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The Critical Path

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CDR Mary A. Esfandiari — Completing a Year of Deployment

You might have wondered what happened to me when I disappeared from my NASA position last December 2010. In military parlance, I got involuntarily “MOBed”, that is, Mobilized for 400 days/ 350 days BOG (Boots on Ground). I have been a Navy Reservist for about 24 years and although mobilization was always a possibility, it still caught me by surprise. As a Commander and an Aeronautical Engineering Duty Officer, I figured my assignment would be within the Navy’s Air Systems Command.

My assignment turned out to be very different. I have been assigned to the Office for Administrative Review for Detained Enemy Combatants (OARDEC), which is responsible for the conduct of Annual Review Boards (ARB) for detainees held at Guantanamo Bay, Cuba (GITMO). The ARB is an annual board conducted to determine whether the detainee should be released, transferred or continue to be detained. The ARB is a discretionary process that is not required by the Geneva Convention or by U.S. or international law. Detainees are given the opportunity to make a statement and are assigned a Personal Representative to assist throughout the ARB

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The Critical Path with this issue introduces two new “Corners.” Entitled “New Future Changes” (page 12) and “Knowledge Management” (page 13), we plan to have articles on these two Code 400 topics in future editions.

Message from the Director Of



Many congratulations to Ken Schwer and the extended NPOESS Preparatory Project (NPP) team for the successful launch and continuing smooth on-orbit checkout of the spacecraft. The launch of NPP was a long time in coming but was truly a team effort including the Joint Polar Satellite System Program, NOAA, and DoD.

By the time you're reading this, the Mars Science Laboratory (MSL) with the GSFC Sample Analysis at Mars (SAM) main instrument suite will have been launched and be on its way to Mars. SAM is one of the most complex instrument suites ever designed and built in-house at GSFC. Best wishes to SAM PI, Paul Mahaffy, Greg Frazier, and the entire SAM and MSL teams.

As many of you know, Mary Ann Esfandiari, Associate Director for Exploration and Space Communications Projects, has been on active duty for the Navy for the past year serving in Afghanistan and Guantanamo Bay, Cuba. Mary Ann will be returning to GSFC in January and we will all be glad to have her back. Look for an article written by Mary Ann on her experiences over the past year beginning on page 1.

Progress on activities in support of the Creating a New Future initiative continues in full force. Consider Matt Ritsko's selection as the winner of the third annual White House "SAVE" award as just one example. Redesign of the Project Management Development Emprise program is well under way. Most organizations within the Directorate are now using 4-Dimensional assessments and workshops to their advantage. We have developed and documented Operating Standards for all employees. Career path roadmaps are in development as are many other improvements in succession planning and personnel processes. We're really starting to reap the benefits of the initiative.

In closing, I want to wish everyone a happy and joyous Holiday Season and New Year. Don't forget to schedule some down time away from work with your friends and family.

George

PERSONALITY TINTYPE

Jennifer Brill

Born: Rockledge, Florida

Education: AA Commercial Arts, AA Fine Arts

Occupation: Web Development and Graphic Design



Life at Goddard: Jen works on graphics and designs and maintains a variety of mission web sites. Jen began her life at Goddard as a student in 1999. Primarily residing under Code 420 (Earth Science Projects Division), she has also supported dozens of projects over the years. She has maintained the Flight Projects Directorate site for the past decade, along with a supporting cocktail of missions along the way. Some of these have included Aura, Terra, Aqua, LRO, Glory, QuikTOMS, Aquarius, ICESat, GPM, LDCM, GEMS, NPP, SSCO, and others. She has also played a part in unifying the Code 400 web sites. She once coordinated an art show of Goddard employees at 'Community Day'. That experience was especially inspiring, to discover some of the underlying talent of all kinds that resides within the Center. The projects and web sites come and go, but there is a great pride in having played even a small part in these amazing missions. Being in the NASA family is in itself so rewarding, this organization that continuously teaches us about our own world in addition to discovering magic that resides outside it.



Family / Life Outside Goddard: Jen has a five-year-old daughter, Vera, who currently is in the "Rockets" kindergarten class at the Goddard Child Day Care. Vera is a self-proclaimed ninja / superhero (her mother is very proud, naturally). Jen and Vera currently live in a little swamp house in Edgewater, Maryland. Their spare time is often spent gardening, doing house projects, collaborative paintings, crazy dress-up photo shoots, and dance parties in the living room. Jen is also quite fond of alligators, cactus, olives, Scrabble and pie.



(Esfandiari continued from page 1)



Humvee Rollover Training

process. Currently, the ARBs have been on hold while the process is under review by the Obama Administration.

In addition to responsibility for the conduct of the ARBs in GITMO, OARDEC provides key support to the Combined Joint Interagency Task Force 435 (CJITF) Legal Operations Directorate (LOD) at the Detainee Facility in Parwan (DFIP), Afghanistan. This is where I spent the first part of my year deployment. In Afghanistan I served as the Detainee Review Board (DRB) President conducting 543 DRBs using a process very similar to the ARBs. Upon arrival at the DFIP, each detainee has a review board within 60 days and then one every 6 months. DRBs are conducted 6 days/week with about 7-8 boards/day. It is an intense and stressful process.

The Legal Operations Directorate's Mission in Afghanistan is to hold " a transparent, credible, Detention Review Board process at the DFIP consistent with US and international legal standards." The LOD partners with other US agencies and Afghani authorities to transition from an

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intelligence-based Law of War detention to evidence-based detention. The DFIP supports the conversion of Law of Armed Conflict detainees to Afghan national security or to the Government of the Islamic Republic of Afghanistan (GIROA) for criminal prosecution at the Justice Center in Parwan (JCIP).”



Break Time!

Whew! I should have been a lawyer! In fact, this process has a cadre of lawyers (mostly Air Force) that provide support to the DRBs and ensure that the boards are conducted in accordance with the law. The DRBs are not criminal trials. DRB board members carefully review a large amount of information, assess risk, and conduct a board session with the detainee in order to arrive at a decision for continued internment, release or transfer to GIROA's JCIP for prosecution. Each decision is difficult. At the end of each long day we hope we have made the best decision for the security of Afghanistan, the U.S. and our partner coalition countries.

