



ENVIRONMENTAL PROTECTION AUTHORITY

Review of Evidence Statements against Key Questions

Application Ref No.: EEZ100016

Technical Review & Analysis of Operational Activities associated with Sidetrack Development Drilling & Marine Discharge Consent

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Document No.: D0010-OPS-REP-GN-0002		Revision: 0		Date Issued: 30/08/2018	
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Document History					
Rev	Date	Description	Prepared	Checked	Approved
0	30/08/18	Issued as FINAL to EPA-NZ	FB	BS	PW



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1.0 INTRODUCTION AND SUMMARY

My name is Frank Lyle Broomhead and I am a Senior Operations Consultant employed by Oil & Gas Solutions Pty Ltd for the purpose of undertaking a technical review and analysis on information specified in the Tamarind Marine Consent application no. EEZ100016.

I have previous experience in the Electrical and Instrument and Control field in the papermaking industry in Scotland, the steel industry in South Africa and the sugar refining industry in Swaziland before joining Shell B.P. Todd in New Zealand in 1974.

In 2010, I completed thirty-six years of service with Shell companies worldwide involved in both the onshore and offshore environments at a supervisory and senior management level.

I joined Shell BP Todd in 1974 as an Electrical and Instrument Control Supervisor at the Kapuni Field before making the transition to Production Operations in 1978 and working in the Maui Field as Operations Supervisor involved in the commissioning and start-up of the Maui Production Station (MPS).

I transferred to Petroleum Development Oman (PDO) in 1980 and was Production Supervisor at the onshore oil and gas facilities at Fahud and Qarn Alam.

I returned to New Zealand in 1984 as Kapuni Field Superintendent until 1987 when I moved to The Netherlands and joined Nederlandse Aardolie Maatschappij (NAM) BV as Onshore Platform Manager responsible for three gas and condensate platforms in the Dutch sector of the North Sea.

In 1990, I transferred to Shell Expro, Aberdeen as Offshore Installation Manager (OIM) on the Brent Delta. I remained there until 1993 when I returned to New Zealand and took the position of Maui Field Superintendent, responsible for Maui-A (MPA), Maui-B (MPB) and MPS. This included the manning, commissioning and steady state operation of the new Floating Production and Storage Offloading (FPSO) facility. I also transitioned MPB to a Not Normally Manned (NNM) installation.

In 1998 I left New Zealand to take a position on the Camisea Project in Peru as Onshore Coastal Facilities Manager based in Houston in the USA, where the design office for this project was located.

The Camisea project was later deferred so in 1998 I transferred to the Malampaya project as Platform Manager. The design office for this project was also in a Houston. I later relocated to Singapore where the construction of the Malampaya platform was being carried out and then to The Philippines where I was responsible for establishing the offshore procedures and business processes for the project, the technical training of local staff and the handover from Projects to Production Operations. I finished with the project in 2004 having achieved the position of Operations Manager, responsible for the onshore and offshore facilities.

In 2004, I transferred to the Sakhalin Energy Investment Company (SEIC) on the Sakhalin project in Russia and remained there until 2008 as Upstream Operations Readiness Manager, responsible for managing the handover of two offshore platforms, an onshore gas plant and two 800 km pipelines from Projects to Production Operations. I also established a suite of policies and procedures covering operations and maintenance, Permit to Work (PTW), Health, Safety and Environmental (HSE) in preparation for the handover from Project to steady state operations. In addition, I developed and implemented a technical competency system for local staff. I was also responsible for negotiating and managing the transition of the two pipelines and SEIC staff to Gazprom, a Russian energy company.

In 2008 I joined the North Caspian Operating Company (NCOC) Kashagan project in Kazakhstan charged with managing the transition of all responsibilities from the current operator to NCOC. I later



became Technical Capability Manager, establishing a technical competency framework for local staff. During this time, I assisted the Shell Learning and Development department in The Hague in building competency profiles for technicians.

I was also involved with local government and other agencies associated with the project and technical competency training. I left Kazakhstan and Shell service in 2010.

From 2010 to 2016, I provided consultancy services through a third-party consultancy company Wood Group ODL as a Senior Operations Consultant. During this time, I provided services to Apache, Chevron and INPEX which covered the development of documentation management systems and I carried out a manning study for Bumi Armada. In addition, I project managed an offshore organisation and efficiency review on behalf of Wood Group ODL prior to a major reorganisation by Repsol – Talisman in Malaysia.

