CANADA'S OIL & NATURAL GAS PRODUCERS

August 23, 2021

Kim Phillips
Senior Regulatory Officer
Offshore Petroleum Management Division
Natural Resources Canada
Atlantic Canada Energy Office
1801 Hollis Street, Suite 700
Halifax, NS B3J 3C8

Dear Ms. Phillips:

Re: CAPP Comments on the *Canada-Newfoundland and Labrador Offshore Occupational Health and Safety Regulations – Canada Gazette 1*

The Canadian Association of Petroleum Producers (CAPP) is pleased to have this opportunity to provide comments on the *Canada-Newfoundland and Labrador Offshore Occupational Health and Safety Regulations – Canada Gazette 1* (draft OHS Regulation).

CAPP members have been operating in the Atlantic offshore region for almost fifty years and are committed to the safe and responsible exploration, development, and production of Canada's petroleum resources. Our comments, provided in this letter and in the attached table, are founded upon sound operating practices and collective experience working in Canada and around the world.

Before commenting specifically on the draft Regulation, CAPP would like to point out there is a fundamental disconnect with the framework regulation. The framework regulation clearly states that the "Regulations apply to any production installation, drilling installation or accommodation installation and, for the purposes of *Part 3*, to any diving installation." Thus, the framework regulation only applies to installations with a Certificate of Fitness (CoF). This guidance is missing from the draft OHS Regulation and is a significant industry concern. This is a considerable missed opportunity to develop OHS regulation that recognizes installations with a CoF and installations that do not hold a CoF. CAPP is recommending that language similar to the framework regulation be included in the preamble of the draft OHS Regulation that provides clear guidance and applicability for installations with and without a valid CoF.

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Executive Summary

Since 2016, CAPP has been reviewing and providing comment on the draft Occupational Health and Safety Policy Intent and we remain steadfast in our commitment to the safe and responsible exploration, development and production of Canada's petroleum resources which is reflected in 2020-2021 safety and sustainability plan for the Atlantic Canada offshorewww.atlanticcanadaoffshore.ca

CAPP assembled a technical committee comprised of operator's health, safety, and regulatory specialists and our comments are focused on the critical operational concerns that have a direct impact on offshore safety and the operations of existing facilities.

This submission focusses on the comprehensive approach taken by operators in the development of their management systems and Risk Based Inspection (RBI) strategies as means of addressing the critical operational concerns outlined and prescriptive isolation of piping requirements in this submission as follows:

- **Lack of recognition for Risk Based Inspection Programs specifically prescriptive Equipment Inspection Requirements (s.82 and s.90); and**
- **Prescriptive Isolation of piping requirements (s.147)**

Other CAPP concerns include:

- **Conformance with standards incorporated by reference**

The revisions CAPP is advocating for (s.82, s.90 and s.147) are either current global and local industry practices and/or have already been approved by the Canada – Newfoundland and Labrador (C-NLOPB) and Regulatory Queries (RQs) remain in place.

CAPP is advocating for regulation that recognizes existing risk-based inspection requirements already approved by the offshore Boards' be honored. The current regulatory query approach has addressed many of the operational concerns raised by industry pertaining to the Transitional OHS requirements. This has involved significant resources, time, and effort on behalf of industry and Regulators to execute. More specifically, a performance-based perspective is required to permit industry to conduct business in the Canadian offshore industry in a safe, efficient, and competitive manner. One intent of this draft OHS Regulation was to reduce the number of RQs but with requirements that necessitate compliance for installations with an approved CoF the amount of gap assessments and RQs required is expected to be in the order of magnitude similar to the Transitional OHS requirements. CAPP recommends that the OHS regulation recognize the

requirements contained in approved RQs to reduce the level of burden on operators and the regulator.

Modernized regulation should provide for utilization of approved best practices for risk-based approach to equipment inspection and piping isolations as the current level of prescription has potential to increase risk to worker safety and asset integrity, and negatively impact project economics.

Also, many of the recommendations that were made by the Implementation Committee for the Oil and Gas Industry Recovery Task Force are based on the use of developing technologies and that emerging expertise, not only in information sharing between operators but in operational and regulatory efficiencies. The approach that the draft OHS Regulation is taking with a prescriptive approach is counter to this vision and will deter investment in these areas by operators who are then burdened with doing archaic maintenance practices based on time and not substance. As written, the draft OHS regulation will result in significant system shutdowns and will affect lower risk maintenance and operator work that could have otherwise been executed safety using single isolations. The projected impact to two operators is included further in the submission.

Critical Operational Concerns as outlined in the Executive Summary

Risk Based Inspection Programs specifically prescriptive Equipment Inspection Requirements (s.82 and s.90)

A RBI program is one which determines the most appropriate inspection frequency and methodology based on design and operating data, rather than something prescribed.

The goal of an RBI program is the safety and reliability of operating facilities.

RBI and Condition Based Monitoring RQs have been approved and in place since 1997 and the most recent RQ was approved by the C-NLOPB in 2020. Examples of approved RQs include:

- SeaRose regulatory queries (RQ) approved for Pressure Systems RBI & Condition Based monitoring for critical equipment
- Hibernia and Hebron RQs – Risk Based Inspection for Pressure Equipment
- Terra Nova RQs – Pressure Systems RBI
- Approved RQs are in lieu of the current prescriptive inspection requirements
- All are approved by Certifying Authority and/or Classification Society and/or Transport Canada

Also, current RBI RQs align with global industry practices both onshore and offshore including:

- ABSA's AB-505 – Risk Based Inspection Programs for Pressure Equipment (2017)
- API 580 and 581, which have replaced time-based inspection approaches to encourage focus and on the management of identified risks
- Saskatchewan – TSASK - Boiler and Pressure Vessel Regulations, 2017
- National Board Inspection Code Part II
- DNVGL-RP-G101 – Risk Based Inspection of Offshore Topsides Static Mechanical Equipment
- Aligns with NL/NS onshore OHS requirements

The Certifying Authorities (CAs) working in the Newfoundland offshore basin (NL basin) for production facilities offer support to RBI programs in the form of commercially available RBI software, 3rd party RBI analysis services, and/or the publication of industry guidance/standards supporting the development and implementation of such programs. Notable mentions include:

- LR's (formerly Capstone's) RBMI™ software and LR ALLASSETS™ Risk-Based Inspection software module
- DNV publications:
    - DNVGL-RP-G101 – *Risk Based Inspection of Offshore Topsides Static Mechanical Equipment*
    - DNVGL-RP-G103 – *Non-Intrusive Inspection*

This demonstrates that the CAs are globally recognized 3rd parties knowledgeable in RBI and are capable of the technical oversight for such programs in the NL basin.

In addition to the local jurisdiction, the Certifying Authority Det Norske Veritas (as an international Verification Body) have recognised RBI programs through the following recommended practice (which uses API codes as reference material): DNV-RP-G101 Risk Based Inspection of Offshore Topsides Static Mechanical Equipment.

In support of their RBI programs, local operators have invested in the deployment of advanced inspection techniques and development of new, advanced inspection technologies from local vendors and inspection contractors. As inspection techniques evolve, the ease at which accurate, repeatable data can be incorporated into equipment RBI assessments has increased the confidence in such assessments. Revoking the use of RBI in the basin will essentially de-incentivize operators to continue to invest or utilize such technologies. It can be expected to see a reduction in the advancement and deployment of inspection techniques/technologies in the basin if calendar-based inspection programs are mandated.

Over time, facilities operations such as pipe systems, tanks, pressure vessels and associated equipment are subject to degradation such as corrosion, fatigue, and mechanical damage. These operations need to be managed in a systematic approach as part of an operator's management system to safeguard life, the environment and property. To do so, the associated risks need to be identified and managed.

While traditional inspection methodologies work on a fixed interval basis, RBI methodologies consider the risk as the product of the consequence and the probability of a failure event. This ensures that the objects with highest risk are prioritized with the most rigorous inspection strategies and items with lower risk are prioritized accordingly.

The underlying difference between utilizing an RBI program vs. prescriptive inspection frequencies is that resources are focused on developing/maintaining overarching Integrity Management programs for fixed equipment. In focusing on risk identification and its mitigation, RBI provides a

better linkage between the damage mechanisms that lead to equipment failure and the inspection approaches that will effectively reduce the associated risks. This is not the case for prescriptive inspection frequencies, as unnecessary equipment outages and intrusive inspections do not necessarily equate to an equal or greater reduction in risk compared to an RBI program. A point is reached where additional inspection activity begins to show a diminishing return and, eventually, may produce very little additional risk reduction. If excessive inspection is applied, the level of risk may in fact increase. This is because invasive inspections in certain cases may cause additional deterioration to equipment and unnecessarily increase personnel injury risks due to the increase in intrusive equipment inspection and confined space entries. Under a prescriptive inspection program, all equipment is essentially treated equally with no consideration for the process conditions, corrosion rates, metallurgy, or operating history unique to a specific piece of equipment. All Operators in the basin, utilize these variables in their RBI assessments to optimize their inspection programs and focus inspection resources where tangible risk reduction can be achieved.

It should be noted that under the current RBI program, there are many instances where pressure equipment, for example, is intrusively inspected at a frequency less than the 5-year interval being prescribed in the draft regulations, as the engineering evaluation of the affected equipment and risk profiles under the current RBI program warrant a shorter frequency. Conversely, low risk equipment is inspected at intervals greater than 5 years when it is supported by the same type of engineering evaluation. This is to reinforce the point that RBI is not used as a tool to avoid or obfuscate from inspection obligations, it is simply a more effective wholistic Integrity Management tool than a calendar-based inspection program.

RBI schemes are widely accepted by operators, verification bodies and regulators within the offshore industry. Within Canada, jurisdictional societies such as Service NL, Alberta Boilers Safety Association (ABSA), British Columbia Boiler Branch and Canada Nova Scotia Offshore Petroleum Board (CNSOPB), C-NLOPB have accepted risk-based approaches to the inspection of pressure system equipment. For Alberta, this approach is recognised as valid by ABSA through the following publication (which refers to API standards):

- AB-505, “Risk based Inspection Programs for Pressure Equipment”

It is CAPP’s understanding that if the OHS regulation does not recognize RBI, offshore Nova Scotia and Newfoundland will be the only two jurisdictions in Canada that do not recognize risk-based approaches. As previously noted, the C-NLOPB has approved risk-based approaches for local operators, on a case-by-case basis.

Competing global offshore basins, notably the Gulf of Mexico, Norway, and UK all permit the use of RBI programs for offshore production facilities. Discontinuing to permit RBI programs is at odds with global practice and other jurisdictions where RBI is recognized as industry standard and capable of providing equal or greater facility integrity and safety metrics.

Mandatory 5 yearly Pressure Vessel internal inspections increase risk to personnel and equipment (including exposure to confined spaces, disruption of pressure containing connections, shut down and startup of equipment, etc) and will result in approximately 180+ additional internal inspections over a 5 year period for the SeaRose FPSO over 350+ additional internal inspections over a five-year period at Hibernia and over 350+ additional internal inspections over a five-year period at Hebron, creating unnecessary burden on both the operator and the regulator.

CAPP recommendation: Recognition of existing RBI approved RQs as an appropriate means of compliance.

CAPP recommendation: Based on the case for RBI, CAPP is recommending that Sections 82(c) 90(1)(e)(ii) be amended as follows:

Draft Atlantic OHS Sections 82(c) and 90(1)(e)(ii) prescribe inspection requirements for pressure equipment and for equipment, machines, or devices that "preserve or protect life". More specifically, section 82 states that "Every employer must ensure that all pressure equipment at a workplace under its control is, despite paragraph 90(1)(e), subject to:

> (b) an external inspection at least once every year or more frequently if recommended under paragraph 83 (c) and
>
> (c) an internal inspection at least once every five years or more frequently if recommended under paragraph 83(c)."

Also, Section 90(1) states that "Every operator and employer must ensure, with respect to any equipment, machine, or device that that operator or employer provides for use at a workplace, including any part of or accessory used with one of those things, that

> (e) it is subject to:
>
> > (ii) a thorough safety inspection at least one each year…"

CAPP Recommendation: 82 (b) & (c) and 90(1)(e)(ii)

Amend section 82 (b) & (c) and as follows:

"Every employer must ensure that all pressure equipment at a workplace under its control is, despite paragraph 90(1)(e), subject to:

> (b) an external inspection at least once every year or more frequently if recommended under paragraph 83 (c), *unless subject to a risk-based inspection and / or condition-based monitoring scheme approved by the CSO;*
>
> (c) an internal inspection at least once every five years or more frequently if recommended under paragraph 83(c), *unless subject to a risk-based inspection and / or condition-based monitoring scheme approved by the CSO."*

"90(1) Every operator and employer must ensure, with respect to any equipment, machine or device that that operator or employer provides for use at a workplace, including any part of or accessory used with one of those things, that

> (e) it is subject to:
>
> (ii) a thorough safety inspection at least one each year *unless it is subject to a risk-based inspection and / or condition-based monitoring scheme approved by the CSO."*

Prescriptive Isolation of Piping Requirements

Piping Isolations philosophy is based on a risk-based approach to piping isolations and considers the nature of the fluid, pressure, and temperature. It recognizes the inherent difference between a hydrocarbon service versus non-hydrocarbon systems such as potable or domestic water systems. Any changes or new technologies used in isolations are done so under management of change philosophies and subject to review by the Certifying Authority.

As written, the draft OHS regulation will result in significant system shutdowns and will affect lower risk maintenance and operator work that could have otherwise been executed safety using single isolations The projected impact for two operators is approximately 9-10 million barrels of deferred production (between $597M - $663M) per year.[1] This also doesn't take into account increased maintenance backlog, process instability, increased flaring and burning of diesel for main power and possible produced water upsets while ramping down and starting back up.

[1] Hebron and Hibernia total deferred production combined via scoping level estimate; assuming average pricing YTD for Brent crude of 66.30 US dollars

Due to existing equipment design or type of work being executed, conformance to positive isolation method may create additional risk to personnel performing isolations (e.g: pipe cutting, spreading, heavy lifts in process area, etc.) or working on equipment. In some instances, special isolation methods may be required to perform hazardous energy isolation (e.g: Plugs, mechanical stopples, pipe freezes, etc).

The draft regulations as written may preclude the use of newer technology such as "Line Blind Valves" as recommended by OCIMF Cargo Guidelines for FPSOs 2018 (sect. 9.2.4). Line Blind Valves can be operated by one person in minutes and can only be operated after the depressurization of a line (with an upstream isolation valve).

Currently, as written section 147(3)(a) does not allow for risk-based approaches to piping isolations.

Section 147(3) states: "The employer must ensure that:

> (a) the energy isolating device used on a pipe that contains a substance under pressure, other than in a confined space, consists of
>
> > (i) a blank or blind, in conjunction with valves or other blocking seals that are secured and locked out in the closed position to prevent the substance from reaching the blank or blind; or
> >
> > (ii) a double block and bleed isolation system, consisting of two valves or other blocking seals that are secured and locked out in the closed position, located on either side of a valve or other mechanism that is secured and locked out in the open position, to allow for bleed-off between the two seals;"

CAPP Recommendation: Amend section 147(3)(a) and as follows:

147(3) The employer must ensure that

> "(a) the energy isolating *method* used on a pipe that contains a substance under pressure, other than in a confined space, consists of
>
> > (i) a blank or blind, in conjunction with valves or other blocking seals that are secured and locked out in the closed position to prevent the substance from reaching the blank or blind; or
> >
> > (ii) a double block and bleed isolation system, consisting of two valves or other blocking seals that are secured and locked out in the closed position, located on either side of a valve or other mechanism that is secured and locked out in the open position, to allow for bleed-off between the two seals; or

> *(iii)Where (i) or (ii) are not deemed to be reasonably practicable, once zero energy is determined, the employer may utilize an alternative risk-based isolation method that must ensure the safety of all person who may be exposed to a hazard arising from the work."*

This amendment would be in line with current piping Isolation philosophy which is based on a risk-based approach to piping isolations and considers the nature of the fluid, pressure and temperature.

