NASA as an agency is getting futuristic—and not just in the realm of space and exploration.

In the coming months, Johnson Space Center team members will notice changes in security measures being implemented on site, all because of Homeland Security Presidential Directive (HSPD) 12. The directive mandates that all government agencies will implement security controls and measures under the direction of the National Institute of Standards and Technology.

And while you won't be seeing machines that scan your retina to allow access into buildings, as you may have read in popular science-fiction books, new technologies will usher JSC to the cutting edge of safety and security.

The advent of the smartcard, a badge equipped with a computer chip to store information, will ensure greater controls for both the physical and Information Technology (IT) environment at JSC.

"We will have identities that are thoroughly vetted and validated for every individual that accesses a NASA system, facility or information. We're required to make sure that each individual has the proper investigation or background check," Lynn Vernon, JSC HSPD 12 Implementation manager and chief of Information Systems and Applications Division, said.

With a common identity across all government agencies, access to other centers or government institutions will be easier. JSC team members visiting other centers can use the same badge to get in and will not have to undergo any additional background checks. Those moving between centers will have significantly less interruption when accessing IT systems and data.

Prior to HSPD 12, NASA was already embarking on several agency initiatives to help improve the overall security posture and capabilities of the agency. HSPD 12 is emphasizing the need for NASA to create an integrated agency architecture, which will create spin-offs such as an agencywide system to manage all computer accounts.

"The other element you will see is you will now have to use your smartcard to get to the systems that you normally get to today with an ID and password," Vernon said. "We will require you to plug your smartcard into your computer before you can actually get on the system and get to any NASA data." This will improve security while providing users a simpler method of getting to their systems.

The smartcards will also contain security data specific to each employee.

"The agency's getting ready to do a 'Create an Identity' process. To get someone a credential right now, their identity has to be created first," Scott Robinson, JSC Security lead, said. "Once a person's identity is created, it's then pushed over into the badging system. That person must appear before one of our badge clerks and present the two forms of I-9 data. A smartcard will capture two of their fingerprints, and the other biometric for the card is the facial image."

Once the individual's background check is complete, fingerprints will then be matched up to the person before their smartcard is activated.

"There is a layer of security that was not there before," Robinson said. "You can rest assured knowing that the person coming through the gate or getting access to your systems has been cleared or properly vetted."

HSPD 12 is being introduced in phases. The current re-badging effort for civil servants and contractors is just the first step in obtaining the proper background checks and verification of two forms of I-9 data. The smartcards will be issued to all permanent employees with an expected completion date of October 2007.

Management is looking to implement HSPD 12 with as little disruption to the workforce as possible. Although such a widespread change will pose challenges, JSC is already one step ahead in anticipating obstacles and working to prevent issues before they arise.

"The key is that we have to meet the policy and requirements of HSPD 12. But we want to implement this smartly across the agency," Vernon said. "Our goal is that we will not do anything to break our budget, break our centers, break our programs or our mission. That comes first. We will look at how to take the big picture and execute chunks in a reasonable fashion to minimize the impact."

For more information on HSPD 12, visit the JSC Security Web site: **http://www6.jsc.nasa.gov/ja/news/newsfiles/1993.doc**

HSPD 12: What's in it for me?

How will HSPD 12 improve the center and its operations?

HSPD 12 is designed to enhance security, increase efficiency, reduce identity fraud, protect personal privacy and increase mission success.

What changes will I notice as HSPD 12 is implemented?

- There will be changes to "in processing" processes and procedures for all civil servants, contractors and partners.
- Everyone who has a permanent badge today will be issued a smartcard badge.
- Employees will all have, at the minimum, an NAC-I background investigation.
- Anyone who gets access to an IT system or application must first have a validated identity.
- Access to IT systems and applications will be controlled more tightly than ever before.
- All systems and applications will be retrofitted to accommodate two-factor authentification, or two forms of proof for access, such as a smartcard and a PIN or password.
- NASA will adopt a Cyber Identity Management System, which will work as a new glorified X500 phone directory. This system will take all the validated identities and provide improved information for every individual.

