

Incident Report: WELDING IN A CONFINED SPACE

This is an update on the death of Mr V, a 33 year old Indian welder, who crawled inside a 24-inch diameter pipe on Sunday, 23 August ca. 9:30 am. Mr. V apparently entered the pipe to inspect his work and subsequently suffocated. He arrived in Qatar on 9 February 2006 to work on the X project and had just returned from a 2-month holiday on 26 July to join the Y project to work as a welder. The accident occurred on the 3rd level of Train 7, at the 20 m level (see attached slides).

A multi-functional Incident Investigation Team (IIT) representing Stakeholders has been formed and began their work immediately after the accident. Investigation results to date were shared with Senior Management Thursday afternoon, 27 August, with the expectation that the final report may be available by 31 August. The IIT has identified the following sequence of events leading to the accident:

- The welding crew conducted their daily Toolbox Talk and Task Instruction (TI) meetings around 6:30 am
- Mr. V and another welder were assigned with one Helper to Joint #29 (the 24" spool) on the 3rd level where the accident eventually occurred
- The argon dam in the pipe spool had been installed during fit-up on 20 August
- After the TI and without the knowledge of the foreman, the two welders decided that one would work on Joint #29 and the other work on nearby Joint #98 (a 16" spool some 10m away and out of line-of-sight)
- Mr. V began the "root & hot pass" welds on Joint #29
- Argon had already been introduced into the dam at the time of welding as there had been no attempt to shut-off argon flow to the dam
- He then completed these welds and called down to the Helper on a lower level to come up as he was "going in"
- It took the Helper some 2-1/2 minutes to climb back up to the upper level
- Once the Helper arrived at the 24" pipe, Mr. V was already inside the pipe and the Helper called to him with no response
- The Helper knew there was a serious problem, but wisely did not attempt to enter the pipe to initiate rescue; he called for help from welders in the adjacent areas
- They made jarring noises on the pipe and attempted to call Mr. V on his mobile phone with no response
- The Helper then went down to the ground level to notify the foreman and emergency services were then activated
- Emergency services arrived and initiated rescue operations
- When Mr. V was safely pulled from the pipe, he was unconscious & unresponsive; CPR was attempted but was unsuccessful

The team's key findings to date are:

- The task assigned to the two welders was to perform the weld on Joint #29 jointly, but a decision was made by the welders to work separately
- Mr. V had no tools in his possession other than his mobile phone (which served as a light); he had removed his hardhat before entering the pipe
- Evidence to date indicates Mr. V entered the pipe on his own to inspect his weld
- There is no evidence that Mr. V intended to harm himself, nor is there any evidence that he fell into the pipe
- Mr. V was known to have an excellent work history as a welder and employee; he was well-liked by all of his co-workers
- The (safe) re-creation of the accident indicated that a man of similar size can move relatively easily inside a 24" (ID 22") pipe
- There is no record of specific confined space training for Mr. V during his employment
- The atmosphere was checked ca. 20 minutes after Mr. V entry and found to contain only 10.2% oxygen (whereas minimum oxygen content recognized by industry standard for safe entry is 20%)
- Other welders interviewed since the accident have indicated that they "might" go into a pipe to check their welds
- All pipeline entries require a Confined Space Entry permit per the PTW procedure and those less than 30" specifically require company approval based on a risk assessment evaluation
- Numerous similar tragic incidents have occurred at other locations within the industry

In addition to those actions taken immediately after the incident, the following actions will be implemented prior to the finalization of the investigation report:

- Initiate action to provide appropriate training to field workers on compressed gas and inert gas hazards
- Initiate action to provide training to all workers such as welders who might be exposed to confined space hazards
- Implement immediate awareness campaign on confined space and inert gas hazards
- Evaluate worker / supervision ratio
- All pipe-ends onshore project-wide are to be closed and Confined Space signage to be provided to prohibit entry

Mr. V had an uncle and brother working here in Qatar. It is expected that Mr. V body will be shipped by 1 September and a facilitator will accompany the body to his home in India.