This piping isolation philosophy **is** aligned with UK's HSE publication, HSG253 The safe isolation of plant and equipment as well as with the Newfoundland and Labrador as well as Nova Scotia onshore OHS requirements and ASME / API piping design codes.

For further clarification, a comprehensive approach is taken by Industry in the development of their management systems and their complex and highly capable organizational structure should be considered as part of the solution to addressing the two critical operational concerns noted above.

Industry management systems and in particular the occupational health and safety components are designed, implemented, and monitored to ensure that companies meet and exceed those regulatory requirements particularly those stipulated under *Section 201.12 of the Atlantic Accord Implementation Act* as well company specific goals and objectives. Operators continuously strive for improvement in the effectiveness and suitability of these management systems.

Operators organizational structure and capability in support of operations are extensive and complex. Organizational functions, specifically health, safety and risk management teams are staffed with professional, technically competent personnel with the responsibility for development, implementation and monitoring of health and safety management elements. These teams are also tasked the responsibility for identification of opportunities to adopt and introduce global best practices and technical advances in the spirit of continuous improvement.

Management systems are common practice in industry and form the basis for providing assurance that equipment is maintained, inspected, and operated as intended. These management systems are subject to regular internal audits and review as well as assessment and audit by regulators and independent bodies such as Certifying Authorities or Classification Societies.

Atlantic Canada offshore operators have management systems in place for assessing, managing, and optimizing operations risk, safety, environment, and operating performance. As part of the continuous improvement process to manage risk and operational performance operators have

compliance assurance programs in place to verify compliance with regulatory requirements. Typically, compliance assurance assessments include the following:

- Facilities operations
- Pipeline integrity management
- Regulatory approvals
- Environmental requirements
- Health & safety requirements
- Measurement requirements

Recognition of the Atlantic Canada Offshore Training Standard

CAPP is pleased that NRCan and its partners have recognized the Atlantic Canada Offshore Petroleum Standard Practice for the Training and Qualifications of Offshore Personnel (PDF), a code of practice that the chief safety officers of the C-NLOPB and the CNSOPB have both required operators and employers of drilling and production workplaces to adopt. Keeping people safe is the first consideration in all aspects of offshore oil and natural gas activity. Making sure employees have the skills necessary to do their jobs safely by providing relevant and appropriate training is one of the ways the industry strives to keep employees safe.

CAPP serves as the Secretariat to the Atlantic Canada Offshore Petroleum Training and Qualifications Committee (TQC) and was formed as a collaborative, multi-stakeholder committee by the regulatory authorities, offshore petroleum industry operators and drilling contractors and workforce representatives. The objectives of the TQC are to support and oversee the development of an offshore Atlantic Canada training standard that outlines the minimum qualifications and certified training required of individuals working in Atlantic Canada's offshore petroleum industry. This is truly a collaborative initiative that should serve as a model for the development of future offshore regulation.

Other CAPP concerns:

Conformance with standards incorporated by reference

The concept of requiring foreign flagged MODUs and vessels to demonstrate conformance to the prescriptive requirement in the regulation, suggests that the prescription in the regulation is the highest standard possible and that selection of any other internationally recognized code or standard must be measured and compared to the prescription. This has not been the case to date, for any OHS regulation including the Draft OHS regulations, initial Transitional OHS regulations or

the 2017 amended Transitional OHS regulation. Simple recognition of an international standard, primarily Class based or other internationally recognized standard, was the basic measure of acceptance. The proposed requirement of conformance to a primarily Canadian standard (most of which were never written for offshore application), and the ability for Board Safety Officers to ask for such a demonstration, will add a substantial administrative burden to operators in the form of gap analyses with no tangible improvement to worker safety.

The prescriptive code or standard requirements such as those in Sections 126(1) and (2) are at odds with the goal-based requirements in the draft Framework regulation and removes the operator's ability to select appropriate internationally based codes and standards. CAPP suggests removing these references where Framework Regulation provides for appropriate selection.

CAPP also recommends the addition of a provision for acceptance of the rules, codes, or standards acceptable to a recognized classification society and previously accepted as part of the Offshore Boards' regulatory query (RQ) process. CAPP continues to emphasise that an international regulatory perspective is required to support the development of effective OHS Regulation. This permits industry to utilize the internationally based resources and infrastructure, which are unique and technically complex in their function. This would also help alleviate industry concerns with regulatory queries as this process typically contemplates internationally recognized standards to demonstrate equivalency.

Similar to Canadian flagged vessels, foreign flagged vessels and mobile units are governed by comprehensive technical and regulatory regimes that include statutory requirements established under the Flag state as well as globally adopted international requirements that include SOLAS, International Maritime Organization, Maritime Labour Convention as well as Classification Society Rules. These vessels and installations are designed and constructed to internationally recognized standards and should receive equivalency when verification and monitoring is conducted by a recognized classification society.

It is CAPP's view that the regulations should permit the adoption of codes and standards that have been accepted by flag states and classification societies for foreign flagged vessels and installations.

Conclusion

CAPP's attached detailed comments on the Canada Gazette I version of the OHS regulations are attached in Appendix A and additional information to address points of clarification is contained in Appendix B. Given that CAPP has been consulted on the Framework Regulation Cost Benefit Analysis, we also request the same opportunity for input be considered prior to Canada Gazette 2. We look forward to continued engagement with Natural Resources Canada, the Provinces of Newfoundland and Labrador and Nova Scotia and members of the Technical Working Group as final regulation is developed. Given the significant concerns industry has with the draft OHS regulation we are requesting a meeting with the Technical Working Group as soon as possible.

If you have any questions, please do not hesitate to contact me at 709 724-4200.

Sincerely,

R. Paul Barnes

R. Paul Barnes
Director, Atlantic Canada and Arctic

cc
Tim Gardner, Director General, Natural Resources Canada
John Cowan, Deputy Minister, NL Department of Natural Resources
Chris Carter, Director, NL Department of Natural Resources
Simon d'Entremont, Deputy Minister, NS Mines and Energy
Alison Tracy, A/Director, Regulatory and Policy, NS Mines and Energy

Attachments

Appendix A

CAPP Table of Comments (attached)

Appendix B

CAPP - Additional information to address points of clarification from NRCan

Query #1: What is the current scope of RBI on the production Installations currently or recently operating in Atlantic Canada, e.g. does this approach apply to all equipment and structure or only to SCE or only to process equipment and not to marine equipment, etc.

Draft Atlantic OHS Sections 81(c) & 89(1)(e)(ii) prescribe inspection requirements for pressure equipment and for equipment, machines or devices that "preserve or protect life". Interpreted as Safety Critical equipment.

Proposed Atlantic OHS Regulation:

81 Every employer must ensure that all pressure equipment at a workplace under its control is, despite paragraph 89(1)(e), subject to:

(c) an internal inspection at least once every five years or more frequently if recommended under paragraph 82(c).

89(1) Every operator and employer must ensure, with respect to any equipment, machine or device that that operator or employer provides for use at a workplace, including any part of or accessory used with one of those things, that

(e) it is subject to:

- (ii) a thorough safety inspection at least one each year, if
  - (A) it preserves or protects life,…

Current Practice:

Multiple Risk Based Inspection and Condition Based Monitoring RQs approved. Eg:

- SeaRose RQs approved – Pressure Systems RBI & Condition Based monitoring for critical equipment
- Hibernia and Hebron RQs – Risk Based Inspection for Pressure Equipment
- Terra Nova RQs – Pressure Systems RBI
- Approved RQs are in lieu of the current prescriptive inspection requirements
- All are approved by Certifying Authority and/or Classification Society and/or Transport Canada
- Aligns with Framework Policy Intent Section 7.3(13)

Alignment with other jurisdictions

- The current RBI RQs align with global industry practices both onshore and offshore including:
    - ABSA's AB-505 – Risk Based Inspection Programs for Pressure Equipment (2017)
    - API 580 and 581, which have replaced time-based inspection approaches to encourage focus and on the management of identified risks
    - Saskatchewan – TSASK - Boiler and Pressure Vessel Regulations, 2017
    - National Board Inspection Code Part II
    - DNVGL-RP-G101 – Risk Based Inspection of Offshore Topsides Static Mechanical Equipment
    - Aligns with NL/NS onshore OHS requirements

Potential impacts

- Approved RQs with proven implementation will be withdrawn as they will no longer demonstrate compliance and exemptions may not be tolerated under new regulations.
- Several Performance Standards, maintenance routines and CA Verification Schemes will require substantial revision
- Prescriptive inspection frequencies will have all pressure equipment treated the same regardless of risk
- Mandatory 5 yearly PV internal inspections increase risk to personnel and equipment including exposure to confined spaces, disruption of pressure containing connections, shut down and startup of equipment and resulting in approximately 180+ additional internal inspections over a 5 yr period (for SeaRose).

Operator Specific Input

Cenovus

Cenovus consider that risk-based maintenance is fundamental to a successful maintenance program, with inspection of piping and pressure vessels being just a component of the program. For SeaRose, there are two Risk Based Inspection (RBI) programs, Pressure Systems and Pressure Safety Valves.

The SeaRose Pressure Systems RBI program was reviewed and approved by DNV's worldwide RBI Lead with the following comments made in a letter dated January 22, 2007:

DNV encourage the use of risk-based inspection for process facilities, as this ensures focus on identified risks and their management. To that end, DNV has developed under contract to API the documents API RP 580 and 581, as well as DNV RP-G 101, all aimed specifically at static process

equipment and piping. As a result, DNV consider that the Husky Energy proposal to use RBI should be encouraged, subject to the limits of Canadian legislation and regulations. Similarly, the PSV RBI program has been approved by DNV's RBI group and is reviewed annually as part of the Verification scheme. The program was initially developed by Petrofac Plant Asset Management to Husky's specification and has continued to evolve using the annual review processes. Petrofac presented the program at the 2019 API summit in Galveston, Texas. Together with Cenovus's Integrity Lead, they co-authored a joint paper with the topic **"**Integrity Management of Pressure Safety Valves Using an Integrated Risk and Reliability Approach". A copy of the presentation provided at the API conference is attached.

Corporately, Cenovus operates under an Owner/User Pressure Equipment Integrity Program (PEIM) which has been approved by jurisdictional authorities (primarily Alberta Boiler Safety Association). This program is fundamentally risk based.

Cenovus RQ summaries

RQF-WR-081 – RBI for pressure systems
Regulatory Requirement at time of RQ submission - Draft OHS Regulations

Section 5.9 "*Subject to section 5.10, every pressure system in use at a work place shall be inspected:*

a) externally, at least once each year; and
b) *internally, at least once every five years"*

A Pressure System is defined as a boiler, pressure vessel, tanks and the piping system connected thereto that contains or is intended to contain a gas, vapour or liquid at a pressure greater than atmospheric (generally mechanical static equipment.

Proposal Summary
In line with the requirements of API RP 580, "Risk-Based Inspection (RBI)," Husky Energy proposes to conduct inspection based on a qualitative assessment of each systems risk of failure. Understanding the Probability of Failure (PoF) and Consequence of Failure (CoF), the overall risk of failure will be used to determine the appropriate level of inspection (i.e. high risk items receive more inspection than low risk items) along with identification of inspection techniques to detect the onset of all applicable or predicted degradation mechanisms.
This assessment will be maintained live throughout the field life and will be conducted and periodically reviewed by a team of industry professionals experienced in risk analysis, equipment degradation mechanisms and offshore production processes. Per API 580, this process will ensure the following:

- Appropriate inspection methods, scope, tools and techniques to be utilized based on the expected degradation mechanisms.
- Appropriate frequencies for internal, external and on-stream inspections.
- Identification of mitigation tasks to reduce the likelihood and consequence of a failure.

It should also be noted RBI is a continuous process that is fundamental to the success of the pressure systems integrity management program. As each set of inspection data is gathered the risk assessment will be reviewed for appropriateness and the inspection interval revised as necessary.

Relevant standards referenced

- API 510:Pressure Vessel Inspection Code; Maintenance Inspection, Rating, Repair and Alteration
- API 570:Piping Inspection Code; Inspection, Repair, Alteration and Re-rating of In-service Piping Systems
- API RP 571:Damage Mechanisms Affecting Fixed equipment in the refining Industry
- API RP 572:Inspection of Pressure Vessels (Towers, Drums, Reactors, Heat Exchangers and Condensers)
- API RP 574:Inspection of Piping System Components
- API RP 576:Inspection of Pressure-Relieving Devices
- API RP 579:Fitness for Service
- API RP 580:Risk Based Inspection
- API RP 653:Tank Inspection, Repair, Alteration and Reconstruction

Precedents

Risk Based Inspection schemes are widely accepted by operators, verification bodies and regulators within the offshore industry. Within Canada, regulatory authorities such as Alberta Boilers Safety Association (ABSA), British Columbia Boiler Branch and Canada Nova Scotia Offshore Petroleum Board (CNSOPB) have accepted risk-based approaches to the inspection of pressure system equipment. For Alberta, this approach is recognised as valid by ABSA through the following publication (which refers to API standards):

- AB-505, “Risk based Inspection Programs for Pressure Equipment”

It is Husky’s understanding that the Canada Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) have approved risk-based approaches for local operators, on a case by case basis.

In addition to the local jurisdiction, the Certifying Authority Det Norske Veritas (as an international Verification Body) have recognised RBI programmes through the following recommended practice (which uses API codes as reference material):

- DNV-RP-G101 Risk Based Inspection of Offshore Topsides Static Mechanical Equipment

Approvals – Certifying Authority, C-NLOPB

RQF-WR-0306 – Predictive and CBM for Critical Equipment
Regulatory Requirement at time of RQ submission – Drilling and Production Regulations

Part 4 – EQUIPMENT & OPERATIONS
Wells, Installations, Equipment, Facilities and Support Craft

Section 25.
The operator shall ensure that (b) a comprehensive inspection that includes a non-destructive examination of critical joints and structural members of an installation and any critical drilling or production equipment is made at an interval to ensure continued safe operation of the installation or equipment and in any case, at least once in every five-year period;

Proposal Summary

Husky Energy proposes that its predictive and condition-based maintenance routines as well as OEM recommended maintenance provides an equivalent level of safety to the requirement for a comprehensive inspection of critical production equipment at least once in every five years with respect to ensuring the continued safe operation of the installation or equipment.

The following equipment on the SeaRose FPSO falls under the condition-based monitoring scheme:

- Gas compression (Flash Gas, LP/IP, & HP) compressors and motors
- Main Power Generators
- Glycol regeneration Package
- Turret swivels and bearings
- Crane Slew Ring Bearings
- Marine Utility Pumps, incl. Ballast (providing safety critical service)
- Process hydrocarbon pumps (Oil Separation and Treatment)
- Water Injection Pumps and Motors

- Rotating equipment in safety critical marine service:
- Hydrocarbon pumps (rundown, export, COW, flowline recirculation, MGO, aviation fuel,
    - MPG liquid fuel booster, Methanol, Lube oil)
    - HVAC fans
    - Chillers

Precedents

This approach has been accepted by Transport Canada for the SeaRose FPSO. MTRB Decision 10299 was issued on September 21, 2011 accepting Husky's approach, using the PMS for the vessel's machinery. Husky's PMS system has been accepted by Husky's Marine Classification Society, DNVGL. See attachment #1, MTRB Decision 10299.

