Safety & Mission Assurance News

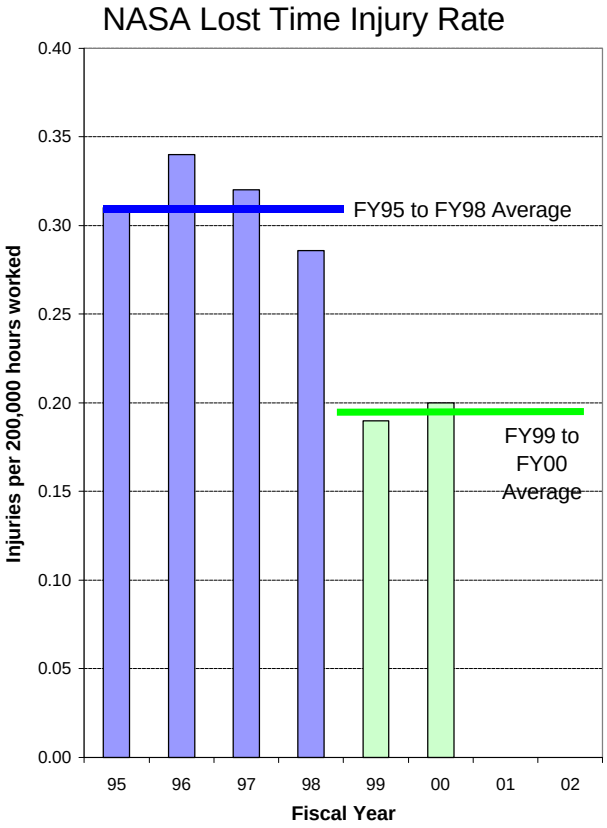
Mission Success Starts With Safety

January 2001

Are We There Yet?

--Frederick D. Gregory, Associate Administrator for Safety and Mission Assurance

Two years ago, NASA set a goal to be the Nation's leader in safety and health, with an ultimate goal of attaining a mishap rate of zero. We outlined four core process requirements—management commitment and employee involvement, system and worksite hazard analysis, hazard prevention and control, and safety and health training—to structure our effort. We prescribed a three-step process—a preliminary self evaluation, a second evaluation involving employees and supervisors using the Performance Evaluation Profile (PEP) survey tool, and pursuit of independent third-party evaluation and certification—to help implement the core process requirements.



After two years, where do we stand? This chart shows that our lost-time injury rate has improved significantly since we began the Agency Safety Initiative. But now, the rate has stagnated.

We must increase the momentum to achieve the culture

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NASA's Agency Safety Initiative

--Jim Lloyd

Since February 1999, NASA has placed a greater emphasis and focus on enhancing the Agency safety and occupational health program. NASA senior managers met to hammer out a new fundamental value for NASA and a priority consideration for all decisions involving the safety and health of anyone connected with a NASA program or operation. Two very important symbols of NASA's commitment to this new value came out of that meeting—a motto and a poster. "Mission Success Starts with Safety" resonated with senior management's belief in the thrust of the safety focus.

Everyone should strive for mission success, but the quest for mission success must not compromise the quest for performing that mission safely. The motto also conveys the expectation that safety concerns need to be addressed in the initial stages of any program or operation so that those concerns are properly understood and suitably mitigated

Senior management carefully designed and approved the poster to depict the safety hierarchy. Our direct attention and commitment to safety benefits:

- The public, whose safety is paramount.
- Our astronauts and pilots, who accept a higher level of personal risk when performing their flight duties on our research aircraft and our space vehicles.
- Our work force, whose daily work involves some of the most energetic and hazardous materials and chemicals in existence.
- Our high-value equipment and property, whose loss could endanger America's access to space.

See ASI, p. 6

OSMA's Enterprise Point of Contact/Center Point of Contact System *--Pam Richardson*

During the spring of 2000, the Enterprise Safety and Mission Assurance Division created the Enterprise Point of Contact/Center Point of Contact (EPOC/CPOC) program. The EPOC/CPOC program is designed to provide continuity for SMA programs and operations by providing a single OSMA point of contact for each Enterprise and Center. The EPOC/CPOC program was designed by OSMA management and staff, with input from the Center SMA community.

