June, 2025

Canada-Newfoundland and Labrador Offshore Energy Regulator (C-NLOER)
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**Doc. No.: CVA-CPB-WR-LTR-00069**

**Attention:** **Jill Mackey, Chief Safety Officer (CSO)**

Dear Ms. Mackey:

**Subject:** **Acceptance of Increased POB during Campaign Maintenance on SeaRose FPSO**

Periodically, Cenovus require maintenance periods to complete critical maintenance and modification work scopes. Such activities are required to maintain the integrity of the installation as well as regulatory compliance. Personnel resources required to successfully prepare and complete such campaigns, in addition to ongoing preventative maintenance and normal operations, may exceed the established steady state persons onboard number of 90. As a result, Cenovus is requesting permission from the Chief Safety Officer to periodically increase POB from 90 to a maximum of 100 during such maintenance periods.

**Life Saving Appliance Arrangement**

The following outlines the Life Saving Appliance configurations on the SeaRose FPSO

*Lifeboats*

Lifeboat configuration on the SeaRose FPSO is as follows:

- 1 x 67-person lifeboat (KISS 1000) located at the aft/starboard disembarkation station;
- 1 x 67-person lifeboat (KISS 1000) located at the aft/port disembarkation station;
- 1 x 56-person lifeboat (KISS 800) located at the aft/port disembarkation station; and
- 1 x 37-person lifeboat (KISS 700) located at the forward/starboard disembarkation station.

Based on a maximum of 100 POB and 100 kg/person, lifeboat capacity is as follows:

- 227% total lifeboat capacity.
- 123% lifeboat capacity on the port side; and
- 104% lifeboat capacity on the starboard side.

As noted, the proposed configuration does comply with the C-NLOPB requirement for 200% capacity, as well as the Transport Canada/SOLAS requirements for 100% capacity per side

*Liferafts*

Liferaft configuration on the SeaRose FPSO is currently as follows:

- 5 x 20-person liferafts located at the aft/starboard disembarkation station;
- 5 x 20-person liferafts located at the aft/port disembarkation station;
- 2 x 20-person liferafts located at the forward/starboard disembarkation station; and
- 2 x 20-person located at the forward/port disembarkation station.

Based on a maximum of 100 POB and 100 kg/person, liferaft capacity is as follows:

- 280% total lifeboat capacity.
- 140% lifeboat capacity on the port side; and
- 140% lifeboat capacity on the starboard side.

As noted, the proposed configuration does comply with the C-NLOPB requirement for 100% capacity for liferafts onboard. In addition, this is in compliance with Transport Canada Safety and Security's approved MTRB 12554 which states that the SeaRose shall carry, on each side of the ship, enough liferafts to accommodate 100% of the complement.

*Immersion Suits and Lifejackets*

The SeaRose FPSO is provided with 275 immersion suits and 150 lifejackets; therefore, there is sufficient equipment available to meet regulatory requirements. The facility has 68 immersion suits outside the port side and 72 immersions suits outside the starboard side of the Accommodations Module (close to the lifeboats), with 37 immersion suits located in the Forward Muster Area (in proximity to the forward lifeboat). In addition, all personnel are also provided with an immersion suit in their assigned cabin. The facility also has 55 lifejackets close to the aft/port lifeboat station, 72 lifejackets close to the aft/starboard lifeboat station, and 20 lifejackets located in the Forward Muster Area; In addition, there are 12 immersions suits and 4 lifejackets on the Bridge, and 2 immersion suits and 2 lifejackets in the Engine Room (2nd Deck) to meet other marine requirements

All other Lifesaving equipment onboard are installed as per *the Canada-Newfoundland and Labrador Offshore Area Occupational Health and Safety Regulations* and the *Canada-Newfoundland and Labrador Offshore Area Petroleum Operations Framework Regulations*.

Lifesaving Equipment is maintained as per the following Performance Standards

- Safety Critical Element Performance Standard #33 – Life Saving Appliances and Personal Survival Equipment
- Safety Critical Element Performance Standard #34 – Evacuation Systems

*Ancillary Life Saving Appliances*

The SeaRose FPSO is outfitted with Emergency Escape Breathing Apparatus (EEBD's) and designated locations as per the LSA plan. These devices are place in accordance with hazards and risks associated with the systems, equipment, and operations in those areas as well as expected numbers of personnel to be in those areas. Fitted EEBD's will remain as per the LSA plan, with additional EEBD's located in areas where increased personnel may be present, and hazards and risks warrant an increased number of devices. This includes confined space entries.

Each cabin on the SeaRose is outfitted with a smoke hood for each bed within that cabin. These smoke hoods are maintained as per preventative maintenance routines. Additional smoke hoods are located throughout the installation as per the LSA plan. Quantities of smoke hoods onboard, as well as distribution will align with scopes

of work being executed.

*Evacuation Timing*

Based on discussions partially associated with MC-RQF-WR-044 (Revision 2), Transport Canada had previously tasked Cenovus to demonstrate that all personnel can be evacuated from the FPSO within 10 minutes following the abandonment command. In summary:

- It was estimated that either of the aft KISS 1000 lifeboats could be loaded and launched, with personnel originating inside the Temporary Refuge, in under 9 minutes from the abandonment command, including time to put on the immersion suits. (Note: the KISS 800 lifeboat was not installed when the assessment was completed; however, it has a maximum capacity of 56 persons and can be loaded via the aft doors and side door simultaneously, and should therefore be loaded quicker than the KISS 1000 lifeboats);
- It was estimated that the forward lifeboat could be loaded and launched, with personnel originating inside the Temporary Refuge, in under 11 minutes from the abandonment command, including time to put on the immersion suits, with a lifeboat complement of up to the maximum capacity of 37 persons (however, it was agreed that 10 minutes could have been achieved if the immersion suits were donned as a precautionary action so it was agreed that the 10 minute time could be met);
- It took approximately 3 minutes to simulate the lowering of a liferaft, releasing the hook and recovering it such that the next liferaft could be launched (this demonstrates that 2 liferafts could reasonably be launched from a single liferaft station within 10 minutes of the abandonment command, with personnel on scene and ready for launch, as it was estimated it would take approximately 60 - 90 seconds to load 18 people into a raft, and it was noted that hook recovery after the second liferaft is launched is not a requirement if all other personnel have evacuated by other means); and
- For the purposes of demonstrating that evacuation time criteria are met, it is acceptable to assume that multiple lifeboats and/or liferafts can be launched simultaneously as there are sufficient coxswains on board.

As a result of the above, it can be concluded that 100 POB could be evacuated within 10 minutes based on the agreed criteria. Cenovus will commit to completing an abandonment drill shortly following any increases beyond 90 POB for campaign maintenance.

**Crew Engagement**

The Proposal to periodically increase POB from 90 to a maximum of 100 during maintenance periods has been presented to both shifts of the SeaRose Joint Occupational Health and Safety Committee (JOSHC). All feedback has been carefully assessed and a special meeting has been held to present responses to this feedback, provide rationale and justification for increased personnel during campaign maintenance periods, and to gain alignment with the committee. The feedback from the committee has been incorporated into the proposal to ensure minimal impact to crew comfort.

