Pacific Adventurer Oil Spill and Container Loss

Recommendations to improve the incident response, impact assessment and recovery monitoring

Pacific Adventurer Oil Spill and Container Loss Scientific Advisory Panel

Summary

At 0312 (UTC) on 11 March 2009, the Hong Kong registered container ship *Pacific Adventurer* lost 31 containers carrying ammonium nitrate overboard in gale force weather conditions and large swells. The ship was approximately seven miles east of Cape Moreton, Queensland. All the containers sank but two of the ship's fuel oil bunker tanks were pierced as the containers went overboard. Around 270 tonnes of heavy fuel oil was spilled into the sea and washed ashore on Moreton Island and the Sunshine Coast (including Bribie Island). The incident triggered the Queensland Coastal Contingency Action Plan (QCCAP) and the clean-up operations were largely completed by 15 May 2009.

Early in the clean up effort (in response to this major incident) the Queensland Government convened an independent Scientific Advisory Panel (the Panel) to advise the Government on the likely immediate impacts of the oil spill and the potential for the lost ammonium nitrate containers to impact the marine and coastal environment of South East Queensland. The Panel was also asked to provide advice on requirements to ensure the State is well prepared if a similar event occurs anywhere in Queensland (including the Great Barrier Reef) in the future.

The focus of this report is a review of the incident response and post incident actions, and to provide advice on measures that could be considered to improve the incident response, impact assessment and recovery monitoring should a similar event occur in the future.

Recommendations

1. *Environmental and Scientific Coordinator (ESC):* The role, responsibilities and reporting arrangements of the ESC in the Queensland Coastal Contingency Action Plan (QCCAP) should be clarified to ensure the ESC is able to provide direct advice to the Incident Controller (and/or the Marine Pollution Controller if required) and provide more direct input into incident response actions.

2. *Documenting Decisions:* Review the procedures in the Queensland Coastal Contingency Action Plan (QCCAP) to ensure there are processes to clearly document ESC environmental advice, the response to that advice and the reasons for particular actions. This will help facilitate effective post incident impact assessment and recovery monitoring.

3. *Access to data, information, expertise and assets:* For major incidents the ESC requires timely access to appropriate scientific and technical expertise. Consideration should be given to establishing an institution contact list for Queensland Government Departments, Universities, Publicly Funded Research Agencies and other agencies to ensure the ESC has timely access to expert advice and assets in the response to a major incident. If established it will need to include a regular (six-monthly) induction and updating process. Consideration should also be given to what resources and/or assets are available to the ESC to effectively carry out their role.

4. *Establishment of a Science Panel:* The Queensland Coastal Contingency Action Plan (QCCAP) should be reviewed to include a mechanism to establish an independent environmentally-focused Science Panel to ensure appropriate coordination and advice to support impact assessment and recovery monitoring (including Type II monitoring). This should only be required for major incidents and will require a process in the Plan to trigger the establishment of an appropriate Science Panel.

Background

At 0312 (UTC) on 11 March 2009, the Hong Kong registered container ship *Pacific Adventurer* lost 31 containers overboard in gale force weather conditions and large swells. The ship was approximately seven miles east of Cape Moreton, Queensland. All the containers, carrying ammonium nitrate prills[1], sank. Two of the ship's fuel oil bunker tanks were pierced as the containers went overboard and the *Pacific Adventurer* lost about 270 tonnes of heavy fuel oil into the sea. The heavy fuel washed ashore on Moreton Island and the Sunshine Coast (including Bribie Island). A summary of the incident response and clean up action can be found at the MSQ website (see www.msq.qld.gov.au). A preliminary report on the incident is provided by the Australian Transport Safety Bureau (see: www.atsb.gov.au) and a detailed report will follow approximately one year from now.

Early in the clean up effort, the Queensland Government decided to assess the environmental impacts of the *Pacific Adventurer* incident and to ensure the State is well prepared for any future threats. The Government convened an independent Scientific Advisory Panel to advise the Government on:

1. The likely immediate impacts of the oil spill;
2. The potential for the lost ammonium nitrate containers to affect the marine and coastal environment of South East Queensland; and
3. Requirements to ensure the State is well prepared if a similar event occurs anywhere in Queensland (including the Great Barrier Reef) in the future.

