

Title: Extended Use of Acoustic Positioning Systems

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Abstract

Acoustic positioning systems were originally used primary as a position reference system to the DP. For several years, these systems have also been used for riser monitoring and emergency BOP control. Today's operations also require control of other sub-sea systems and uploading of both real time and logged data. This can be status information, raw and processed data used for fatigue monitoring of wellheads. Survey operations also have a need for using the acoustic positioning system to perform long baseline calibration and uploading of sensor data.

The underwater acoustic communication channel has a relatively limited bandwidth. Care must be taken to enable the positioning system to perform several tasks, while not affecting its main purpose as position reference. It is critical that the DP class is not affected. This paper will discuss how this can be addressed by use of integrated positioning and communication, dedicated operator stations, and flexible use of inertial navigation. Integration of acoustic position measurements into inertial navigation work well with simple standard models for the behavior of the acoustic positions. However, use of improved models based on the nature of the acoustic measurements allow for better performance, integrity, and ease of use.