



Exercise "GEORGE BASS"

National Plan to Combat Pollution of the Sea by Oil
5-6 June 1996

Summary and Recommendations

September 1996

Prepared for Victorian Marine Pollution Committee (VMPC)

The authors and the Exercise George Bass Steering Committee wish to acknowledge the assistance of all agencies and individuals who provided comments on the exercise. In particular, the comments of David Baird, AMSA, Melbourne (for Section 10.), and Rohanne Young, AMSA, Canberra (for Section 11.) are gratefully acknowledged.

- Ampol
- Ampolex Apache
- Australian Marine Oil Spill Centre (AMOSOC)
- Australian Maritime Safety Authority (AMSA)
- BHP Petroleum
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- Country Fire Authority
- Darwin Port Authority (John Butler, Mike Bowman and Bruce Wilson)
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- Esso Australia Ltd
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- International Tanker Owners Pollution Federation (ITOPF), Tosh Moller (Principal Umpire)
- Marine Board of Victoria
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- Port Phillip Marine Pilots
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- South Australian EPA (Peter Pfennig)
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- United Salvage
- Victorian Channels Authority
- Victorian Institute of Marine Sciences
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- Woodward-Clyde Consultants (Rob Noyes-Fitzsimmons)

Foreword

Exercise George Bass, held on 5 and 6 June 1996, was the major national oil spill response exercise conducted by Australia's National Plan to Combat Pollution of the Sea by Oil for the years 1995 and 1996. Similar major exercises are held each two years, the last being Exercise Capricorn held in Gladstone in March 1994.

This exercise was perhaps the most ambitious exercise of oil spill response capability that has been held in Australia to date and involved a large number of agencies and personnel. It is also the first time that the exercise has been umpired by an international umpire.

The umpire, Dr Tosh Moller of the International Tanker Owners Pollution Federation (London) stated after the exercise that "If I may take this opportunity of summarising my overall impression, I am convinced that if there was to occur a major oil spill response in Victoria

tomorrow, the talent and dedication of the people involved and the concentration of clean-up resources at their disposal would win the day".

George Bass achieved its aims of exercising a wide range of plans and procedures and also has identified areas in which work is required and those areas where existing arrangements are working well. The exercise reaffirmed the close working relationship between the Victorian regions, and between State and Commonwealth agencies and personnel. A rapid turnout of equipment and human resources was achieved and this included government and industry resources such as AMOSC. At the same time the exercise provided guidance for future improvement to be made in both resources and planning.

We wish to thank each member of the Exercise George Bass Steering Committee (Captain Thyge Enevoldson, Marine Board of Victoria; Captain Charles Paulusz, Victorian Channels Authority; Mr Alan Crouch, Department Natural Resources and Environment; Mr Colin Gibbs, EPA; Mr David Ffrench, Esso; and Mr Joe Buffone and Mr Paul Welshe, SES) for their dedication and effort in assuring a realistic, effective and safe test of National, State, regional and local systems, both government and industry.

Special thanks also to QEST Consulting and AGC Woodward-Clyde (Mr Gary Rigby and Mr John Wardrop) for their most professional and dedicated efforts in developing the scenario, running the exercise and preparing this report.

Wayne Stuart
Chair, Exercise George Bass Steering Committee
Marine Environment Protection Services
Australian Maritime Safety Authority, Canberra

John Turnbull
Chair
Victorian (National Plan) Marine Pollution Committee
August 1996

Summary Of Recommendations

Recommendation 1: Operating procedures should be incorporated into NATPLAN, VICPLAN and Regional OSCP's requiring that the Plans are formally activated and that any change of responsibility or response Tier should be similarly enacted

Recommendation 2: The roles of VMPC members, and support staff, should be reassessed and redefined in VICPLAN along more functional lines, eg:

- VMPC Chairman; political aspects of the response should be managed by the VMPC rather than the VOSC;
- State Scientific Support Coordinator;
- AMSA VMPC representative;
- National Response Team.

Recommendation 3: A VMPC organisational chart should be prepared to illustrate the roles of VMPC members and supporting staff, and the revised VMPC structure.

Recommendation 4: State Committees should develop programmes for contingency plan familiarisation and testing. A series of task oriented minor training events should be run eg:

- Notification, callout, transport, deployment and recovery exercises related to a specific scenario such as deployment of equipment and recovery of oil approaching a geographic location eg Swan Island in Port Phillip;
- Special oiled foreshore assessment exercises;
- Strategic planning and assessments needed to assist planning of a credible response;
- Running and assessment of OSTM and CRA exercises and the planning to follow.

Recommendation 5: That AMSA representation be considered in the event of an upper Tier 2 or Tier 3 response. This should be either on the VMPC or as an adviser to the VOSC depending on the revised VMPC structure.

Recommendation 6: VICPLAN should be revised in accordance with the changes mooted in Recommendations 1-5, and the Regional Contingency Plans should be revised to be concise "operational" plans concentrating on Regional procedures, including response strategies and actions.

Recommendation 7: National and State response management, together with NATPLAN and VICPLAN, should be revised to incorporate an incident control system (eg. AIIMS ICS). This should encompass:

- Standardised reporting procedures and formats (SITREPS, POLREPS etc);

- Personnel tracking;
- Tracking and logging of communications and events;
- Display and communication of status reports etc.;
- Procedures for the formal activation of the relevant plan and a clear statement of the response tier and lead agency responsible;
- Handover briefings;
- Training etc.

Recommendation 8: Adequate numbers of administrative support staff should be planned for across all disciplines required and be allocated to key response staff and to the ECC generally.

Recommendation 9: All agencies should plan for relief staff in the event of a prolonged response. This needs additional trained staff to be identified.

Recommendation 10: Need for all levels of response personnel to be physically identified in their respective roles.

Recommendation 11: Only essential personnel should be permitted into the ECC. This should be the VOSC, Executive Group and support staff and/or the OSC plus regional OSRT coordinators and administrative support personnel depending on the response tier. This should be defined in the Port Phillip and other Regional OSCP and VICPLAN.

Recommendation 12: The layout and resourcing of the Emergency Control Centre should be reviewed including the need for:

- Additional telephone lines;
- Extra plain paper facsimile units and lines, including dedicated "in" and "out" lines;
- Provision of a dedicated photocopier.

Recommendation 13: The ECC layout should be revised so that members of any 'functional groups' are in close proximity and administrative support is catered for. A separate media room should be retained and a "retreat" for the VOSC/OSC advisers is also recommended.

Recommendation 14: All State-Regional communications are to be through the OSCVOSC/VOSC OSC channel of command. The VMPC Chairman should be provided with key communications also.

Recommendation 15: Regional Control Centres (RCC) should be pre-identified in Regional Oil Spill Contingency Plans. These should be agreed upon within the RMPC and all agencies

should be represented in the RCC. Other locations (eg. wildlife centres etc.) should also be pre-identified and listed in the ROSCPs. Centres should consider SES establishments, motels or other similar locations having conference rooms, established communications links, food, accommodation etc.

Recommendation 16: Regional training programmes should be initiated so that response team members can become familiar with their roles. These should include classroom, desktop and field exercises. AMSA MEPS response personnel should also participate in some of these exercises in an advisory and operational role.

Recommendation 17: The functions of some response team roles needs to be better defined in State, Regional and Local plans, in particular:

- Environmental Coordinator;
- AMSA (MEPS) support personnel.

Recommendation 18: The OSC should have additional administrative/clerical support.

Recommendation 19: The role of Local Government officers, and relevant Committees of Management in spill response, be reassessed in the Regional OSCPs, and responsible officers identified in the plans.

