



NOPSEMA

Report

Petroleum Environmental Inspection

Titleholder	Timor Sea Oil and Gas Australia Pty Ltd
Petroleum Activity	Northern Endeavour FPSO
Environment Plan	Northern Endeavour FPSO Operations Environment Plan (Document No. 01-HSE-PL03, Revision 6 dated 3 October 2016)
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Abbreviations and Acronyms

ALARP	As Low As Reasonably Practicable
AMOSC	Australian Marine Oil Spill Centre
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
CEFAS	Centre for Environment, Fisheries and Aquaculture Science (United Kingdom)
CHARM	Chemical Hazard and Risk Management
DMP	Department of Mines and Petroleum (Western Australia)
EP	Environment Plan
EPS	Environmental Performance Standards
FPSO	Floating Production Storage and Offloading
IMT	Incident Management Team
NOGA	Northern Oil and Gas Australia Pty Ltd
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
OCNS	Offshore Chemical Notification Scheme
OPEP	Oil Pollution Emergency Plan
OPGGs Act	Offshore Petroleum and Greenhouse Gas Storage Act 2006
OSMP	Oil Spill Monitoring Plan
OSRL	Oil Spill Response Limited
PFW	Produced Formation Water
TOGA	Timor Sea Oil and Gas Australia Pty Ltd

1 Petroleum Environmental Inspections

NOPSEMA conducts petroleum environmental inspections as part of its legislated function to implement effective monitoring and enforcement strategies to ensure compliance with petroleum environmental law. Petroleum environmental inspections are undertaken by NOPSEMA inspectors appointed by NOPSEMA under Section 602 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGs Act).

This inspection report has been prepared in accordance with Schedule 2A, Part 2, Division 3 of the OPGGS Act. It presents the inspection team's:

- Conclusions from conducting the inspection, along with the reasons for these conclusions
- Recommendations arising from the inspection that have been raised to address non-compliance with petroleum environmental law and / or to draw the titleholder's attention to matters that are to be considered by the titleholder in relation to continuous improvement and good environmental management practice.

Note: Findings of compliance are not listed in this report.

2 Inspection Method

The inspection team prepared a petroleum environmental inspection brief and discussed this with Timor Sea Oil and Gas Australia prior to the inspection. The brief set out the proposed inspection scope and methodology.

The inspection related to the Northern Endeavour FPSO activity described in the in force Northern Endeavour FPSO Operations Environment Plan (Document No. 01-HSE-PL03, Revision 6 dated 3 October 2016).

The proposed scope for this inspection included:

- Item 1: Verification of oil spill response arrangements with third party service providers are in place to implement response strategies (Source Control);
- Item 2: Arrangements and preparedness for implementing an oil spill monitoring program, including in relation to service providers and relevant incident management team roles;
- Item 3: Test ongoing monitoring of environment performance and measures to ensure that impacts from PFW are reduced to ALARP and acceptable levels; and
- Item 4: Training and competence of Oil Spill Response personnel - Onshore Incident Management Team and Crisis Management Team.

The inspection also included a follow-up on actions initiated as a result of previous recommendations relevant to the activity.

On arrival at the premises, the inspection team held an opening meeting to discuss the format and process of the inspection. Prior to departing the premises the next day, an exit meeting was held to provide an overview of the preliminary inspection findings. Attendees at these meetings are listed in Attachment A.

The inspection team reviewed documented evidence relevant to the scope of the inspection, with the assistance of Timor Sea Oil and Gas Australia personnel. A list of documents inspected is provided in Attachment B.

3 Conclusions and Recommendations

It is noted that at the time of the inspection, that TOGA had been operating under the EP for a period of over 2 months. NOGA, the parent company of TOGA is referenced in this report, given the activity is operated under NOGA's systems and procedures and personnel are employed by NOGA.

Production of crude oil at the facility was at reduced rate, due to the shut in of the Laminaria-8 well.

The following sections present the inspectors' conclusions and reasoning in relation to each inspection topic scope. Where considered appropriate, recommendations have been made in relation to these conclusions. The detailed recommendations are included in the following section and will also be provided electronically to the titleholder's representative with the final report.

3.1 Previous recommendations

The inspection included following up on actions arising from previous recommendations relevant to this activity. Appendix C provides the inspectors' conclusions against these recommendations and associated actions.

Where previous recommendations have not been satisfactorily addressed further recommendations have been raised as follows;

Recommendations 1456-1 and 1456-2 from the previous inspection stated:

"MOC Procedures should be reviewed and amended to provide sufficient instruction for undertaking the MOC process to ensure that changes proposed are appropriately justified, considered and documented."

"Ensure that documents recording outcomes of management of change processes contain consideration of all legislative requirements, consider the full extent of the implications of the change and sufficient justification to support the outcomes and decision making based on the extent and nature of the change(s)."

The TOGA response to the recommendations stated:

"The MoC procedures and corresponding forms have been reviewed and updated following the initial inspection to include the noted findings."

Inspectors reviewed the updated Change Management Procedure (Document 3) and Management of Change (MoC) Form (Document 4) to determine if the actions taken by TOGA to update the MoC procedures and form had been implemented and addressed the findings from the previous inspection. In particular, that the documents considered all relevant legislative requirements, included details on conducting an appropriate risk assessment and justification for changes proposed and included sufficient detail to ensure consistent and appropriate decision making.

It is noted that significant improvements have been made to the procedure in response to the previous inspection recommendations including improvements to the checklist of items for consideration of changes to regulated activities, instruction on how to use the outcomes from the checklist, documenting the approvals process, keeping a register for all MoC and the roles and responsibilities for conducting the process. However, the updates made to the procedure and form do not address all the findings from the previous inspection. In particular:

- The MoC Form and the procedure do not provide guidance on how much information should be considered, and in what form, to provide an appropriate level of support and justification for the outcome of the decision or the change. While the procedure states that some changes may require a full risk assessment (ENVID) and minor changes can be addressed by consultation internally, the procedure does not state how the outcomes of these processes are to be documented or how the level of information considered and documented during these processes is consistent with the assessment processes described in the EP. Further, while the MoC form includes tables to be completed with information relating to key considerations regarding the change (e.g. the need to submit a revision, consultation management and ALARP and Acceptability Assessment), guidance is not provided on how much information is required to be included in the MoC form to document the assessment and decision making.
- The MoC form includes a set of triggers for consideration of the need for a revision under the Environment Regulations. However, the requirement to consider if the change results in the titleholder acting contrary to the EP (Regulation 7) is not listed in the form.

The following observations were also made in relation to the content of the procedure and form:

- Section 3.1 and 3.2.1 include a number of statements for when TOGA will submit a revision. For example:
 - *“To avoid the need to resubmit the EP, a risk based assessment by the HSE Manger must conclude that the change does not introduce new activities, impact or risks – and that for existing activities, the change will not cause by itself or cumulatively, a significant increase environmental impact or risk”.*
 - *“If the approved operational program activities or schedule, for instance, were to change from the concept described within the accepted EP, to the extent that new significant environmental impacts or risks could occur, NOGA should consult with NOPSEMA and review the OPGGS(E)R to ensure that any approvals already received are still relevant...”.*

These statements do not describe the all requirements that may trigger a revision, such as under regulation 7 (operations must comply with the accepted EP), regulation 17(5) (significant modification or new stage of activity) or regulation 17(7) (change in titleholder) or consistently describe the requirements of regulation 17(6) (a new impact or risk, an increase in impact or risk, occurrence of a series of new impacts or risks or occurrence of a series of increases in impacts or risks).

