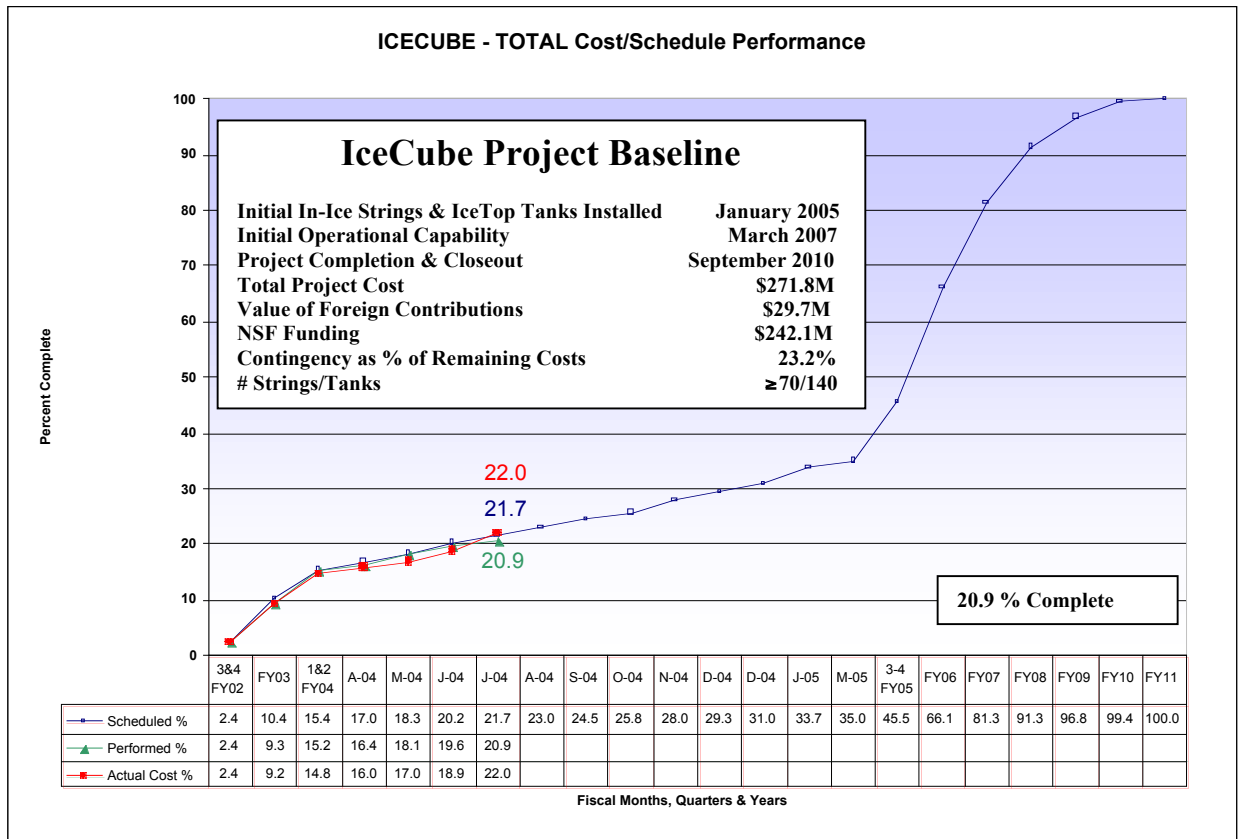


# IceCube Project Monthly Report August 2004

## Accomplishments

Completed development and testing of the Enhanced Hot Water Drill (EHWD) and shipped the drill equipment from the University of Wisconsin-Madison to Port Hueneme, California. Raytheon Polar Services Company and NSF are responsible for future shipments from California to New Zealand, from New Zealand to McMurdo Station on the coast of Antarctica, and ultimately McMurdo to the South Pole.

Started final acceptance testing of the first production batch of Digital Optical Modules (DOMs). A total of 92 DOMs were loaded into the recently commissioned Dark Freezer Lab at PSL. Test results indicate that over 90% of the DOMs will pass the testing program and will be shipped to the South Pole.



**Construction Cost and Schedule Performance** –The schedule variance of -.8% through July is due to minor delays in the start of instrumentation production, completion of Enhanced Hot Water Drill system level testing, and delays in increasing staff in the areas of data systems and detector verification and commissioning preparation activities. The cumulative cost variance is negative 1.1% includes encumbered, but yet to be expended funds. The total contingency budget relative to the budget for the remaining work is holding at about 23%.

### ***Enhanced Hot Water Drill Testing***

Testing of the Enhanced Hot Water Drill was completed in August and the drill was shipped from UW Physical Sciences Laboratory to Port Hueneme, California. Tests completed in August include the fuel pump functional test, return hose reel spooling test, preheat system tests, and Rodriguez well system tests. The drill head will be shipped in September following completion of additional pressure tests. Additional tests of the cable-hose banding tape will also be completed in September.

Load tests were completed on sections of the new drill hose that is being evaluated as a possible replacement to the existing supply hose. It was determined that the hose meets requirements, however at the highest load conditions some necking of the hose occurred immediately adjacent to the hose couplings. Possible remedies are being investigated.

### ***Digital Optical Module Production & Testing***

UW Physical Sciences Laboratory (PSL) - As of August 28<sup>th</sup>, a total of 155 DOMs were completed and ready for testing, 30% more than the baseline plan. The first final acceptance testing cycle began on August 17<sup>th</sup> with 92 DOMs placed in the dark freezer laboratory. Start up problems with the first cycle resulted in a week delay in the test cycle. The second testing cycle will begin on September 11<sup>th</sup> as originally planned. The delivery of electronics, specifically the “main boards” from Lawrence Berkeley National Laboratory, continue to be the critical path for DOM production. On September 14<sup>th</sup> approximately 72 DOMs will be shipped from PSL to Port Hueneme, California. This is more than necessary to instrument a single IceCube station of 64 DOMs (a string of 60 DOMs on a 2.5 km cable in the ice plus 4 DOMs frozen into two surface tanks). A second shipment of DOMs is planned for the first week in October.

DESY Laboratory - As of August 28<sup>th</sup>, one production DOM was completed and ready for testing. Germany has received 18 main boards and 8 more are in transit. The first final acceptance testing cycle is scheduled for September 20<sup>th</sup>. This date will be a challenge given the experiences in the U.S. getting the PSL facility on line.

Stockholm and Uppsala, Sweden – As of August 28<sup>th</sup>, Stockholm received 18 main boards and started DOM production. The first final acceptance testing cycle is scheduled to begin in Uppsala on September 25<sup>th</sup>.

### ***Digital Optical Module Testing***

Overall the results thus far appear to be quite good. The yield is projected to exceed the goal of 90%, and the observed data does not indicate any systemic issues. Seven DOMs will fail acceptance testing due to problems with high voltage stability, the flasher, or local coincidence.

### **Future Meetings and Events**

Monthly Status Meeting @ UW	September 15
International Oversight & Finance Group Planning Meeting	October 7
IceCube Collaboration Meeting @ Uppsala, Sweden	October 8-10
NSF Semi-annual Review/Cost Review @ UW	October 26-28
Monthly Status Meeting @ UW	November 17