



**Australian Institute of Marine Science (AIMS) Submission to the Commission of Inquiry – Montara Well Head Platform Uncontrolled Hydrocarbon Release – 22 December 2009**

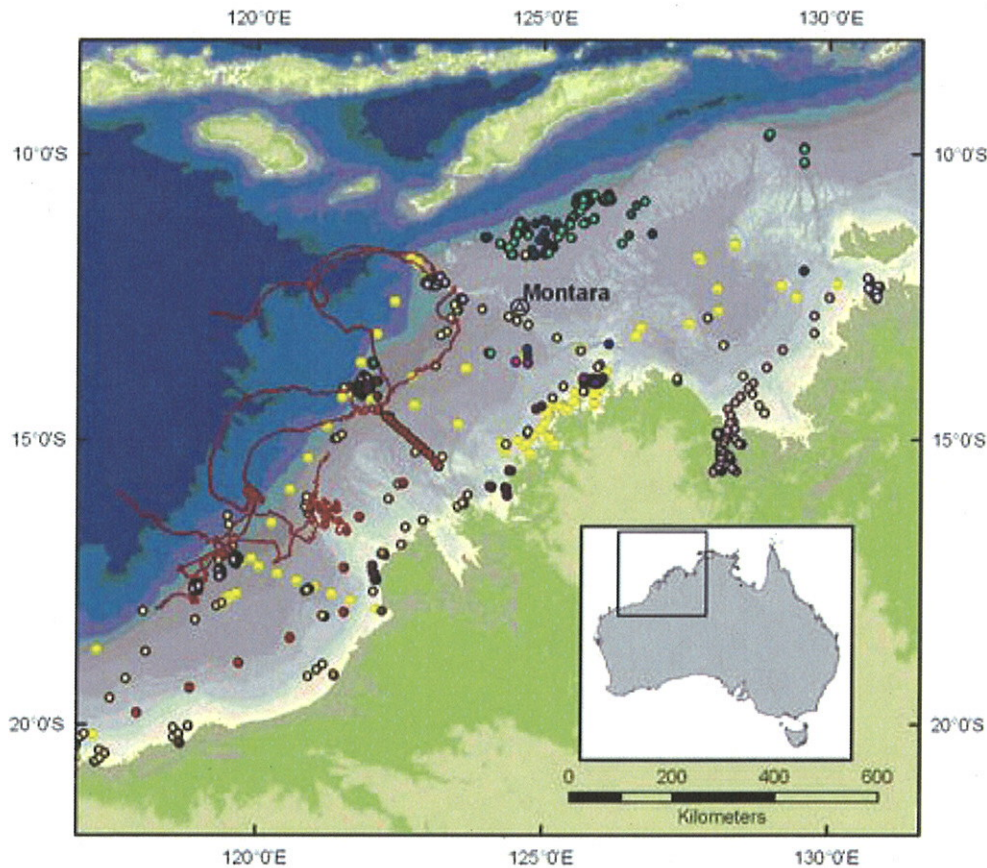
The Australian Institute of Marine Science (AIMS) welcomes the commission of inquiry established by the Minister for Resources and Energy Minister for Resources, Energy and Tourism, the Hon. Martin Ferguson AM MP, and would like to submit comment on some of the terms of reference under section 'C ENVIRONMENTAL IMPACTS', concerning the nature of the monitoring programmes, with special reference to the delays associated with implementing the programmes and the management of the monitoring programme.

AIMS is Australia's tropical marine research agency. The Institute is a Publicly-Funded Research Agency with statutory independence granted by the AIMS Act (1972). Our annual budget of approximately \$50 million supports over 200 staff (plus an additional 20 early-career researchers and 80 students) who have access to modern and well-maintained infrastructure including two coastal oceanographic vessels and advanced analytical facilities for oceanographic, geochemical, molecular and genetic research.

