On Scene

September 2010

Appointment of New General Manager and Maritime Emergency Response Commander (MERCOM)

I am pleased to announce that AMSA's permanent General Manager of our Marine Environment Division is Toby Stone.

Toby has also been appointed as the Maritime Emergency Response Commander (MERCOM).

MERCOM is the national decision maker responsible for the management of responses to maritime casualties. With intervention powers to take such measures as may be necessary to prevent, mitigate or eliminate a risk of significant pollution, incurring the power to direct a port to release a tug to provide emergency assistance to a vessel at risk, or designate a place of refuge for a ship in emergency situations that present a risk of significant pollution.



Toby is well known to many of you who are involved in marine pollution response and has been the Head of Counter Pollution and Salvage with the UK Maritime and Coastguard Agency (UKMCA) for the last six years. In his role in the UKMCA he was responsible for the overall operational management of the Emergency Towing Vessel Contract, Aerial Surveillance and Dispersant Spraying Contract, National Pollution and Salvage Stockpile Contracts, National Hazardous and Noxious Substances Response Team Contract and providing operational, scientific and technical response and support to the Regions of the Maritime and Coastguard Agency and other government and external organisations.

Toby has been involved in and attended the majority of maritime shipping casualties in the UK pollution zone since 1997, including the *Sea Empress* and *Ever Decent*. In addition, he attended the *Erika* and *Prestige* disasters in France. More recently he was involved in the *MSC Napoli* incident.

As you can see from Toby's experience, we have been fortunate to secure his services as General Manager Marine Environment Division and MERCOM at a time when the National Plan and the National Maritime Emergency Response Arrangements are about to undergo a significant review and during the formation of our Marine Environment Division.

Editor's Note

Welcome to the new look September edition of our newsletter.

Excellence - It's not a skill, it's an attitude. It's as simple, and as complicated as that.

Well, the members of the National Plan certainly know how to rise to the occasion with attitude. With one of the biggest occasions recently being the grounding of the vessel *Shen Neng 1* on the Douglas Shoal. There was a coordinated response effort across many Government departments, resulting in only a small amount of oil lost and the vessel eventually returning safely home to China.

Read on to find out more about the *Shen Neng 1* and other issues for the National Plan including; the launch of the National Plan review; new staffing arrangements; levy increases; and workshops.

Don't forget that if you have some interesting news, we would love to hear about it. Send it in to us at eps@amsa.gov.au

Spring Greetings, Katrina Hansen

AMSA Hosts Oil Spill Management Course

Darwin was the location for the Oil Spill Management Course hosted by AMSA in June.

There were 19 participants from a range of States and agencies.

Australasian Inter-Service Incident Management System (AIIMS) was a central component of the training to allow participants to look at both AIIMS and Oil Spill Response Incident Control System (OSRICS) structures and the functional roles within these.

The participants were responsive, interactive and enjoyed putting their newly learned skills into practice through a range of exercises.



Top: Ken Rickard, John Finch, Cathy Cousins, Andrew Shelverton, Sandy Wells, John Gorrie, Nigel Green, Brad Thomson, Albert Simonato, Mal Parsons, Kylie Mancini
Bottom: James Pickett, Serkan Yakacikli, Fiona Dunk, Amanda Hall, Graham Edgley, James Lawson Missing from photo: Stephen Van Prooyen

Spillcon 2010

The AMSA and Australian Institute of Petroleum's International Oil Spill Conference for the Asia-Pacific region - Spillcon 2010 was declared a great success. Held at the Grand Hyatt in Melbourne a real highlight of the Conference was the high calibre of national and international speakers.

An average of 400 delegates from over 40 countries attended each day of the Conference.



There were a large number of sessions covering: Legislation and Policies, Incidents and Hazardous and Noxious Substances Response, Technology, Transport and Oil Spill Media Response.

New AMOSC Response Manager



AMOSC is pleased to advise that Mr Nick Quinn has accepted the position of Response Manager.

Nick was most recently the Group Manager of the New Zealand Marine Pollution
Response Service where he is well regarded for having been a prime force behind the development of the high standard of New Zealand's national response capability. Nick's technical knowledge has also enabled him to provide positive input as Chairman of the IMO OPRC Technical Committee.

Prior to joining Maritime NZ, Nick completed 22 years service as a Commander in the Royal NZ Navy.

Nick will bring a skill set to AMOSC which will enable the ongoing development of AMOSC services to industry and the National Plan. His initial focus will be the management of response operations, equipment stockpile logistics and coordination of the industry Core Group.