- The procedure and MoC form do not provide guidance on the criteria that will be used to determine when a proposed revision may be required under the regulations. In particular, as per NOPSEMA’s Guideline - When to submit a proposed revision of an environment plan, what environmental management aspects and information is considered by TOGA when determining what is a “new activity”, “significant modification”, “new stage”, “new or increased impact or risk” and “significant new or increased impact or risk”.
- The procedure refers to completing an Environmental Change Form (section 1.1 and 3.1). However, the titleholder’s representative advised at the inspection that there is no Environmental Change Form and that the MoC form is the form completed during the change process. The procedure does not refer to the correct document for recording the MoC process.

Given the observations above, TOGA’s management of change procedures and documents do not demonstrate that an appropriate and well documented process is in place to ensure that impacts and risks from the activity will continue to be managed to levels that are ALARP and acceptable. The observed

TOGA processes also do not currently provide for consistent decision making and appropriate reflection of the regulatory triggers for the need to submit a proposed revision of the EP.

Recommendation 1561-1

Ensure that MOC procedures and forms include:

- consistent consideration of all relevant legislative requirements in determining the need to submit a revision to the EP;
- provide guidance on the criteria that will be used to determine when a proposed revision is required;
- describe the processes that will be followed when conducting an assessment of the change and considering assessment outcomes; and
- the level of information required to be documented from the assessment to support the change.

3.2 Inspection Findings

3.2.1 Item 1 - Verification of oil spill response arrangements with third party service providers are in place to implement response strategies (Source Control)

The aim of the inspection was to verify that oil spill response arrangements with oil spill response organisations (OSROs) and other third party service providers were in place. The inspection specifically focused on the arrangements in place to implement source control strategies, but also looked to confirm that TOGA had key arrangements in place with OSROs critical to providing specialist resources required to implement several oil spill response strategies. While the inspectors found that TOGA has arrangements in place with OSROs and other third party service providers required to implement source control as detailed in the EP the inspection found that the arrangements had not been adequately tested or verified.

The EP (page 248) states that *“OPEP readiness review exercises are undertaken annually to verify that relief well resources are available for mobilisation.”* The titleholder’s representative confirmed that readiness review exercises have not been completed to date. While the Inspectors note that the EP was accepted on 12 December 2016, completion of the readiness review exercises and extending the commitment to all strategies will aid TOGA in ensuring that the arrangements are in place to implement oil spill response strategies.

Recommendation 1561-2

Ensure that TOGA is suitably prepared to respond to an oil spill by undertaking a readiness review to verify that resources are available for mobilisation as required. The review should include all response strategies adopted and detailed in the submission.

Section 7.5.3 of the EP states that *“All Response arrangements are tested when they are introduced or when they are significantly amended as required by the regulation 14(8C).”* The EP (Table 10-3) also states that the *“Annual Level 3 Oil Spill Exercise is held in order to test the oil spill response plans, arrangements, roles and responsibilities, manning levels, access to equipment and resources”*.

Section 7.5.3.2 further states that *“Level 3 exercises focus on critical risks to the business, including oil spills, and are conducted annually. The objective of these exercises is to test NOGA’s oil spill response arrangements and the oil pollution first strike plans incorporating the use of operational plans and tactical response plans. Testing the response arrangements will include:*

- *Immediate notifications*

- *Consideration of appropriate response strategies and associated resources*
- *Development of an IAP beyond the initial first strike period*
- *Initiation of appropriate response strategies; and*
- *Field deployment exercise*
- *Ability of third parties listed as part of the response strategies to respond in the timeframes and manner outlined in the Oil spill documents including the availability and mobilisation times of personnel and equipment”.*

The titleholder’s representative stated that TOGA has undertaken two oil spill response exercises prior to the EP being accepted (Document 20 and 21) however, no exercises or testing have been undertaken since the EP was accepted on 12 December 2016. While the exercises undertaken prior to acceptance were testing the arrangements that were to be introduced on acceptance, the exercises did not adequately test all response arrangements including source control.

Recommendation 1561-3

Ensure oil spill response exercises are undertaken in accordance with the requirements the EP. Specifically exercises must:

- Address the specific requirements detailed in section 7.5.3.2; and
- Test TOGA’s source control plans, arrangements and ability to access equipment and resources required to implement source control strategies.

3.2.2 Item 4 - Training and competence of Oil Spill Response personnel - Onshore Incident Management Team (IMT)

The titleholder’s representative stated that the NOGA Asset Manager is responsible for ensuring that personnel fulfilling emergency response roles are trained and competent and ensuring that TOGA have adequate numbers of personnel. Minimum requirements in terms of numbers and training requirements for IMT members are detailed in the EP (Table 7.6). The focus of the inspection was to verify TOGAs ability to resource an IMT in accordance with the requirements detailed the EP at a point in time.

The inspectors found that TOGA maintains a competency matrix (Document 25) that allows tracking of TOGA personnel’s oil spill response training status. The matrix identifies the training course undertaken, the date training was completed and timeframes for renewal. The titleholder representative states that the training status is tracked on monthly basis against the planned training schedule; however, there was no evidence that TOGA track compliance with the EP requirements.

The EP details that in the event of a spill TOGA will rely on UPS to provide several trained and competent personnel. The titleholder’s representative stated that UPS maintain a training and competency matrix to track the training and competency UPS personnel. TOGA provided the inspectors with a report generated from UPS’s matrix detailing UPS personnel who have undertaken oil spill response training and are potentially available in the event of an oil spill. The report details the training course, completion date and the individuals normal work location.

The inspectors found that TOGA and UPS maintain a combined Northern Endeavour emergency response roster. The emergency response roster details individual’s availability and level of training. While the roster details the personnel available, there is no system in place to ensure that the resources available as detailed in the emergency response roster are adequate to meet the minimum requirements detailed in the EP.

The EP details that in the event of a spill TOGA will rely on AMOSC and OSRL to provide “escalation personnel”. The titleholder representative confirmed that TOGA do not actively track the availability of “escalation personnel” available through contracts with AMOSC or OSRL. The titleholder representative stated that the ability for these organisations to provide resources was established during the development of the submission; however, there has been no further verification to date.

Through reviewing the documents detailed above, the inspectors found that TOGA could demonstrate that on day one of the inspection (27/02/2017) TOGA had access to the minimum number of trained personnel from the organisations detailed in Table 7.6 to fill the identified roles of Deputy Incident Controller, Planning Officer, Logistics Officer, Operations Officer and Finance Admin. TOGA could not, however, demonstrate that they had access to the minimum number of Incident Controllers required to comply with minimum requirements.