I also provided consultancy services to OMV, again through the third-party consultancy company Wood Group ODL. I was not directly employed by OMV. The services provided covered the development of an Operations Readiness Assurance (ORA) Graduate Training toolkit for OMV corporate in Austria. This was a short-term assignment, conducted over 1 month in July/August 2012 and was completed on 17th August 2012. Under a separate assignment through Wood Group ODL, I also developed Performance Standards for Safety Critical Elements on for OMV corporate in Austria. This was also a short-term assignment, conducted over 1 month in May 2013 and was completed on 4th June 2013. I am not providing any ongoing support to OMV.

I have also worked independently on a review of BHP assurance processes on a mining project, assisting Lloyds Register Energy Drilling on developing an assurance process and for Woodside Energy in a 'cold eye' review of operating expenditure.

More recently, I have provided consultancy services to AWE Limited through a third-party consultancy company, Oil & Gas Solutions Pty Ltd. I was not directly employed by AWE Limited. The services provided covered the Operability & Maintainability review of the Front End Engineering Design of a new onshore natural gas processing facility, the Waitsia Gas Plant (WGP) in the Northern Perth Basin approximately 360km from Perth which will provide conditioning of raw gas to sales gas quality prior to export to gas distribution pipelines. This was a short-term consultancy assignment, conducted over 1 month in March 2017 and was completed on 31st March 2017. Under a separate assignment through Oil & Gas Solutions Pty Ltd, I also conducted an audit of the Computerised Maintenance Management System (CMMS) used on the current AWE Perth Basin Operational assets of Xyris and Dongara, also situated in the Northern Perth Basin. This was a short-term assignment and was conducted over a 2-week period in April/May 2018, with the work completed on 4th May 2018.

I was a member of the Instrument & Control panel (NZ) setting the curriculum for Instrument & Control apprenticeship schemes. I have presented papers in New Zealand on Dual-Skilling and in Kazakhstan on developing a technical competency framework.

My qualifications are:

- a) New Zealand University Diploma in Industrial Production.
- b) U.K. Full Technological Certificate (Credit) – Electrical Installation Work.
- c) U.K. Technological Certificate (Credit) – Industrial Measurement & Control.
- d) Management of Major Emergencies (Offshore Installation Manager assessment) – Health and Safety Executive U.K.



2.0 EXPERT WITNESS

I confirm that I have read and comply with Environment Court Practice Note 2014 and Section 7 Code of Conduct for expert witnesses.

3.0 SUMMARY OF FINDINGS

The following documents have been referenced in respect to the Tamarind Tui Development Drilling Applications (EEZ100016) and the review of evidence statements against key questions.

1. Final Assessment Report on Application Reference No. EEZ100016 by OGS. Document No. D0010-OPS-REP-GN-0001 (Rev 1), dated 22/05/2018.
2. EPA Key Issues Report, EEZ100016, dated July 2018 by Jack O’Carroll.
3. Tamarind Response to the Board’s Request for Further Information under section 54 EEZ Act and Other Further Information – Notified Marine Consent and Marine Discharge Consent Applications. Document reference 0435786, dated July 2018.
4. Statement of non-expert evidence of Iain Alastair McCallum for Tamarind Taranaki Limited, dated 20 July 2018.
5. Statement of Evidence of Jason Lee Peacock for Tamarind Taranaki Limited, dated 20 July 2018.
6. Environmental Protection Authority letter by Richard Johnson, Manager EEZ Applications file reference EEZ100016, dated 10 July 2018.

The final assessment report (Document No. D0010-OPS-REP-GN-0001, Rev 1) contained 24 questions all assigned a significance level to guide the Board of Inquiry in obtaining answers based on the following:

RED: Obtaining answers to these clarifications is critical to understanding the proposed activities

AMBER: Obtaining answers to these clarifications would be valuable in understanding the proposed activities

GREEN: Obtaining answers to these clarifications would provide insight towards understanding the proposed activities

A description of the level assigned is given in section 4.

The status of the number of original questions, their level of significance and the number outstanding is provided below.

SIGNIFICANCE LEVEL	NUMBER	CLOSED	OUTSTANDING
	6	3	3
	13	8	5
	5	2	3

4.0 REVIEW OF EVIDENCE STATEMENTS AGAINST QUESTIONS RAISED

The questions listed below have been extracted from the clarification register (Refer OGS Assessment Report, document No. D0010-OPS-REP-GN-001(Rev 1), dated 22 July 2018, appendix 6).