AIMS scientists have studied tropical ecosystems in Australia and internationally since 1975 and in marine and coastal waters in north west Australia since 1993. In the last 15 years, AIMS has generated a broad scale understanding of oceanography and ecosystems (patterns and processes) throughout the coastal, continental shelf and continental slope regions between Ningaloo Reef and Darwin. These activities have been supported by the permanent deployment of the 35 metre research vessel, RV Solander, to this region since she was built in 2007. Figure 1 summarizes research by AIMS scientists in the area of the Uncontrolled Release.

AIMS is one of the few appropriately resourced research institutions in Australia able to respond to the Montara spill because of its history of research in the region; ready access to a dedicated offshore research vessel; and, teams of scientists with expertise in expeditionary, ship-based research. Accordingly, when the Uncontrolled Release was reported, AIMS:

- contacted AMSA and DEWHA and indicated that it was available to provide assistance in the form of technical advice and (where feasible) logistic support;
- developed a report of all available research conducted by AIMS scientists in the region and made this information available to stakeholders by publishing it on the AIMS website (accessible under the 'Featured content' of the front page see <http://www.aims.gov.au/>);
- reviewed an early draft of the Monitoring Plan for the Montara Well Release Timor Sea and participated in a teleconference to help further refine the Plan.
- submitted 2 detailed, unsolicited proposals for examining the submerged Offshore Banks (Component S5 of the Monitoring Plan) and sediment hydrocarbon concentrations (Component S7 of the Monitoring Plan; submission date: 20 October 2009);
- submitted a further proposal for monitoring the coral reef environments (Component S6 of the Monitoring Plan; submission date: 30 October 2009);
- AIMS scientists also worked with the WA Environment Branch of the Department of Fisheries in submitting a fourth proposal in November 2009 (Component S3 of the Monitoring Plan - Assessment of Fish for the Presence of Oil);
- AIMS staff met with PTTEPAA representative Eleanor Stoney and PTTEPAA delegate John Wardrop, on the same day the Monitoring Plan was released (15 October 2009);
- On 17 November 2009 an AIMS scientist was asked to submit a proposal for S6 Shoreline Ecological Ground Surveys; and,
- AIMS have been asked by DEWHA to review the scientific content of 5 proposals submitted by scientists from other institutions.



**Legend**

- |   |   |   |
|---|---|---|
| ● Tow Video - 2009                        | ○ Holothuria & Trochus Surveys              | ● Pearl Oyster Genetics WA              |
| ● Tow Video - 2009                        | ○ Dampier Benthic Surveys 1993              | ○ Marine Bioproduct Sampling            |
| ● ROV - 2009                              | ● Scott Mermaid Oceanographic Monitoring    | ○ Fish Exposure - Harriet A             |
| ● Towed Video - Heywood Seeps             | ● Scott Reef Oceanography 1993 - Moorings   | ● Grabs - 2009                          |
| ○ BRUVS - Scott Reef                      | ● Physical Oceanography - Karri Shoals 2004 | ● 1996 Sediment Study                   |
| ○ BRUVS - Darwin Harbour                  | ● Scott Reef Oceanography 1993 - CTD        | ● Sediment Samples - Exmouth & NW Shelf |
| ○ ROV 1999                                | ○ NW Shelf Oceanography (NOWSOC)            | ● Sediment Hydrocarbon Study - 2005     |
| ○ Shark Surveys - Scott & Mermaid Reefs   | ○ NW Cape Oceanography 98-99                | ● Chemical Oceanography Sites           |
| ● Benthic Surveys - Big Banks Shoals      | — ARGOS Drifter Tracks 2003 - 2006          |   |
| ○ Scott Rowley Monitoring                 | ○ Ord River/Cambridge Gulf Oceanography     |   |
| ○ Biodiversity Surveys - Timor Sea Shoals | ○ Dampier Archipelago Oceanography          |   |
| ○ Coral Recruitment                       | ● Crab Collection for Biotxin Analysis      |   |
| ○ Fish Surveys - 1992                     | ● Mangrove Study Sites                      |   |

Figure 1. Summary map of research activity by AIMS scientists in the area of the Montara rig since 1993.

