

## IceCube Project Monthly Report March 2004

### Accomplishments

- Completed Digital Optical Module Test Readiness Review.
- Ordered the high voltage and flasher boards for 400 DOMs.
- Prepared shelving and optical test equipment for the Dark Freezer Laboratory at the UW Physical Sciences Laboratory.
- Submitted a request for \$3 million to support an additional two months of start-up activities in anticipation of a decision by NSF to proceed with construction in May.
- Developed a schedule for the internal technical reviews for this year.
- Conducted an IceCube Collaboration meeting at the Bartol Research Institute.
- Secured unanimous approval of the project baseline by the IceCube Collaboration Board on March 24, 2004.

### Status and Issues

***Drill Hose*** – The performance of the drill hose for the Enhanced Hot Water Drill is viewed as marginal due to questions concerning the fatigue life. The issue is necking of the hose under simultaneous application of tensile, pressure and bending loading. There are no concerns that the hose will burst or leak, i.e., it is not a safety issue. The drill cable is designed to carry the load of the hose through tight coupling with nylon bands and therefore, once adequate banding is demonstrated by either automated or manual banding techniques, the current hose should be suitable for use in the first drilling season. Backup plans include the expedited procurement of a replacement hose and there is a possibility that sections of the new hose will be available for the first drilling season.

***Internal Reviews*** – A series of internal technical reviews are planned in support of the first season deployment. The reviews are aligned with the various technical elements of the project, e.g., the drill hose, digital optical module design verification and production, data flow, etc. These reviews cover the full scope of the project and are also relevant to ongoing efforts to strengthen the basis of the baseline cost estimates.

***IceCube Project Baseline*** – The table below summarizes the project baseline information. The project is tracking progress against this plan and is working to establish a contingency budget that is at least 25% of the remaining cost.

IceCube Project Baseline

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

***Project Management Plan*** – In response to the NSF review in February the Project Management Plan was revised and submitted to the NSF for comment on March 31, 2004. Following incorporation of the final NSF comments the revised plan will be provided to the Collaboration for concurrence and formally submitted to NSF for approval. It is expected that the final plan will be approved in conjunction with the implementation of a new Cooperative Agreement between the UW-Madison and the NSF covering the full duration of the construction project.

***UW/RPSC Planning Meeting*** – Raytheon Polar Services Company and University of Wisconsin staff met for in Madison for two days at the end of March to develop detailed work and logistics plans for the first deployment season at the South Pole. The meeting was very productive and UW and RPSC staff will continue to work closely to ensure coordinate plans.

***Quality and Safety*** – The IceCube Quality and Safety Manager is now preparing monthly reports as an input to the Monthly Status Reports (attached). Safety was an agenda topic at the UW/RPSC meeting and there are a number of follow-up actions to be addressed in the next few months including designation of Safety Officers at the Pole, ensuring proper communication of potential hazards, emergency response, and general training.

**Future Meetings and Events**

Monthly Status Meetings      April 14<sup>th</sup>, May 12<sup>th</sup>, June 16<sup>th</sup>, August 8<sup>th</sup>, September 15<sup>th</sup>  
Quarterly Status Meeting      July 12<sup>th</sup>, October 13<sup>th</sup>

# ICECUBE QUALITY & SAFETY MONTHLY REPORT

## Inputs To Graduate School Monthly Report

March 2004

T. Demke

QUALITY	
<b>Tasks Completed / Status:</b>	
1)	<b>DOM Production Walkthrough:</b> <ul style="list-style-type: none"><li>• Conducted DOM Production Walkthrough at PSL to review the quality and safety processes used to make the DOM's.</li><li>• A summary report with action items was generated.</li></ul>
2)	<b>IceTop Production Review:</b> <ul style="list-style-type: none"><li>• Reviewed the production processes for the IceTop tanks at Bartol to review the quality and safety processes used.</li><li>• Tanks are fabricated by a vendor; no fabrication is done at Bartol. Bartol staff needs to manage vendor and conduct QC checks of tanks prior to shipping.</li></ul>
3)	<b>Quality Plan:</b> <ul style="list-style-type: none"><li>• Reviewed the Quality Plan against ISO 9001 and current practices to determine whether coverage was adequate/appropriate and processes were being implemented.</li><li>• Coverage appears to still be adequate. A few areas (i.e., internal audits and management review) were left out of the Quality Plan intentionally as it appeared it would be premature to implement such processes (see next bullet).</li><li>• Implementation of Quality Plan has been very slow and inadequate for the stage which the project is (see Risks below).</li></ul>
4)	<b>Configuration Management:</b> <ul style="list-style-type: none"><li>• Configuration Management Plan 9000-0004 awaits final implementation of change control process prior to release.</li><li>• Worked with Paul Nipko and Brenda Ziegler on process definition for Change Control Board (CCB).</li><li>• Draft CCB procedure generated by Paul Nipko.</li><li>• Draft change control forms generated.</li><li>• Simon Patton distributed the Software Configuration Management Plan 9000-0006 for review.</li></ul>
5)	<b>Action Item Tracking Table generated.</b>
6)	<b>Document Review:</b> <ul style="list-style-type: none"><li>• Cable Test Verification Plan.</li><li>• DOM Verification Plan &amp; Procedures.</li><li>• EHWD Main Heat Plant 1 and High Pressure Pump subsystem test results.</li></ul>
7)	<b>Reviews / Meetings (participation):</b> <ul style="list-style-type: none"><li>• DOM High Voltage pre-purchase meeting.</li><li>• Change Control Board.</li><li>• Bartol Collaboration Meeting.</li></ul>
<b>Risks:</b>	
1)	Acceptance and implementation of the Quality Plan have been very slow. This presents a significant risk of not being able to manage the system configuration due to inadequate documentation.

## SAFETY

### Tasks Completed / Status:

- 1) **Safety Design Review (EHWD):**
  - 2 action items/analyses closed
  - 50/61 actions/analyses completed
- 2) **Hazard analyses:**
  - Signed IceTop HA
  - Started DOM Manufacturing HA (in follow-up to Quality item 1)
  - HA's needed for DOM Deployment (including deployment reel) and Counting House.
- 3) **Fire Suppression Systems (EHWD):**
  - Last 2 suppression systems were installed in Main Heat Plants 3 and 4.
  - Certificates of installation are needed for these last 2 installations.
- 4) **Waivers (EHWD):**
  - 9 of 10 have been approved; no activity this month.
- 5) **Event Reports (EHWD):**
  - 3 of 7 closed; no activity this month.
  - 40 of 47 actions completed.
- 6) **Post-Manufacturing Inspection (EHWD):**
  - 61% complete; no activity this month.
- 7) **Chemical Safety:**
  - Reviewed Material Safety Data Sheets for chemicals to be used in DOM Production.
- 8) **RPSC:**
  - Participated in RPSC Logistics meeting to discuss safety. Tom Hutchings plans to set up an offline meeting to discuss coordination of various safety topics, including:
    - Designation of Safety Officer.
    - Ensuring RPSC/IceCube staff understand IceCube safety concerns and are working in a safe environment.
    - Emergency response.
    - Training.

### Risks:

- 1) Lack of Quality/Safety staff is slowing ability to complete tasks on a timely basis, such as:
  - Initial HA's on Deployment and Counting House need to be started.
  - Inability to review previously released HA's to ensure all issues have been addressed and the HA's are current.
  - No activity this month on the Post-Manufacturing Inspection of the EHWD or Event Reports.