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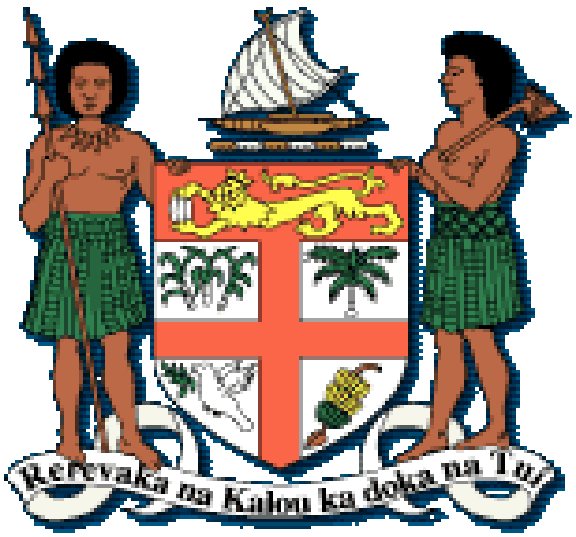
REPUBLIC OF FIJI

MARINE SPILL

CONTINGENCY PLAN



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This Plan has been developed pursuant to PART 12 of the *Maritime Transport Decree, 2012*.As such, the Plan reflects the essential steps to initiate, conduct, and terminate an emergency marine spill response in Fiji.

The Plan provides a concise and easy to follow guide to the management of spill response and associated linkages to supporting documentation.

This plan consists of two main parts, the core plan text and annexes designed to provide key supporting information to assist with spill response operations and planning.

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8	Pacific Energy South West		
9	Mobil		
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25	Fiji Umbrella of NGO's		
26	Ministry of Finance		
27	Pollution Adviser – SPREP		
28	Maritime NZ (MPRS)		

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PLAN AMENDMENT CERTIFICATION

Proposals for amendment or additions to the text of this plan should be forward to:

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Amendment		Section	Page	Entered	Date	Signature
No	**Date**					
1	18.07.12	All	All	First Draft	18.07.12	Anthony Talouli
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4	07.08.12	All	All	Third Draft (with edits from Rob Service)	07.08.12	Anthony Talouli

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MARINE SPILL RESPONSE – ACTION CHECKLIST

24 – Hour Contact for Marine Pollution Reports - (679) 3304449/ 3315 266/9920392/9906331

