Chapter 5

Regulatory Model—Australia

Many countries have put into place sophisticated oil spill planning and response systems, which cover all aspects affecting the transportation of oil through their territorial waters, including response to oil spills. They have effective maritime administrations and national legislation that implements international treaties. Australia's management of the Great Barrier Reef (GBR) is one of the leading models of effective protection of a world-class coral reef resource from oil pollution incidents.

The GBR stretches more than 2000 km along Australia's eastern (Queensland) coast, covers approximately 345,000 km^2, and contains 2900 individual reefs and 300 reef islands (or cays) (Craik, 1995). The length of the coastline of the mainland and the larger islands is estimated to be some 70,000 km, with islands numbering about 12,000 in total (Nelson, 2000). The GBR supports the greatest diversity of plant and animal life found anywhere in the world: 1500 species of fish, more than 350 species of hard coral, over 4000 species of mollusc, and at least 242 species of birds. The GBR is the world's largest coral system, 93% of which falls under the Great Barrier Reef Marine Park, controlled by the Great Barrier Reef Marine Park Authority (GBRMPA) (Craik, 1995).

Tourism in the reef and coastal areas represents an A$700 million a year industry. Commercial and recreational fishing pulls in another A$400 million annually (Craik, 1995). Australia first recognized the need to protect the GBR in the early 1970s, when certain mining and oil interests announced their intent to mine the reef and drill for oil and minerals. Public reaction led to establishing the Great Barrier Reef Marine Park under the Great Barrier Marine Park Act, 1975. Oil drilling and production were subsequently banned in the GBR region and, by later amendment, control of the GBRMP was placed in the GBRMPA.

Australia is the fifth largest shipping task in the world in terms of tonnes of cargo shipped and kilometers traveled, and depends almost exclusively on shipping to move its imports and exports. About 12,000 ships visit Australia each year (Craik, 1995). Three thousand ships navigate the inner route of GBR annually, the majority of which are tankers, transporting everything from coal, nickel ores and alumina to raw sugar, sand, bauxite and oil. These ships of some 200,000 DWT plus carry significant quantities of bunker fuel (Watkinson, 2000). Only 5% of the ships moving through Australian waters are tankers that carry crude or refined oil products. Tanker traffic is on

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the increase as the Queensland population grows and demands increased refined oil products. Australia's future crude oil needs are expected to be supplied primarily from Indonesia and Australia's Timor Sea Fields (Craik, 1995).

Two routes of passage, known as the "inner" and "outer" routes, wind through the GBR's complex and dangerous maze of reefs, shoals, cays and islands, and connect with the Torres Strait at the region's northern end. The inner route follows the calmer waters between the reef and the Queensland coast. The outer route travels the deeper waters of the Coral Sea, seaward of the GBR, with entry into the lagoon between the reef and the coast at specified and limited narrow passages.

Eighty percent of all vessel voyages occur in the inner route, where other hazards include the 1500 fishing vessels and 100,000 recreational and tourist vessels that congest shipping lanes in and around the ports. Whales and other large marine animals compound traffic problems (Ottesen, 1994b). Given the natural dangers of navigation, the high volume of shipping traffic and the constrained routes, the risk of an oil spill in the GBR in the next 20 years is considered high (Craik, 1995). A recent risk analysis report predicts that the amount of oil which might be spilled would be relatively small: a spill of 10,000 tonnes or more may occur only once every century. Smaller to middle size spills are more likely in key areas of high risk, such as the Eastern coast of Queensland, major ports around Sydney and Melbourne, and certain areas of Western Australia. For these areas, predicted spills of 100 tonnes or more may happen once every 17 months, of 1000 tonnes or more, once every 7 years, and of 10 tonnes or more, every 8 months (Nelson, 2000).

Even if the prediction of low spillage of oil holds true, the incidence of serious "near misses" and groundings with the GBR means that continued assessment of risk needs is required for the GBR (Watkinson, 2000).

Australia combines national and international legislative muscle with national, state and territorial response and zoning plans to protect this major resource. The entire GBR Marine Park is a marine protected area, zoned for multi-use with zones of no activity, restricted activity such as research, and limited commercial activity. Prohibited activities include oil drilling and production, mining, littering, spearfishing, and extracting large specimens of certain fish species. High impact activities require permits from the GBRMPA, which can be granted only after an extensive assessment is conducted.

