



Safety Alert

From the International Association of Drilling Contractors

ALERT 99-09

BRAKE LINKAGE FAILURE

WHAT HAPPENED:

The drill crew was preparing to pull the drill string from the well to log it. The drill string was hoisted and the kelly was broken off and racked back. Then the first stand of drill pipe was hoisted. When the driller applied the brakes, the brake handle fell to the floor. The driller immediately secured the drill string in a stationary position by engaging the drawworks clutch. He instructed the floorhands to inspect the brake linkage, assuming that a pin had come out of the brake lever linkage upstream of the crown saver-actuating device. While this task was underway, the driller instructed the motorman to engage the crown saver. Engaging the crown saver automatically releases the drawworks hoisting clutch and engages the drum brakes, as this mechanism is designed to prevent the traveling blocks from hitting the derrick mast crown (sheaves). The driller was trying to engage the drum brakes in order to release the drawworks hoisting clutch to prevent friction on this clutch. With the clutch released, the traveling blocks fell free to the drill floor. The crew was not able to set the slips as the drill pipe was not centered and this could have decreased the distance that the traveling blocks would have fallen.

WHAT CAUSED IT:

The incident was directly related to the failure of the off-driller side brake adjusting knuckle joint, which resulted in the brake band anchor point failing. Without a secured anchor point, the brake band could not be pulled tight against the brake flange on the drawworks drum. Additionally, the off-driller side failure pushed the driller side brake mechanism out of alignment further compromising the drawworks braking efficiency. Upon investigation, the knuckle joint failure was attributed to a failed weld on the knuckle joint drift pin ear. The engaging of the crown saver as a means to engage the drum brakes was not successful due to this mechanical failure. An additional factor that added to the problem was that the drawworks were at a lower level from the work platform and the knuckle joint could not be visually seen without removing floor plates.

CORRECTIVE ACTIONS:

1. The contractor involved recommended that all brake linkages be inspected and that knuckle joints with welds be replaced with solid machined pieces.
2. The slips should be set before the engaging of the crown saver to secure the drill pipe and limit distance the blocks could fall if failure should occur.
3. The crew should not be sent to inspect the brake linkage until the drum brakes are engaged.

The Corrective Actions stated in this alert are one company's attempts to address the incident, and do not necessarily reflect the position of IADC or the IADC HSE Committee.

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