RQF 215.1 – Suncor Energy - Main Power Generator (MPG) Continuous 5 Yearly Survey to Align with the Manufacturer Recommended Maintenance Schedule - Gas Turbine

Approvals – Certifying Authority, C-NLOPB

RQF-WR-078 – Planned Maintenance System Survey Arrangement
Regulatory Requirement at time of RQ submission – Canada Shipping Act

Marine Machinery Regulations

20. (1) Machinery referred to in Schedules I to XV is subject to a periodic special inspection by an inspector... and shall consist of an external and an internal inspection of the machinery comprising an inspection of each item set out in Subdivision I of Division II of Part IV of the applicable schedule of Schedules I to XV.

Proposal Summary

This requirement for fixed interval intrusive inspection of marine machinery by an independent body is queried by this RQF.

Husky proposes to follow the requirements of DNV's Planned Maintenance System (PMS) notation for maintenance of marine machinery and considers that this provides an equivalent level of safety to that intended by the above referenced regulation.

Equipment considered within PMS:

The PMS notation applies to safety critical marine machinery such as:

- Propulsion engines and steering system
- Essential and emergency power generation and distribution
- Remote control and monitoring systems
- Bilge and Ballast Pumping Systems
- Auxiliary boilers and steam distribution
- Inert gas distribution
- Utilities systems (feed water, cooling water, compressed air, fuel oil, lube oil, hydraulic)

Approvals – Certifying Authority, C-NLOPB, Transport Canada

Suncor
Terra Nova's RBI programs for pressure equipment includes all process equipment, pressure relief valves and piping approved for the program by the Certifying Authority (Lloyd's Register). This includes both SCE and non-SCE pressure equipment. We are currently assessing the use of RBI for our Subsea infrastructure and Structures. Marine equipment inspection frequencies follow Transport Canada *Marine Machinery Regulations* and are not within scope of the RBI program.
RQ References:
RQ 3.22 - RBI for Piping and Pressure Systems

ExxonMobil
RBI encompasses a number of different aspects of the production installations, including Pressure Equipment, subsea pipelines, drilling equipment and structures. As a newer installation, Hebron will continue to look for future opportunities to optimize our maintenance and inspection programs through means such as RBI.
Hebron RQF-HEB-080 – Pressure Equipment RBI Program

Hibernia Management Development Company (HMDC)
RBI encompasses a number of different aspects of the production installations, including Pressure Equipment, subsea pipelines, drilling equipment and structures. This can apply to SCEs as well; for example, risk-based inspections are performed on firewater piping.
HMDC-RQF-441 – Risk Based Inspection Program
HMDC-RQF-462 – Hibernia Safety Critical Equipment 5-year Comprehensive Inspections – In-Line Inspection for twin 24" Main Offshore Pipelines and Interconnecting Offshore Pipeline

Query #2 - Do MODUs normally follow an RBI approach?
Query #3 - How common is this approach on Diving Vessels, Seismic Vessels and Construction Vessels, etc.

CAPP Response
By way of examples, please see the approved RQs permitting the use of RBI or condition-based monitoring for MODU's operating in NL.
https://www.cnlopb.ca/wp-content/uploads/rqfs/210015dec.pdf
https://www.cnlopb.ca/wp-content/uploads/rqfs/210032dec.pdf
https://www.cnlopb.ca/wp-content/uploads/rqfs/2015rq0026dec.pdf

Operator Specific Input

Suncor
Inspection and maintenance programs on MODU's are stewarded as per the rig contractor's management system. Various rig contractors have varying degrees of adoption / maturation of Risk Based Inspection / Condition Based Monitoring within their maintenance programs. During MODU intake activities, Suncor would review this aspect of a rig contractor's management system and gap assess against regional regulations. In general, there is growing momentum to leverage technology and data analytics to responsibly implement RBI where practical.
Condition Based Monitoring Programs for safety critical equipment would have full endorsement of the relevant Certifying Authority (CA)

- The periodic sampling and measurements are analyzed by a CA approved company
- The maintenance strategy for CBM/RBI (for MODU's) uses recognized ISO Standards
- The CBM/RBI survey arrangement ensures compliance with Class certification
- The CBM/RBI uses predictive techniques, that may predict failure prior to the 5 year certification requirement
- The OEMs (for MODUs) endorse CBM/RBI programs in use
- The Rig Contractor have a significant database of failures that back up the use of CBM over invasive maintenance/overhauls

For other Marine Installations, refer to response above. The same process is followed for Dive vessels.

Query #4 - It appears that Terra Nova has an exemption from TC with regard to the Machinery Regulations, but White Rose does not, please clarify.

Operator Specific Input

Cenovus
Cenovus RQ (RQF-WR-078), and subsequent MTRB (10299) is specific to the Canadian Shipping Act, Marine Machinery Regulations. That RQ was approved by both the CA and Transport Canada as its specific to Transport Canada regulations. This MTRB is also referenced in the approved RQ for critical maintenance (RQF-WR-0306) within the precedents section as well as included as an appendix. This RQ was subsequently approved by the CA and the CNLOPB

Suncor
This is not the case. As noted in Terra Nova RQ 3.22 and TN-PE-MN26-X00-007 - PSV Maintenance and Sparing Strategy, marine systems covered under the *Marine Machinery Regulations* are not within scope of these documents. As there were no deviations for pressure equipment inspections covered by the *Marine Machinery Regulations*, Transport Canada approval was not required. However, Transport Canada did review/approve the tag list of equipment within the RQ and TN-PE-MN26-X00-007 - jointly with the Certifying Authority (LR). Basically, LR and Transport Canada coordinated to vet the list with Transport Canada, ensuring that any equipment approved for RBI was not within their purview of administering/enforcing the *Marine Machinery Regulations*. This same joint review/approval effort is ongoing as part of our review and continuous improvement. Terra Nova currently adheres to the *Marine Machinery Regulations* for inspection of pressure equipment within scope and would continue to do so going forward.

Query #5 – Please provide a summary of CAPP's understanding of Risk/Reliability/Performance Based Inspection and Maintenance. I know there are several internationally recognized standards and at the end of the day each individual operator must provide their company's policy in the Safety Plan and other related management system documents. However, I feel it would be helpful, if all stakeholders, had a clear understanding of exactly what CAPP means by RBI.

CAPP Response
RBI is a risk assessment and inspection management process focused on mitigating loss of containment of pressurized equipment in process facilities due to material deterioration. API RP 580 *Risk-based Inspection* is the typical industry resource utilized by the Operators in the basin for development and alignment of their respective RBI programs. The goal of inspection is the safety and reliability of operating facilities. RBI, as a risk-based approach, focuses attention/resources specifically on the equipment and associated damage mechanisms representing the most risk to a facility rather than treating all pressure equipment as equal. It acknowledges the reality that more inspection does not always equate to less risk, but rather focuses on holistic integrity management practices and risk identification/mitigation at the equipment level.

Operator Specific Input

Cenovus

The SeaRose RBI program scope is to provide a means to determine the most appropriate integrity assessment tools for pressure equipment to minimize the risk of loss of containment due to material deterioration. The ultimate goal is to optimize processes and resources such that attention is focused on the most critical equipment and ensure assets are safe to operate. In addition to ensuring inspection frequencies are appropriate for the level of assessed unmitigated risk, the RBI program provides both an inspection program targeted at identified degradation mechanisms and a monitoring program (process trends, chemical sampling and dosing) which provide insight to the onset of deterioration.

Monitoring: The risk assessment process also highlights monitoring activities that would mitigate the occurrence of a predicted damage mechanism or provide knowledge of the onset of a damage mechanism. These play an important role in risk mitigation and allow knowledge and confidence in the condition of the plant. Each monitoring activity considered necessary during the risk assessments are highlighted within the corrosion circuits. These include process monitoring, chemical sampling and inspection specifics.

Inspection: Inspection tasks are driven by the degradation mechanisms identified as part of the risk assessment. For each applicable mechanism, an appropriate inspection technique is identified, and probable locations of degradation noted. Inspection instructions and reports provide general condition information with a focus on the degradation mechanisms driving the risk for the equipment in question.

Reassessment: Once inspection activities are complete; the results are reviewed within a cross functional team meeting. The degradation mechanisms and associated risk are re-evaluated, restarting the RBI cycle.
An evergreening approach is fundamental to the success of the program. Cenovus has a straightforward qualitative RBI approach that uses subject matter experts to support each risk assessment.

ExxonMobil and HMDC

Fundamentally a risk-based inspection program is one which determines the most appropriate inspection frequency and methodology based on design and operating data, rather than something prescribed. This data will vary based on the specific piece of equipment being assessed, but typically includes elements such as:

- Material of construction and fabrication information
- Past inspection history
- Process conditions and history
- Known and potential degradation methods
- Safety considerations and equipment reliability requirements
- Industry and company recommended practices

The RBI process involves assembling a cross-functional team to review each piece of equipment and its relevant data to determine the most appropriate inspection methodology and frequency required to verify the integrity of the equipment. This ensures that the inspection program is data-driven and prioritizes inspection resources based on managing risk.

There are a number of international standards which cover RBI programs, but the most direct would be API 580 – Risk Based Inspection and ASME PCC-03 "Inspection Planning Using Risk-based Methods".

An additional note: With Hebron, for example, the 1 and 5 year inspection requirements are still in place until a formal RBI has been conducted for each piece of equipment and an MOC (endorsed by the Certifying Authority) has been approved. As such we are only modifying the inspection program in those instances that we have sufficient data to complete a thorough RBI evaluation. This is why the recommended text in the regulations would be that the 1 and 5 year inspections are required unless the Operator has an RBI program in place which can document the basis for an alternate inspection frequency.

Suncor
RBI is a risk assessment and inspection management process focused on mitigating loss of containment of pressurized equipment in process facilities due to material deterioration. API RP 580 Risk-based Inspection is the typical industry resource utilized by the Operators in the basin for development and alignment of their respective RBI programs. The goal of inspection is the safety and reliability of operating facilities. RBI, as a risk-based approach, focuses attention/resources specifically on the equipment and associated damage mechanisms representing the most risk to a facility rather than treating all pressure equipment as equal. It acknowledges the reality that more inspection does not always equate to less risk, but rather focuses on holistic integrity management practices and risk identification/mitigation at the equipment level.

Query #6 – While there are internationally accepted standards on the isolation of pressure systems, it would be helpful to have a brief overview of CAPP's approach. Here again, I recognise, that each

operator has specific policies and procedures but feel a better understanding of the approach that is applied to making decisions such as the level of isolation needed would be helpful for stakeholders.

Query #9 – Given my experience, I have some knowledge of process plumbing and general operations on petroleum installations. Thus, I can understand (not necessarily agree or disagree with) your concern that the two options for piping isolations that are prescribed could in some circumstance, while reducing risk for individuals performing specific tasks, lead to an overall increase in risk for the installation and personnel on board. However, I do not feel competent to explain the concern or provide realistic examples nor do I feel that is my role. Consequently, I request that you provide a more complete explanation of this concern that may help stakeholders that do not have process or offshore petroleum experience better understand the concern.

Section 144(3)(a): The requirement for either a blank/blind/valve combination or a double block and bleed isolation system for all systems containing pressure does not allow for risk-based approaches to piping isolations.

Proposed Atlantic OHS Regulation:

144(3) The employer must ensure that:

(a) the energy isolating device used on a pipe that contains a substance under pressure, other than in a confined space, consists of

(i) a blank or blind, in conjunction with valves or other blocking seals that are secured and locked out in the closed position to prevent the substance from reaching the blank or blind; or

(ii) a double block and bleed isolation system, consisting of two valves or other blocking seals that are secured and locked out in the closed position, located on either side of a valve or other mechanism that is secured and locked out in the open position, to allow for bleed-off between the two seals; or

Current Practice:

- Piping Isolations philosophy is based on a risk-based approach to piping isolations and considers the nature of the fluid, pressure and temperature. It recognizes the inherent difference between a hydrocarbon service versus potable or domestic water systems.
- Any changes or new technologies used in isolations are done so under management of change philosophies and subject to review by the Certifying Authority.

Alignment with other jurisdictions

- Piping Isolations philosophy is aligned with UK's HSE publication, HSG253 The safe isolation of plant and equipment
- Aligns with NL / NS onshore OHS requirements
- Aligns with ASME / API piping design codes

Potential impacts

- The proposed regulations will result in significant system shutdowns and will affect lower risk maintenance and operator work that could have otherwise been executed safety using single isolations (e.g: replacing pressure gauges, isolating instrument components, PSV testing, etc.)
- Due to existing equipment design or type of work being executed, conformance to positive isolation method may create additional risk to personnel performing isolations (e.g: pipe cutting, spreading, heavy lifts in process area, etc.) or working on equipment;
- In some instances, special isolation methods are needed to perform hazardous energy isolation (e.g: Plugs, mechanical stopples, pipe freezes, etc). There is no provision in regulations for risk based special isolation methods.
- The draft regulations as written may preclude the use of newer technology such as "Line Blind Valves" as recommended by OCIMF Cargo Guidelines for FPSOs 2018 (sect. 9.2.4). Line Blind Valves can be operated by one person in minutes and can only be operated after the depressurization of a line (with an upstream isolation valve).

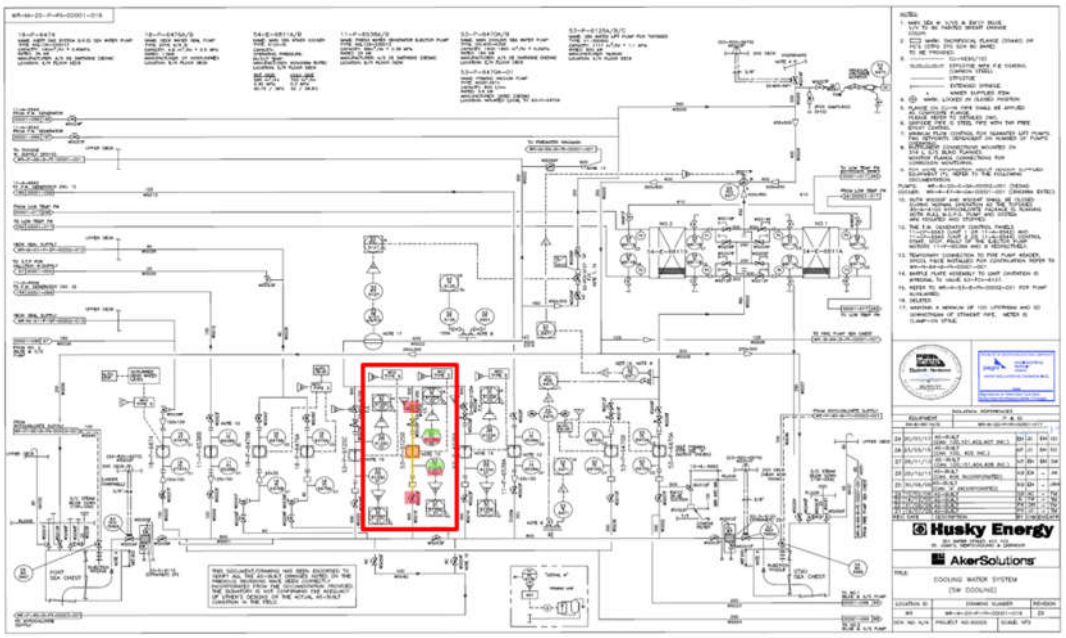
Operator Specific Input

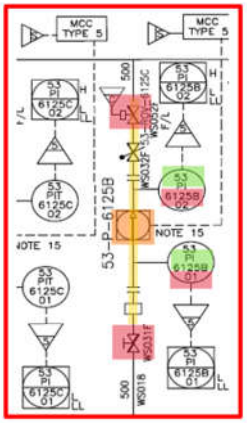
Cenovus

Within Cenovus, we follow our internal Isolation Standard (AR-O-00-O-ST-00012-001). This standard was developed based on UK's HSE publication, HSG253 - The safe isolation of plant and equipment which takes a risk-based approach to the installation of isolations, considering multiple parameters including pressure, temperature, and nature of the contents within the pipe or vessel. Not all systems are treated alike based on the risks to personnel who may need to work on those systems. Any isolations that are installed are also done so in conjunction with other control of work processes such as a documented permit to work system which only authorizes work once all hazards have been identified, controls implemented, and risks appropriately mitigated prior to proceeding. This is all carried out by trained and competent personnel, including those installing the isolations and those identifying, reviewing, and approving the isolations.
See two examples of isolations current practices vs impacts from changes to the requirement.