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The DFIP is a fully staffed and well functioning facility that ensures fair and humane treatment of all detainees. Both US and Afghan guards work together to manage the day-to-day operations within the facility. There is an experienced group of interpreters to assist in direct discussions with detainees. The DFIP houses a medical and dental facility where detainees receive regular care and medications, as needed, for conditions such as diabetes, high blood pressure, etc. Through reintegration and rehabilitation efforts, some detainees are offered classes in agriculture, tailoring, and basic languages such as Pashto, Dari and English (reading and writing). During the DRB, detainees are assigned a Personal Representative that works with them to arrange witnesses and address issues. If a release is planned, sometimes a trip to the Battle Space Owner (BSO) is conducted to understand the activities in the area and assess the potential impact of the release. Where possible, the military works closely with Afghan elders, attending their *shuras*, to gain support and reach a commitment on their participation in managing a detainee's return to their village.



Hindu Kush Mountains, Afghanistan

Preparation for deployment to Afghanistan was daunting. Before arriving in the combat zone, I had to complete the Navy Individual Augmentee Combat Training (NIACT) at Fort Jackson, SC. I didn't think my old body could get through it but after 20 days of drill sergeants, wearing full body armor, weapon assembly and disassembly, hours on the shooting range, stress shooting drills, clearing a room/building, emergency medical care, Humvee and Mine Resistant Ambush Protected (MRAP) roll over drills (not really fun), crawling in the dirt, using latrines, and survival skills, I was ready (well,

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sort of). This is the super accelerated Navy version of Army boot camp, or 'NARMY' training as we called it.

Living in Afghanistan was dusty, dirty and stressful. I was stationed in Camp Sabalu-Harrison. The air was constantly dust filled and when the summer warm weather started, strong, dry winds blew daily and obliterated the landscape like fog. Although we were surrounded by picturesque mountains, we rarely saw them. It didn't help that we were burning trash every day, so the 'burn pit' was a regular topic of conversation. Temporary buildings and tents were standard living quarters. Sometimes in the evenings, the camp received 'incoming' alerts, with the 'big voice' telling you to don your 'battle rattle' (body armor gear). After a few of these alerts where I was walking around with all my gear, I realized that few on Camp were 'suited' up and a sort of complacency became the norm. Fortunately, our camp was spared, with a few of the incoming rounds falling just outside the perimeter. A nearby camp was not as lucky.

The food was generally good but the coffee was, well, drinkable but we were never sure exactly what was in it since it never really tasted like coffee. The days of the week blended together with the high tempo work pace. Since there was not much to do during off times (exercise, eat, sleep, read), you quickly get used to working almost every day.

But...aaah.. that part is behind me now! Blue skies, green plants and coffee! To transition out of the war zone, all Navy personnel go through the Warrior Transition Program in Kuwait. And I thought Afghanistan was hot! It was 130°F and we were back in tents for 4 days. What part of this was supposed to be 'decompression'? The good part was that we were able to turn in our weapons and heavy gear and go home with a lighter load.

Right now, I am writing this from Naval Station Guantanamo Bay, Cuba, otherwise known as GTMO. After returning from Afghanistan, I was then assigned to be the Officer-In-Charge (OIC) for OARDEC Forward here in Cuba. It was a very short turn-around so things literally got dumped out of my sea bags from Afghanistan and repacked for a new environment and a different set of uniforms, the desert cammies this time. GTMO is considerably different from Afghanistan with a different set of detainees, and a more complex legal environment. It's green, hot and humid and iguanas roam around every corner. But, the work is similar. After being on hold since early 2009, the US is preparing to restart both the military commissions and the periodic review boards. I expect to leave GTMO in early December, demobilizing from this long year by the end of the year and look forward to being back at NASA/GSFC in mid January.

Whatever I might have thought before embarking on this year long deployment, I can say that I have been impressed with the collaborative and professional nature of everyone within the joint military environment (Army, Air Force, Navy, and Marines) brought together for the difficult and challenging work in both Afghanistan and Cuba. We can be proud of our U.S. military and the work they are doing to not only improve the every day lives and security of Afghani citizens but also to conduct detainee operations with respect for religious and cultural differences.

Mary Esfandiari
Associate Director
Exploration and Space Communications Projects Division / Code 450

MAVEN Reaches West Virginia with Social Media

Anyone who doubts that social media is here to stay should talk to Susan Sparacino, Deputy Project Manager/Resources for the Mars Atmosphere and Evolution (MAVEN) Project, and to teachers at two schools in rural Wayne County, West Virginia. MAVEN Principal Investigator (PI) Bruce Jakosky from the University of Colorado at Boulder's Laboratory for Atmospheric and Space Physics (LASP) went with Susan to Crum Middle School and Tolsia High School in West Virginia coal country. Bruce and Susan spent two days at the schools in late September, with Bruce explaining MAVEN and the search for life on Mars to science classes, all this the natural outgrowth of a Facebook relationship between Susan and her cousin Bonnie Evans, who lives in Crum, West Virginia.

Susan had shared blog postings from the MAVEN PI for her Facebook friends to see. It quickly became apparent that Cousin Bonnie was interested. A retired teacher, Bonnie shared subsequent postings faster than Susan did for the benefit of her students. The cousins hatched the idea for MAVEN's PI to "adopt" Crum Middle School, establishing a relationship that might last until MAVEN's launch in November 2013, and beyond, to MAVEN's insertion into Mars orbit in September 2014, and delivery and processing of science results through April 2016. The middle school students were the focus of attention because of the extended period of MAVEN activity. First communications between the MAVEN Project and Crum Middle School officials were made with Facebook messages. "It felt really odd to be conducting MAVEN business on Facebook, but that's how the first contacts with the Crum principal were made," said Susan.



Students and teachers at Crum Middle School, Crum, West Virginia, with MAVEN PI Bruce Jakosky and DPM/R Susan Sparacino. Everyone's feeling good at the end of a long day.

