

**SUNCOR ENERGY INC. REGULATORY QUERY FORM**

<b>RQF No: 313</b>	<b>Description:</b> <b>Fixed Ladders – Support Intervals</b>	<b>PAGE:</b> 1 of 3
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<b>Applicant</b> Suncor Energy		<b>Project</b> Terra Nova		<b>Installation</b> Terra Nova FPSO	
<b>RQF Category Code:</b>	<b>3</b>	1) Clarification 3) Equivalent Arrangement		2) Contradiction 4) Exemption	
<b>Jurisdictional Auth.</b>	<b>1</b>	1) C-NLOPB	2) Transport Canada	3) Classification Society	
<b>Regulation:</b>	Canada – Newfoundland and Labrador Offshore Area Occupational Health and Safety Regulations			<b>Section:</b>	101(1)(b)
				<b>Issue Date:</b>	Jan 1, 2022

**Regulatory Requirement:**

**PART 20**  
**Ladders, Stairs and Ramps**

**Fixed Ladders**

101 (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,

(b) is securely held in place at the top and bottom and at intervals of not more than 3 m

**The undersigned concur with this proposal:**

RQ Originator	_____	Date:	_____
RQ Owner	_____	Date:	_____
Team Leader Env. & Reg.	_____	Date:	_____
Team Leader Safety	_____	Date:	_____
Director Eng., Ops., or Drilling	_____	Date:	_____

<b>Certifying/Classification Body</b>	<b>Transport Canada:</b>	<b>C-NLOPB Decision:</b>

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### **Proposed Deviation from Regulations:**

The Terra Nova FPSO existing fixed ladders for the topsides and turret modules have been designed based on top and bottom supporting arrangements with flexibility in the requirement for intermediate supports. Terra Nova FPSO standard ladder details allow for support spacings or unrestrained heights greater than the maximum support spacing of 3m as required by the 'Canada – Newfoundland and Labrador Offshore Area Occupational Health and Safety Regulations' section 101(1)(b).

It is proposed that the existing fixed ladder designs be accepted as meeting an equivalent level of safety to that required by the subject Regulation. The existing ladders have been designed to suit maximum anticipated loads combined with actual support spacings and are supported by calculations demonstrating acceptable structural integrity.

### **Reason for the Deviation:**

The existing Terra Nova FPSO topsides and turret fixed ladders have been designed to suit varying support spacings and are not all in compliance with the subject regulation requirement. In some cases, due to the inherent design characteristics of topside module structures, it would not be physically possible to meet the regulation as there are no adjacent structures for which to attach intermediate supports.

### **Discussion on how the proposed deviation reduces risk to ALARP**

The Terra Nova FPSO topsides and turret fixed ladders have been designed to support maximum anticipated loads, as is required by section 98(1) of the 'Canada – Newfoundland and Labrador Offshore Area Occupational Health and Safety Regulations'. Design loads for ladders are in accordance with Terra Nova project design basis(s) which define the anticipated usage or occupancy loads and site-specific environmental loads. While support spacing may exceed the 3m maximum per section 101(1)(b) of the Regulations, ladder side rail members and supports have been designed or sized accordingly based on the maximum anticipated loads combined with actual support spacings. Standard ladder details include several ladder types based on different support spacing or unrestrained height limitations, each type with individual member sizing as required to meet structural strength in accordance with the code requirements of CAN/CSA S16:19 – 'Design of Steel Structures' and CAN/CSA ISO 19902:20 – 'Petroleum and Natural Gas Industries – Fixed Steel Offshore Structures'. Ladder design details and supporting calculations have been reviewed and accepted by the Certifying Authority for the Terra Nova.

In further support of the RQ proposal, it is noted that other industry standards allow for variations in fixed ladder support spacing based on design. For example, reference is made to ANSI-ASC A14.3-2018 – 'American National Standard for Ladders – Fixed – Safety Requirements', a guidance document referred by the 'Guideline for the Occupational Health and Safety Regulations'. Section 5.2.4.1 of ANSI-ASC A14.3, similar to section 101(1)(b) of the Canada – Newfoundland and Labrador Offshore Area Occupational Health and Safety Regulations, recommends a maximum support spacing for fastening steel ladder side rails of 10ft (3m); however, the requirement is noted to be for a specifically defined minimum size (cross section) of side rails per section 5.2.2.2 of ANSI-ASC A14.3. It is further noted in section

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5.2.2.1.b of ANSI-ASC A14.3 that "...for spacing of supports that exceeds the maximum spacing recommended, the maximum size of side rails shall be increased in accordance with recognized design practice." For reference, all Terra Nova topsides and turret fixed ladders have side rail member sizes greater than the minimum size specified by ANSI-ASC A14.3, with further increased member size for support spacings beyond 3m; additionally, the loads used for structural design of the ladders are considered to meet or exceed the design loads specified by ANSI-ASC A14.3.

Finally, it is noted that fixed ladders are part of the Structural Integrity Management Program for the Terra Nova FPSO and included in annual general surveys to ensure continued in-service integrity.

**Other Relevant Documents (not for approval):**

## Reference Documents:

- TN-BR-ST66-M00-008-01 – Standard Details – Ladders, Safety Cages and Fixing Details Sheet '1'
- TN-BR-ST66-M00-008-02 – Standard Details – Ladders, Safety Cages and Fixing Details Sheet '2'
- TN-BR-ST66-M00-008-03 – Standard Details – Ladders, Safety Cages and Fixing Details Sheet '3'
- TN-SO-ST59-M01-007-01 – Miscellaneous Upper Turret Structure Ladder Details
- TN-SO-ST59-M01-008-01 – Miscellaneous Upper Turret Structure Ladder Details
- TN-SO-ST59-M01-010-01 – Miscellaneous Main Turret Ladder Details
- TN-SO-ST59-M01-011-01 – Miscellaneous Main Turret Ladder Details
- TN-FS-ST15-X00-001 – Terra Nova FPSO Topsides Fixed Ladders Structural Calculations
- ANSI-ASC A14.3-2018 – American National Standard for Ladders – Fixed – Safety Requirements