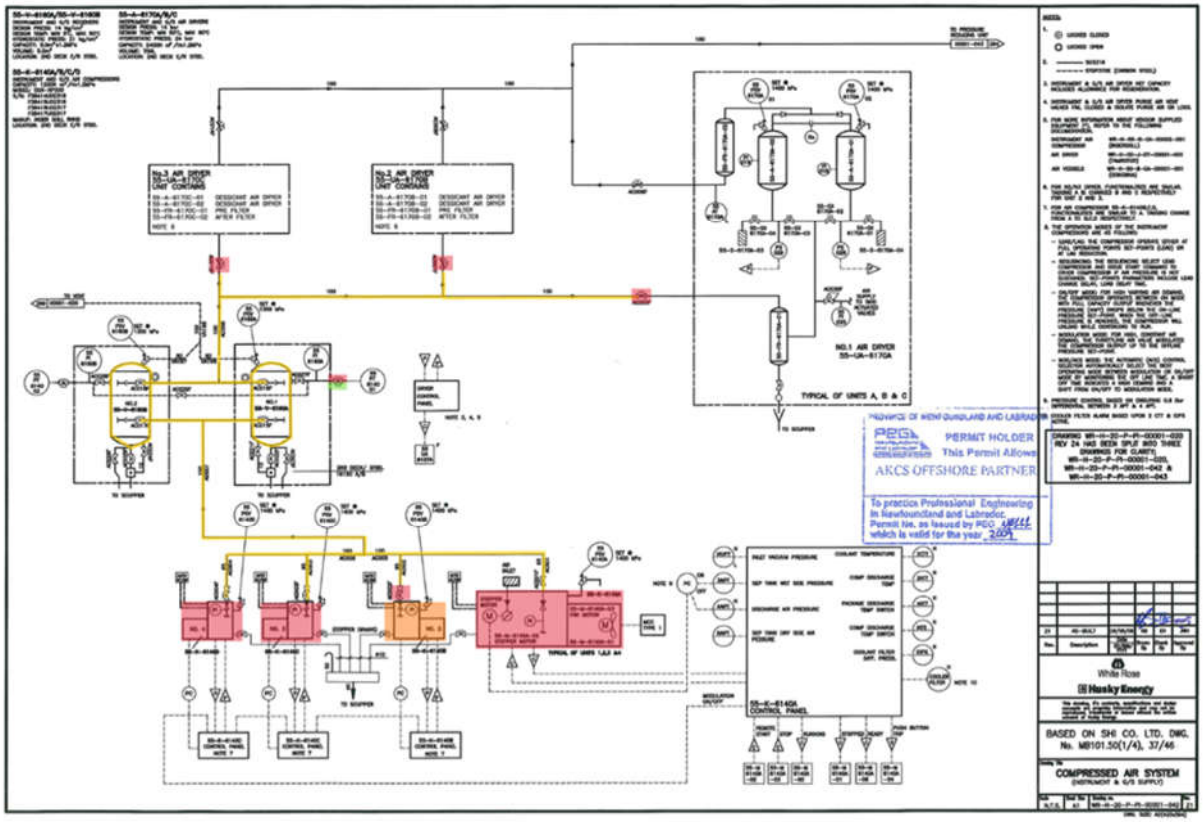
See examples below where the prescriptive isolation requirements in the Draft AHOS will require shut down of complete systems to accommodate and result in shut down of the platform.

Isolation of Seawater Lift System - Single Isolation

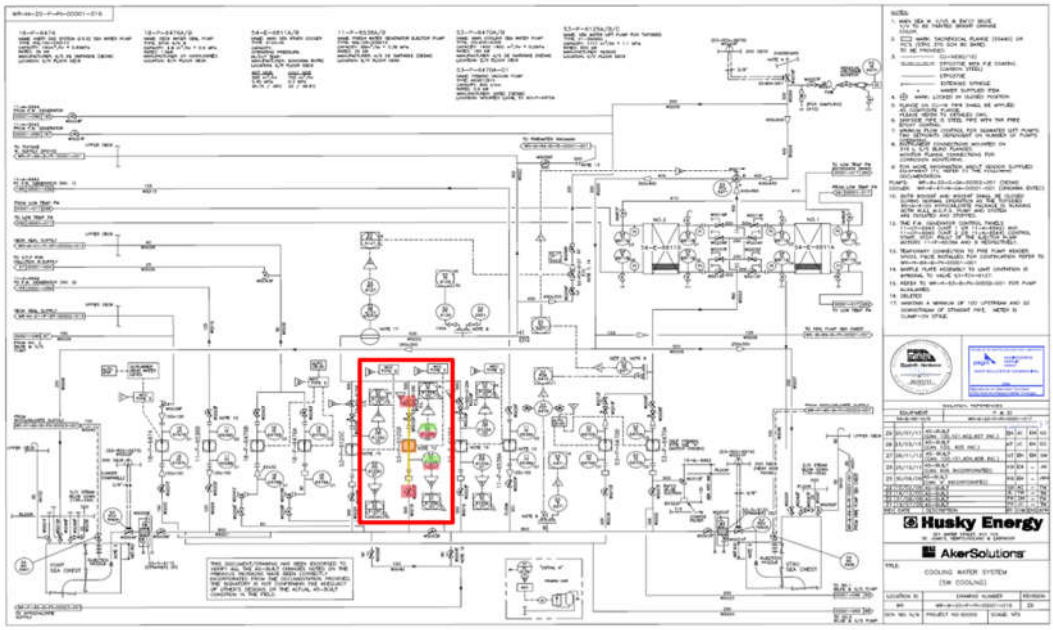


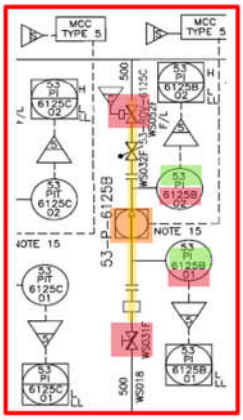


Isolation of Compressed (Instrument) Air System - Double Isolation

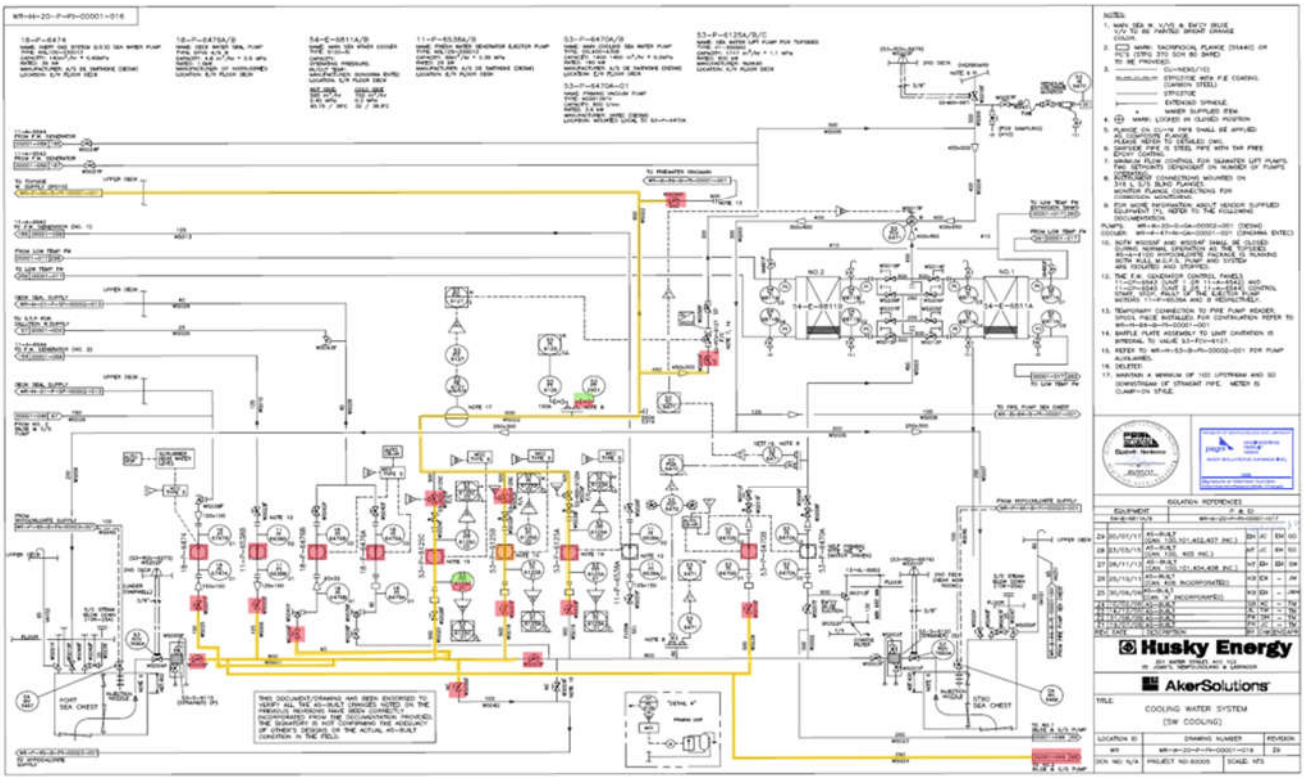


Isolation of Seawater Lift System - Single Isolation





Isolation of Seawater Lift System - Double Isolation



Suncor

Terra Nova uses a pressure envelope of 2500kpa (~360psi or 25bar) to decide whether the isolation will be a 1) SVI or 2) DBB. Despite the isolation type, the more important part is the zero-energy verification life saving rule. Terra Nova follow's Suncor's life saving rule, applying an isolation (whether it be SVI, DBB, blinds, etc …) and assuring/proving to the worker(s) that there is zero energy at the workspace, and will continue to be zero energy. If zero energy can be confirmed and continued, then the likelihood of a catastrophic failure is remote.
See below excerpt from the latest Permit to Work Document:

> *Before any work activity can be performed on any piece of equipment, the equipment must be made safe for the worker. If the equipment is mechanical, it requires a mechanical isolation to make it safe. This involves the use of valves, valve blocks or gags, pipe freezing, blinds/spades or any combination of these.*
> *Isolation of mechanical equipment by itself does not ensure the workers safety. To fully ensure the worker is safe Zero Energy must be confirmed by the OA and witnessed by the PA as outlined in 3.0 - Confirming Zero Energy."*
>
> *All valves used for mechanical isolation must be identified, recorded and where possible made inoperable using some form of locking device. Most equipment only requires one valve to be closed at each isolation point to provide adequate protection for the worker. This is referred to as single valve isolation (SVI).*
>
> ***Note:** A check valve cannot be used as a means of isolation.*
> *Equipment where the pressure upstream of the isolation valve is greater than 2500 kPag requires an extra level of protection. This requires two (2) valves to be closed as the isolation points with a bleed or drain open in between. These are referred to as a double block and bleed (DBB).*
> *Electric, pneumatic or hydraulic operated valves that can be proven to provide positive shutoff can be used for mechanical isolation provided they can be reliably immobilized.*
>
> ***Note:** Typically, a controlling valve for pressure, temperature or level control, are **not** used for isolations purposes. Valves with an integrated, keyed interlock system shall be secured with a locking mechanism and a lock, where possible. It is not permitted to use the interlock system as a means to lock the valve.*
> *If an SVI or DBB isolation cannot reliably isolate (passing valve for example) and provide a zero-energy condition and:*

The nature of the fluid/medium is hazardous; the intrusive work cannot take place. The work activity must be deferred until the system can be shutdown.
The nature of the fluid/medium is non-hazardous, and the OA and PA are in agreement, the intrusive work can take place.

The following fluids/mediums are considered hazardous.

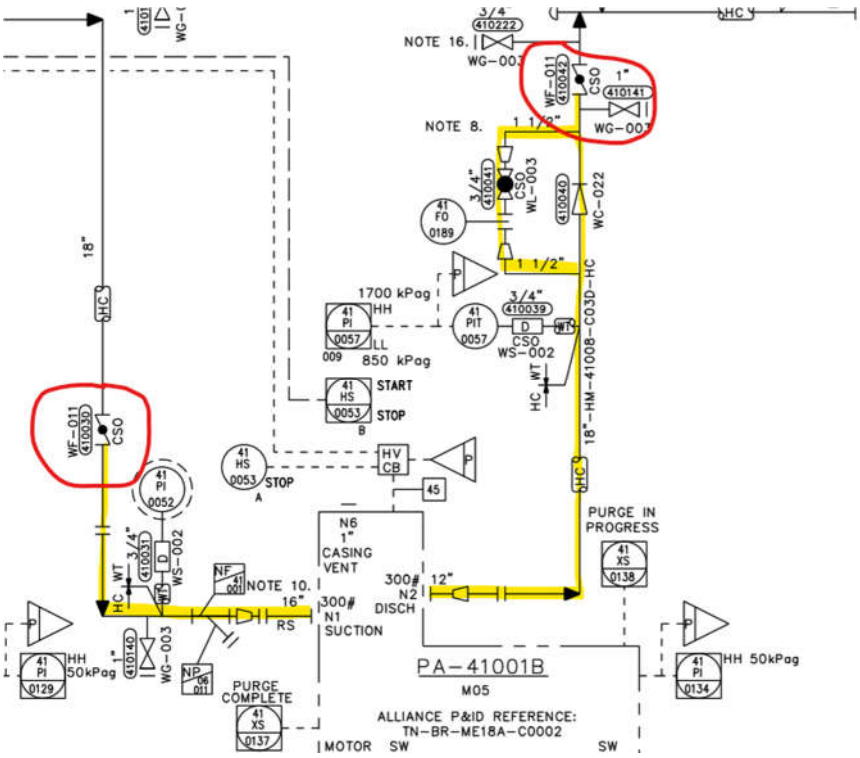
- *Crude oil*
- *Process vapors and liquids*
- *Diesel oil*
- *Aviation fuel*
- *Contaminated inert gas*
- *Produced water*
- *Slops*
- *Heat medium*
- *Glycol*
- *Methanol*
- *Chemicals*
- *Nitrogen*
- *Transaqua*
- *Firefighting Foam*
- *Sewage*

The following fluids/mediums are considered non-hazardous:

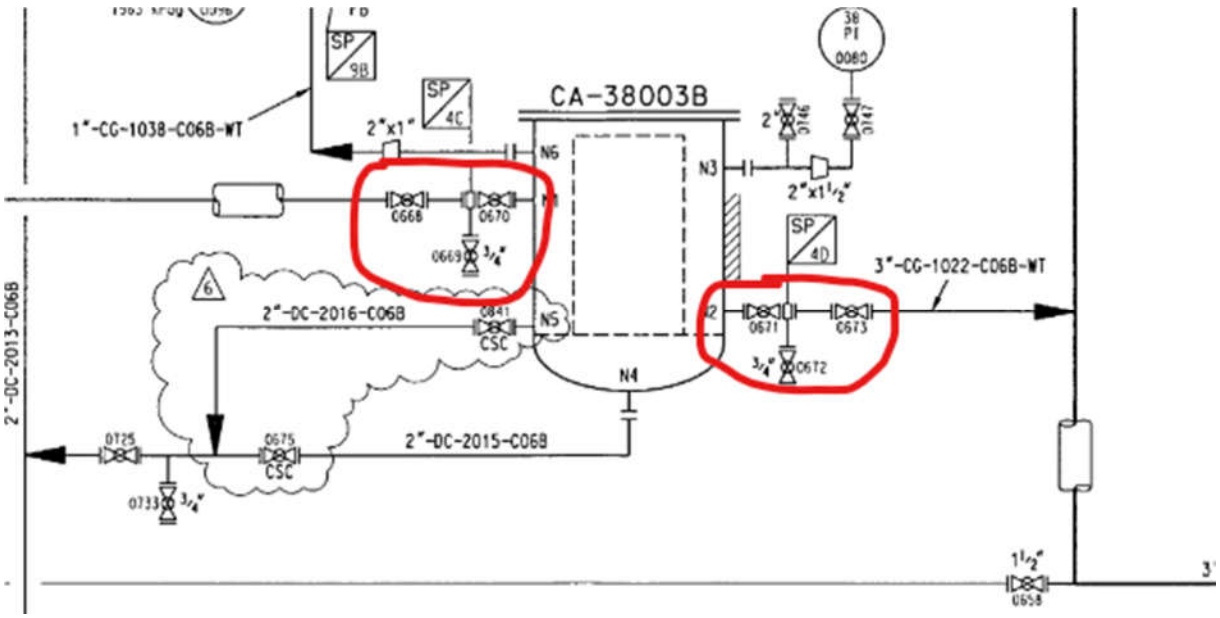
- *Service/instrument air*
- *Seawater*
- *Fresh/potable water*
- *Grease*
- *Lube oil*

Terra Nova FPSO was designed to allow for a SVI isolation on some systems for lower operating pressures (<2500kpa) so maintenance can be completed as required. A primary example is the heat medium pumps. Heat Medium on the Terra Nova is used to heat crude to the proper temperature to allow on-spec separation in the oil processing units. Without the heat medium the process plant would have to be shutdown thus ceasing production. The system (including the pumps) operates at

~1650kpa and is supplied with SVI's. If a DBB is required, then is would require the facility to be shut down to perform intrusive work scopes on the circulation pumps.
See below example.



The above is only one example of many on how the TN FPSO is designed with SVI's, and how regular and corrective maintenance is carried out without plant shutdowns but still working safely. Below is a case of greater than >2500kpa whereby a DBB is required. This is a glycol utility system (glycol filters) that operates at ~5500kpa. A DDB is required to complete regular and corrective maintenance on the filter "B" without shutting the system down.



In case where there is no DBB, that Operates at >2500kpa, then regular maintenance activities would fall under the annual Turnaround-Group. And if corrective maintenance activities were required, then the system would be shut down and repaired as required.

ExxonMobil & HMDC

At ExxonMobil and HMDC. Upstream Operations Hazardous Energy Isolation is conducted as part of ExxonMobil's Global Work Management System Best Practice. Isolation methodology, integrity and controls are used at 16 Global Business Units and at over 100 operating assets. Equipment designs are comprised of many equipment types based on applied Engineering Designs and Company Global Practice documents. The current proposed regulations do not allow for work using Single Valve Isolation, however there are many lower risk instances where this work is performed safely with additional mitigative controls, independent verification and most importantly zero energy verification and demonstration. It also supported by robust locking/securing/tagging requirements. Further, there are certain instances where special isolation methods may have to be used due to unique circumstances and conditions (e.g. Stopples, Plugs, etc.). These specialized isolation methods can only be used after formal Risk Assessment and Approvals. Please note that many other Oil and Gas companies periodically perform isolations using these methods when required.

As noted, the ExxonMobil Upstream Work Management System Best Practice meets local country regulatory requirements and has been the approved requirements since 2010. These best practices undergo a 3 year review cycle.

Examples of Low-Risk Single Valve Isolations:

Note: Single Valve Isolations are allowed for lower risk activities and for equipment engineered for a specific purpose where a procedure exists such as installing and/or removing blinds and plugs, sampling, on-line PSV testing, isolating instrumentation, replacing pressure gauges, pig senders and receivers, Senior Daniel Orifice Meter changes and well head stuffing boxes.

Summary of Impacted Systems on Hebron & Hibernia include:

Production Systems

- Minox Water Injection
- Fire Water
- Seawater
- Sewage treatment
- Diesel Fuel
- Chemical Injection
- Cooling Medium
- Heat Medium
- Instrument Air
- Nitrogen Generation
- Fresh/Pot Water
- Utility & Process Drains
- Flare and Closed Drains

Drilling Systems

- Mud System
- Knuckle Boom Crane
- BOP Control Unit
- LP Mud
- Solids Control System
- HP Mud
- Gravel Pack System
- CRI
- Drains Treatment
- Cement Unit
- Drill Water
- Base Oil

- BOP Control System
- Hydraulics System

Query #7 – Any further information that may be helpful in understanding your concerns would be welcome.

CAPP Response

The Certifying Authorities working in the basin for the NL offshore production facilities offer support to RBI programs in the form of commercially available RBI software, 3rd party RBI analysis services, and/or the publication of industry guidance/standards supporting the development and implementation of such programs. Notable mentions include:

- LR's (formerly Capstone's) RBMI™ software and LR ALLASSETS™ Risk-Based Inspection software module
- DNV publications:
    - DNVGL-RP-G101 – *Risk Based Inspection of Offshore Topsides Static Mechanical Equipment*
    - DNVGL-RP-G103 – *Non-Intrusive Inspection*

This demonstrates that the CAs are globally recognized 3rd parties knowledgeable in RBI and are capable of the technical oversight for such programs in the NL basin.

In support of their RBI programs, local Operators have invested in the deployment of advanced inspection techniques and development of new, advanced inspection technologies from local vendors and inspection contractors. As inspection techniques evolve, the ease at which accurate, repeatable data can be incorporated into equipment RBI assessments has increased the confidence in such assessments. Revoking the use of RBI in the basin will essentially de-incentivize Operators to continue to invest or utilize such technologies. It can be expected to see a reduction in the advancement and deployment of inspection techniques/technologies in the basin if calendar-based inspection programs are mandated.

The underlying difference between utilizing an RBI program vs. prescriptive inspection frequencies is that resources are focused on developing/maintaining overarching Integrity Management programs for fixed equipment. In focusing on risk identification and its mitigation, RBI provides a better linkage between the damage mechanisms that lead to equipment failure (loss of containment) and the inspection approaches that will effectively reduce the associated risks. This is not the case for prescriptive inspection frequencies, as unnecessary equipment outages and intrusive inspections do not necessarily equate to an equal or greater reduction in risk compared to an RBI program. A

point is reached where additional inspection activity begins to show a diminishing return and, eventually, may produce very little additional risk reduction. If excessive inspection is applied, the level of risk may in fact increase. This is because invasive inspections in certain cases may cause additional deterioration to equipment (e.g. moisture ingress in equipment with polythionic acid, air into equipment at risk of pyrophoric substance accumulation, inspection damage to protective coatings or glass-lined vessels, etc.) and also unnecessarily increase personnel injury risks due to the increase in intrusive equipment inspection and confined space entries. Under a prescriptive inspection program, all pressure equipment is essentially treated equally with no consideration for the process conditions, corrosion rates, metallurgy, or operating history unique to a specific piece of pressure equipment. All Operators in the basin, including Terra Nova, utilize these variables in their RBI assessments to optimize their inspection programs and focus inspection resources where tangible risk reduction can be achieved.

It should be noted that under the current RBI program, there are many instances where pressure equipment is intrusively inspected at a frequency less than the 5-year interval being prescribed in the draft regulations, as the engineering evaluation of the affected equipment and risk profiles under the current RBI program warrant a shorter frequency. Conversely, low risk equipment is inspected at intervals greater than 5 years when it is supported by the same type of engineering evaluation. This is to reinforce the point that RBI is not used as a tool to avoid or obfuscate from inspection obligations, it is simply a more effective wholistic Integrity Management tool than a calendar-based inspection program.

- It should also be noted that RBI programs for pressure equipment have become the industry norm in other Canadian jurisdictions for the O&G sector. Within Canada, onshore jurisdictions in NL, NS, NB, AB, and SK all permit the use of RBI programs for onshore facilities under the following:
    a) Alberta – ABSA's AB-505 – Risk Based Inspection Programs for Pressure Equipment (2017)
    b) Saskatchewan – TSASK - Boiler and Pressure Vessel Regulations, 2017
    c) NL/NS/NB – onshore OHS requirements and/or Boiler & Pressure Vessel Regs (varies by province)

Competing global offshore basins, notably the Gulf of Mexico, Norway, and UK all permit the use of RBI programs for offshore production facilities. Discontinuing to permit RBI programs for the production facilities offshore NL portrays a message that the Regulator and the CAs have allowed these facilities to operate in an unsafe manner to date, as revocation of these programs could be

interpreted as them being “lesser” than the proposed calendar based inspection intervals currently within the draft regulations. This is at odds with global practice and other jurisdictions where RBI is recognized as industry standard and capable of providing equal or greater facility integrity and safety metrics.

Operator Specific Input

Cenovus

Risk-based techniques provide confidence in the condition of the asset because a multidisciplined team review all inspection results and provide direction for the next inspection. This approach ensures that resources are prioritised on “at risk” areas, and that the inspection is targeted on more likely degradation mechanisms at a frequency which is appropriate. Cenovus can provide a demonstration of both RBI programs to provide a greater understanding of the program.

Suncor

In implementing an RBI program, Operators are currently subject to continuous review/auditing of these programs to ensure program efficacy in place of a prescriptive frequency-based inspection program. In the case of Terra Nova, the RBI program and associated methodology has been reviewed and approved by the Certifying Authority, Lloyd’s Register, and is subject to continual oversite/audit by the CA at all time. All pressure equipment RBI assessment updates and the associated equipment inspection frequency changes are vetted by the CA’s personnel as part of this process.

In 2014, Lloyd’s Register was contracted to conduct a 3rd party verification of the inspection frequencies for all pressure equipment and process piping on the Terra Nova FPSO in support of the 2032 platform life extension project. The RBI analysis for all equipment was conducted by LR personnel using their own Capstone RBMI software. This independent report (Suncor doc. # TN-PE-MN15-X00-013) recommended intrusive and external inspection intervals for all equipment covered under Terra Nova’s current RBI program. Notably, the results reported by LR recommended longer inspection intervals for all analyzed equipment than those already determined using Terra Nova’s existing RBI methodology. This systemic finding highlights the inherent conservatism of RBI methodologies currently employed by basin Operators.

Query #8 - I note that section 81 of the Draft OHS Regulations does not include a reference to Class. Will that have any impact on your industry as the OHS regulations apply on vessels that are not subject to a COF?

CAPP Response

In this scenario, we would discuss options with the Board and determine how to handle a Class that is not also recognized as a CA. In the most pessimistic case, we'd likely have to hire one of the CA's locally and have them act in a pseudo CA role to augment the role of the vessel's Classification Society. We'll see what the language in the CG1 states and determine if it warrants a formal comment.

Another consideration is in the absence of a reference to Class in the regulation and, recognizing that the AOHS regs are applicable to all marine installations coming to NL, Section 81 may cause a conflict with the requirements of class (which permits goal-based inspection methods).

Part	Section Title	CG 1 Section	Canada Gazette 1 Text	CAPP Comment
1	**General**			
	Definitions			
2	**Occupational Health and Safety Management and Oversight**			
	Occupational health and safety policy	2.4	4 The occupational health and safety policy referred to in section 205.011 of the Act must contain (a) the commitment of the operator to cooperate with any committee or coordinator, as the case may be, with regard to health and safety; and (b) an overview of the duties of all persons under Part III.1 of the Act.	CAPP response: Please clarify is it "Operator" and "Employee" to be referred to in the Policy? Is it not clearly understood. Iis this in respect to OHS "policy" or "program." We interpret this to mean "program".
3	**Reporting and Investigation**			
	Investigation	3.14(1)	14 (1) An operator that is required, under subsection 205.017(2) of the Act, to investigate an occupational disease, accident, incident or other hazardous occurrence must obtain, within 14 days after the day on which it becomes known to the operator, a report, prepared by a competent person and accompanied by supporting documentation, that sets out, in respect of the disease, accident, incident or other occurrence and to a level of detail that is proportional to its actual or potential severity.	CAPP response: Recommend standardizing 21 days for all incidents as incident definition within the regs has been expanded and additional time to investigate/interview is required. 14 days is quite difficult when workforce engagement is required or in the case of impairments, equipment root cause failure analyses can require manufacturer or OEM investigation.
4	**Training - General**			
	Provision of general training	4.15	15 The training that every employer must provide to each of its employees includes (a) before the employee is transported to a workplace and then as necessary to ensure the training remains valid for the duration of the employee's employment at the workplace, (i) an offshore survival training program appropriate to the workplace location and to the means of transportation to be used to transport the employee to and from the workplace, (ii) training on the legislation applicable to occupational health and safety, including employ- ees' rights and operators', employers', supervisors' and employees' duties; (iii) training on hydrogen sulfide safety, if hydrogen sulfide may be present at the workplace; and (b) without delay on the employee's arrival at the workplace and before they perform any work there, (i) an orientation to the hazards and emergency procedures at the workplace, and (ii) training in respect of any emergency duties that may be assigned to them and (iii) if the workplace is a marine installation or structure that is equipped with lifeboats, practice in boarding a lifeboat while wearing an immersion suit and securing themselves on a seat	CAPP response: The requirement for all new arrivals to a MODU to don a survival suit and enter a lifeboat immediately upon arrival is impractical. Some MODU lifeboats (specifically free fall) are mounted at a steep angle. There is personal injury risk in requiring all new personnel to the rig to don a survival suit and enter lifeboat. This is also challenging from a Control of Work perspective as a lockout isolation can be required to permit entry to a lifeboat. Suggest clarification on this... Is this required for a visitor to the rig? (i.e. operator management, CNLOPB Safety Officer, etc.). How often must this be renewed? Once per facility? Every 6 months? Would it be acceptable to install a lifeboat seat on the rig for personnel to use for the exercise vs the actual lifeboat?
	Competent Person	4.16	Competent person Every employer must ensure that all instruction and training that it is required to provide under the Act is developed by and, if applicable, delivered by a competent person.	CAPP response: This section states that all instruction and training is delivered by a competent person. This does not account for computer based training which needs to be incorporated as this is more prevalent in our workplaces now. Is there an allowance for Computer-Based training or alternative training delivery? When completing tasks, one employee might instruct another employee to carry out a particular task. This is not the same as training however this section implies it must be recorded. This section should be updated to just include "training" records. Also,. Regulation does not distinguish between instruction and training. Regulation requires records to be maintained for both. Some instruction may be informally through videos, handbooks, safety meetings, without records. There are numerous references throughout Regulation to "instruction and training" Please provide definition.
5	**Emergency Response and preparedness**			
	Auditing	5.2	(2) The audit referred to in paragraph 205.015(2)(g) of the Act must be carried out at as soon as practicable after either of the following occurrences and, in any event, at least once every three years: (a) if there is a change of circumstances that may affect the health and safety of persons in the workplace; or (b) if a health and safety officer provides to the operator a report under subsection 205.074(1) of the Act indicating non-compliance with Part III.1 of the Act or makes an order under section 205.092 or 205.093 of the Act	CAPP response: Clarification required. The Occupational health and safety system is under continuous improvement. Clarification is required around what constitutes a change and therefore what drives an audit under this section.

