



The Dryden X-PRESS

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First science is complete

By Jay Levine
X-Press Editor

The Stratospheric Observatory for Infrared Astronomy's first series of three science missions took to the skies over a nine-day span that concluded Dec. 8. The missions gave scientists a feel for how the observatory is going to perform and a look at some of the science they will be able to achieve with it.

"The flights were outstanding and have exceeded our expectations. Everything worked great," said Bob Meyer, SOFIA program manager. "The observatory is not fully developed. Some of the capabilities are not where we want them yet. For example, the pointing stability and accuracy was good for these flights, but we still have room for improvement."

For that reason, the observatory science is beginning at a slow pace as the development effort on the aircraft continues. Brent Cobleigh,



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NASA Photo by Tom Tschida

Jim De Buizer, lower right, studies data with FORCAST instrument principal investigator Terry Herter, left. In the background, Eric Becklin and Allan Meyer, right, look on during preparations for the initial SOFIA science flight.

SOFIA platform manager, said the observatory will undergo additional modifications next year to meet the challenges of an expected 20-year operation.

A key modification will be a cockpit upgrade from dials and gauges to a modern electronic, or "glass," cockpit. Also planned are telescope improvements and a checklist

of items that will improve the observatory's overall performance and capabilities, he said.

Erick Young, SOFIA science mission operations director for Universities Space Research Association, said he was extremely pleased with the first science flights, which exceeded all of the requirements.

"We are seeking better performance as we go higher," Young said. "I think the hardest thing is to get all of the different pieces to work together properly. The only way you can tell if all the elements are working properly is to actually do it in real flight. So what these flights have proven is that all of the pieces do work together, and well enough to produce great science."

Pam Marcum, SOFIA project scientist, said the flight went better than expected.

See Science, page 2

CCPM moving through preliminary phases

By Jay Levine
X-Press Editor

Weeks into the transition to a new project management initiative and, soon, a new software tool, things are going well, Dryden managers reported at a town hall meeting Dec. 2. When the new system is fully implemented, it is expected to increase Dryden's efficiency by as much as 30 percent.

Center Director David McBride led the update and Dryden individuals working on phasing

in the Critical Chain Project Management initiative sat on a panel to answer questions. Panel members were Dave Wright, director of flight operations; Dennis Hines, associate director of programs; Brad Flick, director of research and engineering; and Joel Sitz, who heads up the CCPM implementation team.

CCPM is a methodology and management structure designed to reach milestones on schedule and efficiently allocate resources.

Projects will be synchronized and integrated into a single database to minimize constraints. With this concept, resources are made available to accelerate a project to its completion. CCPM is based on the Theory of Constraints, the concept that a system can work safely and with as much momentum as allowed by its most constrained component – machine, aircraft or staff.

Active projects chosen as starting points for the new initiative are under way, while others are

scheduled during the next year. A number of additional projects and significant work will be added to the schedule as the process moves toward full implementation in the first quarter of 2011. The way the new initiative works, resources are focused on projects that are under way to allow them to be completed on time and, preferably, sooner. All known milestones are expected to be complete on time, although

See CCPM, page 4

Melvin talks to AV students

By Alan Brown
Dryden News Chief

As part of a whirlwind three-day visit to the three NASA field centers in California, NASA's Associate Administrator for Education and former astronaut Leland Melvin encouraged students at a middle school in Palmdale to "believe in yourself. Do what it takes to be successful."

Melvin brought his message of motivation to about 250 students and several local dignitaries at Shadow Hills Intermediate School Dec. 8 during a morning assembly in the school's cafeteria. His visit to the school was part of a daylong visit to Palmdale that included discussions with NASA Dryden Office of Education staff at the



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NASA Photo by Tom Tschida

NASA Education chief and former astronaut Leland Melvin talks to students during a visit to Shadow Hills Intermediate School in Palmdale.

AERO Institute in downtown Palmdale and a tour of the Dryden Aircraft Operations Facility adjacent to Air Force Plant 42.

"Whatever your dream...if you work at it, if you believe in it, if you put your mind to it, you can do it," said the veteran of two space shuttle missions, STS-122 in February 2008 and STS-129 in November 2009.