The current EPOC's are:

- Human Exploration and Development of Space (Code M), Bill Hill
- Aerospace Technology (Code R), Pam Richardson
- Space Science (Code S), Pat Martin
- Earth Science (Code Y), Phil Napala

OSMA has not yet named a point of contact for the new Biological and Physical Research Enterprise (Code U).

The current CPOC's are:

- Ames Research Center, Pam Richardson
- Dryden Flight Research Center, Pam Richardson
- Glenn Research Center, Pam Richardson
- Goddard Space Flight Center, Phil Napala
- Jet Propulsion Laboratory, Pat Martin
- Johnson Space Center, Mike Card
- Kennedy Space Center, Bill Hill
- Langley Research Center, Pam Richardson
- Marshall Space Flight Center, Roger Mielec
- Stennis Space Center, Roger Mielec

If you have any questions or need any information from OSMA, the first place to go is to your EPOC/CPOC. The EPOC/CPOC is well versed in the programs, budget, and issues of his or her Enterprise or Center. We also actively encourage Center SMA Directors to work closely with the CPOC to establish better information flow and to improve communication between OSMA and the Center's SMA organization.

EPOC's and CPOC's also provide information to OSMA senior management in their area of responsibility. This includes SMA program implementation, Annual Operating Agreements, and funding issues that may compromise safety or mission success.

A complete description of the functional responsibilities for EPOC's and CPOC's can be found on the OSMA website, http://www.hq.nasa.gov/office/codeq/epoc.htm

OSMA Implements Integrated Mission Assurance Review (IMAR) Process for Science Missions *--Pat Martin*

The Office of Safety and Mission Assurance (OSMA) developed the prelaunch Integrated Mission Assurance Review (IMAR) process for science missions to assess and confirm satisfactory completion of all the SMA activities that are necessary to provide an acceptable level of confidence in mission success. The IMAR covers the spacecraft and instruments, mission operations, and launch services. During the IMAR, participants demonstrate a complete understanding of the individual element risks and integrated mission risks. This understanding provides the basis for the Associate Administrator for Safety and Mission Assurance or his designee to sign the Certificate of Flight Readiness (COFR) with confidence.

The first IMAR supported the TDRS-H mission, launched June 29, 2000, on an Atlas IIA. The TDRS-H mission was followed in rapid succession by NOAA-L, launched September 21 on a Titan II; HETE-2, launched October 9 on a Pegasus; and EO-1, launched November 21 on a Delta. The Science Mission element SMA organizations did an excellent job in these initial implementations of the IMAR. OSMA will continue to refine and perfect the process in 2001.

The 2001 manifest will continue to challenge the Science Mission SMA teams. There are 13 missions on 6 different vehicle configurations including 6 Delta, 2 Pegasus, 2 Atlas, 1 Taurus, 1 Titan II, and 1 Athena.

For information on the IMAR process, contact Pat Martin on (202) 358-0417.

New Draft of NPG 8705.XX in NODIS *--Ron Moyer*

A new draft of NASA Procedures and Guidelines 8705.XX, Risk Management Procedures and Guidelines, has been entered into the NASA On-line Directives Information System for a new 60 day review cycle. Comments are due February 27, 2001. Because this NPG has undergone a major rewrite, due in part to the NASA Integrated Action Team recommendations, the previous draft was discarded and a new NODIS review initiated. Interested parties should review the new draft and submit comments through proper NODIS channels.

New Insights by Remembering the Past

--Phil Napala

NASA's Office of Safety and Mission Assurance met with NASDA's Safety and Reliability Department on November 7-9, 2000, to exchange technical knowledge on ways to improve space program safety, reliability, software quality, risk management, and quality assurance.

The 3-day meeting saw a thousand pages of technical information presented and exchanged, but the real benefit was the dialog in how we could improve our own safety and mission assurance processes. For example, a young NASDA reliability engineer, Takafumi Matsuda, presented a short paper on their updated KYO–KUN (pronounced Key-Yo Coon) Lessons Learned System. On the surface, the KYO-KUN system looks surprisingly like our own NASA Lessons Learned Information System (LLIS). But in fact, the Japanese process and use of the system is far more successful than LLIS.