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Bruce Jakosky explains why we might want to go to Mars, where the conditions exist or may have existed to support life.

Crum, population around 1,000, is a very small collection of homes and stores along US Route 52 in southern West Virginia, just across the Tug River from Kentucky. Bruce agreed to visit before he understood that there are no hotels in the largely wooded mining area. Susan was more than happy to bring him to the region, which is underprivileged in terms of household income. Susan has many family connections and fond memories of visits over a lifetime and considered it a definite privilege to return with the MAVEN PI. They stayed at Cabwaylingo State Forest in cabins built by the Civilian Conservation Corps in the 1930s. The pair drove about 70 miles from the park to Crum, to Tolsia, and back, along main roads in the mountainous area where the Crum and Tolsia students live, and spoke to six classes of science students in each school, about 225 students in all. Bruce, who is accustomed to Rocky Mountains, was struck by the very different, lush roundness of the Appalachians.

“The students asked good questions,” Bruce noted, “including queries about whether I saw a conflict between the MAVEN science and religion. I look forward to continuing interesting science discussions with these students and learning more about their environment as we investigate the atmosphere at Mars.” He is working with the MAVEN’s Education and Public Outreach Office at

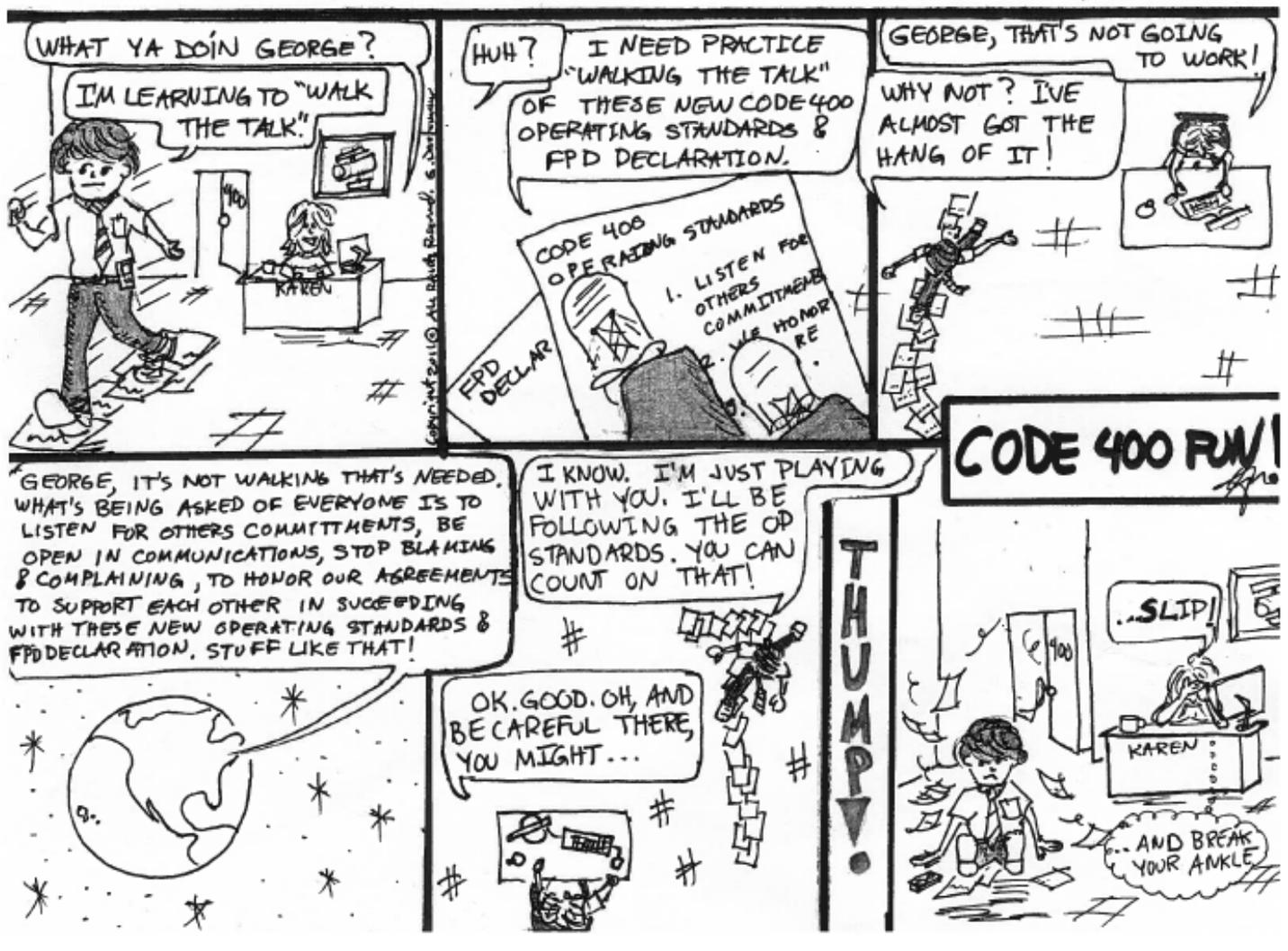
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LASP to develop middle school classroom content that complements the state science curriculum. Teachers and principals are enthusiastic about the continuing relationship, with a potential for exchange between scientists and students on MAVEN-related topics, which are extensive. Bruce expects to repeat his visit.

In the meantime, photos from the visit have been posted to Facebook, where many of the students and their families added "tags." Other earthlings can follow MAVEN's journey to Mars on Facebook, Twitter, and the web. On Facebook and Twitter, check out MAVEN2MARS, and on the web, look for <http://www.nasa.gov/maven> and <http://lasp.colorado.edu/maven>.

Susan M. Sparacino (in conjunction with the Editor)
Deputy Project Manager/Resources
MAVEN Project, Code 432



Matt Ritsko in the News

Fox TV recently had a piece on Goddard's (Code 460) Matt Ritsko. Matt was one of more than 20,000 Federal employees who submitted a suggestion to the annual Federal "SAVE" program (2011) with his idea on how to save the government money in the future. He recently received a message from the White House that his suggestion was one of only four finalists remaining in the competition.