Table 7.6 details that TOGA requires a minimum of two Incident Controllers to be sourced from TOGA. The inspectors found that TOGA only had one TOGA employee with the required training to fill the role of Incident Controller. The titleholder’s representative stated that while TOGA only have access to one trained Incident Controller, TOGA have an arrangement with a third party provider Risk and Emergency Management (REM) Associates to provide an Incident Controller in the event of a spill.

The contract states that REM has two highly-experienced IMO 3-trained Incident Commander/Controllers who would undertake this project and will maintain one incident controller on standby 24 hours / 7 days. However, the titleholder’s representative confirmed that while the contract is in place the standby arrangement was not activated on day one of the inspection (27/02/2017). The titleholder’s representative stated that the contract could be activated upon request and provided correspondence (Document 46) on day two of the inspection (28/02/2017) to confirm that the standby arrangement with REM had been activated. Through activation of the contract TOGA were able to demonstrate compliance with the requirement to have access to two Incident Controllers.

Recommendation 1561-4

Implement systems to ensure TOGA maintains access to and have available minimum numbers of trained and competent personnel as detailed in the EP at all times.
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The Oil Pollution Emergency Plan (Section 3.12.) states that TOGA maintains the capability of key roles (which includes IMT) to respond to a hydrocarbon spill by requiring that focussed training, coupled with participation in drills and exercises, is undertaken as appropriate to their role in a hydrocarbon spill. While it is noted that EP (Table 7.6) details the minimum numbers and training requirements, TOGA have not documented minimum requirements for IMT members to participate in drills or exercises to ensure personnel maintain competency.

Recommendation 1561-5

Establish and monitor minimum requirements for participation in drills and exercises to ensure trained personnel maintain competency.

The EP (Table 10-3) also states that the *“Annual Level 3 Oil Spill Exercise is held in order to test the oil spill response plans, arrangements, roles and responsibilities, manning levels, access to equipment and*

resources". Inspectors determined that oil spill exercises have not been undertaken to test the ability for TOGA, UPS, AMOSC, OSRL, Aventus Consulting or Jacobs to provide the required number of personnel as detailed in the EP.

Recommendation 1561-6
Ensure ability to access adequately trained and competent IMT personnel is tested.

3.2.3 Item 2: Arrangements and preparedness for implementing an oil spill monitoring program, including in relation to service providers and relevant incident management team roles

Inspectors examined oil spill environmental monitoring arrangements and specific measures in place to ensure the titleholder is prepared to implement its operational and scientific monitoring program (OSMP) if needed. In particular, the inspection focused on:

- Roles and responsibilities of relevant IMT functional positions;
- Competency and training of personnel/contractors with responsibilities for the OSMP; and
- Appropriateness and maintenance of OSMP documentation;

3.2.3.1 Roles and responsibilities

Table 4 of the Northern Endeavour OSMP (01-HSE-PL05) briefly explains coordination and advisory roles of the NOGA IMT Environmental Coordinator in relation to implementation of the OSMP.

Section 3.12 of the OPEP (page 37) addresses incident management and hydrocarbon spill responder and responsibilities and includes the following:

"Key roles and responsibilities within the incident management structure in the event of a hydrocarbon spill are detailed in...IMT – Incident Management Plan Function Role Description (Appendix B)"; and

"The Oil Spill Response IMT Role Description / Checklist is shown in Appendix B and is also available on the NOGA's and UPS' SharePoint system".

During the inspection, TOGA personnel were able to outline the general roles and responsibilities of the IMT Environmental Coordinator in relation to the OSMP.

The titleholder's representative also advised that, like some other IMT roles, the IMT Environmental Coordinator function will be filled by an external contractor. This arrangement is reflected in Appendix C, Logistics Support Plan (01-HSE-PL13).

When asked how IMT personnel are made aware of their roles and responsibilities, TOGA personnel advised that IMT role description/checklist documents were prepared for a number of primary IMT functional roles (e.g. Incident Commander, Planning Officer, Operations Officer, Logistics Officer). These documents were sighted by the inspectors on the TOGA file management system.

TOGA personnel advised that a draft role description/checklist had been prepared for the IMT Environmental Coordinator but the document was yet to be finalised. The inspectors sighted the draft position description document.

TOGA personnel also advised that oil spill exercises provide for IMT personnel to be aware of their roles and responsibilities. It is noted that TOGA personnel explained that the titleholder is planning to undertake a level 3 exercise later in 2017.

Taking into account:

- that the risk of an oil spill from the activity is present;
 - the role of the IMT environmental coordinator in management of the OSMP and that the IMT environmental coordinator role will be fulfilled by an external contractor; and
 - the draft status IMT Environmental Coordinator role description/checklist and that it is not evident that the role of the IMT Environmental Coordinator has been practiced in an exercise,
- measures to ensure relevant contractors are clear about their roles and responsibilities in the event of an oil spill incident are considered to be key to timely, orderly and appropriate implementation of the OSMP particularly in the initial phases of a response and should be implemented as soon as possible.

Recommendation 1561-7

Ensure that contractors filling the IMT Environmental Coordinator functional role are made aware of, and able to clearly and promptly understand, their roles and responsibilities in the event of an oil spill incident requiring implementation of the OSMP.

3.2.3.2 Assuring access to appropriately trained and competent personnel and contractors

Table 7.6 of the EP and the monitoring strategies in Section 6 of the OSMP (01-HSE-PL05) set out minimum manning requirements and, competency and training criteria for personnel involved in implementation of the OSMP. Appendix C of the Logistics Support Plan (01-HSE-PL13) also outlines training required of the IMT Environmental Coordinator as well as various monitoring personnel. Section 3.5 of the OSMP Implementation Plan (Document 7) also provides information regarding minimum training requirements for monitoring personnel.

Titleholder representatives advised that, consistent with the EP, Jacobs would be the primary service provider for scientific services associated with the OSMP. The EP (page 262) states that NOGA has established a MoU with Jacobs Scientific to provide access to scientific monitoring specialists. A signed MoU between Jacobs and NOGA for provision of operational and scientific monitoring services was collected during the inspection (Document 30). The titleholder representative advised that the MoU has not led to a contract between NOGA and Jacobs being entered into.

Inspectors sought information from TOGA personnel regarding how the titleholder is assured that service providers with responsibilities for the OSMP hold the appropriate competencies and training.

TOGA personnel advised that the titleholder does not keep records of the competency of external providers.

Inspection of the OSMP Implementation Plan (Document 7) found that it states:

“A Primary Investigator has been contracted by NOGA to monitor personnel and equipment availability and to provide ongoing updates of base-load resources that may have available at any point in time to implement the OSMP in the event of a Level 2 or 3 hydrocarbon spill (page 23).”

The OSMP implementation Plan also states details that a key responsibility of the PI Duty Manager is to:

“Monitor personnel and equipment availability and provide ongoing updates of the base-load resources (page 12).”

When asked about these arrangements, TOGA personnel were not able to provide evidence of a contract with a Primary Investigator to fulfil the responsibilities above and it did not produce evidence of reports on resource availability. Titleholder representatives did however note that OSMP Readiness Review that is currently being planned could address assurance around availability of appropriately trained and competent personnel for the OSMP. The inspectors note that the EP includes environmental performance standards that set an annual frequency for OSMP readiness reviews (pages 369 & 370).