Because of the size of the GBR, enforcement is a major problem. The reef is so huge that catching violators is almost impossible. Even when violators are caught by the Australian authorities, conviction is uncertain. For example, regulations prohibit fishing within 1500 m of the reef flat, but determining where the 1500-m line lies is often at question (Steven, personal interview, 1996). Size impacts response to an oil pollution incident. Distance of reefs from shore, inhospitable weather during much of the year, remote areas far from adjacent populations are factors which create great difficulty for effective response. They limit the ability to use more traditional response such as booming, on sea mechanical recovery, and mechanical shoreline clean-

up, particularly in large spills (Craik, 1991). Communication between responders, movement of personnel and equipment, and logistical support can become substantial problems during a response due to the "tyranny of distance" imposed by the vast size of coastline and maritime waters. Infrastructure existing at ports may not be readily available outside the most densely populated capital city ports (Lipscombe, 2000).

While Australia can protect its own seas to a degree, the driving force behind control and protection of its GBR comes from Australia's ratification of the major international conventions, specific and specialized international status accorded to the GBR, and adoption by Australia of necessary implementing legislation. Australia has embraced the international system to ensure that its seas, territorial waters, and ports remain safe from pollution. Australia is a signatory to and implemented its own national legislation as follows:

- MARPOL 73/78 (International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978) given effect in Australia by the Protection of the Sea (Prevention from Ships) Act 1983 and the Navigation (Protection of the Sea) Amendment Act 1983. Under MARPOL 73/78 provisions, a Port State can protect its waters by inspection of ships entering its ports for compliance with treaty requirements. (See discussion, Section 4.1.5.) The Australian Maritime Safety Authority (AMSA) maintains a strong Port State Control program. In 1998, 2946 ships were inspected. 88.5% were in compliance with MARPOL 73/78 (AMSA, 1997/1998).
- CLC (International Convention on Civil Liability for Oil Pollution Damage, 1992), given effect in October 1996 in Australia by amendments to the Protection of the Sea (Civil Liability) Act 1981.
- FUND Convention (International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992), given effect in Australia in October 1996 by the Protection of the Sea (Oil Pollution Compensation Fund) Act 1993 and other enabling legislation.
- INTERVENTION (International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties 1969 and amending 1973 Protocol), given effect in Australia by the Protection of the Sea (Powers of Intervention) Act 1981. In cases of "grave and imminent danger", authority exists to remove cargo, salvage the vessel, sink or destroy the ship or its cargo, and take control of foreign flag ships regardless of the location of the vessel.
- OPRC (International Convention on Oil Pollution Preparedness, Response and Co-Operation, 1990), upgrades response capability of ships for oil spills, provides for emergency plans, reporting requirements, training and safety standards. OPRC entered into force in Australia in July 1992 under the Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (Section 11A). Australia has regional agreements in place with New Zealand, Indonesia, Papua New Guinea, and New Caledonia (AMSA, 1998).

As the coastal state, Australia can adopt national laws relating to navigational safety, marine traffic control, preservation of the environment, and control and prevention of pollution from oil spills and other substances. Shipping lanes and shipping schemes can be prescribed, particularly where inherently dangerous or noxious substances are being shipped.

In November 1990, the GBR was declared the first Particularly Sensitive Sea Area (PSSA) by the International Maritime Organization (IMO). PSSAs are defined as areas "which need special protection through action by the IMO because of their significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by maritime activities" (Craik, 1995).

The PSSA declaration places special protective measures on all shipping activities taking place in the GBR. Since October 1991, all loaded oil tankers, chemical tankers, liquefied gas carriers, and all vessels of 70 m or more in length must carry a licensed pilot when taking passage through the inner route of the GBR between Cape York and Cairns, or when passing through the Hydrographers Passage, a much-used narrow passage between the inner and outer route. An amendment to the Great Barrier Reef Marine Park Act 1975 implemented the compulsory pilotage section (Ottesen, 1994a).

