

UNCLOS Continental Shelf Project – Arctic Ocean – Update #4



(March 8, 2009)

Our little Bobcat loader is one of the pieces of equipment that will respond to the Sudanese proverb and ease the burden on the team. Our Bobcat will be the focus of this posting.

Bob arrived in Eureka on the annual sealift in the summer of 2007. Bob was purchased to be a tough, agile, and versatile piece of equipment that could plow and blow snow to create an ice runway, or work as a fork-lift. The specifications for Bob were carefully prepared to include weight and dimensions maximums that would allow it to be transported to the ice by a ski equipped aircraft. Bob has not yet lived up to expectations due to misfortune that stated 20000 kilometres away before we even came up here last year and a few cold-weather related teething problems. For the record, it is a very handy piece of gear and we are all looking forward to actually being able to use it at camp one day soon,

The whole concept for the 2008 ice camp for the ARTA (Alpha Ridge Test of Appurtenance) project was designed around two aircraft, the Douglas DC-3 and the De Havilland DHC-5 Buffalo. The plan was for the DC-3 to take the Bobcat out to the camp, landing on skis. There it could go to work digging out a 3000 foot runway that the Buffalo could land on, then Bob would be used to unload the aircraft and maintain the runway during the project. At the end of the season, after loading all the gear back onto the Buffalo, it would go out on the last Buffalo flight, to be stored in Eureka until the next winter survey.

The DC-3 component required that the operator's cab be temporarily removed and special modifications were included in the specifications so as to be able to drive it into and out of the airplane in this condition. Also, some kind of a ramp had to be invented in order to get up this 5000 pound loader up to the door of the plane, but this part never left the drawing board last year.

It is over 70 years since the first Douglas DC-3 aircraft began flying. It has been a work horse in many campaigns and in the Canadian Arctic for many years. It can be equipped with skis and the fact that its third wheel is a tail wheel rather than a nose wheel makes it ideal for off-airport work. In recent years Basler Aviation has been installing new turbine engines to replace the piston engines that were original equipment on the DC-3 and marketing the turbo DC-3 as the Basler BT-67. These turbine equipped DC-3 are much more reliable in the Arctic environment than the piston version.

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A problem on another ice runway about as far from the Canadian Arctic as possible threw a wrench into our best laid plans for Bob. The only ski-equipped turbo DC-3 available for work in the Canadian Arctic in winter 2008 spun out while taking off from a glacier in Antarctica in December 2007 damaging it's landing gear, putting it out of service for our season. While there were piston equipped DC-3 flying below the tree line, there was neither aviation gas available nor piston engine equipped DC-3s flying the high Arctic, so no way to get Bob out to camp.

The plan was modified to find some other means of building the initial runway and then bringing Bob out on the Buffalo. Choreographing this was easier said than done, on both counts. A rented diesel-powered All Terrain Vehicle (ATV) and belt driven snow blower could not move the wind packed snow so we resorted to using shovels to break the snow clear of the ice and the ATV to move it to the side of the runway. Once we had 1000 feet cleared we were able to bring in a smaller version of Bob using a Short 360 Sky-Van. By that time the Buffalo had been released to other jobs and the camp gear and fuel for the helicopters were brought in with the De Havilland DHC-6 Twin Otters and the Sky-Van. The beloved, albeit ungainly and stumpy-looking Sky-Van made us cringe every time it landed or took off within what seemed like an inch of it's life. At the same time, Bob found meaningful, if not essential, work to do in Eureka: loading the Sky-Van and, eventually, unloading the Buffalo. We continued to work away at the runway using the ATV and a snow drag and the small Bobcat so that by the time the project was over we were able to bring out the gear using the Buffalo. In retrospect, nobody knows how the Buffalo ever would have been loaded and unloaded on the Eureka end had Bob actually gone to camp in the beginning as planned. It seems that two Bobcats are required to make this project work, so a second loader is being rented for Eureka for this 2009 season.

Also last year, we discovered that Bobcats in general (based on our observations of the only two specimens to be found within a 400+ mile radius) are susceptible to a fuel starvation problem that seems to be caused by fuel congealing in the tank due to the cold weather, and clogging the pick-up screen. We are still working around this problem to this day.

At the end of last season, at the last minute when there was no time to deal with it, we found that the tilt function of the hydraulic loader would fall forward under a load and Bob was becoming

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dangerous to operate as a fork-lift. We left Eureka with plans on troubleshooting this problem in our minds without further access to the machine until we came back with the parts to fix it.

Now, here we are, a year later. After consulting with our farm equipment dealership, we came up armed with a new hydraulic control valve. The turbo DC-3 is flying again and there is now a second one available in the Canadian Arctic. Kenn Borek Air had offered to build a ramp for loading Bob on their recently repaired DC-3 and we had agreed that that would be the best solution to the problem. All our problems solved.

Changing out the control valve proved to be a huge undertaking and we were very fortunate to have the use of the Eureka garage to do the job in. After almost two days, the new the valve was in place, but there were still problems. Another day of back and forth on the phone with Stratford Farm Equipment and a bit of tweaking and testing seems to have gotten Bobbie back his strength. Now to get him out to the ice.



Bob – in the operating room

Photo by Mike Black



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Bob's internal organs - Photo by Aaron Carpenter

When the Borek ramp was assembled we discovered it came with an insanely steep incline and had to be modified to even get the wheels of the machine on to the slope without hitting the skid plate and frame. As a precaution, we put a chain falls from the back of the ramp down to the hitch on the Bobcat to take up strain and keep it from doing a face-plant down the ramp.



Photo by Mike Black

An identical ramp will have to be assembled at the camp site so that the operation can be repeated in reverse. Then we can get to work on building this year's runway. Stay tuned.