



Safety Alert

From the International Association of Drilling Contractors

ALERT 10 – 23

REPAIRING CENTRIFUGAL PUMP RESULTS IN A NEAR – MISS

WHAT HAPPENED:

A welder was in the process of removing a seized threaded impellor from the 2-1/2" shaft of a centrifugal mud pump. To loosen the impeller from the shaft the welder used a welding torch to heat it. The impeller is screwed onto the shaft with right-hand threads and the threads are sealed inside the back of the impeller with an "O"-ring. When the shaft/impeller was installed previously, the threads were greased and cavity was filled with grease. As the impeller was being heated, the heat from the torch caused the grease to expand inside the impeller thread cavity. The expanding grease caused the cast center of the impeller to explode outward (see photo), striking a nearby welding machine.

WHAT CAUSED IT:

- Grease had been used to lubricate threads on the impeller, which later expanded from the heat of a welding torch. Since there was no way to relieve the pressure an explosion resulted and the center of the impellor to become a missile.

CORRECTIVE ACTIONS: To address this incident, this company instructed rig maintenance personnel in the following:

- This incident highlights that many of us are unaware of the technical aspects of centrifugal pumps and their design.
- **Do not heat the impeller to remove it unless a relief hole is drilled!**
- This incident was reported to the manufacturer and they are sending a representative to discuss the technical nature of the equipment.
- Workers are to include (review) equipment safety bulletins related to the tasks they are performing in pre-job safety meetings and JSAs being discussed.

 Projectile from center of cast impeller.	 Cavity which was filled with grease.
	Recommended Corrective Action: Drill a 1/8 hole in the center of this impeller cavity before attempting any removal using heat. Extreme Explosive Hazard!

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.

This material is presented for information purposes only. Managers & Supervisors should evaluate this information to determine if it can be applied to their own situations and practices

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