STS-115 CONCLUDES A WHIRLWIND MISSION

by Catherine E. Borsché

After a picturesque night landing, Space Shuttle *Atlantis* returned to Earth Sept. 21, ending a jam-packed 12-day mission that reignited International Space Station assembly efforts and also tested NASA's crunch-time decision-making capabilities.

While hurtling through 4.9 million miles of space, STS-115 delivered and installed the massive P3/P4 truss, an integral part of the station's backbone, and two sets of solar arrays that will eventually provide one-quarter of the station's power.

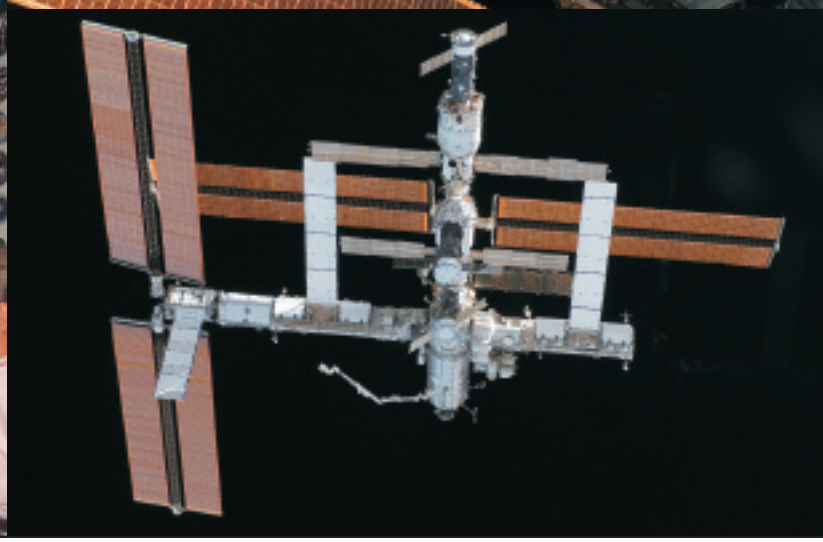
Atlantis' Commander Brent Jett, Pilot Chris Ferguson and mission specialists Joe Tanner, Heidemarie Stefanyshyn-Piper, Dan Burbank and Steve MacLean, a Canadian astronaut, were excited to be part of this historic effort. After landing, Jett said to Mission Control at Johnson Space Center, "Thanks, Houston. It's nice to be back. It was a great team effort, so I think assembly's off to a good start."

The flight was the first in a series of missions that will be among the most complex in space history. *Atlantis* delivered the first major new component to the station since 2002 and laid the groundwork for upcoming station assembly missions.

STS-115 is one of the most photographed shuttle missions ever, with more than 100 high-definition, digital, video and film cameras documenting the launch and climb to orbit. Data from these images, as well as station and shuttle crew inspection, helped to clear *Atlantis*' thermal protection system for return only two-and-a-half days after launch.

Tanner, Piper, Burbank and MacLean, with the help of crewmates, made three spacewalks that completed truss installation, enabled solar arrays to be deployed and prepared an important radiator for later activation. They also installed a signal processor and transponder that transmits voice and data to the ground and performed other tasks to upgrade and protect the station's systems.

A new procedure called a "campout" was implemented, in which astronauts slept in the Quest airlock prior to their spacewalks. The process shortens the "pre-breathe" time during which nitrogen is purged from the astronauts' systems and air pressure is lowered so the spacewalkers avoid the condition known as the bends. On each of the three spacewalks, the astronauts were able to perform more than the number of scheduled activities.



