program control for the experienced project team member such as Earned Value Management, Scheduling, Cost

Estimating, Quality and Safety.

Hot Topics - come find out about "what's new" and innovative within project management at NASA, including initiatives such as the detailed requirements of NASA’s 7120.5C, Independent Technical Authority (ITA) and spiral development.

Dream Team Building - bring out the best in your project teams by experiencing these innovative dialogues in Team building, Leadership, Communications, Managing People and related topics.

The Right Stuff - it’s what you learn after you have seen it all that really counts, so come to these Case Study Discussions and hear how NASA’s experienced program and project managers faced their challenges.

Launch and Learn - highly informative lessons-learned panel discussions with some of the best project managers from both inside and outside of NASA.

Risky Business - enhance your risk management tool kit with these sessions in Quantitative Risk Assessment, Probabilistic Risk Assessment, Cost and Schedule Risk Analysis and others.

Tool Time - a chance to see in-depth demonstrations of project management vendor software tools in more detail than a visit to the exhibit area offers.

An update to the conference will be presented in the next issue of The Critical Path (November). Conference registration will commence in early fall. In the interim, for more information, contact either Dorothy Tiffany, x6-5917 or Walt Majerowicz, PMP - CSC at x6-5622.



Awards

2004 NASA Honor Awards

August 24, 2004

Code 400 Recipients

Group Achievement Awards

GSFC SMCDS Procurement Team

"In recognition for your exceptional dedication and commitment in support of the Space Mission Communications and Data Services Acquisition."

URSA/ANSER-NASA NASA Institute for Advanced Concepts (NAIC) Team/400

"To the USRA/ANSER-NASA NIAC Team for your leadership and outstanding support that empowered development and success of the newly created NASA Institute for Advanced Concepts."

SORCE Mission Team/427

"For your outstanding contributions and dedication to the success of the SORCE Mission."

ICESAT Mission Development Team/429

"For sustained, creative, and persistent effort in preparing the NASA Science community's most ambitious orbital laser mission for flight."

Special Projects and Missions/451

"For outstanding resourcefulness, initiative and achievement in support of Homeland Security following the September 11, 2001 terrorist attack on the United States of America."

TDRS-I Orbit Raising Recovery Team

"For the personal sacrifice, dedication and engineering excellence exhibited by the NASA/Boeing team which led to the successful recovery of the TDRS-I spacecraft."

Public Service Medal

Thomas Sparn/427

"For your outstanding leadership and distinguished contributions to the SORCE Mission."

Richard Clagett/441

"In recognition of your outstanding leadership, programmatic and technical accomplishments in support of the Hubble Space Telescope."

John Hankinson/450

"For your exceptional leadership and technical contribution in meeting the challenges associated with network support for the launch(s) of the TDRS, H, I, J spacecraft"

Exceptional Service Medal

Debbie Cusick/442

"In recognition of your dedication and commitment to your job and the people you support at NASA throughout your 33 years of Federal Secretarial Service."

Edward Lowe/454

"In recognition for your outstanding leadership and dedication during the successful development and implementation of the TDRS H,I,J Replenishment Program."

Outstanding Leadership Medal

Robert Jenkins/454

"In recognition for your outstanding leadership and dedication enabling the successful development and implementation of the TDRS H, I, J Replenishment Program."

Nicholas Chrissotimos/460

"For three decades of outstanding leadership and for the mentoring of other successful Project Managers."

Lyme Disease - Be Aware

Lyme disease is an illness caused by a spirochete bacteria, which is transmitted to animals and humans through the bite of infected ticks. Although not as prevalent in the Middle Atlantic region as compared to some of the states to the north, those stricken in this area, include a number of Goddard employees.

Most infected ticks around Goddard and its environs are found in grassy areas (including lawns) and in brushy, shrubby and woodland sites, even on warm winter days. They prefer areas where some moisture is present. Their bite is painless so most victims do not know that they have been bitten. Adult ticks (about the size of a sesame seed) prefer to feed on white-tailed deer.

In about half of the cases, a characteristic rash or lesion is seen. It begins a few days to a few weeks after the bite of an infected tick. The rash usually takes the form of an expanding red ring, but can be confused with poison ivy, insect bite, or ringworm. As the rash develops, flu-like symptoms may appear with headache, sore throat, stiff-neck, fever, muscle aches, fatigue and general malaise. Seek prompt medical attention if any of these symptoms appear, especially after being bitten by a tick or visiting an area where Lyme disease is common. If possible take a picture of the rash as it may disappear before you see a physician.

If ignored, early symptoms may disappear, but more serious problems can develop months to years later that can be quite severe and chronic. These may include muscle pain and arthritis, meningitis, Bell's palsy, severe pain and fatigue, and depression. Symptoms are often intermittent, lasting from a few days to several months, and sometimes years. Chronic Lyme disease, because of its diverse symptoms, mimics several other diseases and can be difficult to diagnose.

Treatment is with antibiotics and the sooner the better whether in humans or pets. Treatment for later stages is more difficult often requiring extended and repeated courses of antibiotic therapy.

