

## Phillips, Kim (NRCan/RNCan)

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**From:** Dennis Barrington <dennisbarrington@yahoo.com>  
**Sent:** Tuesday, October 24, 2017 3:38 PM  
**To:** Phillips, Kim (NRCan/RNCan)  
**Subject:** Diving Reg Comments  
**Attachments:** Comments.docx

Hi Kim,  
Attached are my comments. Hope the process is going well.

The important topics (to me) include:

- Providing sufficient prescriptive framework for Contractors and Operators who would otherwise cut corners.
- Maintaining an exclusive Canadian certification
- Ensuring the DSS position is not diluted by allowing junior engineers to assume senior management roles in diving operations
- Developing the Emergency Response capabilities for recovering Hyperbaric Lifeboats

Please do not hesitate to call if you'd like to discuss anything.

Regards,  
**Dennis Barrington**  
**(705) 627-2008**

## Part 1

2. Too general - invites arguments for the use of sub-standard equipment. Who will decide compliance to "Fit for Purpose" and based on what criteria?

## Part 2

1.1w identification and management of Differential Pressure exposure from subsea systems.

1.1.x Detailed description of the Management of Change (MoC) Procedure including Responsibilities for specified category decision levels and Bridging to the Operator's MoC procedure.

1.2 ... divers, Dive Supervisors, DSSs and other employees who will or may be working on the project.

2.3 These amendments must be documented and signed off per the Management of Change Procedure in place for the operation.

3.k Barriers and Isolations procedures for work on subsea piping / well systems

4.1.c&d Specify working within anchor / riser patterns

4.1.g including maximum increments for repositioning and heading change while divers in water.

4.3 Specify requirement for Open comms between dive control and DP desk (ROV also)

8.4 The main umbilical system of a diving bell must be fitted with suitable protective devices to control loss of diving bell atmosphere if any of the components in the umbilical are ruptured.

9. Specify saturation exposure limits in days and lockout hours (28 days & 6 hrs)

10. Specify dive rotations to prevent ratcheting - a diver's total lock out time does not exceed, in any 24 hour period, in the case of a category III (sat) dive, eight hours.

14 Delete- this is covered in 11.2 for SS; not achievable for Saturation – Bellman

16 Procedures and equipment will maintain life support for the duration necessary to complete evacuation, recovery, decompression and bend watch.

17.1 Delete – unless the inert gas load remaining does not create a risk to the diver. ....Non quantifiable statement.

17.2 No flying for 24 hours; EMERGENCY ONLY <300m

18 Including bend watch

19.c Specify for > 8hrs min 2m diameter

19.e.ii lighting and heating / cooling the compression chamber, and

20.2 Notwithstanding the above, a minimum of two dive supervisors must be **on shift** at all times during active diving activities.

21.1.a.i During the Planning Phase prior to the commencement of the dive program, including the decision to use diving vs ROV, selection of Contractor and vessel / equipment, Procedure Development, HIRAs and

21.1.ii at all times at the dive site during the execution of the diving program **including decompression**, to advise on any matter related to the safety of the diving program.

21.1.d **Is a senior representative offshore with** authority to make **operational** decisions with respect to the safety of divers.

21.2

21.3 **Will have** the safety of divers **as the primary consideration in making ANY operational approvals or decisions.**

23. Clarify??

24. Clarify??

25. Each position in the dive team, and any ROV pilot, where **ROVs** are deployed in the diving operation

26. All members of the dive team, other than the specialized diving physician, shall hold valid certificates issued by a **Canadian** certifying body acceptable to the Chief Safety Officer.

27 Certificates of competency shall be issued based on completion of formal training from an **institution accredited by a Canadian** certifying body acceptable to the Chief Safety Officer.

28.1 All not appropriate. Define - Divers, Supervisors

28.2 Every dive team shall incorporate a sufficient number of DMTs to ensure at least one DMT is available at all times. For saturation, available shall mean at appropriate depth.

31. For saturation divers these checks shall be performed within 12 hours prior to entering the chamber and within 12 hours of surfacing from saturation dives.

32. The Dive Contractor, in consultation with the Specialized Dive Physician, shall ensure sufficient supply of first aid and medical supplies, equipment and medications are available at the dive site, for all reasonably expected injuries and illnesses that could occur **including any** that were identified in the Hazard and Risk Assessment, and at minimum, must conform to DMAC 15 *Medical Equipment to be Held at the Site of an Offshore Diving Operation.*

34.1.a is able to communicate directly with a diver inside the saturation chamber and effectively with a diver inside the diving bell

37 Standby divers shall be equipped with diving equipment appropriately similar to the primary diver.

38.1.a and appropriate emergency response to any loss of heating

38.1.b ... including sufficient heating supply redundancy.

38.1.c Active heating of mixed gas breathing mixtures;

38.2 ... the dive is to be suspended immediately and divers are to return to the diving bell. For Surface Supplied divers, divers are to return to surface using an emergency abort procedure including the deck chamber.

39.1 Define vicinity - 10km??

41.1 A system for active monitoring of critical components and equipment of the diving system that provides indications in the dive control room of the operational status of the system.

41.2 & 3 Maintenance System must include records of equipment failures and corrective actions. Where such failure exposes divers or diving personnel to significantly increased risk, the failure shall be reported to the Chief Safety Officer.

45 The diving supervisor shall have OPEN communications with the DP Operator on the Bridge, and two-way audible / voice communications with other relevant operational activity personnel.

46 If an ROV is in use in conjunction with diving operations, there shall be a dedicated OPEN communications link between the diving supervisor and the ROV operator, and the diving supervisor shall have a monitor in dive control room displaying the same picture as the ROV operator.

48.1 Delete "low level"

48.2 The dive contractor shall ensure that bell atmosphere monitoring includes redundancy both internally and in dive control.

48.3 Diving bell oxygen and carbon dioxide levels must be continuously analyzed, and recorded hourly as a minimum.

49 The dive contractor must ensure an adequate quantity of breathing mixture is available at all times during the diving operation, including sufficient quantity to complete the diving operation, an adequate quantity of reserve supply and an additional adequate supply for use in the event of an emergency.

50 A breathing mixture supply used for a dive must be appropriate for the depth and circumstances of the dives. Breathing Gas Calculations shall be based on a consumption rate of 42.5L per minute or greater.

52.1 The Dive Contractor shall ensure that each diver's breathing gas shall be of the correct composition, quality, temperature and flow for all foreseeable situations including independent primary and secondary supplies. Gas supplies shall be arranged so that individuals divers' supply can be independently isolated.

52.3 Any mixed gas supplied via umbilical to a diver must be continually analyzed at the furthest practical downstream point. An audible alarm must signal any unacceptable variance of Oxygen content.

55 Specify "For Saturation diving..."

56.1.b.iii plans to resupply the SPHL to prevent its onboard resources being depleted.

56.2.e Contractor and Operator Emergency Response Teams AND Canadian Coast Guard JRCC.

58.1.b&c Six months

58.1.f Delete first "Loss of position"

59.2 Timely manner