

IceCube Project Monthly Report February 2005

Accomplishments

Six weeks after the first IceCube string was deployed and two weeks after freeze-in all 60 DOMs are operating and reading data.

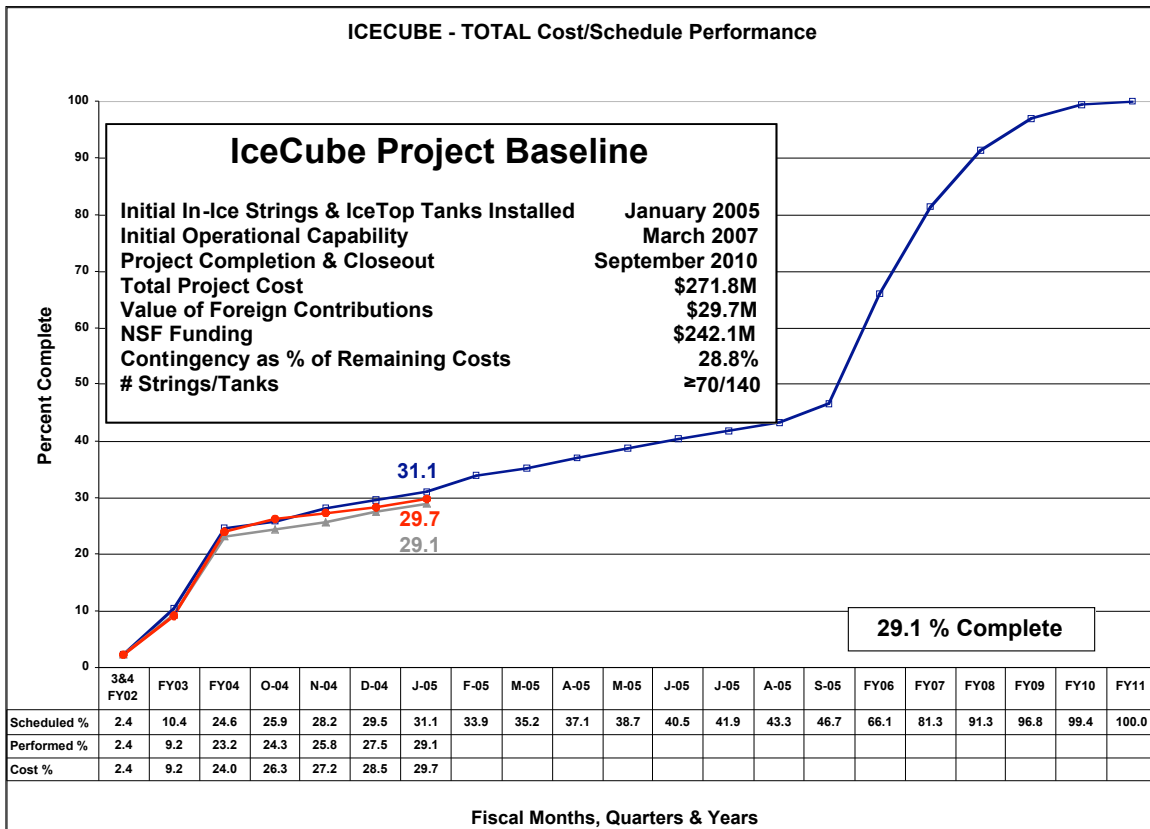
The 16 IceTop DOMs frozen into 8 IceTop surface tanks are also operating and reading data.

Safely stored instrumentation for three strings at the South Pole Station for the winter. These cables and DOMs will be used at the beginning of next season.

Conducted a strategic planning meeting with Raytheon Polar Services Company and the NSF on March 3-4, 2005, establishing key planning assumptions for next season.

Completed and Instrumentation Readiness Review on March 7-8, 2005, confirming readiness to proceed with DOM production and cable procurement later this month.