Recommendation 20: The Regional Oil Spill Contingency Plans should be written or rewritten to be concise, functional documents, which concentrate on the actions to be taken in response to marine pollution incidents, as well as detailing roles and responsibilities. Plans should nominate people trained to fill the various roles.

Recommendation 21: A functional mobile spill response Operations Centre should be designed and acquired for use in remote locations or as additional support of field operations. If feasible, the design of this should be developed as a standard.

Recommendation 22: Shoreline cleanup arrangements, particularly the role of the FC and other NRE officers, need to be better integrated into the overall spill response organisation. The relationship between the NRE Incident Management Structure (including wildlife) and shoreline response teams needs to be clarified.

Recommendation 23: Simplified shoreline assessment procedures should be developed and integrated into NATPLAN, VICPLAN and Regional OSCPs.

Recommendation 24: NRE, Local Government and other relevant personnel should be trained in shoreline cleanup including planning, logistics, other requirements and methodology.

Recommendation 25: The SSC needs to develop a response team to manage all aspects of the 'scientific' response. This should include provision for the role of AMSA scientific personnel. This should encompass both regional and statewide support teams and regional (EC) teams should be linked through the SSC.

Recommendation 26: The EC needs to develop a regional support team and be integrated with the SSC team (see Recommendation 25).

Recommendation 27: A plan be developed for the formation of a Crisis Management Media Team, with consideration given to industry participation, and how the Team should operate and access information (also see Recommendation 30). The Team should be accommodated close to the ECC with access to sufficient resources (eg. computers, photocopiers, facsimiles etc.).

Recommendation 28: Provision should be made for accommodating the media close to the ECC and at strategic sites close to the scene of the incident.

Recommendation 29: Media briefing room needs to be designated and equipped with video, charts and other facilities.

Recommendation 30: A Media and Public Relations Management Plan should be developed and integrated into NATPLAN, VICPLAN and other State Plans, and Regional Plans. This plan to outline roles, tasks, responsibilities, information flow and processing etc.

Recommendation 31: The CRA should be used to produce functional 'field maps' showing resources on a sector-by-sector basis. These should be produced in a large format (ie. the entire region) for use as a wall chart in the ECC, and in A4 format for field use.

Recommendation 32: OSSM and CRA resources in the ECC should be under the control of a defined officer and reporting procedures should be better defined.

Recommendation 33: The incident role of the AMSA representative on the VMPC (and other State Committees) should be reviewed and revised. His role in ship-salvage related issues should be strengthened and responsibilities such as equipment location, supply and OSSM input coordination be removed.

Recommendation 34: The role, responsibilities and authority of the AMSA representative onboard (ARO) should be better defined and incorporated into NATPLAN, VICPLAN, other State Plans and Regional OSCPs. This role is currently mentioned in VICPLAN as the Onboard Casualty Coordinator (VICPLAN Section B.1.3).

Recommendation 35: The role of the Health and Safety Coordinator should be defined in VICPLAN and allocated to an agency or individuals. Consideration should be given to making this position independent of the AC and support group.

Recommendation 36: Health and Safety Training components of existing spill response training courses should be strengthened and additional health and safety courses developed.

Recommendation 37: A generic Site Health and Safety Plan should be developed and included as an appendix to NATPLAN, State and Regional Plans. This should be structured such that site specific issues can be readily integrated for use in spill response operations.

1. Introduction

"Exercise George Bass" was conducted on 5th and 6th of June 1996. The exercise was a major national exercise conducted under NATPLAN. The incident to be responded to was a large spill requiring a Tier 3 response. As such the response encompassed not only Victorian regional and state response organisations, but also interstate, federal, and overseas support arrangements.

1.1 Exercise George Bass: Objectives

The broad objectives of Exercise George Bass were to conduct a safe and professional exercise which would:

Test local, regional, State, Commonwealth and industry oil spill contingency plans, practices and procedures, including the efficient and effective co-ordination of response management activities;

Test relationships between local, regional, State, Commonwealth and industry agencies responsible for oil spill response activities at all levels, ie. senior and middle management and operator levels;

Test the adequacy of the National Plan response organisation at local, regional, State and National levels;

Test the understanding of roles and responsibilities of National Plan response agencies at local, regional, State and National levels;

Test lines of communication and the exchange of information between local, regional, State, National and international response agencies. This includes dialogue between AMSA/industry and overseas agencies, for example OSRC Southampton, EARL Singapore, ITOFF, NZMSA, UK MPCU and USCG;

Test specific operational activities, including, physical transportation of equipment between equipment storage locations in Victoria and on site deployment locations, deployment of dispersant spray equipment from industry and/or chartered helicopters, mobilisation of a spray aircraft under Australia's national fixed wing dispersant spraying contract, mobilisation of on site response personnel, and physical deployment of government and industry equipment.

In addition to these objectives, individual response agencies identified internal objectives which should be tested by Exercise "George Bass". These were discussed by the Exercise George Bass Steering Committee during the planning of the exercise.

These agency specific objectives included the testing of:

- Wildlife cleanup arrangements (NRE);
- Internal incident management systems (NRE, SES, CFA, EPA);
- Waste handling, temporary storage, transport and final disposal arrangements (EPA);
- Field sampling of oil etc. (EPA);

Mobilisation of National Response Team and interstate equipment, international assistance, Customs and Immigration arrangements and utilisation of Federal legislation to underpin response activity (AMSA).

1.2 The Scenario

The scenario developed for the exercise was based around a grounding of an oil tanker, the "MV Ocean Oregon", on Lonsdale Rock, in the mouth of Port Phillip Bay (see figure 1). As a result of this incident the ship initially loses about 200 tonnes of heavy fuel oil and 1000 tonnes of crude oil. An ongoing loss of about 50 tonnes of oil per hour provides for a total spill volume of over 1600 tonnes.

