Worker injured due to ineffective isolation

Mines safety alert no. 344 | 03 July 2017 | Version 1

What happened?

A maintenance worker was injured when repairing a vertically installed pump discharge control valve on a 200 mm process water line in a pump station. The bottom cover of the control valve had been removed and six of the eight bolts holding the shuttle bottom to the shuttle had been removed. The final two bolts failed and the shuttle bottom was ejected, striking and injuring the worker's right hand.

Image 1 shows part of the incident scene. Image 2 illustrates a schematic of a similar valve and the key components.

How did it happen?

In preparation for the task, isolation valves on inlet and discharge sides of the control valve had been closed and locked out. During this process the crew did not identify the presence of a non-return valve positioned between the inlet valve and the control valve.

Using a drain valve, pressure was bled from the isolated section between the inlet valve and the non-return valve.

A drain valve located on the discharge side of the non-return return valve was not identified or opened, which resulted in pressure being relieved from the inlet side of the non-return valve only and the section containing the control valve remaining under pressure (9MPa/1300 psi).

Pressure gauges fitted to both inlet and discharge sides of the non-return valve were not inspected prior to the valve shuttle bottom being removed.

Comments

The investigation is still being completed.

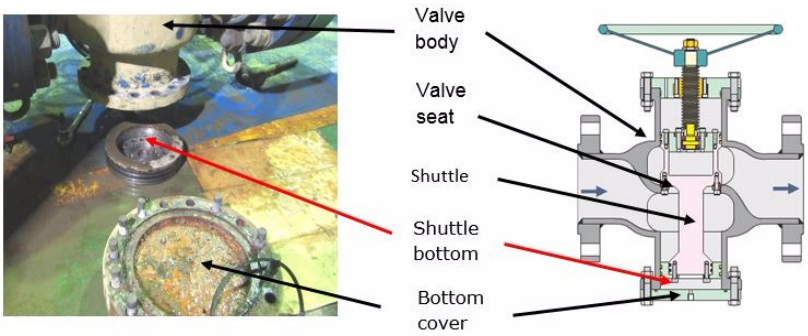
Reference should be made to Safety bulletin No 49 Isolation of plant containing stored energy.

Recommendations

Whenever isolations are undertaken ensure that the hazardous energy has been isolated and/or released from all sources that may impact on workers.

Workers should be familiar with the system they are working on and the potential for stored energy.After isolating, locking and tagging, always test for dead. Depending on the type of energy source you are working with, this can mean checking for stored energy in different ways. For example:

- Electricity - use a test meter.
- Hydraulic systems - operate hydraulic function levers and check pressure gauges
- Air and water - open drains on the inlet and discharge side and check pressure gauges.



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