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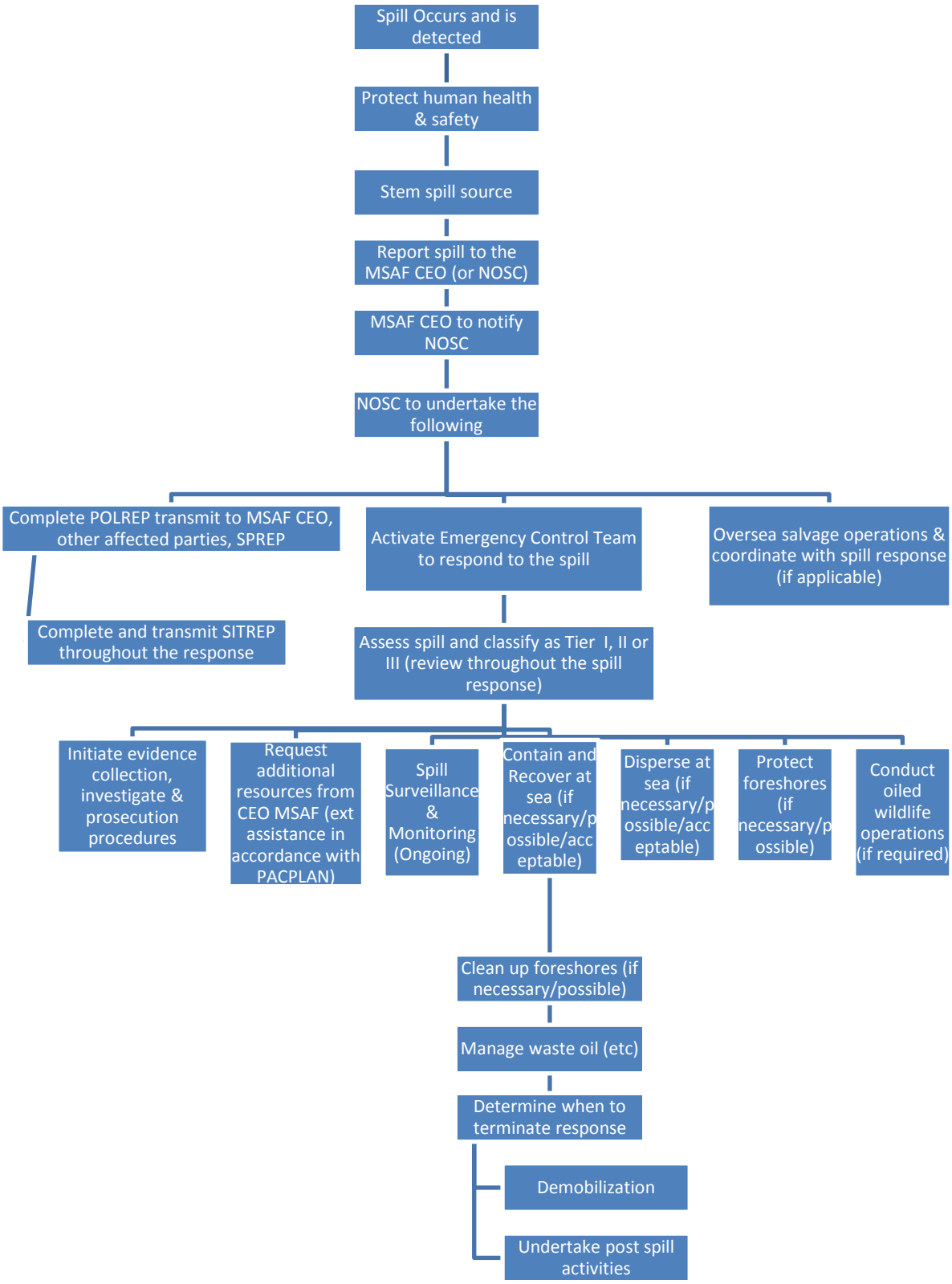
Spill Occurs and is detected
Protect human health & safety
Stem spill source
Report spill to the MSAF CEO (or NOSC)
MSAF CEO to notify NOSC
NOSC to undertake the following
Complete POLREP transmit to MSAF CEO, other affected parties, SPREP
Activate Emergency Control Team to respond to the spill
Oversea salvage operations & coordinate with spill response (if applicable)
Complete and transmit SITREP throughout the response
Assess spill and classify as Tier I, II or III (review throughout the spill response)
Initiate evidence collection, investigate & prosecution procedures
Request additional resources from CEO MSAF (ext assistance in accordance with PACPLAN)
Spill Surveillance & Monitoring (Ongoing)
Contain and Recover at sea (if necessary/possible/acceptable)
Disperse at sea (if necessary/possible/acceptable)
Protect foreshores (if necessary/possible)
Conduct oiled wildlife operations (if required)
Clean up foreshores (if necessary/possible)
Manage waste oil (etc)
Determine when to terminate response
Demobilization
Undertake post spill activities

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LIST OF DEFINITIONS AND ACRONYMS

AMOSC	Australia Marine Oil Spill Centre
CLC	Liability Convention1992
EEZ	Exclusive Economic Zone
ESC	Environmental Scientific Coordinator
FUND	Fund Convention 1992
FIJI Waters	means all the waters comprising (a) territorial seas, (b) archipelagic waters, (c) inland waters, (d) the exclusive economic zone of Fiji.
HAZMAT	Hazardous Materials
IC	Incident Commander
IMO	International Maritime Organization
MTD	Maritime Transport Decree, August 2012
MARPOL	International Convention for the Prevention of Pollution from Ships
MPA	Marine Pollution Adviser
NATPLAN	National Spill Contingency Plan
NZ	New Zealand
NDRMP	Fiji National Disaster Risk Management Plan 2006
Noumea Convention	Convention for the Protection of the Natural Resources and Environment of the South Pacific Region and related protocols
NOSC	National On Scene Commander
OHS Act 96	Health and Safety at Work Act 1996
OPRC	International Convention on Oil Pollution Response, Preparedness and Cooperation 1990 (OPRC 90)
OSRICS	Oil Spill Response Incident Control System
OSRL	Oil Spill Response Limited
PACPLAN	Pacific Islands Regional Marine Spill Contingency Plan
PACPOL	Pacific Ocean Pollution Prevention Programme
PACREP	Pacific Islands Regional Marine Spill Reporting Centre
PICTs	Pacific Island Countries and Territories
P&I	Protection and Indemnity Club
POLREP	Pollution Report
POSTREP	Post-incident Report

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PPE	Personal Protective Equipment
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SITREP	Situation Report
UNCLOS	United Nations Convention on the Law of the Sea

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1.1 INTRODUCTION

1.1.1 Background

The Government of the Republic of Fiji has developed this National Marine Spill Contingency Plan (NATPLAN) as part of its commitment to protecting our valuable coastal and marine resources from an eminent or substantial threat to the marine environment or public.