National Plan Review Set to Commence

The Terms of Reference for the proposed Review of the National Plan have been finalised by AMSA and the National Plan Management Committee (NPMC). Tenders have been called for two projects:

- An assessment of the risk of pollution from marine oil spills in Australian ports and waters, to be conducted in two phases. The first phase will provide a report that can be taken into account during the overall review, and the second phase will provide a dynamic web-based risk model that will enable AMSA and its stakeholders to update the model as necessary to reflect changing risk profiles in the future.
- An analysis to determine if current arrangements are adequate to provide an effective response to pollution of the sea by oil and HNS, and where deficiencies are identified, make recommendations to rectify them. This analysis will include the National Maritime Emergency Response Arrangements (NMERA).

Request for tender advertisements appeared in 'The Australian' on 10 July 2010 and were also placed on the Aus Tender and AMSA web sites. NPMC has established a tender evaluation committee, to be chaired by Malcolm Irving (NPMC Chairman) with senior officials from AMSA, the Australian Institute of Petroleum, and Maritime Safety Queensland.

It is hoped that both projects will be completed in the first half of 2011.

Giovanna Lorenzin

AMSA would like to welcome Giovanna as the new Information Systems Coordinator for the Environment Protection Response section of the Marine Environment Division. Her role includes providing GIS analysis, mapping and data management support when marine pollution incident responses are activated through the National Plan.



Giovanna has a Bachelor of Arts degree and a Graduate Diploma in Applied Remote Sensing, and subsequently a Graduate Diploma in Information Technology.

Before coming to AMSA, Giovanna spent 10 years at Geoscience Australia's National Mapping and Information Group in various GIS roles. Most recently as a GIS Project Officer, she managed several large-scale topographic revision projects that were undertaken in collaboration with State and Emergency Services agencies to support emergency management over high priority areas of the country. Giovanna was also involved in the computation of Australia's Maritime Boundaries and Continental Shelf claim submission as defined in the United Nations Convention on the Law of the Sea (UNCLOS).

Giovanna is also an ongoing spatial professional volunteer with Mapping and Planning Support (MAPS), a Canberra-based pool of spatial professional volunteers that are called upon from various agencies to provide GIS support during major disasters, usually bushfires. During the 2009 Victorian bushfires, Giovanna was deployed to Kilmore to assist the Victorian Police in collating and mapping field data collected during Police Search and Rescue efforts.

Giovanna's incident response experience gained from MAPS will be highly valuable in her new role at AMSA.



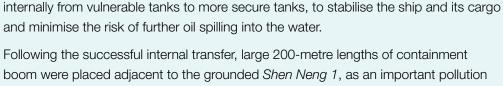
On 3 April 2010, the 230 metre-long bulk coal carrier *Shen Neng 1* left the Port of Gladstone bound for China, carrying 68,000 tonnes of coal as cargo. The Chinese-registered ship was traversing a well known shipping route south of the Douglas Shoal, when it veered off course and ran hard aground 38 nautical miles east of Great Keppel Island at about 5.30pm. The impact ruptured the ship's fuel tanks and released approximately four tonnes of fuel oil into surrounding waters.



Following an initial assessment of the circumstances, Maritime Safety Queensland (as combat agency) activated National Plan response arrangements. AMSA immediately mobilised key personnel and airlifted a surveyor onto the vessel to carry out damage assessment. Response crews were activated in Brisbane, Gladstone and Rockhampton. Emergency surveillance aircraft were placed on standby to inspect the scene at first light. Oil booms and skimmers were deployed to contain and recover the oil, and dispersants were applied by light aircraft as soon as practicable.



Professional salvors (Svitzer Salvage) were engaged and boarded the *Shen Neng 1* on the morning of 4 April to begin the process of refloating the grounded ship. The initial damage report showed that the main engine room was breached, and the main engine and rudder were both damaged. The action of the sea was causing the ship to move on the reef, creating further damage and increasing the risk of break-up.



Before an attempt could be made to refloat the vessel, oil had to be transferred



boom were placed adjacent to the grounded *Shen Neng 1*, as an important pollution prevention measure before oil could be pumped off the ship. In the prevailing weather, external oil transfer was a difficult and complex operation and the safety of all concerned was of the highest priority.