**7. Terms of Reference: Assess and report on the environmental impacts following the Uncontrolled Release using available data and evidence including the outcomes of the monitoring activities already underway, review any proposed environmental monitoring plans, and make recommendations on whether any further measures are warranted to protect the environment from the consequences of the uncontrolled release.**

**a. The adequacy of the “Monitoring Plan for the Montara Well Release Timor Sea as agreed between PTTEP Australasia and the Department of the Environment, Water, Heritage and the Arts, 9 October 2009” (the Monitoring Plan).**

*Nature of the Monitoring Plan*

The Monitoring Plan was released on 15 October 2009, 55 days after the Uncontrolled Release occurred. The plan was made up of (1) an explanation of the terms ‘Operational Monitoring Programme’ and ‘Scientific Monitoring Programme’, (2) a description of the management structure of these monitoring programmes, and (3) a broad outline of the expected objectives and methodologies.

Understanding what is meant by the terms Operational Monitoring Programme and Scientific Monitoring Programme, how they relate to national policies under the National Plan (a national integrated Government and industry organisational framework enabling effective response to marine pollution incidents), and how the programs were funded and managed is important to this submission.

According to the Monitoring Plan, Operational Monitoring:

- is undertaken during a response and is focussed on providing information of use in planning or executing a response, and must be acquired and processed quickly so that it can be acted upon;
- acquires data in a useable time-frame and this sometimes compromises scientific rigour;
- is synonymous with Type 1 monitoring in the National Plan which is defined as ‘...the collection of information about the oil and hazardous substances spill, in particular the extent and quantity of contamination and effectiveness of clean up for the purposes of aiding decision making during shoreline clean up and on-water operations...’.

According to the Monitoring Plan, Scientific Monitoring:

- is focused on non-response objectives such as estimating environmental damage and post response recovery;
- has a high requirement for accuracy and the data may be challenged (legally);
- is synonymous with Type 2 monitoring according to the National Plan which is defined as relating to ‘...non-response objectives and includes short term environmental damage assessments, longer term damage assessments (including recovery), purely scientific studies, and all post response monitoring activities...’.

*Funding and Management of the Operational and Scientific Monitoring Programmes*

Under the National Plan, costs for Type 1 activities are an integral part of the oil spill response and as such are funded by the owner/operator involved with a spill, their insurance and/or international arrangements under general liability regimes operated by Protection and Indemnity (P&I) Clubs. However, since the Montara Uncontrolled Release was from an anchored (spudded) oil rig and not from a ship, general liability from P&I clubs does not apply. According to the Monitoring Plan, Type 1/Operational Monitoring was commissioned by AMSA, or by PTTEPAA, with the agreement of, or at the request of AMSA and presumably paid by the owner/operator (and/or their insurance).

According to the National Plan Type 2/Scientific monitoring is not considered part of the oil spill response and costs will *not* be reimbursed as for Type 1 studies. For spills from ships there is a provision for environmental damage assessment under the International Pollution Compensation (IOPC) fund; however, this does not apply for spills from oil rigs. According to the Monitoring Plan, Type 2/scientific monitoring studies were managed by PTTEPAA with studies commissioned by PTTEPAA (subject to approval by DEWHA) - and presumably paid for by the owner/operator (and/or their insurance).

As noted by the Monitoring Plan, the Scientific Monitoring Programme was only an outline, providing indicative scope and guidance with the eventual component studies requiring specialist input by a proponent commissioned by the owner/operator for any particular study. Proponents such as scientists, research institutes, government agencies or other parties (i.e. the Australian marine science community) were expected to develop the detailed individual components of the Monitoring Plan providing a justification, and a description of the objectives, field/sampling methods, analysis techniques, data management and handling procedures and a detailed budget. Submitted proposals would be sent out for external review and if accepted, would form the basis of a contract with the proponent (see below). The study would then be implemented.

