

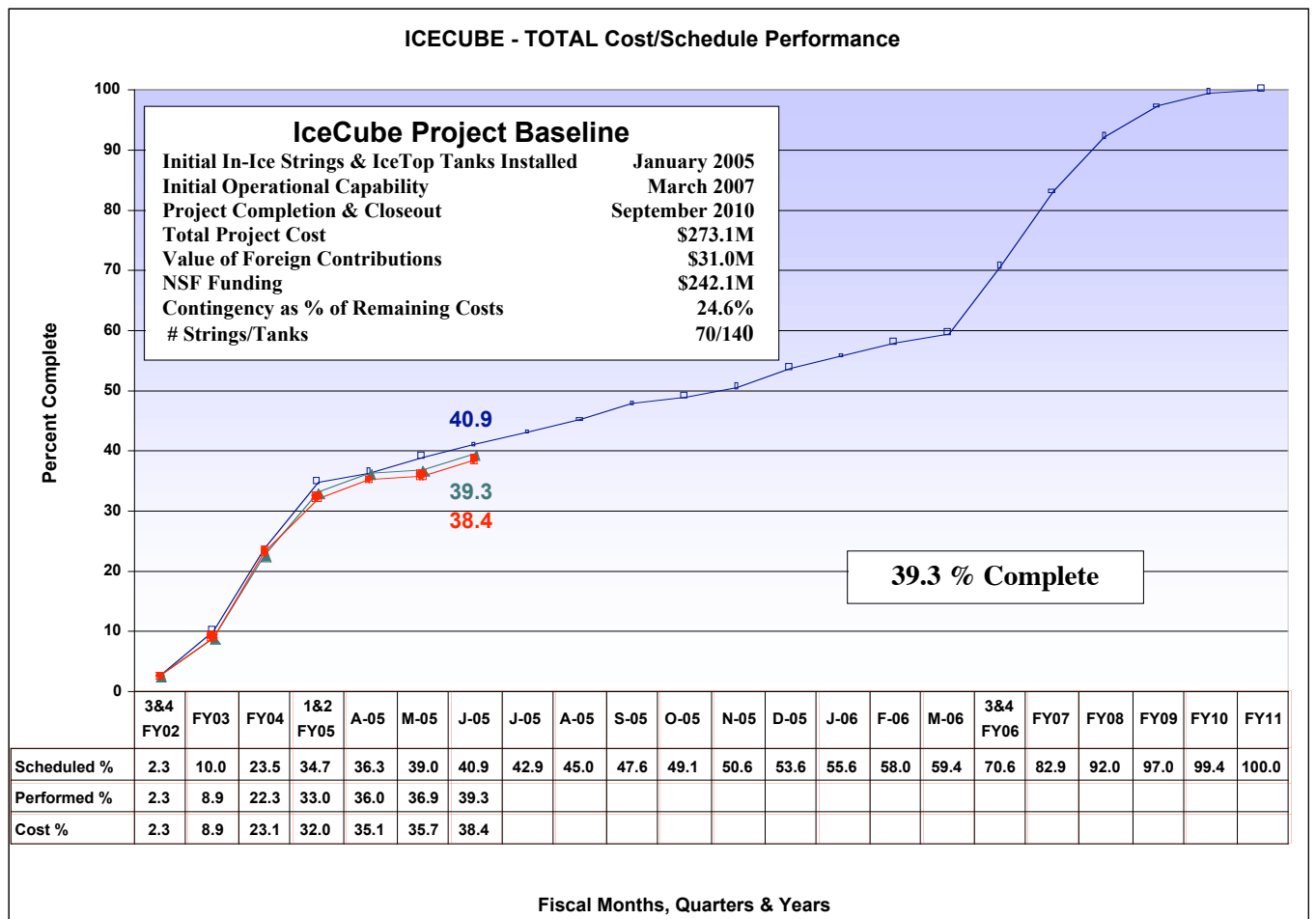
## IceCube Project Monthly Report July 2005

### Accomplishments

All Digital Optical Modules (DOMs) installed at the South Pole continue to produce physics quality data. There are 60 DOMs installed in the operating string and 16 DOMs installed in the IceTop surface tanks.