Matt, a member of the most recent PMDE class suggested the creation of a Tool Library (or Tool Shed) where tools and materials can be kept to be reused multiple times by various projects as the need arises, rather than buy new equipment every time. If he is selected, Matt, a 28-year old Financial Manager, will be invited to the White House to discuss his suggestion directly with President Obama.

News Flash!!

Matt Ritsko was selected as the winner of third annual White House "SAVE" Award. Matt will meet with President Obama to discuss his centralized tool repository or "lending library" in the near future. Congratulations Matt!

Cultural Tidbits

Did you Know.....

November is Native American Heritage Month? The official month was first established in 1990. Several states previously endorsed observance days as early as 1915, however establishment of the month was the first national recognition.

American Indians and Alaska Natives are 1.4% of the total U.S population. Eight of ten Americans with Native American ancestry are of mixed ancestry according to the 2000 Census. There are 562 federally recognized tribal governments within the United States. There have been instances of debates at both the state and Federal level within the last 10 years regarding the status of tribal governments and their continued existence.

Remember if you don't know, just ask! Appreciating our diversity and allowing everyone opportunities helps build stronger teams.

Do you have a cultural tidbit to share? Send it to the Code 400 Diversity Council c/o Matthew Ritsko at matthew.w.ritsko@nasa.gov and we'll publish it in a future issue.

Our People, Our Relationships, Our Tools: Creating a New Future Changes!

This corner of the Code 400 Critical Path will be devoted to highlighting the Changes that have been instituted and differences made across the Directorate out of the Creating a New Future initiative. All Code 400 employees are encouraged to submit success stories so all can share in your triumphs!

GOBBS and Code 401

Consistent with the commitment to Create a New Future for Code 400, and in response to employee concerns about having an 'open', 'clear', and 'transparent' process for career progression hiring opportunities, the Goddard Opportunities Bulletin Board System (GOBBS) process is now being used to announce opportunities to get direct experience working on 401 led proposal team efforts. Indeed, as one example, GOBBS was used by Code 401, the Advanced Concepts and Formulation Office (ACFO) to advertise the ASTRE and TESS DPM/R positions. Look for the GOBBS process to be used more in this capacity, creating an 'open', 'clear', and 'transparent' process for career ladder opportunities.

4D and Operating Standards in Action at GOES-R Ground Segment Project

The GOES-R Ground Segment (GS) Project has instituted the Code 400 Operating Standards and is using the 4D approach to measure and improve in all areas. GOES R GS Project improved efficiency by paying attention to team culture (from the small things such as small inexpensive peer awards to say "thank you for the little things you do" to bigger things such as improving the structure and efficiency of our meetings). They also used the 4D Context Shifting Worksheet (CSW) to align their thoughts and practices to tackle real team issues. For example, their effort to alleviate workload stress has led to streamlining monthly project status reviews so it takes less time for staff to prepare and less time to present while maintaining (in fact creates more) focus on pertinent status. PSR presentation time has been reduced by about 40 to 50% from about 5 hours to as little as 2.5 hours. Additional actions related to reducing workload stress are in progress. 4D tools and processes applied to clarifying roles, accountability and authority have improved working relationships across sub-teams in the areas of Software QA vs. Software Engineering, Interface Engineering, Integration and Test (I&T).

The 4D CSW has also been used to align the GOES R GS Project team thinking on their approach to key cross-team activities and processes that have been challenging in the past. For example, I&T oversight planning benefitted significantly from application of processes around the 4D CSW worksheet. Follow-up work clarifying roles, accountabilities and authorities of the nearly 30 stakeholders in execution of I&T is in progress and will serve to maximize efficiency (and reduce potential chaos and frustration) as the GS Project moves

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Knowledge Management Corner

The Knowledge Management (KM) Corner will be a recurring feature of The Critical Path newsletter, providing information about Code 400 activities in support of knowledge sharing and learning, as well as insights into knowledge management and organizational learning within the aerospace industry and within the Federal government.

KM Facts

Question: How many NASA centers have a “Chief Knowledge Officer” position?

Answer: Two. GSFC’s Chief Knowledge Officer is Ed Rogers. JSC’s Chief Knowledge Officer is Jeannie Engle.

At Goddard, the Office of the Chief Knowledge Officer (OCKO) is responsible for assuring that the Center operates as a learning organization. It is responsible for policy and guidance on Lessons Learned, Knowledge Management and Learning Practices. The OCKO provides the Center with knowledge management services and support facilitating the application of knowledge and enhancing Goddard’s development as a learning organization.

>>Read more on the OCKO website: <http://www.nasa.gov/goddard/ocko>

ARTICLE 1

Improved Learning in Projects

Learning is similar to breathing. We do it all the time without putting much thinking into it. Once in a while, however, paying attention to our breathing can help improve our overall performance, whether you are presenting to a room full of people or running a 10K. Just as there is breathing and “improved breathing,” there is learning and “improved learning.”

When you are working on a project, you are learning; however, in an organization such as Goddard, individual learning isn’t good enough. Individual learning is a critical, but insufficient piece of the organizational learning puzzle. As individuals, we learn from one project and move on to the next, taking what we’ve learned and applying it elsewhere. There are things we can do as individuals to enhance our learning experience, including individual reflection. There are also things we must do as an organization to ensure that learning happens on a project and organizational level in addition to an individual level.

Project learning is more than the sum of the individual-learning taking place within a project. Project learning leads to a common understanding of what happened on a project and common lessons learned from the experience. Even though we’re all members of the same project team, when we keep our individual lessons to ourselves, there is a danger of moving on with different interpretations of what happened and why. This means that everyone on the team is not taking away the same lessons, and they do not have a common understanding of what may need to be done next time.

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into the complex I&T phase. Use of the CSW tool has turned skeptics in our team into strong advocates of this approach.