In effect, what was released on 15 October 2009 and 55 days after the Uncontrolled Release started, was simply a scope and guidance document - it was not a monitoring programme *per se*. The delays associated with release of the Monitoring Plan and subsequent delays before proposals were commissioned, meant that the sampling window for short-term direct assessing environmental damage (a component of the Scientific Monitoring Programme) had in many cases elapsed (see below). For this reason the Monitoring Plan was not as effective as it could have been. Recommendations and improvements are suggested below.

**b. How effective was the Operational Monitoring Programme and what lessons have emerged?**

Operational monitoring is concerned with assessing the extent and quantity of contamination and effectiveness of clean up operations for the purposes of aiding decision making. It is surprising that biological effects monitoring associated with the use of dispersants was not included in the Operational Monitoring Programme. Dispersants were used to introduce the oil into the water column and so prevent the oiling of shorelines but at the risk of environmental damage to the benthos and demersal fishery. Scientific monitoring programs S3 and S4A could possibly have been incorporated into the Operational Monitoring Programme funded by AMSA to support the decision to use dispersants. Then would it be possible to weigh up the net environmental benefit of the use of dispersants.

Some information on the Operational Monitoring Programme has been made available including a report conducted on behalf of AMSA published on the DEWHA website (see '*Report on biopsy collections from specimens collected from the surrounds of the West Atlas oil leak – fish specimens*' on 29th September 2009). It is not clear whether this report is/was an attempt to incorporate biological effects monitoring into the Operational Monitoring Programme (as discussed above), but the report contained data on hydrocarbon in fish "...landed in Broome on September 4<sup>th</sup> 2009 by a commercial fisherman...". There were a number of significant weaknesses in this study. There was no description of when or where the fish were caught, no description of the methodologies or analytical techniques used, no QA/QC procedures and no detection limits specified. There was a sample size of only 1 fish per species, although for comparative purpose some fish were purchased at Sealane fish market, Fremantle WA. There was no chain of custody form. These weaknesses highlight the need for ongoing expert advice and review during both the operational and scientific monitoring phases.

In an Operational Monitoring Programme there is a need for information to be collected and processed rapidly to suit response needs, with a lower level of sampling and accuracy than needed for scientific purposes. Nevertheless, there comes a point when scientific rigour has been compromised to such an extent that results could be considered meaningless. Little useful information can be derived from an analysis of 1 fish.

AMSA have released (on their website) some Operational Monitoring Programme reports, including Study O2 - Report 01 (released September 24<sup>th</sup> 2009), Report 02 (released 8<sup>th</sup> November 2009), and Report 03 (released December 14<sup>th</sup> 2009). The Report 03 was important as it was concerned with hydrocarbon concentrations in the water column and the effect of dispersant usage. It also provided data for possible breaching of triggers associated with the Offshore Banks Assessment survey (Scientific Monitoring Programme S5). The rationale behind the study is that "...Concerns have been expressed with regards the potential for hydrocarbons to enter the water column and to affect marine life. In particular, the distribution of dispersed oil has been a focus. Water samples have been obtained during response operations and these have been analysed for dissolved, miscible or entrained hydrocarbons...".

The Discussion and Recommendations section of the report contains the following:

"...The use of fluorescent data is problematic in that it cannot be correlated with measured hydrocarbons in water..."  
 "...Neither study provided data enabling an accurate measurement of dispersed oil concentrations, duration, distribution (vertical or horizontal) or of plume trajectory..."  
 "...Study O2.1 methods allow for calibration of fluorometry and analytical data (TPH) but on the basis of the data from the current study this correlation would appear to be poor..."  
 "...The need to be able to convert fluorometry or other field readings into hydrocarbon concentrations must be addressed..."

Clearly there were issues associated with the collection and interpretation of the data which highlights problems associated with basing triggers for Scientific Monitoring Programmes (which includes environmental damage assessment) on results from Operational Monitoring.

