Project Cornerstone

Newsletter #4:

Everything went well today at the two Cornerstone camps. The weather was splendid: it was clear, calm and only minus 25 (C). Skidooing was still cold, but all other work was quite pleasant. We had the usual problems with reluctant skidoos and generators that complain of the cold. But, on the other hand, we are running about 15 skidoos, and it's a credit to the mechanics that most of them run quite well.

At the AUV camp the pre-launch test was completed today – right on schedule, and, unless things go very wrong, it will have its first submerged test tomorrow. I think that tomorrow will be pretty much devoted to ballasting it.

The picture on the right shows the AUV lifted off its supports by the overhead gantry. At the top of the picture you can see the box beam holding up the electric winches. For the engineers in the crowd, the centre of the beam deflected an inch and five eighths when it took the weight. As nearly as I could tell, their only problem of the day was a battery charger that failed.

Garry Heard says that everything progressed very nicely today at his camp (Niflheim). Garry and his people are working on two acoustic methods of helping the AUV with its navigation. The first one is called the Long-Range Acoustic Bearing System (LRAB). It, as you might guess, helps direct the AUV when it is a long distance from the recovery hole. When the water is deep (4000 m, say), the acoustic propagation will be good, and Garry expects that this system should provide a continuous contact at ranges of 100 km or better. The AUV, upon hearing the signal, will know which direction to swim in order to get to the recovery hole.

The other system is called the Short-Range Localization System (SRL). A modem on the AUV will communicate acoustically with a number of other modems hanging from the ice. It will measure its distance from each of the stationary modems and, since it knows their locations, it will be able to calculate its own position. The range of this system is, of course, not as long as the LRAB, 10 km being the expected maximum range. This system will be particularly useful as the AUV makes its way from its launch point down to the bottom in, say, 2000 m of water. During this descent, the AUV will have no other way of knowing where it is. Once it gets close to the bottom it will be able to use its Doppler-sonar velocimeter (and its compass) to dead-reckon. When you realize that it will take the AUV several hours

to spiral down to the bottom, you begin to appreciate the importance of this 'interim' navigation system.

Today, Garry and crew surveyed in the locations of where he wishes to lower the modems. Stay tuned.

I end with a few more pictures of our crew. First we have Sean Spears, who works at DRDC, Halifax. Sean turned 28 today, and the kitchen staff laid on a birthday cake, and we all sang a rousing version of 'Happy Birthday'. Al Tremblay, who organized this asked the girls to give him a big hug and a kiss. It looked for a while like they might be interested, but they chickened out in the end. Perhaps in the bar tonight….

Dave Wheaton sort of mother-hens the people at the ice camps. Keeps their skidoos running, supplies them with fuel for their stoves and makes sure they have everything they need. He does this in conjunction with Jim Milne, Al Tremblay and, to some extent, Sean Spears.

Derek Clark works at DRDC in Halifax. He is the person who will be writing the software that will interface Garry's modem in the AUV to the vehicle's control computer.

Don Mosher, one of old-timers responsible for the Halifax lab's successful field trials. Has vast knowledge, an enormous skill set, and has the ability to keep everyone laughing. Here he has 50 m of rope stretched along the hole in order to mark it for length.

Nicos Pelavas, one of the more recent additions to the Halifax lab. Recently he has been helping Garry simulate how well the two acoustic systems assists are going to work. Here he is helping Don measure and mark the ropes.

This is our very own Super Hero. He appears at random times, gives his infectious laugh, solves someone's difficult problem and then vanishes. We call him the Arctic Shnoz.

This is mild-mannered Garry Heard, researcher extraordinaire and responsible for several of the experiments this year. What most people don't know is that – given 15 minutes and a lot of room he can don his special garb and turn into… "The Arctic Shnoz".

Best Wishes, Ron Verrall
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