Taking into account:

- that the risk of an oil spill from the activity is present;
- the titleholder relies heavily on external providers who require specialist skill sets to manage (IMT Environmental Coordinator) and implement (e.g. scientific specialists) the OSMP
- the arrangement with the primary provider of scientific services for the OSMP is an MoU;
- the availability of appropriately trained and competent contractor personnel to implement the OSMP is not being monitored;

systems should be implemented to ensure TOGA maintains access to, and has available minimum numbers of, appropriately trained and competent personnel for OSMP implementation at all times.

Recommendation 1561-4 applies to these findings.

3.2.3.3 Plans for implementation of oil spill environmental monitoring programs

A key element of TOGA’s strategy for oil spill environmental monitoring involves the preparation and use of sampling and analysis plans (SAPs) that give technical details of when, how and the where monitoring is to be conducted (OSMP, 01-HSE-PL05, page 10).

The EP includes environmental performance standard 35, which states (page 370):

“Scientific monitoring is undertaken in accordance with the OSMP (01-HSE-PL05) and the SMPs.”

Section 4.2.2 (p11) of the OSMP (01-HSE-PL05) states that:

“SAPs have been developed to provide sufficient information to carry out the field monitoring and data analysis (or modelling) and generally have the following components:

- *Introduction;*
- *Overview of Monitoring Study Implementation Strategy;*
- *Baseline Data;*
- *Study Design;*
- *Field Sampling Procedures; and*
- *Resources.”*

When asked for evidence that SAPs have been developed, TOGA personnel located SAPs for oil spill monitoring programs on the TOGA file management system. The SAP for scientific monitoring program 3 – Benthic primary producer habitat monitoring (01-HSE-PL20) was collected (Document 31).

TOGA personnel advised the inspectors that SAPs for monitoring programs OM4 (Pre-emptive assessment of sensitive receptors) and SM7 (Assessment of impacts and recovery of marine fish), while nearing completion, had not yet been finalised.

Taking into account:

- information in the EP and OSMP relevant to the preparation and use of SAPs for oil spill environmental monitoring;
 - that the risk of an oil spill from the activity is present; and
 - findings of the inspection regarding the status of SAPs,
- SAPs for oil spill monitoring programs should be completed and ready for their intended use.

Recommendation 1561-8

Ensure that all sampling and analysis plans (or equivalent monitoring guidance) for oil spill environmental monitoring programs are finalised.

3.2.3.4 Ensuring that provisions for oil spill environmental monitoring are appropriate

Regulation 14(8D) of the OPGGS (Environment) Regulations states:

“The implementation strategy must provide for monitoring of impacts to the environment from oil pollution and response activities that:

- *is appropriate to the nature and scale of the risk of environmental impacts for the activity;*
- *and*
- *is sufficient to inform any remediation activities.”*

There are a suite of documents relevant to the implementation of oil spill environmental monitoring, some of which were collected during the inspection. Documents subject to inspection include the OSMP (01-HSE-PL05), the operational monitoring mobilisation plan (01-HSE-PL06, Document 6), the OSMP Implementation Plan (01-HSE-PL10, Document 7) and SAPs (e.g. 01-HSE-PL20, Document 31).

Inspection of documentation above found inconsistency and gaps in the oil spill environmental monitoring arrangements which generate risk that, if relied upon to guide implementation, the oil spill monitoring may not be matched to the risk of impacts from oil pollution. For example, content of the OSMP and the operational monitoring mobilisation plan (Document 6) relating to the approach to implementation of OM3 is not consistent. In the case of the operational monitoring mobilisation plan, guidance for data analysis and decision making (Figure 4) includes key elements that are not relevant to the activity. In particular, the data analysis and decision guidance for OM3 includes an approach to monitoring water quality that relates to testing dispersant effectiveness, even though dispersant use is not a response strategy for the activity.

A sampled inspection of Document 6 also found it includes web-links and content that has been superseded. For example, the task descriptions for OM5 (called ‘Shoreline Assessment’ in this document) state that the Planning Section of the IMT should refer to Guideline S.1 of AMSA (2003) for guidance on determining new shoreline sectors and segments. An internet hyperlink is given for the same task:

(https://www.amsa.gov.au/environment/maritimeenvironmentalemergencies/nationalplan/Contingency/documents/Oil_Spill_Monitoring_Handbook.pdf)).

Inspection found that this link is not active and Document 6 does not give a full citation for AMSA (2003). These types of shortfalls create operational uncertainty for personnel or contractors that will apply the documentation, and this in turn that generates risk for the efficient and effective implementation of the OSMP.

The inspectors note that the Australian Maritime Safety Authority website provides information on a 2016 revision of the Oil Spill Monitoring Handbook that is published by CSIRO.

The inspection found that operational and scientific monitoring programs with the same numerical reference are named inconsistently in different documentation. For example, in Document 6, OM5 is referred to as 'Shoreline Assessment', while in the OSMP OM5 is titled 'Monitoring of Contaminated Resources'. Similarly, the OSMP refers to OM2 as 'Hydrocarbon Surveillance and Tracking', while document 6 refers to OM2 as 'Surveillance and reconnaissance'.

Inspection of scientific monitoring program 3 (SM3) SAP (Document 31) found that the scope of SM3 is designed for monitoring benthic primary producer habitat. Section 4.3 of the SM3 SAP states that three broad benthic primary producer habitats that will be monitored, being: 1) coral, 2) macroalgae, and 3) seagrass.

Inspectors note that the EP refers to SM3 more broadly to provide an 'Assessment of impacts and recovery of subtidal and intertidal benthos' (e.g. EP p). It also noted that the EP describes the benthic environment that may be affected as including filter feeders habitats that do not fall within the scope of the three broad habitat types which Document 31 identifies as being monitored under SM3.

More specifically the EP identifies benthic filter feeder habitats that organisms such as sponges which are known food resources for listed threatened species (hawksbill turtle) and among the values of key ecological features (Carbonate banks in the Joseph Bonaparte Gulf, Carbonate bank and terrace system of the Van Diemen Rise), which themselves are recognised values of Commonwealth Marine Reserves that may be affected by oil pollution.

The inspectors note that during the inspection TOGA personnel advised that the titleholder is in discussion with a service provider to undertake an OSMP readiness review and that consideration will be given to matters raised during the inspection as part of the review scoping.

In summary, the inspection has found that management of oil spill monitoring arrangements for this activity is described across a number of documents. A sampled inspection of relevant documentation found inconsistencies, scope gap and out-dated information, which individually and collectively generate risk for the efficient, effective and appropriate implementation of oil spill environmental monitoring. The titleholder should consider the findings and examples given above when designing and implementing measures to manage risk to the efficient and effective implementation of the OSMP.

Recommendation 1561-9

Ensure oil spill environmental monitoring arrangements are able to be clearly understood by all users, are checked and maintained, and are designed to be resourced in a way that is appropriate to monitor the impact to the environment from oil pollution and from the response measures for the activity.