KYO-KUN system is used 10 times more than LLIS. How is NASDA doing it? First, they have a "KYO-KUN of the week" program that gets each employee to read new lessons regularly. Second, NASDA develops special KYO-KUN training modules that bundle lessons into easily digestible flow-diagram learning packages that are tailored to specific problem areas. This way, engineers researching pyro-valve problems don't have to wade through lessons about propulsion tanks. While LLIS has key-word searches that filter targeted areas, KYO-KUN's graphic-based flow charts are more intuitive. Third, NASDA proactively collects lessons from their projects and contractors. At mission completion, they collect positive lessons learned from the project teams and honor them for their success. Still, there was more to their system than the database and ceremonial presentations.

In the main hall of the Integration and Test Building, surrounded by yellow and black police tape, sit the twisted and crumpled pieces of the failed Japanese H-2A rocket

See NASA/NASDA, p. 6

Administrator's Keynote at Risk Management 2000 Symposium

--Pete Rutledge, Ph.D.

NASA Administrator Daniel Goldin delivered the keynote presentation at the Risk Management 2000 symposium sponsored by Aerospace Corporation, NASA, Air Force, Ballistic Missile Defense Office, and others. He spoke about new tools that might be in use five to 10 years from now for managing risk and discussed the "Design for Safety" program that will include learning, adaptive systems that can operate successfully outside of the environment they were designed for. Mr. Goldin said that the objective of Design for Safety is to develop inherently safer systems and to quantify risk.

Mr. Goldin talked about knowledge capture, with the example of the Shuttle wiring problems. NASA had wiring failures 10 years before, and has them again. NASA didn't learn. We will need more intelligent search engines in the future.

Mr. Goldin commented that traditional risk analysis methods don't capture the complexity of modern aerospace systems. We will need to integrate risk management into our engineering organizations.

He spoke of the Ariane 5 mishap—it was a software problem—Ariane 4 software was used on the Ariane 5, even though the newer vehicle flew a different trajectory. They used the old software without understanding the new context. They did not consider common cause software failure. The software was not tested to the new trajectory. In operations, the exception handling system shut down both healthy inertial reference systems.

He talked about Mars Polar Lander. About 1 km up, just prior to landing, the legs unfolded and caused a shock that was sensed by the vehicle as "we've landed." In design, the "ringing" effect of the unfolding legs was not recognized; the test article was mis-wired; IV&V was insufficient. In operation, software modules didn't talk to one another. In the end, the vehicle was lost.

He spoke of the ejected pin in the Shuttle engine during the Chandra mission. This happened before, but wasn't recognized because it was recorded in the "data morgue."

Mr. Goldin said we all need to work on organizational design flaws, lessons learned, human reliability, common cause failure, data analysis/trending, software V&V, system testing, etc. Mr. Goldin cited the mismatch between the "real world"

See Goldin, p. 8

NIAT Report Addresses the Importance of Risk Management

--Michael A. Greenfield, Ph.D., Deputy Associate Administrator for Safety and Mission Assurance

In January 2001, NASA released the much-anticipated NASA Integrated Action Team (NIAT) report. The NASA Chief Engineer chartered the NIAT in March 2000 with a two-fold objective--to develop an integrated plan to address recommendations from reports on the Mars program, Space Shuttle wiring issues, and a generic assessment of NASA's "Faster, Better, Cheaper" practices, and to formulate actions for improvement from an Agency perspective. The NIAT reviewed and assessed 165 findings from the four reports and generated a set of 17 actions divided into five "implementation themes." The NIAT report, "Enhancing Mission Success -- A Framework for the Future," describes the steps NASA will take to improve the way we plan and carry out our programs and projects.

Members of the Safety and Mission Assurance (SMA) community will find, when they read this report, that there is plenty of emphasis on safety, health, risk management, and mission assurance. In this article, I'd like to discuss risk management.

Underlying the NIAT effort was the assessment of NASA's Faster, Better, Cheaper (FBC) program management approach. While NASA's total mission success rate has remained high, success rates of missions associated with exploring the boundaries of FBC have been about two out of three. The NIAT determined that FBC principles were indeed valid, but they must be properly applied.