Some things you can do to avoid tick bites include:

- Clear brush from around your house and keep grassy areas mown
- Avoid plantings that especially attract deer and other animals
- Limit watering of lawns

More precautions should be taken if out in the countryside including: tucking your pant legs into your socks and your shirt into your pants; wearing light colored clothing; inspect clothing for ticks; apply repellents directly on clothing; upon returning home remove clothing and wash or put in dryer for 30 minutes to kill ticks, and inspect your children's bodies and clothing.

Prompt removal of ticks decreases the chances of getting Lyme disease. The proper and easiest method is to grasp the tick with fine tweezers, as near the skin as you can, and gently pull it straight out.

Lyme disease is not considered to be contagious between people or directly from animals to man, and is not generally considered to be fatal.

You should consult your family physician (don't forget a blood test) or veterinarian as a first step to learn more about Lyme disease.

(Wright TinType from page 3)

Born:Lockport, Il.

Education:Bachelor degree in Electrical Engineering from Southern Illinois University and a Master's degree in Software Engineering from the University of Maryland, College Park.

Family: My wife Nona and I reside in Silver Spring, Maryland. Nona develops and directs programs at the George Washington University. We have two children. Ali just finished his freshman year at St. Albans. He's an amazing writer, loves to read, play soccer, fence, and make noise on his guitar. Amanda will be entering the 7th grade this fall at Our Lady of Victory. She's a gifted artist, swims, plays soccer and is a budding flautist. We also recently acquired a German Shepherd puppy named Otto. He is wreaking havoc in our house but we are patient and true Shepherd lovers.

Life outside of work:I coach my daughter's soccer team. This season we took first place and we were undefeated. I'm also the assistant coach of my son's team. They also took first place this season. I'm also preparing for the Marine Corp Marathon. In less than eighteen weeks I'll be running the race of my life. In some aspects, I've trained for this event all my life. Running a marathon is like a mental game that requires discipline, focus, determination, an unwavering commitment and drive. It doesn't hurt to also have tolerance for pain. This race is of particular significance since many of my colleagues have labeled me a "closet marine." Look for the race on Halloween. See you on the road!



Pictured from left to right at the recent PMDE Graduation Ceremony are: Diane Williams (Dir. Code 200), Mark Seidleck (492), Caroline Massey (200), Dolly Perkins (Dir. Code 400), Ron Brade (210), and Carmen St. Paul (495)

(Harrell TinType from page 3)

selected as the Mission Business Manager for SDO.

On Family: Wanda currently lives in West Laurel with her husband John and their two children Reggie and Jack. Reggie is 15 and is a student at Laurel High School. Jack is 6 and is a student at Bond Mill Elementary School. Wanda's step-daughter Misty Mayberry is 25 and lives in Baltimore. Her mother, Edith Dean retired from Goddard in 1996 from Code 681, Lab of Astronomy and Solar Physics. Edith spends time watching her grandchildren Reggie and Jack during the summer and traveling overseas in the fall and spring.

Life Outside of Work: Away from Goddard, Wanda enjoys movies, swimming, reading, cooking and spending time with her family and friends. During the summer, she enjoys going to their beach house with her family where they enjoy going out on their boat and jet skiing.

2003 Presidential Rank Award

It might be a bit late, but better late than never. The Goddard recipients noted below were announced in May 2004, just after the last issue of The Critical Path was distributed on May 20/21.

Code 400's own Preston Burch, Associate Director/Program Manager for HST received the (Presidential Rank) award from NASA Administrator Sean O'Keefe for his outstanding leadership and accomplishments of HST over an extended period of time. Other Goddard recipients were: Dr. Joanne Simpson, Code 900; Dr. Mario Acuna, Code 695; John Dalton, Code 600; Dr. John Day, Code 560, and Deputy Center Director Bill Townsend, Code 100. Congratulations to all.

CELEBRATE GODDARD DAY

On Thursday, July 29, Code 400 once again attracted long lines on the mall as part of Celebrate Goddard Day. Due to the generosity of the programs and projects, numerous visitors were able to walk away with an assortment of posters, stickers, magnets, pencils, pins, rulers, CDs, hats, luggage tags, information on IFM, and even some tattoos—all designed to demonstrate the work of Code 400 and its people.

Needless to say, it was really hot out there and the ground was soggy, soggy, soggy from several showers and downpours that week. However, our spirits were not dampened by the squishy ground nor the long lines of people! Numerous managers and employees took turns staffing and restocking the booth all day and had a great time interacting with all the visitors.

Several members of the Code 400 Diversity Council are to be commended for making this day a success! Nate Wright, Theresa Hayden, Jane Lui, Steve Dobrosielski, and Julia Knight assumed leadership roles to cover all the responsibilities which comprise an event of this magnitude. They in turn solicited, or in some cases, “volunteered” their peers to help get the job done. Many thanks to all who helped, but especially to Jimmy Barcus for seeing to it that Code 400 had cups for giveaways that contained not only the 400 logo, but also the diversity message of “Strive for Diversity, Celebrate Goddard Day”

Code 410 deserves many, many thanks for assuming responsibility for the directorate’s presentation at the “Karaoke” contest this year. Their interpretation of a diverse group of individuals putting together an interactive satellite was very entertaining to the audience. The satellite’s “human-type” responses received many chuckles from those in attendance.