The Panel first convened on the 24 March 2009 and has met several times since (as well as undertaking inter-session tasks).

The Terms of Reference for the Panel are to:

1. Assess the short, medium and long term impacts of the oil spill on the marine and coastal environment of South East Queensland;
2. Determine the potential impacts should the ammonium nitrate content of the 31 containers leak into the marine and coastal environment of South East Queensland;
3. Advise government on what additional mechanisms are needed (particularly in relation to ecologically sensitive areas such as reef) should a similar event occur in future; and,
4. Advise government on possible recovery strategies based on the Panel's assessment of likely impact.

To date the Panel has focused on issues associated with terms of reference one, two and four. The SAP has provided advice to the Government on the short term environmental impacts of the oil spill and incident response actions on the flora and fauna of the marine and coastal environment of South East Queensland, and the likely impact of the ammonium nitrate on the offshore marine environment and commercial fisheries. It has also provided advice on

[1] The process of 'prilling' is undertaken to make a solid into granules or pellets that flow freely and do not clump together.

monitoring activities required to determine the medium to long term impacts of the oil spill and the recovery.

The focus of this report is on term of reference three.

Incident Response

Under the National Plan to combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances (see National Marine Oil Spill Contingency Plan at www.amsa.gov.au), there are clear processes and roles regarding decision making during an incident. After safety, the environment is the highest priority for decision makers. The Plan has roles and processes regarding environmental and scientific advice, although there is variation in how that works between States when the National Plan is refined into State Plans.

In Queensland there is the Queensland Coastal Contingency Action Plan (QCCAP) (see www.msq.qld.gov.au) and this was triggered by the *Pacific Adventurer* incident. Further to this, the oil spill incident was seen to be of significant impact and as a result the Premier of Queensland invoked a 'disaster declaration'. The QCCAP Plan was still followed (with Maritime Safety Queensland as the lead agency), however the disaster declaration ensured that additional State Government resources were available (under the Queensland Disaster Management System).

A disaster declaration "empowers response or combat agencies and 'authorised officers' to undertake combat and rescue operations that secure life and property, as well as enabling them to acquire the necessary resources to adequately deal with the disaster response operations" (please see www.disaster.qld.gov.au).

In responding to major incidents, the overall response strategy is specified in the QCCAP Plan, formulated by a Marine Pollution Controller (MPC), and implemented by an Incident Controller (IC). They are advised by an Incident Management Team (IMT). In some State plans and for some incidents there is provision to shift decision making to a State committee, higher level government official and/or other agency. However, the people responsible for the incident response should have timely access to appropriate scientific and technical expertise from relevant, agencies and institutions.

In this report the Panel has reviewed the environmental aspects of the *Pacific Adventurer* incident response and provided recommendations for consideration by Maritime Safety Queensland (MSQ – part of the Queensland Department of Transport and Main Roads) and the Australian Maritime Safety Authority (AMSA) in their analysis of the *Pacific Adventurer* incident response, for consideration in their scheduled review of the National Marine Oil Spill Contingency Plan in late 2009.

Issues and Recommendations

Four issues have arisen during the work of the Panel and its review of this incident that should be considered in MSQ and AMSA incident/Plan reviews.

1. Ensuring key decision makers have timely access to environmental and scientific advice during an incident.
2. Ensuring adequate documentation of incident response decisions relevant to environment risk.

3. Ensuring timely and cost-effective access to science and technical capability for post incident clean-up actions, impact assessment and recovery monitoring.

4. Reviewing the value of the establishment of a SAP in the case of a major oil spill incident such as this

Issue 1:

Environmental and Scientific Coordinator
After safety, the environment has the highest priority in incident response (see Protection Priorities on page 21, National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances - Queensland Coastal Contingency Action Plan (QCCAP)). It is important that Plans ensure environmental and scientific advice have a high priority in any incident response.

