Industry good practice for saturation diving

Saturation divers work at great depths for prolonged periods of time. They live in a pressurised chamber on a diving support vessel (DSV), travelling to and from their worksite on the seabed in a similarly pressurised chamber called a diving bell. Before returning to normal atmospheric pressure, divers must first decompress slowly to eliminate inert gasses from their bodies or they risk decompression sickness and even death.

In the event of an emergency evacuation from a DSV, saturation divers enter a self-propelled hyperbaric lifeboat (SPHL) or hyperbaric rescue chamber (HRC). The SPHL or HRC is then deployed overboard, and recovered to a hyperbaric rescue vessel (HRV) to be transported to a hyperbaric reception facility (HRF) where the divers can safely decompress.

Facility operators and diving contractors consistently identify that operational failure of the SPHL or HRC is a risk during saturation diving activities. Typically, the causes of such a failure include unsuccessful deployment, dropped SPHL or HRC, loss of structural integrity (hull), mechanical damage, environmental factors, and operator error.

This type of operational failure has the potential to cause multiple diver fatalities and is classified as a major accident event. Facility operators and diving contractors must ensure that control measures are in place and are being implemented to reduce the risk of an SPHL or HRC failure to a level that is as low as reasonably practicable.

NOPSEMA is pleased that our recent assessments of safety cases and diving-related inspections show that control measures for possible SPHL or HRC failure generally reflect good industry practice. There is, however, scope for improvement. To promote continuous improvement, NOPSEMA would like to share some examples of good industry practice.

First, many safety cases include the provision of a HRV with capabilities to recover the SPHL or HRC to its deck and provide life support to the diver until the SPHL or HRC is safely delivered to a HRF.

Second, safety cases have specified that all davits or A-frames must be rated to the safe working load of the SPHL or HRC that they are being used to recover. Also, any cranes or other lifting equipment that will be used to transfer the SPHL or HRC onto another facility must be suitable for personnel lifts and be fitted with associated personnel lift controls.

NOPSEMA would like to remind facility operators and diving contractors that all safety-critical equipment and procedures should be tested and trialled before commencing a diving project. Project drills should include diver muster to the SPHL or HRC, HRV response (less than two hours to recover the HRV to deck), and desktop trials of onshore and offshore emergency response. SPHL and HRC trials should also include:

- deployment and recovery to the HRV
- HRV life-support systems
- SPHL towing trials with emergency life support umbilical
- SPHL or HRC shore-side recovery
- SPHL or HRC road transport with life-support package systems
- SPHL or HRC mating trials with HRF
- SPHL or HRC thermal balance trials.

Images courtesy of the Australian Diver Accreditation Scheme (www.adas.org.au)