Please note that references in bold text relate to the Tamarind Marine Consent application no. EEZ100016. For completeness, the relevant section in the OGS Assessment Report is also referenced.

All questions were previously assigned a significance level to guide the Board of Inquiry based on the following:

RED: Obtaining answers to these clarifications is critical to understanding the proposed activities

AMBER: Obtaining answers to these clarifications would be valuable in understanding the proposed activities

GREEN: Obtaining answers to these clarifications would provide insight towards understanding the proposed activities

1	5.0 para 2, p10 3.2.1 para 4, p49	Advise the final number of anchors and the chain/anchor spread to be used by the rig once the rig has been chosen.
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In the statement made by Tamarind (Reference document 0435786, paragraph 3.1.2, dated July 2018) it describes the Hai Yang Shi You 982 Rig (**HYSY 982 Rig**) as the preferred semi-submersible rig that will be secured for the work outlined in the marine consent applications. Tamarind confirms that a total of eight (8) anchors will be attached to the drilling rig and four (4) anchors will be attached to the blow out preventer (BOP).

It is also stated that if the **HYSY 982 Rig** is not available, then an alternative but comparable rig will be sourced with the total number of anchors and the planned mooring arrangement remaining unchanged.

In addition, the statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 2.11, 2.16 and appendix 4 – Anchor and chain disturbance schematic) also supports the semi-submersible drilling rig to be secured, the total number of chains and the mooring arrangement as mentioned above.

It is further stated by Iain Alastair McCallum that additional mooring analysis work and stability and movement of the riser and BOP expected in the met ocean conditions in the South Taranaki Bight has supported the total number of anchors attached to the rig and BOP and is recognized as best practice when intervening on existing facilities. (Reference statement dated 20 July 2018, paragraph 2.16).

Conclusion: Advise if the mooring analysis addressed the failure of one anchor leg and the resultant effect on the position of the semi-submersible rig.

2	5.0 para 5, p10 3.6.1 para 4, p66	Provide a list of the bunded containers and their contents once the semi-submersible rig has been chosen.
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In Iain Alastair McCallum’s statement covering a list of the bunded containers and their contents (Reference statement dated 20 July 2018, paragraph 3.16 and 3.17), it is mentioned that any containers holding chemicals that are lifted from a supply boat would be sealed and would have the ability to contain any spills caused by damage to sacks or drums. Additional precautions are also taken below decks to ensure that the containers are unloaded in a dry environment.

It is stated that the **HYSY 982 Rig** will be set up with large storage areas and chemicals segregated for safety reasons. Tamarind will also further segregate and clearly mark any ecotoxic chemicals as per the offshore processing and drainage management plan.

Whilst a list of bunded containers and their contents have not been provided, a schematic of the **HYSY 982 Rig** drain system Appendix 2 provides a view of the bunded areas and the general type of containers in those areas.

In addition, the statement made by Tamarind (Reference document 0435786, dated July 2018, paragraph 6.1 pages 24 - 27) states that the exact chemicals that would be used on board the rig could not be confirmed at this time as the information is not available but that it will be provided when known.

Conclusion: The question has been adequately addressed but requires further action by Tamarind to inform the Board of Inquiry once the exact chemicals are identified.

3	5.0, para 9, p10 1.2.4 Figure 1.2, p6	Confirm that the FPSO swing radius including any offtake tanker will not interfere with the semi-submersible drilling campaign.
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No schematic or distance has been provided to ascertain if there is any potential conflict between the FPSO Umuroa operation and the drilling activities.

The non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 2.87) states that general field activities may occur, which involves the FPSO. The FPSO activities and any interface issues that arise between the FPSO, drilling rig and support vessels will be managed by the introduction of a Simultaneous Operations (SIMOPS) document. This document will ensure that all parties are aware of the various work scopes, operations and designated responsibilities.

Conclusion: The question has not been adequately addressed and requires further information on the FPSO swing radius, including any offtake tanker and the semi-submersible drilling rig before it can be closed out.

4	5.1 para 9, p10 7.2.1 Bullet 13, p155	As the semi-submersible rig cannot pull away from the well in an emergency on the rig or in the event of a well integrity issue, what changes will be made to current Emergency Procedures/SIMOPS, MOPO etc. to prevent escalation?
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It is stated by Tamarind that a Safety Case has been submitted to and approved by Worksafe NZ (High Hazards Unit) covering all aspects of the drilling rig operations (Reference document 0435786, dated July 2018, paragraph 2 .2 b).