**CA Engagement**

DNV has been fully engaged in the proposal to periodically increase POB to manage campaign maintenance. As part of this engagement, a review and assessment of all class certificates has been completed to determine any impacts and subsequent changes that may be required to reflect the increased POB. As part of this review and assessment, 2 certificates were identified for update:

- The SeaRose Sewage certificate specifically calls out 90 POB as the base case for sewage capacity. The system has been assessed and determined to capable of managing the increased POB numbers. This will be reflected in the sewage certificate moving forward.

- The Safety Inspection Certificate will need to be updated to reflect changes in minimum POB levels and associated Life Safety Equipment. This will be confirmed by DNV prior to updates to the certificate.

**Accommodations**

Paragraph 63(2) of the Canada–Newfoundland and Labrador Offshore Area Occupational Health and Safety Regulations states:

> (2) Every employer must, to the extent feasible, assign each person at a workplace under its control their own sleeping quarters with direct access to their own washroom containing a shower.

However, Paragraph 63(3)(a) states

> (3) If compliance with subsection (2) is not feasible, the employer must
>
> (a) assign no more than two persons to sleep in the same sleeping quarters at the same time, unless a greater number is approved in advance by the Chief Safety Officer on a short-term basis;

The SeaRose FPSO is designed for a normal operating complement of 90 POB considering only 2 people assigned to a room on opposite shifts. However, the rooms on the SeaRose FPSO are outfitted with sleeping quarters for up to 126 POB to accommodate campaign maintenance periods as per this request. Cabins are designed with 1, 2 and 3 person sleeping quarters per cabin. Each sleeping quarters is designed to meet the dimensions and access requirements outlined within the OHS regulations and is assigned its own storage cabinet and reading lamp.

The following summarizes the sleeping quarters on the SeaRose FPSO:

| Location | Single Cabins | Double Cabins | Triple Cabins | Available Bed Space |
|---|---|---|---|---|
| Upper Deck | - | - | 4 | 12 |
| B Deck | - | 1 | 15 | 47 |
| C Deck | - | 3 | 13 | 45 |
| D Deck | 2 | 4 | 4 | 22 |
| | | | TOTAL | 126 |

During increased POB operations for campaign maintenance, at no time will there be more than 2 persons occupying a room at the same time (i.e. the third person will be on the opposite shift). The 2 persons assigned to the same room and shift will be associated with the campaign maintenance crew to minimize impact on core SeaRose crew. To further minimize impacts on core crew living arrangement, Cenovus Back-to-Back night and day shifts will be maintained, focusing on selected allotment of rooms and beds for the increased POB associated with the campaign maintenance. The campaign maintenance crew will be managed to minimize impact on core crew assignments and mitigate against fatigue. However, at times Cenovus may be required to utilize other rooms and beds to best manage crew shifts and scope assignments.

During campaign maintenance periods, an additional person will be added to the catering staff to offset the additional demands associated with such an increase.

**Basis of Safe Operations:**

Cenovus requested Kent prepare an overview of the impact that an increased POB may have on the overall risk profile for the FPSO. Several assumptions were made as part of the assessment, however one key assumption, for the purpose of calculating the worst-case risk profile, was that it was assumed that the POB will be 100 all year rather than periodically throughout the year.

Overall, Kent has stated that a campaign maintenance crew would not be at any higher risk than the existing FPSO crew. Increasing the POB would not have a detrimental effect on the existing crew. The FPSO's provision of lifesaving devices / EER equipment is suitably located and sufficient for the increased POB such that there should be no negative impact on the ability to evacuate personnel safely in the event of an emergency. There is benefit to be gained from actively managing the maintenance back log, particularly in the ballast tanks.

It can be considered that the risks associated with conducting maintenance campaigns can be considered to have been reduced to as low as reasonably practicable (ALARP). Refer to Appendix A for the Kent Impact Assessment Report.

**Conclusion:**

Based on the above information, Cenovus Energy is proposing to increase its persons onboard (POB) to a maximum of 100 during periodic maintenance campaigns to complete fabric and corrective/preventative maintenance. This proposal is intended to be utilized during planned and unplanned maintenance periods. The duration of the maintenance periods and increased personnel onboard will be dependent on the scopes and the progress of work to be executed. However, Cenovus commits to re-evaluate this proposal no later than June 30, 2026. In addition, increased POB will be added to the JOSHC agenda as a standing item to regularly discuss opportunities and lessons learned as scopes progress.

During normal operations, the maximum POB of 90 will be maintained.

Sincerely

Cenovus Energy

[redacted]

[redacted]

cc: [redacted]

**Attachments: Kent POB Increase Impact Assessment, Increased POB JOHSC Presentation**

# SeaRose FPSO Safety Support

## POB Increase Risk Impact Assessment

Cenovus Energy

June 2025

1987-4VER-700

## Notice

This document and its contents have been prepared and are intended solely as information for Cenovus Energy and use in relation to POB Increase Risk Impact Assessment.

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This document has 21 pages including the cover.

## Document history

Document title: POB Increase Risk Impact Assessment

Document reference: 1987-4VER-700

| Revision | Purpose description | Originated | Checked | Reviewed | Authorised | Date |
|---|---|---|---|---|---|---|
| A1 | For client review | LD | CSH | AH | LD | June 2025 |
| A2 | Incorporating minor comments | LD | CSH | AH | LD | June 2025 |
| | | | | | | |
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| | | | | | | |

## Client signoff

| | |
|---|---|
| Client | Cenovus Energy |
| Project | SeaRose FPSO Safety Support |
| Job number | 1987/700 |
| Client signature/date | |

# Contents



## Tables



## Figures

# 1. Background

The SeaRose FPSO currently operates with a normal POB (persons on board) of 90. In order to alleviate a backlog in maintenance activities, Cenovus is considering increasing the POB to 100 for campaign maintenance scopes. The additional 10 POB would mostly be dedicated to carrying out remediation work in the ballast tanks. These maintenance activities form part of the ongoing Aging Asset / Life Extension action plan for the FPSO.

Cenovus has requested Kent to prepare an overview of the impact that an increased POB may have on the overall risk profile for the FPSO. In addition, this study looks at the suitability of existing / proposed Escape, Evacuation and Rescue (EER) equipment on board to accommodate the additional personnel.

The ultimate aim of this assessment is to determine if the risks to all personnel working on the SeaRose can continue to be considered ALARP and that the increase in POB would not have a significant impact on the FPSO's risk profile or on the ability to safely and efficiently evacuate personnel in the event of an emergency situation.

# 2. Assumptions for 100 POB Risk Profile

The following assumptions have been made when re-assessing the risk profile for the SeaRose with an increased POB of 100.

