

**Title:** New Interfaces for Aided Inertial Sensors

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### **Abstract**

Current DP specifications often require GNSS and acoustic Position Measurement Equipment (PME) to be integrated with inertial navigation systems (INS) for critical DP operations.

Simply writing “INS” in a vessel spec does not guarantee the technology will deliver the accuracy, availability and integrity improvements the vessel owner / operator expects or reduce DP incidents as a result of PME equipment or human errors. These benefits can only be realised if the inertial navigation system is integrated with the DP and PME in a robust manner.

This paper firstly examines the limitations of previous generation aided inertial reference systems that are loosely coupled and use legacy DP telegrams to transfer data to the DP system. Next, a more closely coupled design is detailed where the PME and DP make use of additional data from a tightly integrated aided INS. New interfaces enable the PME and DP system to utilise the INS signals more effectively with improved fault tolerance and better diagnostics. Case studies are reviewed where the new interfaces are in use to show the operational benefits they can provide.

To conclude, usability improvements facilitated by the new telegram are discussed including how ease of use is maintained despite increased technical complexity and more meaningful diagnostic information and alarms can now be displayed in the event of system failure.