In addition, an Oil Spill Contingency Plan (OSCP) identifying the controls to avoid or minimize a marine oil spill, response organization and measures to a marine oil spill associated with the activities, and including a Well Control Contingency Plan has also been submitted to and approved by Maritime NZ (Reference document 0435786, dated July 2018, paragraph 2 .2 c).

In addition, the non-expert evidence given by Iain Alastair McCallum states that a worst case well control incident has been modelled, resulting in the development of various critical documents and bridging documents between Tamarind and the Drilling Contractor (Reference statement dated 20 July 2018, section 4 – Spill Response Plan

Conclusion: The question has been satisfactorily addressed. No further action required.

5	5.1 Bullet 4, p11 3.3.1 para 1, p60	What procedure will be put in place should communication between the rig and the Intervention and Workover Control System (IWOCS) fail?
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No answer has been received to this question.

The non-expert evidence given by Iain Alastair McCallum states that once the rig is on location that a remote operated vehicle (ROV) will be launched from the drilling rig to inspect the production tree to assure the integrity of the electrical and hydraulic connections (Reference statement dated 20 July 2018, paragraph 2.33).

It is further stated that the majority of valves and control systems in the BOP have multiple redundant systems and are designed to fail in closed position (Reference statement dated 20 July 2018, paragraph 2.37).

The BOP and marine riser are also pressure and function-tested prior to entering the well (Reference statement dated 20 July 2018, paragraph 2.40).

Conclusion: Provide clarification on the redundancy built into the IWOCS i.e. control pods, umbilical's and the automatic shut in sequence in the event of a failure.

6	5.1 Bullet 6, p11 No Reference	Will modelling be carried out to assess the risk to the semi-submersible rig associated with seismic events?
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No answer has been received to this question.

Taranaki is an earthquake prone province and there have been incidences of seismic events occurring offshore.

Conclusion: Provide evidence that this has been modelled or a risk assessment carried out as part of the rig safety case to ensure the proper response and safety checks are carried out following a seismic event, which directly affects the drilling rig and its activities.



7	6.1.1 para 1, p13 No Reference	Will any modification or repair work carried out to the rig or any of its systems in the field be subject to a Management of Change (MOC) review by Tamarind or by a recognised certifying authority to ensure vessel classification is maintained?
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This was not answered directly. However, the statement of non-expert evidence given by Iain Alastair McCallum states that a number of management systems are implemented by Tamarind to ensure the integrity of the subsea Tui facilities. These measures are documented and approved via the FPSO Safety Case and Certificate of Fitness (Reference statement dated 20 July 2018, paragraph 5.2).

A statement of evidence of Jason Lee Peacock (reference statement dated 20 July 2018, paragraph 3.11) states that the operation, maintenance and modification of the offshore assets is undertaken in accordance with the requirements of all relevant legislation.

It is also stated by Iain Alistair McCallum (Reference statement dated 20 July 2018, paragraph 5.2) that the semi-submersible drilling rig will also adhere to these measures with a Safety Case and Certificate of Fitness to operate in New Zealand waters.

Conclusion: It is normal practice to mention Management of Change (MOC) in the Safety Case and include a MOC procedure in the Safety Management System (SMS). The MOC procedure details the process to follow when a design or hardware change has been carried out. No further action required.

8	6.1.2 para 1, p13 No Reference	Is data available from previous semi-submersible rig installations in the area to supplement the existing geotechnical data and allow lessons learned to be included in the planning process?
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No specific response was received from Tamarind. However, the statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 2.18 and Appendix 3) provides a clear picture of the installation and removal of the drilling rig.

In addition, the analysis and stability work mentioned in question 1 also provides a degree of assurance that every avenue has been explored to gather information.

Conclusion: No further action is required.

9	6.1.3 para 1, p13 No Reference	Will the ROV carry out a survey to ensure there are no objects, which could interfere with placement of the anchor spread?
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The statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 2.19) states that the anchoring locations and seabed character within the Tui field are well understood from previous extensive side-scan sonar imaging, ROV surveys and an EPA approved Environmental Effects Monitoring Plan under consent EEZ300006.

It is not planned to conduct further baseline monitoring other than that already scheduled within the Environmental Effects Monitoring Plan.

Conclusion: No further action is required.