1. 10 additional personnel will be referred to as the 'campaign maintenance crew' and, for the base case, it is assumed that nine (9) of the crew spend their on-shift working hours in the ballast tanks, with one person dedicated as 'tank watch' on the main deck. The remaining off-shift hours are spent in the accommodation. The maintenance activities will be entirely during night shift.
2. The campaign maintenance crew will spend 10 hours per day working in the ballast tank (or on watch), with the remaining time spent in the TR, either offshift, or on breaks.
3. The campaign maintenance crew are assigned a FAR of 5.6, which aligns with both the existing marine/deck and maintenance crews.
4. There are no welding activities to be performed. The main hazards associated with the ballast tank repair activities would be working at height (rope access / scaffold) and confined (relatively) space working.
5. The ballast tanks would be fully emptied and the atmosphere tested before entry to ensure safe breathable air and suitable ventilation is provided.
6. When the campaign maintenance crew is working in the ballast tanks, it is assumed that they are protected from the immediate effects of fires or explosions that occur on the main / process deck above. Therefore, their immediate risk is considered to be zero for this time. The member of the crew who is on 'tank watch' duty would be exposed to the immediate effects of a fire or explosion on the main deck, and their immediate risk is calculated in the same manner as any other personnel who spend time on the main deck area.
7. The ballast tank escape routes are arranged such that if the primary escape route to the main deck is impaired, escape may still be possible via a secondary route located as far from the primary route as possible, or through a rescue hatch. However, for conservatism, it is assumed that if there is a pool fire on the main deck, the personnel working within the tanks would have a slightly increased risk of becoming trapped and unable to safely return to the TR (referred to as muster fatalities). A simple but conservative assumption has been made to increase the current muster fatality fractions used in the QRA by 1% for small releases, 5% for medium releases and by 10% for large releases. This has only been applied to events where it is judged that there is the potential for a significant explosion which may result in collapse of the process deck (either directly or via escalation to cause a main deck pool fire). It has not been applied to events which may cause turret collapse.
8. There is no impact on TRIF as a result of the additional personnel or the activities which they will be performing.

9. There is no impact on the individual risk calculations for the current 90 POB – i.e. the additional personnel do not influence the risk to others. See section 5 which talks about lifeboat / liferaft provision.
10. Helicopter risk calculations for the new personnel have followed the same assumptions as for all existing crew in terms of proportions of shared / direct flights and proportion of transfers carried out by vessel instead of helicopter due to weather conditions.
11. When the campaign maintenance crew is present on the FPSO, one additional return helicopter flight for the associated 3 week period is assumed.
12. It is expected that the campaign maintenance crew may not be present for the full year. However, for the purpose of calculating the worst-case risk profile, it will be assumed that the POB will be 100 all year. Therefore there will be two campaign maintenance crews of 10 people each, working back to back for the full year. Each crew works 3 weeks-on, 3 weeks-off, the same as the existing crew.
13. A sensitivity will be conducted where the additional 10 crew will be performing general maintenance tasks in all areas of the FPSO and therefore their distribution is throughout the topsides modules, rather than in the ballast tanks. To model this, the number of personnel in the existing maintenance crew will simply be increased by 10.

# 3. Potential Impact Categories

The following areas, where it is considered that the additional personnel may have implications on the risk profile, have been reviewed in turn throughout this document:

| Section | Subject | Content |
|---|---|---|
| Section 4 | Transportation Risk | Review of impact on transportation (helicopter / vessel) PLL and on the increased potential for helicopter crash onto the FPSO due to extra flights for the increased POB. |
| Section 5 | Escape, Evacuation and Rescue Facilities | Review of the provision of EER facilities in terms of numbers, locations and type, to ensure sufficient and suitable facilities are provided for the increased POB. |
| Section 6 | Escape routes and Timings | Review of the escape route timing from the ballast tanks to feed into the assessment of the potential for muster fatalities. |
| Section 7 | QRA | Re-calculation of PLL and IRPA and overall risk profile for the FPSO based on a POB of 100. |
| Section 8 | ALARP | A review of the changes to the risk profile in relation to the ALARP principle. |

# 4. Impact on Transportation Risks

Where crew transfers can be carried out by helicopter (i.e. when there are no fog or other weather-related restrictions) then there would be the requirement for one additional return helicopter flight per 3-week period that the campaign maintenance crew is present. If crew transfers are undertaken by vessel, it is unlikely that any additional journeys would be required due to the larger capacity of the vessel compared to helicopters.

If the campaign maintenance crew was present year-round, they would make the same number of helicopter flights / vessel transfers per year as the existing SeaRose crew, based on a 3 week on, 3 week off rota. Therefore, their individual transportation risk due would be no higher than existing crew – which has been assessed to be 4.36E-05 per annum.

For year-round occupancy of 10 campaign maintenance crew members, the PLL would be 8.72E-04 per annum. When added to the transportation PLL for the current 90 POB (1.09E-02), the total transportation PLL for 100 POB would be 1.18E-02 per annum (or one fatality every 85 years).

The individual transportation risk is approximately 5E-06 per return trip. This value can be scaled up for the campaign maintenance crew based on the number of trips per year (if not a full year) to give the IRPA value.

The additional personnel have no impact on the individual transportation risk of the existing SeaRose personnel.

The potential for helicopter crash onto the FPSO has been assessed previously [1], based on a maximum of 204 helicopter flights per year landing on / taking off from the SeaRose's helideck. The frequency of crash was estimated to be 7.30E-04 per annum based on 204 helicopter take-off and landings per year (actual data from helicopter flight records).

If the campaign maintenance crew's additional 10 personnel were present year-round, it is assumed that this would lead to one additional return flight per 3 week period (i.e. increasing the annual number from 204 to 221.333) and therefore the risk of crash onto the FPSO would increase by up to 8.5%, to a maximum of 7.92E-04 per annum (noting that a proportion of these flights may ultimately be replaced by boat journeys, thereby reducing the additional risk). However, it is expected that the additional crew would not be present year-round and therefore the impact on risks would be lower than this. The risk of helicopter crash onto the FPSO, per take-off / landing sequence, is estimated at 3.58E-06 [1].

Table 4-1 shows the IRPA and PLL values, calculated for a range of number of weeks of presence of the campaign maintenance crew. It should be noted that the IRPA (and hence PLL) is not directly proportional to the number of weeks spent offshore, because, on average, 12% of crew transfers are undertaken by vessel and the risk associated with this is significantly lower than helicopter risk.

Note that the IRPA is conservatively calculated based on the same personnel in the crew each trip and therefore the maximum number of annual trips would be 8.67, as no individual would be offshore more than 50% of the year. If there is a campaign maintenance crew present more often than this, there would need to be more than one crew. The PLL takes no account of the make-up of the crew and is simply calculated based on the total number of person-days present on board.

**Table 4-1 Transportation PLL and IRPA**

| Number of 3 week periods that campaign maintenance crew are onboard | Maximum IRPA for Campaign Maintenance Crew | PLL for Campaign Maintenance Crew | PLL for all 100 POB |
|---|---|---|---|
| 0 (i.e. current 90 POB base case) | - | - | 1.09E-02 |
| 1 | 4.09E-06 | 4.09E-05 | 1.09E-02 |
| 2 | 8.18E-06 | 8.18E-05 | 1.10E-02 |
| 5 | 2.48E-05 | 2.48E-04 | 1.12E-02 |
| 8.67 (max for one crew) | 4.36E-05 | 4.34E-04 | 1.13E-02 |
| 10 | 4.36E-05 | 5.01E-05 | 1.14E-02 |
| 17.33 (i.e. all year round, 2 crews) | 4.36E-05 | 8.69E-04 | 1.18E-02 |

# 5. Impact on Suitability of Provision of Escape, Evacuation and Rescue Facilities

When increasing the POB on the FPSO to 100, it is necessary to review the provision of EER facilities to ensure that the requirements are met.