Exercising the Operating Standards: “Get Out On The Field And Into The Game”

The Ground Segment Tiger Team (GSTT) was formed in the winter of 2010 to address concerns regarding the erosion of ground segment related competencies in the civil service across GSFC. This grass-roots effort includes representatives from Codes 100, 300, 400, 500, 600 and 800 and started when managers responsible for staffing activities ranging from building small systems in-house to acquiring and overseeing large, complex systems to be developed by contractors, found themselves struggling to staff up in many areas. In order to regain the strength in the civil service to continue to support missions of all sizes, the GSTT has taken on an effort to identify ground segment competencies, inventory staff available, look at projects in the near- and mid- term and perform a gap analysis. The results of this analysis will be the basis for recommendations to various Directorates and GSFC management in order to sustain ground segment expertise going forward.

The Time is Now

George Morrow has made it clear he wants to see change. If you have an idea for ‘change’, you are invited to participate with the Creating a New Future team, and given George’s intention you’ll have an opportunity to see your change realized.

To get involved, call Robin Krause/416, Bob Menrad/401, or Kevin Carmack/476.

Gerard J. Daelemans
Code 440



Ninth Annual NASA Project Management Challenge 2012

“Evolve and Excel”

PM Challenge 2012 will be held in Orlando, Florida on **February 22-23**. The following web site should answer all questions concerning hotel reservations or how to be an associate/volunteer with the PM Challenge team: <http://www.nasa.gov/pmchallenge>.

For additional questions, contact Pam Trance, PMC Chair at: Pamela.i.trance@nasa.gov.

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For project learning to happen, a team reflection session is necessary. At Goddard, this team reflection session is called a **Pause and Learn** (or PaL). The PaL not only helps individuals think about what they have learned individually, but by talking about it with others, it helps build a collective knowledge (or trans-active memory) of what happened. Even if members of this team never find themselves on the same team again, they will have gained valuable insights by talking about their experiences with fellow team members.



PaL Team Reflection Session

The PaL is done at regular intervals during the project. In a GSFC project context, PaLs should be implemented soon after critical reviews. When PaLs are done consistently within a project, they can strengthen the team by fostering and maintaining open and honest communication within the project. Of course, PaL sessions can be implemented within subsystems or at the instrument level as well.

Key principles of a PaL:

- * Schedule shortly after a key event or project milestone
- * Focus on key questions
- * Open, facilitated discussion
- * No official report generated (it's not a review)

Within the Advanced Concepts and Formulation Office (ACFO), Pause and Learn sessions are now systematically implemented after proposal submission. Insights shared during the sessions are captured through conversation maps, integrated into the Legacy Insights Data System (LIDS) and then used as workshop materials for new capture teams. In other words, within the ACFO, Pause and Learn sessions have become fully integrated within a broader learning process.

Moving Forward

The Flight Projects Directorate now supports a more systematic implementation of PaLs across the directorate. Barbara Fillip is now available to support PaLs across the directorate.

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Project leaders should expect Barbara to approach them with an offer to integrate PaL sessions in project work plans as an activity to implement shortly after major reviews (and wherever else they may provide value).

Background to the PaL Process

- * Pause and Learn (Brochure):
http://www.nasa.gov/centers/goddard/pdf/431367main_PaL%20Brochure.pdf
- * Ed Rogers, "[Introducing the Pause and Learn \(PaL\) Process: Adapting the Army After Action Review Process to the NASA Project World at the Goddard Space Flight Center](#)," Revised June 8, 2006.

Recommended Reading

- * "I Don't Have Time to Think!" versus the Art of Reflective Practice, by Joseph A. Raelin, <http://www.global-leader.org/Reflective%20Practice%20Article.pdf>
(A short paper about the critical role of group reflection in workplace learning)

ARTICLE 2

Cases for Learning

A Case Study is a narrative, based on actual events, that creates an opportunity for conversation, problem analysis, and virtual decision making. The Office of the Chief Knowledge Officer has developed case studies (see the Case Study Collection in the library's Digital Repository) addressing a broad range of project management issues. These cases are integrated in training sessions (such as the Road to Mission Success Workshop Series and Goddard's annual Masters Forum), as well as informal workshops open to all across Goddard.

The Summer/Fall 2011 Case Studies workshop series featured a mix of NASA cases (Challenger and Columbia) and Goddard-specific cases (TDRSS, MSES, and CALIPSO).

The last in the series, the CALIPSO Propulsion Safety Launch Decision case study, was held on November 17, 2011. A Winter/Spring 2012 series will be announced shortly. Keep an eye out for additional information in Dateline.

Case Study Highlight: The CALIPSO Propulsion Safety Launch Decision

CALIPSO (Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations) was designed as a pioneering tool for observing and measuring clouds and aerosols.

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(KM continued from page 16)

A design issue involving a risk of leaks and related safety hazards resulted in the NASA Engineering and Safety Center (NESC) being called to provide an independent review of the Proteus spacecraft bus. Although a waiver was written based on the NESC report and a redesign was not deemed necessary, the leakage risk continued to be carried as a red risk on CALIPSO's residual risk chart. How did the project get to that point? What was the broader context within which this technical issue failed to be resolved to everybody's satisfaction? You'll need to read this six-page case to get the whole picture. In the meantime, here are some lessons highlights:



Artist's Concept of CALIPSO

This case offers valuable lessons related to:

- * the need to handle problems as early as possible in the project life cycle rather than let them evolve into major headaches;
- * the need for partnership roles to be clarified early and often to avoid misunderstandings;
- * the role of contracting arrangements in explaining the behaviors and attitudes of critical partners;
- * how precedent can become a liability (e.g., "it's worked fine before, why is it suddenly an issue?").

Keywords: risk management; safety; international partnerships.

This case was presented at the NASA Supply Chain Conference on October 19, 2011, and at the November 17 Case Studies Workshop Series event. Are you interested in developing a case study or identifying an existing case to use in a training or workshop? Call the Office of the Chief Knowledge Officer.