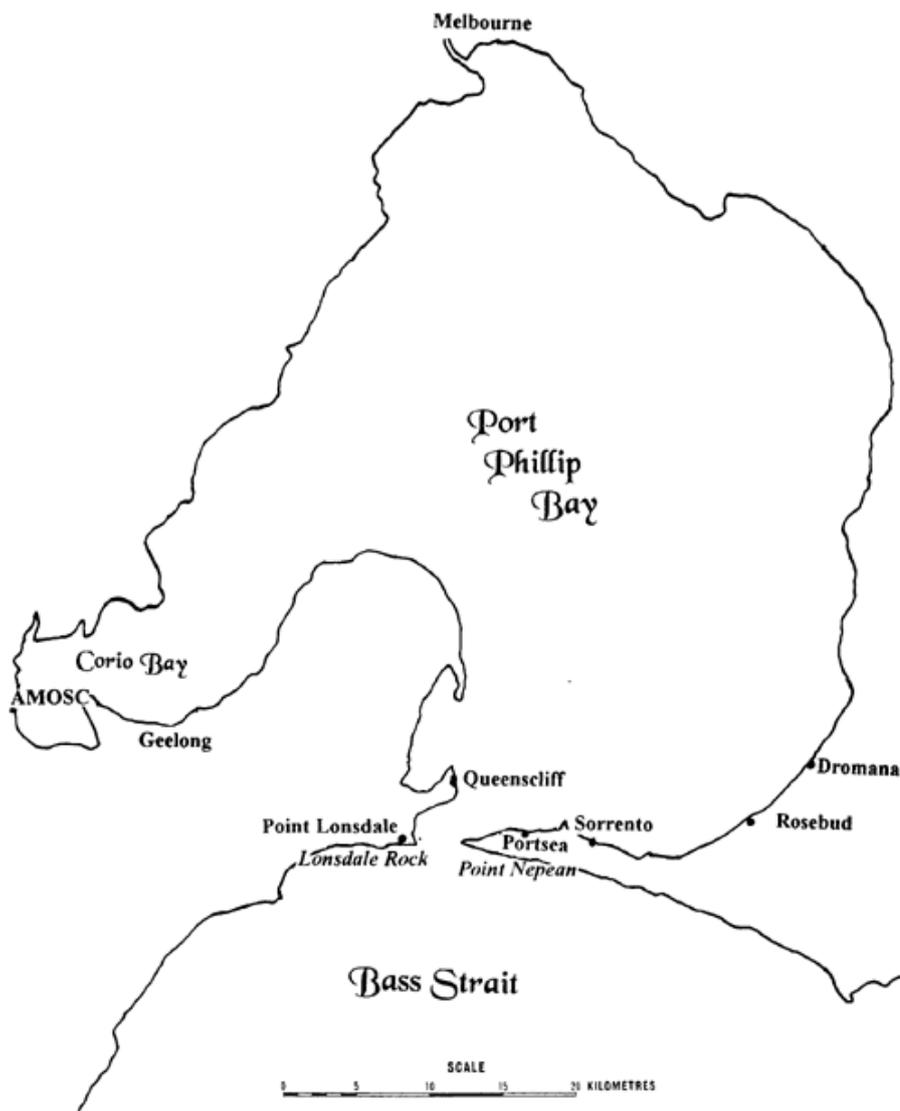


Figure 1: Port Phillip Bay showing location of grounding (Lonsdale Rock), major ports and Response Coordination Centres

A considerable length of shoreline was oiled during the incident. Approximately 30 km of shoreline on the west of the Bay between Barwon Heads and Portarlington, including Swan Island, and 40 km on the east from Point Nepean to Dromana Bay. Mud Island was also

oiled. Changing tides and use of real wind conditions were also expected to result in some oiling of Bass Strait shorelines, probably to the southwest of the heads.

Details of the scenario are provided in Attachment A.

1.3 Agencies Involved

A number of agencies were involved in Exercise George Bass, either as part of the Steering Committee (**), as role players and umpires (*), or as members of the spill response (+). The exercise was umpired by a mixed team of people from, government and industry. The team also included Dr Tosh Moller from the International Tanker Owners Pollution Federation (ITOPF) who performed the role of principal umpire. The agencies are listed below.

- Australian Marine Oil Spill Centre (AMOSOC)+
- Australian Maritime Safety Authority (AMSA)**+
- Burns Philp Shipping Agencies*
- Commonwealth Environment Protection Agency (EPA)**+
- Emergency Management Australia (EMA)+
- Esso Australia**+
- International Tanker Owners Pollution Federation (ITOPF)*
- Marine Board of Victoria**+
- Marine and Freshwater Research Institute (MAFRI)+
- Melbourne Port Corporation+
- Melbourne Port Services Pty Ltd+Mobil Oil Australia*+
- Northern Territory Department of Transport*
- NSW Office of Ports Policy and Marine Safety*
- NSW Waterways*
- Port of Geelong Authority*
- Port of Melbourne Authority, Gippsland*
- Port of Melbourne Authority, Hastings*+
- Port of Portland Limited
- Port Phillip Sea Pilots*+
- Queensland Department of Transport*
- Shell Refining Australia*+
- South Australian Department of Transport*+
- South Australian Environment Protection Agency*
- Tasmanian Department of Environment & Land Management (DELM)*
- United Salvage**+
- Victoria Police*+

- Victorian Environment Protection Authority (EPA)**+
- Victorian (National Plan) Marine Pollution Committee (VMPC)+
- Victorian Channels Authority (VCA)**+
- Victorian Country Fire Authority (CFA)+
- Victorian Department of Natural Resources & Environment (NRE)**+
- Victorian State Emergency Services (SES)**+
- Western Australia Department of Transport*

1.4 Scope of the Report

A number of responses and comments were received in the weeks after the conclusion of Exercise George Bass and these covered a wide range of topics and perspectives.

The comments summarised in this report are drawn from the submissions of both individuals, industries and government agencies.

2. State Organisation: The Victorian (National Plan) Marine Pollution Committee (VMPC)

2.1 Mobilisation

The notification and mobilisation of the Regional Spill Response Team and the VMPC was extremely rapid, although some duplication of callout was noted and one commentator noted that the State VMPC AMSA representative was called before the MRCC in Canberra.

2.2 Role Of The Victorian Oil Spill Controller (VOSC) and VMPC

The VMPC Chairman (VMPCC) took effective control of the situation within the first few hours although it was difficult to determine whether he was acting in the role of Regional Oil Spill Controller (ROSC), VOSC or VMPCC (see Figure 2). No person was nominated to fill the role of the VMPCC as stipulated in VICPLAN.

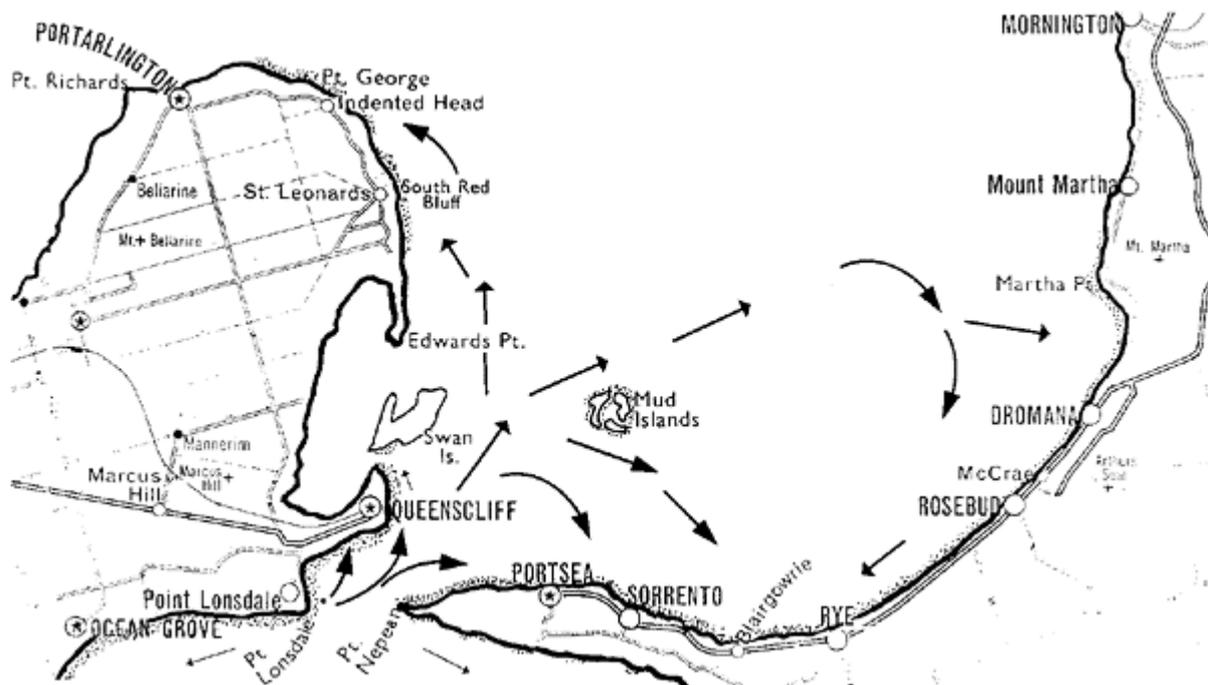


Figure 2: Summary of oil spill trajectory and extent of shoreline oiling (to 10:00 hrs, day 1)

It was not clear at what stage the VOSC passed operational control to the OSCs, or whether this was effectively done at all. Consequently it was not clear whether the VMPC was operating as a 'Lead Agency' or in a supporting role to the OSCs.