3.2.4 Item 3: Test ongoing monitoring of environment performance and measures to ensure that impacts from PFW are reduced to ALARP and acceptable levels

Inspectors examined the systems and processes in place for monitoring environmental performance of the discharge of PFW to the environment and the measures in place for managing this discharge and ensuring that impacts were continuing to be reduced to ALARP and acceptable levels. In particular, the inspection focused on:

- Reporting of environmental performance by the facility and any actions taken by TOGA in the event of changes to performance;
- Monitoring of environmental performance through audits and inspections;
- Monitoring requirements for PFW discharge and measuring environmental effects; and
- Measures for managing impacts through the adaptive management framework and chemical selection process.

3.2.4.1 Monitoring of PFW

A commitment given on page 137 of the EP states:

“Currently, the process to be followed to assess the annual chemical characterisation data and any potential change in risk is as follows:

- *Compare results to previous chemical composition data and assess the results for any significant changes that may be a potential indicator of change in overall toxicity and compliance with the relevant EP Performance Outcome. In the absence of defined triggers, and whilst additional data is developed through expanded monitoring program (including 2014 ecotoxicity testing and field sampling), NOGA will engage experts currently undertaking the ecotoxicity analysis to review the information in light of their knowledge of components contributing to PFW toxicity and toxicity more broadly (e.g. from available literature). If such components have changed to a degree where there is uncertainty as to known toxicity from that defined from the last round of ecotoxicity testing, the PFW decision framework will be followed (Figure 6-5) and potential additional ecotoxicity testing triggered if required; and*
- *Compare the results with ANZECC/ARMCANZ (2000) guidelines and any potential for applicable guidelines to be breached at the edge of the mixing zone (utilising modelled dilutions) and assess potential for any breach to impact upon overall toxicity.”*

Inspectors requested documents containing the results of the most recent annual chemical characterisation of PFW and were provided with Northern Endeavour Produced Water Chemical Assessment 2016 (Document 9). The scope of work stated in the report is to facilitate the collection and chemical characterisation of the collected PFW sample and comparison of the 2016 chemical characterisation results to previous years in order to determine if there has been a change of contaminant status. Inspectors made the following observations regarding the contents of the report and the outcomes of the analysis:

- It is not clear why a laboratory correction factor based on Adams *et al*, 2015 has been used to determine significant increases between two measured values (i.e. current and historical concentrations). It is noted that the correction factor has not been applied to previous year’s results and it has been applied to inorganic compounds.
- The alternative methods in the report for determining significance of any change in contaminant concentrations are not well founded. For example, the report determines significance by applying a Relative Percentage Difference (RPD) of 67% greater than the historic year to current results of metals/metalloids, ammonia and total sulphide. This measure of significance has not taken into account:
 - The report states that $RPD (\%) = (\text{difference between two values} / \text{average of the two values}) \times 100$. By averaging the two values in this formula, the actual difference between the current and historical contaminant concentration is underestimated;
 - For some contaminants, an increase in concentration that is less than 67% may be considered significant; and

- By measuring percentage difference to the historic year, increases in contaminant concentrations over time less than the RPD, may not be identified.
- Increasing trends in some contaminants have not been identified as per the scope of work. For example, increasing trends in iron, total suspended solids and total recoverable hydrocarbons C₆-C₁₀ (less BTEX) from 2011 to 2016.
- The report does not compare the results to all previous composition data as stated in the EP commitment. The 2015 PFW monitoring data, which is detailed in the EP, is not included in the report or used in trend analysis.
- The limit of reporting for the analysis of copper in 2016 was changed to <0.4 µg/L. The report acknowledges that this value is above the 0.3 µg/L ANZECC/ARMCANZ 99% species protection guideline value. However, no explanation for this change to limit of reporting is given nor has the report justified why reporting limits set above guideline values is appropriate.
- The report makes statements about the results, but does not interpret the data against the triggers for further action in the Marine Discharges Adaptive Management Framework or whether there is a potential for any of the guidelines to be breached at the edge of the mixing zone, as stated in the EP commitment above.
- Actions to manage changing trends, such as the increasing trend in concentrations of manganese identified in the report, have not been proposed.

The findings above were discussed with TOGA representatives during this inspection. When asked, the TOGA was not aware that the report had not delivered on the commitments in the EP or the scope of works specified in the report.

Recommendation 1561-10
Ensure that the PFW chemical composition data contained in the Northern Endeavour Produced Water Chemical Assessment 2016 is reviewed in accordance with the scope of work and the requirements of the EP, appropriate actions are taken in response to the review outcomes and appropriate quality assurance measures are in place to ensure future reports meet these requirements.

A performance standard on page 360 of the EP states:

“The NOEC is to be achieved 95% of the time at 1,000m from the PFW discharge point. This will be achieved by complying with the NE Production Annual Operating Plan and NE Offshore Marine Discharge Adaptive Management Framework (within this EP):

- *PFW ecotoxicity (and plume dilution) is assessed every 3 years or more frequently if risks (such as significant changes to chemical composition) are identified.”*

Inspectors collected the proposed scope of work for the PFW ecotoxicity assessment (Document 37 - Northern Endeavour Produced Water Ecotoxicity and Chemistry Assessment 2017 Scope of Work) to be performed in 2017. The document was inspected to confirm that the scope meets the requirements of the EP and results could be used to determine whether the no effect concentration stated in the performance standard is being met. Inspectors made the following observations relating to the content of Document 37:

Chemical characterisation of produced water:

- Total Mercury and Chromium are proposed to be analysed however relevant marine water quality ANZECC/ARMCANZ guideline trigger values for these total metals are not available. Species of

chromium (III and VI) and inorganic mercury have relevant trigger values but are not listed as being analysed and are relevant for ensuring commitment listed on page 137 of the EP are met

- Barium, meta-Xylene, para-Xylene and ortho-Xylene are not listed to be analysed in the scope of work. It is noted that these parameters were analysed during the annual PFW chemical characterisation assessments in 2011, 2014, 2015 and 2016 and it is not clear why they are not proposed to be analysed during this study.

Optional Scopes – Toxicity Identification Evaluation:

- The scope of work states that in the event that direct toxicity assessment identifies significant toxicity associated with produced water samples, a toxicity identification evaluation is recommended to identify which groups or classes of chemicals is/are responsible for the toxicity. It is not clear when this optional scope of work would be triggered given that a definition for “significant toxicity with the produced water samples” has not been defined.

Recommendation 1561-11

Ensure that the scope of work for ecotoxicity assessment includes analysis of parameters that will identify whether the NOEC is to be achieved 95% of the time at 1,000m from the PFW discharge point, maintains consistency in the parameters to be analysed where required and clearly defines triggers for any further work.

3.2.4.2 Measures for ALARP and acceptable levels

Adaptive management

A performance standard on page 360 of the EP states:

“The NOEC is to be achieved 95% of the time at 1,000m from the PFW discharge point. This will be achieved by complying with the NE Production Annual Operating Plan and NE Offshore Marine Discharge Adaptive Management Framework (within this EP)...”