## 5.1. Lifeboats

The lifeboat configuration on the SeaRose FPSO is as follows:

- 1 x 67-person lifeboat (KISS 1000) located at the aft/starboard disembarkation station;
- 1 x 67-person lifeboat (KISS 1000) located at the aft/port disembarkation station;
- 1 x 56-person lifeboat (KISS 800) located at the aft/port disembarkation station; and
- 1 x 37-person lifeboat (KISS 700) located at the forward/starboard disembarkation station.

This gives a total capacity of 227 personnel (227% of max POB), with capacity for 104 personnel (104%) on starboard side and 123 on port side (123%).

The proposed configuration complies with the C-NLOPB requirement for 200% capacity across all lifeboats, as well as the Transport Canada/SOLAS requirements for 100% capacity on both port and starboard sides. The increase in total POB from 90 to 100 would not change this conclusion and the lifeboat provision continues to comply with the relevant regulations.

Note that this is based on a weight of 100 kg/person – average personnel weights should be continually monitored and should it rise above 100kg/person, the nominal capacity of the lifeboats should be adjusted and the sufficiency of the provision should be confirmed.

It is noted that the starboard side aft provision is only for 67 personnel. In the event that the port side lifeboats are inaccessible AND the starboard side aft lifeboat fails to launch, personnel who are mustered at the TR would need to use alternative means of evacuation. This may include the forward lifeboat, which has capacity for 37. Clearly, even at the current 90 POB, this would not allow for evacuation of all personnel and some would need to use liferafts instead. With an increased POB of 100, it is conceivable that an additional 10 personnel may need to use liferafts to evacuate. However, it is noted that this is judged to be an exceptionally low likelihood scenario.

The forward lifeboat is most likely to be used in the situation where personnel are trapped forward of a large fire, preventing them from returning to the TR and evacuating using the aft lifeboats. A recent assessment [2] of potential fire sizes and locations, combined with the personnel distribution, estimated that it is unlikely that more than around 5-7 personnel would be trapped forward of a fire and require to use the forward lifeboat. Therefore, even if all 10 of the additional personnel needed to use the forward lifeboat, there would be sufficient capacity. See Section 5.3, there are 20 lifejackets at the forward muster area / lifeboat, so this would be sufficient for the maximum credible number of trapped personnel, accounting for the additional 10 POB.

## 5.2. Liferafts

The liferaft configuration on the SeaRose FPSO is currently as follows:

- 5 x 20-person liferafts located at the aft/starboard disembarkation station;
- 5 x 20-person liferafts located at the aft/port disembarkation station;
- 2 x 20-person liferafts located at the forward/starboard disembarkation station; and
- 2 x 20-person located at the forward/port disembarkation station.

This gives a total capacity of 280 personnel (280% of max POB), with capacity for 140 personnel (140%) on starboard side and 140 on port side (140%).

The proposed configuration complies with the C-NLOPB requirement for 100% capacity for liferafts onboard. In addition, this is in compliance with Transport Canada Safety and Security's approved MTRB 12554 which states that the SeaRose shall carry, on each side of the ship, enough liferafts to accommodate 100% of the complement. The increase in total POB from 90 to 100 would not change this conclusion and the liferaft provision continues to comply with the relevant regulations.

## 5.3. Immersion Suits and Lifejackets

The SeaRose FPSO is provided with 275 immersion suits and 150 lifejackets; therefore, there is sufficient equipment available to meet regulatory requirements for the increased POB of 100.

The facility has 68 immersion suits outside the port side and 72 outside the starboard side of the Accommodation Module (close to the lifeboats), with 37 immersion suits located in the Forward Muster Area (in proximity to the forward lifeboat). In addition, all personnel are also provided with an immersion suit in their assigned cabin.

The facility also has 56 lifejackets close to the aft/port lifeboat station, 72 lifejackets close to the aft/starboard lifeboat station, and 20 lifejackets located in the Forward Muster Area; In addition, there are 12 immersions suits and 4 lifejackets on the Bridge, and 2 immersion suits and 2 lifejackets in the Engine Room (2nd Deck) to meet other marine requirements

All other Lifesaving equipment onboard are installed as per *the Canada-Newfoundland and Labrador Offshore Area Occupational Health and Safety Regulations* and the *Canada-Newfoundland and Labrador Offshore Area Petroleum Operations Framework Regulations*.

Lifesaving Equipment is maintained as per the following Performance Standards

- Safety Critical Element Performance Standard #33 – Life Saving Appliances and
- Personal Survival Equipment
- Safety Critical Element Performance Standard #34 – Evacuation Systems

The provision – in terms of numbers, location and maintenance of immersion suits and lifejackets – continues to comply with all relevant regulations after increasing the POB from 90 to 100.

# 6. Escape Routes and Timings

The EER strategy to be adopted by personnel in response to incidents occurring on the vessel will be:

- Early detection/raise the alarm and move away from the immediate hazard;
- Escape to the muster station in the TR in the aft superstructure or if the event prevents access to the TR escape to the secondary muster are;
- Raise the alarm with external parties i.e. standby vessel, shore base, neighbouring installations;
- Determine and implement appropriate response to the incident e.g. fire response team to tackle incident etc. This should also include assessing if and when evacuation should take place.

Figure 6-1 shows an example ballast tank. The campaign maintenance crew could be working at any location within this or other ballast tanks on the FPSO at the time of an emergency that requires them to return to the TR.