Production of DOMs for PY4 is nearly complete at the three worldwide production sites (UW-Madison, Stockholm University, and DESY-Zeuthen). The project has integrated over 700 DOMs. Approximately 930 DOMs will be produced this year.

A training program for IceCube drillers and string installation staff is planned for August 15<sup>th</sup> – 26<sup>th</sup> with the 22<sup>nd</sup>-23<sup>rd</sup> devoted to string deployment training.



IceCube Neutrino Observatory Cost Schedule Status Report Reporting Period Ending: 6/30/2005 <sup>1</sup>											
WBS Element	Cumulative To Date (AY K\$)					At Completion (AY K\$)			Complete (%)		
	Budgeted Cost <sup>2</sup>		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 <sup>3</sup>	13,780.3	13,744.0	12,679.7	-36.3	1,317.6	30,232.2	29,167.9	1,064.3	45.6%	45.5%	41.9%
1.2 Implementation	16,263.8	16,298.0	15,158.9	34.2	1,438.2	32,295.5	31,156.4	1,139.1	50.4%	50.5%	46.9%
1.3 Instrumentation	42,281.1	41,344.1	41,401.8	-937.0	100.0	98,174.3	98,232.0	-57.7	43.1%	42.1%	42.2%
1.4 Data Systems	7,753.3	7,556.4	7,341.8	-196.9	214.6	24,874.3	24,659.7	214.6	31.2%	30.4%	29.5%
1.5 Detector Commissioning & Verification	5,117.3	4,831.9	4,898.0	-285.5	-66.1	18,773.7	18,839.8	-66.1	27.3%	25.7%	26.1%
1.6 Polar Support Services	11,390.7	9,202.2	9,215.8	-2,188.5	-13.6	31,932.6	31,946.2	-13.6	35.7%	28.8%	28.9%
NSF <sup>3</sup>	458.9	458.9	437.3	0.0	21.6	1,263.0	1,241.4	21.6	36.3%	36.3%	34.6%
Sub Total	97,045.3	93,435.450	90,423.2	-3,609.9	3,012.2	237,545.6	234,533.3	3,012.2	40.9%	39.3%	38.1%
Management Reserve											
Total Contingency						35,507.8	38,520.0	42,963.8			
Items Outside of Approved Baseline											
IceCube Neutrion Observatory <sup>2</sup>	97,045.3	93,435.5	90,423.2	-3,609.9	3,012.2	273,053.3	273,053.3	0.0	40.9%	39.3%	38.1%

Notes: 1 Incorporates approved and currently pending baseline changes.

2 Total Budget at Completion includes non-US contributions \$1,283K over the amount in the post Hartill III baseline.

3 Budgeted contingency is 24.6% of the Budgeted cost of work remaining.

**Cost and Schedule Performance** – The project is just over 39% complete. The total cumulative schedule and cost variances at the end of June are less than 4 percent of planned. The detailed plan for “Project Year 4” (April 1, 05 to March 31, 06) is approved and incorporates a number of changes to the detailed performance baseline. There is no change to the total project cost baseline or completion schedule.

**Drill Construction and Operation** – The program to improve the reliability of the hot water drill is projected for completion by the end of September. Final acceptance tests of the new sections of hose were completed in Italy in July. The new hose is now being shipped directly from IVG (the Italian hose supplier) to Christchurch, NZ. About six new standard operating procedures have been developed and are in the review and approval process. The goal for next season is to install ten strings according to the following plan:

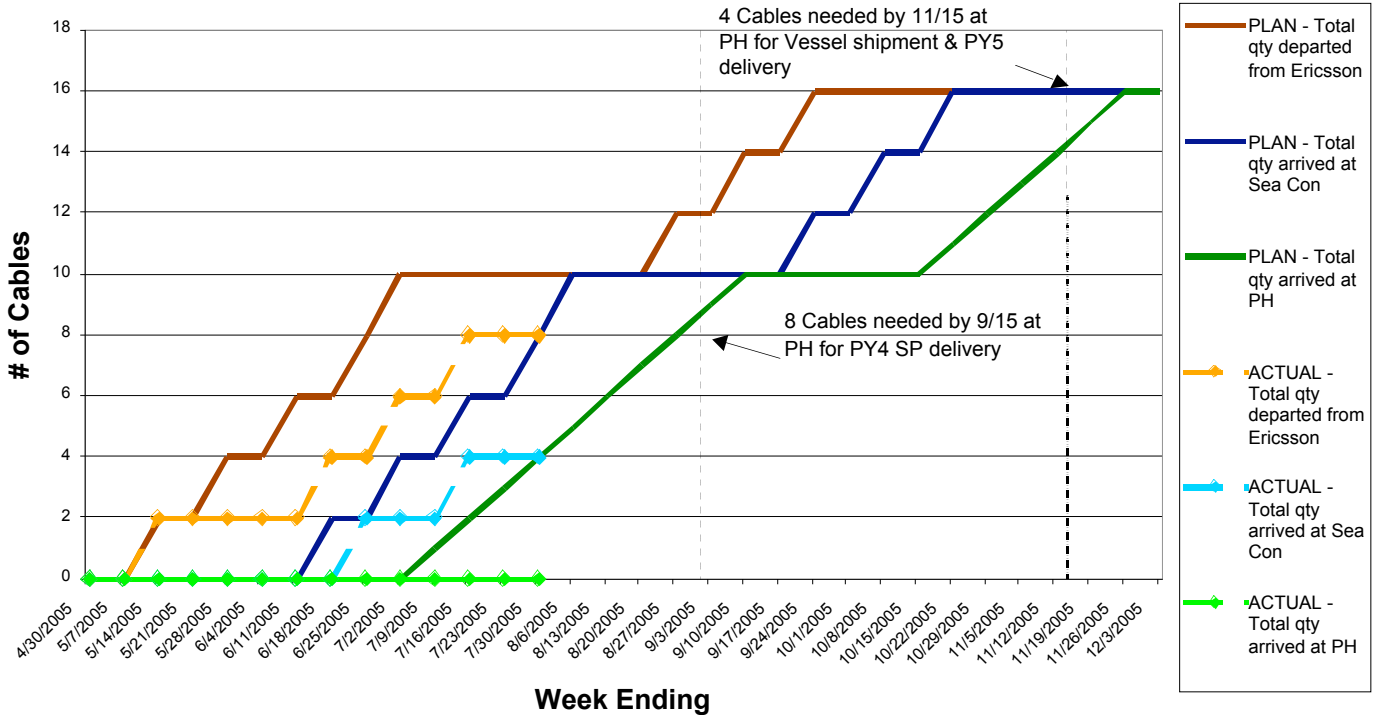
- Set up the drill camp and prepare for the start of drilling by December 10<sup>th</sup>.
- Drill and install strings over seven weeks (December 11<sup>th</sup> – January 28<sup>th</sup>).
- Install 2 strings per week with a total of 12 strings possible at this rate.

A productive IceCube Drill Workshop was conducted on July 26-27. The workshop panel included oil drilling industry experts and two individuals with extensive hot water drilling experience in the Antarctic. A report from the workshop will be available by mid-August.