OSCs, coordinators and other response staff were generally unclear as to who was responsible for making key response decisions.

Recommendation 1: Operating procedures should be incorporated into NATPLAN, VICPLAN and Regional OSCPs requiring that the Plans are formally activated and that any change of responsibility or response Tier should be similarly enacted.

VMPC members, including the Chairman, felt that the VMPC in its present form is not suited to take a Lead Agency role.

Recommendation 2: The roles of VMPC members, and support staff, should be reassessed and redefined in VICPLAN along more functional lines, eg:

- VMPC Chairman; political aspects of the response should be managed by the VMPC rather than the VOSC;

- State Scientific Support Coordinator;
- AMSA VMPC representative;
- National Response Team.

Recommendation 3: A VMPC organisational chart should be prepared to illustrate the roles of VMPC members and supporting staff, and the revised VMPC structure.

Recommendation 4: State Committees should develop programmes for contingency plan familiarisation and testing. A series of task oriented minor training events should be run eg:

- Notification, callout, transport, deployment and recovery
- exercises related to a specific scenario such as deployment of
- equipment and recovery of oil approaching a geographic location
- eg Swan Island in Port Phillip;
- Special oiled foreshore assessment exercises;
- Strategic planning and assessments needed to assist planning
- of a credible response;
- Running and assessment of OSTM and CRA exercises and the
- planning to follow.

During the exercise the VMPC AMSA representative took a central role in dealing with the vessel and salvors. This became an important role in the course of the exercise and it may be appropriate for additional AMSA representation alongside the VOSC in the case of upper Tier 2 or Tier 3 responses.

Recommendation 5: That AMSA representation be considered in the event of an upper Tier 2 or Tier 3 response. This should be either on the VMPC or as an adviser to the VOSC depending on the revised VMPC structure.

2.3 Victorian Marine Pollution Contingency Plan (VICPLAN)

Recommendation 6: VICPLAN should be revised in accordance with the changes mooted in Recommendations 1-5, and the Regional Contingency Plans should be revised to be concise "operational" plans concentrating on Regional procedures, including response strategies and actions.

A number of observers have commented on the organised manner in which some government departments operated during the exercise, and all of these departments operated under formal emergency management systems.

Recommendation 7: National and State response management, together with NATPLAN and VICPLAN, should be revised to incorporate an incident control system (eg. AIIMS ICS). This should encompass:

- Standardised reporting procedures and formats (SITREPS, POLREPS etc);
- Personnel tracking;
- Tracking and logging of communications and events;
- Display and communication of status reports etc.;
- Procedures for the formal activation of the relevant plan
- and a clear statement of the response tier and lead agency responsible;
- Handover briefings;
- Training etc.

2.4 AMSA Operations: Canberra

AMSA operations in Canberra reportedly progressed smoothly with a rapid callout and mobilisation of staff to the Canberra MRCC and on-scene at Point Lonsdale.

AMSA (MEPS) correspondents did note that two versions of the internal procedures were in circulation and that some duplication of callout occurred.

Communications links worked well overall but again the absence of SITREPs was commented upon. Most information to Canberra appeared to come via on-site AMSA personnel rather than via the OSC or VOSC (ECC).

As in other aspects of the response the need for additional administration and public relations/press staff was also noted.

One area that perhaps needs to be addressed is the financial arrangements for AMSA staff deployed on-scene. Some time was spent arranging financial arrangements for accommodation etc., when they could have been easily avoided if AMSA staff had access to Government credit cards.

3. State Response: The Emergency Control Center (Melbourne)

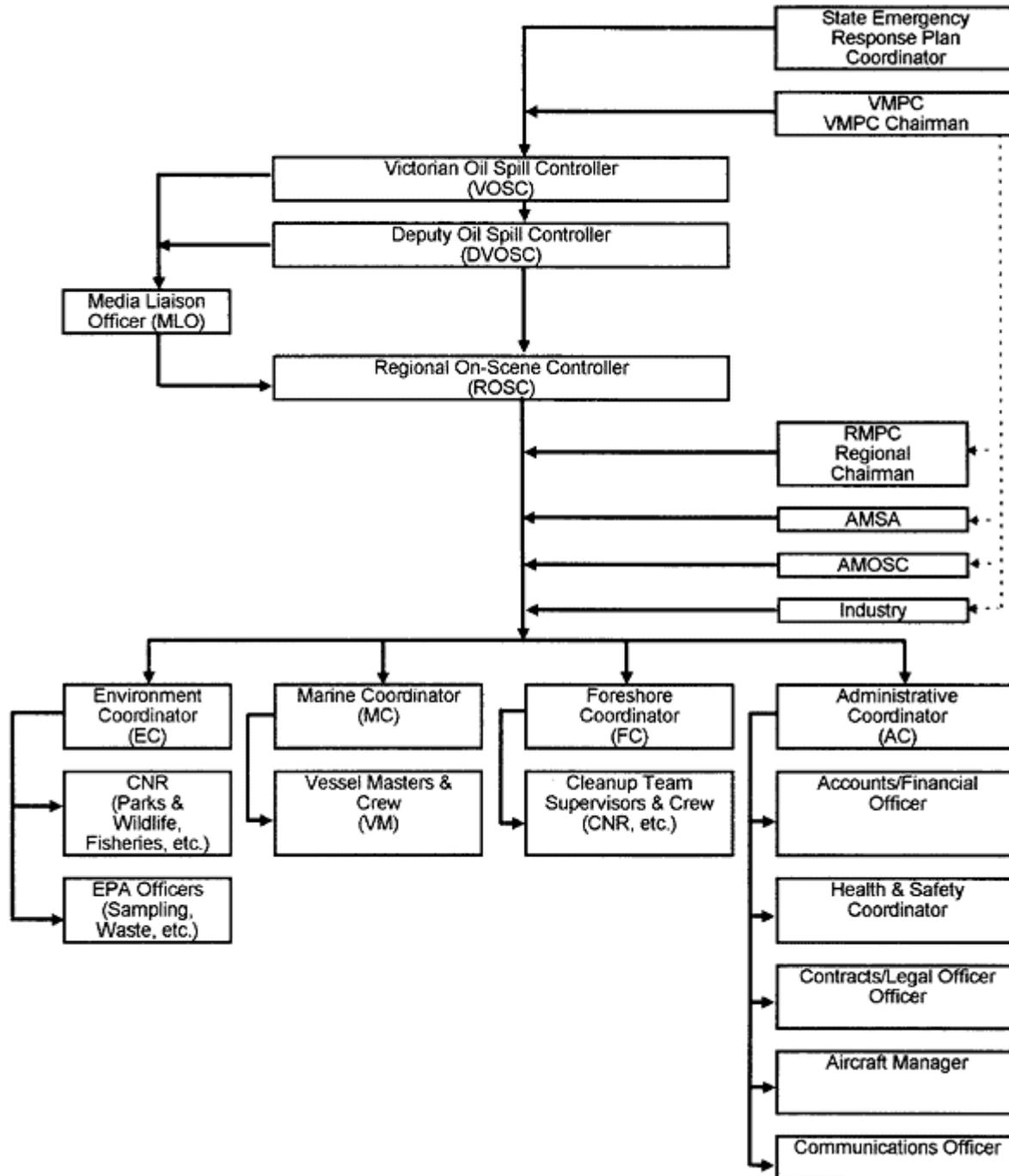


Figure 3: Tier 3 spill response team - indicative organisation

3.1 Organisation and Operations

The VOSC decided to appoint two On-Scene Controllers for the response; one to control operations on the western side of the bay (based at Point Lonsdale) and the other on the eastern side of the bay at Sorrento/Rosebud. The relationship between these OSCs and between the OSCs and the VOSC were not clear or adequately defined, leading to each making incorrect assumptions about the authority and activities of the others.