For this and more cases, visit the Case Study Digital Library in the Goddard Library Repository. <http://gsfcir.gsfc.nasa.gov/casestudies>

Barbara Fillip
Program Manager/Library Associates, Code 100



NASA Ranks #5 in Best Places to Work in the Federal Government

Colleagues:

Today, the Partnership for Public Service released the 2011 “Best Places to Work in the Federal Government.” NASA remains highly ranked at #5 for the second year in a row.

NASA Goddard was also highly ranked among Agency Subcomponents, placing 11th amongst all the Agency Subcomponents (240 in total). Goddard was also ranked in several “Best in Class” categories. In addition to retaining our #2 ranking for “Support for Diversity,” we also made several upward shifts in the following categories:

- Employee Skills/Mission Match - ranked #2 (#6 in 2010)
- Teamwork - ranked #5 (#10 in 2010)
- Effective Leadership - ranked #6 (#7 in 2010)
- Training and Development - ranked #7 (#9 in 2010)
- Strategic Management - ranked #12 (#21 in 2010)

Goddard’s ranking in this survey is a direct result of the commitment we all share to the work that we do here, as well as a reflection of our ongoing efforts to create an environment at Goddard that embraces teamwork, innovation and inclusiveness. We will continue to utilize these employee survey results to ensure continued focus on those areas that need attention while capitalizing on our strengths.

While we know we have many challenges ahead of us, we should all be very proud of this recognition.

The complete listing of the rankings and scores for federal components is available at <http://www.bestplacetowork.org>.

Rob Strain
Center Director

Space Flight Awareness Leadership Award

The Space Flight Awareness Leadership Award is intended for recognition of mid-level managers who consistently demonstrate excellence in support of NASA's Human Spaceflight Programs. The award is reserved for only the most outstanding leaders who exemplify characteristics necessary for flight safety and mission success.



Center Director Rob Strain presents Robert Calvo with the Space Flight Awareness Leadership Award on Monday, September 12, 2011

Robert, or Bob, Calvo, as the Chief Safety and Mission Assurance Officer within the TDRS project office, lead for the K,L program, is a prime example of an exceptional leader. The K,L program has encountered challenges since it began in January 2008. The contract approach was unique in comparison to most of Goddard's experience base. When Bob came to the program in August 2009, he immediately set to work with his team, the Prime Contractor of the program, and the Defense Contract Management Agency (DCMA), developing a game plan to untangle significant challenges. He invested himself heavily, working long weeks and weekends. He listened to the Prime Contractor and worked with teams from Codes 300 and 500 to broker workable solutions. Bob used his strong, effective leadership skills to ensure constant, positive progress. Bob's attention to detail, his appreciation of diversity and respect for all contributors to the program have ensured that the Third Generation TDRS spacecraft will be as reliable as the First and Second Generations.

Robert H. Goddard Honor Awards

The Robert H. Goddard Honor Awards Ceremony was held on Thursday, November 29, 2011. Noted below are awards to Code 400.

EXCEPTIONAL ACHIEVEMENT AWARD (INDIVIDUAL)

Jill McGuire (442)

For outstanding leadership, dedication and technical expertise in the development of astronaut and robotic tools for in-space servicing.

Brian Roberts (Jackson & Tull/442)

For unwavering dedication behind, above, and beyond the scene to develop Goddard's world-class robotics simulation and demonstration facility in support of servicing.

Joseph Easley (SGT/442)

For your tireless effort to continually improve and enhance the capabilities of Goddard Satellite Servicing Demonstration Facility robotic simulation laboratory.

ENGINEERING (TEAMS)

Robotic Refueling Mission Team

For unparalleled dedication, technical expertise, and collaboration delivering the groundbreaking Robotic Refueling Mission demonstration for STS-135 launch to the ISS.

JWST ISIM Structure Team

For your ground breaking, technology advancing, and overall outstanding achievements in developing and delivering the ISIM Structure.

JWST ISIM Remote Services Unit Development Team

For Outstanding Engineering in the Design and Development of the Flight JWST ISIM Remote Services Unit (IRSU) with "First Pass Success".

PROFESSIONAL ADMINISTRATIVE (INDIVIDUALS)

Lisa Hoffmann (400)

For exceptional achievement in improving the FPD productivity and enabling our success toward NASA's mission.

Linda Landini (420)

For your dedication to assuring the funding and financial management for the NASA-wide Conjunction Assessment Risk Analysis process.

(Awards continued on page 21)

(Awards continued from page 20)

Ramona Truss (SGT/432)

For your exceptional achievement in implementing the MAVEN Project's Earned Value Management System.

PROFESSIONAL ADMINISTRATIVE (TEAMS)

JPSS Ground Project Resources Management Team

For your outstanding commitment to quality and service in support of the Joint Polar Satellite System's Ground Project.

CUSTOMER SERVICE (INDIVIDUAL)

Adrienne Alessandro (Aero Systems/440)

For your vision, professional temperament, proactive "can do" attitude, and extensive knowledge of the customer's needs for the Robotic Refueling Mission launched on STS-135.

Michael Flynn (ASRC/440)

For outstanding and distinguished customer support, going above and beyond all expectations to produce critical solutions and build excellent customer relations with the team.

Frank Eastman (NOAA-JPSS/470)

Frank Eastman is recognized for leading a multi-agency effort to capture the customer needs for environmental data requirements for the Joint Polar Satellite System (JPSS).

CUSTOMER SERVICE (TEAMS)

HST Automated Operations Development Team

In Recognition of Outstanding Customer Service in the Development, Delivery, and Operation of the Hubble Space Telescope Automated Operations Development Capability.

LEADERSHIP

Ardeshir Azarbarzin (442)

For your commitment to the success and growth of the Global Precipitation Mission Project Team.

William Ochs (443)

For Outstanding Leadership of the Landsat Data Continuity Mission.

(Awards continued on page 24)

Sample Analysis at Mars: Developing analytical tools to search for a habitable environment on the Red Planet

Mars provides one of the most accessible locations in our solar system outside Earth into geological and geochemical windows through which to view planetary evolution from billions of years in the past until the present. Successful missions in the past decade to both study Mars from orbit and to land on its surface have dramatically advanced our understanding of our neighboring cold but volatile-rich planet.

