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Ice to see you

DC-8 continues Operation IceBridge flights

A second Operation IceBridge mission was conducted with NASA's DC-8 airborne science laboratory over the Pine Island Glacier in Antarctica Oct. 26 after a huge crack many miles long across the glacier's ice shelf was discovered on an Oct. 14 mission.

The science team aboard the converted jetliner collected data over what is being called a significant fissure that transects a large portion of the terminal glacier. IceBridge scientists believe they are witnessing the separation of an enormous portion of the glacier, and this survey is the first of its kind during this type of a glacial event.

Earlier in the week, the IceBridge mission team kept up the rapid pace of long-duration flights to gather data on ice thickness and movement using a suite of seven specialized science instruments.

NASA/Michael Studinger

Ice-coated mountain ridgelines on Alexander Island, one of the largest islands off Antarctica, protrude through the snow and ice in this view from NASA's DC-8 airborne science laboratory Oct. 24 during an Operation IceBridge flight.

On Oct. 24 a 10.7-hour mission took the crew over the Alexander Island area in the Antarctic Peninsula, with pilots carefully flying the aircraft over the same flight tracks flown in the 2009 and 2010 IceBridge campaign. Clear conditions allowed for excellent data collection with the Airborne Topographic Mapper and the Digital Mapping System, an airborne digital camera that acquires high-resolution natural color and panchromatic imagery, which scientists will now compare to data obtained in prior

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Budget steady, CCPM work continues

By Jay Levine
X-Press Editor

Dryden Center Director David McBride explained at an Oct. 18 town hall meeting that the center's budget appears to be steady despite some changes for the fiscal year that began Oct. 1. Actual budget figures will not be available until Congress approves the appropriations bill that funds NASA.

In addition, although there are growing pains in its implementation, the new management system will allow Dryden to meet its commitments more efficiently and allow employees time for writing reports and completing training.

The budget for Dryden is anticipated to be $263 million, identical to that of the previous fiscal year, though distribution of funds has changed. Existing programs managed at the center include one that is entering an operational phase as another gears up. In addition, aeronautics' work and budget are intended to grow as two new projects are begun.

The overall Dryden Science Mission Directorate budget is expected to decrease from $78.1 million to $68.8 million, McBride said. Most of the reduction, however, is attributed to the Stratospheric Observatory for Infrared Astronomy program's transition from a development program to a science program.

Another significant decrease was in human exploration. Though there are no more space shuttle flights, several tasks are required to close out the program at Dryden. It is expected

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that wrapping up shuttle-related work will take about two years. The human exploration budget reflects the program's conclusion, and will be decreased from $11.2 to $8.5 million.

Reimbursable work – work that Dryden develops in partnership with companies – is expected to remain steady. The center received $12.8 million in fiscal year 2011, and an estimated $12 million in reimbursable projects is on the books for fiscal 2012.

The largest increase in Dryden's budget is the result of taking on management of the Flight Opportunities Program for the Office of the Chief Technologist. It is anticipated that the $9.5 million required for administering the program's various elements will increase to $26.2 million as additional projects are funded.

Aeronautics reflects another area of Dryden's workload expected to see an increase over the previous fiscal year. Historically a key component of Dryden's work, the budget in this area is $64 million, up from $51.2 million. Two projects comprise the bulk of the additional funds. The Uninhabited Air Vehicles in the National Airspace project is getting under way, as is aeronautics work on Dryden's G-III No. 804.

Dryden has more projects than can be completed in a single year, McBride said.

In an effort to complete that work as efficiently as possible, Dryden managers continue to use Critical Chain Program Management principles to organize, coordinate and prioritize the workload.

Important milestones were reached during the year toward that goal, including addition of many of Dryden's main campus projects to the Concerto software suite. Concerto maps projects and identifies scheduling conflicts and potential solutions.

Dennis Hines, Dryden associate director for programs, discussed the status of CCPM implementation, saying that while there have been successes, the focus is on lessons learned in moving toward the new philosophy of program management and adjusting the project flow. Better identification of what customers want and better tailoring of the requirements to meet those goals are among the lessons, he explained.

In the eight months since CCPM implementation, including the Concerto operation that came online in February, a total of 86 projects have been planned and implemented, 28 projects and 828 tasks have been completed and 338 people are using the system.

Other key focuses are maintaining NASA's guidelines, adjustments of the new tools to align with how the center does business and modifying CCPM metrics that measure what is important for the center to accomplish.

One example of the challenges of implementing CCPM is that a project has a number of variables, such as weather, broken parts, a soggy lakebed or components delivered late, that affect a first flight. Industry partners consider first flight a key measurement of project success. Using flight as the key measure of success is one of the reasons that integration, ground tests and flights have traditionally been lumped together in determining project success at the center, Hines explained.

The modified measurement examines a project on the basis of information provided in the Tech Brief and offers a more accurate prediction for the first-flight milestone. Center managers will not only be concerned with improving the accuracy of first-flight prediction, however; attention will also be paid to another Dryden mission, information delivery. Technical reports are a key product.

The average project still lags behind predictions without factoring in additional time needed for training and innovation, the inclusion of which remains another key goal, Hines said. To achieve that, the network flow of projects requires continued adjustment in the interest of producing a strategy that aligns priorities and measurements. The focus will be on documentation, operation, learning and improving.

The CCPM initiative has resulted in reduction of multi-tasking, which was a key concern early on in the decision to adopt CCPM principles. Hines said the center can still do better, and efforts will focus on improving schedule predictions, determining the right flow for projects, meeting customer goals and seeing that Dryden meets the key goals of advancing technology and science through flight while completing reports to ensure that information is available to researchers.

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New technologies to be tested by the project team include multi-trajectory ground-collision escape predictions, compressed digital terrain elevation data, and hosting of the algorithms, or software formulas, on the smart phone.

The smart phone will eventually be installed and flown aboard the aircraft following initial flights during which the phone will remain on the ground but will be used in the operational loop.

To test the Auto-GCAS software's capability to pull up and sharply turn the airplane to prevent collision, the DROID airplane will be purposely aimed first at flat ground and then at local hills.

The DROID aircraft is flown remotely from a mobile ground-control-station van fitted with the latest digital flight displays. A safety pilot maintains visual contact with the airplane and can take over control with a handheld radio transmitter.

Mike Marston, deputy program manager for operations for NASA contractor Jacobs-Tybrin, is the DROID aircraft project lead as well as operations engineer for the Small UAS project, of which DROID is part. He's thrilled with the DROID team's progress so far.

"Supporting the ACAT SUAS Auto-GCAS effort has provided the DROID project team the opportunity to begin flight research with the DROID aircraft," Marston said. "We are very excited to begin this new phase because it introduces DROID as a low-cost, subscale solution to flight research opportunities. We see the potential for additional automatic collision-avoidance flight research prospects with the center's Unmanned Aircraft Systems Integration into the National Air Space, or UAS in the NAS, project in the near future as well."

Dryden funds the DROID aircraft project, while the Auto-GCAS project flights are funded by the Office of the Undersecretary of Defense and the U.S. Air Force.

Nov. 14, 1958 – Following modification as a mothership for the X-15, NB-52A (52-0003) was delivered to Edwards Air Force Base from North American Aviation's Palmdale facility. Crewmembers assigned to the aircraft were Capt. Charles C. Bock Jr. (pilot), Capt. John E. Allavie (co-pilot) and TSgt. Robert L. Wynn (flight engineer).

Nov. 9, 1965 – John Manke was checked out in T-33A (55-4351) by Bill Dana. It was Manke's first NASA flight.