The report was prepared by Leeder Consulting and SEER Associates. SEER Associates is formerly Wardrop Consulting and the revision records of the reports indicate each report was co-authored by Leeder Consulting and Wardrop Consulting. The methodology for Report 03 refers to "Leeder Consulting and Wardrop Consulting (2009) Monitoring Study O2: Monitoring of Oil Fates and Effect. Study Design and Scope. Document No. Montara 04-02...". John Wardrop (from Wardrop Consulting) is also the consultant of the owner/operator who developed the Monitoring Plan.

This level of involvement by the owner/operator in the design and implementation of an important component of the Operational Monitoring Programme presents a potential conflict of interest situation, and exposes the owner/operator to allegations that the scope and timing of monitoring may have been influenced in a way that does not maximise scientific rigour or serve the public interest. While there has been no indication that this has occurred in the present incident, it would be unfortunate if, because of a perceived conflict of interest, operational monitoring results were called into question after significant effort had been invested in the activity.

Operational Monitoring Programme report 02 (Water Quality) indicates the first monitoring of the character of oil collected with proper QA/QC procedures occurred on 30<sup>th</sup> September 2009, 40 days after the Uncontrolled Release. If this is the case the response time of the Operational Monitoring Programme could be improved significantly (see below). Data within report 02 indicate no hydrocarbon concentrations in water samples collected during the Shoreline Ecological Assessment Aerial Survey undertaken by the University of Queensland (Study S2, conducted 9-18 November 2009) and by Curtin University (Study S4, 9-19 November 2009). Both these studies were conducted *after* the well had been sealed. The O2 Report 02 (Water Quality) indicates measureable concentrations of oil up to 5 m depth under freshly spilled oil close to the rig (3 nm E of West Atlas), but no measureable oil concentrations under weathered oil or under clean seas. The rationale behind the sampling program (what areas were sampled and why?) was not explained in the report.

**c. Is the Scientific Monitoring Programme adequate; and are there worthwhile enhancements that could be made to it?**

The Scientific Monitoring Programme released on 15 October 2009 was more realistically described as a plan, including a broad list of topics and outlined the expected scope of the programme - it was not a detailed monitoring programme in its own right. As also stated earlier, proponents were expected to design individual programmes submitting details as a proposal. AIMS has provided advice on drafts of some of these individual programmes, but without having seen the finalized programme approved by the owner/operator and DEWHA, it is not possible to evaluate the adequacy of the Scientific Monitoring Programme. AIMS believes that a formal scientific advisory body, which provided advice on both draft and final versions of individual plans could have added significantly to the overall effectiveness of the final approved and implemented monitoring activities.

In broad terms, the sub-components of the Scientific Monitoring Programme appear to cover expected areas (i.e. shoreline oiling, mega-faunal surveys, surveys of submerged offshore banks); *however*, there is no certainty that all components of the programme will be conducted because of the use of 'triggers' for various components (see below). Overall, the adequacy of the Scientific Monitoring Programme can only be assessed when the reports of the commissioned studies are compiled and peer-reviewed. In this peer-review process it is important to consider when each of the studies was conducted against the chronology of the Uncontrolled Release to examine the relevance of each study for achieving its stated objectives.

*Delays in implementing the Scientific Monitoring Programme*

There was a sense that Scientific Monitoring Programme was only to start once the leak had been plugged and hence the programme was mostly about post-spill monitoring as opposed to assessing environmental damage. This sense came from the long delay before the release of the plan (55 days) and the timing of the release of the Monitoring Plan. The Monitoring Plan was eventually made publically available on 15 October 2009, just after the second failed attempt to seal the well. The sense here was one of the Scientific Monitoring Programme being delayed pending result of the operational activity. There is no reason why the Scientific Monitoring Programme, especially the natural resource damage assessment should not be conducted during operational activities.

*Triggers used in the Scientific Monitoring Programme*

The Monitoring Plan used triggers, which were parameters that needed to be breached for an individual study to be conducted. While the final decision on what constituted a breach of the trigger was agreed between DEWHA and the owner/operator, it was not clear whether one or all of the often multiple triggers per individual study needed to be breached.