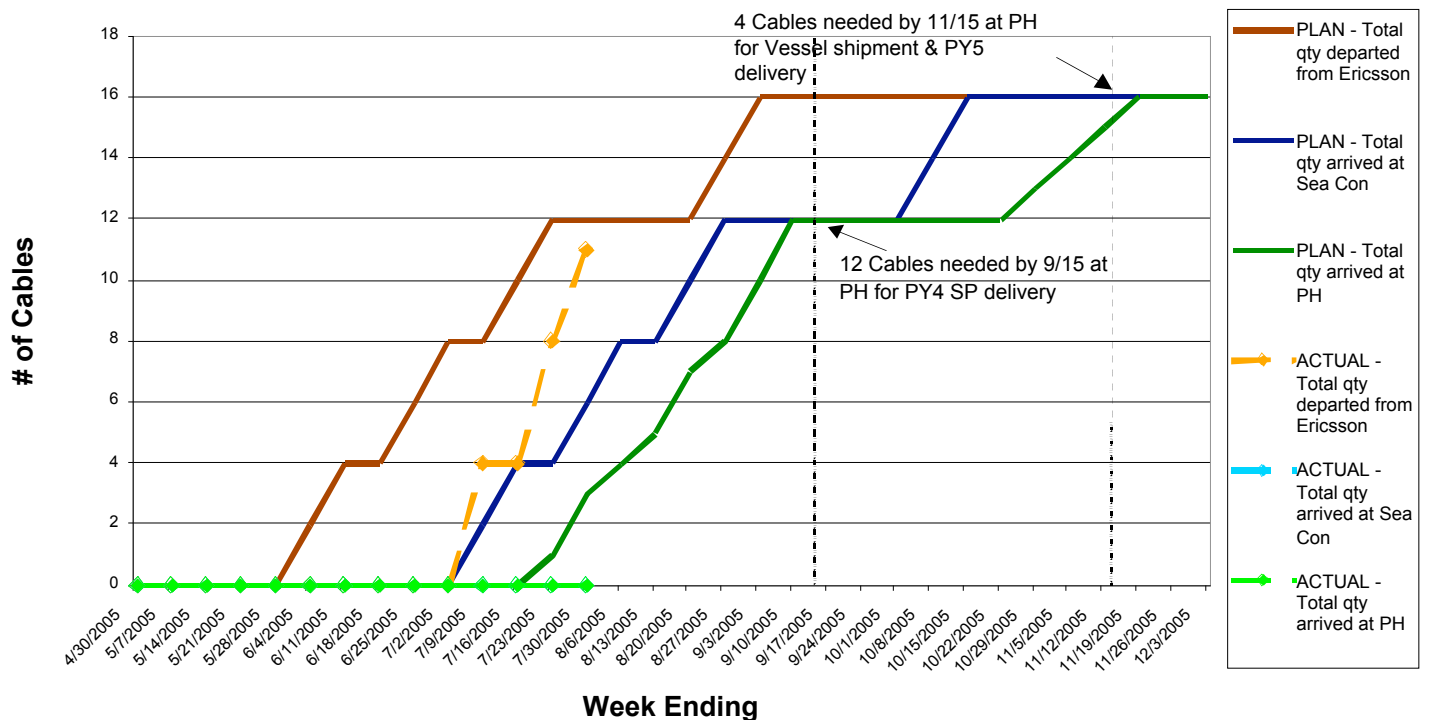
**Instrumentation Production, Testing, and Shipping** – The production goals for this calendar year are to produce 16 surface-DOM cables, 16 surface cables, and 930 DOMs. Approximately 800 DOMs and all cables will be sent to McMurdo Station. More than 700 DOMs are already integrated with roughly 400 DOMs in final acceptance testing. The final delivery of 930 DOM Main Boards from LBNL were delivered this month, ahead of schedule. The IceCube Surface to DOM Cable, Surface Cable, and DOM production plans and current status are shown in the

graphs below. Cable production is somewhat behind planned, however the goal of eight in-ice and 12 surface cables to Port Hueneme by mid-September remains on track.