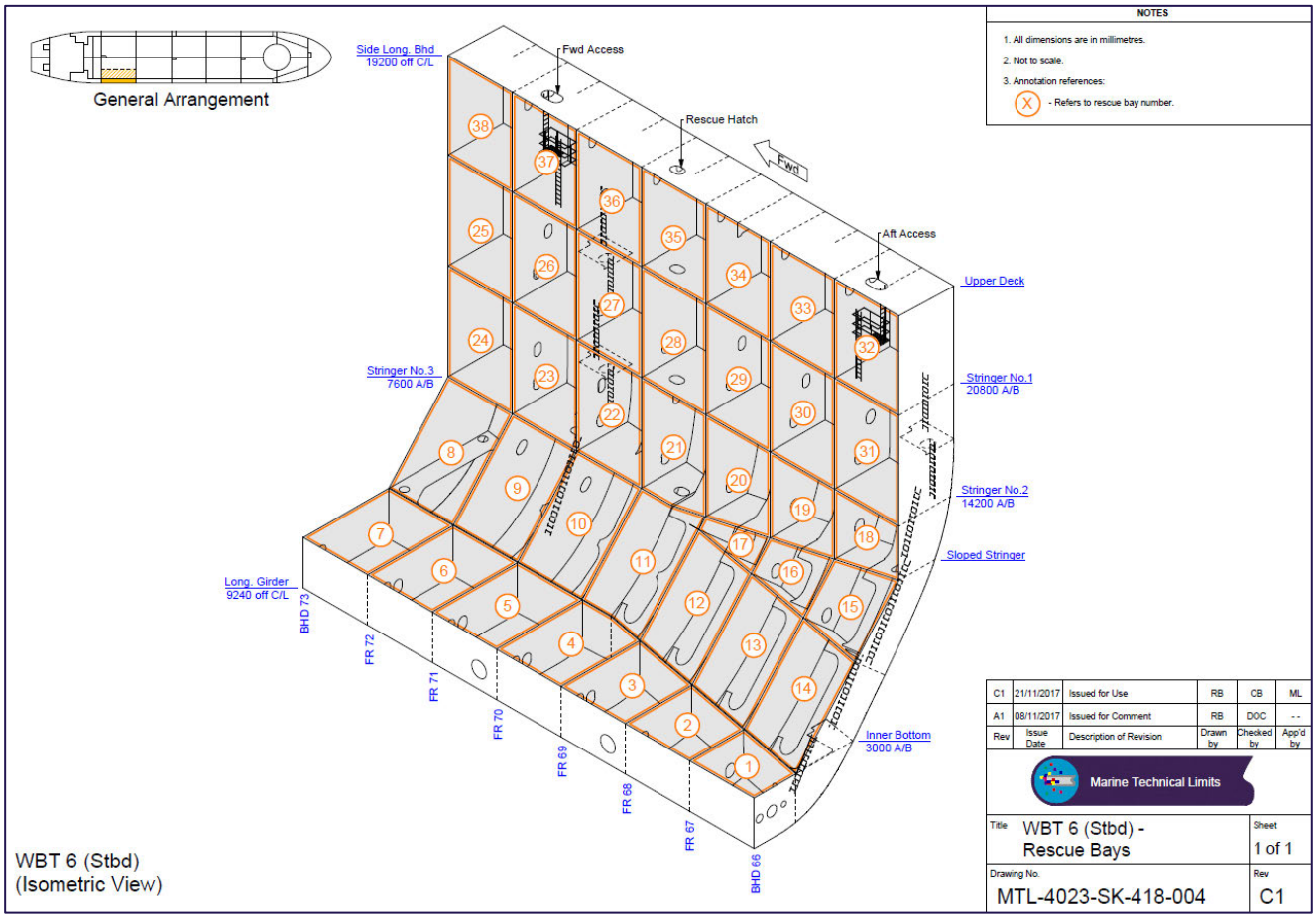



**Figure 6-1 Ballast Tank Details**

All wing water ballast tanks have an escape hatch and ladder on the forward part of the tank with either a main access ladder or stairs in the aft part of the tank. There are 3 centre water ballast tanks that only have one access point for the tank. [3]

Personnel movement speeds [4] can be used to estimate how quickly personnel would be able to escape vertically (via staircases or ladders) and/or horizontally (via topsides primary escape routes) back to the TR.

- Horizontal movement speed 84m/min
- Vertical (stairs up/down) movement speed 42m/min

For movement via ladder, the vertical movement data quoted above has been reduced by a factor of 4 (10.5m/min) to more accurately represent the speed of personnel movement on ladders. It should also be noted that only one person at a time can start climbing the ladder, so a delay of at least 20 seconds per person is assumed.

Escape from the ballast tank can be estimated based on the worst case – escape from the lowest level of the furthest forward ballast tank.

Vertical height = 27m time = 27/10.5 = 2.6 minutes

Horizontal Distance from tank to TR = ~200m time = 200/84 = 2.4 minutes

Total time per person = 5 minutes

Assuming that only one person can climb the exit ladder at a time and leaving a 20 second gap, the total time for all 9 personnel to exit the tank and (all ten) to return to the TR would be (8 x 20 second gaps = 2.67 minutes) + climb time (2.6 minutes) + return to TR time (2.4 minutes - all at the same time) = 7.67 minutes.

If a fire develops on the main deck and spreads to cover the top of multiple ballast tanks, then there is the potential for the exits from the occupied tank and the adjacent tank to both be impaired.

Note that this applies to events that originate on the deck, rather than those which escalate to the main deck following topsides vessel damage spilling onto the main deck. It is assumed that personnel would quickly be alerted to an incident on the process deck and that they would have time to escape from the ballast tank and return to the TR before major escalation occurred (assumed at least 10 minutes).

Table 6-1 summarises the findings of the escape assessment for the ballast tanks.

**Table 6-1 Escape Assessment Sheet for Ballast Tanks**

| REF. | HAZARD LOCATION | HAZARD DESCRIPTION | ESCAPE ROUTES | IMPAIRMENT POTENTIAL | COMMENTARY |
|---|---|---|---|---|---|
| Personnel in Ballast Tanks | | | | | |
| ER – 01 | Main Deck or process modules | There are no sources of hydrocarbons in the ballast tanks and therefore no fire or explosions are considered credible within the tanks.<br>The main hazard to personnel would be a fire on the main deck which blocked the access / exit from the tank, trapping personnel inside the ballast tank. | Escape from the ballast tanks would be via the main exit ladder. If this route is impaired then a second escape route is provided as far horizontally as possible from the primary exit, via an adjacent ballast tank.<br>The time to escape from a ballast tank could be up to a maximum of 2.6 minutes, based on climbing a ladder 27m. Assuming 20 seconds is left between each person, it would take 5.3 minutes for all 9 to exit the tank. It would then take up to a further 2.4 minutes to return to the TR (worst case based on most forward tank, ~200 m from the accommodation). | If a fire develops on the main deck and spreads to cover the top of multiple ballast tanks, then there is the potential for the exits from the occupied tank and the adjacent tank to both be impaired.<br>Note that this applies to events that originate on the deck, rather than those which escalate to the main deck following topsides vessel damage spilling onto the main deck. It is assumed that personnel would quickly be alerted to an incident on the process deck and that they would have time to escape from the ballast tank and return to the TR before major escalation occurred (assumed at least 10 minutes). | In the QRA sensitivity (results in Section 7) it has been considered that there would be a slight increase in the potential for personnel who work in the ballast tanks to become muster fatalities. |

# 7. Impact on QRA

Adding 10 personnel to the POB to conduct the ballast tank maintenance activities, will have an impact on the overall risk picture for the FPSO. The current QRA [5] provides full details of the risk calculation method and assumptions, but for ease of reference, some key points are repeated here, along with a summary of the current risk profile and the targets against which these are measured.

The QRA process uses three main indices to define the risk on the Installation in quantitative terms:

- TRIF - Temporary Refuge Impairment Frequency (per annum) - the annual frequency with which the TR will be impaired within its specified endurance time from hydrocarbon events. The specified endurance period of the TR on the SeaRose FPSO is taken to be 2 hours [6];
- PLL - Potential Loss of Life (per annum) - number of statistical fatalities per year on the installation;
- IRPA - Individual Risk Per Annum - the annual probability of fatality of an individual member of an employment category.

The IRPA is calculated for the main employment categories to cover the range of activities on the installation. These worker categories have been defined as:

- Process Crew, those who spend a significant proportion of their outdoor time in the processing areas;
- Maintenance Crew, those who spend most of their time in the process areas, utilities area and the engine room, in addition to the TR;
- Marine/Deck Crew, those who spend most of their time in the utilities area and engine room, as well as the TR;
- Catering / Admin Crew who spend all of their offshore time in the TR.