In some instances (i.e. scientific studies S2, S4B, S5, S7 in the Monitoring Plan) triggers were dependent upon parameters measured during the Operational Monitoring Programme. As mentioned above, data collected in an Operational Monitoring Programme is not rigorous and has a lower level of sampling frequency and accuracy than collected in a Scientific Monitoring Programme. If operational sampling is not sufficiently rigorous to be able to detect a breach, then some scientific studies may never be triggered.

While the use of triggers enabled the plan to include monitoring activities which might not be needed if the spill did not encounter specific habitats, it made the Monitoring Plan inherently reactive as opposed to proactive. Any delays in

agreeing whether a trigger had been breached, or in arranging for a triggered component of the plan to be implemented, could result in significant delays in beginning the data collection. In future, if trigger levels are to be used, then it is recommended that either

- (a) all triggers for the Scientific Monitoring Programme are considered to have been breached *unless* the Operational Monitoring Programme has proved otherwise;
- (b) and/or triggers should be regularly reviewed by an Expert Panel (see below) that is able to take into account the day-to-day outputs of the Operational Monitoring Programme and to make a recommendation based on the likelihood that a trigger has been, or is likely to be breached.

This would require the operational monitoring programme to be of sufficient strength, integrity and rigor to allow decisions regarding the breaching of triggers to be made with reasonable reliability. It would also need to be adequately resourced.

#### *Environmental damage assessment*

The ability to detect any environmental damage (for example contamination of fish, damage to submerged reefs, hydrocarbon contamination of sediments) will be greater during an Uncontrolled Release than after the flow has been stopped, and will naturally decrease with time once a release has been stopped. The release of the plan occurred very late in the course of the emergency, and the plan required breaches of trigger levels and subsequent invitation of selected individuals to submit proposals. This resulted in such a slow response time that the most relevant sampling window in some cases had passed. For example, sampling of fish from the commercial fishery for the presence of hydrocarbons has still not occurred as of mid December 2009, 18 weeks since the Uncontrolled Release and 7 weeks after the Uncontrolled Release was stopped. The most appropriate time-frame would have been during the Uncontrolled Release.

Thus, overall, the use of triggers in the Scientific Monitoring Programme made the Monitoring Plan inherently reactive as opposed to proactive, and contributed significantly to the delays in implementing the data collection (see above). Scientific Monitoring Programme was mostly associated with post spill monitoring rather than environmental damage assessment.

#### *Improvements to the Monitoring Plan*

The Operational and Scientific Monitoring Programmes both contain highly generic components which could have been anticipated in the event of a blow out. These components include, for example, the need for chemical fingerprinting of oil, measuring dispersed oil concentrations and assessing dispersant effectiveness, monitoring the fate and effects of the oil, shoreline assessments, assessments of fish for contamination etc. Since blow outs are always a possibility for mining and exploration activities, an oil spill response plan similar to the Monitoring Plan released on 15 October 2009 might have been more effective if it had been part of environmental contingency plan. If this had been the case, the plan could have been released a few days after the Uncontrolled Release instead of after 55 days. This would have greatly improved the speed of the environmental response, and would have engaged the Australian marine science community at an earlier stage. Individual components of the scientific monitoring studies could then have been commissioned in a timely way with greater possibility of detecting immediate and direct environmental damage.

According to the Inter-Governmental Agreement on the National Plan each state/NT agrees that, following consultation with the National Plan Operations Group and relevant stakeholders, they will "...ensure that each oil/chemical terminal and offshore drilling rig/platform within their jurisdiction maintains, either directly or indirectly, an appropriate preparedness and response capacity consistent with the level of risk posed by the terminal, offshore drilling rig or offshore platform...". It is recommended that appropriate preparedness and response capacity includes production of an environmental monitoring response plan (similar in scope to the Monitoring Plan). The plan could be implemented immediately in the event of an incident such as the Montara blow out. This should be part of pre-approval licensing.

