

Safety Alert No. 308
19 March 2014Contact: Matt Nagy
(504) 736-2828

Overloading Leads to Catastrophic Failure of Crane Boom



A lease operator was performing a well permanent abandonment (PA) on an Outer Continental Shelf (OCS) platform. Operations were being conducted to pull the 3.5" workstring and casing knives from the well after using a power swivel to cut the 9^{5/8}" and 10^{3/4}" casings. The cutter assembly had become stuck while mechanically cutting the casings, and the hydraulic cylinders on the swivel stand were used to free the stuck knives. The cutter came free from the casing and the assembly was ready to be pulled from the well using the crane. The workstring and knives weigh approx. 6,600 pounds. The load line on the platform crane was attached to the workstring using pipe elevators. The load chart in the crane indicated that the crane could perform a static lift of 21,448 pounds and dynamic lift of 16,780 pounds at a boom angle of 63 degrees. The boom was raised to a 63 degree angle and the crane operator then proceeded to pull on the workstring until 21,000 pounds was displayed on the weight indicator with no success. The crane operator stated "looked like workstring was stuck." After slacking off on the load, a second attempt was made to pull the workstring and knives from the well. The crane operator stated that "the weight indicator in the crane cab was displaying 21,000 pounds during the second attempt." The operator then stated that "all of the weight fell off of the indicator at which time the crane boom began to fall to the deck of the platform." The crane boom, as well as a power pack, came to rest on the power swivel stand that had been used for the cutting operation. The tip section of

the boom came to rest at approximately 90 degrees to the right side of the main stem of the crane boom. No personnel were injured, and all were accounted for immediately following the incident.

An investigation by BSEE concluded that the following factors contributed to the accident:

- Incorrect load chart was used at the time of the incident.
- The crane operator used static load limits when pulling cutter assembly from the well instead of using the dynamic load limits as required by the contractor's SOP.
- The bore holes of the pin connections in the boom showed excess wear thus causing slack in the connections and improper load distribution in the boom.
- The diagonal lacing, boom cords, and pin connections of the middle boom sections were found to be corroded.

BSEE recommends the following prior to use of cranes on OCS platforms:

- Conduct proper crane pre-use inspections as per API RP 2D, C.4.1.2a which should include proper load chart verification.
- Conduct proper crane maintenance inspections as per API RP 2D, C.4.1.2 which should include thorough inspection of boom connections and proper load chart verification.
- Adherence to the SOPs and procedures put forth by both the operator and contractor while conducting lifting operations.
- Use the load chart for the dynamic load limits when pulling tubulars from wells instead of using the static load limits.
- The Crane Operator shall verify that the hook load is within the crane's applicable static or dynamic rated load at the radius for which the load is to be lifted.
- Crane boom pull shall never exceed the calculated weight of the hook load, block, and rigging.

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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.