By 10 April, 400 tonnes of fuel oil and oily water had been pumped off the *Shen Neng 1*. Subsequently, the Acting General Manager of Maritime Safety Queensland (Patrick Quirk) agreed with a request from the salvors to 'blow down' the vessel's breached tanks with high pressure air to ensure the tanks were clear of oil, before an attempt to lift the grounded vessel commenced. Damage to the ship's hull caused fuel mixed with

seawater to be trapped in hard-to-access tanks, making it difficult to extract all trapped oil. Each tank was sounded and 'blown down' separately, with booms in place to contain any oil that may have escaped.

Following this process, the *Shen Neng 1* was successfully refloated at 7.48pm on Monday, 12 April, with no loss of oil, and towed to a safe location off Great Keppel Island for further assessment. Inspections by divers showed substantial damage to the bottom hull surrounding the engine room at the stern of the ship, although the ship remained structurally sound overall. Increasingly adverse weather conditions, with south easterly winds of approximately 25 to 30 knots, prevented extended diving operations and hampered further condition assessments of the hull.

Advice received indicated the ship needed significant repairs and a large amount of coal to be unloaded before it would be safe to tow out of Australian waters. Following appropriate consultation, a decision was made to tow the ship to the Port of Gladstone where appropriate repairs could be conducted. During this operation, tug crews had difficulty keeping lines secured to the ship and five thick towing hawsers parted in the rough conditions.

Due to the poor handling properties of the ship and unfavourable weather, it was considered too great a risk to attempt to enter the Port of Gladstone for repairs. On 30 April, AMSA issued a direction for the ship to move to a safe and protected anchorage between the mainland and Fraser Island in the northern reaches of Hervey Bay.

On 12 May, with the vessel safely at anchor off Hervey Bay, the coal off-loading operation began. One scoop at a time, 19,000 tonnes of coal were transferred to two lighterage vessels, the *Clipper Mistral* and *Johanna C*, to bring the *Shen Neng 1* higher in the water and take the strain off the vessel's damaged hull, in readiness for the long ocean tow. This phase of the response was completed on May 20, ahead of schedule, with no coal lost during the carefully managed off-loading operation.

By 31 May, the *Shen Neng 1*, towed by a deep sea tug, was on its way back to China, marking the end of a two-month salvage operation. The ship's master has been charged for causing damage in the marine park. All costs incurred by agencies, estimated in the vicinity of \$5–\$6 million, will be recovered from the ship owners and insurer.

As a result of this incident, the Commonwealth and Queensland Governments are proposing to expand the compulsory ship reporting area to include the southern reaches of the Great Barrier Reef, via a submission to the International Maritime Organization (IMO). The extension will entail an expansion of the existing Reef Vessel Traffic Service (REEFVTS) coverage area, which monitors ships' tracks and alerts crews of impending dangers.

Patrick Quirk said the successful outcome of this response operation was the result of combined and sustained effort by many agencies including Maritime Safety Queensland, the Australian Maritime Safety Authority, Svitzer Salvage, The Department of Environment and Resource Management, the Great Barrier Reef Marine Park Authority, the Queensland Police Service, the State Emergency Service and regional councils. Mr Quirk said the successful conclusion of the incident, without any further material harm being done to the environment since the *Shen Neng 1* initially struck Douglas Shoal on April 3, was a tribute to everyone who responded to the task.

Courtesy of Maritime Safety Queensland













The Effects of Oil and Dispersed Oil on Temperate Seagrasses

Seagrasses are a vital component of many near-shore areas of coastal Australia, providing habitat and food for a variety of marine, estuarine and beach-dwelling animal species, as well as being important in the nutrient cycle of near-shore and foreshore areas.

Oil spills may affect seagrasses either by direct smothering or by toxic effects of the water soluble fraction of oil.

Although Australian approved Oil Spill Dispersants rate predominantly as "slightly toxic" to "practically non-toxic" by the International Maritime Organization GESAMP classification system, there is limited knowledge on the specific effects on seagrasses exposed to dispersants. The use of dispersants may also increase the exposure of submerged seagrasses to oil as dispersed oil enters the water column.

To address the knowledge gap on the impact on seagrasses exposed to oil spills, AMSA entered into a funding agreement on behalf of the National Plan with the University of Technology Sydney (UTS). The National Plan also provided in-kind support and technical advice to the research team. UTS contributed additional funding and were also successful in securing an Australian Research Council Industry Linkage grant to expand the project.