No provision for two OSCs is made in either VICPLAN or the Port Phillip Regional OSCP. Since the OSC, by definition, is responsible for all day to day (or tactical) operational aspects of the response, this situation clearly had the potential to cause difficulties.

During the response the VOSC spent much time discussing and directing operational issues and in so doing could not develop a view of the 'wider picture'.

Lack of information was also a factor in these difficulties. There was little information displayed in the ECC and briefings were either too few or failed to provide enough direction. Most umpires, observers and response personnel felt that the ECC group was isolated from the broad field operations. Some ECC personnel however did have a close liaison with their departmental counterparts in the field (eg. EPA, NRE). The VMPC AMSA representative also had good communications with the role players representing the vessel and salvors.

The infrequency of SITREPS was compounded by a low usage of whiteboards or status boards, and the ECC lacked adequate wall charts or maps. Communications were generally poorly documented although it has been suggested that the reliance on mobile telephones compounded this problem.

While some of these failures can be attributed to lack of physical resources such as telephone lines, it was largely due to an absence of agreed tracking or logging procedures and by the lack of suitable administrative support.

The need for an Administrative Coordinator was clearly indicated, and VICPLAN stipulates such a role.

Recommendation 8: Adequate numbers of administrative support staff should be planned for across all disciplines required and be allocated to key response staff and to the ECC generally.

Fatigue was common on day 2 of the exercise and some response personnel had been operating for much of the 36 hours. Some agencies (NRE, SES, EPA, CFA) had a relief

system in place and most changeovers were accompanied by a formal briefing and handover.

Recommendation 9: All agencies should plan for relief staff in the event of a prolonged response. This needs additional trained staff to be identified.

Most observers commented that they would have found it beneficial for response team personnel to be identifiable, particularly their role in the response. Some response personnel have made similar comments.

Recommendation 10: Need for all levels of response personnel to be physically identified in their respective roles.

3.2 The Emergency Control Centre (ECC)

The ECC was generally satisfactory as a Control Centre and is large enough to contain the VMPC. It is doubtful that it could comfortably contain the entire VMPC, administrative support and other supporting staff but some of these could be housed in the adjoining buildings. Difficulties encountered during the exercise were attributable to:

- Overcrowding;
- Inadequacy of equipment;
- The layout of the room.

Recommendation 11: Only essential personnel should be permitted into the ECC. This should be the VOSC, Executive Group and support staff and/or the OSC plus regional OSRT coordinators and administrative support personnel depending on the response tier. This should be defined in the Port Phillip and other Regional OSCP and VICPLAN.

Recommendation 12: The layout and resourcing of the Emergency Control Centre should be reviewed including the need for:

- Additional telephone lines;
- Extra plain paper facsimile units and lines, including
- dedicated "in" and "out" lines;
- Provision of a dedicated photocopier.

Recommendation 13: The ECC layout should be revised so that members of any 'functional groups' are in close proximity and administrative support is catered for. A separate media room should be retained and a "retreat" for the VOSC/OSC advisers is also recommended.

3.3 Information Management and Communications

Difficulties experienced in the ECC in the acquisition, collation, transmittance and documentation of information have already been noted. Consequently, there was little that response team personnel could do to find out the current status of response. Most ECC based team members resorted to contacting their on-scene counterparts for details and, occasionally, this resulted in inconsistent information being sourced.

Recommendation 14: All State-Regional communications are to be through the OSCVOSC/VOSC OSC channel of command. The VMPC Chairman should be provided with key communications also.

More dedicated administrative support staff and a simple incident management system with documentation/data handling protocols would remedy this problem.

4. Regional Response: The Advanced Operations Centres (AOCS)

4.1 Mobilisation and Setup

Some respondents felt that the establishment of two on-scene command centres was not warranted or that in any case the use of a mobile Advanced Operations Caravan (AOC) in the western sector was not required.

Mobilisation to Point Lonsdale was rapid, with personnel and equipment arriving well before daybreak. The deployment of response vessels and booms, particularly shoreline boom indicated that spill trajectories were being anticipated and that appropriate countermeasures were being put in place.

Some difficulties were encountered in finding a suitable site for the AOC (west). The OSC in the east also had some difficulty in establishing a control centre and eventually located at the Rosebud Police Station. The Department of Natural Resources and Environment (NRE) established incident command centres at Geelong (west) and at Sorrento (east). Although generally well organised these centres were not coordinated with the OSC operations and multiple command centres persisted through much of the day.

Recommendation 15: Regional Control Centres (RCC) should be pre-identified in Regional Oil Spill Contingency Plans. These should be agreed upon within the RMPC and all agencies should be represented in the RCC. Other locations (eg. wildlife centres etc.) should also be pre-identified and listed in the ROSCPs. Centres should consider SES establishments,

motels or other similar locations having conference rooms, established communications links, food, accommodation etc.

4.2 Organisation And Operations

Many problems that were noted in the ECC were also noted in the AOCs, at both Point Lonsdale (west) and Rosebud/Sorrento (east). These included:

- Uncertainty or unfamiliarity as to roles and responsibilities.
- Lack of clear command and team approach.
- Inadequate handling of information and documentation.

Some response team roles were not filled (eg. Administrative Coordinator, Accounts/Financial Officer, Health & Safety Coordinator, Communications Officer etc.). Indeed, the OSC on the eastern shore operated with no team for much of day 1.

Misunderstanding of ones own role, and the role of others, is indicated in some of the post exercise comments of response team personnel in the western sector.

Recommendation 16: Regional training programmes should be initiated so that response team members can become familiar with their roles. These should include classroom, desktop and field exercises. AMSA MEPS response personnel should also participate in some of these exercises in an advisory and operational role.

Recommendation 17: The functions of some response team roles needs to be better defined in State, Regional and Local plans, in particular:

- Environmental Coordinator;
- AMSA (MEPS) support personnel.

As with the VOSC, the OSC in the western sector appeared to be swamped by incoming calls and the volume and frequency of responses required of him. Although this would have been greatly alleviated had a full response team been activated, the need for dedicated clerical and administrative assistance to the OSC is indicated.

Recommendation 18: The OSC should have additional administrative/clerical support.

The organisation of the EPA and NRE on-scene was commendable with a clear command and control structures in place on both sides of the bay. Communications were generally satisfactory and reporting and documentation was of a high standard. In the case of the NRE

though the regional organisations were not well integrated with those of the OSCs and greater liaison is required.

Shire councils also need to be better integrated into Regional response arrangements. Local government officers operated well during the exercise, providing local advice and information to field crews, and also provided feedback to exercise coordinators. In the case of the eastern sector there was, however, some uncertainty as to who the Shire contact officer was. In the west the Local Government officer spent long hours in the field providing assistance where required but with no clearly defined role.

Recommendation 19: The role of Local Government officers, and relevant Committees of Management in spill response, be reassessed in the Regional OSCP, and responsible officers identified in the plans.

4.3 Planning

Recommendation 20: The Regional Oil Spill Contingency Plans should be written or rewritten to be concise, functional, documents which concentrate on the actions to be taken in response to marine pollution incidents, as well as detailing roles and responsibilities. Plans should nominate people trained to fill the various roles.

4.4 The Advanced Operations Centre (AOC)

Most correspondents commented that the AOC used in the western sector was inadequate for the task, although some noted that it could have been used effectively in a less vital role.

The reliance on these units can be reduced through the identification of regional command centres, but the value in some sort of mobile unit is noted.

