



Safety Alert

From the International Association of Drilling Contractors

ALERT 11 – 04

TRANSFER PUMPS (PRIMER CAP HAZARDS)

WHAT HAPPENED:

A transfer pump on the reserve pit had stopped working. The driller alerted a crewmember to shut down the pump and take the primer cap off to re-prime the pump if needed. The injured person (IP) shut off the transfer pump and began to open the primer cap by loosening the bolts on the top cap. Pressure from the pump blew the cap off resulting in super-heated mud spraying the crewmember in the face. The injury resulted in 3rd degree burns to the IP's face and neck with permanent injuries.

WHAT CAUSED IT:

Transfer pumps that are bull plugged with no pressure relief valve pose a serious hazard that could result in serious injury or death. There have been reports of serious struck-by and burn injuries in the drilling industry when attempting to remove the transfer pump's primer cap while it is under pressure.

- The discharge hose was buried only a few inches underground in a PVC pipe and routed across a path where trucks continuously drive.
- The PVC pipe was crushed by a truck running over it which pinched off the discharge hose.
- The suction hose had a one way valve allowing fluid in but not back out (self-priming). Once the discharge hose was pinched off, back pressure built up in the primer reservoir while the impellor continued to operate which superheated the mud.
- The ball valve located at the bottom of the reservoir tank which could have been used to release pressure, was plugged and the ball valve lever was removed.
- The crew member began backing the bolts off of the primer plate when the plate blew off and sprayed super-heated mud onto his face and neck.

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

Corrective Action: The Company recommended the following corrective actions to prevent reoccurrence of this type of incident.

- Issued a notice to all rig supervisors that all crew members should be trained (mentored) on the proper operations and safety hazards for transfer pumps.
- Rig Supervisors were instructed to inform each new crew member that if they do not understand the maintenance operations of priming the transfer pump, or have not been shown the proper steps to take to prime the pump, then (STOP) the process and ask for help.
- Instructed rig supervisors to ensure that all transfer pumps have a working ball valve (pressure relief valve) installed on the reservoir which is not plugged so that it can be used to relieve pressure in the pump.
- Rig personnel were instructed to conduct two separate JSAs on opening the primer cap of a transfer pump that has a bull plug but no ball valve lever, and a transfer pump that is properly equipped with no bull plug and does have ball valve lever.
 - It is necessary to conduct both JSAs due to:
 - Crew members not knowing the normal routine tasks of proper shut down and maintenance on the transfer pump that is properly equipped.
 - Crew members not knowing the non-routine task of recognizing improperly modified equipment (i.e., bull plug and no ball valve lever) and what the necessary steps are to perform the task safely.
- Rig personnel were instructed that proper Lock-Out /Tag-Out Procedures should be taken when working on or maintaining the transfer pump:

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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- Shut the pump down (electrical power).
- Lock out the power source and tag out the power source (breaker and/ or lock out switch or button).
- Push the start up button several times making sure that any residual electrical power is removed from the pump.
- Release any pressure from the pump by slowly opening the valve located at the bottom of the pump reservoir tank.
- Rig personnel were instructed to NEVER attempt to remove the primer cap if the pressure relief valve is replaced with a bull plug (a approved JSA must be in place before releasing any internal pressure).
 - If the pressure relief valve has a bull plug then **(STOP)**. Do not attempt to open the primer cap. Immediately contact your driller, pusher and company man for further evaluation and instructions (communicate with all three).
- Instructed rig personnel to NEVER remove the suction and discharge hoses without first releasing any built up pressure. This can be done by slowly opening the pressure relief valve at the bottom of the tank reservoir.
- Instructed rig personnel to NEVER attempt to readjust cam levers on the suction and discharge hoses while the pump is running or has just been shut down. Always shut down the power and relieve any pressure.
- Rig personnel were instructed that during rig up procedures, all transfer pumps (including 3rd party) should be visually inspected:
 - Note: power shall be locked out before inspecting transfer pumps.
 - Inspect all fittings and hoses.
 - Make sure the pressures valves used to relieve pressure do not have a bull plug in place.
 - Make sure the pressure relief valve has a ball valve lever in place.
 - Make sure the pressure relief valve is working correctly.
 - Inspect all electrical connections and electrical lines.
 - Make sure any moving parts (couplings) are adequately guarded.
- Instructed rig personnel to wear PPE including:
 - Gloves
 - Safety glasses
 - Hard hat
 - Eye goggles (when removing primer cap or hoses)
 - Full face shield (when removing primer cap or hoses)
 - Chemical rubber gloves, apron full face shield and goggles if mud is hot or high PH (caustic).

SEE NEXT PAGE FOR PICTURES

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Figure 1 Transfer pump at reserve pit behind mud tanks.



Figure 2 Primer Cap that was being removed.

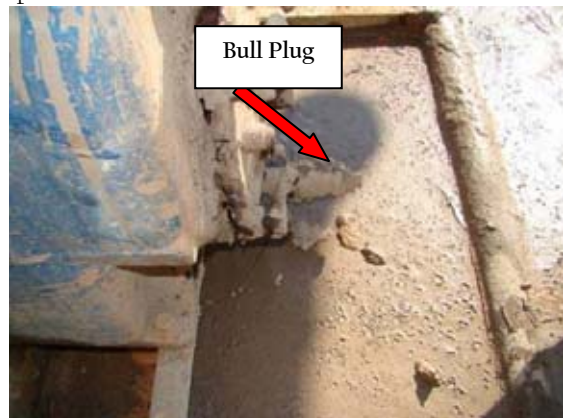


Figure 3 Relief valve on transfer pump with a bull plug in place (pressure cannot be relieved from valve).



Figure 4 Follow Up Inspection 2 months later on same transfer pump from which the safety alert was initiated (see next picture).



Figure 5 After fleet wide distribution of the initial issuance of this safety alert, the pump was corrected by removing the bull plug and adding a new ball valve lever.

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