The National/State Plans for oil and chemical spills have an Environmental and Scientific Coordinator (ESC) whose role is to gather information and provide advice on environmental and science matters including: priorities for protection; the impacts of oil and chemicals on environmental values; the effectiveness and impacts of combat options (for example dispersant use); and, advice on assessments and monitoring that may aid combat decision or determine the impacts of spills.

Under the National and Queensland Plans, the ESC works under and provides advice to the Planning Officer who reports to the Incident Controller (who reports to the Marine Pollution Controller) (please see Appendix 2 for diagram of National Plan structure). Under some State and Territory arrangements the ESC may directly advise the Marine Pollution Controller (MPC).

Recognising the high priority placed on the environment and the ESC's key role in incident response, the Panel questioned whether the ESC could have been more effectively utilised during the *Pacific Adventurer* incident and suggests that this should be considered in the MSQ and AMSA reviews.

The panel suggests that in large-scale incidents (such as this) the ESC should be able to report directly to the Incident Controller (and if necessary the Marine Pollution Controller), in addition to working with the Planning Section/Officer.

Recommendation 1 - Environmental and Scientific Coordinator (ESC): The role, responsibilities and reporting arrangements of the ESC in the Queensland Coastal Contingency Action Plan (QCCAP) should be clarified to ensure the ESC is made available to the Incident Controller to provide more direct input and advice into incident response actions.

Issue 2:

Documenting Decisions
Effective post-incident environmental impact assessment and recovery monitoring requires a clear understanding of the incident, what actions were taken in an incident response and the reasons for particular actions. This is specified in the QCCAP's transparency of decision making requirements but it seems this was not always achieved in the *Pacific Adventurer* incident. The Panel suggests this should be considered in the MSQ and AMSA reviews. Clear documentation of advice, actions and justifications will also assist agencies that have to respond to concerns during and after an incident.

Recommendation 2 - Review the procedures in the Queensland Coastal Contingency Action Plan (QCCAP) to ensure there are processes to clearly document ESC environmental advice, the response to that advice and the reasons for particular actions. This will help facilitate effective post-incident environmental impact assessment and recovery monitoring.

Issue 3

Access to data, information, expertise and assets
Access to current information is the key to providing high-quality environmental advice in an incident response. There have been compilations of environmental information to assist in incident response e.g. AMSA Oil Spill Response Atlas, however as these are 'snapshota' they do not include the most up to date data and information.

A variety of Queensland Government Departments, Universities, Publicly-Funded Research Agencies and other organisations have expertise, data and information that would help ensure the best response to a major incident. Currently, this information may be either sought by the ESC or offered by the provider. Either way the information must be compiled, interpreted and presented in a form suitable for use by the planners and decision makers during a response. In the *Pacific Adventurer* incident timely access to data, information and expertise seemed to have been an issue for the response team.

With today's rapid and efficient communication technologies and noting that the number of relevant Queensland universities, institutions, Government agencies and other relevant organisations is not large, consideration should be given to establishing a Queensland institutional contact list (a single contact person for each agency). This would ensure the ESC has timely access to expert advice and assets. If this were established it would need to include a regular (six-monthly) induction and updating process.

This resource could be used to call together a group (if necessary) to provide early-phase specialist environmental advice and would support the ESC in carrying out their role (information gathering, filtering and synthesising environmental advice). This resource would also provide direction for institutions as to how and where they can contribute information/resources. The contact person for each institution would have responsibility for responding to requests from the ESC and liaising internally within their organisation. This will ensure that the best information is gathered and made available by each institution.

As well as access to data, information and expertise, there may also be requests for assets, for example vessels and technical equipment. This is likely to come from the Logistics Officer in the response team. However, it is possible that the institution contact network/list could also deal with these requests.

Recommendation 3 - For major incidents the ESC requires timely access to appropriate scientific and technical expertise, as well as resources/assets to act on scientific advice. Consideration should be given to establishing an institution contact list for Queensland Government Departments, Universities, Publicly-Funded Research Agencies and other agencies to ensure the ESC has timely access to expert advice and assets in the response to a major incident. If established it will need to include a regular (six-monthly) induction and updating process.