Recommendation 21: A functional mobile spill response Operations Centre should be designed and acquired for use in remote locations or as additional support of field operations. If feasible, the design of this should be developed as a standard.

4.5 Information Management And Communications

Poor communication of information hampered the on-scene response in much the same way as it did at higher levels and similar observations were made by observers, umpires and response personnel:

- Absence of suitable charts or status boards.

- Limited use of whiteboards etc.
- Infrequent SITREPS.
- Infrequent briefings, including handovers.

4.6 Communications

As noted earlier some correspondents felt that mobile telephones were overused and that radio resources (eg. AMSA, AMOSC, SES) should have been mobilised for the response. Others felt that the mobiles overcame what otherwise would have been a gap in the communication network.

In any case communication links between the on-scene teams and the ECC, and between the AOC's and field groups while adversely commented upon to some degree appeared to work generally over the 36 hour response.

4.7 The Use of Dispersants

Conflicting advice was offered as to whether the crude oil spilled would have been amenable to chemical dispersants and some response personnel commented that this was confusing. In fact these conflicting views was real and not (initially) an exercise input. Eventually field trials vessel and air) were commissioned and after a report describing non-effectiveness a second trial was indicated which indicated a partially successful dispersion. It is worth noting too that two oils were spilled (bunker and crude) and the bunker oil was unlikely to be dispersable.

Discussions on dispersant approval were undertaken at both the Point Lonsdale AOC and in the ECC and both groups approved dispersant use albeit independently of each other. The SSC was not consulted by either the ECC group or the OSC in the decision to use dispersants. In fact VICPLAN (Section 3.5.3) requires the OSC to consult with local EPA and NRE representatives on the RMPC and this appears to have been done at Point Lonsdale.

5. Field operations

5.1 Organisation and Operations

Field deployments were not as extensive as hoped, partly due to inclement weather conditions but also because of poor communications. As noted in the previous section field supervisors did not seem to pursue the Marine Coordinator (MC) or OSC for instructions to

deploy. In some cases this may have been due to uncertainty, on the part of the field crews, as to who was in charge.

On site management of the public, when needed, was not handled well. No site security arrangements had been made and in one instance a party of school children (with teachers) highlighted the need for site security.

6. Shoreline Response

6.1 Organisation and Operation

By late morning on day 1 both the ECC group and the on-scene FC were aware of the extent of the shoreline impacted and were beginning to plan ongoing activities. In the ECC the planning group consisted of the Scientific Support Coordinator (SSC), EPA representative and Industry Advisers. On-scene the "foreshore" group comprised the FC, Environmental Coordinator (EC; an EPA officer) and an AMSA scientific officer.

Coordination between the two groups was ad hoc. The SSC in any case received few status reports on planned or actual shoreline activities. As a result conflicting decisions were made with the FC planning cleanup and the ECC group deciding a 'monitoring' for some beaches. It was unclear over much of the exercise whether the ECC group was planning shoreline activities with a view to advising the FC of these or whether the ECC role was to be one of support on an as needs basis (eg. sensitivities, resources etc.).

The FC in both sectors was an officer of the NRE and operated within that department's incident management system; and based largely in the NRE incident management centre. This resulted in an increasing loss of contact between the FC (and supporting team) and the OSC. In addition, the relationship between the FC and the NRE Incident Commander was unclear.

Recommendation 22: Shoreline cleanup arrangements, particularly the role of the FC and other NRE officers, need to be better integrated into the overall spill response organisation. The relationship between the NRE Incident Management Structure (including wildlife) and shoreline response teams needs to be clarified.

6.2 Planning

In the early hours of the exercise, it was evident to many response personnel that shoreline impacts would be extensive.

Despite this few planning activities were undertaken, and when they were, overly optimistic figures for labour were postulated. Logistical requirements for the (hypothetical) 800-odd beach cleaners were not considered and the realism of the figures was not verified.

Shoreline assessment procedures were attempted at a number of levels.

Whilst all of these efforts were commendable they were not coordinated. Rapid assessment methods such as aerial surveillance or videotaping of the shoreline were not requested and aerial surveillance reports supplied were not translated into maps in the AOC until done so by one of the field umpires.

Recommendation 23: Simplified shoreline assessment procedures should be developed and integrated into NATPLAN, VICPLAN and Regional OSCPs.

Recommendation 24: NRE, Local Government and other relevant personnel should be trained in shoreline cleanup including planning, logistics, other requirements and methodology.

7. Scientific Support

7.1 The State Scientific Support Coordinator

The SSC quickly established a close association with the VMPC representatives for the EPA and NRE in the ECC and many of the roles noted above 'devolved' to these officers. This liaison continued to varying degrees over the course of exercise but did not coalesce into a functional group with the ECC.

The EC role on site is very close to that of the SSC at the VMPC/VOSC level (see VICPLAN Section B.2.2) and close contact with the SSC is necessary if the potential for conflicting scientific advice is to be avoided. During the exercise the SSC had some difficulty in maintaining contacts with the EC and other on-scene officers.

Recommendation 25: The SSC needs to develop a response team to manage all aspects of the 'scientific' response. This should include provision for the role of AMSA scientific personnel, encompass both regional and statewide support teams and regional (EC) teams should be linked through the SSC.

7.2 The Environmental Coordinator (EC)

The role of the EC is defined in VICPLAN but some confusion over the EC and SSC responsibilities was noted. Shoreline assessment, for example, is not an SSC or EC responsibility but rests with the Foreshore Coordinator.

Like the SSC, the EC roles are very broad and joint EPA-NRE teams are needed if all functions are to be performed.

Recommendation 26: The EC needs to develop a regional support team and be integrated with the SSC team (see Recommendation 25).

7.3 Wildlife Management

VICPLAN identifies the Department of Natural Resources and Environment (NRE) as the agency responsible for the management of oiled wildlife. Overall, the NRE response was methodical and, internally, appears to have been well coordinated.

Examination of NRE logs suggest that oiled bird numbers were under reported throughout day 1 of the exercise suggesting that many 'public' reports were not being passed through the information channels. This was noted during the exercise and provision of numbers and input at a multiple of levels appeared to have overcome the problem.

The NRE identified sites for staging points, bird cleaning and rehabilitation but did not physically establish these. This was a limitation on the NRE resources committed to the exercise rather than due to any constraint in capacity.

The Phillip Island Penguin Reserve (PIPR) felt that they were under utilised during the exercise and also that they were not directly notified of the grounding or spill. The NRE response needs to recognise that PIPR may be affected by oil spills even if the penguins themselves are not at risk.

7.4 Waste Management

Waste management issues were handled well by the EPA at both a local (ie. on-scene) and regional level. EPA officers calculated realistic volumes of waste likely to be generated and had designated disposal sites with the 36 hours of the exercise. Lists of potential licenced transport contractors were available. On site (ie. shoreline) temporary storage sites were not determined but this could realistically not be done within the exercise time frame given the

state of shoreline response planning achieved; ie. shorelines were not ranked for priority for cleanup in time for this level of planning to take place.

8. Media and Public Relations

Media and public relations are nominated to the Media Liaison Officer (MLO) under VICPLAN (see VICPLAN Section 3.4.6 and B.1.7).

8.1 Media Liaison

The Media Liaison Officer was provided by the MBV and was supported by an AMSA media officer from Canberra. This was a very small allocation of staff and dedicated facilities were very limited. The exercise planning allowed for only a limited media input and even this proved taxing for the two officers; in a real incident pressures would have been far greater.

Given their resources the MLO and AMSA officer performed well but, like other spill response team members, were hampered by the absence of up to date information and, occasionally, the provision of incorrect information. Information passed on to the press was sometimes inconsistent; although other ECC personnel were invariably the source in these cases.

