

# SAFETY ALERT



Safety Alert No. 325  
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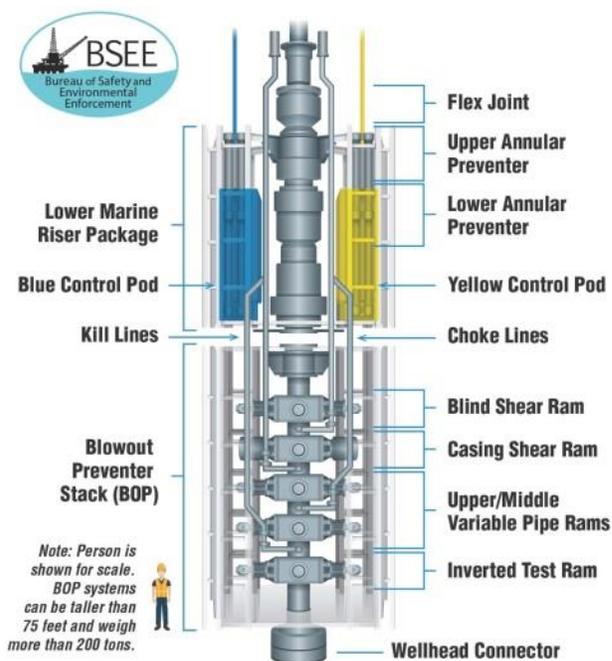
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## Bolt Failures

The Bureau of Safety and Environmental Enforcement (BSEE) has been informed about a recent subsea bolt<sup>1</sup> failure by a European offshore safety regulator and the original equipment manufacturer (OEM) of the affected Blowout Preventer (BOP). The specific bolt failure described herein occurred during a 21 day BOP high pressure test at a water depth of approximately 7,382 feet. A leak was observed in the area of the lower marine riser package (LMRP) connector. The leak did not result in a loss of well control or personal injury.

Upon inspecting the BOP and LMRP on the surface, personnel noted that 13 of 20 bolts failed at the LMRP connector. The BOP OEM and an independent test laboratory are currently conducting testing to determine the root cause for the failure by evaluating the bolts' material properties. At this time, it is suspected that the reason for this failure is that the raw material and/or heat treatment processes were not suitable for the bolts intended use.

Although this bolt failure did not occur on the U.S. OCS, BSEE is aware of multiple U.S. OCS bolt failures associated with subsea critical equipment (connectors, LMRP, BOP) which pose recurring risks to oil and gas operations and the environment. Operators should continue to work with drilling contractors and OEMs to ensure that these components meet the latest industry standards and best practices. Details on previous OCS bolt failure occurrences and BSEE reports can be found at: [www.bsee.gov/bolts](http://www.bsee.gov/bolts).



Generalized blowout preventer (BOP). This example is not meant to be indicative of the blowout preventer discussed in this Safety Alert.

<sup>1</sup> For this Safety Alert, the term "bolt" includes all types of fastening devices, such as a stud.

## **BSEE Recommends:**

Operators should work with their OEMs to do the following:

- Confirm that all customers and assemblies using the affected heat treatment lot number TN-696 have been notified directly by the supplying OEM. BSEE supports this OEM's recommendation that all connectors utilizing bolts from this heat treated lot should be removed from service until the bolts have been changed out.
- Verify that all in-service components' material properties are in compliance with your BOP OEM's specifications and the latest industry standards.
- Verify that all installation and maintenance procedures (including equipment calibration, lubrication, torque processes, and recorded torque values) satisfy OEM specifications and ensure that best practices are effectively implemented.
- Report any failures to OEMs and appropriate industry organizations in a timely manner to ensure the prompt communication of relevant data to the industry.

BSEE is continuing to evaluate the bolt failures discussed in this Safety Alert to determine if long-term action is needed to prevent potential future failures on the OCS.

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