

Icing and Offshore Arctic Oil Operations Safety

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Climate change reducing the extent and duration of sea ice cover and increased demands for oil have caused renewed interest in exploring and drilling for oil in Arctic waters. Superstructure sea spray icing and atmospheric icing from snow, freezing rain, freezing drizzle, rime, sleet, and frost in the Arctic reduce the safety of offshore platform and supply boat operations. Though icing has not caused the loss or destruction of an offshore platform, it does reduce safety, and does have the capability of reducing operational efficiency and productivity. In general, supply boats are at greater risk of loss from icing than are platforms because they interact more aggressively with seas. Some platforms operating in cold regions are now semi-protected primarily by innovative designs that reduce ice accretion. New designs intended to minimize the effects of floating sea ice forces are also, serendipitously, designs that should minimize superstructure ice accretion. In the past, a variety of deicing and anti-icing technologies have been tested on offshore platforms and boats, but with little overall success. Therefore, today only selective use of heat and mechanical methods such as baseball bats, mallets and shovels are used to remove ice accretions. However, there is opportunity to adapt new technologies and modern versions of old technologies, especially those technologies used successfully in aviation, the electric power industry, and on transportation systems, for use in the offshore environment. This paper describes the threat of superstructure and atmospheric icing to offshore safety by addressing how ice type may influence platform functions and components. Suggestions are made of how ice protection technologies from other industries may be applied to offshore operations, and the challenges in doing so.