Becoming a NASA astronaut wasn't in his career plan when he was in school; Melvin said he was far more interested in playing sports, especially football, in which he excelled. He said being creative inspired him to design and build his own skateboard when he was in middle school. "That's what

See Melvin, page 3

Science... from page 1

"Both the telescope and instrument together produced unbelievably crisp images of very high quality that I am sure the FORCAST team will be able to go off and analyze and do some really good science in understanding these star formation regions we observed," she said.

The SOFIA missions looked at Orion, or M42, and S140, which are regions forming stars in the Milky Way galaxy. Also observed was nearby galaxy M82, which is undergoing a burst of star formation.

Those observations were conducted with the SOFIA telescope and the Faint Object Infrared Camera for the SOFIA Telescope, or FORCAST, instrument. The FORCAST was developed at Cornell University, Ithaca, N.Y. Using it on the SOFIA for the first time was an education with lessons that can be applied to future missions with the instrument, said Terry Herter, FORCAST principal investigator. "We have learned quite a bit about how best to optimize the operation of FORCAST on SOFIA. Lab testing cannot fully reproduce the airplane environment," he said. "FORCAST and SOFIA are a system, which must be tuned together to get

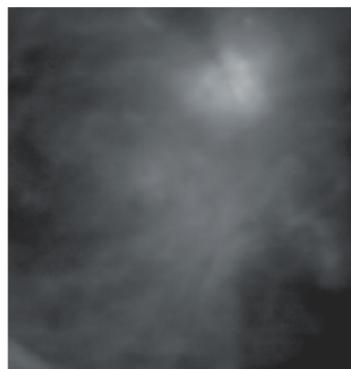


Photo courtesy
NASA/SOFIA/USRA/FORCAST team

This infrared image of the heart of the Orion star-formation complex was taken from the SOFIA using the FORCAST instrument.

the best performance, and we have made great progress. This includes how fast to 'read out' [or, transfer data] the detector/sensor and synchronizing this with the observatory."

Nancy McKown, mission director for this series of SOFIA science missions, said preparation for the flights has been ongoing and included computer simulations and line operations – i.e., everything that would happen in the sky is practiced on the ground – prior to

the first science mission.

The complex coordination tasks were directed by McKown, but a talented team worked together to meet the flight objectives and built confidence and experience with the observatory, she said. The first flight included support from telescope operator Allan Meyer, who tallied 900 missions on the Kuiper Airborne Observatory, a SOFIA predecessor, and science flight planner Charlie Kaminski.

McKown, who also had experience on the KAO, said "the best training is in the air" and that with so few hours available, new people will be getting their first opportunity to fly on each flight whereas KAO operators had to have three to six months of experience before they could fly without direct supervision on board.

"What we are doing now is starting the science flights with the systems still in development," she said. "We are always mixing in something new, or fixing something from the last flight. It takes patience, but it is of benefit to us that we are helping to develop the observatory."

Evolving the systems also presents opportunities for enhancing procedures and working to mature the system. "It will never be static, it will always be dynamic," McKown said.

The SOFIA is fitted with a 100-inch-diameter airborne infrared telescope. The aircraft's instruments can analyze light from a wide range of celestial objects, including warm interstellar gas and dust of bright star-forming regions.

The program is managed at Dryden. The center also has responsibility for the NASA 747SP platform, which is based at the Dryden Aircraft Operations Center in Palmdale, Calif.

The SOFIA is an international collaboration between NASA and the German Aerospace Center, Deutsches Zentrum für Luft und Raumfahrt (DLR).

SOFIA science and mission operations are managed at NASA's Ames Research Center, Moffett Field, Calif., in cooperation with the Universities Space Research Association in Columbia, Md., and the Deutsches SOFIA Institut at the University of Stuttgart, Germany.

Williams awarded 'Snoopy'

Public Affairs Specialist Leslie A. Williams has been chosen to receive a Silver Snoopy Award for her support of space shuttle program activities during more than a decade at Dryden.

NASA Associate Administrator of Education and former astronaut Leland Melvin presented Williams with the award Dec. 7 in a ceremony at the AERO Institute in Palmdale.