The Australian Maritime Safety Act established the Australian Maritime Safety Authority (AMSA) in January 1991. This agency is charged with augmenting "the delivery of safety and other services to the Australian maritime industry". AMSA assumed five basic functions to:

- Enhance maritime safety;
- Provide a national system of navigational services;
- Administer marine pollution prevention and response programs;
- Provide services to the maritime industry; and
- Coordinate maritime search and rescue.

AMSA is responsible for administering applicable maritime international treaties, the Navigation Act 1912, and other maritime national legislation such as the Protection of the Sea (Prevention of Pollution from Ships) Act 1983. AMSA is the authority designated to enforce compulsory pilotage, oversee training and respond to oil spills, and to conduct Port State control and tanker surveillance inspections (Australian Department Of Transportation, 1995). AMSA's authority over the exclusive economic zone extends (EEZ) over an area of more than 11 million km^2, making Australia's EEZ one of the largest in the world (Nelson, 2000).

The master and owner of a vessel which navigates through a compulsory pilotage area without a pilot are both liable for felony prosecution and a maximum penalty following conviction of $50,000 for an individual and $200,000 for a corporation. The regulation applies whether the violator enters an Australian port on the same or a later trip, or returns at a later date with the same master. Since its inception, compliance with compulsory pilotage has risen from almost 90% to almost 100%, according to

one study, although another study indicates that 25% of foreign vessels traveling on the inner route fail to meet the pilotage requirement. With the new upgraded pilot licensing system instituted in 1993 and administered by the AMSA, the impact of compulsory pilotage through the GBR is improved safety and lessened possibility of oil spills (Ottesen, 1994b). Effective July 2001, compulsory pilotage applies to increased routes through the GBR, including the outer edge of Hydrographers Passage. Additionally, penalties for oil spill polluters have increased substantially (OSIR, 2001).

The designation of the PSSA allows the governments to take special preventive measures:

- Asserting certain discharge restrictions;
- Adopting routing measures, including prohibiting travel through certain areas;
- Introducing environmental fees, such as tolls for transit;
- Prohibiting certain activities such as offshore mineral exploration and fishing activities;
- Developing site-specific contingency plans to combat oil spills;
- Introducing Flag and Port States strict surveys of ships commensurate with increased risk to the environment due to age of vessels and other safety factors; and
- Instituting vessel traffic management and reporting systems; for example, requiring vessels traveling through the reef to report every 4 hours.

The Australian government has implemented some of these measures. The international community assisted the GBR when, under MARPOL 73/78, they defined the designated area for no ship discharges of any type for the area between the Queensland coastline and nearest land as a line drawn between coordinates on the outer edge of the GBR. This translates to a prohibition against discharge for oil tankers of up to 50 nautical miles from the outer edge of the GBR, and up to 200 nautical miles from the Queensland coast. For vessels other than oil tankers, the range of the prohibition extends between 12 and 162 nautical miles. Without this special definition, the usual distance from actual land in which discharges are prohibited varies from 3 to 12 nautical miles (Ottesen, 1994a, b). "Effectively this means all operational discharges are prohibited within GBR" (Watkinson, 2000).

In October 1973, the Australian government adopted a national strategy for responding to marine oil spills. Australia conducted a major review of the plan in 1992 and finalized its present format in 1998. The plan is called the National Plan to Combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances (the National Plan), administered by AMSA (AMSA, 1997/1998). The National Plan maintains a national integrated government/industry organizational framework capable of responding effectively to oil pollution incidents, and to manage funding, equipment and training programs to support the plan. AMSA conducts a comprehensive training program to provide training of skills needed by response personnel.

The objectives of the Plan are to provide a national integrated system for responding promptly and effectively to marine oil or chemical pollution incidents by designating competent national and local authorities and establishing:

- "A national contingency plan for preparedness and response which includes the organisational relationship of the various organisations involved, whether public or private;
- An adequate level of pre-positioned spill combating equipment, commensurate with the risk involved, and programs for its use;
- A comprehensive national training program to familiarise personnel at all levels with the requirements of planning and responding to the needs arising from an oil or chemical spill. This program includes conducting frequent exercises;
- Detailed national, state, local and industry plans and communications arrangements for mobilising resources and responding to an oil or chemical pollution incident;
- An awareness by Governments, media and the community of the limitations inherent in a response to a major oil or chemical spill, with particular emphasis on the understanding that: other than in exceptionally favourable conditions, current technology does not exist to prevent weather-driven oil washing ashore. In many cases, the most environmentally-friendly solution may be leave it alone and let nature take its course.
- In many situations chemical spills cannot be contained or recovered, and the primary response activities will be reducing the risk to the public and wildlife and minimising the damage to the environment" (AMSA, 1998a).