One of the critical elements for success in FBC projects is the ability to understand and control risk. The NIAT determined that risk management implementation across NASA was not uniform. In addition, there was not enough SMA presence and involvement in the projects. Theme III of the NIAT report, "Understanding and Controlling Risk," establishes actions for improving risk identification, assessment, and management; the definitions of acceptable risk and success criteria; and safety and mission assurance.

Risk management practices emphasized by NIAT include the full use of existing tools; reinforcement of the project manager as focus for risk management activities; inclusion of all team members in risk management; improvement of risk "consultation" proficiency of SMA organization; and use of "success criteria" for decisionmaking. The NIAT report also addressed risk management tools for the future. These new tools will enable design and development of systems and architectures that are inherently safer and more reliable, adaptive, and resilient.

NASA must exercise prudent mission decisions on risk that do not compromise safety considerations. The NIAT concluded that one way to enhance success was to minimize failures that could have been prevented thorough good planning and sound practice. The ability of NASA managers to objectively assess, appropriately mitigate, and consciously accept risk will play an important role in NASA's future. The involvement of well-trained SMA personnel throughout the program/project life cycle will be critical.

I encourage every member of the SMA community to read the NIAT report. It is available at: ftp://ftp.hq.nasa.gov/pub/pao/reports/2001/NIAT.pdf

OSMA Emphasizes NASA's PRA Expertise *--Michael Stamatelatos, Ph.D.*

For the past nine months, OSMA has intensified its efforts to enhance NASA's expertise in Probabilistic Risk Assessment (PRA). The objectives of these efforts are:

1. Providing guidance on where and how PRA should be applied;
2. Increasing NASA's awareness of PRA's benefits;
3. Increasing the expertise of NASA people in performing state-of-the-art PRA;
4. Improving NASA's technical support material and computer tools for performing PRA; and
5. Enhancing communication and cooperation among current and potential PRA practitioners in NASA.

Several activities have supported these objectives:

1. A NASA PRA policy was drafted and circulated within OSMA just prior to year's end. The draft policy will be circulated within the SMA community prior to the formal NODIS review and comment period.
2. PRA awareness presentations were made at HQ, GSFC, MSFC, ARC, and GRC.
3. Workshops at HQ, JSC, MSFC, ARC, and GSFC familiarized 70 NASA personnel with the integrated PRA computer program, SAPHIRE.
4. Development of a "PRA Procedures Guide for Aerospace Applications" was initiated in November 2000 and the first draft will be issued by the end of March. A one-week PRA workshop for NASA practitioners is being developed by NASA PRA experts and outside consultants. It will also be available for test presentation in March. After that the workshop will be presented periodically. In the meantime, Idaho Nuclear

See PRA, p. 6

Safety Tips Learned the Hard Way

An OSMA homeowner lit a small paper fire in his fireplace to destroy old personal documents. An hour after the fire was out, the homeowner swept the ashes into a fireplace shovel by hand. He assumed that since the ashes were cold enough to touch, they weren't a hazard. He then put the ashes into a bag and put them in the garbage can outside the garage. The garbage can contained a week's worth of other trash. The homeowner was awakened the next morning by two loud bangs. The disposed ashes had retained enough heat that within 8 hours, the temperature in the garbage can had risen high enough to explode at least two "empty" aerosol cans and start a fire. The fire grew quickly and jumped to the wood frame around the garage doors. The wood quickly burned through to the inside of the garage and ignited the homeowner's store of motor oil, brake fluid, other automotive chemicals, and garden poisons. Next the cleaning rags and to-be-recycled newspapers ignited. Fortunately the fire department arrived within minutes and extinguished the fire. The fire was limited to the garage area and nobody was injured.