Issue 4:

Establishment of a Science Panel
Within ten days of the *Pacific Adventurer* incident the Queensland Government convened an independent Scientific Advisory Panel (the Panel). The reasons behind this decision included the size of the incident, potential environmental risk, coordination of capabilities and the need for continuous improvement of incident response plans. Specifically the Panel's role was to advise the government on the likely environmental impacts of the incident and recovery monitoring needs and requirements, to ensure the State is well prepared if a similar event occurs anywhere in Queensland (for example the Great Barrier Reef). The Queensland Government will need to review whether the establishment of the Panel added value to the response to the *Pacific Adventurer* incident.

In a 'self assessment' of its role, the suggestion of the Panel is that the response to a major incident would be helped by the establishment of an appropriate independent Science Panel to ensure appropriate coordination and advice to support environmental impact assessment and recovery monitoring, and this should be considered in the MSQ and AMSA reviews. If it were to be 'formalised' in the National and QCCAP Plans, this would require a process to trigger the establishment of an appropriate Science Panel. For example, this could be done on the recommendation/request of the ESC to the Incident Controller and/or Marine Pollution Controller based on clear criteria that would include the complexity of the incident and habitats potentially/actually impacted with the decision to establish the Panel taken by the Marine Pollution Controller in consultation with their supervisor.

A key scientific and environmental role following a major incident is to assess the environmental impacts of oil and/or chemical spill and the actions undertaken to clean it up. This information is essential in providing advice about the incident and response to stakeholders. It is also the basis for determining the likely longer term impacts of the incident. This requires establishing cost effective, scientifically robust targeted monitoring programs to quantify impacts and recovery. To be effective, monitoring programs need to be developed and commenced early in the incident response process.

The current Plans do not seem to explicitly recognise the need for longer term monitoring to measure impact and recovery. Furthermore, without appropriate monitoring it is difficult to provide advice on the effectiveness of the response to improve Plans. There is also a coordination dimension to this issue as establishing a monitoring program should be informed by and take advantage of any existing monitoring activities and draw on available local expertise for example University programs and students.

One of the roles of an independent Science Panel would be to help ensure impact assessment and monitoring plans are a clearly delineated part of the response to a major incident. There would need to be clear and explicit links between the Panel and the Incident Controller and other key decision makers.

Recommendation 4 - The Queensland Coastal Contingency Action Plan (QCCAP) should be reviewed to include a mechanism to establish an independent environmentally focused Science Panel during some incident response operations - to ensure appropriate coordination and advice to support environmental impact assessment and recovery monitoring (including Type II monitoring). This should only be required for major incidents and will necessitate a process in the Plan to trigger the establishment of an appropriate Science Panel.

Acknowledgement
The Panel thanks Mr Malcolm Turner of the Great Barrier Reef Marine Park Authority (GBRMPA) for his significant contribution to this report.

Appendix 1 – Members of the Pacific Adventurer Oil Spill and Container Loss Scientific Advisory Panel

The membership of the panel comprises eminent scientists, from the government and academic sectors, with recognised expertise in the environmental impacts of events such as oil and chemical spills and a track record of research in this area.

Panel Members

Dr Ian Poiner (Chair)	CEO, Australian Institute of Marine Studies
Professor Peter Doherty	Research Director, Australian Institute of Marine Studies
Dr Russell Reichelt	Chairman and Chief Executive, Great Barrier Reef Marine Park Authority
Professor Paul Greenfield	Vice Chancellor, University of Queensland
Professor Chris Cocklin	Deputy Vice Chancellor, Research and Innovation, James Cook University of North Queensland
Dr John Robertson	General Manager, Fisheries and Aquaculture Development, Department of Primary Industries and Fisheries
Dr John Glaister	Deputy Director-General, Queensland Transport
Dr Eva Abal	Senior Scientist, Healthy Waterways partnership
Dr Kate Wilson	Wealth from Oceans Program, CSIRO
Dr Munro Mortimer	Principal Scientist, Freshwater and Marine Sciences Unit, Queensland Department of Environmental and Resource Management
Dr Rick Morton	General Manager, Planning, Environment and Communities, Port of Brisbane Corporation.

Queensland Transport provided secretariat functions and meeting venues for the Committee.

Appendix 2 – Diagram of National Plan Structure