ABSTRACT – DRAFT
Requirements and Options –
Wet Demonstrators for Sensors and Interfaces to Telecom Cables
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The concept of deploying oceanographic sensors on commercial telecom repeaters is under study by the scientific and telecom industry as an efficient means to study the ocean, assess climate change, and provide tsunami and earthquake monitoring at depths beyond existing regional scientific observatories. As a first step to prove-in the required sensors and interfaces, a phased approach to a wet demonstrator configuration is recommended that would allow engineering trade-offs to be evaluated and would build confidence within the industry for future deployment of sensors on commercial telecom systems.

This paper provides an overview of the requirements and the options for a progression of demonstrations that could include: simulations, laboratory tests, pier side shallow water tests, testing using interfaces to existing or planned coastal observatories, use of out-of-service cables, and deployment of a limited demonstrator interface on a commercial telecom cable or oil and gas infrastructure cable. For example, the use of existing telecom Branching Units on a telecom system, with or without dual conductor cable, would allow sensors to be tested and allow data and power interfaces to be evaluated with a relativity small investment and with minimal impact to the primary telecom system; the sensor interfaces could be largely isolated from the telecom power and data path. Data interfaces on both the wet and dry side can be evaluated. Depending on location, the test site could be reconfigurable to test a number of sensors and would provide an opportunity to test and demonstrate deployment through cable handling equipment, prove sensor calibration methods, accuracy, and drift, measure influence of the repeater on the sensor measurements, and assess impact of bio fouling and other performance measures over the longer term. Advantages of each option are discussed.