Top left: ***The Sept. 9 launch of Space Shuttle* Atlantis *is reflected in nearby water.***

Bottom left: ***STS-115 and Expedition 13 crew members enjoy a light moment in the station's Unity node.***

Top right: ***Mission specialist Heidemarie Stefanyshyn-Piper can be seen working at one of the space station trusses in the center of this photo, taken during the final spacewalk of the mission.***

Bottom right: ***This view of the space station was taken shortly after* Atlantis *undocked from the orbital outpost.***

The astronauts performed unprecedented robotics work. They used the shuttle's arm in a delicate maneuver to hand off the school bus-sized truss to the station's arm. The 45-foot truss weighs 35,000 pounds. The arrays at the end of the truss extended to their full 240-foot wingspan once they unfurled on Flight Day 6. The astronauts also moved the station's robotic arm to a position where it will assist in the next phase of station construction.

After *Atlantis* undocked from the station, it did the first full fly-around of the facility since prior to the Space Shuttle *Columbia* accident. The maneuver helped ground crews get a better perspective on the station's environment and overall exterior health.

On Flight Day 11, the crew and Mission Control were tested when an unidentified object was observed in close proximity to the spacecraft following standard tests of *Atlantis*' reaction control system. Flight controllers and engineers got together to analyze the situation, and Mission Control then determined that a thorough inspection of the heat shield was warranted before clearing the shuttle to land.

The astronauts used cameras on the shuttle's robotic arm to conduct the scans, and imagery specialists and engineers reviewed the data from previous activities. These specialists did not see any areas of concern from the first inspection, but decided to do a more complete inspection with the Orbiter Boom Sensor System to ensure *Atlantis*' safe return. Their combined teamwork and quick thinking showcased the professionalism of the entire shuttle team and NASA's commitment to safety.

Canadian Prime Minister Stephen Harper made a call during the mission to astronaut Steve MacLean to congratulate him on being the first Canadian to operate Canadarm2, the station's Canadian-built robotic arm.

After undocking, the *Atlantis* crew participated in a first-ever three-way call with the Expedition 13 crew aboard the station and the three crew members of the Soyuz spacecraft on their way to the station. All 12 astronauts in space at that time were able to have a conversation.

With *Atlantis* and its crew safely home, the stage is set for the next stage of station assembly. Preparations continue for Space Shuttle *Discovery*'s launch, targeted for December, on the STS-116 mission to deliver an additional truss segment and a cargo module to the station. *Discovery* will also do extensive work on the station's electrical and cooling systems.

Connecting the next generation of explorers to the moon, Mars and beyond

Taking learning to the extreme

by Debbie Nguyen

FOR STUDENTS, a field trip usually entails a visit to the museum, the zoo or the park.

But through NASA's Digital Learning Network (DLN), more than 10,000 students nationwide can add the desert, the ocean floor and Antarctica to their field trip.

Johnson Space Center's hub of the DLN uses video conferencing and webcasting technology to send classrooms on virtual field trips to these extreme environments, where they are connected to NASA scientists and engineers on research expeditions. In addition, each participating school is allowed to ask the experts questions. NASA team members and the public can also observe the webcast sessions.

JSC's DLN team hosts about 650 DLN events per year, reaching nearly 26,000 students. To better equip the students for these exotic locations, the DLN also provides educators with pre-event classroom activities that are aligned to the missions' objectives and national education standards.

"These connections are teaching today's students to explore their own backyard, the Earth and how it correlates with ventures to the moon, Mars and beyond," said Erika Guillory, a DLN education specialist. "We're showing them just how accessible these future missions are now."

Prior to some of the connections, the DLN team of videographers, producers and a field host will travel to the site, set up the connection and line up experts. In the meantime, the television director, on-camera host, technical specialists and NASA subject-matter experts prepare in the DLN studio, housed in the Space Vehicle Mockup Facility at JSC.

"Once the lights go on, we're live from beginning to end," said Don Caminati, the DLN's television director and technical specialist. "It takes a lot of choreography. We've connected schools from as far as Maine and Alaska to Antarctica."

For the past three years, the DLN has taken classrooms to Arizona's Meteor Crater for the Desert Research and Technology Studies, or Desert RATS, project. Though far from Mars, students hear from the experts about how NASA is using the desert's rough terrain and temperature extremes as a test bed for prototypes of future spacesuits, robots and rovers.