	Emergency Response Plan	5.18(1)	18 (1) Every employer must ensure that the following items are posted in the specified locations, separately from the emergency response plan, at each workplace under its control that is a marine installation or structure: (a) a station bill containing the information referred to in subsection 7(1) of the Fire and Boat Drills Regulations as well as a description of any additional alarm signals, the membership of all emergency response teams and the location of all evacuation stations	Subsection (2) describes the required content of an emergency response plan. The draft FORRI consultation (dated 08-13) 12 (2) allows for "reference to a number or title of a document that provides this description" versus including many documents within the Emergency Response Plan itself. Section 18 (2) could be read that each of the items listed must be in the same document. Recommend changing (2) "The emergency response plan must" to "The emergency response program must" CAPP response: These respective requirements should be consistent, aligned, and harmonized.
	Contents of plan	5.18 (2)(m)(iv)	Section 18 (2)(m)(iv) states that "the location of emergency shutdown switches for all safety critical equipment" must be included in a verified drawing of the layout of the workplace and be contained within the Emergency response plan.	CAPP response: This is neither practical nor feasible for all safety critical equipment. Each installation has numerous safety critical systems made up of countless safety critical equipment. It is assumed that this reference is made to manual call point/deluge/ESD stations for the facility however this needs to be clarified. Even approved Fire control plans and LSA plans would not have this level of detail contained.
	Emergency Electrical Power	5.24	Every employer must ensure that each workplace un-der its control that is a marine installation or structure is equipped with a secondary emergency electrical power supply that is sufficient to operate the following to the degree necessary to allow for safe occupancy of or egress from the workplace in the case of a failure of the main power system: (a) the public address and alarm system; (b) the emergency lighting system; (c)internal and external communications systems; and (d) light and sound signals marking the location of the workplace.	CAPP response: Secondary emergency power supply - doesn't "secondary" imply "backup" or "emergency" power supply? or does this wording introduce possibility of misinterpretation that there should be both a main and secondary emergency electrical power supply? 5.24 - Clarification on 'secondary' requirement as it pertains to MODUs. Modern MODUs have main engines that double as emergency generators (not a separate emergency generator).
	Emergency descent control	5.25	25 (1) Every employer must provide, on each derrick or other elevated part of a workplace under its control that is a marine installation or structure, if there is only one other means of escape from that location, a device that would allow a person to descend from the location at a controlled speed in an emergency.	CAPP response: Section 5.25 (1) states "Every employer must provide, at each workplace under its control that is a marine installation or structure at which persons may be working at heights, a device, equipped with a brake mechanism, that may be used in an emergency to control a person's descent from the derrick or any other elevated part of the workplace". Aside from a derrick, where would this apply? CAPP response: There is no reference in this section which refers back to elevated work areas that may have both primary and secondary access to that area. As a result, the reference to "working at heights" could result in misinterpretation of this section. Fixed primary and secondary access and egress shall be used rather than an emergency decent device. What is meant by working at heights within this section? This should be clarified. Elevated parts of a Marine installation or structure where approved primary and secondary escape routes/methods have been established should not require a emergency descent device unless some other hazard dictates such. In addition, how does this clause apply to temporary elevated structures such as scaffolding? The requirement for emergency descent control devices introduces new equipment which must be maintained and for which employees require training, and which is unlikely to be used so possibly adds risk rather than recuing risk. What constitutes an "elevated part of a workplace"? Wording is ambiguous and is open to interpretation. Clarification requested to ensure consistent interpretation.
	Falls into ocean	5.29	29 The risk of a person at a workplace falling into the ocean is a prescribed risk for the purpose of paragraph 205.02(2)(a) of the Act and the employer with control over that workplace must (a) provide appropriate life saving appliances and ensure they are held in readiness; (b) ensure that a competent person is readily available at all times to operate the life saving appliances; and (c) ensure that a fast rescue boat that meets the requirements of Chapter V of the LSA Code is provided — or available from a standby vessel that is no more than 500 m away — and held in readiness.	CAPP response: This section has been updated to specify that a standby vessel must be within 500m and held in readiness. The previous draft version did not give a specified distance to be held in readiness. It can be implied that this is meant to cover off working over the side operations, however it can also be inferred that there is always a risk of falling in the ocean when working on an offshore installation. Standby vessels are currently required to be within a 20 min of an installation when on standby. Clarification should be added to cover intent here. (c) Suggest removing ' that is no more than 500 m away' - too prescriptive - 'consider close standby. Recommend aligning the wording of this section with the Atl. Canada Standby Vessel Guideline'

	Minimum frequency	5.30 (2)	(2) Despite subsection (1), the employer must ensure that (a) a drill to practice mustering is conducted at least once a week; (b) a fire drill is conducted at least once a month; (c) a drill to practice escape to the location of lifeboats or life rafts in preparation for abandonment of the workplace is conducted at least once a month; (d) if the workplace is equipped with lifeboats, (i) each employee participates, at least once every six months, in a drill that requires them to board a lifeboat while wearing an immersion suit and to secure them- selves on a seat, and (ii) if feasible, a lifeboat launching drill is conducted annually to test the integrity and operation of the lifeboats and launching equipment; and (e) all drills and exercises are repeated as soon as practicable after any significant change to the emergency plan or to the work or activities at the workplace for which an authorization has been issued.	CAPP response: There have been previous comments submitted to NRCan regarding the donning of immersion suits. Donning of the abandonment suit is done in BST training and included in offshore orientation, and quarterly video demonstration refreshers. The requirement for all crew to don suits once every six months will increase risk of injury. With the exception of summer months where suits can be donned at the lifeboat station, the rest of the year will require personnel to walk from the TSR to the LB station down numerous stairwells. Since the immersion suits are general sizing the feet can present a tripping hazard. Consider adding "if feasible" or "if environmental conditions allow" to (d) (i) Section 30 (3) Alternative to Launching Drill has been added to the regulation and states "If compliance with subparagraph (2)(d)(ii) is not feasible, the employer must ensure that additional inspections and testing of all components that would otherwise be tested by the launching drill are carried out in consultation with the lifeboat manufacturer and with the prior approval of the Chief Safety Officer". As per other comments, the method of gaining CSO approval has been the use of an RQ. This is a new addition and would required an RQ for already agreed upon practices. CNLOPB Interpretation Note 11-01 "Supplementary Guidance" calls out the above mentioned details regarding additional inspections as an expectation of the CNLOPB however does not require approval of those additional inspection and testing processes by the CSO, however the CA must be involved. The Supplementary guidance also discusses alternate training in addition to inspection and testing. TC has since approved simulator training as an alternative to coxswains launching lifeboats, recognizing the additional risks of such activities.
	Alternative to launching drill	5.3 (3)	3) If compliance with subparagraph (2)(d)(ii) is not feasible, the employer must ensure that additional inspections and testing of all components that would otherwise be tested by the launching drill are carried out in consultation with the lifeboat manufacturer and with the prior approval of the Chief Safety Officer.	CAPP response: 5.3(3) "prior approval of the CSO" - currently managed through RQ. Clarify what type of approval will this be under new OHS Regulations?
6	**First Aid and Medical Care**			
	Employer obligations	6.32	32 (1) Every employer with control over a workplace must (a) when assessing the risk of illness or injury at the workplace for the purposes of the occupational health and safety program referred to in section 205.02 of the Act, consult with a medic designated under paragraph (f), if any, and take into account (i) the location of the workplace and the expected delay in obtaining emergency medical services, (ii) the layout of the workplace, and (iii) environmental factors, including thermal considerations; (b) develop, in consultation with a medic designated under paragraph (f), if any, and, if a dive project is to be carried out from the workplace, a diving physician specialist, a written medical emergency response plan that addresses all reasonably expected emergencies at the workplace and takes into account the location of the workplace, the time of year in which the work is to be carried out, the expected number of persons at the workplace during normal operations and the work- place's maximum capacity; (c) determine, in consultation with a medic designated under paragraph (f), if any, and, if a dive project is to be carried out from the workplace, a diving physician specialist, the type and quantity of first aid and medical supplies and equipment, medication and facilities needed to respond to all reasonably expected injuries and illnesses at the workplace and ensure that those supplies, that equipment, those medications and those facilities are provided, maintained, replenished and replaced as necessary; (d) establish and make readily available to all persons at the workplace written instructions for the prompt provision of first aid or medical care for any injury or illness - including procedures to follow while awaiting that care; (e) keep conspicuously posted at the workplace (i) a diagram indicating the location of all first aid kits and medical rooms, (ii) near every first aid kit and in every medical room, a list of all medics and first aiders at the workplace, as well as information on how and when they may be contacted and where they may be located, and (iii) near every fixed telephone, a list of up-to-date telephone numbers for use in emergencies; and (f) designate, in writing, first aiders and medics and ensure that the number of each set out in columns 2 to 4 of the following table that correspond to the number of persons at the workplace set out in column 1 are at the workplace and readily available to provide prompt and appropriate first aid or medical care to persons there (See First Aid tab)	CAPP response: 6.32(1)(e)(ii) For workplaces which have a designated medical response team, the list to be posted should be medic plus medical response team members. Medic would be first point of contact in a medical emergency and would call for support of medical response team if required. Other personnel with first aid training, who are not members of the medical response team, may provide first-aid if they are on-scene prior to arrival of medic or medical response team, but would not be contacted directly by the Installation Manager in an emergency. Clarification requested that posting of medic and medical response team members is acceptable. CAPP response:6.32(1)(f) Emergency First Aid training replaced with Standard First Aid training. Rationale for change is not understood. This change will result in additional training days for offshore personnel and not enhance safety. installations have a dedicated medical response team with advanced level first-aid training.
Part 8	**Personal Protective Equipment**			

	Prescribed equipment	8.46	46 The personal protective equipment that every employer must provide to its employees and other individuals at a workplace under its control includes (a) if the workplace is a marine installation or structure, (i) emergency escape breathing devices that conform to the International Maritime Organization's International Code for Fire Safety Systems and that, if they are to be used for escape from an atmosphere that is immediately dangerous to life and health, (A) have a rated service time in excess of the anticipated time needed to reach the nearest temporary safe refuge or muster station, and (B) if they are multifunctional self-contained breathing apparatuses or airline respirators, have an auxiliary self-contained air supply with a rated service time in excess of the anticipated time needed to allow for escape by way of the planned escape route and, in any event, of not less than 15 minutes, or (ii) respirators for the purpose of escape that are selected in accordance with CSA Group Standard Z94.4, Selection, use, and care of respirators; (b) if the workplace is a marine installation or structure, properly fitted immersion suits that (i) conform to the applicable provisions of (A) Chapter II of the LSA Code and IMO Resolution MSC.81(70), with the provisions of that Resolution being read as mandatory, and (B) Department of Transport publication TP 14475, Canadian Life Saving Appliance Standard, and (ii) are appropriate for all expected environmental conditions in the vicinity of the workplace, all situations that may require emergency evacuation and the time it would take for rescue operations to reach the area and complete a rescue; (c) if the workplace is a workboat, an anti-exposure suit for each employee or individual that conforms to the applicable provisions of (i) Chapter II of the LSA Code and IMO Resolution MSC.81(70), with the provisions of that Resolution being read as mandatory, and (ii) Department of Transport publication TP 14475, Canadian Life Saving Appliance Standard; (d) if the employee or individual is in the vicinity of moving equipment or loads, personal protective clothing that conforms to CSA Group standard Z96, High-visibility safety apparel, other than the provisions of that standard that pertain to marking, and that is selected in accordance with that standard's annex on selection, which is to be read as mandatory; (e) if the employee or individual may be exposed to a risk of head injury, protective headwear that conforms to CSA Group standard Z94.1, Industrial protective headwear — Performance, selection, care, and use, other than the provisions of that standard that pertain to marking; (f) if the employee or individual may be exposed to a risk of injury to the eyes, face, ears or front of the neck, eye or face protectors that conform to CSA Group standard Z94.3, Eye and face protectors, other than the provisions of that standard that pertain to marking, and that are compatible with any corrective lenses worn by the employee or individual; (g) if the employee or individual may be exposed to a risk of foot injury or electric shock through footwear, protective footwear that conforms to	CAPP response: Note that "or" has been included at the end of "B". Does this now imply that Emergency Escape Breathing devices can conform to IMO or CSA? The requirement for "workboat anti-exposure suits" has been added to Section 46 (c). What is meant by workboat anti-exposure suits? Is this a reference to immersion suits? If so, wording should be changed to state that as immersion suits are used in other sections of the regulation. Section 46(k)(ii) has been added and states "(ii) in the case of a pressure-demand self-contained breathing apparatus that is to be used in atmospheres that are immediately dangerous to life and health, equipped with an audible alarm that sounds when the air supply has diminished to 33% of the capacity of the unit". This is what the NFPA standard calls out for now, however this could change. Why not reference the NFPA standard like all the rest of the standards in this section rather than specifying one particular parameter?
	Records	8.49	49 Despite subsection 90(2), every employer must retain the records referred to in paragraph 90(1)(f) in respect of all personal protection equipment that they provide for as long as the equipment is in service	CAPP response: As worded, this requirement would appear to apply to consumable PPE issued directly to individuals that is likely to last longer than a year, including coveralls, boots, hard hats, hearing protection devices, etc. It is left to the individual to maintain their own personal PPE and have replaced as required, and would not be practical for the employer to keep records on such equipment. Clarification required as to intent and suggest revision to wording to ensure misinterpretation mitigated. Is consumable PPE recordable?
9	**Passengers in Transit**			
	Transit by Helicopter	9.5(2)	(2) The equipment and devices with which every operator must, for the purpose of paragraph 205.014(2)(b) of the Act, ensure that any helicopter going to or from any of its workplaces is equipped includes (a) equipment that permits the helicopter's flight path to be tracked at all times; and (b) sufficient life rafts, each of which is equipped with two position indicating devices, to accommodate all passengers on board, having regard to the passengers' space requirements and weight while wearing helicopter passenger transportation suit systems.	CAPP response: Clarification requested on definition of "position indicating devices" referred to in Section 50 (2) (b) & (c). Given that FORRI makes reference to the TC Lifesaving Equipment Regulations and life raft equipment list this should be removed from OHS.
	Safe entry and exit	52 (1) & (2)	Safe entry and exit 52 (1) Every operator must establish procedures for safe entry to and exit from each of its workplaces that is a marine installation or structure, including procedures respecting the use of gangways and fast rescue boats to transfer persons between marine installations and structures. Swing rope prohibited (2) The procedures must prohibit the use of swing ropes for entering to or exiting from a marine installation or structure.	CAPP response: Regulations should simply state that Swing Ropes are prohibited in the regulations versus making Operators add this to procedures. No one uses Swing Ropes in the North Atlantic.