Since coming to Dryden in 1998, Williams has provided media and other organizational support for shuttles landing at the center. At Dryden and in her previous public affairs position at Kennedy Space Center, Fla., she has planned shuttle-related staffing and coordinated logistics among NASA and Air Force Flight Test Center personnel, acting as media spokesperson and public affairs director when called upon. She was the first to respond in Dryden's public affairs office during the loss of shuttle Columbia, and led return-to-flight activities related to STS-114 when that mission ended with a landing at Dryden.



ED10 0379-08

NASA Photo by Tom Tschida

Associate Administrator Leland Melvin presents Dryden public affairs specialist Leslie Williams with a Silver Snoopy Award for shuttle support.

Williams was previously recognized with a OneNASA award and was co-recipient of a Code T Group Achievement Award for efforts during the STS-114 landing. The Silver Snoopy award is awarded to individuals for

outstanding efforts that contribute to the success of human space flight missions. The recognition focuses on efforts that enhance the probability of a mission. All job classifications and task assignments are eligible for the award.

Melvin... from page 2

engineers do," he told students.

An interest in chemistry sparked by his mother's purchase of a chemistry set for him during his middle-school years led him eventually to earn a bachelor's degree in chemistry and a master's in materials science, academic fields that would serve him well when his initial career after college as a professional football player with the Detroit Lions was cut short by injuries.

Melvin's academic credentials led to a job as an aerospace research engineer at Langley Research Center in 1989, and nine years later he was accepted into the astronaut corps.

"I didn't know that I wanted to become an astronaut until later in life," said Melvin, now 47.

Melvin responded to a number of questions posed by honors students and those in the Advancement Via Individual Determination program at Shadow Hills selected to attend

the assembly, including the usual queries about how astronauts eat and relieve themselves when in the weightless environment of space. His lengthy and detailed response could be summed up with "very carefully...things float in space."

Melvin challenged his listeners to focus on what they can do, and not be dissuaded by those who say they can't.

"The problem with 'can't' is the apostrophe and the 't,' and those you can remove," Melvin said.

"Anything you dream you can do," he added. "Have a plan for your life. Get the tools in your head – the reading, math and science. You need to have the right tools.

"Live your dream as an average guy – be dedicated, eat your green beans, respect your teachers and parents. If I can do it, you can do it."

Melvin made visits to the Jet Propulsion Laboratory in

Flintridge-La Canada Dec. 9 and Dec. 10 to Ames Research Center near San Jose. During each of his trips to NASA field centers around the country, Melvin includes a visit to a nearby middle school to encourage students to pursue studies and careers in the so-called STEM disciplines (science, technology, engineering and mathematics).

Melvin was appointed to NASA's senior education position in October. He is responsible for developing and implementing agency education programs that strengthen student involvement and public awareness about NASA's scientific goals and missions. While still in the astronaut corps, Melvin co-managed the former Educator Astronaut program in 2003 that recruited teachers to become fully trained astronauts in an effort to connect space exploration with students across the country.

News at NASA

NASA #1 in social media

By a wide margin, NASA placed first in a study released in November that ranks 100 public sector organizations in the effectiveness of their websites, digital outreach, social media use and mobile sites. The L2 Digital IQ Index for the Public Sector was conducted by New York University Professor Scott Galloway, Doug Guthrie, dean of the George Washington University School of Business, and a team of experts from L2, a think tank for digital innovation.

The study reports NASA "is in its own stratosphere" and the clear leader in digital use, noting the agency's innovation on nearly every platform. The 26-point spread between NASA and the next-closest organization is the largest seen in any of L2's Digital IQ Index studies to date. Studies in the past year and a half have looked at more than 500 private and public sector organizations, including luxury, beauty, automobile, pharmaceutical and retail industries.

"NASA's goal is to communicate the important work of thousands in our nation's space and aeronautics missions as broadly as possible, and we employ numerous tools to do that," said David Weaver, associate administrator for communications at NASA Headquarters.

The report highlights NASA's use of Tweetup events and the agency's social media aggregator site, the Buzzroom.

A list of ways to connect and collaborate with NASA is available at <http://www.nasa.gov/connect>. To view the rankings and key findings, visit <http://www.L2thinkrank.com/publicsectordigitaliq>.

CCPM... from page 1

some might have delayed starting dates as they come up on the schedule, McBride said.