In addition to the above, the following measures of risk have also been derived for the SeaRose FPSO using the risk model developed during the QRA process:

- GR - Group Risk - a measure of the risk of multiple fatality accidents that can be expressed in terms of a frequency distribution (F-N Curve) or simply as the frequency with which fatalities exceed a specified level;
- Impairment Based Risk – the frequency of impairment of the installation's key Safety Functions; namely the installation's Primary Structure, the escape routes and evacuation systems.

Table 7-1 shows a summary of the current risk profile on the SeaRose FPSO.

**Table 7-1 Current Risk Profile for SeaRose FPSO**

| Risk Category | Risk Levels | Target Level of Safety |
|---|---|---|
| TRIF within 2hrs (per annum) | 9.35E-05 | - |
| Total TRIF (per annum) | 1.71E-04 | 1.0E-03 |
| PLL (fatalities per annum) | 3.71E-02 | Not Applicable |
| Maximum IRPA (per annum) | 2.56E-04 (Marine/Deck) | 1.0E-03 |
| Frequency (per annum) of 10 or more fatalities | 4.55E-04 | 1.95E-03 |
| Frequency (per annum) of 50 or more fatalities | 2.52E-05 | 3.90E-04 |
| Frequency (per annum) of Loss of Integrity of Primary Structures | 8.83E-05 | 1.0E-03 |
| Frequency (per annum) of Impairment of all Escape Routes | 1.14E-04 | 1.0E-03 |
| Frequency (per annum) of Impairment of Evacuation Systems | 1.02E-04 | 1.0E-03 |

As mentioned in Section 2, two cases will be considered:

1) Case 1: the 10 campaign maintenance crew modelled as conducting maintenance activities in the ballast tanks (with 1 crew member on watch on the main deck).
2) Case 2: the 10 campaign maintenance crew modelled as conducting maintenance activities on the topsides, with the same location distribution as the current maintenance crew.

In both cases, the worst case occupancy (in terms of risk potential) is assumed i.e. with year-round occupancy by the campaign crew. This would effectively mean two crews of 10 working back to back – with each crew spending 50% of the year offshore.

There is no impact on the TRIF as a result of the additional personnel. The following sections discuss the impact on Individual Risk and PLL.

## 7.1. Individual Risk

### 7.1.1. Hydrocarbon Risk

Table 7-2 shows the breakdown of the hydrocarbon Individual Risk (IRPA) for the maintenance crew (current) compared to the new campaign maintenance crew (Case 1 – ballast tank work). Note that when the additional 10 crew carry out maintenance activities in the topsides modules (case 2), it is assumed that their IRPA would be identical to the current maintenance crew, so there is no requirement to calculate a new IRPA value for this case.

**Table 7-2 Hydrocarbon IRPAs**

| Risk Contribution | Maintenance Crew (Current) | Campaign Maintenance Crew (new) | Discussion |
|---|---|---|---|
| Immediate | 3.05E-05 | 1.59E-05 | This is significantly lower because the campaign maintenance crew spend the majority of their on-shift time in the ballast tanks, where they would be protected from the immediate effects of fire, explosions or toxic gas releases. There are no sources of hydrocarbons in the ballast tanks, so other than the person on tank watch, there would be no immediate threat to the campaign maintenance crew. |
| Muster | 8.27E-06 | 1.76E-05 | The muster IRPA is higher for the campaign maintenance crew. This is partly due to the assumption that there is the added potential for impairment of escape routes from the ballast tanks which could lead to personnel being trapped. It is also simply a factor of the way in which risks are calculated and since the immediate fatality potential is low, there is a higher potential for personnel to be exposed to muster risks. |
| TR fatalities | 7.76E-06 | 7.70E-06 | TR and evacuation fatalities are very similar – the minor differences are based on the probability that personnel survive the immediate effects of a hazardous event and successfully manage to muster to the TR and therefore could be present to be affected by TR or TEMPSC impairment. |
| Evacuation Fatalities | 2.96E-06 | 2.93E-06 | |
| Total Hydrocarbon IRPA | 4.95E-05 | 4.41E-05 | The campaign maintenance crew has an 11% lower hydrocarbon IRPA than the existing maintenance crew. |

### 7.1.2. Toxic Gas Risk

The toxic gas risk to the campaign maintenance crew is lower than the current maintenance crew, because of their expected work location. The campaign crew is expected to be less exposed to the effects of a toxic release because they spend much of their time in the enclosed ballast tanks which should provide significant protection. It is assumed that suitable gas detection will be in place on the ballast tank air intakes and inside the tanks to alert personnel to the presence of any toxic gas.

### 7.1.3. Non-Hydrocarbon Risk

The non-hydrocarbon risks are identical for all personnel, because they are based on time spent on the FPSO. Assuming that the campaign crew is present year-round, the non-hydrocarbon IRPA will be the same as the existing maintenance crew (as they have the same occupational risk). If they spend less time offshore, their non-hydrocarbon risks can be scaled down in direct proportion to the number of weeks spent offshore.

### 7.1.4. Overall IRPA

Table 7-3 shows the overall IRPA values for the current maintenance and proposed campaign maintenance crews.

**Table 7-3 Overall IRPAs**

| Risk Contribution | Maintenance Crew (Current) | Campaign Maintenance Crew (new – case 1) | Difference |
|---|---|---|---|
| Total Hydrocarbon IRPA | 4.95E-05 | 4.41E-05 | -11% |
| Toxic Gas Risk | 1.42E-06 | 1.25E-06 | -12% |
| Total Non-Hydrocarbon IRPA | 2.01E-04 | 2.01E-04 | - |
| Total IRPA | 2.52E-04 | 2.47E-04 | -2% |

It can be seen that the new campaign maintenance crew (for case 1, working in the ballast tanks) would have a slightly lower IRPA than the existing maintenance crew. For case 2 (working in the topsides modules) they would have the same IRPA as the existing maintenance crew. This is based on the worst case scenario, where the campaign maintenance crew is present year-round. If they were present for fewer weeks, their IRPAs would reduce in proportion to the time spent on board.

Taking into account the remainder of the POB, an average IRPA can be calculated, as shown in Table 7-4.

**Table 7-4 Average IRPAs**

| | Process | Deck/Marine | Maintenance | Campaign Maintenance | Catering/ Admin |
|---|---|---|---|---|---|
| IRPA | 1.30E-04 | 2.56E-04 | 2.52E-04 | 2.47E-04 | 8.33E-05 |
| Number (current) | 33 | 6.5 | 40.5 | 0 | 10 |
| Average IRPA | 1.890E-04 | | | | |
| Number (proposed – Case 1) | 33 | 6.5 | 40.5 | 10 | 10 |
| Average IRPA | 1.947E-04 | | | | |
| Number (proposed – Case 2) | 33 | 6.5 | 50.5 | 0 | 10 |
| Average IRPA | 1.953E-04 | | | | |

The average IRPA increases by 3.1% when the campaign maintenance crew is added to the FPSO. This is because although the campaign maintenance crew's IRPA is slightly lower than the existing maintenance crew's IRPA, it is higher than some of the other crews (Process and Catering/Admin) – due to the higher occupational risk. For case 2 (where the campaign maintenance crew work in the topsides modules rather than the ballast tanks, the average IRPA is marginally higher again, since the 10 additional personnel are added to the existing crew with a relatively high IRPA).