	PPE	9.5(3)	(3) The personal protective equipment that every operator must, for the purpose of paragraph 205.014(3)(a) of the Act, ensure is provided to each employee and other passenger going to or from any of its workplaces by heli- copter includes (a) a helicopter transportation suit system that con- forms to the Airworthiness Manual published by the Department of Transport; and (b) an emergency underwater breathing apparatus (EUBA) that conforms to the Canadian Aviation Reg- ulations.	CAPP response: Helicopter Transportation Suit system references a section of Canadian Aviation Regulations, Part V Airworthiness Manual Regs, that has Section 551 repealed. This section includes the requirements for the Helicopter Passenger Transportation Suit System. Clarification requested as this section appears to be repealed. Note the 2009/12/01 reference is not the latest CGSB standard
11	**Facilities**			
	Requirements	11. 58(3)	(b) are, on their floors and the lower 15 cm of their walls and partitions, watertight, apart from drains, and impervious to moisture;	CAPP response: This should be addressed under FORRI. As written, this does not apply to OHS.
14	**Lighting**			
	Emergency lighting	74(1)	Verification (2) The employer must ensure that the emergency lighting system is verified to be in working order at least once a month	CAPP response: Emergency lighting 74 (2 is considered a safety and environmental critical equipment and is maintained according to a performance standard. Inspection topic should add language to allow for RB equipment strategies and performance standards. Our members have had reliable response from testing and most correctives are minor in nature i.e. missing tags. The change to monthly will be very laborious without enhancing safety and the result will be a backlog management scenario (ie. approx. 1000 battery backed up fixtures on each asset) when there is already redundancy in lighting systems. We recommend changing to "at least annually" to align with current practice.
16	**Ventilation**			
	Air quality	78(1)	78 (1) Poor air quality is a prescribed risk for the purpose of paragraph 205.02(2)(a) of the Act and every employer must ensure that all contaminants in the air at each workplace under its control are kept below the applicable threshold limit values, including — if the workplace is a marine installation or structure — through the installation, use, maintenance and testing of appropriate ventilation systems and other engineering controls.	CAPP response: Part 16 there is no mechanism for exemption of limit (H2S, current ACGIH TLV is 1 ppm) however there are several instances whereby the "suggested" TLV's selected by ACGIH have had exemptions issued against them. The Government of NL did so when the ACGIH changed the TLV for H2S to 1ppm from 10ppm. Clarification required. There is also no exception clause noted within this section. Suggest exception clause be added to allow for industry best practice or other standard be used with justification or equivalent level of safety outlined.
17	**Pressure Equipment**			
	Inspection	17.82	(a) an internal and an external inspection (i) before being put into service after installation, (ii) before being returned to service after any alter- ation or repair, and (iii) upon showing any signs of not being safe for use;b) an external inspection at least once a year or more frequently if recommended under paragraph 83(c); and (c) an internal inspection at least once every five years or more frequently if recommended under paragraph 83((c)	CAPP response: CAPP considers this as a critical operational concern. Please refer to letter dated Aug 23, 2021 which accompanies this table.
18	**Structural Safety**			
	Guard-rails	18.86	86 Any guard-rail that is required under these Regulations must (a) consist of (i) a horizontal top rail, cable or chain not less than 90 cm and not more than 1.1 m above the working surface, (ii) a horizontal intermediate rail, cable or chain spaced midway between the top rail, cable or chain and the working surface, and (iii) vertical supports spaced not more than 3 000 mm apart at their centers; (b) be capable of withstanding the greater of (i) the maximum load that is likely to be imposed on it, and (ii) a static load of not less than 890 N applied in any direction at any point on the top rail, cable or chain; and (c) be capable of withstanding the effects of fire.	CAPP response: The majority of offshore facilities have rails in some areas that are 1500-1600mm above the working surface for additional safety reasons (e.g. on stairs to the helideck). Removing the word ‘top’ would allow for a third rail higher than the prescribed one. Recommend this be reworded as follows: “an operator may place additional higher rails as long as they do not impair the prescribed rails.”
	Open-top enclosures	18.88 (3)	"If an employee is required to access the inside of an open-top enclosure from its top, the employer must ensure that there is a fixed ladder on the inside wall of the enclosure to permit the employee to safely enter and exit".	CAPP response: As written, this section is not feasible. Section 88(3), Access to Inside now states "If an employee is required to access the inside of an open-top enclosure from its top, the employer must ensure that there is a fixed ladder on the inside wall of the enclosure to permit the employee to safely enter and exit". This section previously stated, where feasible, there is a fixed.... which would have been considered acceptable as in most cases, large enclosures that required regular access for maintenance, etc... would have fixed ladders installed. However, many smaller open top enclosures are not designed with fixed ladders installed. In addition, many enclosures may not be designed or intended for regular access, however may be required to accessed for a particular maintenance issue. Safe access must still be provided, however to require fixed ladders in all these spaces is neither reasonable nor practical. Suggest reverting back to previous language to include "where feasible, there is a fixed" Compliance to this section will be challenging if language is not reverted back.

19	**Equipment, Machines and Devices**			
	Requirements	19.90 (1)(b)	Every operator and employer must ensure, with respect to any equipment, machine or device that that operator or employer provides for use at a workplace, including any part of or accessory used with one of those things, that (a) only a competent person installs, assembles, uses, handles, stores, adjusts, modifies, maintains, repairs, inspects, tests, cleans or dismantles it; (b) the activities referred to in paragraph (a) are carried out in accordance with its manufacturer's instructions and, if they are done outdoors, having regard to existing environmental conditions;	CAPP response: Section 90(1)(b) states that maintenance should be conducted in accordance with manufacturer's instructions but Section 90(1)(e)(ii) states a thorough safety inspection is to be conducted annually. These two statements contradict one another.
	Requirements	19.90 (1)	90 (1) Every operator and employer must ensure, with respect to any equipment, machine or device that that operator or employer provides for use at a workplace, in- cluding any part of or accessory used with one of those things, that (a) only a competent person installs, assembles, uses, handles, stores, adjusts, modifies, maintains, repairs, inspects, tests, cleans or dismantles it; (b) the activities referred to in paragraph (a) are done in accordance with its manufacturer's instructions and, if they are done outdoors, having regard to exist- ing environmental conditions; (c) the manufacturer's instructions respecting its op- eration and maintenance are made readily available to any person doing an activity referred to in paragraph (a); (d) adequate space is provided around it to allow the activities referred to in paragraph (a) to be done safe- ly; (e) it is subject to (i) a brief visual inspection before each use by the person using it, and (ii) a thorough safety inspection at least one each year if (A) it preserves or protects life, (B) its use would, in the absence of any controls, pose a risk to the health or safety of persons at the workplace, or (C) it is subject to degradation over time that could affect its safety; (f) any person who maintains, repairs, modifies, tests or inspects it— other than by carrying out a brief visu- al inspection — makes and signs a record that clearly identifies the equipment, machine or device, describes the activity carried out and provides the person's name, the date of the activity and, if applicable, the person's observations regarding the safety of the equipment, machine or device; (g) no person uses it in a manner that may compromise the health or safety of a person at the workplace, including by (i) maintaining, repairing or cleaning any powered equipment, machine or device while it is opera- tional, or (ii) operating any equipment, machine or device that is equipped with a guard while the guard is not in its proper position; (h) no person intentionally tampers or interferes with it such that the health and safety of any person at the workplace could be compromised, including, unless done in accordance with these Regulations, by impair- ing or rendering inoperative a safety device or system used with it.	CAPP response: this section is not aligned with FORRI and should be removed.We are concerned that the OHS regulation does not align for installations with a CoF. The term "thorough safety inspection" has been interpreted by the Board/CAs to date as invasive/intrusive maintenance techniques such as full equipment teardowns, unless approved otherwise. The concern is the ambiguity in those terms and what constitutes a "through safety inspection". One example for us is when we were mandated to tear down perfectly healthy engines based on a "5 yearly comprehensive inspection" requirement.
	Standards	19. 94	94 (1) Every employer must ensure, in respect of each workplace under its control, that (a) all equipment and machines conform to and are used in accordance with all applicable provisions of CSA Group standard Z432, Safeguarding of machinery;(f) all portable hand-held motor-operated electric tools conform to CSA Group standard C22.2 No. 60745, Hand-Held Motor-Operated Electric Tools – Safety, or CSA Group standard C22.2 No. 62841, Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety, as applicable; (g) all powder-actuated fastening tools, fasteners and power loads conform to and are used in accordance with ANSI/American Society of Safety Professionals (ASSP) standard A10.3, Safety Requirements for Powder-Actuated Fastening Systems, except with respect to the required eye protection, which must instead conform to paragraph 46(f); (h) all power presses conform to and are used in accordance with CSA Group standard Z142, Code for power press operation: Health, safety, and safeguarding requirements; (i) all electric tools that plug into an electrical receptacle are grounded, unless they (i) have a protective system of double insulation, or (ii) are used in a location where reliable grounding cannot be obtained and are supplied from a double-insulated portable ground fault circuit interrupter of the class A type that conforms to CSA Group standard C22.2 No. 144, Ground Fault Circuit Interrupters, on a 125-volt or 15-, 20- or 30-ampere circuit;	CAPP response: Recommend recognition of internationally accepted standards to minimize the requirement for RQ's with every foreign vessel entering the region. This relates back to our concern with the number of gap assessments.
	Fuelling	95 (1)	95 (1) Every employer must ensure that no equipment or machine at a workplace under its control is fuelled and no fuel is transferred between containers (a) in the following locations: (i) a place where the vapours from the fuel are not readily dissipated, or (ii) the hold of a vessel or any other enclosed space at the workplace; or (b) in the following circumstances: (i) subject to subparagraph (ii), while there is any source of ignition in the vicinity that presents a risk of fire or explosion, or (ii) in the case of equipment, while the equipment's engine is running, unless it is designed to be fuelled in that manner.	CAPP response: Clarification required as to whether this would apply to enclosed systems. For example, both the forward and aft fire pumps, including diesel day tanks on the SeaRose are located in enclosed spaces. Aft pumps are located on lower level of engine room and fwd pumps located in the fwd forepeak space. Fuel is transferred to these tanks via a fixed, hard piped system. Note, there is an exception that says equipment can be fuelled in such spaces with a number of precautions, however clarification still required as to whether it applies to fixed, hard piped systems.

	Exception	19.95 (2)	(2) Despite paragraph (1)(a) (ii), equipment may be fuelled in the hold of a vessel or another enclosed space if (a) an employee with a suitable fire extinguisher ready for use is in the space; (b) no one other than the employee referred to in paragraph (a) and those employees engaged in the fu- elling are in the space; (c) the fuelling is carried out by transferring fuel di- rectly into the equipment's fuel tank or, in the case of liquefied gas, by replacing spent cylinders; and (d) no more fuel than is necessary to fill the equip- ment's fuel tank or, in the case of liquefied gas, no more than the number of cylinders in need of replace- ment are taken into the space and (e) atmospheric gas levels in the hold or space are continuously monitored.	CAPP response: Clarification requested on "continuously monitored" - is this during fuelling or 24/7?
21	**Ladders, Stairs and Ramps**			
	Fixed ladders	21.104	Fixed ladders 104 (1) Every employer must ensure that any fixed ladder installed at a workplace under its control, other than one installed as part of a scaffold, ~~installed vertically~~ replaced with (a) is installed with its underside angled between 75 and 90 degrees from the ground; (d) has side rails that extend not less than 1 m above each landing or platform; (e) unless it is made of metal, is not coated with mate- rial that may hide flaws affecting its integrity replaced with (e) is not coated with material that may hide flaws affecting its integrity; f) changed from 2.44m above its bottom to 2.5m Removed i) (iii) configured to reduce the potential fall distance from any landing or platform to no more than 6 m.	CAPP response: 104 (1) (a) Flare ladders on facilities are installed with underside angled at 65 degrees from ground but require fall protection and have restricted access. Recommend changing to incorporate existing facilities. (d) Previous TOSH regs allowed "side rails that extend not less than 900 mm above the landing or platform" - recommend changing from 1m to .9m to incorporate existing facilities (e) Some fixed Ladders have corrosion protective coating and textured paint on the rungs. Is this section referring to Belzona or similiar coatings? Please define the type of coating that is being referred to in (e)
22	**Scaffolding and Platforms**			
	Elevating work platforms	22.110	106 In this Part, elevating work platform means a type of integral chassis aerial platform that has an adjustable position platform that is supported from ground level by an articulating or telescoping boom or by a vertically oriented, telescoping or elevating mast.	Every employer must ensure, with respect to any elevating work platform at a workplace under its control, that (e) if it is self-propelled or mobile, it is used only with the approval of the Chief Safety Officer. CAPP response: Please clarify whether this pertains to first use or every use. Also, for such equipment, is the CSO approval required before first usage, or every time the equipment is used? Would it be more appropriate for a Competent Person or the CA to approve use of the equipment?
	Elevating work platforms	22.110	(e) if it is self-propelled or mobile, it is used only with the approval of the Chief Safety Officer.	CAPP response: It should be clarified whether this means prior to first usage, or prior to every usage. Shoud this be in the Safety Plan, or a procedure, or on a PTW? Also, it would seem more relevant that the CA approves the usage.
23	**Fall Protection and Rope Access**			
	Fall arrest system required	112 (3)	(3) Despite subsection (1) and paragraph (2)(a), the employer must ensure that a fall-arrest system described in paragraph (1)(d) is provided to every person. (a) who is on a fixed ladder more than 6 m in length, other than one installed as part of a scaffold; (b) who is on an elevating work platform, as defined in section 106; or (c) who uses a work-positioning system.	CAPP response: This addition implies that regardless of whether the ladder has a protective cage, etc... whenever a person uses a ladder greater than 6 meters, a fall arrest system shall be used. Clarification is required as to whether this is implying that lad-safe systems be installed on all ladders greater than 6 meters as it excludes scaffold ladders where these systems cannot be installed. Otherwise there would be no reason to exclude scaffold ladders in this requirement. If fall arrest system is required for all ladders greater than 6 meters, this would likely result in significant costs to each operator. What if the ladder is in a restricted area or not accessable to personnel?
25	**Materials Handling**			
	Crane near helicopter deck	25.125 (4)	(4) Every employer must ensure that, when a helicopter is landing or taking off, any crane at a workplace under its control that could pose a physical or visual hazard to the helicopter or its crew remains stationary and, if feasible, has its boom stowed.	CAPP response: The term "visual hazard" is not defined in this regulation or in related standards such as CAP 437. It may be better to use the phrase "physical hazard or visual distraction".

