

SYSTEM AND METHOD FOR OBSTACLE AVOIDANCE DURING HYDROCARBON OPERATIONS

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the priority benefit of U.S. Provisional Patent Application 61/720,191 filed 30 October 2012 entitled System and Method for Obstacle Avoidance During Hydrocarbon Operations, the entirety of which is incorporated by reference herein.

FIELD OF INVENTION

[0002] This invention generally relates to the field of offshore hydrocarbon operations and, more particularly, to a system and method to avoid obstacles, such as arctic ice, during hydrocarbon operations.

BACKGROUND

[0003] This section is intended to introduce various aspects of the art, which may be associated with exemplary embodiments of the present invention. This discussion is believed to assist in providing a framework to facilitate a better understanding of particular aspects of the present invention. Accordingly, it should be understood that this section should be read in this light, and not necessarily as admissions of prior art.

[0004] Arctic offshore regions are continuing to receive more interest by oil and gas development companies. However, due to the presence of ice floes and icebergs, conducting hydrocarbon extraction related operations, such as, but not limited to, hydrocarbon production and drilling, in offshore arctic locations is difficult.

[0005] A conventional offshore drilling system is depicted in Figure 1. As depicted, a vessel 101 floats in the water 103. The position of both the vessel 101 and a wellhead 105, which is positioned on the seafloor 107, are fixed relative to each other using thrusters or other known techniques. For a drilling vessel, each installation typically includes a single riser 109 used to connect the wellhead 105 to the vessel 101 and pass drilling materials such as, but not limited to, drilling fluid, drill bit and string, casings, and cement. As appreciated by those skilled in the art, wellhead 105 may be equipped with additional hardware, such as, but not limited to, a blowout preventer or a lower marine riser package.

[0006] When drilling in offshore arctic locations, it may be required to disconnect from the wellhead 105 due to intrusions of unmanageable ice 111 flowing into the watch circle, or area surrounding the vessel 101. Based on the vertical configuration of the riser 109, the

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