

# Safety Alert

**MMS**

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

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## Wellhead Damage Caused by Hurricane

Subsequent to Hurricane Ike, several wells on a platform were leaking from the flanged wellhead connections. Several attempts were made to isolate wellhead pressure through utilization of Surface Controlled Subsurface Safety Valves (SCSSVs), but an uncontrolled gas leak from one well resulted when the well's SCSSV would not fully close to isolate the wellhead from downhole pressures. The well was flared several hours before the SCSSV fully closed to seal and isolate the wellhead. Wellhead repairs were made the following day with no report of personnel injury or environmental pollution.

A Minerals Management Service (MMS) investigation into this incident revealed that the root cause of the wellhead damage resulted from the large hurricane forces acting on the wellhead flange studs, resulting in the loss of seal integrity. These forces were also evident from several flowline u-bolts and caisson stabilizers that also failed/broke during the hurricane. The stabilizers are support gussets that attach the well's caisson to the bell guide, and are used to minimize movement of the caissons relative to the platform structure. The failed stabilizers and u-bolts could have allowed the hurricane forces to impart enough moment force to the wellhead studs to stretch them to fatigue.

Operators are reminded that a Level I survey should be conducted after direct exposure to a significant environmental event (e.g., hurricane) in accordance with subsection 14.3.1 of API RP 2A-WSD (Refer to NTL No. 2005-G20 and NTL No. 2008-G18 for additional information regarding this requirement).

Subsequent to severe weather events, collisions, etc., MMS recommends that operators visually inspect wellhead studs, flowline u-bolts, and caisson stabilizers prior to returning the wells to flow. If the inspections indicate that the wellhead studs, flowline u-bolts, and/or stabilizers may have been subjected to forces greater than design limitations, the following action is recommended to prevent possible loss of well control:

- Verify zero pressure on the SCSSV control line.
- Isolate the SCSSV control line from the wellhead.
- Isolate wellbore pressure from the damaged equipment.
- Repair/replace all damaged equipment.
- Test the wellhead to the maximum anticipated surface pressure prior to opening the SCSSV.

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