Triggers for activating the NE Offshore Marine Discharge Adaptive Management Framework are listed in Table 6.27 of the EP. Inspectors noted that a number of terms described in the triggers were open to interpretation and were not clearly defined in the EP. For example:

- The trigger of “Increase in average OIW concentration output” is described in the EP as “If ongoing reviews of OIW concentration data indicate a significant increase for a sustained period” and “A significant increase would be considered to be a large change (e.g. 10mg/L) over a short period (e.g. three months) or a moderate change (e.g. 5mg/L) over a longer period (e.g. six months).” It is not clear that a large change is defined as 10 mg/L over 3 months or if this is a guide. Further the EP has not defined the baseline OIW concentration from which to measure the change.
- The trigger of “Results from 12 monthly routine PFW chemical characterisation assessment” is described as “If there is a significant change in chemical characterisation, desktop analyses will be undertaken to identify if there is a potential increase in toxicity that has the potential to impact compliance.” What is considered to be a “significance change” has not been defined in the EP.

Inspectors sought information from TOGA as to how decisions to trigger the framework were made consistently and whether there was a document that described how these triggers were defined. TOGA advised that it relies on the professional judgement of the process operators monitoring the PFW discharges and third party contractors analysing sampling results to monitor for change. There was no documentation which defined all these triggers.

Definitions have not been documented for key triggers in the NE Offshore Marine Discharges Adaptive Management Framework which may lead to uncertainty and inconsistency in the implementation of further actions and potential non-compliance with the EP.

Recommendation 1561-12

Ensure that key terms for triggering the NE Offshore Marine Discharges Adaptive Management Framework requirements are defined and documented.

Reports on oil in water (OIW) concentrations and discharge volumes for produced formation water discharges were examined to determine if there were any events in which discharges triggered further action under the EP NE Offshore Marine Discharges Adaptive Management Framework. The OIW Analysis Log 2016 (Document 11) includes the daily average OIW concentrations and daily PFW discharge volumes and the log shows that on one occasion, 26 May 2016, the daily discharge volume was 16906.69m³. A comment is listed against this discharge record that states "*produced water discharged 9462 m³ (total both seps) according to ICS*". It is noted that a PFW discharge over 13,500m³ per day triggers the adaptive management framework commitment to undertake dilution modelling in the EP (Page 176) in force at the time¹.

Inspectors requested information from TOGA regarding the reasons for the comment listed in the report and whether dilution modelling was undertaken in response to this daily discharge volume trigger being exceeded. TOGA advised that dilution modelling was not undertaken and on that day, there was a fault in the flow meter recording the volume of PFW discharged and personnel took the flow meter reading from both separators as a substitute. TOGA advised that this was communicated in the morning meeting and these types of operational issues are captured in the daily report. Inspectors requested the daily report from 26 May 2016 (Document 44) to determine how the high reading and fault in the flow meter has been recorded to justify why the decision to not undertake dilution modelling. The report states that the volume of PFW discharges that day was 9,660m³, therefore does not identify that there was a high reading due to a fault in the flow meter.

Records clearly documenting the reasons for not undertaking dilution modelling on 26 May 2016 from a high volume of PFW discharged were not kept. The daily report and OIW discharge logs did not provide an explanation of the high readings, detail what action was taken to ensure an accurate, adjusted reading was recorded and contained inconsistent adjusted readings for daily volumes of PFW discharged.

Recommendation 1561-13

In the event that PFW monitoring equipment faults or errors result in adaptive management framework actions being triggered, ensure that appropriate records are kept for the reasons for not undertaking the actions specified in the EP.

Chemical selection and approval

A performance standard on page 360 of the EP states:

¹ TOGA because the titleholder on 16 May 2016 and from this date, was required to comply with the [s 47G](#) Energy Northern Endeavour FPSO Facility Operations Environment Plan, Document No. M1500AH004 Revision 4, dated 19 December 2014. Compliance with this EP continued until such time as a revised EP was accepted by NOPSEMA. This occurred on 12 December 2016.

“Process and non-process chemical selection will comply with the NE Chemical Selection and Management Procedure [01/HSE/PC05]:

- *Chemicals with OCNS rating other than Gold or Silver (CHARM) or E or D (non-CHARM) or those that have a substitution or product warning require an ALARP demonstration before use. The ALARP demonstration will include:*
 - *Details of the chemical application (volumes, concentration, location);*
 - *Ecotox data;*
 - *Fate of the chemical; and*
 - *Alternatives available to the Global and Australian market’*

The associated measurement criteria states:

Completed and approved Chemical Selection, Assessment and Approval forms verify assessment and approval of chemicals under the required procedure for the NE FPSO.

Inspectors examined the NE Chemical Selection and Management Procedure (Document 5) to determine if the processes described were consistent with the performance standards outlined in the EP and if the procedure contained information for consistent and well supported decision making to ensure that environmental impacts from discharging chemicals would be of an acceptable level and reduced to ALARP.

Part B of the procedure is the Environmental Chemical Selection and Assessment Procedure. This outlines the selection, approval, review and improvement of process, downhole and subsea chemicals for Northern Endeavour activities. Section 3.5 describes the assessment process and refers to Figure 1, a flowchart of the process, and Appendix B for further guidance. Information gathered during the assessment is then included in the ALARP Justification Proforma in Appendix C.

Overall, Inspectors did not consider that the procedure for chemical selection, assessment and approval contained consistent, clear and well documented instruction to ensure that the chemicals selected for use at the facility would be result in impacts being reduced to ALARP and of an acceptable level. The following observations were made regarding the content of the procedure:

- Section 3.5.3 states that the ALARP Chemical Justification includes an *“Assessment of the ecotoxicity, biodegradation and bioaccumulation potential of the chemical in the marine environment and any other applicable environmental information available”*. Appendix B Step 2 states *“do not approve chemicals if it has not been tested for some basic environmental performance (biodegradation and ecotox) to make assessment”* which does not specify that all three data requirements, including bioaccumulation must be included in the justification and is therefore not consistent with section 3.5.3.
- Step 2 Appendix B asks *“Has adequate environmental performance data/discharge data been provided to make an assessment”* and includes a list of performance data that may be used. However, other than the finding above, the procedure does not specify which of the list of performance data suggested under Step 2 is required to be utilised to inform the assessment.
- Ecotox data is suggested under Step 2 Appendix B as performance data that can be used to make an assessment. It refers to data on *“LC50/EC50 against an aquatic species, which should be presented in mg/L along with the species tested against”*. This is not consistent with the ecotoxicity assessment criteria from CEFAS and DMP stated in Attachment 1, which refers to aquatic toxicity tests for three marine species (fish, crustacea and algae/other aquatic species).
- Assessment criteria at Attachment 1 do not provide instruction on:
 - The criteria and considerations when using of ecotoxicity testing data for marine species that are not endemic to the Northern Endeavour operational area in the assessment;

- classifying the toxicity of the chemical based on the species with the lowest EC/LC 50 data;
 - the assessment process to be followed in the event that ecotoxicity data is not available for the whole chemical, but for various constituent; and
 - application of the classifications derived for ecotoxicity, biodegradation and bioavailability and the information contained in this Attachment 1 in the assessment.
- The procedure and ALARP Justification Proforma does not provide guidance on how much supporting information is to be documented in the ALARP Justification Proforma to justify the statements made and ensure that decisions are consistent and well supported. For example, whether the level of assessment to be undertaken follows those documented in the EP and relevant reference to supporting laboratory analysis data for ecotoxicity, bioaccumulation and bioavailability, scientific studies and use of monitoring and modelling data.