## 7.2. Potential Loss of Life (PLL)

The PLL is a measure of the total risk to life. It is calculated based on individual risk and the number of personnel exposed to that risk.

The base (worst) case assumption is that the campaign maintenance crew would be present year-round. Their IRPA is based on 50% occupancy and therefore to represent two crews of 10 personnel, back-to-back for the year, the IRPA is multiplied by 20 (10/50%).

The PLL for the campaign maintenance crew is therefore 2.47E-04 x 20 = 4.93E-03 fatalities per annum.

If this is added to the existing PLL for the current 90 POB (3.71E-02), the new total would be 4.20E-02 fatalities per annum, or one fatality every 24 years.

## 7.3. Impairment Based Risk

Impairment Based Risk covers the frequency of impairment of the installation's key Safety Functions; namely the installation's Primary Structure, the escape routes and evacuation systems.

None of these would be affected by the additional personnel.

## 7.4. Frequency of 10 or 50 Fatalities

The frequency of 10 fatalities occurring has increased by approximately 1%, from 4.55E-05 to 4.60E-05 per annum.

The frequency of 50 fatalities occurring has increased by approximately 25%, from 2.27E-05 to 3.17E-05 per annum. This is because events which cause 50% of the POB to become fatalities now result in 50 fatalities rather than 45, so are included in this metric.

Despite the increase, both of these metrics remain well below the relevant Target Levels of Safety.

## 7.5. Summary of Risk Assessment Results

Table 7-5 shows the summary of current risk profile (90 POB) compared to the risk profile for 100 POB. It can be seen that whilst some values have increased slightly, all metrics remain well below the associated target level of safety.

**Table 7-5 Current Risk Profile for SeaRose FPSO**

| Risk Category | Risk Levels (90 POB) | Risk Levels (100 POB) | Target Level of Safety | Comment |
|---|---|---|---|---|
| TRIF within 2hrs (per annum) | 9.35E-05 | 9.35E-05 | - | No change |
| Total TRIF (per annum) | 1.71E-04 | 1.71E-04 | 1.0E-03 | No change |
| PLL (fatalities per annum) | 3.71E-02 | 4.20E-02 | Not Applicable | 13% higher due to increase in POB |
| Maximum IRPA | 2.56E-04 (Marine/Deck) | 2.56E-04 (Marine/Deck) 2.47E-04 (Campaign) | 1.0E-03 | No change in max IRPA Campaign crew 3% lower |
| Average IRPA | 1.89E-04 | 1.95E-04 | 1.0E-03 | 3% increase due to more personnel with higher occupational |
| Frequency (per annum) of 10 or more fatalities | 4.55E-04 | 4.60E-04 | 1.95E-03 | 1% increase |
| Frequency (per annum) of 50 or more fatalities | 2.52E-05 | 3.17E-05 | 3.90E-04 | 25% increase |
| Frequency (per annum) of Loss of Integrity of Primary Structures | 8.83E-05 | 8.83E-05 | 1.0E-03 | No change |

| Risk Category | Risk Levels (90 POB) | Risk Levels (100 POB) | Target Level of Safety | Comment |
|---|---|---|---|---|
| Frequency (per annum) of Impairment of all Escape Routes | 1.14E-04 | 1.14E-04 | 1.0E-03 | No change |
| Frequency (per annum) of Impairment of Evacuation Systems | 1.02E-04 | 1.02E-04 | 1.0E-03 | No change |

# 8. ALARP Considerations

The QRA results presented in Section 6 show that the campaign maintenance crew (conducting activities in the ballast tanks) would have a slightly lower IRPA than the current maintenance crew. The average IRPA for all 100 POB is found to be 3% higher than for the current 90 POB, because the campaign maintenance crew has a higher than average occupational risk. The PLL would increase by around 13% to account for the additional personnel on board. Although the risk parameters have increased slightly, they all **remain well below the relevant Target Level of Safety**.

There is no measurable impact on the risk profile for the existing crew on the FPSO – in other words, the presence of the additional campaign maintenance crew personnel does not adversely affect the risk profile of those already working on the SeaRose FPSO.

It is noted that the starboard side aft lifeboat provision is for 67 personnel. In the event that the port side lifeboats are inaccessible AND the starboard side aft lifeboat fails to launch, personnel who are mustered at the TR would need to use alternative means of evacuation. This may include the forward lifeboat, which has capacity for 37. Clearly, even at the current 90 POB, this would not allow for lifeboat evacuation of all personnel and some would need to use liferafts instead. With an increased POB of 100, it is conceivable that an additional 10 personnel may need to use liferafts to evacuate. However, it is noted that this is judged to be an exceptionally low likelihood scenario.

Other than this, no issues have been raised relating to the provision of escape, evacuation and rescue facilities – the lifeboat, liferaft, lifejacket and immersion suit provision is suitable for the increased POB.

The bed capacity on SeaRose is for a maximum of 120 POB. It is intended that the 10 campaign maintenance personnel would be accommodated in the 4 x (3-man) cabins on U-deck. As the campaign crew will work night-shift, this will minimise disruption to other personnel on board. Therefore, despite the additional POB, there would be no requirement for cabin sharing and there should be no subsequent impact on personnel welfare among existing or campaign crews.

The benefit of conducting campaign maintenance during operational time would be to reduce the maintenance back-log, particularly in the ballast tanks, and therefore resolve issues before they escalate and lead to a hazardous event occurring.

Overall, it can be said that the campaign maintenance crew would not be at any higher risk than the existing FPSO crew. Increasing the POB would not have a detrimental effect on the existing crew. The FPSO's provision of lifesaving devices / EER equipment is suitably located and sufficient for the increased POB such that there should be no negative impact on the ability to evacuate personnel safely in the event of an emergency. There is benefit to be gained from actively managing the maintenance back log, particularly in the ballast tanks.

It can be considered that the risks associated with conducting maintenance campaigns can be considered to have been reduced to as low as reasonably practicable (ALARP).

# 9. Recommendations

The following recommendations have been made based on this assessment.

1) The lifeboat capacity is based on 100kg/person – average personnel weights should be continually monitored and, should it rise above 100kg/person, the nominal capacity of the lifeboats should be adjusted and the sufficiency of the provision should be confirmed. Clearly at 100POB, there is less redundancy in capacity than at 90POB.
2) The impacts on risk levels have been shown to be minimal and it may be sufficient for this summary to be signposted from the existing safety plan to cover periods where the campaign maintenance crew are present. However, if the move to 100 POB were to become permanent, the associated safety studies (QRA, EERA, Safety Plan etc.) should be updated to reflect the revised POB.