10	6.1.3 para 5, p13 No Reference	What weather limits will be imposed e.g. wind, current, sea-state to allow the safe operation for laying and retrieval of the anchor spread?
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No answer has been received from Tamarind. A statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 2.79) does mention adverse weather conditions that may result in the suspension of drilling operations but no limits are provided.

It is important that those carrying out pre and post drilling activities know the operational envelope that they can work within.

Conclusion: Provide the weather limits that will be imposed on the laying and retrieval of the anchor spread.

11	6.1.4 para 3, p14 No Reference	Has there been any integrity issues recorded on the ballast control system of the chosen rig?
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The Hai Yang Shi You 982 Rig (**HYSY 982 Rig**) has been identified as the semi-submersible rig that will be secured for the work outlined in the marine consent applications. It is assumed that the rig will hold a Certificate of Fitness to operate in NZ waters as mention above in question 7 above, which would include the ballast control system.

Conclusion: Tamarind to supply the Board of Inquiry with the maintenance and repair records of the ballast control system and the log relating to any incidents concerning the system.

12	6.2 para 3, p14 3.1 para 5, p45	What activities will be carried out when returning the well to service and what handover procedures will be put in place?
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A statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 2.70 and 2.72) states that the ROV will complete a final survey of the production tree and surrounding area and any adverse effects recorded and action taken to remedy any situation if required.

The well will be handed back over to the FPSO under a formal handover process. It is further stated that production will not start until the drilling rig is mover from the well location.

Conclusion: No further action is required.

13	6.4 para 2, p15 3.4 para 3, p61	Will a vessel remain in the field to cover emergency response duties e.g. man overboard, spill response?
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A statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 2.81 and 2.82) states that the throughout the drilling activities, logistics support

will be required in the form of support and supply vessels and helicopters and the support vessels will undertake a variety of tasks including those mentioned above.

Conclusion: No further action is required.

14	6.4 para 3, p14 3.4 para 3, p61	Will any of the support/supply vessels be fitted out with spill containment equipment e.g. chemicals, booms, skimmers?
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A statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 4.10) states that the support vessels will carry spill response equipment to respond to a Tier 1 spill or for first strike response in the case of a more significant spill incident.

A statement of evidence of Jason Lee Peacock (reference statement dated 20 July 2018, paragraph 3.23, 3.24 and 3.25) states that the FPSO Umuroa has spill response equipment and a spill tracking buoy which can be deployed. Also, Tamarind has access to dispersant, which can be deployed in the field by either by a dedicated supply vessel or by helicopter. Similar resources will be provided by the drilling contractor and located on the drilling rig during the entire development program.

Conclusion: No further action is required.

15	6.5.1 para 2, p15 6.6.3 Bullet 7, p138	Will placement of a temporary structure be required to allow the ROV to hold position for extended periods?
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A statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 2.33) states that the ROV will be launched from the drilling rig to carry out specific activities.

The non-expert evidence given by Iain Alastair McCallum also illustrates the ROV tethering mechanism used from the rig in Appendix 3 - Drilling Operations.

In addition, a response to the Board's Request by Tamarind on the above subject (Reference document 0435786, dated July 2018, paragraph 3.4) states that no temporary structures will be placed on the seafloor with respect to the ROV operations.

Conclusion: Since no temporary structure will be required, no further action is required.

16	6.5.1 para 4, p15 7.3 para 1, p165	Has consideration being given to the placement of any protective devices to mitigate against potential damage to flowlines and the umbilical during activities associated with the drilling campaign?
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A response to the Board's Request by Tamarind on the above subject (Reference document 0435786, dated July 2018, paragraph 3.5) states that no protective structures are required for the existing flowlines or umbilical's in the Tui Field. In all cases, any existing structures will be avoided during anchoring.

Conclusion: No further action is required.

17	6.5.3 para 3, p15 3.6 para 7, p65	Provide a comprehensive list of chemicals and their hazard characteristics once known.
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A definitive response to this question has not been received. However, a statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 3.24) makes mention to the effect that Tamarind has, to the greatest extent practicable, engineered out all hazardous substances from the fluids systems and to systematically reduce the chemicals to a minimum.

In statement, Tamarind confirmed that certain hazardous substances will be used within the fluids systems (Reference statement dated 20 July 2018, paragraph 3.25).

A statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 3.32) also mentions that small amounts of hazardous substances may be contained in the cement.

Conclusion: Tamarind to advise the Board of Inquiry once the comprehensive list of chemicals and their hazard characteristics are known.