The UTS researchers used a combination of laboratory and field experiments to compare the toxicity of several oils and dispersant/oil mixtures on seagrasses, and to provide advice on the best approach to the use of dispersants on oil spills in the vicinity of seagrasses.



The project outcomes to date have been a literature review completed in late 2004, a report on the proof-of-concept experimental work completed in June 2005, and a final report completed in August 2010.



In this work, the toxic impact of oil and dispersants on three temperate seagrasses *Zostera capricorni, Zostera muelleri* and *Halophila ovalis* was measured. A range of experiments were performed in the field, and in the laboratory using whole plants and seagrass leaf sections.

Seagrasses were exposed to the water accommodated fraction (WAF) of Tapis Crude oil and IFO-380 (Intermediate Fuel Oil) produced with and without the addition of dispersants, Corexit 9527, Ardrox 6120 (for dispersing the Tapis Crude oil) and Corexit 9500 and Slickgone LTSW (for dispersing the IFO-380).

The findings of the study were that non-dispersed oil, in general, leads to less photosynthetic stress to *Zostera* capricorni and *Halophila ovalis* compared with the addition of a chemical dispersant. *Zostera muelleri* did not appear to be negatively impacted by either dispersed or non-dispersed Tapis crude oil. In most treatments, where photosynthetic stress was detected in the seagrasses, full recovery was evident prior to the conclusion of the experiment, whilst in other cases recovery occurred within the ten hour exposure period.

In conclusion, when the addition of a chemical dispersant is deemed necessary to protect other resources in the area, the seagrass may still recover depending on the dispersant used. Contact AMSA for further information.

Photographs courtesy of Kim Wilson

Pacific Adventurer and Montara Incident Analyses concluded

The report of the analysis of the response to the *Pacific Adventurer* incident near Moreton Island, on 11 March 2009, was completed and issued in March 2010. The recommendations in the report have been presented to both the National Plan Operations Group and National Plan Management Committee, and will also be taken into account as necessary during the proposed National Plan Review.

The report of the analysis of the response to the *Montara Wellhead Platform* incident in the Timor Sea from August to November 2009 was completed and issued in March 2010. The report includes eight recommendations. Key issues for AMSA include the need to review and update internal procedures for responding to major incidents where AMSA is the combat agency, and to ensure appropriate resources are available for such incidents. Other recommendations will involve AMSA working with the Department of Environment, Water, Heritage and the Arts regarding arrangements for environmental input and the Department of Resources, Energy and Tourism regarding approval of contingency plans and insurance arrangements in the offshore petroleum, exploration and production industry. AMSA's response to the recommendations was issued and placed on the AMSA web site at the same time, and a copy of the report was provided to the *Montara* Commission of Inquiry. The report has also been considered by the National Plan Management Committee.



Environment Protection Response ran an intensive week long Aerial Observation of Oil on Water Course in Albion Park in August.

Twelve participants from AMSA, each state, the Northern Territory and New Zealand attended the course, with seven of the participants forming part of the National Response Team.

Four nationally accredited units of competency were met during the week including Navigate from an Aircraft, Work Safety Around Aircraft, Plan Aircraft Operations and Obtain Incident Intelligence.





The course had a large practical component, and utilised a number of helicopters and fixed wing aircraft, including one of AMSA's search and rescue Dornier aircraft.

It was a hugely successful week allowing our National Aerial Observers to come together to build on experience gained at recent incidents and enhance their skills. The course demonstrated the continuing cooperative nature of the National Plan and was well received generating positive feedback.

AMSA Hosts Regional Oil Spill Workshop

On Monday 12 April, AMSA hosted a seminar on regional cooperation for preparedness and response to maritime pollution incidents, as well as raising awareness of the new Bunkers Convention. The seminar was held under the auspices of the South Pacific Regional Environment Program (SPREP), with support from the IMO Technical Cooperation Program, and was attended by officials from the Cook Islands, Micronesia (Federated States of), Fiji, Kiribati, Niue, Nauru, Palau, Samoa, Tokelau, Tonga, and Vanuatu. The participants included representatives from port authorities, maritime and environment administrations as well as nationally owned oil companies. The seminar was held in Melbourne the day before the commencement of Spillcon 2010.

The seminar was carried out by a number of facilitators and presenters from IMO, SPREP, the Australian Marine Oil Spill Centre, International Oil Pollution Compensation Fund, AMSA, Maritime New Zealand and Samoa. The primary objective was to raise awareness of the importance of the Pacific Ocean Pollution Prevention Programme (PACPOL) and the Pacific Marine Spill Contingency Plan (PACPLAN) as the regional framework and mechanism for Tier III response, as well as provide up-to-date information on the international framework under the OPRC Convention and international compensation arrangements.