All in all, Celebrate Goddard Day was very successful and gave employees an opportunity to get out on the mall and experience the diversity that surrounds us each day. We look forward to another exciting adventure in 2005!

Julia Knight

Code 400 Representative to the Goddard Diversity Action Team

(STP/LWS Continued from page 15)

- STP/LWS 2004 Astronomy Institute at Green Bank National Radio Observatory - West Virginia. GSFC and the Green Bank National Radio Observatory scientists collaborate on a six-day astronomy institute for educators. Participants are exposed to cutting edge workshops on Sun-Earth science and technology, Radio Astronomy, Radio Jove, and Telescope in Education (TIE), benchmarks and science standards.

Emphasis for outreach efforts at both the program and mission level includes a variety of materials such as, CD-ROMs, videos, educational posters, and a comprehensive website that inspires and informs educators and the general public about STP/LWS EPO program. The EPO staff also presents exhibits at conferences and public events, and disseminates information through schools, teacher workshops, and pre-service programs around the nation.

Close cooperation between the STP/LWS Education and Public Outreach effort and NASA's EPO community is imperative to ensure maximum effectiveness and consistency of the NASA education activities.

Gilberto Colon
SEC Program Manager, Code 460

“Cultural Tidbits”

Did you know ... *that the origins of the handshake have been researched, debated and discussed with little official agreement. There's the theory of the handshake's Egyptian origins, having been delivered as a gift from God. And there's the one about medieval strangers shaking hands to assure the other no weapons would be drawn. In the U.S., the handshake was popularized in the 19th century to demonstrate equality between the individuals shaking hands, and today, has become such an accepted sign of mutual respect, that it is often considered a personal insult to refuse an extended hand when greeted or introduced. However, comfort in touching others varies from culture to culture.*

Although many people from non-western cultures are aware of the handshaking custom and will shake hands, it's important to be sensitive to the fact that they may not be comfortable with it. When in doubt, it's a good rule of thumb not to offer your hand first and allow the other person to take the lead. Or, learn and use your counterpart's form of greeting. You will establish an immediate and positive connection with them.

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.
Andrea Razzaghi/Code 424

Comings & Goings

Comings:

Dwaine Kronser joins 405/Integrated Financial Management Projects Office
 Janet Jew joins 408/Aerospace Concepts and Technology (ACTO) Office
 Paul Richards joins 417/GOES-R Project Office
 Cathleen Richardson joins 417/GOES-R Project Office
 Paul Brandinger joins 420/Earth Observing Systems (EOS) Program Office
 Richard Burg joins 420.2/Earth Science Formulation Office
 Kathleen Glasser joins 441/HST Operations Project Office
 Priti Vesudeva joins 441/HST Operations Project Office
 Gibran McDonald joins 441/HST Operations Project Office
 Jill Holz joins 442/HST Development Office
 William Smoot joins 443/James Webb Space Telescope (JWST) Project Office
 Debbie Williams joins 450/Space Communications Program Office
 Donna Montgomery joins 455/Mars Laser Communications Demonstration (LCD) Project Office
 Kenneth Mobeck joins 480/POES Project Office
 Arlene Tonge-Buckner joins 492/GLAST Project Office

Goings:

Terri Yancy leaves Code 400 to join Code 200/Management Operations Directorate
 Azita Valinia leaves Code 407 to join Code 600/Space Sciences Directorate
 Carol Dibble leaves Code 410 to join Code 210/Procurement Operations Division
 John Thomas retires from Code 417/GOES-R Project Office
 Suzanne Gallagher retires from Code 420.2/GPM Project Office
 John Daniels retires from Code 450/Space Communications Project
 William Webb retires from Code 452/Space Network Project
 Stephanie Armstrong resigns from Code 453/Ground Network Project
 Arlene Peterson retires from Code 461/Solar Terrestrial Probes Program Office

THE CRITICAL PATH SOCIAL NEWS

Congratulations:

Congratulations to Mark and Rebecca Dombrowski (490) on the birth of their son. Isaac was born on June 22, 2004, at 2 a.m., and weighed in at 8 pounds, 6 ounces. Red was the preferred hair color with little else worn for Isaac's debut. Mother and son are doing well, and so is Dad.

Best wishes to Ronnice Sturdivant (442), who was married to Aaron Wedge on June 26, 2004, in Bowie, MD.

Continued happiness to Bill Lebair (416) and his wife Stephanie, who renewed their marriage vows on



FUTURE LAUNCHES CALENDAR YEAR 2004 AND 2005	
SWIFT	OCT
GOES N	DEC
NOAA-N	FEB
ASTRO-E2	FEB
CALIPSO	APR
CLOUDSAT	APR
CINDI	APR
TWINS-A	MAY

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>



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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: Howard.K.Ottenstein@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 October 29, 2004.