

Safety Alert

BSEE

U.S. Department of the Interior
Bureau of Safety and Environmental
Enforcement
Gulf of Mexico OCS Region

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Lower Marine Riser Package (LMRP) Connector Failure

On January 24, 2013, BSEE personnel met with industry to discuss initial findings associated with a pollution incident involving the discharge of synthetic base mud (SBM) into the Gulf of Mexico (GOM) due to a loss of integrity of a LMRP H-4 connector. During this meeting, a qualified third-party presented preliminary evidence that the stress corrosion cracking caused by hydrogen embrittlement was a contributor to the incident. It was introduced that zinc electroplating without proper baking, as per ASTM B633, was a possible cause of hydrogen embrittlement. During this meeting, BSEE was informed of two other rigs as having H-4 connector bolt failures.

On January 25, 2013, BSEE received information from the connector vendor which identified rigs as having blowout preventer (BOP) stack connectors that may contain bolts that may no longer be fit for purpose. BSEE issued emails to the associated operators of the subset of rigs with current well operations in the Gulf of Mexico. The content of the emails notified these operators of the initial findings and gave specific instructions on securing the current well operations in order to retrieve the LMRP and/or BOP to the surface, if not already on the surface. These operators were directed to then suspend operations until the existing bolts on the LMRP connector/wellhead connector could be changed out with bolts that have been certified by an independent third-party to be in compliance with recommended heat treatment practices or the existing bolts have been examined and certified by an independent third-party that they are fit for purpose.

In order to ensure all of these affected bolts are identified and proper corrective action is taken, BSEE recommends the following:

Operators are hereby urged to make an inventory of your contracted rigs [currently involved in well operations in the Gulf of Mexico Outer Continental Shelf (GOM) or planned to conduct well operations in the GOM] and investigate the bolts of the LMRP and Wellhead connectors. For detailed instructions on identifying affected bolts please refer to the Safety Notice issued by GE Oil and Gas on January 25, 2013, titled, "H4 Connector Bolt Inspection Required(P/N H10004-2)" at the following: <http://www.ge-energy.com/connector-update.jsp>

If you have H-4 connectors, as identified in GE's safety notice, and have verified through documentation that the connector contains any affected bolts, you should immediately notify

BSEE. You should also consult with your contractors and subcontractors to determine the appropriate inspection, disposition and/or corrective actions. BSEE will require an independent third-party certification that confirms proper inspection and refurbishment processes were completed prior to reinstallation of any affected bolts.

Operators should review the QA/QC programs for all equipment vendors (contracted and sub-contracted) to ensure that all equipment is being manufactured to the required specifications. Special attention should be given to ensure proper heat treating has taken place in accordance with the specifications.



Upper half of failed LMRP Connector



Lower half of failed LMRP Connector

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A **Safety Alert** is a tool used by BSEE to inform the offshore oil and gas industry of the circumstances surrounding an accident or a near miss. It also contains recommendations that should help prevent the recurrence of such an incident on the Outer Continental Shelf.