Arctic Survey Expedition: Iqaluit to Resolute July – August, 2017; Identifying Locations for ULF Receiver Stations

Ian J. Hanlon[1]

[1]EOAS, University of BC, Garibaldi Highlands, BC, Canada.

ABSTRACT

In the two previous presentations at the 3PArctic conferences we firstly (2013) presented: Compressive Sensing (CS) Overview ‘with the potential for sub-ice acquisition’ describing applications in the Arctic setting, highlighting the advantages of this technique. In the second presentation (2015) we further proposed a schema for implementing and managing such an endeavour: Canadian Geophysical Survey Herschel Island to Alert: 2016 – 2026 Compressive sensing: A new technology for Sub-ice data acquisition Multi-Analytics: next generation HPC for ‘Big Data’ acquisition, processing, modelling, imaging, simulation and prediction. The subsequent market crash and decimation of the exploration industry has resulted in a radical rethink of approach and methodology: At the 2017 3PArctic conference we will present a method of collecting ULF seismic information at the lowest cost of outlay, by utilizing off-the-shelf equipment, CS techniques and ambient source information (signal generation). We will also present the preliminary data from our first expedition to the Arctic for the purpose of surveying potential locations to place combined Geophone and Hydrophone receivers and the collection of associated data to base line future experiments. Objectives: We propose to identify locations with potential for placing Ultra Low Frequency ULF recording equipment which can be visited annually for maintenance. We will also run experiments and collect data on behalf of other scientific groups. In the future we hope to collect passive seismic data generated in the Arctic region for FWI processing of low frequency regional velocity models. Presentation: We will present a short review of the previous presentations for context, then a travelogue of the expedition and the survey results that we derive along the way. We will also explain the reason for collecting ULF data and it’s importance in the field of Full Waveform Inversion as a technique for deriving regional velocity models.