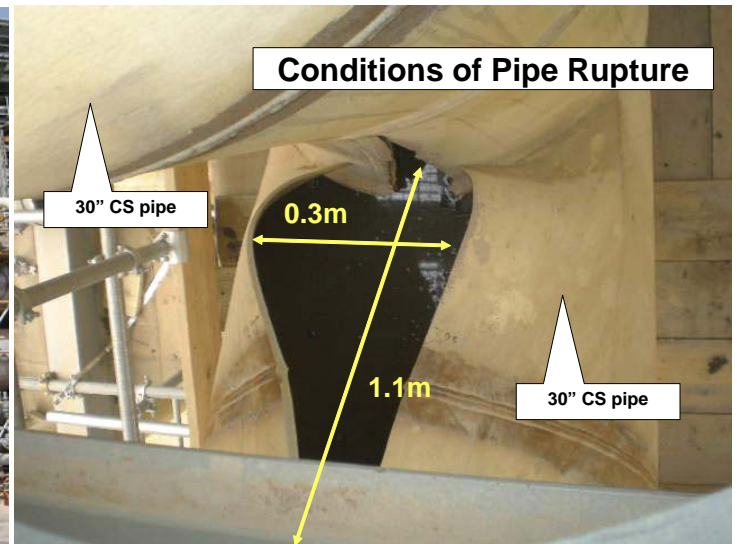
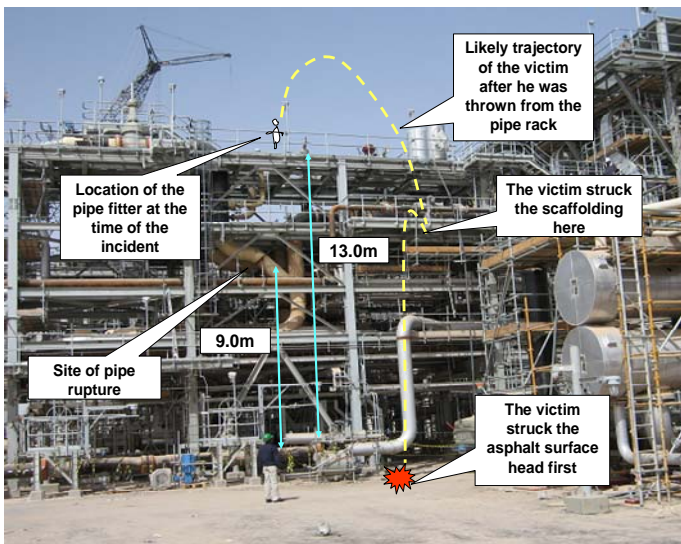


JGC Responsible Company For Global HSE Issues Be Safe Today For A Safer Tomorrow



LESSONS LEARNED & SAFETY ALERT

On 19 February, 2008 hydrostatic test preparation started in the morning for the test package located at the Train 2 pipe rack. At 16:45, test pressurization started. During the pressurization, 3 crew were on the top of the pipe rack (13m from the ground) checking the conditions, and one foreman was on the ground directing them. At 17:40, before reaching the highest pressure, 30" pipes burst at the 45degree joint located 9m from the ground. The force of the blast threw one pipe fitter 14m from the top of the pipe rack. He hit the scaffolding on the other side and fell 7m to the ground and died as a result of a skull fracture.



Reference No: JGC-HSE-LL-2008003
Issue Date: 2008/3/17
Country /Location: Saudi Arabia
Date of Incident: 19 Feb 2008
Type of Incident: Hydro test failure/fall from height
Incident Status: Fatal incident

Direct & Contributory Causes:

- Test pressure was wrongly selected and higher than it should have been
- No depressurizing was performed when the crew found a leakage
- The Pipe fitter was working on top of an unfixed grating
- The Pipe fitter was working at height without tie-off
- Air was likely trapped inside the pipe during the test preparation

Root Cause Category:

- Procedure not available
- No training objective
- Quality control inspection technique inadequate
- Poor communication system
- Management enforcement system inadequate
- Human engineering complex
- Inappropriate supervision

Message from Yokohama :

Greater attention needs to be given to minimizing the effects on safety of incidents such as a burst pipe during a hydrostatic test. Particularly in this case, consideration should have been given to the impact of pipe failure when such a large-sized piping system was involved.

Corrective Actions To Be Taken:

- Develop new procedure for test pressure determination and implement it
- Conduct risk assessment for hydro-test, and develop new hydro test procedure reflecting the assessment and implement it
- Develop new procedure for working at height associated with grating removal permit system and implement it
- Develop air release control system for hydro-test and implement it
- Develop and use new training materials reflecting all of the above.