Media players complained that access to the MLO was restricted with phone lines frequently engaged.

Recommendation 27: A plan be developed for the formation of a Crisis Management Media Team, with consideration given to industry participation, and how the Team should operate and access information (also see Recommendation 30). The Team should be accommodated close to the ECC with access to sufficient resources (eg. computers, photocopiers, facsimiles etc.).

No provision was made for the accommodation of media on-scene, or close to the ECC but the scale of this aspect of the exercise did not really provide sufficient stimulus to prompt this. Nevertheless such provisions should be planned for (see Recommendation 28).

Recommendation 28: Provision should be made for accommodating the media close to the ECC and at strategic sites close to the scene of the incident.

A number of correspondents commented adversely on the room(s) used for press briefings. This included the absence of maps, charts and other visual aids (slides, video, television etc.). When we consider that Melbourne Ports staff also "commented" on the use of their

canteen for this purpose by banning the VMPC/VOSC from using it during the exercise it is fairly safe to assert that arrangements were found wanting.

Recommendation 29: Media briefing room needs to be designated and equipped with video, charts and other facilities.

Numerous comments were made about the general conduct of press briefings, media releases and other aspects of the media management response. These include:

VMPC staff introducing terms such as "sacrificial beach" "disaster" and concepts such as "tainting of fish" into the press conferences thus creating issues and adverse impressions. Under preparation of speakers (however, some correspondents commented that ECC's team members handled the briefings well).

- Provision of conflicting figures (eg. wildlife numbers) and other "facts".
- Lack of handout materials or spill response details
- Absence of any 'filtering' or 'prioritisation' of calls.
- Failure to return calls.

While the MLO operated well and others handled press queries competently it was clear that there was no generally accepted plan for media management.

Recommendation 30: A Media and Public Relations Management Plan should be developed and integrated into NATPLAN, VICPLAN and other State Plans and Regional Plans. This plan to outline roles, tasks, responsibilities, information flow and processing etc.

8.2 Public Liaison

A number of the telephone operators who received calls were clearly unaware of the exercise and on occasion this required some hasty explanations on the part of the caller. In other cases the call receiver did not know what to do with the supplied information and a lot of information did not appear to get through to the ECC or relevant agency. In other cases the receivers were clearly operating to a set script or checklist and methodically took pertinent details and prompted the caller.

9. Computer Support

Computer support was available in the ECC (Melbourne) in the form of a trajectory model, the On-Scene Spill Model (OSSM), and the Coastal Resource Atlas (CRA) for Port Phillip

Bay. The latter was also available in hard copy form. Comments from both response team members and umpires/observers indicates that the presence of these resources in the ECC enabled their greater use. OSSM can also be run in Canberra with results (maps) available via facsimile.

9.1 The OSSM Model

As noted above OSSM was seen as a valuable tool throughout the exercise. Staff operating the model felt that, although the model was used more than in past exercises, greater use could have been made of the models' full capabilities.

Both umpires and OSSM operators have commented that the staff available could probably have not been able to cope with any such expanded use of OSSM, like other aspects of the response, no system of relieving the staff who were operating OSSM was in place. The two staff available consequently worked a 16 hour day on day 1 of the exercise. Given that this is a skilled job, requiring extensive knowledge of both the operation of the system and interpretation of the output, additional support staff need to be identified. The use of AMSA and interstate personnel should also be considered for this.

It is worth noting also that AMSA (MRCC/MEPS) are currently developing an OILMAP based OSTM and a system for accessing real time satellite derived oceanographic and meteorological data. It is intended that this would be accessed via Internet.

Caution needs to be exercised of course in the interpretation of modelled trajectories. Ground truthing (eg. aerial surveillance) should always be undertaken. At times during the exercise, the computer output was heavily relied upon to the detriment of 'field' reports. This may have reflected the fact that this was an exercise, but probably reflected also the greater availability of the computer output in the ECC compared to field reports.

9.2 The Coastal Resource Atlas (CRA)

The CRA was used in conjunction with OSSM to identify sensitive resources at risk on which had been 'hit' by the oil. Areas for the use or non-use of dispersants were also discussed with the SSC. This information was not, however, reassessed often during the exercise. The performance of the computer-based CRA was also hampered by the low power of the computer used for the purpose (on laptop).

The availability of the CRA in both software and hard-copy format was advantageous although the hard copy atlas was not greatly referred to through the 36 hours of the

response. The atlas represents data on a resource basis rather than primarily data based on area.

Recommendation 31: The CRA should be used to produce functional 'field maps' showing resources on a sector-by-sector basis. These should be produced in a large format (ie. the entire region) for use as a wall chart in the ECC, and in A4 format for field use.

9.3 Communications and Information Management

No mechanism was present to ensure the accurate and rapid transmission of information to the OSSM/CRA team nor to disseminate the output through the ECC or to OSCs. Transmission of output was hampered by the fact that there was no person clearly responsible for this task; although it falls broadly under the role of the (AMSA representative; see VICPLAN Section B.1.3). This would appear inappropriate when OSSM is based in the ECC rather than Canberra, and when we consider the broader role of the AMSA VMPC representative (Section 10. of this report).

As with other aspects of spill response, clear pathways for information management need to be developed.

Recommendation 32: OSSM and CRA resources in the ECC should be under the control of a defined officer and reporting procedures should be better defined.

10. Salvage issue and Other Ship-Related Issues

During the exercise the AMSA VMPC representative operated as a "Casualty Coordinator", although VICPLAN does not identify such a role by name the AMSA VMPC representative does have the role of ensuring "adequate liaison between the agencies for salvage operations". VICPLAN also states that AMSA may also appoint on board "Casualty Coordinators". This is consistent with national arrangements.

10.1 The AMSA VMPC Representative

The AMSA representative of the VMPC operated as a 'Casualty Coordinator' (CC) and dealt largely with the ship and salvage aspects of the response and this included those relating to 'safe haven'. This aspect of the response was well handled by the CC and a close communication was maintained between the CC, the on board AMSA representative (ARO) and personnel playing the roles of ships' master and salvors.

Recommendation 33: The incident role of the AMSA representative on the VMPC (and other State Committees) should be reviewed and revised. His role in ship-salvage related issues should be strengthened and responsibilities such as equipment location, supply and OSSM input coordination be removed.

10.2 The AMSA Representative Onboard (ARO)

The role of the AMSA representative onboard the vessel (the ARO) was not clearly defined in the initial stages of the exercise but rather developed during the course of the 36 hours. All personnel involved in this aspect of the response noted that the 'ARO' role was valuable during the response.

Recommendation 34: The role, responsibilities and authority of the AMSA representative onboard (ARO) should be better defined and incorporated into NATPLAN, VICPLAN, other State Plans and Regional OSCP's. This role is currently mentioned in VICPLAN as the Onboard Casualty Coordinator (VICPLAN Section B.1.3).

10.3 Communications and Information Management

Communications with the ship were adequate during the exercise although they relied heavily on mobile telephones and the salvors satellite telephone system. In a real incident communications are likely to be more problematic and it has been suggested that this needs to be assessed.

11. Health and Safety

Health and Safety requirements are designated in VICPLAN to a Health and Safety Coordinator (HSC). During the exercise no HSC was appointed in either the western (Point Lonsdale) or eastern (Rosebud/Sorrento) operations.

Recommendation 35: The role of the Health and Safety Coordinator should be defined in VICPLAN and allocated to an agency or individuals. Consideration should be given to making this position independent of the AC and support group.