Every one of the factors that led up to the fire was preventable using common sense. Remember:

- Fireplace ashes from wood and other fuels can retain embers with enough heat to reignite for up to three days after the fire is out, even though the ashes are cool to the touch on the outside.
- Fireplace ashes should be thoroughly soaked with water prior to storing or disposal into a non-combustible container. Never store ashes in a paper bag.
- Garbage cans may contain a wide variety of combustible materials, chemicals, and gases. Be careful not to create a hazardous mixture or introduce an ignition source.
- Storing flammables inside the house and garage is NOT a good idea. Store them outside.
- Smoke detectors with independent power sources should be located on every floor of a home and in any sealed areas like garages. In this case, the smoke detectors sounded when the fire started, but stopped while the fire was still burning. The smoke detectors in this house were powered by the house's 110 volt electricity, and when the fire burned through wires in the garage, all of the smoke detectors in the house stopped working.

Later the day of the fire, the homeowner's neighbor, anxious to avoid a similar incident, cleaned out his fireplace and dumped his own fresh "cool" ashes in the woods behind his house. The next morning, the neighbor saw smoke coming from that spot. Luckily, the woods were cold and wet and the neighbor was able to extinguish the embers before they could ignite.

There are no new discoveries in this account. Safety is vigilant common sense. It only takes a moment for a fire to start. Please review fire safety at home with your family before you have to learn the hard way, too.

ASI, from p. 1

The poster conveys that a mishap to any NASA activity has consequences, so all employees and managers should be thinking about how they personally can prevent a mishap. Our Administrator wants each and every NASA civil servant and contract employee to know who we are protecting in the Agency Safety Initiative and why. Make a point of reviewing the motto and the poster elements and determine how you might contribute to decreasing the likelihood for mishap within your own sphere of influence. Take a few minutes each day to query your fellow workers on the ideals and expectations of the Agency's safety program—then discuss ways of contributing.

There is much more to having an excellent mishap prevention program than a slogan or a poster, but these two representations of the Agency Safety Initiative remind us how important it is to pursue that level of excellence.

NASA/NASDA, from p. 3

engine. Tsukuba Space Center Director Masanori Nagatomo explains, "We exhibit the failed H-2A rocket engine components in this prominent place to remind all our engineers what can happen if they fail in their duty."

There is a great deal of pain and loss of face tied into the Japanese KYO-KUN process. Partly as tradition dictates, individuals are almost duty-bound to look at past history before proceeding into the future. Not surprisingly, the KYO-KUN package that gets the most referrals is the H-2A launch vehicle-engine propulsion lessons learned package.

While we can't simply trade NASDA customs for ours, we can learn and apply NASDA safety and mission assurance innovations to our own particular NASA tastes. Using this KYO-KUN example, we plan to collect positive lessons learned from our project teams. Almost all of our LLIS entries are derived from negative experiences. At completion of all NASA primary missions, we are making plans to collect positive lessons and at the same time honor those individuals that made mission success possible.

At the conclusion of the meeting, a *Joint Working Group on Mission Success Assurance Charter* was formally signed between NASA and NASDA. This charter established a mutually agreeable mission success management framework where NASA and NASDA can share experiences to improve mission success practices. Identified topics include parts control, system safety, software assurance, quality management systems, and risk management.

Safety, from p. 1

change in safety that we desire. Achieving our ultimate objective of "zero mishaps" will require continued commitment to, and application of, the mishap prevention fundamentals. To this end, in December 2000, I provided the NASA Administrator with a status report and recommended a set of specific actions for the Agency. These actions include:

- Increasing accountability for safety.
- Establishing a commitment from each Center to achieve OSHA Voluntary Protection Program Star rating by the end of FY 2002.
- Engendering the same cultural affinity for safety within our contractor community.
- Offering executive consulting sessions between my office and the Center Directors.

Much will be changing over the next several months. The one thing that must never change is our unwavering commitment to protect the public, the astronauts and pilots, our workforce, and our high-value equipment and property. Remember, mission success starts with safety.

PRA, from p. 4

Engineering and Environmental Laboratory (INEEL) PRA experts will conduct a one-week PRA workshop for NASA practitioners January 30 through February 2 at KSC.