National Response Team (NRT) update

The NRT now has a full complement of 63 members.

We would like to welcome the following members to the team

- David Rogers South Australian Department for Transport,
 Energy & Infrastructure
- Rob Lea New South Wales Maritime
- Zac Wrigley- Darwin Port Corporation
- Rachael Alderman Tasmanian Department
 Primary Industries, Parks, Water and the Environment
- Anthony Port Tasmanian Department
 Primary Industries, Parks, Water and the Environment



New NRT member, Rachael Alderman is a biologist in the Marine Conservation Program of the Biodiversity Conservation Branch of DPIPWE. Her focus is on research and conservation of marine wildlife, particularly seabirds and marine mammals. The small marine conservation team is responsible for a diverse range of activities around Tasmania, including coordinating the rescue of stranded whales and dolphins responding to seal and whale entanglements, and running long term population monitoring of seals, large migratory whales and albatrosses using a variety of boat, aerial and ground based methods.

Matt Hanrahan, Bruce Chistopherson and Walter Ferrao have moved on from the NRT, and we want thank them for their energy and enthusiasm and wish them all the best in their future endeavours.

Baseline Hydrocarbon Survey and Shoreline Assessment of North Kimberley, Western Australia

During the *Montara* Wellhead Platform incident there was considerable concern about the threat the uncontrolled hydrocarbon release posed to the Kimberley, and the measures in place to protect the State's environment. While the Department of Transport is the lead agency in Western Australia for marine oil spill response, Office of the Environment Protection Agency (OEPA) staff provide the Environment Science Coordination role under WestPlan (Marine Oil Pollution), Western Australia's plan for combating oil spills at sea.

As part of the state response, OEPA staff undertook a survey to assess environmental values and establish the natural background levels of petroleum hydrocarbons in marine waters, shoreline sediments, intertidal filter feeders and cultured pearl oysters at selected sites in the Kimberley bioregion.

With the assistance of Paspaley Pearling Company (PPCo), 16 sites on 12 islands and two mainland shores in the Kimberley were surveyed between October and November 2009. This is a period prior to the transition into the northern monsoon, when winds would tend to be more onshore and could favour the transport of *Montara* hydrocarbons towards the Kimberley coast.

The survey found no evidence of contamination in seawater, shoreline sediments or oyster tissue by petroleum hydrocarbons from the *Montara* Wellhead release or other sources. Information collected about the ecological values (e.g. bird and turtle utilisation, presence of mangroves and reefs formations) at each of the sites is being compiled for incorporation into the Oil Spill Response Atlas (OSRA).

Further details of the baseline hydrocarbon survey and its findings are provided in Marine Technical Report No.3; it was released in July 2010 and can be downloaded from www.epa.wa.gov.au

A follow-up survey was undertaken in July 2010, again with the assistance of PPCo, revisiting the majority of sites sampled during the baseline survey, to determine if any hydrocarbons had come ashore during the wet. A report of this follow-up survey is in preparation.

Courtesy of Ray Masini and Cam Sim









New Boom and Equipment Stocktake

AMSA recently received a boost to its stockpile in Dampier of an additional 500 metres of Inflatable GP boom.

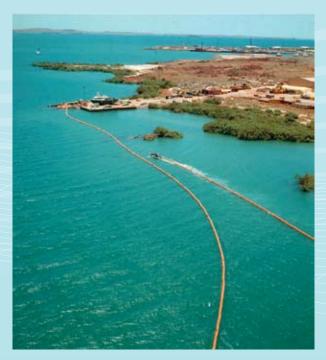
Sturcturflex were the successful tenderers for the supply of this boom, which is divided into five separate aluminium storage boxes.

This will enhance the ability for the boom to be quickly dispatched in 100 metre self contained kits. They each contain 5 x 20 metre lengths of boom, a towing bracket, petrol powered inflation blower and a repair kit.

The National Plan equipment stock take has progressed well, with all inspections completed in July.

The contractor is collating the information, with recommendations for what equipment requires replacement and what is still in satisfactory operational condition.

In addition to the physical inspection of all of the equipment, the contractor will be producing an up-to-date equipment catalogue including weight dimensions and shipping details. The new equipment catalogue will



become a very useful tool at an incident allowing logistics personnel to know all required aspects of each piece of equipment on one page.

