LEARNING FROM ACCIDENTS

Safety Alert from SEA (India)

SEA (INDIA)

HQ & Correspondence address: Safety Engineers Association
G1, 95/5 Sundaramurthy Gramani Street, Virugambakkam, Chennai - 600 092
Tel: 044 - 23774060; Mob no.: +91 9884514060; E Mail: seaindiachennai@gmail.com; URL: “www.seaindia.org”

Vol: 6 ISSUE NO: 53 **ALERT -88** July’ 2020

Title	:	Hydraulic pressure caused an injury
Location	:	Hydraulic Pipe Testing – Steel plant
Type of Incident	:	Loss of Eye Vision due to pressure gauge hit on the face

What Happened?

The hydro test was being carried out for the newly installed hydraulic pipelines (supposed to carry Hydraulic oil) of variable dia. (varies from 1.5” to 5”) of the Blast furnace.

There was a complaint from the operation team to Maintenance Department that the required pressure [300 Kg/cm2] was not getting built up with the operating pump.

The victim had been assigned to attend the problem with the pump unit and the problem was rectified.

After attending the pump unit, he had operated the pump to observe the pressure build up (for testing of the pump unit) standing adjacently to the fitted pressure gauge in the ½ inch delivery line.

In the delivery line there was one Non return valve [NRV] along with a calibrated pressure gauge [Max 600 Kg/cm2] in between two gate valves.

The inner gate valve was in open position whereas the outer valve was in closed position.

During pump operation, the pressure started building up and suddenly, the fitted Pressure gauge flew off striking over the face of the victim causing injury to his nose & impact over the right eye.

Immediately injured person taken to hospital for medical assistance, but he lost eye vision due this incident.

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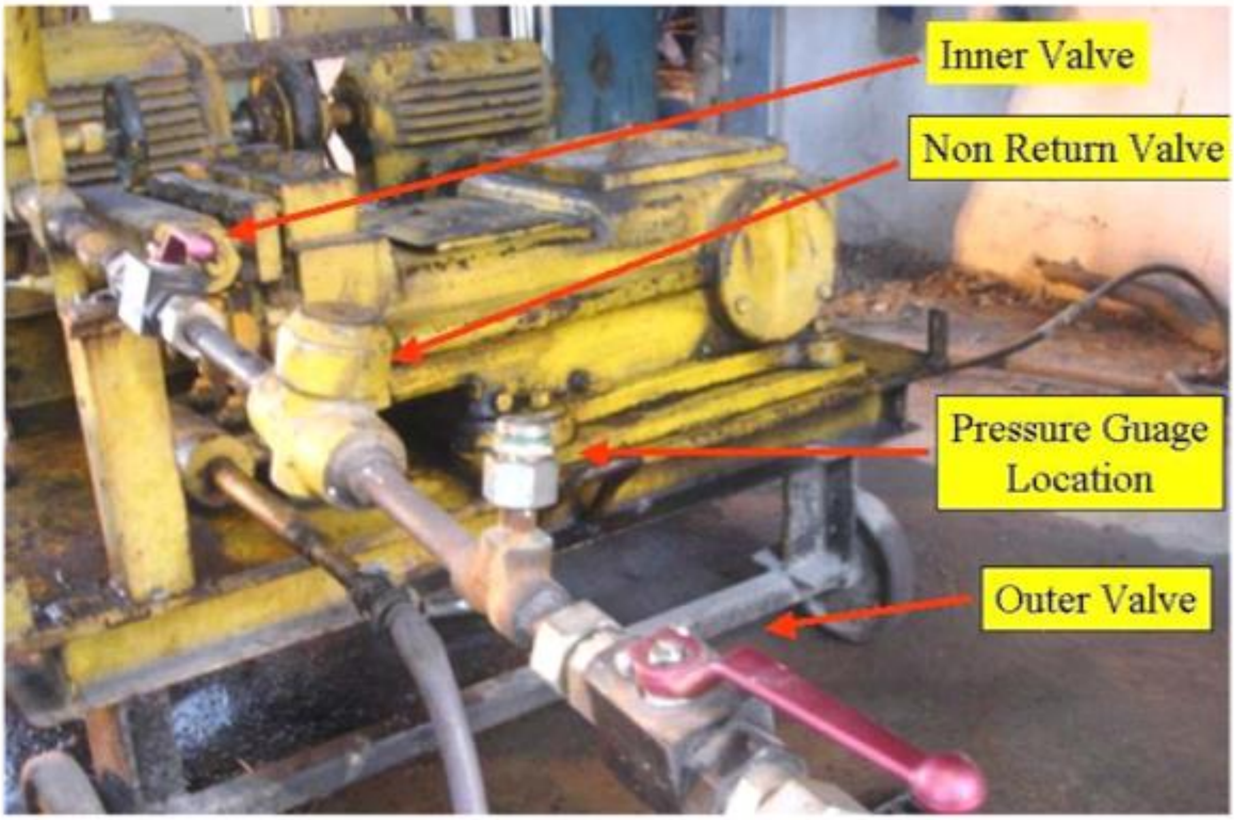

Causes of the Incident

- Keeping the outer gate valve in closed position resulted in sudden build-up of pressure in the short segment (2.5mtr) of delivery line (1/2-inch dia.) of the pump unit within a very short time.
- The pressure gauge came out from the pipeline due to sudden increase of pressure and got broken.
- Wrong operating procedure for testing the pressure build up during hydro testing operations.
- It was supposed to be tested up to 450 Kg/cm2 pressure which is 1.5times of operating pressure i.e. 300 Kg/cm2.
- But due to sudden increase in pressure above 450 Kg/cm2, the pressure gauge came out and got broken.
- The pressure relief valve was not working.
- The pressure gauge was not fitted fully (as the threads of the pressure gauge had minor damages)

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Recommended Precautionary Measures

- The first step to take before carrying out any pressure test is to perform a risk assessment of the activity.
- It helps to list the safety measures needed to carry out pressure testing.
- It relies on the identification of all relevant hazards and dangers and consists of an estimation of the risks arising from them with a view to their control or avoidance.
- Permit -to-work system to be followed.
- The safe system of work should also require that all persons involved in pressure testing are adequately and properly trained.
- Written test procedures shall be available which include procedures for pressurizing, depressurization, and venting.
- An updated piping and instrumentation drawing (P&ID) or Piping Isometric drawing showing the position of all isolation valves, safety valves, non-return valves, pressure gauges, pressure release valve, testing medium supply points, vent valves and blind plates should be available with the site Supervisor
- Care shall be taken to avoid overloading any part of the pipe support system or supporting structures. Before hydrostatic pressure is applied, the test equipment shall be examined to see that it is tight.
- A suitable safety valve set to test pressure in the piping loop.
- Physical inspection to be carried out by the supervisor to ensure all valves, gauges blank plates are fitted as per the manufacturer instruction.
- Cordon off the area at initial stage of pressurizing to avoid the unauthorized entry during hydraulic testing.
- A protective barrier should be used to prevent high pressure fluid or flying objects striking the passerby.