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TITLE: GEOPHYSICAL METHODS FOR ONSHORE AND OFFSHORE PERMAFROST MAPPING

ABSTRACT

Prove that frozen ground is a geological hazard in civil construction abound in edifices to engineers and contractors around the State. Providing continuity in frozen ground distribution is the role of geophysical methods.

In this paper we will review from case histories the lateral and vertical resolution (accuracy) of mapping frozen ground distribution onshore and offshore on the North Slope of Alaska. We have employed for the past five years a method called time domain electromagnetic (TDEM) soundings; it measures the electrical resistivity stratification of the subsurface.

Surveys have been run on profiles traversing the coast line and deltas on Lines between Smith Bay and Kaktovik. We will show that accuracy of mapping frozen ground distribution offshore is a function of:

- depth of sea water
- thickness of unfrozen, brine saturated sediments overlaying frozen sections.
- lithology of frozen sediments.

Onshore the thickness of frozen ground can be measured with absolute accuracy often better than ± 5%.