5. A NASA-wide PRA workshop was held in Rockville, MD, on October 25-26, 2000. Approximately 60 civil service personnel and contractors from eight NASA Centers and Headquarters attended the workshop. A few PRA consultants who are currently working with NASA on PRAs also participated. The first half-day consisted of presentations on NASA PRA goals, projects, and activities. This was followed by one full day of brainstorming by the attendees, who divided into five groups to discuss various aspects of NASA PRA needs and to propose solutions. The workshop ended with three demonstrations of PRA computer programs developed for or used by NASA. According to feedback from a number of participants, the workshop was deemed a success. More such workshops are planned for the future.

For further information on these topics, please contact Dr. Michael Stamatelatos by phone at (202) 358-1668 or by e-mail at: mstamate@hq.nasa.gov

Design for Safety 2000 Workshop

--Pete Rutledge, Ph.D.

SMA personnel from Headquarters and the Centers attended the "Design for Safety 2000 Workshop" at Ames Research Center from October 10-12, 2000.

The material presented was of significant interest to the SMA community. Much of it was directly related to risk management, risk assessment, system safety, mishap prevention, and other aspects of the SMA disciplines. Overall, the material was future-oriented, and it provided some rare glimpses of where our profession may be headed in its use of state-of-the-art (and beyond) technology. The objective of the Design for Safety (DFS) program is to develop, tailor, mature, and infuse advanced technology methods into all NASA Enterprise missions to provide:

- Continuous reasoning, model-based, risk-advised systems engineering;
- Continuous life-cycle knowledge capture, evaluation, and utilization;
- Highly adaptive, resilient systems for intelligent response to both known and unanticipated hazards;
- Robust sensing and self-healing components.

DFS looks to apply the above technologies throughout the life cycle of NASA systems and programs. All of these technologies are important to the SMA community.

Recently, OSMA personnel at Headquarters met with the new DFS program manager, Dr. Yuri Gawdiak, from ARC. We agreed to work together in many areas of common interest. We are already providing the DFS program with information on SMA research and technology projects supported by OSMA and conducted at the Centers and at Headquarters.

I firmly believe that DFS is an initiative that the SMA community must get involved in and support, or get left behind. If you would like to know more about the DFS 2000 Workshop, perhaps to judge its relevance to SMA yourself, e-mail me at pete.rutledge@hq.nasa.gov, and I will send you my closing session presentation charts that summarize the workshop results. Additional points-of-contact for DFS are Pam Richardson here in OSMA at HQ and Alan Wong, who is on a developmental assignment to the DFS program from ARC SMA.

THE VPP STAR: *a Manager's Greatest Gift*

--Col. John Casper, Astronaut, Director, Safety, Reliability, and Quality Assurance, Johnson Space Center

If you, as a manager, could give one thing of lasting value to an employee, what would it be? A raise? A promotion? A title? All good, but fleeting. My answer would be a simple one: give the VPP Star. Star is the highest certification of the Occupational Safety and Health Administration's Voluntary Protection Program for organizations with comprehensive occupational safety and health programs that have proven successful in reducing workplace hazards.

On the surface, this might seem a curious choice, but having helped nurture JSC through the VPP process to the ultimate goal of becoming a Star site, I can say with conviction, and passion, that it is worth every hour, every hurdle, every setback, and, certainly, every achievement that comes with it. And *everyone* is the beneficiary.

Earning the VPP Star is an enormous challenge, but with it come substantial rewards. Consider some of the benefits.

A safe workplace is a more efficient workplace. Since adopting VPP practices, JSC has seen a continual decline in work-related injuries, especially over the past 7 years, resulting in greater productive work time. This is a major gain considering that we, as a government agency, are continually asked to produce more with fewer people and resources. Also, because we must work with fewer people, each person's contribution takes on an even greater importance. Each injury, whether on the job or at home, represents valuable experience lost to the space program.

VPP encourages management and employees to work together as a team. This teamwork helps mission accomplishment, makes the workplace safer, and imparts a sense of shared pride and ownership. We have seen a renewed sense of cooperation and common concern among our people, and that is good. Managers and employees alike feel a personal loss when a fellow worker is hurt, and this mutual concern fuels the desire to be safe.

Employees become more willing to share lessons learned. Safety tools such as the Close Call System are more recognized and take on a new meaning, with employees not only willing to share their experiences, but interested in knowing what has happened to their co-workers and friends. Victims aren't just numbers any more; they're the guy at the next desk, the security guard, the groundskeeper, the neighbor's kid, the clerk at the store.

