

**Title:**            **Dynamic Positioning Control Augmentation for Jack-up Vessels**

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**Abstract**

Specialized Dynamic Positioning (DP) System augmentations are assisting self-propelled jackup vessels as they move into deeper and harsher environments. The features of one such system are described here along with simulation results to demonstrate the performance improvements when the new control modes are enabled.

Jack-up vessels are platforms with three or more legs that can be extended to the seafloor to lift the vessel's hull above the sea surface. Once deployed, the jack-up vessel offers a stable and sturdy platform for performing offshore jobs such as drilling platforms and wind farm service platforms. Most jack-up vessels are not self propelled. Tugs or heavy lift vessels are used to move the jack-up from place to place and are again used, along with anchoring systems, to precisely position the vessel over the sea floor. The jack-up's work site is often alongside other structures, such as oil drilling platforms, complicating the positioning process. Precise positioning may be important to avoid pipelines or other structures on the seafloor. There is a trend toward self-propelled jack-ups which avoid the cost of the additional vessels needed for transport and positioning associated with un-propelled jack-up vessels. Even more recently, self propelled jack-ups are being equipped with Dynamic Positioning Systems to further reduce operational costs and risks

Standard Dynamic Positioning Systems are valuable to jack-up vessels, allowing independent and precise positioning. There are issues associated with the interaction of DP systems and jack-up systems, however, which are discussed in this paper.

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