



# Safety Alert

From the International Association of Drilling Contractors

ALERT 13 – 09

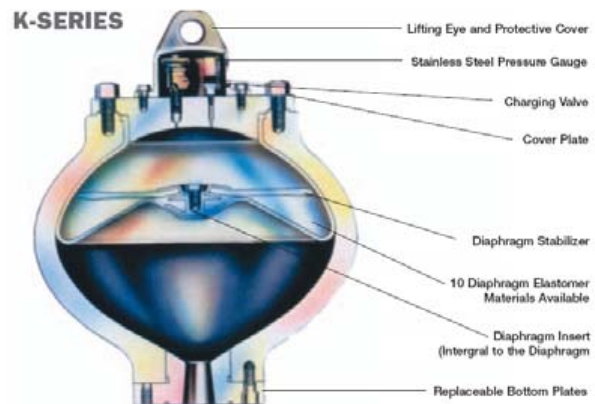
## HIGH PRESSURE RELEASE RESULTS IN INJURY

### WHAT HAPPENED:

The maintenance team, consisting of three crew members, had been involved in stripping a pulsation damper's bottom plate, which had a damaged seal groove. Prior to starting the task, the crew checked the pulsation damper gauge for pressure and verified a zero pressure reading. After unscrewing all flange mounting studs and Allen-screws from the bottom plate, the crew started to remove the bottom plate with the extractor studs, which enabled them to move the bottom plate slightly. As per the advice of the crew supervisor and in order to remove the stuck bottom plate, it was decided to utilize the two inserts in the gap between the bottom plate and dampener body in combination with the extractor studs. While two of the crew members forced the bottom plate open with wedges from opposing sides, another crew member (injured person), who was positioned in front of the bottom plate, was using the pneumatic spanner to screw-in the extractor studs. Without warning, the diaphragm burst out due to the pressure inside, resulting in the bottom flange being discharged from the pulsation dampener. The bottom plate struck the injured person on the thigh of his right leg, throwing him approximately 6 meters (20 feet) due to the differential pressure wave, and causing serious injury to his right leg.



Position of IP after accident



Pulsation Damper K-Series Diagram

### WHAT CAUSED IT:

The gauge read zero psi as witnessed by three separate people before dismantling of the dampener began; however, the gauge was faulty and showed an inaccurate reading. Consequently, the crew members involved in the operation did not anticipate the contained pressure and failed to bleed off the pressure by opening the charging valve. The pulsation damper had approximately 750 psi of pressure within, while the bottom plate was being removed. In addition, the contributing causes were:

- Pulsation damper gauge had an expired calibration.
- Pulsation dampener diaphragm was not secured to the diaphragm stabilizer with the diaphragm locking screw, which resulted in the diaphragm expanding like a balloon due to the system pressure, and piercing through the bottom flange hole, as the crew tried to remove the flange.
- The crew had no experience in removal of the pulsation damper's bottom plate.
- There was no Permit-To-Work (PTW) issued, Job Safety Analysis (JSA) completed and Toolbox Talk (TBT) conducted prior to starting the task.

**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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**CORRECTIVE ACTIONS: To address this incident, this company did the following:**

- The company communicated the relevant Safety Alert to all rigs and logistic base teams.
- All maintenance crews were reminded that the system pressure must be bled off completely by opening the charging valve. Following this, the charging valve and gauge must be unscrewed from the pulsation damper. Further, it is recommended to remove the top cover plate during disassembly of the pulsation damper. This information should be reflected in the relevant JSA and discussed during the TBT Meeting.
- Maintenance Foremen were reminded that whenever personnel are working on pressurized lines and/or pressure vessels, regardless of the product contained, the pressure is to be vented before the work begins.
- The company placed more emphasis on its implementation of the gauges calibration program and reminded all maintenance personnel to use only gauges with a valid calibration certificate.
- Pulsation damper plate stabilizers should always be secured to the diaphragm with the stabilizer screw (ensure during replacement of diaphragm elastomer).
- All employees were reminded that all pressure vessel maintenance/services are to be performed by competent mechanics only.
- All employees were reminded that a PTW is mandatory for any maintenance task performed on a compressed vessel.

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