### Surface to DOM Cable PY4 Production

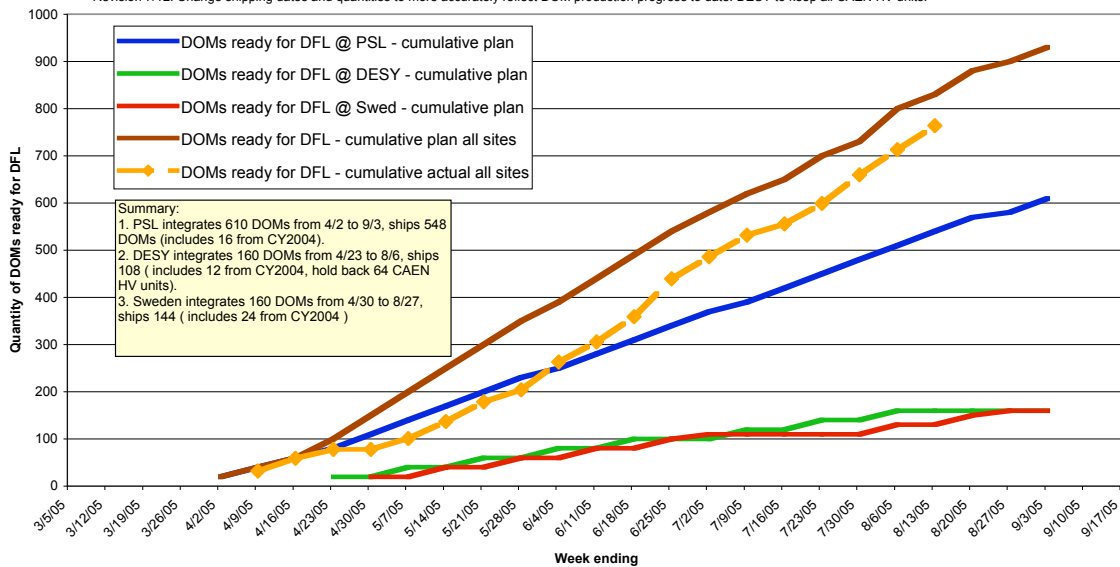


### Surface Cable PY4 Production



### IceCube DOM Production PY4 - Summary ( revised 7/12/05 )

Revision 7/12: Change shipping dates and quantities to more accurately reflect DOM production progress to date. DESY to keep all CAEN HV units.



**String and IceTop Commissioning** – 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. Overall, the data from the first string and IceTop tanks supports the production and instrumentation installation plans for 2005.

**Instrumentation System Test Status** – The South Pole Test System located at the Physical Sciences Laboratory was relocated to the UW Physics Department (Chamberlin Hall). The test system is an important test bed for data acquisition and data handling software. The DOM-to-Cable test facility at PSL continues to operate as a test environment for both software and for more general system performance testing. This system will be moved to the new IceCube utility building on the KRC campus during the month of August.

**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 it was decided to postpone the build-out of the interior of the permanent counting house until next year. It is a considerable challenge to be able to use the temporary facilities for the second season of IceCube strings and IceTop installations because of the severe space limitations. Plans for the exact layout of the interior of the temporary counting house have been mocked-up in the Physics Department lab. Tests of the SP system will be performed in the next two months.

**Quality Assurance** – The IceCube QA Manager, Michael Zernick, is working with the DOM production and engineering teams to investigate issues with nonconforming materials identified during material acceptance tests, DOM production, and final acceptance testing. All failures are subjected to a formal process of failure review and follow-up action through the Failure Review Board (FRB) process.

**Safety** – A safety review with the NSF and its panel of external experts will be held August 10-11. The review will focus on drilling and deployment on-ice activities as well as the status of

hazard analyses, written operating procedures and instructions, lines of communication, and organization.

**Meetings and Events**

IceCube Drill Workshop with Advisory Group	July 26-27, 2005
NSF Safety Review of the IceCube Project	August 10-11, 2005
IceCube Drill Training	August 15-26, 2005
IceCube String Deployment Training	August 22-23, 2005
International Oversight and Finance Group Meeting @ NSF	tentatively, September 21, 2005

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