

ICAM8 Abstracts

Circum-Arctic onshore/offshore geological sampling

Overview of Canada's 2016 Arctic Dredging operations

Gordon N. Oakey

gordon.oakey@canada.ca

In 2016, the Geological Survey of Canada conducted a multidisciplinary scientific expedition across the Arctic Ocean to acquire new data to support Canada's Extended Continental Shelf Program using the CCGS Louis S. St. Laurent and the Swedish Icebreaker Oden. As part of the expedition, two significant dredge recoveries were made: one from the edge of Lomonosov Ridge near the North Pole (89.271, -65.613), and the other at the crest of Alpha Ridge from the flank of Fedotov Seamount (86.825, -139.724). Dredging operations were conducted from the Oden using equipment from the Geological Survey of Denmark and Greenland (GEUS) with onboard technical support from Aarhus University. In addition, as part of a collaborative agreement between Canada and the United States, the USCGS Healy collected dredge samples from Nautilus Spur (82.073, -142.450), on the southern edge of Alpha Ridge.

Preliminary site locations were planned based on identification of high gradient bathymetric slopes (> 20°) from existing data; however, final targets were revised using new multibeam bathymetric mapping during the expedition and identification of the maximum slope gradient (typically > 30°). Two significant logistical constraints determined the final site location: there had to be ice to "dock" the ship (not open water); and, the ice had to be drifting toward the target slope. As such, dredging operations at two additional sites were aborted. This presentation gives an overview of the dredge sites, technical operations, and a summary of the ~1000 kg of recovered rock samples.