Met with the IceCube Project Advisory Panel and the chair of the Science Advisory Committee on March 9-10, 2005, to discuss the results of this season and plans for the next.



Cost and Schedule Performance – The total cumulative schedule and cost variances at the end of January were less than a few percent. A report of cumulative variances at a lower level of the work breakdown is provided as an attachment to this report.

Drill Construction and Operation – In February the IceCube drillers reviewed the experience constructing, commissioning, and operating the enhanced hot water drill at the South Pole and began preparing plans for improving the reliability and performance of the drill for next season. Farshid Feyzi, Technical Director of the UW Physical Sciences Laboratory agreed to serve as Project Manager for the drill over the next six to eight months to help ensure that the desired improvements would be completed. The improvements are necessary to support the current planning goals for next season including:

- Set up and prepare for the start of drilling by Dec 10
- Drill and deploy strings over seven weeks (Dec11 - Jan 28)
- Target drill speed less than 48 hrs/hole, including firm
- Target deploy speed of less than 24 hrs/hole
- Use both drill towers to leapfrog between drilling and deployment
- Deploy 2 strings per week
- Drill and deploy up to 12 strings

String and IceTop Commissioning – About six weeks after the string was deployed and about two weeks after complete freeze-in of the hole there is detailed data about basic technical performance of the first IceCube string and the eight surface tanks. All 76 DOMs are operating and reading data (60 DOMs on the string and 16 DOMs in 8 surface tanks). Communication tests show that all DOMs can communicate simultaneously at a bandwidth of about 1/2 Mbit/DOM/sec. Four DOMs on one quad show an elevated bit error rate in the startup mode but they are able to produce full quality data. The cause for the bit error rate is still being investigated.

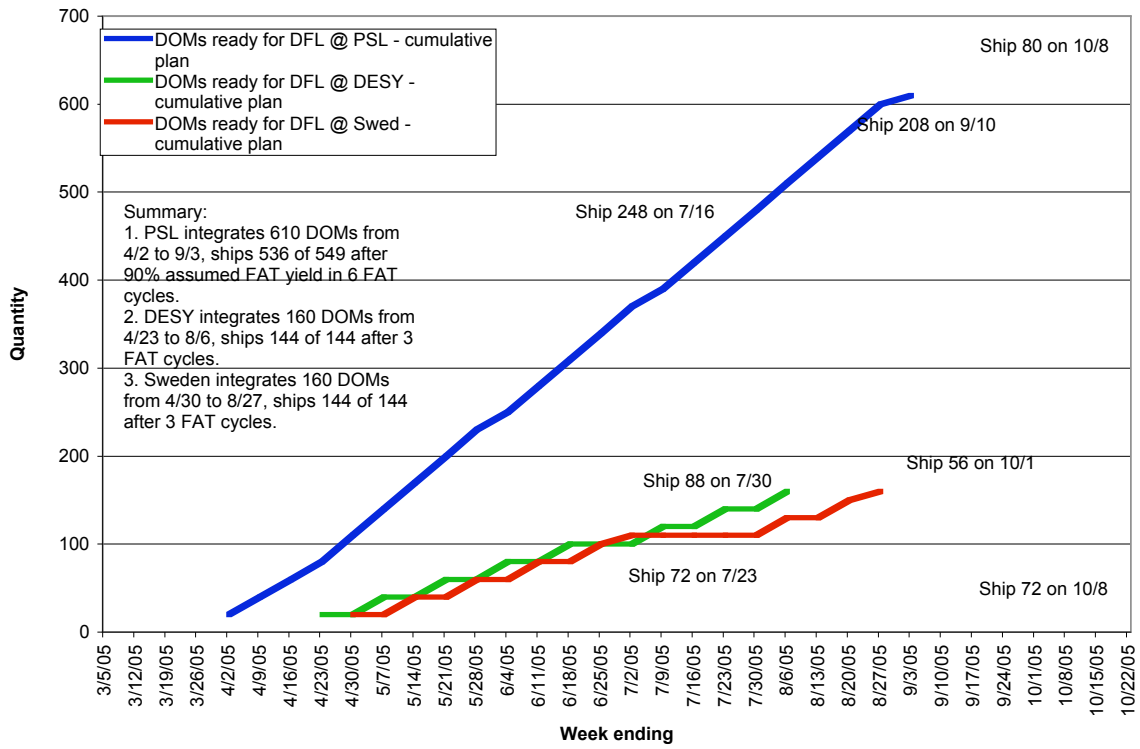
Overall, the data from the first string are very promising and adequate for moving ahead on production plans. Single photoelectron noise rates (1/4 PE threshold, no dead time) have settled at about 750 Hz. This noise rate is excellent and slightly exceeded expectations. Calibration data and reconstructed events were shown.

