

## Identifying Oil under Ice using Radar

Researchers have been conducting a new research initiative designed as an extension to the ongoing Joint Industry Program (JIP) *Detecting oil on and under sea ice using ground penetrating radar (GPR): Development of a new airborne system*. This is a pool-funded project with seven sponsors being led by a project manager from DF Dickins Associates and an engineering design team from Boise State University. The host testing facility is the U.S. Army's Cold Regions Research and Engineering Laboratory's (CRREL) Geophysical Research Facility (GRF).



**The host site  
CRREL's Geophysical Research  
Facility, Hanover, N.H.**

with an opportunity to test the new radars over a relatively thick ice sheet with oil, something not possible in a natural field setting due to permitting restrictions.

The primary objectives of the GPR tests at CRREL are to validate the radar performance predictions with a controlled ice sheet of known temperature, salinity and thickness, and known oil spill volume, thickness and spatial distribution; and to provide a comparison of the parabolic and horn antennae that will guide future oil-in-ice GPR development priorities. And, at the same time, the CRREL tests provided an opportunity to compare the performance of the new radars developed through the JIP with commercially available off-the-shelf systems used in previous tests at CRREL in 2004, Prudhoe Bay in 2005, and Svalbard in 2006. The findings from the 2011 test program will provide continuity with past test results and a clear indication of the relative improvement in capability offered by the new purpose-built systems.

Secondary objectives include comparing the performance of the both the existing new radar systems in detecting encapsulated oil layers within the ice sheet versus oil freshly spilled under the ice.

### Points of Contact:

**Testing** – David Dickins, P.Eng., DF Dickins Associates, LLC  
9463 Poole Street, La Jolla, CA  
Tele: (858) 453-8688  
[dfdickins@sbcglobal.net](mailto:dfdickins@sbcglobal.net)

**Engineering** – Hans Peter Marshall and John Bradford, Boise State University  
Tele: (208) 426-1416  
[hpmarshall@boisestate.edu](mailto:hpmarshall@boisestate.edu) and [jbradford@boisestate.edu](mailto:jbradford@boisestate.edu)

**Research Facility** – Leonard Zabilansky, CRREL research civil engineer  
72 Lyme Road, Hanover, N.H.  
Tele: (603) 646-4319  
[leonard.i.zabilansky@usace.army.mil](mailto:leonard.i.zabilansky@usace.army.mil)