This is the first in a series of five reports providing an up-date on the testing of GLiDE (Grounding Line Dynamics and Exploration) instrumentation in Lake Tahoe prior to its deployment to Antarctica. Building of the equipment and its testing is supported by NOAA, the Gordon and Betty Moore Foundation and the California Seismic Safety Commission. Participants include scientists and students from Northern Illinois University and the California Geological Survey, engineers from DOER Marine, and operations personnel from Tahoe Marine and Excavating.

The key instrumentation is a customized remotely operated vehicle (ROV) named SIR (Sub-Ice Rover) designed to be lowered through a borehole in the Ross Ice Shelf of the Antarctic Ice Sheet and then explore the ocean, sediment and ice where the ice sheet starts to float into the Ross Ice Shelf; an area called the grounding zone. Such areas are considered by scientists to be critical to learn about if we are to improve predictions from our models of the ice sheet’s future during global warming.

On Sunday 14th DOER-Marine transported SIR, its instrumentation, command and control center (a 20ft ISO van), and operational equipment up to Lake Tahoe from their facility in Alameda, CA. All arrived intact at about 1pm at Homewood, CA on the western shore of Lake Tahoe. During the afternoon all of the transported units were loaded onto the working barge of Tahoe Marine and Excavating.
Today, Monday 15th, has been an intense day of connecting and testing all operational components of SIR and its communication to and from the command and control van through the 3km-long (~2 mile) umbilical. The umbilical is a strengthened fiber-optic tether that allows commands to be sent to SIR as well as providing its power while under ice and water. Its fiber-optic cables also allow real-time video images to be sent back to the surface enabling SIR to be driven using a joystick in the command van. Likewise, all SIR's operational and scientific instrumentation data are transferred to the van where they are recorded and stored. These operations and communications we tested and after some initial issues of some, all were resolved and in operational condition ready for putting SIR in the water tomorrow for its initial “wetting”.

Figure 2: Command and control center ISO van being loaded onto the barge on Lake Tahoe

Figure 3: SIR being loaded onto the barge on Lake Tahoe.
The final step of the day was to test communications with the scientific instrumentation it is carrying. Communication was achieved with all but a precision depth sensor. Problems appear to be in fiber-optic connections at the surface and will be tracked down early tomorrow as the first engineering test are conducted on SIR while being submerged in Lake Tahoe on its christening.

Figure 4: Barge laid-out for operations with SIR to the left, deployment crane in the center, winch with 3km of umbilical right background, and generator for powering the whole system to the middle right. Taken from the top of the command and control van.

Figure 5: NIU student Tim Hodson working with DOER engineers preparing the SIR instrumentation for testing.