Instrumentation System Test Status – The South Pole Test System located at the Physical Sciences Laboratory continues to operate as a test environment. The engineering and instrumentation team use the setup for off-line trouble shooting including tests of new software.

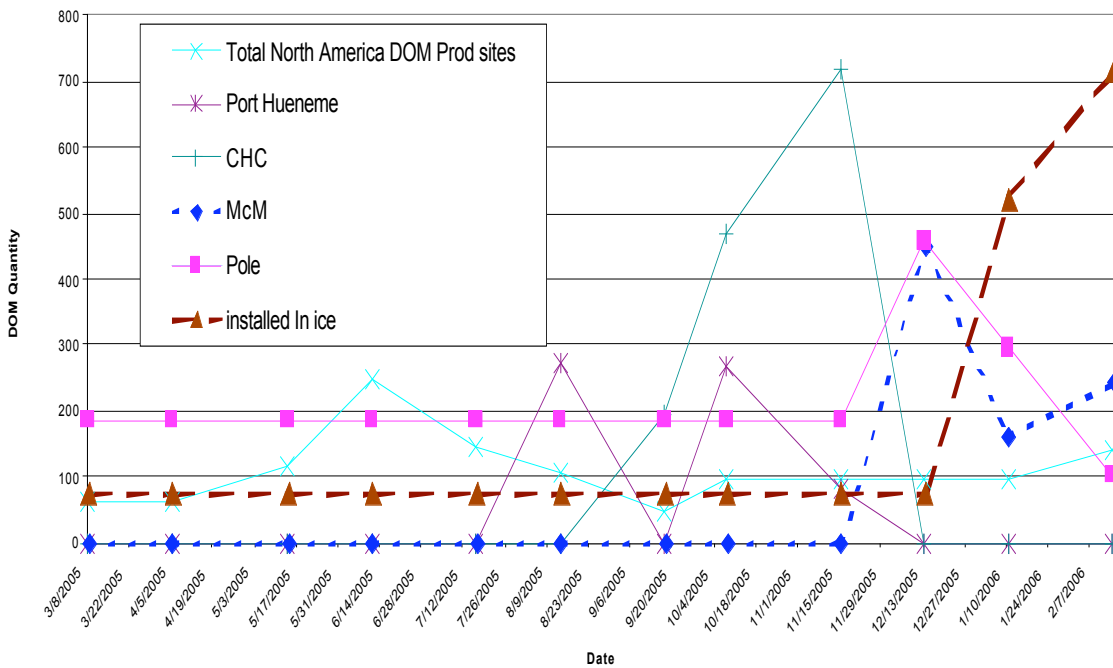
Data Systems – The data handling systems are installed in the temporary counting house (future optical module laboratory) and the software is operational. Due to cargo shipment limitations NSF and Raytheon decided to postpone build out of the interior of the permanent counting house until next year. It is now anticipated that conditional occupancy of the IceCube Counting House will be December 1, 2005.

Instrumentation Production, Testing, and Shipping – The IceCube production, testing, and shipping plans for DOMs in 2005 are shown in the following graphs.

