

SAFETY ALERT



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Failure to Mitigate Known Hazards Leads to Kick

On November 12, 2017, a platform rig was performing abandonment work when the rig encountered pressure below a bridge plug during a milling operation. This pressure propelled the work string out of the hole, causing damage to the drill pipe, derrick, and top drive. This failure allowed for potential catastrophic consequences to personnel and the environment.



Buckled pipe leans against rotary table (left) and derrick (right) after being ejected from well

The abandonment operation included drilling out a surface plug, removing the intermediate casing to 1000', and setting an intermediate plug and surface plug. After the surface plug was set, the well would then be permanently abandoned by cutting and pulling the remaining casings at least 15' below the mudline.

The incident occurred while milling out the 9-5/8" bridge plug after drilling through the surface cement plug as part of abandonment operations. The bridge plug was being milled using a mud motor with the annular preventer in the closed position and flow being taken through the open choke. After milling three inches of the bridge plug, the pressure below the bridge plug rapidly forced the bridge plug and drill string 15 ft. out of the hole; buckling the pipe and causing extensive damage to the top drive and derrick. Following the incident, the pumps were immediately stopped and a flow check was performed. With confirmation that the well was not flowing, the crew shut down operations to evaluate the situation.

The incident investigation found the immediate cause to be pressure below the bridge plug, which exceeded the weight of the work string, consequently forcing the pipe out of the hole. There were multiple contributing factors that could have prevented the incident from occurring:

- A pre-job assessment was completed and presented during the program kickoff meeting. Despite identifying the risk of gas beneath the bridge plug, a pilot mill to mitigate the risk was not used.
- Uncertainty around milling large bridge plugs at shallow depths, as well as encountering gas below bridge plugs were discussed at the pre-spud meeting, yet no mitigation techniques were included in the well program or communicated to the field outside of being aware of the possible hazard.
- The Job Safety Analysis recognized possible hazards related to gas below the plug, yet no recommendations were provided to eliminate or reduce the likelihood of these potential hazards.

Therefore, BSEE recommends that operators consider the following options:

- Ensure that completed hazards analysis and mitigations for the recognized hazards are communicated to the personnel conducting the operation.
- Reinforce with personnel that a Job Safety Analysis should not only identify potential hazards, but should provide mitigations to reduce or eliminate the risks identified.
- Employ methods to identify and safely relieve trapped pressure on the backside of any well barriers prior to releasing a barrier latching mechanism or slips.

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.