See VPP, p. 8

Dave Lengyel is New ASAP Executive Director

Dave Lengyel is the new Executive Director of the Aerospace Safety Advisory Panel. He comes to OSMA from a two year tour of duty as the Manager of the Moscow Technical Liaison Office (MTLO) for the ISS Program. The MTLO interfaces with Russian contractors and space agency personnel to monitor and track the progress of Russian Segment elements such as Soyuz and Progress vehicles, Proton and Soyuz boosters, the Docking Compartment, and Science Power Platform. The MTLO also supports on-orbit operations for mission and payload integration and sustaining engineering tasks.

Dave joined NASA in October 1993 as the third Executive Officer to Administrator Daniel Goldin. Dave served in several program operations and payloads capacities within the Space Station and Phase 1 Programs at JSC from 1994 to 1998. He led an analytical assessment of Shuttle-Mir lessons learned for application to ISS.

Prior to joining NASA, Dave was a senior aircrew training instructor for McDonnell-Douglas. He conducted pilot training on the FA-18 Hornet and F-15 Eagle for the USN/USMC, USAF, Kuwaiti Air Force, and Israeli Air Force. He is a Lieutenant Colonel in the Marine Corps Reserves and has accumulated over 2,000 hours flight time in F-4S Phantom II, OV-10D Bronco, and FA-18 Hornet.

Dave holds a Bachelor of Science from the U.S. Naval Academy, an MBA from the University of Missouri, and an MA in International Affairs from Washington University in St. Louis.

Goldin, from p. 3

and the "engineering world." The engineering world doesn't catch the interaction; it works only for anticipated combinations. NASA will set up engineering research centers with universities to work on soft, adaptive computing

Mr. Goldin listed five tools that we need: intelligent agents (object oriented approaches); model-based reasoning (model the components, the state of the environment, and the interaction); probabilistic reasoning; machine learning (neural nets); and genetic algorithms (we're using this to build reasoning into Field Programmable Gate Arrays).

Mr. Goldin said NASA will shut down programs if necessary, and do more Design for Safety. NASA will design safety into the front end of the life cycle rather than inspecting it in.

Upcoming ESA/NASA System Safety, Risk Management, and Payload Safety Conference

--Michael Stamatelatos, Ph.D

A Joint ESA-NASA Safety Conference will be held at the ESTEC Conference Center in Noordwijk, The Netherlands, on November 6-8, 2001. Fred Gregory (OSMA) and A. Soons (ESA) will co-chair the conference.

The objectives of the conference are to:

1. Provide an international information exchange forum;
2. Attract and maintain attention to safety;
3. Foster cooperation among NASA, the European Space Agency (ESA), and other partners on the safety of space flight projects; and
4. Assess current practices and lessons learned for space flight safety.

Participants will discuss system safety, risk management, and payload safety and certification, and how these disciplines relate to design and development, verification and validation, and operation of space systems.

The Technical Program Coordinators for system safety and risk management will be M. Stamatelatos and P. Rutledge (NASA), and C. Preyssl (ESA). The Coordinators for payload safety will be M. Ciancone (NASA) and T. Sgobba (ESA). The Technical Program Committee has NASA and ESA representatives.

For further information, please contact Dr. Michael Stamatelatos by phone at (202) 358-1668, or by e-mail at mstamate@hq.nasa.gov

VPP, from p. 7

Thus, VPP, with its heightened awareness, goes beyond the workplace. It becomes a way of life, and safety is encouraged in every waking moment, in every conscious action. What may have been central to the individual before becomes a shared philosophy, and workers become, truly, "their brother's keeper," noticing and correcting that which is unsafe or has risk potential, regardless of where they are.

In summary, VPP is the vehicle. The Star says you mean what you say and do. But, it also represents a greater good, a caring for yourself and your fellow man. You can't order, demand, or dictate safety or good health practices. Like respect, recognition of such a value system must be earned, and we at JSC have found VPP to be the way. A raise? A promotion? A title? Yes, good, but transient. Give your employee VPP, and you give the gift of a lifetime—maybe even life.