It is recommended that in the event of a blow out or event of similar magnitude that the plan discussed previously is released and a range of experts with experience in impact monitoring and oil spill impacts on relevant species and habitats are brought together into an expert review committee. This committee could provide immediate advice to the regulator and the owner/operator of the facility, on the ideal level and timing of monitoring. It could also review operational monitoring results as they are produced, and make further recommendations for modifications of the plan to meet current circumstances. With this timely advice scientists and institutions could be quickly contacted and commissioned to develop individual components of the plan.

One of the problems with setting realistic limits to the range of monitoring activities and in setting effective triggers for their implementation was scientific uncertainty on the likelihood of oil/dispersants encountering sensitive species or

habitats, and the likely physiological and ecological impacts of such encounters. Better prior understanding of the tolerance limits of key species and habitats, of the behaviour of different oil and dispersants under varying meteorological and oceanographic conditions, and of the behaviours of mega-fauna in the area, would have greatly assisted the development of monitoring programs. Ideally monitoring programs should targeted the most likely and severe impacts over those where impacts are known to be highly unlikely. With the knowledge gained from properly reviewed results of the Montara monitoring, and from further targeted research on key areas of uncertainty, a much more efficient monitoring program could be developed if a similar event happens in the future.

**d. It is noted that the Department of the Environment, Water, Heritage and the Arts is required to approve study proposals under the Scientific Monitoring Program, which will then be managed by the owner/operator. What role will the Department of the Environment, Water, Heritage and the Arts be taking in assessing or reviewing the veracity of the studies that are being commissioned? What will be the Department's role in determining how the studies might be modified or evolve as circumstances change over time? Will there be independent peer reviews of the studies?**

DEWHA was required to approve a study proposal under the Scientific Monitoring Programme, but only *after* it had been approved by the owner/operator. In fact, the owner/operator was given the responsibility of commissioning studies from proponents (see section E.1.0 of the Monitoring Plan), and under section E.4.0 were given the responsibility of receiving the studies which may then be revised as requested by the owner/operator to 'clarify deliverables (e.g. data, reporting schedule and other study output)', to 'ensure integrity of data and validity of approach/', to 'ensure efficiency and cost effectiveness'. Once revised and accepted by the owner/operator the proposal would be submitted to DEWHA for approval. This level of involvement by the owner/operator in the design and implementation of the scientific monitoring program presents a potential conflict of interest situation and exposes it to allegations that the scope and timing of monitoring may have been influenced in a way that does not maximise scientific rigour or serve the public interest. While there has been no indication that this has occurred in the present incident, it would be unfortunate if, because of a perceived conflict of interest, monitoring results were called into question after significant effort had been invested in monitoring activities.

Similarly, according to the Monitoring Plan, the owner/operator is also responsible for reporting the results of the Scientific Monitoring Programme i.e. "...Data obtained through the Scientific Monitoring study, by the owner/operator, or any person(s) contracted by the owner/operator, will be provided to DEWHA in individual reports at the completion of each component study by the owner/operator. Draft or interim reports may be prepared as required by DEWHA and agreed by the owner/operator..." (see the Monitoring Plan section 2.4.2). Again, there is a potential conflict of interest here, and it would best if owner/operator was not the sole agency responsible for deciding on the release of results and conclusions of the monitoring program.

In the event of future Uncontrolled Releases of the scale of the Montara incident, it is recommended that the owner/operator of the facility in question (or their delegates) should not have any final veto on the detailed scope and timing of the monitoring programme or be responsible for delivering final reports. In this instance the responsibility would ideally rest with DEWHA who would consult the owner/operator. The Scientific Monitoring Programme is the basis of the environmental damage assessment and in simplest terms this data is evidence which might eventually be used to justify remediation or compensation. According to AMSA's Oil Spill Monitoring Background Paper, scientific monitoring may be used for legal (prosecution) reasons. It follows that the owner/operator is in a highly compromised position and needs to be removed from any direct decision making within the management structure in future incidents.