Recommendation 1561-14

Ensure that the Chemical Selection and Management Procedure is updated to include consistent instruction on the assessment process to be applied, further guidance on the conduct of the assessment and the amount and type of information to be included and documented to support the assessment.

Inspectors requested the completed ALARP Justification Proforma for three chemicals currently being used and discharged to the environment from the Northern Endeavour: scale inhibitor, oxygen scavenger and biocide. The proforma for each chemical was reviewed to determine if procedures were followed and if the assessment outcome reached was well supported and justified. Overall, the proforma were not completed in accordance with the procedure and did not contain sufficient supporting information to support the chemical approval.

The proforma includes information which is inconsistent or is not complete and does not support the outcomes. For example:

- The Nalco EC6458A Scale Inhibitor ALARP Justification Proforma (Document 22) states that the organic portion is expected to be poorly biodegradable, yet justification for the selection of the chemical states that the chemical has high biodegradability.
- The Nalco EC6338A Biocide ALARP Justification Proforma (Document 16) includes an ecotoxicity value of 0.26 mg/L for algae which according to the procedure is classified as “very toxic”. The biocide is proposed to be added in 60-120 litres to the Port slops tank three times per month and the proforma states that the risk to the environment is negligible. However this is not supported with an analysis of the concentration of the biocide in the discharge (up to 360 L per month) or the discharge frequency.

Reference or sources of environmental performance data included could not be verified or were not provided. For example:

- Ecotoxicity data stated in Document 16 is given as 493 mg/L for algae and lists the source as the Nalco Ecotox Data Sheet. The Nalco EC6338A SDS (Document 45) states that no toxicity studies have been conducted on this product and TOGA was unable to provide the Nalco Ecotox Data Sheet when requested by the inspectors.
- Document 22 states that scale inhibitor is “not expected to bioaccumulate”, is “expected to be poorly biodegradable” and cites the MSDS as the source of the information. However, the criteria for classifying bioaccumulation and biodegradation are not consistent with the assessment criteria given in Attachment 1 of the procedure and is not supported by any analytical data (e.g. log P_{ow} or 28 day test).

Chemicals were approved for use inconsistent with the procedure:

- No ecotoxicity or bioaccumulation data has been included in Multitreat 650 Oxygen Scavenger ALARP Justification Proforma (Document 19). The procedure states that *“Do not approve chemical if it has not be tested for some basic environmental performance (biodegradation and ecotox) to make assessment”* (Page 14). However, Multitreat 650 has been approved for use without the ecotoxicity data.

Given the findings above, TOGA have not demonstrate that chemical selection processes have been undertaken in accordance with the Chemical Selection and Management Procedure as required by the performance standard or that there are appropriate quality assurance processes in place to ensure that proformas are completed correctly prior to approval.

Recommendation 1561-15

Ensure that the ALARP Justification Proformas are reviewed in accordance with the Chemical Selection and Management Procedure and that appropriate quality assurance is applied prior to approval of chemicals for use and discharge to the environment.

3.2.4.3 Monitoring of environmental performance

Inspectors collected the Annual Inspection Report 2016 (Document 36) to determine if monitoring of PFW environmental performance had been undertaken as per the commitments in the EP. It is noted that the inspection was conducted to verify compliance with the [s 47G](#) Northern Endeavour Floating Production Storage and Offloading Facility Operations Environment Plan (M1500AH004, Revision 4 dated 19 December 2014) which was in force at the time. The relevant commitment regarding monitoring environmental performance in the [s 47G](#) EP states:

“Annual NE Facility Environment Inspection – Each year the Production Environment Advisers undertake a site based environment inspection and review of performance against the EP performance outcomes, standards and measurement criteria at each offshore facility, including NE.”
(Page 334)

Document 36 includes a table of all the performance outcomes, performance standards and measurement criteria. *“Additional Information”* is listed in each row of the table with conclusions regarding compliance. However, the inspection did not confirm that testing of compliance with the performance outcomes had been undertaken during the TOGA annual inspection. For example, the performance outcome of *“No detectable change from natural variation beyond the approved mixing zone as a result of discharge of PFW from the NE FPSO.”*, there are no inspection findings relating to compliance with this outcome. Inspectors discussed the process applied by TOGA with the titleholder representatives and was advised that TOGA work through the measurement criteria and the performance standards, but did not specifically and separately test the performance outcomes. This is not consistent with the commitment in the EP for reporting environmental performance.

Inspectors noted that a number of performance standards were not tested for compliance during the 2016 inspection. A note is made on page 12 of document 36 that there was a sampled evaluation approach to the inspection and areas not tested may be the focus of future inspections. The NE Audit and Assurance Schedule 2016 cited by inspectors did not show other inspections after 16 May 2016, the date in which TOGA became the sole titleholder for AC/L5, to test compliance with these performance standards. Given this, TOGA has not monitored environmental performance as required by the EP from the date they became the titleholder for the title.

A commitment on Page 324 of the EP states:

“Quarterly Procedure Compliance Reviews: Procedure reviews are completed as outlined in the assurance schedule but at a minimum of one key procedure a quarter.”

A copy of the assurance schedule (Document 18 - NE Audit and Assurance Schedule 2017 - 2019) was examined during the inspection to confirm whether the quarterly procedure reviews included key procedures for managing and mitigating discharges to the environment. It is noted that Document 18 includes a UPS inspection of PFW procedures and that the next review for this procedure is scheduled for November 2017. The minimum frequency specified in the EP is for quarterly reviews, yet of the 6 procedures listed, there are no reviews scheduled in Quarter 1 (January to March 2017) in Document 18.

Inspectors also discussed the process for undertaking the quarterly reviews with TOGA. Inspectors were advised that no procedures reviews had been completed to date however, UPS would check compliance against the procedures by going through the procedure with the person who performs it. Inspectors asked whether there were any documented procedures or checklists for conducting the review. TOGA advised that these had not yet been developed for this task.

Recommendation 1561-16
Ensure that audit and assurance activities are scheduled and conducted to reflect the requirements of the EP

Recommendation 1561-17
Consider developing a procedure for undertaking the quarterly procedure review to ensure that reviews are conducted consistently.

4 Report Close-out

It is NOPSEMA's expectation that the titleholder considers the findings detailed in this inspection report, and acts upon them. Recommendations identified in this report may also be considered during future petroleum environmental inspections undertaken by NOPSEMA.

Attachment A – Meetings

An inspection opening meeting was held on 27 February 2017.

An inspection closing meeting was held on 28 February 2017.