# 10. References


1 Helicopter Crash Risk Assessment, 1987-4VER-0004, December 2023

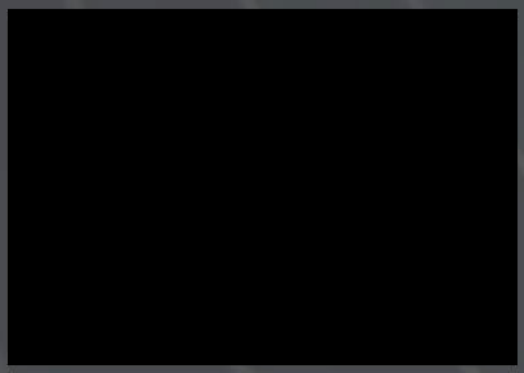
2 Forward Lifeboat Assessment, 1987-TN-500 (DRAFT), March 2025

3 SeaRose FPSO Escape. Evacuation and Rescue Assessment, WR-HSE-RP-0007, December 2017

4 SFPE of Fire Protection Engineering Handbook, 2nd Edn NFPA 1995

5 SeaRose FPSO Quantitative Risk Assessment, 1987-4VER-0003 Rev A2, November 2024

6 Husky Oil Operations Limited, SeaRose Oilfield Development Application, Volume 5 Preliminary Safety Plan and Concept Safety Analysis, January 2001




St. John's

# POB 100 Proposal
# June 2025

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# Agenda

- POB 100 Proposal
- Why?
- Safety Considerations
- Mental Health & Wellness
- Next Steps

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# Proposal – POB 100 during Production

**Operating between 91 and 100 POB** will be **restricted** to scopes requiring significant execution hours, with VP Operations approval

- Immediate need is related to Water Ballast Tank coatings with consideration to be given to Cargo Oil Tank coatings/valve repairs and Steam & Condensate piping repairs
- There is no intent, nor would approval be granted, to operate at POB 100 without justification

**Duration** will be scope specific and would be expected to stretch into 2026

- Once the Dedicated Field Support Vessel (Walk to Work capable) is delivered in March 2027, there will be more flexibility to campaign scopes without increasing SeaRose POB, outside of ice season

**Adhoc resources** assigned to the specific approved scope would be briefed on shift allocation, room assignments and sleeping arrangements **prior to offshore travel**

- Careful planning of room allocation required to balance night shift and day shift to alleviate demand on accommodations amenities
- Only rooms meeting storage requirements for 3 people will be allocated

**Additional ECC Resource** to be mobilized when **operating above POB 90**

# Why Now?

**LED Carryover and Repair Scopes**

- As part of the post LED production re-start, C-NLOPB and DNV set clear expectations for Cenovus to execute carryover in a timely manner while maintaining safe operations, with:
  - Life Extension Operating Authorization Renewal – July 31st, 2025
  - 5 Yearly Certifying Authority Renewal – August 16th, 2025
- Impactful carryover and repair scopes include:
  - Water Ballast Tank Coatings, Cargo Oil Tank Suction Valve Repairs and Coatings, Steam System Repairs, Fabric Maintenance

**Backlog Management & West White Rose Considerations**

- SeaRose is the heart of the White Rose Field, maintaining safe and reliable operations is and will remain the highest priority
- Executing planned and corrective maintenance, along with LED carryover/repairs has been very challenging
  - We need to acknowledge that SeaRose is an aging asset; it is reasonable to anticipate increased break-in and fabric maintenance needs
  - Executing preventative and corrective maintenance on time is critical to safe operations
- West White Rose requirements are fast approaching. Planning SeaRose maintenance and outages will become more complex in the very near term
  - October 20, 2025 - first gas from SeaRose to WWR
  - April 14, 2026 - first oil from WWR to SeaRose

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# Backlog Overview – POB 100 during Production

**SeaRose Backlog (Click Here to View Hour Details)**

| Type | Current Hours | Current - 7 days | Current - 7 Variance | ▲/▼ |
|---|---|---|---|---|
| Planned Backlog Hours | 3,156 | 3,288 | -132 | ▼ |
| Corrective Restore Hours | 18,292 | 18,007 | 285 | ▲ |
| Corrective PM Hours | 23,665 | 22,374 | 1,291 | ▲ |
| Engineering Mod Hours | 27,142 | 28,135 | -994 | ▼ |
| Total | 72,255 | 71,804 | 450 | ▲ |

**SeaRose Backlog SCE (Click Here to View SCE Hour Details)**

| Type | Current Hours | Current - 7 Days | Current - 7 Variance | ▲/▼ |
|---|---|---|---|---|
| Planned Backlog Hours - SCE | 2,008 | 1,920 | 88 | ▲ |
| Corrective Restore Hours - SCE | 5,806 | 5,963 | -158 | ▼ |
| Corrective PM Hours - SCE | 8,030 | 7,523 | 507 | ▲ |
| Engineering Mod Hours - SCE | 662 | 662 | 0 | - |
| Total | 16,505 | 16,068 | 437 | ▲ |

**~ 30,000 hours added since March 31 related to:**

- WBT coatings, Flash Gas and Flare Optimization
- Additional hours anticipated with turnaround planning ongoing, including COT valve repairs

**Forecast to end of 2025 (excluding new corrective work) = 140,000 hours**

- To reduce to 40,000 hours by end of 2025 46 personnel working on tools would be required

SeaRose Backlog Dashboard



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# Safety Considerations – POB 100 during Production

SeaRose Safety Study updated by Subject Matter Experts, Kent, to confirm Risk Impact of POB increase from 90 to 100, scope included:

> **An overview of the impact that an increased POB may have on the overall risk profile for the FPSO. In addition, this study looks at the suitability of existing / proposed Escape, Evacuation and Rescue (EER) equipment on board to accommodate the additional personnel.**
>
> **The ultimate aim of this assessment is to determine if the risks to all personnel working on the SeaRose can continue to be considered ALARP and that the increase in POB would not have a significant impact on the FPSO's risk profile or on the ability to safely and efficiently evacuate personnel in the event of an emergency situation.**

The Assessment concluded:

> **Risk parameters remain well below the relevant Target Level of Safety. There is no measurable impact on the risk profile for the existing crew on the FPSO – in other words, the presence of the additional campaign maintenance crew personnel does not adversely affect the risk profile of those already working on the SeaRose FPSO.**

# Mental Health & Wellness – POB 100 during Production

Concerns and feedback related to mental health and wellness are taken seriously with consideration to:

- Guideline for the Occupational Health and Safety Regulations, Section 63, OHSguideline2022.pdf
- Finding the balance between crew comfort and maintaining SeaRose with the highest safety standard and reliable operations
- Utilizing existing processes, including Fatigue Risk Management (AR-M-99-X-ST-00011-001)

Adhoc resources from 91 to 100 POB are planned for day shift to mitigate fatigue and improve sleep quality based on previous learnings

- Day and Night shifts will be balanced to mitigate demand on accommodation spaces, where practicable
  - Onshore to support Camp Boss with bed allocation planning in parallel with offshore scope planning, prior to offshore mobilization

***Constructive, solution focused feedback from the offshore team is kindly requested; We need to work together to meet the high volume of work, both upcoming and in backlog, remaining focused on safe and reliable operations***

# Next Steps – POB 100 during Production

- Request feedback and suggestions from SeaRose JOHSC Committee and Crew
- Once aligned, request approval to operate with maximum POB 100 from both the C-NLOPB and our Certifying Authority, DNV (including updating of required documentation)
- Discuss and obtain agreement from adhoc resources prior to offshore mobilization for approved scopes



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# Thank you

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# Backlog Estimate Post Re-start (January 2025)