11.1 The Use of Motor Vehicles

A number of issues relating to motor vehicle safety were observed:

- Speeding
- Seat Belts

- Operation of Mobile Phones
- Non Restraint of Equipment in Vehicles

11.2 Use of Personal Protective Equipment (PPE)

Overalls with reflective tape have generally become standard operator uniform, as have safety footwear. The use of this equipment was good, generally, although a number of observers and bystanders were not wearing safety footwear or conspicuous or reflective clothing.

No hardhats were worn by either operators or bystanders when operating the crane and moving metal baskets. Earmuffs and other forms of hearing protection were generally not worn even when operating pumps and other noisy equipment. Eye protection was not worn.

11.3 Use of Vessels

The boat trailer for the Marco needs to be reviewed and possibly replaced with a tilt bed trailer as a number of very poor work practices were required to successfully launch and recover the boats.

Personnel also found it necessary to jump up and down next to the operating outboard motors on the back of the Marco in an effort to lower the stern and assist with reloading the Marco onto the trailer.

11.4 Operation of Cranes and Trucks

No lights/buzzers are attached to the truck to indicate when the crane is in operation.

The set-up of the crane resulted in two persons telling the crane operator what to do. One person, standing on the load on the truck was out of sight of the operator and was relying on an intermediary to tell the operator what to do and when it was safe to move the crane arm. This is a recipe for disaster.

11.5 Plant and Equipment

There is a need to ensure that equipment is checked and properly maintained. The operator wearing a small inflator/leaf blower on his back should have been wearing hearing protection.

11.6 General Safety

A number of general health and safety issues were for example, the rolling up booms on the roadway, without cordoning off the area or warning oncoming traffic, was observed and this could lead to accidents. The area around the truck's should be cleared of all personnel outside of the range of the crane and its load. The work areas should have been cordoned off and a crowd control officer appointed to ensure that spectators were excluded from the worksite. In particular, children and general public on the beach should have been warned to keep back.

Recommendation 36: Health and Safety Training components of existing spill response training courses should be strengthened and additional health and safety courses developed.

Recommendation 37: A generic Site Health and Safety Plan should be developed and included as an appendix to NATPLAN, State and Regional Plans. This should be structured such that site specific issues can be readily integrated for use in spill response operations.



Plate 1 (top) and plate 2 (bottom): Deploying the Marco Skimmer (Photographs: T Gilbert, AMSA)

Plate 3: Boom Deployment, Queenscliff (Photograph: T Gilbert, AMSA)



Plate 4: Shoreline Impact and Resource Maps: NRE Incident Control Room, Geelong
(Photograph: B Wagstaff)

ATTACHMENT A

Scenario Outline

Date: Wednesday 5th June 1996

Location: Port Phillip (vessel runs aground on Lonsdale Rock on the way in)

Vessel name: MV Ocean Oregon (Oil Tanker)

Port of Registry: Nassau, Bahamas

Signal Letters: QUEST

Owner: Devon Energy, Houston, U. S. A

Operator: Devon Energy, Houston, U. S. A

Origin of crew: Korean Officers, Phillipino Crew

Agent in Australia: Bums Philp Shipping Agents

Destination: Thai Oil Refining Company refinery Sri Racha, Thailand

Cargo: Gippsland Crude 32,600 m3

Bunkers: Heavy Fuel Oil 1,600 m3

Fictitious tanker "W Ocean Oregon" is carrying a near full cargo of Gippsland Crude ex Westport en-route Thai Oil Refining Company refinery in Sri Racha, Thailand.

Due to a last minute change of orders the Ocean Oregon needs to take on an extra 500 M3 Of bunkers. The vessel is to enter Port Phillip Bay to take bunkers at anchor just south of the Fawkner beacon. Just after @dnight on Wednesday 5 June 1996 whilst under pilotage and approaching the entrance to Port Phillip Bay the Ocean Oregon suffers a main engine failure and temporary blackout (the head of an exhaust valve shears and drops in to one of the cylinders causing extensive damage and total loss of jacket cooling water). The Ocean Oregon runs hard aground at 00 1 0 hrs on Lonsdale Rock. Oil can be smelt on the water. The Ocean Oregon's main engine remains unusable for the duration of the exercise.

The Ocean Oregon suffers an initial loss of around 200 tonnes of heavy fuel oil and 1000 tonnes of crude oil cargo with an on-going leakage of 50 tonnes per hour (cargo) for a further 10 hours (approx).

The Ocean Oregon Master signs L0F95 for United Salvage to take over the vessel salvage operation.

The Ocean Oregon is re-floated at 1500 hrs (on the next high tide) with the assistance of tugs. A further release of 50 to 1 00 M3 of crude oil occurs as the Ocean Oregon is refloated. The Ocean Oregon's agents request safe haven for cargo transfer in Port Phillip Bay.

The Ocean Oregon and it's cargo is not the responsibility of Esso or any other oil company in Australia.

Glossary of Acronyms

AC-Administrative Coordinator
AGAL-Australian Government Analytical Laboratory
AIP-Australian Institute of Petroleum
AIIMS-Australian Inter-Service Incident Management System
AMOSC-Australian Marine Oil Spill Centre
AMSA-Australian Maritime Safety Authority
AOC-Advanced Operations Centre
CFA-Country Fire Authority
CNR-Department of Conservation and Natural Resources
CRA-Coastal Resource Atlas
DAEM-Department of Agriculture, Energy and Minerals
DISPLAN-Victorian State Emergency Response Division Plan
DPP-Director of Public Prosecutions
EARL-East Asia Response Limited
EC-Environmental Coordinator
ECC-Emergency Coordination Centre
E&P-Exploration and Production
EMA-Emergency Management Australia
EPA-Environment Protection Authority (of Victoria)
FC-Foreshore Coordinator
HSC-Health & Safety Coordinator
ITOPF-International Tanker Owners Pollution Federation
LIC-Local Industry Coordinator (Oil Industry)
MBV-Marine Board of Victoria
MEPS-Marine Environment Protection Services (of AMSA)
MC-Marine Coordinator
MLO-Media Liaison Officer
MOSAP- Marine Oil Spills Action Plan
MPC-Melbourne Port Corporation
MPS-Melbourne Port Services Pty Ltd
MPW-Melbourne Parks and Waterways
MRCC-Maritime Rescue Coordination Centre
NATPLAN-National Plan To Combat Pollution of the Sea by Oil
NRE-Department Natural Resources & Environment
NZMSA-New Zealand Maritime Safety Authority

OH&S-Occupational Health and Safety
OIC-Overall Industry Coordinator
OSC-On-Scene Controller
OSCP-Oil Spill Contingency Plan
OSD-Oil Spill Dispersant
OSRC-Oil Spill Response Corporation (Southampton)
OSSM-On-Scene Spill Model
OSTM-Oil Spill Trajectory Model
P&I Club-Protection and Indemnity Club
PGC-Port of Geelong Corporation
POLREP-Pollution Report
POWBONS-Pollution of Waters by Oil and Noxious Substances Act
PPC-Port of Portland Corporation
RIC-Regional Industry Coordinator (Oil Industry)
RMPC-Regional Marine Pollution Committee
ROSC-Regional Oil Spill Controller
RPA-Regional Port Agency
SITREP-Situation Report
SPEAR-Selected Pollution Equipment Availability Register
SSC-Scientific Support Coordinator
UK MPCU-United Kingdom Marine Pollution Control Unit
USCG-US Coast Guard
VCA-Victorian Channels Authority
VICPLAN-Victorian Marine Pollution Contingency Plan
VIMS-Victorian Institute of Marine Sciences
VMPC-Victorian (National Plan) Marine Pollution Committee
VOSC-Victorian Oil Spill Controller