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Australian Oil Spill Arrangements and Recent Responses

This paper is presented in three sections, each section dealing with specific subject matter relevant to the system and capability of Australian oil spill response arrangements.

Section 1 – provides an outline of the organisation and intent of oil spill arrangements in Australia and the relationship between Government and industry.

Section 2 – outlines the response to the Pacific Adventurer spill which occurred on 11 March 2009 and resulted in approx 270 tonnes of fuel oil contaminating shoreline adjacent to the Queensland capital, Brisbane.

Section 3 – highlights the response strategies used to combat the Montara oil spill in which over 6,000 tonnes of oil were estimated to flow into the Timor Sea to the North-West of Australia.

Section1 – Australian Arrangements

The essence of oil spill response arrangements in Australia is CO-OPERATION. The International Convention on Oil Pollution Preparedness and Response and Cooperation (OPRC) requires signatory countries to embrace the same principle in developing local and regional capacity.
In Australia the requirement for this cooperative relationship was reinforced in 1970 when an oil spill (Oceanic Grandeur 1270 tonnes) highlighted inadequacies in National arrangements.
The Oceanic Grandeur spill was the catalyst for the development of inter-Government agreement between the National and State authorities which became the National Plan:

"The National Plan is a national integrated Government and industry organisational framework enabling effective response to marine pollution incidents. The Australian Maritime Safety Authority (AMSA) manages the National Plan, working with State/Northern Territory (NT) governments, the shipping, oil, exploration and chemical industries, emergency services to maximise Australia's marine pollution response capability. The National Plan Management Committee (NPMC) provides strategic management of the National Plan while the National Plan Operations Group (NPOG) handles operational functions."
Courtesy AMSA Website

Importantly, the Australian response strategy is a Cooperative arrangement and envisages all stakeholders having some involvement in a response operation dependent on location and severity.
As a result of the ongoing commitment of all participants in the National Plan, Australia has maintained a competent level of response capability in the years since the development of the National Plan.

However, it is difficult to ascertain at any given time if the arrangements will actually work. Notwithstanding local and national exercises, there are so many variables associated with oil and oil spill incidents, not least of those the physical nature of Australia with over 50,000kms of coastline and 12,000 islands, which means that each potential spill can be dramatically different and potentially requires very different strategies and resources.
The two spills which occurred in 2009 and are highlighted later in this paper provide excellent examples of the enormous diversity in conditions and environments which can be encountered.

The National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances defines the responsibilities associated with oil spill response in Australia.
From a practical response perspective the important component is the Combat Responsibility which is the responsibility for the direct management of the response activities; the National Plan assigns this role in the event of a spill from an off-shore oil operation or from oil refineries and terminals to the company operating the facility.
In the case of spills from ships, either the State government (if spill is within 3 nautical miles of shore) or National government (if more than 3 nautical miles distance from shoreline) are required to provide the necessary resources and lead the response.

These nominations are intended to ensure an immediate and effective response, however if a spill escalates in size, additional resource or support is available from regional or national stockpiles.
This last point is critical as it is possible for spill dynamics to be beyond the capability of the resources and expertise of even a well-prepared organisation, especially if the volume spilt or contamination is high or the response is long term.

Australia has had an improvement in performance with significant reductions in spill events and volumes in recent years as have many other countries and regions.
Higher standards in ship construction and selection, crew training, navigational arrangements and Port State Control have been major contributors to this improved performance.
As a consequence there has been less opportunity to assess the true capability of response arrangements in real conditions.
As the periods between spills extends there is an increased opportunity for experienced personnel to move on to new roles, careers or indeed retire from the oil spill response workforce.
The absence of this experience and knowledge makes vulnerable every spill response organisation, be it Government or industry.
This is the result of new personnel and management not having experienced anything other than exercise and risk assessment. Even the calculation of a high risk scenario or circumstance does not engender the level of preparation and response capability that is readily acceptable immediately following a spill event.

No amount of desk-top exercises and deployment drills fully prepare a team for an actual oil spill situation.
It is only in the real spill scenario that every strategy from slick identification, chemical treatment, containment and recovery, tracking and modelling, NEBA, sampling (oil and water), waste storage and the myriad of other pollutant-specific activities are taken to the end point.
In Australia the activity associated with the pollutant is often preceded by the need to establish access to remote environments where there are no facilities for responders and by that I mean roads, camps or airstrips.