Taking advantage of nearly every recent launch window that presents itself every 2.135 years, the 'follow the water' theme has been vigorously pursued as a first exploration step most relevant to the driving question of the possibility of past or present microbial life on Mars. With this exploration directive, the global distribution of near surface water ice and hydrated minerals was mapped from orbit by NASA's Odyssey spacecraft using measurements of the energy distribution of cosmic ray generated neutrons produced from the near surface. High latitude regions were inferred to be typically composed of more than 50% water ice in the top tens of centimeters of soil.

Hard on the heels of this discovery, the Mars Exploration Rovers Spirit and Opportunity found convincing evidence at mid latitudes but on opposite sides of the planet of aqueous alteration by liquid water. This evidence came in the form of minerals (jarosite, goethite, and opaline silica) formed by aqueous transformation and also in the form of signatures of water flow revealed in return images of cross-bedding in sedimentary layers from the rover cameras. The Phoenix high latitude lander mission trenched down through surface soil to an icy layer and provided ground verification of the Odyssey measurement.

More recent observations from high resolution orbiting telescopes and imaging spectrometers have resulted in better understanding of the surface transformations over the history of Mars by water, giant impacts, volcanoes, winds, and the large scale movement of surface ice caused by the periodic variations in the planet's axial tilt (its obliquity). Rich assemblages of phyllosilicates (clays) and hydrated mineral layers continue to be revealed in many locations by imaging spectrometers on both the European Mars Express Mission and NASA's Mars Reconnaissance Orbiter.

An emerging paradigm now paints a picture of an early wetter Mars that enabled clay formation in a more neutral chemical environment than the following more acidic sulfur dominated surface environment produced by immense volcanic activity. Exposure of ancient terrains and the lack of plate tectonics for much of the history of Mars suggest that geochemical windows into the distant past may be preserved in the near-surface so that future surface landers and rovers may be able to explore the environmental conditions necessary for life in ancient sites.

The Mars Science Laboratory (MSL) now planned to be sent on its way to Mars in the 2011 launch opportunity is designed to explore habitability with a large heavily instrumented rover.

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The Sample Analysis at Mars (SAM) instrument suite will take up more than half the science payload on board the MSL rover and feature chemical equipment found in many scientific laboratories on Earth. Provided by Goddard Space Flight Center, Sample Analysis at Mars will search for compounds of the element carbon, including methane, that are associated with life and explore ways in which they are generated and destroyed in the Martian ecosphere.

After landing, MSL will be able to traverse 10's of kilometers over the 2-year mission lifetime (one Mars year) and access specific sites that have been identified from orbit by imaging and spectroscopy measurements. The MSL primary science goals are (1) to assess the past or present biological potential at the targeted site, (2) to characterize the site's geology at various spatial scales, and (3) to investigate other planetary processes that influence habitability.

The MSL mission moving beyond the 'follow the water' theme seeks an even more detailed understanding of the history of the Mars environment and how significant transitions in this environment might have impacted potential habitants for even the simplest microorganisms or even their chemical precursors.

Dust storms on Mars are predicted to enhance the abundance of hydrogen peroxide in the atmosphere to the point where it accumulates on the surface. A first order question for MSL is whether organic compounds produced by early or current biological processes, by abiotic processes, or even delivered from space by meteoritic infall can be preserved in what is likely to be this oxidizing surface environment. MSL will not only search for these organic compounds but will also inventory other chemical building blocks of life containing carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur compounds.

Regardless of the fate of ancient or recent reduced carbon compounds in the Martian soils and rocks, the chemical processes that might destroy or preserve organic compounds must be understood and so MSL intends to study the geology and chemistry in detail to interpret processes that have formed and transformed rocks and regolith.

Planetary process that impact habitability such as climate change and loss of a portion of the atmosphere over time will be explored by MSL by signatures of these processes in isotopic composition, particularly in the inert noble gases in the atmosphere.

MSL will be launched in late 2011 on an Atlas V 541 rocket as the The Critical Path goes to press. Its entry, descent, and landing (EDL) through the thin atmosphere of Mars in the late summer or fall of 2012 will utilize first a heat shield to slow down the entry vehicle during a guided descent, then deployment of a large supersonic parachute followed by a powered descent, and finally tethered release of the MSL rover directly onto its wheels from the descent stage hovering several meters above the surface. This final sky crane touchdown system is intended to enable a soft landing for the ~900 kg rover, since airbag technology of the type used to protect the MER landers after their release from their parachute is not suitable for this size vehicle.

(SAM continued on page 24)

(SAM continued from page 23)

The nominal mission duration is one Mars year (2 Earth years) although an additional exploration period may be realized in an extended MSL mission.

MSL has the range of analytical tools to search for windows that could preserve evidence of the nature of ancient environments. Exploration at the MSL landing site is not limited to the search for organic compounds, but is planned as a systematic in situ examination of geomorphology, microscopy, mineralogy, chemistry, and isotopes over an extended area on the surface of Mars where hypotheses regarding habitability and geological processes can be tested with multiple experiments in diverse locations. The in situ studies will be well supported by orbital imaging and spectroscopic data. We anticipate that the MSL investigations will provide a significant step forward in exploring the processes that have shaped Mars and in our understanding of the present or past biological potential of the selected landing environment.

Paul Mahaffy
Supervisory Research Scientist
Code 699

Abstracted from an article written for The Geochemical News.

(Awards continued from page 21)

QUALITY AND PROCESS IMPROVEMENT (TEAMS)

JPSS Information Technology Systems Team

The JPSS IT Systems team successfully delivered secure repository systems that enable the JPSS Program to function as a highly performing mission.

ROBERT H. GODDARD AWARD OF MERIT

Donald Carson (432)

In recognition of an exceptional 28-year career of outstanding support to the Goddard Space Flight Center, a well-executed mission.

Marco Toral (454)

For your outstanding contributions during your 25 years of service to the Tracking and Data Relay Satellite Project.