IceCube DOM Production PY4 - Summary



DOM WIP snapshots PY4 - 12+ strings built, 10 strings installed at Pole



Safety, Quality Assurance, and Project Documentation – The project has successfully recruited an experience safety manager, Hank Lowell. Hank will start with IceCube on March 21, 2005. There are a number of safety related action items resulting from the operations experience gained at the South Pole this year including additional procedures and training.

Recent progress on completing a rather long list of project documentation is very good and is tracked by the Quality Assurance Manager and Project Manager.

Other News – IceCube staff moved to new office space at 222 West Washington Avenue, Madison, Wisconsin. IceCube is located on the 5th floor of the Network 222 Building. Phone numbers will remain the same. The space includes three conference rooms and video-conferencing capability.

Future Meetings and Events

Amanda/IceCube Collaboration Meeting @ Berkeley/LBNL	March 19-23, 2005
UW/RPSC Detailed Planning Meeting in Support of SIP @ UW	April 5-6, 2005
NSF Site Visit @ UW	April 8, 2005
NSF Baseline Update Status Review (Hartill IV) @ UW	May 23-25, 2005
International Oversight and Finance Group Meeting @ NSF	Week of June 13, 2005

The monthly reports are posted at [IceCube Monthly Reports](#).

IceCube Neutrino Observatory Cost Schedule Status Report Reporting Period Ending: 1/31/2005 ¹											
WBS Element	Cumulative To Date (AY K\$)					At Completion (AY K\$)			Complete (%)		
	Budgeted Cost ²		Actual Cost of Work Performed	Variance		Budgeted AY \$s	Latest Revised Estimate	Variance	Scheduled	Performed	Actual
	Work Scheduled	Work Performed		Schedule	Cost						
1.1 Project Support ³	11,525.6	11,334.0	11,725.7	-191.6	-391.6	28,678.4	29,070.1	-391.6	40.2%	39.5%	40.9%
1.2 Implementation	12,610.0	12,590.5	13,863.9	-19.5	-1,273.4	27,757.7	29,031.1	-1,273.4	45.4%	45.4%	49.9%
1.3 Instrumentation	27,756.2	27,916.8	30,338.4	160.5	-2,421.7	90,058.5	92,480.2	-2,421.7	30.8%	31.0%	33.7%
1.4 Data Systems	6,692.9	5,431.7	5,025.6	-1,261.1	406.1	26,403.2	25,997.1	406.1	25.3%	20.6%	19.0%
1.5 Detector Commissioning & Verification	4,731.2	2,900.5	2,622.2	-1,830.7	278.3	19,584.6	19,306.3	278.3	24.2%	14.8%	13.4%
1.6 Polar Support Services	6,773.3	5,983.9	4,083.3	-789.4	1,900.6	32,135.7	30,235.1	1,900.6	21.1%	18.6%	12.7%
NSF ³	405.4	405.4	405.4	0.0	0.0	1,263.0	1,263.0	0.0	32.1%	32.1%	32.1%
Sub Total	70,494.6	66,562.9	68,064.5	-3,931.7	-1,501.7	225,881.3	227,382.9	-1,501.7	31.2%	29.5%	30.1%
Management Reserve											
Total Contingency						45,889.7	44,388.1	1,501.7			
Items Outside of Approved Baseline											
IceCube Neutrion Observatory	70,494.6	66,562.9	68,064.5	-3,931.7	-1,501.7	271,771.0	271,771.0	0.0	31.2%	29.5%	30.1%

Notes: 1 Incorporates approved and currently pending baseline changes.
 2 Budgeted contingency includes \$536K of currently undesignated Non-US Contributions.
 3 Budgeted contingency is 26.4% of the Budgeted cost of work remaining.

28.8% Budgeted Contingency @ Completion as a percentage of the Estimate to complete

\$536.0 K Undesignated Non-US Contribution
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event on February 7 at 11:14:51, offset 698366134.9 ns

