

## **IceCube Project Monthly Report April 2004**

### **Accomplishments**

- Received \$3 million from NSF for two additional months of start-up activities in anticipation of National Science Board approval to proceed with construction.
- Filled several key positions including:
  - Deputy Implementation Manager – Tom Ham, University of Wisconsin
  - Simulation Manager – Klas Hultqvist, Stockholm University
  - Detector Verification & Analysis Manager – Gary Hill, University of Wisconsin
  - Data Filtering & Software Manager – Erik Blaufuss, University of Maryland
- Completed a design review for the instrumentation cable – April 21-22.
- Finalized the schedule for the remaining major technical reviews for the year.
- Started design verification testing for the Digital Optical Modules.
- Completed equipment functional tests for most of the drilling equipment.
- Prepared detailed schedules, milestones, and time-phased budget plans for the current year in preparation for the NSF Cooperative Agreement.

### **Status and Issues**

***Implementation*** – IceCube submitted the FY 2005 Support Information Package (SIP) on April 15th. The estimates are based on very detailed plans for the first season and address the full scope of support required for the project. UW is in the process of hiring the drilling and deployment (installation) managers for the first season. These individuals are expected to report to UW this summer to gain familiarity with the Enhanced Hot Water Drill and the DOM installation equipment. They will also participate in training activities.

A purchase order was placed with IVG, the current host vendor located in Italy, to assist in the design of an improved hose for the Enhanced Hot Water Drill system. The new design is expected to meet performance specifications, in particular the outstanding issues with strength and flexibility under combined loading. A test report for the proposed replacement hose will be delivered as part of the agreement. The current hose should be suitable for use in the first drilling season once several non-nylon banding options are tested and demonstrated to be acceptable. The previous nylon method for banding probably would have sufficed, if necessary, but the project is looking for a more efficient material to bind the hose to the cable. The drill cable is designed to carry the full load of the hose with the use of effective bands applied either manually or by automated means.

The subsystem tests for Main Heating Plants 2 and 4 were completed on April 8<sup>th</sup> and April 23<sup>rd</sup>. Testing for Main Heating Plant 3 is in progress. Work continues on wiring the emergency stops for the Rodriguez Well System and the Main Heater Plants.

Completion of verification testing for the drill is now planned for June. Essentially, all tests will be completed in May with June reserved for final payout testing in parallel with initial training activities.

**DOM Production** – Almost all of the purchase orders for the Digital Optical Module components to be used for the initial strings and DOMs to be used for testing purposes are placed or are in the final stages of placement. Design verification testing is underway and production tooling and test facilities are in the final stages of preparation.

**Internal Reviews** – A series of internal technical reviews are planned in support of the first season deployment. Many of these reviews are in the instrumentation area and are expected to confirm the technical basis for the cables, DOMs, and data acquisitions and to identify issues that need to be resolved prior to shipment of instrumentation equipment to the South Pole. The reviews are listed at the end of this report.

**IceCube Project Baseline** – The table below provides a summary of project baseline information. The project plans to establish a contingency budget that is at least 25% of the remaining cost.

Initial In-Ice Strings & IceTop Tanks Installed	January 2005
Initial Operational Capability	March 2007
Project Completion & Closeout	September 2010
Total Project Cost	\$271.8M
Value of Foreign Contributions	\$29.7M
NSF Funding	\$242.1M
Contingency as % of Remaining Costs	23%
# Strings/Tanks	≥70/140

**Quality and Safety** – The IceCube Safety and Quality Assurance Manager is developing a safety plan for the work to be conducted at the South Pole this coming season. This plan is being prepared in consultation with staff at Raytheon Polar Services Company and the IceCube Implementation Managers.

### **Future Meetings and Events**

Monthly Status Meetings	May 12, June 16, August 8, September 15
Quarterly Review Meetings	July 12, October 13
Instrumentation Reviews	
DOM Main Board Design Review @ LBNL	May 5
DOM Integration Design Review @ LBNL	May 6
DOM Process Integration Review @ PSL	May 19
DOM Final Acceptance Test Readiness Review @ PSL	May 20
DOM Production Readiness Review @ PSL	June 6-9
Internal Software Reviews	
Surface DAQ Software @ LBNL	May 7
Data Systems & Detector Verification @ University of Maryland	May 19-20
Drill Hose Review @ PSL	June 3