A number of equipment related tenders are at different stages of assessment, including the storage and maintenance of the National Plan equipment nationally and the purchase of storage boxes for National Plan equipment in Sydney. An order has also been placed to replace the dispersant used in the *Montara* Incident with delivery expected to be in October 2010.

Protection of the Sea levy Increases

The Protection of the Sea (Shipping Levy) Amendment Regulations 2010 increased the levy rate on 1 April 2010 from 11.25 cents to 14.25 cents per net registered ton per quarter. The minimum payment of \$10 per quarter remains unchanged.

The levy applies to ships visiting or operating in Australian ports that have a tonnage length not less than 24 metres and have on board 10 tonnes or more of oil in bulk, as fuel or cargo, at any time during a quarter when the vessel was in an Australian port.

This levy funds AMSA's management of the National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances and the National Maritime Emergency Response Arrangements.

Consistent with the potential/actual polluter pays principle, the Australian Government has agreed to increase the levy to recover the pollution-related costs beyond those covered by the polluter.

What's On

September 2010

Course Name	Organisation	Location	Dates
Introduction to Oil Spill Response and Level Three	MSQ	Cairns, QLD	6 – 10 September
Course In Oil Spill Operations	AMOSC	Geelong, VIC	13 – 17 September
Oil Spill Response Shoreline assessment and cleanup training	WA DOT	Geraldton, WA	21 – 22 September
OSRA Toolkit roll-out (specific requirements apply)	AMSA	Canberra, ACT	29 – 30 September
Introduction to Oil Spill Response and Level Three	MSQ	Brisbane, QLD	28 September – 1 October

October 2010

	Course Name	Organisation	Location	Dates
	Regional Responders Initial Training Course	Maritime NZ	Auckland, NZ	11 – 14 October
7	Course in Oil Spill Management	AMOSC	Geelong, VIC	11 – 15 October
	Logistics, Finance and Administration	MSQ	Brisbane, QLD	12 – 12 October
	NSW annual maritime incident response exercise	Maritime NSW	Sydney and Port Kembla, NSW	13 – 14 October
	Introduction to Oil Spill Response and Level Three	MSQ	Thursday Island, QLD	18 – 22 October
	HNS Marine Spill Management Course	AMSA	Melbourne, VIC	26 – 28 October

November 2010

Course Name	Organisation	Location	Dates
Core Group Assessment Course	AMOSC	Geelong, VIC	8 – 12 November
Regional Responders Initial Training Course	Maritime NZ	Auckland, NZ	9 – 12 November
Introduction to Oil Spill Response and Level Three	MSQ	Bundaberg, QLD	15 – 19 November
Logistics, Finance and Administration	MSQ	Gladstone, QLD	16 – 17 November
Regional Responders Revalidation Training Course	Maritime NZ	Otago, NZ	16 – 18 November
Course in Oil Spill Command & Control	AMOSC	Geelong, VIC	22 – 26 November
Oil Spill Response Operator Training Workshop	WA DOT	Esperance, WA	23 – 25 November

December 2010

Course Name	Organisation	Location	Dates
Level 4 Oil Spill Responder	MSQ	Brisbane, QLD	6 – 10 December

January 2011

_ _	Course Name	Organisation	Location	Dates
+	Introduction to Oil Spill Response and Level Three	MSQ	Mackay, QLD	31 January – 4 February

February 2011

Course Name	Organisation	Location	Dates
Course in Oil Spill Response Management	AMOSC	Geelong, VIC	7 – 11 February

Farewell John



Paul Nelson farewells John Gillies

Marine Environment Division has said farewell to John Gillies. John is retiring after more than 10 years with AMSA, with nearly 9 years of that time in Environment Protection. John's significant contribution includes the first (and still only) Australian to Chair the Executive Committee of the London-based International Oil Pollution Compensation Fund, a feat he achieved between 2006 and 2008.

John's domestic contribution includes Executive Officer of the National Plan Management Committee since 2002 and also undertaking the Executive Officer role for reviewing major oil spills such as *Global Peace*, *Pasha Bulker* and *Pacific Adventurer*.

John's many years of experience in environment-related roles in Government and particularly with AMSA will be extremely hard to replace and he will be missed by us all

All the best, John!

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On Scene is published by the Australian Maritime Safety Authority as the manager of the National Plan to Combat the Pollution of the Sea by Oil and other Noxious and Hazardous Substances.

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