It is recommended that an independent, standing, environmental expert panel is commissioned that can advise DEWHA and the owner/operator on matters related to the design, implementation and mid program modification of the operational and scientific monitoring components of an environmental response plan. The panel can advise as to the appropriateness of the scale of the response, consider the setting of trigger level, adjudicate on the breaching of trigger levels, and provide advice and recommendations as needed.

It is recommended that a list of relevant institutions that can provide advice to the Environmental and Scientific coordinator (ESC) is compiled and an individual is appointed at each institution to act as a point of contact for the ESC who can coordinate the institutions expertise. The list and contacts would need to be reviewed and updated at least annually.

**e. What public reporting is envisaged to flow from the Operational and Scientific Monitoring Programs?**

All information from the Operational and Scientific Monitoring Programmes should be made publically available. It is recommended that the final reports from the scientific monitoring should also be peer-reviewed *prior* to their formal acceptance by DEWHA.

### Summary and recommendations

The Monitoring Plan – particularly the Scientific Monitoring Programme – could have been significantly improved by implementing it quicker, therefore allowing for effective environmental damage assessment. The *proximate* cause for the delay include (1) not having a pre-existing oil spill environmental response plan (2) having 2 different types of monitoring programmes (Operational and Scientific), that have different objectives and response times, and management schemes, (3) having trigger levels that needed to be breached for studies to be implemented (making the approach reactive as opposed to proactive).

It is suggested that the *ultimate* cause of the delayed response is related to a deficiency in Australian national laws and international maritime conventions regarding Natural Resource Damage Assessment from spills from oil rigs. Australia currently does not have legislation that requires ecological (i.e. non-economic) damages to be assessed, and there are no statutory provisions for claiming compensation for environmental damage assessment. Unless funds or statutory provisions are established to claim compensation (for type 1 and type 2 monitoring), and unless government agencies or academic organisations are prepared for the activities, the only option is to continue for the owner/operator to be closely involved with the environmental damage assessment process. This has the potential to be a conflicted situation.

### Recommendations

- [1] It is recommended that an independent, Expert Panel is commissioned that can rapidly convene to advise state and federal authorities on environmental matters related to the design and implementation of monitoring components of an oil spill environmental response plan. The panel could advise and contribute to the appropriateness of the scale of the response, consider the setting of appropriate trigger levels and adjudicate on the breaching of trigger levels, identify response needs where necessary and monitor the progress of the monitoring programmes; It is recommended that a list is compiled of relevant institutions that can provide advice to the Environmental and Scientific coordinator (ESC), and an individual is appointed at each institution to act as a point of contact for the ESC who can coordinate the institutions expertise and response. The list and contacts would need to be reviewed and updated at least annually. It is recommended that the Expert Panel is linked directly to the National Plan.
- [2] It is recommended that the development of an environmental monitoring response plan (similar in size and scope to the Monitoring Plan) is made part of pre-approval licensing. The monitoring plan could be immediately released in the event of an Uncontrolled Release and scientists and institutions contacted and commissioned for development of individual components. It is recommended that if trigger levels are to be used to implement components of the monitoring plan then all trigger levels should be considered to have been breached unless monitoring can prove otherwise;
- [3] It is recommended that all information from the Operational and Scientific Monitoring Programmes from the Montara incident should be peer reviewed and made available to the public;
- [4] It is recommended that in the event of a future Uncontrolled Release, the owner/operator - or their delegates - should not be involved with the final design, implementation and reporting of a Scientific Monitoring Programme. The responsibility for this should lie with DEWHA (in commonwealth waters) or the appropriate State or Territory authority;
- [5] It is recommended that the distinction between Type 1 and Type 2 monitoring engrained in the National Plan is reviewed to see whether the dichotomy is a useful construct;
- [6] A comprehensive inventory of previous work by the public and private sector which is relevant to implementing responses to future incidents similar the Montara leak should be developed. This should be accessible online and enable queries by habitat, species, institution and other keywords. Additional targeted assessments of the distribution and sensitivities of key species and habitats to future incidents involving oil and dispersants should be undertaken with the collaboration of industry and government.