Once a project is complete, different projects become the focus of resources until they too are complete. In the meantime, other projects are "frozen." In other words, resources required to prepare frozen projects for becoming active ones are allocated, but nothing more until the project comes up on the schedule. Once a project is completed, assets are moved from that project to a new one scheduled to begin.

So far, the CCPM implementation team and center managers are responding to challenges as the process moves forward. Aside from judging if customer needs are met and if projects are finished on schedule, there are other issues that will be closely monitored. The CCPM initiative is intended to reduce employee stress because multitasking will be reduced, and extra time from early completion of projects is intended to be for creating opportunities for research, training and planning.

It is planned that an average of two project milestones will be achieved each week. To do that, daily and weekly meetings are set to review progress – and address challenges – to make sure projects are moving forward, Sitz explained. The careful monitoring also will identify constraints that might apply to more than one project.

Daily meetings will focus on rapidly identifying and resolving challenges that come up, ensuring

adequate resources and resolving items from the weekly meetings. Three weekly meetings look at resource allocation, the full package needed to prepare a project, or "full kit," and the Center Work Review meeting. Resource allocation ensures that adequate resources are given to active projects and that projects about to become active are properly staffed. Full kit meetings help synchronize the center on work a project is preparing to begin and will soon be active. Center Work Review meetings review measurements of work progress and approve release of projects to active status. Also, challenges that could not be resolved at lower levels are discussed.

A "frozen," or full kit in progress, project must have everything together and lined up before it can be considered for addition to the active project list, Sitz explained. That is a process called full kitting. Once it is fully approved it is added to the pipeline of projects called a work queue until it comes up on the schedule.

A next step includes moving the integrated schedules to the Concerto database application, which works with Dryden's current project management software. The new software tool will be used to provide synchronized information on how projects are performing by looking at a single database used by resource managers, project managers and center management. Also of importance, the software helps identify where there are

overlapping schedule conflicts and offers alternatives, Sitz said. Once the Concerto application is fully functional, he said many of the meetings required during the start of the CCPM process will no longer be needed.

The new initiative and software also will enable a shift in Dryden culture, McBride said. Instead of working on a number of projects at the same time, the new approach will be to apply more resources to a single project, complete it and move on to the next project.

In the past, there were a number of overlapping projects and it was a practice that if something wasn't needed right away, it would not be the top priority. The downside to that is there was no buffer if things went wrong later on. This new initiative makes it easier to reach milestones and identify problems that could impede progress.

"The mission changes from year to year, but it is up to us to help manage it," McBride said. "When we make a commitment, we need to understand what needs to be done."

"The tool will allow us to make better decisions with respect to both short- and long-term project planning," Wright said.

The initiative also is expected to give managers insight into questions such as percentage of projects completed on time, cost estimates versus actual dollars spent, the capacity to take on new work and potential constraints in meeting customer schedules, Hines said.

"Buffers" will be added to projects that will be planned in segments so progress can be monitored. Buffers are time increments added to a project's anticipated completion date to account for issues that crop up. That includes variables such as when employees are on vacation, in training or otherwise unavailable, McBride said.

The idea is for half of the buffer to have been used by the time the project is half done, meaning that the project is on schedule and able to meet unexpected items. Re-planning and contacting the customer may be necessary if the project is too far into its buffer zone. How the work is to be accomplished remains the task of the project team.

Project planning was identified during the January 2010 Safety Day as the number one area that needed work to improve the balance between work and home lives. That was the genesis of the CCPM approach.

In the past, a key project or two has monopolized center resources, which has required a shifting of priorities. Along those lines, a recent NASA audit determined that some employees are working on as many as 10 projects in a single week.

The new initiative is aimed at reducing some of those employee stresses associated with multi-tasking. It is anticipated that most center employees will not see major changes in their day-to-day work, while the center's workforce will benefit from the initiative, McBride said.

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Address: P.O. Box 273, Building 4839
Edwards, CA 93523-0273
Phone: 661-276-3449
FAX: 661-276-3566

Editor: Jay Levine, Tybrin, ext. 3459

Asst. Editor: Sarah Merlin, Tybrin, ext. 2128

Managing Editor: Steve Lighthill, NASA

Chief, Strategic Communications:
John O'Shea

National Aeronautics and
Space Administration

Dryden Flight Research Center
P.O. Box 273
Edwards, CA 93523-0273

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