



**U.S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region**

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Wireline Accident Involving the Formation
of an Ice Plug in the Lubricator

In accordance with Minerals Management Service Regulation 30 CFR 250.108(c), a lubricator, when initially installed on a well, must be successfully pressure-tested to the expected shut-in surface pressure prior to wireline work being performed on that well. In practice, many operators pressure-test with seawater or freshwater, bleed off the test pressure, and slowly open the crown valve to admit well pressure into the lubricator. When this is done on a high-pressure gas well, the combination of the high differential pressure, residual test water left in the lubricator, and the orifice created by cracking the crown valve causes a cooling effect and can create the formation of an ice plug in the lubricator.

During recent wireline operations, an incident occurred that involved the situation described above. An ice plug formed in the lubricator, immobilizing the wireline tools suspended within it. In an effort to free the tools, pressure was bled off above the ice plug, thereby creating a differential across the plug. The plug came free, and the ice plug and tools were projected by the well pressure into the top of the lubricator, parting it and opening the well to the atmosphere.

Fortunately, the subsurface safety valve immediately activated, shutting in the well and averting what could have been a disastrous situation.

To prevent recurrence of this type of situation, it is suggested that the test pressure not be bled off the lubricator prior to opening the crown valve. Holding a positive test pressure on the lubricator will eliminate the high differential pressure in the lubricator when the crown valve is opened, and cause the test fluids to drain into the well. Additionally, the use of glycol in the test fluid should further reduce the potential for the formation of ice plugs. Adhering to these safety precautions should effectively eliminate the danger of an ice plug formation during wireline operations.