Social News

Congratulations to Bob Ritter (OSC/442) on becoming a first time Grandpa. The proud parents, Chris and Rebecca Ritter, welcomed Mickaela Ritter on September 2, 2011. Mickaela was 9 lbs. 1 oz. and was 23 inches long.

Karen Jones (formerly of Code 440) welcomed new grandson, Ryder Lane Hudson on September 6, 2011 at 3:11 p.m. He was 7 lbs. 3 oz. and 18 inches long. Big sister, Mia, is beside herself.

Debbie Cusick (Code 408) and husband Jim (QINETIQ, Code 540), recently became the proud grandparents of grandchild #11. The proud parents, Rick and Brea Bartley, welcomed Brayden Richard on September 23, 2011, at 6:02 p.m. He was 7 lbs. 7 oz. and was 20 $\frac{3}{4}$ inches long.

Maggie (Code 441) and Kyle Hagen are the proud grandparents of a new granddaughter, Piper Lee Hagen, born on October 29, 2011, at 9:48 p.m. weighing in at 6lbs. 11 ozs. and 19 $\frac{1}{4}$ inches long. Piper joins two sisters, Summer and Taylor, and a brother, Hunter. Baby, Mom and Dad (Chad & Holly Hagen) are doing fine.

Congratulations and best wishes to Pietro Campanella (Code 460), his wife Marianne, and their daughter Keira (age 4). They welcomed Gianna Rose into their family through adoption on October 9, 2011. She was born on October 7, weighing 6 lbs. 11 oz. and measuring 19 $\frac{3}{4}$ inches long.

Jaime Kline and husband, Matt (SGT, Code 422) are the proud parents of Olivia Louise, born October 17, 2011, at 11:21 a.m. She weighed 7 lbs. 8 oz. and was 19 $\frac{3}{4}$ inches long.

October 31 brought out a knight, maiden, PAC in Black, cat, witch, flapper girl, hockey player, power ranger, and a monk for the annual Code 450 Halloween party. Food, fellowship, fantastic characters and a \$55 donation to the Combined Federal Campaign (CFC) made the event purposeful.

One More Group Achievement Award

The Critical Path (TCP) inadvertently omitted one 2011 Agency Award from the past issue of the TCP. Apologies to the members of the team mentioned below:

Solar Dynamic Observatory Ground System Team

For outstanding teamwork in the successful development, test and operations of the SDO Ground System.

Comings & Goings
September 1 through December 31, 2011

Comings:

- * Michael Delmont to 460/Explorers & Heliophysics Projects Division, Deputy Program Manager
- * Felicia Jones-Selden detail to 400/FPD Deputy Director
- * Laura Williams to 403/Flight Projects Directorate Business Management Office, Resource Analyst
- * Holly Bryant detail to 474/JPSS Ground Project, Resources Position

Goings:

- * Joyce King detail to 505/Instrument Systems and Technology Division, OSIRIS-REx
- * David Scheve detail to 500/AETD Deputy Director
- * Don Carson retires from 432/MAVEN Project, Deputy Project Manager
- * Stephen Ambrose resigns from 401/Advanced Concepts & Formulation Office, Study Manager to NOAA
- * Timothy Dunfee to 703/Business & Investment Management Office, Resources Management Officer
- * Barry Bruce retires from 441/HST Operations Project, Mission Operations Contract Manager
- * Lyle Tiffany retires from 429/NPP Project, Deputy Project Manager—Resources
- * Joe Dezio retires from 460/Explorers & Heliophysics Projects Division, Deputy Program Manager

Lisa Hoffman, Administrative Officer
Code 400

Jack Townsend

Former Center Director Jack Townsend (1987-1990) passed away at age 87. Mr. Townsend, one of Goddard’s first employees in 1959, helped determine the direction of its research said Dr. Frank McDonald a long serving Lab chief at the Center. Mr. Townsend also served as Deputy Center Director from 1965 to 1968.

Quotes To Think About

“Nobody but cattle knows why they stampede, and they ain’t talkin.”
Texas Wisdom

“It is in silence that new thoughts come.
If we divert the mind with too much distraction, it becomes scrambled like eggs.”
– Beatrice Wood – writer (at 100)

Sports reporter interviewing golfer Jack Nicklaus:
“Jack, you’re the greatest golfer of all time. You really know
your way around the course. What’s your secret?”
“The holes are numbered.”
– Jack Nicklaus (with a shrug)

“Nature has given men one tongue, but two ears, that we may hear
from others twice as much as we speak.”
– Epictetus

“This grand show is eternal. It is always sunrise somewhere;
the dew is never all dried at once; a shower is forever falling;
vapor is ever rising. Eternal sunrise, eternal sunset, eternal dawn
and gloaming, on sea and continents and islands,
each in its turn, as the round Earth rolls.”
– John Muir

Nancy White

The editorial staff of The Critical Path was deeply saddened to learn of the sudden passing of its long time (more than 13 years) Production Assistant, Nancy White. Although ill this past year, Nancy always displayed courage and optimism and was in frequent contact with her colleagues in Code 403. Nancy had served as a contractor for approximately 35 years at the Center. We shall all miss her dearly.

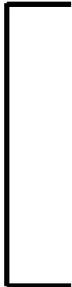




The staff of the Critical Path wishes everyone a very happy and safe holiday season.

FUTURE LAUNCHES CY 2011	
MSL / SAM	NOVEMBER 25
FUTURE LAUNCHES CY 2012	
Nuclear Spectroscopic Telescope Array (NuSTAR)	FEBRUARY
Tracking and Data Relay Satellite-K (TDRS-K)	APRIL
MetOp-B (non-NASA)	APRIL
Radiation Belt Storm Probes (RBSP) Mission	AUGUST
Space Environment Test Beds (SET-1)	OCTOBER
Interface Region Imaging Spectrograph (IRIS)	DECEMBER
Landsat Data Continuity Mission (LDCM)	DECEMBER

ATTENTION INTERNET BROWSERS:



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 — In April, August, and December —

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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: 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 April 2, 2012.