

Uncontrolled decompression of diving bell

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A member has reported an incident involving the uncontrolled decompression of a submersible decompression chamber (SDC) during diving operations.

What happened?

The three man bell vented to surface from 175 fsw when the last man leaving accidentally kicked open a ¼-turn valve. Thinking that a seal had been lost, he immediately continued through the man-way to the TUP and secured the door behind him. The valve was located on the bottom inner door and was not accessible from the outside as the outer bottom door was in the closed position. The bell was allowed to vent to surface as the decompression occurred at a rapid enough rate such that it was deemed inadvisable to try and 'catch' the leak with the addition of more gas. There were no injuries or equipment damage reported.

Elements contributing to the incident according to the first report are listed as:

- the valve having been the wrong type and size.
- previous man-way sealing problems which initiated the assumption that the source of the leak was in the man-way. This in turn prompted a hasty retreat through to the TUP.

The immediate action was to remove the handle from the stem to avoid a recurrence. Subsequently the oversized ¼-turn ball valve was replaced with a small bore needle valve to affect a permanent solution.

Sealing problems due to misalignment were evident at the initial stages of the mobilization when the system was being function tested onboard the diving support vessel. Several modifications to the skid and clamping device had to be made prior to achieving a successful pressure leak test. The system was a recent rebuild and the project was the first one for its current configuration.

Had the valve been kicked open with three men inside prior to opening the door to the TUP, the consequences could have been dire. The combination of the crowded circumstance, the possible loss of visibility from the condensation build up and the focus on a leak anticipated in another area of concern (the man-way) would have made a controlled response very unlikely

The company has summarised the key issues as follows:

- The valve originally installed was not suitable for purpose in terms of both size and type.
- The testing and commissioning of a new or re-build system should be completed prior to its installation on a project vessel.
- System familiarisations and drills should note and highlight the most likely sources of potential leaks – in this case the bottom door hatch (this is the rationale behind the double valve arrangement of a bell flood up valve).
- Caution should always accompany movements within confined spaces.

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