Notwithstanding earlier comment, oil spills do continue to happen and 2009 was a bad year for Australia with two significant incidents, however a number of lessons will be learnt from these incidents which can be used to ensure better preparedness in the future.

Section 2
Pacific Adventurer

***Pacific Adventurer*, Cape Moreton, March 2009**

At 3.12 am (Queensland Time) on 11 March 2009, the 1990 built, 23,737 dwt, Hong Kong China registered general cargo ship Pacific Adventurer lost 31 containers of ammonium nitrate overboard some 7 nautical miles east of Cape Moreton while en route to Brisbane from Newcastle. The ship reported later that it was holed on its port side near its engine room and a fuel service tank had been breached with the loss of some oil before the remainder was pumped from the damaged tank. The ship later estimated that up to 270 tonnes of heavy fuel oil was lost into the sea. However, there also was damage to one of the ship's starboard bunker fuel tanks below the waterline. After an independent audit of the oil aboard in Brisbane, it was estimated more than 270 tonnes was lost.

The oil impacted significant portions of the south-east Queensland coast, in particular the eastern and northern beaches and headlands of Moreton Island (a National Park), the eastern beaches of Bribie Island (north of Brisbane), the beaches and foreshores of the Sunshine Coast (north of Brisbane) and small areas of the Brisbane River. Under the National Plan response arrangements, the Queensland Government through Maritime Safety Queensland was responsible for management of the oil spill response. The Australian Maritime Safety Authority (AMSA) as manager of the National Plan provided specialist and logistical support.

While the majority of oiling occurred on sandy beaches, the clean-up operations were complicated by the large amounts of oil buried by sand being deposited back on the beaches because of the weather and sea conditions. As all areas have high tourism and community amenity value, a high standard of clean-up was required to support the recovery of the tourism industry and restore previous levels of amenity.

Clean-up operations continued for two months. A total of about 2,500 people were deployed for the entire clean-up including workers from many agencies, amongst them Maritime Safety Queensland, the Department of Environment and Resource Management, local regional councils, Emergency Management Queensland, as well as workers from QR, Road Tek, Skilled and private contractors, the State Emergency Service, Queensland Police Service and the Queensland Fire and Rescue Service. The Australian Maritime Safety Authority (AMSA) personnel as well as 72 members of the National Response Team from all States/NT, the oil industry and contractors also provided assistance during the period. At the height of the response operation 400 response personnel were working on Moreton Island each day.

Approximately 3,000 tonnes of sand contaminated with oil was removed from Moreton Island. The work was mostly manual labour using shovels and rakes to fill about 8,000 bags each day to achieve this result. Specialised sand sieving equipment was also used to assist the clean-up operations on Bribie and Moreton Islands.
Considering the size of the oil spill, a very small number of wildlife was affected. Birds, turtles and sea snakes were captured, rehabilitated and released by Queensland Parks and Wildlife Service.

Montara Wellhead Oil Spill 2009

At approximately 5.30am. WA time (7.30am Australian Eastern Standard Time) on Friday 21 August 2009, the Montara Wellhead mobile drilling unit located 140 miles offshore from the NW Australian coast, had an uncontrolled release of hydrocarbons from one of the platform wells. Consequently oil escaped to the surface and gaseous hydrocarbons escaped into the atmosphere.

Initial estimates provided by the operator (PTTEP Australasia) were that 64 tons per day (400 barrels) of crude oil were being lost. It should be noted, however, that this estimate could not be confirmed at any time during the incident, nor was it possible to provide any more accurate assessment. The leak continued until 3 November 2009 and response operations continued until the well was successfully capped on 3 December 2009 (105 days).
The Australian Maritime Safety Authority (AMSA) was advised of the oil leak at approximately 10.00am, and within 15 minutes implemented the National Plan to Combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances (the National Plan). The Australian Marine Oil Spill Centre (AMOSC) in Geelong was advised and activated at 10.35am.

Over 130 surveillance flights were conducted throughout the duration of the operation commencing on the first day of the incident. These flights gathered oil spill intelligence, environmental data, and directed the surface vessels and dispersant spraying aircraft to heavy concentrations of oil.

