Hello Kim
Thank you for considering recommendations. Just a few points, I will try to give a description of points at a level of detail for your team to make informed decisions.

1)Mixed Gas Wet-Bell vs LARS Basket/Stage
Each equipment configuration is designed to mitigate the hazards present with each approach. Surface Mixed Gas has a great deal of risk associated with it's use. IMCA D037 provides guidance. The following will try to explain the designed purpose of a Wet-Bell for Surface Mixed Gas diving. Surface Mixed Gas diving is used to reach depths greater than 50 meters. Wet-Bells are figured with a main umbilical from the surface a distribution panel supplies breathing gases from the domed basket (termed Wet-Bell). Similar to a Closed Bell the Safe Haven for the divers is at depth due to exceptional distance to the surface, low O2 percentage in breathing gases, and limited bailout capacity at depth. In-water decompression time is increased greatly.
Mixed Gas has a lower oxygen percentage to reduce the risk of CNS Acute Oxygen toxicity, but this also creates a hazard near or at the surface as the lower oxygen percentage may not be high enough to maintain consciousness. Diver bailouts filled with mixed gas has the same issue regarding low oxygen percentage meaning immediate escape to the surface is not an option. As a result, diver umbilicals run from the Wet-Bell committing the diver(s) to depth. In emergency situations such as equipment malfunction, Bell entanglement or lost Bell, redundant systems (two Wet-Bells) are critical to enable recover the diver(s) as all gear including the diver helmets must be abandoned. Divers transfer to the secondary rescue Wet-Bell to the domed gas pocket where divers can don redundant helmet/Bandmask for a safe controlled recovered to the surface.
The hazards associated with surface supplied air diving are different, IMCA D 023 provides guidance for equipment requirements. IMCA D023 is guidance developed by industry and referenced in IMCA "Code of Practice". A LARS Basket/Stage approach is designed specifically for diving the air range 0 to 50 meters. Air is breathed from the surface to the working depths without the risk of CNS Acute Oxygen Toxicity associated with deeper diving which requires the lowering of O2%. Diver Umbilicals supplied directly from the surface means the "Safe Haven" is at surface not at depth. There is no need to restrict immediate access to the surface. A LARS Basket system allows the diver(s) to be recovered without the need to switch breathing gas and does not require prolonged in-water decompression.
A Wet-Bell is not designed specifically for Surface supplied air diving. It is not necessarily a safer approach just a different approach. I am not suggesting that Wet-Bells are not to be used, but I recommend allowing Stage/Basket systems to remain in line with international guidance and company practices.

Rather than selecting one type of diving equipment, the focus should be on key components of LARS systems to ensure safe transport of the diver(s);

- Audited and approved to a Classification Society (e.g. DNV. Lloyd's, ABS).
- "Man-riding"; Winches built to transfer personnel.
- Redundant means of recover (main wire, secondary clump-weight)
- A clump-weight system to prevent rotation of a Wet-Bell or Basket
- Redundant Systems (two of whatever type selected; two Wet-Bell or two LARS basket)
- Redundant Power systems
- On-bound emergency breathing supply

I hope I have illustrated adequately the design figures of LARS Basket and Wet-Bell systems constructed specifically to mitigate hazards associated with each approach.

2)Concerns referencing CSA Z275.4

CSA Z275.4 should not referenced, but if consideration are made to reference Z275.4 it should not be without a clarification statement. CSA Z275.4 diving competencies change continually and may differ at times from the requirements of NRCan and the Petroleum Boards needed to address the complexities of the offshore industry. A Certifying body recognized by the Chief Safety Office should notify the boards of any changes. The Certifying Body should ensure the training and competency requirements are maintained to an acceptable level in line with the Chief Safety Officer requirements.

CSA uses a consensus-based approach (not Health & Safety focused) only one voting member of CSA has any offshore diving background. As a consensus-based system any CSA member is permitted to propose changes. Any CSA member can be appointed to chair working groups without qualifications or experience in the guidance being proposed.

A little History on CSA to highlight the need for oversight.

CSA first drafted Z275.4 Diver Competency and Z275.5 Diver training Standards in 1997. Prior to this time all diver training programs followed legislated regulation provided by the NEB and Petroleum Boards. In 1997 with this first draft CSA decided to not follow NEB and Board training requirements (separating out Nitrox diving and scuba from Category One diver training). Recent proposed changes to Z275.4 (April 2018 meetings) will result in the lowering of Bell diver training. Note: April's meetings CSA has rejected NRCan recommendations to require all Bell divers be DMT qualified again highlighting that CSA Z275.4 does not consider the needs of the offshore industry and is more suited to inshore diving.

To Consider: guidance for training already exists in the transitional regulations for Category I and III. This can be easily updated to include Diving Categories, Life support technician, Supervisors, and ROV. In the following few weeks guidance wording can be provided to address minimum training requirements that are up to date and future proofed. This can be used by the CSO to ensure an acceptable level of training is outline providing direction to a certification body.

3)Two supervisors per shift for Saturation and Air diving.

The reasons to justify two Sat supervisors on shift, at all times are just as relevant for all surface supplied diving operations. Diving supervisor in the course of a shift will be required to brief the next team of divers to enter the water. Daily project briefings often require a supervisor to attend. Preparing tools and equipment may require direction from the diving supervisor, communicating with the client, project engineers, deck crew, diving Superintendent, Project manager, bathroom breaks, and meal breaks. These are all examples where a supervisor would be required to leave dive control. If only one supervisor is on shift diving operations would need to be terminated until the supervisor is again available. This is not practical, in reality diving operations will not likely be stopped leading to incidences where the dive would be run by an unqualified individual. Two supervisors on shift is a control measure to mitigate this hazard. The two supervisors do not need to be in dive control at the same time for all diving operation, but only to be available to take over as needed.

For smaller projects consider that a diving superintendent is a qualified supervisor and could briefly takeover for a supervisor as needed. This would ensure two things; one that oversight is provided by a qualified person in the role of diving superintendent. Second that qualified diving supervisors are in dive control overseeing diving operation, at all times.

I hope this information is helpful to you. Any questions please do not hesitate to contact me by phone or email. Thank you for your time and consideration.

Kind Regards

Ian

From: Phillips, Kim (NRCan/RNCan) <kim.phillips@canada.ca>
Sent: June 4, 2018 1:14 PM
To: Phillips, Kim (NRCan/RNCan)
Subject: Atlantic OHS Initiative - Stakeholder Engagement Follow-up

Good afternoon,

Thank you for participating in last week's stakeholder engagement session. As promised, please find attached the deck that was presented. Please submit written comments to me by June 30 (realizing June 30 is a Saturday, any submissions made by July 3 will be accepted).

Best regards,

Kim Phillips
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