Attendees at the opening and closing meetings were as follows:

TITLEHOLDER:	Timor Sea Oil and Gas Australia	Entry meeting date:	27/2/2017
PETROLEUM ACTIVITY:	Northern Endeavour FPSO Operations	Exit meeting date:	28/2/2017
NAME (Please Print)	COMPANY	POSITION	Entry Exit (Please Initial)*
s 22 irrelevant material	NOPSEMA	INSPECTOR	s 22 irrelevant material
	NOGA	Eng. Mgr.	
	NOGA	IKE MANAGER	
	NOGA	ASSET MANAGER	
	NOPSEMA	INSPECTOR	
	NOPSEMA	INSPECTOR	
	Upstream IS	Operations Manager	

Attachment B – Documentation inspected

No.	Title, Document Number and Revision Number
1	Maintenance of Financial Assurance Rev 0 - 00-FIN-PC01
2	Hazard Identification and Risk Management Rev 1 - 00-HSE-PC01
3	Change Management Rev 1 - 00-HSE-PC05
4	Management of Change (MoC) Form Rev 1 - 00-HSE-PC05FM01
5	NE Chemical Selection and Management Procedure Rev 1 - 01-HSE-PC01
6	Operational Monitoring Mobilisation Plan OM1-OM5 Rev 0 - 01-HSE-PL06
7	NOGA-OSMP Implementation Plan Rev 0 - Final - 01-HSE-PL10 IW136700-001
8	Environmental Emissions and Discharges - 26OPINTPS50 -5 P-31
9	Report - PWC Assessment 2016 - Chemical Characterisation Study
10	NOGA-NE - Monthly Operations Performance Report - December 2016
11	OIW Analysis log for NTDPIFM - approved Prod Eng - 2016
12	Novation Agreement - s 47G business - NOGA - Tutt Bryant Group Limited - 2016-04-0010
13	Executed AGR Project Management Contract - 2016-05-15
14	OIW Analysis log for NTDPIFM - approved Prod Eng - 2017
15	Novation Agreement - WEL-NOGA-PTTE- Skilled Offshore - fully executed - 2016-05-05
16	Biocide ALARP form
17	Master MoU - Mutual Assistance for signing -1 - signed
18	NE Audit Assurance Schedule 2017 - 2019
19	Oxygen Scavenger ALARP form
20	NOGA Ex Report - FINAL Oct 2016 - Desktop - REM16-0046
21	NOGA - Oil Spill Response Exercise Report (1) - Dec 2016 - REM16-0049 - ExFF AAR-Rev 01
22	Scale inhibitor ALARP form
23	2017 Exercise Schedule
24	IMT Roster February 2017
25	NOGA HSE KPI's File 2017 Training Matrix
26	UPS Training Report
27	Purchase Order NOGA 2016 065 – Risk and Emergency Management - External
28	Purchase Order NOGA 2016 065 – Risk and Emergency Management - Internal

No.	Title, Document Number and Revision Number
29	Risk and Emergency Management Associated - Proposal to Northern Endeavour Oil and Gas Australia For Incident Controller Standby Services
30	Jacobs OSMP MOU
31	NE Oil Spill SM3 Benthic Primary Producer Habitat Monitoring Sampling and Analysis Plan
32	NE Oil Spill OM3 Sampling and Analysis Plan
33	Nalco EC6458A SDS
34	Nalco EC6338A SDS
35	Daily Report 30 January 2017
36	Annual Inspection Report 2016
37	Northern Endeavour Produced Water Ecotoxicity and Chemistry Assessment 2017 Scope of Work
38	Daily Report 15 June 2016
39	Monthly Environment Inspection Jan 2017
40	Multitreat SDS
41	Oil Spill Environmental Coordinator Position Description Draft
42	Daily Report 26 February 2017
43	Daily Report 27 February 2017
44	Daily Report 26 May 2016
45	Nalco EC6338A SDS
46	Email from REM confirming IC resource arrangements in place
47	Oil Spill Response Limited Associate Agreement

Attachment C - Previous recommendations and titleholder actions

Date of inspection	NOPSEMA report number	Recommendation	Titleholder action and due date	Inspectors' conclusions
June 2016	1456-1	MOC Procedures should be reviewed and amended to provide sufficient instruction for undertaking the MOC process to ensure that changes proposed are appropriately justified, considered and documented.	The MoC procedures have been reviewed and updated following the initial inspection to include the noted findings. Due date: 31/7/2016	See section 3.1
	1456-2	Ensure that documents recording outcomes of management of change processes contain consideration of all legislative requirements, consider the full extent of the implications of the change and sufficient justification to support the outcomes and decision making based on the extent and nature of the change(s).	The MoC procedures and corresponding forms have been reviewed and updated following the initial inspection to include the noted findings. Due date: 31/7/2016	See section 3.1
	1456-3	Ensure that the Northern Endeavour Audit Schedule is finalised and includes the environmental management requirements that will be tested and the frequency of testing required by the EP	The Audit Schedule has been updated to reflect these requirements and the process for auditing and testing will also be outlined in the new EP Revision. Due date: 31/8/2016	Inspectors cited the 2016 Audit schedule and confirmed that it was finalised and included environmental management requirements that will be tested and the frequency of testing as required by the EP.
	1456-4	Consider developing an audit program for quarterly auditing of environmental performance which lists the performance outcomes and standards which are audited for compliance and the frequency of auditing.	The Audit Schedule has been updated to reflect these requirements and the process for auditing and testing will also be outlined in the new EP Revision. Due date 31/8/2016	The EP provides for an annual environment inspection undertaken by the titleholder and does not refer to quarterly inspections. These were the previous titleholder's commitments over and above the EP. The annual environmental inspection included the performance outcomes and performance standards that were tested for compliance.

Date of inspection	NOPSEMA report number	Recommendation	Titleholder action and due date	Inspectors' conclusions
June 2016	1456-5	Ensure that procedures for assessing and controlling impacts and risks from the Northern Endeavour activity use methodology and criteria for demonstrating ALARP and acceptable levels consistent with guidance and recognised standards to support the conclusions and outcomes reached	The Hazard and Risk Management Procedure has been updated to reflect the NOGA risk methodology that will be applied to the new EP and all other NOGA activities. This includes the updated definitions of ALARP and Acceptable in line with the current regulations. Due date: 31/8/2016	The Hazard Identification and Risk Management Procedure (Document 2) was updated on 26 July 2016. It includes a method and criteria for demonstrating acceptable levels, such as compliance with laws, policy, social acceptability, environmental context and ESD. While the criteria for acceptable levels include a test for ALARP, all criteria are considered and tested separately. The document has also been updated to reflect a process for demonstrating ALARP and a definition which aligns with published guidance.
	1456-6	Ensure that there are documented systems or procedures, with appropriate triggers, for the review of financial assurance over the life of the activities conducted on the title to ensure that it is sufficient as required by section 571(2) of the OPGGS Act.	A documented procedure will be created to reflect the process for review of financial assurance Due date: 31/8/2016	The Maintenance of Financial Assurance (Document 1) was collected at the inspection. It states that coverage for the insurance is reviewed annually and lists a series of triggers that would indicate a change to arrangements, including change that would impact the estimated well control cost or operational cost for the asset's reasonably credible event. These triggers include those scenarios that relevant and applicable to the titles. The document is dated 31 August 2016. Given this, the action taken by the titleholder addresses the inspection recommendations.