18	6.5.3 para 1, p16 No Reference	Provide information on the calibration regime put in place to ensure the oil detector is properly maintained.
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No response received. A statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 3.2 and 3.9) mentions the use of oil in water sensors in the non-hazardous and hazardous drain systems. This is further illustrated in Appendix 2 – HYSY 982 Rig Drain System.

Conclusion: Tamarind to advise the Board of Inquiry on the calibration regime put in place once the manufacturer of the sensor is known.

19	6.5.3 para 1, p16 3.6.1 Fig 3.7, p67	How are the solids collected and where do the solids go as they build up in the collection tank?
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A statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 3.1) states that the HYSY 982 rig and any comparable rig will have a similar pollution control systems and equipment installed. Appendix 2 – HYSY 982 Rig Drain System shows a diagram of these systems.

It is further stated that collected waste will be pumped from the holding tanks to supply vessels and returned to shore for assessment and then disposed of by a specialized contractor at a consented location (Reference statement dated 20 July 2018, paragraph 3.8). This method of disposal is also shown in appendix 2.

Conclusion: No further action is required.

20	6.5.3 para 2, p16 3.6 para 6, p67	Provide a schematic of the actual deck drainage system once the semi-submersible rig has been chosen.
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A response to the Board's Request by Tamarind on the above subject (Reference document 0435786, dated July 2018, paragraph 3.3) states that Tamarind were unable to provide full details of the deck drain system at the time as the specific rig to be utilized had not yet been confirmed. However, Tamarind now anticipates using the **HYSY 982 Rig** or a comparable semi-submersible mobile offshore drilling unit.

The non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 3.5) depicts the non-hazardous drain system, hazardous drain system and the enclosed drain system, in appendix 2 - HYSY 982 Rig Drain System.

Conclusion: No further action is required.

21	6.5.3 para 4, p16 7.1.1 para 2, p146	What spill response training will be provided to the personnel on the rig?
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Tamarind has not responded specifically to this but statement of evidence of Jason Lee Peacock (Reference statement of evidence dated 20 July 2018, paragraph 3.22 and 3.27) states that the drilling contractor of any rig operation in the Tui Field would be required to address spill contingency planning as part of a project specific Spill Contingency Plan.

It further states that Tamarind undertakes a range of activities to provide training and raise awareness of staff with respect to spill response on the FPSO. This includes information presented and discussed at monthly HSE meetings, formal training in areas of spill awareness, equipment and aerial surveillances.

Tamarind staff is also regularly involved in spill response combined exercises with Maritime NZ and the Taranaki Regional Council.

A statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 4.6) also supports the premise that the rig will have an approved spill contingency plan and that emergency response arrangements will be bridged with Tamarind's.

Conclusion: Advise if oil spill response training will be provided to personnel on the rig.

22	6.5.3 para 5, p16 7.1.1 para 2, p146	What will be the structure of the oil spill response team on the rig?
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No specific response received. However, there is adequate information contained in the statements of non-expert evidence of Iain Alastair McCallum and Jason Lee Peacock to ensure that the structure of any oil spill response team on the drilling rig will meet Tamarind standards and that of Maritime NZ.

Conclusion: No further action is required.

23	6.5.3 para 6, p16 3.6.1 para 5, p66	In the event of a spill on the rig, how will the insertion and removal of temporary bungs be controlled to ensure that the drain system is returned to normal operation?
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No response received. This activity needs to be captured and responsibilities clearly defined either in a specific procedure or in managing the risks through the Permit to Work system on the rig drilling.

Conclusion: Tamarind to advise the Board of Inquiry how this activity will be managed.

24	6.5.3 para 7, p16 3.6.1 para 8, p66	If the rig does not have automated alarms to monitor oil-in-water content prior to discharge, what method or system will be used?
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A statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, paragraph 3.2 and 3.9) states that the drilling rig will have an alarm if an oil concentration of greater than 15 ppm (parts per million) is detected in the outlet from the non-hazardous and hazardous drain system oil / water separators. The discharge is automatically stopped on either of the two systems in the event of a higher concentration than 15 ppm being detected.

Also, in the statement of non-expert evidence given by Iain Alastair McCallum (Reference statement dated 20 July 2018, appendix 2 – HYSY 982 Rig Drain System), it shows the sensor and automatic shut off valve.

No alarm is shown connected to the sensor in the diagram but it is assumed that it exists.

Conclusion: No further action is required.