Funding for the National Plan, based on the "polluter pays" principle, is from a shipping tax on vessels of "not less than 24 meters in length having at least 10 tonnes of oil on board as fuel or cargo". The 1998 rate was set at 3.3 cents per net registered tonne per quarter with a minimum of $25 per quarter. Two acts authorize the levy: *Protection of the Sea (Shipping Levy) Act 1981* and *Protection of the Sea (Shipping Levy Collection) Act 1981*. Recovery of costs incurred by the government in responding to oil spills is provided by the Protection of the Sea (Civil Liability) Act 1981 (AMSA, 1998b). Currently, the levy produces an annual amount of $3.5 million (Nelson, 2000). The levy is used in part to fund maintenance and administration of the National Plan and stockpiles of industry owned oil spill response equipment. In 1991, the oil industry and the Australian Institute of Petroleum established the Australian Marine Oil Spill Centre in Geelong, where much of the oil spill response equipment is maintained.

The National Plan is supported by state and local contingency plans, such as the TORRESPLAN for the Torres Strait and the REEFPLAN for the GBR. These plans prioritize oil spill response based on threats to human life, followed by habitat threat, then rare and endangered species, and finally threats to other natural resources based on environmental, social and economic factors and the specific spill incident. In 1998,

AMSA received $1 million from the National Heritage Trust to establish a "National Oil Spill Response Atlas", based upon updating the current plan atlas. The outcome of this funding is a compilation of geographical and textual data into standard GIS format for most of Australia's coastal and maritime waters. Additionally, the authority is developing Search and Rescue and Oil Spill Trajectory Models based on meteorological and oceanographic data and trajectory modeling to track oil spills in the GBR. The atlas will link to these models, as well (AMSA 1997/1998; Nelson, 2000). Other technological developments include continued review of a Fixed Wing Aerial Dispersant Capacity contract between AMSA and a provider, for delivery of pre-approved dispersant by air throughout the plan territories (AMSA, 1997/1998).

Historically, the government of Australia and not the ship owner/operator responded to oil spills. This spill response system is changing. Effective 1 January 1999, Australia will adopt an Incident Control System, similar to the Incident Command System used in the US for all spill response, to be put into effect over a 3-year period. Changes in all contingency plans at national, regional, and local levels are underway (AMSA, 1997/1998). The expected implementation date for this plan is year-end 2001 (Nelson, 2000).

International support, national legislation, educational activities on a statewide and territorial basis, compulsory pilotage, national and specialized response plans, and monetary sanctions, all protect the GBR. Australia has been fortunate. Only two major oil incidents have occurred since 1970. During the 1997/1998 fiscal year, AMSA received reports of 251 marine oil spill sightings, 71% of which were within port areas of control. Nine incidents required activation of the National Plan (AMSA, 1998b). Since 1970, there have been only thirteen incidents involving loss of more than 100 tonnes of oil in Australia's waters (Nelson, 2000). Diversion and control of shipping, implemented through special legislation, is part of the answer for protection of Australia's Great Barrier Reef.

The other piece of the solution puzzle is the strong focus upon preparedness and then effective, science-based response. Michael Julian, Executive Manager for International Affairs of AMSA summarizes the strengths of the Australian system: partnership with industry, maintaining a high level of preparedness and response through continual upgrading and readiness of equipment, use of appropriate technology, with dispersant use as a main line of attack, research into other methods of response, such as bioremediation, and strong enforcement of International Maritime Organization conventions, including Port State control, in addition to pilotage and navigational requirements (Julian, personal interview, 1999). Yet even with this most comprehensive system, Australians do not rest easy that everything that can be done to prevent catastrophic oil discharge has been done. A former official at the Great Barrier Reef Marine Park Authority voiced the common sentiment: "We live in fear of an oil spill" (Steven, personal interview, 1996).

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