At around 7.00pm on the first day, the Northern Territory Designated Authority for the platform formally passed responsibility for the clean up to AMSA, in accordance with agreed National Plan arrangements.

Throughout the incident, the majority of observed oil remained within 35 kilometres of the platform with patches of sheen and weathered oil reported at various distances in different directions from the platform as wind, temperature and currents varied. The benign conditions experienced during most of this period permitted containment and recovery operations, however to some extent also hampered the natural breakup of oil. Sheen was reported at Ashmore, Cartier and Hibernia Reefs by observers on board aircraft on several occasions, however there was no reported impact on any shoreline or reef.

Immediate response actions included deploying aircraft (including a Hercules C-130 aircraft from Singapore), Australian Maritime Safety Authority (AMSA) personnel and additional dispersant (initially approximately 50 tonnes) to supplement stocks at the AMSA Darwin equipment stockpile.

AMSA's operational response was reviewed daily based on observations from morning surveillance flights. Equipment from oil industry stockpiles in AMOSC/Geelong, supplemented from Singapore, as well as AMSA stockpiles in Darwin and other States were utilised in the clean-up operation.

Response personnel were provided by the oil industry through AMOSC and AMSA as well as through National Response Team arrangements. This included assistance from all States and the Northern Territory. Assistance was also provided by New Zealand personnel in accordance with formal arrangements between Australia and New Zealand. In total, 247 personnel were involved in the response, with many undertaking more than one rotation through at least one of the positions in the response organisation.

Dispersant spraying operations commenced on 23 August 2009 and continued until 1 November 2009:

- The Hercules C-130 sprayed a total of 12,000 litres of dispersant on 23 and 24 August;
- Aircraft contracted to AMSA (co-funded by AMOSC) as part of Australia's Fixed Wing Aerial Dispersant Capability continued spraying operations based out of Truscott aerodrome from 25 August until 2 September, spraying 32,000 litres of dispersant; and
- Vessel spraying operations were carried out from 30 August to 1 November, with 118,000 litres of dispersant sprayed.

Observations and sampling indicated that the use of dispersant was highly effective in assisting the natural process of degradation and minimising the risk of oil impacts on reefs or shorelines. The six types of dispersant used - Slickgone NS, Slickgone LTSW, Ardrox 6120, Tergo R40, Corexit 9500 and Corexit 9527 - were approved for use within Australian waters, having passed laboratory acute toxicity testing requirements applied under the National Plan arrangements.

Containment and recovery operations commenced on 5 September 2009 and continued until 30 November 2009, although no recoverable oil was located after 15 November 2009. These operations involved two vessels working together joined by a 300 metre containment boom, with a skimmer operating in the boom "pocket" to recover the oil. For much of the response, two pairs of vessels undertook these operations. A total of 844,000 litres of product was recovered. It is estimated that some 493,000 litres of this oil-water mixture was oil.

The Department of the Environment, Heritage and the Arts (DEWHA) reported one confirmed report of an oil-affected sea snake and 29 oil-affected birds found in the region affected by the oil spill. Of these, 22 birds died as a consequence of being oiled. No confirmed reports of oiled whales or other cetaceans were received. No other confirmed reports of affected wildlife were received despite extensive aerial and water-based patrols in the area.

Overall the response operations were successful in achieving the objective to prevent oil from impacting on sensitive marine resources, in particular the marine parks of Cartier and Ashmore Reefs, and the NW Coast of Western Australia.

Conclusion:

Australia is a committed and diligent member of the International maritime community and through its involvement with the IMO continues to strive for ongoing improvements in many facets of maritime activities.

The National Plan is an excellent strategic commitment by all stakeholders (Government and industry) to ensure that preparedness and response capability is maintained in and around Australian waters.

However oil spills do occur and it is at these times that even with a solid agreement and well defined (and exercised) strategy that the vagaries of individual responses create the ‘real time’ challenge.

Whether it is trying to get equipment into a remote location, only several kilometres from a major city or the need to conduct aerial operations and at sea recovery 150 nautical miles from shore, the detail of these activities must be developed ‘on the day’ and require a team of personnel with access to resources and an open mind to potential solutions.