	Loose Lifting Gear	25.128 (2)	(2) Every employer must ensure that the construction, use, maintenance, inspection and testing of all loose lifting gear used at a workplace under its control conforms to the following standards, as applicable: (a) ASME standard B30.9, Slings;(b) ASME standard B30.10, Hooks; (c) ASME standard B30.20, Below-the-Hook Lifting Devices; and (d) ASME standard B30.26, Rigging Hardware.	CAPP response: Section 128(1) - The prescriptive code requirements in Section 128(1) are at odds with the goal based requirements in the Framework Policy Intent Section 7.13 and removes the operators ability to select appropriate internationally based codes where more appropriate. Suggest removing code references where Framework provides for appropriate selection. (2) Every employer must ensure that the construction, inspection, testing, maintenance and use of all loose lifting gear used at a workplace under its control conforms to the following standards, as applicable: (a) American Society of Mechanical Engineers (ASME) standard B30.9, Slings; (b) American Society of Mechanical Engineers (ASME) standard B30.10, Hooks; (c) American Society of Mechanical Engineers (ASME) standard B30.20, Below-the-Hook Lifting Devices; and (d) American Society of Mechanical Engineers (ASME) standard B30.26, Rigging Hardware.
26	**Confined Spaces**			
	Posting	26.135(4)	(4) The employer must ensure that a copy of the work permit is posted at every entrance to the confined space for the duration of its occupation and is updated as new information referred to in paragraph (2)(c) or paragraph 53(1)(i) becomes available.	CAPP response: recommend change to "available at the confined space work site" versus "posted at every entrance". Weather can be harsh to post items up and teams will store permits in a weatherproof sleeve at the workface with the safety watch.
	Entry and occupation requirements	26. 136	k) a drill has been completed simulating an emergency rescue from the confined space.	CAPP response: Please provide a definition of drill. Does a confned space rescue team table top exercise meet the intent which is current practice? It may not be practical to simulate emergency rescue drills without increasing the risk to personnel on the Rescue Team even when its been proven that the rescue can be completed through approved rescue plans, etc... Similar rationale has been used for emergency drills such as the launching of lifeboats where it has been deemed that the risk is greater than the reward of launching a lifeboat with personnel inside. Previous comments were submitted regarding the completion of a drill prior to entry to a space. We recommend the wording be updated to state that where feasible, any confined space being entered for the first time, or if there is a change to protocols, have a drill completed to prove the effectiveness of the rescue plan. It is not practical to complete a confined space entry drill prior to any entry to a confined space.
	Isolation of piping	26.136 (2)	(2) The engineering controls referred to in paragraph (1)(g) must, with respect to a pipe containing a hazardous substance or a substance under pressure or at a high temperature, consist of a blank or blind in conjunction with valves or other blocking seals that are secured in the closed position — using a positive mechanical device that is designed to resist being opened inadvertently, other than as a result of excessive force — to prevent the substance from reaching the blank or blind. The employer must ensure that the pipe is clearly marked to indicate the location of the blank or blind and that the valves or seals are clearly marked as being closed.	CAPP response: Please refer to the CAPP letter accompaning this submission. Piping Isolations philosophy is based on a risk-based approach to piping isolations and considers the nature of the fluid, pressure, and temperature. It recognizes the inherent difference between a hydrocarbon service versus potable or domestic water systems. Any changes or new technologies used in isolations are done so under management of change philosophies and subject to review by the Certifying Authority. As written, the draft OHS regulation will result in significant system shutdowns and will affect lower risk maintenance and operator work that could have otherwise been executed safety using single isolations (e.g: replacing pressure gauges, isolating instrument components, PSV testing, etc .) Due to existing equipment design or type of work being executed, conformance to positive isolation method may create additional risk to personnel performing isolations (e.g: pipe cutting, spreading, heavy lifts in process area, etc.) or working on equipment. In some instances, special isolation methods may be required to perform hazardous energy isolation (e.g: Plugs, mechanical stopples, pipe freezes, etc). The draft regulations as written may preclude the use of newer technology such as “Line Blind Valves” as recommended by OCIMF Cargo Guidelines for FPSOs 2018 (sect. 9.2.4). Line Blind Valves can be operated by one person in minutes and can only be operated after the depressurization of a line (with an upstream isolation valve).
	Testing	26.137(2)	(2) The employer must ensure that a competent person conducts atmospheric testing, and records the results, at intervals appropriate to the hazards in the atmosphere, including (a) before each time the confined space goes from unoccupied to occupied;	CAPP response: 137(2)(a) - Text should note this applies for entry without respiratory protection. Section 26.137(2) states "The employer must ensure that a competent person conducts atmospheric testing — and records the results — at intervals appropriate to the hazards in the atmosphere, including (a) every time the confined space goes from unoccupied to occupied;" This requirement does not appear to account for continuous monitoring. If a space has continuous gas monitoring set up via gas detectors and the space is unoccupied for lunch break, will a new gas test be required? Suggest adding provision for continuous monitoring.

27	**Hot Work**			
	Work permit	27.142 (1)	142 (1) A work permit is required for all hot work carried out at a workplace. Content — circumstances (2) The circumstances referred to in paragraph 53(1)(e) that must be set out in the work permit include (a) the location where the hot work is to be carried out, in particular, relative to any areas referred to in subsection 26(2); (b) the presence of any flammable, explosive or combustible material; and (c) the presence of any material that could produce toxic or flammable vapours.	CAPP response: Permits are not required for approved welding shops. 142 (1) Suggest adding to this sentence "unless the Hot Work is performed in a safe work shop or location designated for that purpose
	Welding, cutting and allied processes	27.143	(2) The employer must ensure that welding, cutting and allied processes are carried out, to the extent feasible, in accordance with the requirements set out in CSA Group standard W117.2, Safety in welding, cutting, and allied processes.	CAPP response: It is not practical to require foreign flagged marine installations to conform with CSA welding standards. Suggest recognition of flag state or CA requirements. The reference to CSA could remain as long as there is language included that allows foreign flagged marine installations to meet flag state or CA requirements.
28	**Hazardous Energy**			
	Employer obligations	147.1 (f) (i-v)	(f) every employee who secures a lockout device affixes to it a tag or sign containing only the following information: (i) the equipment, machine, device or system whose energy source has been isolated and the type of energy that has been isolated, (ii) words or a symbol prohibiting any person from starting or operating the equipment, machine, device or system, (iii) the date and time of the lockout, (iv) the name of the employee who secured the lockout device, and (v) the reason for the lockout	CAPP Requested Clarification - Other 28.147.1 CAPP response: Suggested wording: 147 (1) (d) "marked with an identification number" and "opened with a corresponding key with controlled access (e.g. Lock Box)" 147 (k) Suggested add "or performing functional or operating tests" CAPP Requested Clarification - Other CAPP response: Section 28.147 (1) (f) states "every employee who secures a lockout device affixes to it a tag or sign containing only the following information: (i) the equipment, machine, device or system whose energy source has been isolated and the type of energy that has been isolated, (ii) words or a symbol prohibiting any person from starting or operating the equipment, machine, device or system, (iii) the date and time of the lockout, (iv) the name of the employee who secured the lockout device, and (v) the reason for the lockout The requirement implies that installation of tag or sign is mandatory with the installation of every lock installed by an individual worker. For group lockout situations, this practice does not appear to align with group lockout practices outlined in CSA Z460: Control of Hazardous Energy – Lockout and other methods", referenced in 147(1), under which use of a tag on every individual worker lock is not mandatory. Clause 7.3.7.2 (e) of the Standard references "Authorized individuals then apply their personal lock (and tag if used) to the lockable device." For group lockouts, current practice by most Operators is to install a lock and tag on the main isolation, while individual locks applied by the individual workers would not have individual tags. Any requirement to add individual tags would create additional administrative work and would require revision to Permit to Work systems and training, with no increase in level of safety. Clarification requested that use of individual tags on
	Isolation of piping	28.147(3)	Isolation of piping (3) The employer must ensure that (a) the energy-isolating device used on a pipe that contains a substance that may release hazardous energy, other than in a confined space, consists of (i) a blank or blind, in conjunction with valves or other blocking seals that are secured and locked out in the closed position to prevent the substance from reaching the blank or blind, or (ii) a double block and bleed system, consisting of two valves or other blocking seals that are secured and locked out in the closed position and located on each side of a valve or other mechanism that is secured and locked out in the open position to allow for bleed-off between the two seals; (b) the location of any blank or blind referred to in subparagraph (a)(i) is clearly marked on the pipe; (c) all valves or other seals or mechanisms referred to in subparagraph (a)(i) or (ii) are clearly marked to indicate the position they are in; and (d) any double block and bleed system referred to in subparagraph (a)(ii) is monitored for leaks	CAPP response: Section 147 (3) (a) (ii) is very prescriptive and specifically calls out only 2 means of isolating piping on an installation. This is very restrictive, is neither feasible, nor practical and does not align with industry best practice where the risks associated with physical and chemical properties of the fluid, gas, or other contents dictate the level of isolation that would be applied. Current installations would be unable to comply with the regulation during normal operations due to facility design to industry codes and standards that align with industry best practice isolation philosophies. In order to comply, installations would require more frequent process, equipment and installation shutdowns to facilitate both preventative and corrective maintenance. This requirement will lead to more shutdowns which could have a direct impact on worker safety. Also, please refer to the CAPP cover letter which accompanies this submission.
31	**Explosives**			

	Employer obligations	157 (c)	Employer obligations 157 (1) Every employer must ensure, with respect to each workplace under its control, that (c) the quantity of explosives stored at the workplace is kept to a minimum and does not, in any event, exceed 75 kg unless otherwise authorized by the Chief Safety Officer; (e) containers in which explosives are stored are (i) constructed to safely contain the explosives during all potential emergencies, or (ii) constructed and located in a manner that allows them to be safely jettisoned in an emergency; and (f) a competent person maintains and keeps in a readily accessible location a register of all explosives stored, removed from storage, used, misfired, destroyed or transferred outside the workplace, setting out	CAPP response: 157 (c) the quantity of explosives stored at the workplace is kept to a minimum and does not, in any event, exceed 75 kg unless otherwise authorized by the Chief Safety Officer. If the intent of this regualtion is to reduce RQs we recommend removing the specific 75 kg limit. (c) the quantity of explosives stored at the workplace is kept to a minimum and does not, in any event, exceed 200 kg unless otherwise authorized by the Chief Safety Officer. This is in line with exisiting RQs approved by the C-NLOPB.
32	**Hazardous Substances**			
	Employer obligations	32. 161 (r) (i)	r) if an employee is carrying out work on a piping system that contains a hazardous substance, (i) the following engineering controls are fitted on pipes as necessary to prevent the inadvertent discharge of the substance:(A) a blank or blind, in conjunction with valves or other blocking seals that are secured in the closed position to prevent the substance from reaching the blank or blind, or (B) a double block and bleed system, consisting of two valves or other blocking seals that are secured in the closed position and located on each side of a valve or other mechanism that is secured in the open position to allow for bleed-off between the two seals,	CAPP response: Please refer to the CAPP letter accompaning this submission. CAPP Recommendation: Amend section 147(3)(a) and as follows: 147(3) The employer must ensure that "(a) the energy isolating method used on a pipe that contains a substance under pressure, other than in a confined space, consists of (i) a blank or blind, in conjunction with valves or other blocking seals that are secured and locked out in the closed position to prevent the substance from reaching the blank or blind; or (ii) a double block and bleed isolation system, consisting of two valves or other blocking seals that are secured and locked out in the closed position, located on either side of a valve or other mechanism that is secured and locked out in the open position, to allow for bleed-off between the two seals; or (iii)Where (i) or (ii) are not deemed to be reasonably practicable, once zero energy is determined, the employer may utilize an alternative risk-based isolation method that must ensure the safety of all person who may be exposed to a hazard arising from the work." This amendment would be in line with current piping Isolation philosophy based which is based on a risk-based approach to piping isolations and considers the nature of the fluid, pressure and temperature. It recognizes the inherent difference between a hydrocarbon service versus potable or domestic water systems. Also, any changes or new technologies used in isolations are done so under management of change philosophies and subject to review by the Certifying Authority. This piping isolation philosophy is aligned with UK's HSE publication, HSG253 The safe isolation of plant and equipment as well as with the Newfoundland and Labrador as well as Nova Scotia onshore OHS requirements and ASME / API piping design codes.
33	**Diving**			
	Prohibitions	33.170	170 The following diving activities are prohibited at or from any workplace: (a) diving using a self-contained underwater breath- ing apparatus (SCUBA); (b) surface-supplied diving using a helium-oxygen breathing mixture.	CAPP response: (B) - Surface supplied Helium-Oxygen Diving technique is what appears to be recommended for prohibition. Careful of the wording here. There are some decompression techniques which recommends Helium-Oxygen mixtures to be breathed in the treatment of decompression illness. This is applicable to breathing Helium-Oxygen as a illness treatment inside of a decompression chamber. There should be no prohibition of this technique
	Dive Team	33.175	(2) For the purpose of paragraph (1)(b), the composition of the dive team must be determined having regard to the risk assessment carried out in accordance with the occu- pational health and safety program and must include (a) no fewer than two dive supervisors on shift at the dive control station at all times during a dive, with the exception of breaks, during which one supervisor may be replaced at the dive control station by another competent person; (b) sufficient dive support personnel to support the divers and operate and maintain all equipment; and (c) in the case of surface-supplied diving, sufficient divers to ensure the availability of sufficient standby divers who satisfy the requirements set out in paragraph 176 (2)(c)	CAPP response: (A) - suggest that additional language be added that establishes which of two supervisors has primacy during the diving operation. Decision conflicts can/will arise when two supervisors are designated working at/during the same time frame.

	Saturation diving	33.176 (3)	(3) If the diving operation involves saturation diving, the dive contractor must also ensure that (a) each diver holds a valid diving medical technician certificate; (b) medical checks are carried out by a member of the dive team who holds a diving medical technician certificate, or by a medic under the direction of the specialized dive physician, on each diver immediately before they enter the compression chamber and immediately after they exit it after decompression; (c) at least two diving bells are available, each of which (i) is capable of sustaining the lives of the divers in it and protecting them against hypothermia for at least 24 hours, (ii) is equipped with an emergency locating device whose signals the marine installation or structure from which the dive operation is carried out and all rescue vessels on standby are equipped to receive and interpret, (iii) has suitable protective devices fitted to its main umbilical to control loss of atmospheric pressure in the diving bell if any of the components in the umbilical are ruptured, and (iv) has its internal atmosphere continuously monitored for contaminants and oxygen and carbon dioxide levels by both a primary and secondary monitoring system for the duration of each dive, with the data displayed both in the diving bell and at the dive control station, and the oxygen and carbon dioxide levels being recorded at least hourly; (d) the relative humidity in all living chambers is maintained between 40% and 60% at all depths, regardless of the number of divers in the chamber; (e) no dive is scheduled to last more than 28 days; and (f) a hyperbaric evacuation system that includes the following is readily available for the evacuation and reception of all divers: (i) a hyperbaric reception facility, and (ii) self-propelled hyperbaric lifeboats that are equipped with a life support package sufficient to sustain the lives of the divers and for which a mating trial with the reception facility has been conducted.	CAPP response: recommend Changing "no dive is scheduled to last more than 28 days", to "no pressurization is scheduled to last more than 28 days". The term "dive" should be reserved to describe the diver entering the water from the diving bell (in the case of saturation diving).
	Diving Records	33.177	177 (1) Every dive contractor must make and sign a record that sets out, in respect of each dive carried out under its direction or control, (a) the date and location of the dive; (b) the diver's name; (c) the task carried out; (d) the equipment used; (e) the breathing mixture used; (f) the time the diver began their descent from the surface; (g) the maximum depth attained; (h) the time spent at the maximum depth; (i) the time the diver began their ascent from the maximum depth; (j) the time the diver reached the surface; (k) the surface interval, in the case of a repetitive dive; (l) the decompression table used; and (m) any remarks, including with respect to any unusual occurrences during the dive.	CAPP response: recommend adding "tools and equipment used, name of the stand-by diver, name of the dive tender, name of the dive supervisor, the type of decompression used, environmental and ocean conditions. Change D) to "the type and serial number of diving apparatus equipment.