Xeos Technologies Inc.

Tech Note

XMB & XMF Activity Sensor Development

Thursday, March 28, 2019

This document is to outline the work done by Xeos Technologies to modify their XMF Led Flasher and XMB Radio Beacon to perform as a recovery tool of OBS Systems

Application**:** An existing Ocean Bottom Seismograph system being deployed using a mixture of Xeos and competitor beacons for recovery at ocean surface.

The Problem: The beacons being used were not transmitting signals consistently in rough sea state as they surfaced. Costing time and money as ships were sent out to retrieve the OBS systems that contained valuable data. It was found out that the beacons were not transmitting due to the tilt sensor shutting off the beacons randomly when the OBS units would experience rough waves. More specifically the tilt sensor would shut the beacons off after it measured a pitch outside the "allowable" window.

The Proposed Solution: Designers of the OBS systems proposed we modify the firmware of our beacons to have a larger "allowable" window so that in rough seas, the beacons would remain ON and send signals until retrieved and turned OFF. After some modeling, it was found that this could potentially still pose a problem during rough seas.

The Final Solution: To ensure the beacons would stay on at surface regardless of sea state, an activity sensor idea was introduced. The accelerometers in the beacons were programmed to detect movement of any kind and turn the beacons ON at that time. In this mode, movement is initiated when the OBS is released from the sea floor. The beacons will turn ON and remain ON at the surface, even in calm water applications. The firmware was changed, tested and sent to the end-user for further testing on the actual application. Results were good, and an order was filled for a number of units immediately.