The NATPLAN has been developed to reflect the essential steps necessary to initiate, conduct and terminate an emergency spill response within Fiji's Exclusive Economic Zone (EEZ).

This NATPLAN will facilitate the Fiji Islands meeting the obligations under the *Protocol Concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region (Noumea Pollution Protocol)* of the *Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea Convention)*. It will also assist the Fiji Islands to meet obligations under the *International Convention on Oil Pollution Response, Preparedness and Cooperation 1990 (OPRC 90)* if it decides to become a party.

In the event of a marine pollution incident all government departments and agencies, oil companies, shipping companies and other relevant parties are encouraged to follow the procedures laid down in this NATPLAN.

1.1.2 Applicable Legislation, Enforcement & Prosecution

In the Republic of Fiji, marine pollution is regulated under the Maritime Transport Decree, 2012 (MTD).

The Responsible Authority for the Maritime Transport Decree is Maritime Safety Authority of Fiji (MSAF).

In the event of a marine spill, the Responsible Authority and other government departments, will arrange for the collection of all necessary evidence, including sampling and analysis of the pollutant and its suspected source, photographs, records of interview and inspection of records, vessels, equipment and other facilities; to assist the effective prosecution of any offence that may have been committed

Other national legislations that are linked to the NATPLAN are:

- Environment Management Act (EMA) 2005
- Disaster Management Act 1995
- Sea Ports Management Act 2005
- Marine (Amendment) Act 2005

1.1.3 Aim & Objectives

The Aim of the NATPLAN is:

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- To promote in Fiji planned responses to marine oil spills at shipboard, site, municipal and national levels; and
- To specify the functions and responsibilities of persons at shipboard, site, municipal, and national levels with respect to responses to marine oil spills.

The Objectives of the NATPLAN are:

- To provide the basis of operational planning for marine pollution and other pollution emergencies.
- To provide the organizational structure and procedures for the coordinated, timely and effective response to maritime spills of oil and other noxious and hazardous substances.
- To provide systems for the detection and reporting of marine spills within the area covered by the plan, including communications networks.
- To outline the counter-measures available to restrict the spread of a spill and minimize the environmental, economic and social impacts of a spill.
- To facilitate the implementation of the Noumea Pollution Protocol and OPRC 90 in Republic of Fiji.
- To be a sub-plan of the Fiji National Disaster Risk Management Plan (NDRMP) 2006.
- To complement the Pacific Islands Regional Marine Spill Contingency Plan (PACPLAN).

1.1.4 Technical Scope & Tier One, Two and Three Spills

The NATPLAN covers the response to spills into the marine environment of all forms of pollutants, including oil, chemicals and other hazardous materials. However, it retains a primary focus on oil spills, as oil is the main pollutant likely to be spilled in Republic of Fiji's waters.

The NATPLAN covers spills into the marine environment from all sources, including both shipping and shore-based facilities. While the primary focus is marine spills the NATPLAN also covers spills in in-land waters.

For the purposes of this NATPLAN, spills are classified as Tier One, Two and Three spills. Classification is dependant upon the amount of pollutant spilt, or likely to be spilt, the resources required to respond to the spill.

Tier One

- Spills that are within the response capability and resources of an individual port or oil terminal within the Republic of Fiji. These spills are covered by oil terminal or port specific response plans as per the MTD requirements pursuant article 149.
- HNS Spills are addressed as Tier II or Tier III Spills

Tier Two

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- Spills that are coordinated and supported by national capabilities and resources. These spills are **c**overed by the NATPLAN.

Tier Three

- Spills that are beyond the response capability and resources of the Republic of Fiji, and/or
- Spills that require activation of the Pacific Islands Regional Marine Spill Contingency Plan (PACPLAN) and other mutual aid agreements.
- The spill impacts or threatens to impact the jurisdiction of a neighbouring country(ies) and,
- The spill has the potential to cause extensive environmental damage and loss of resources at the regional level.

Set quantities and sizes of spills have intentionally not been used in the definition of Tiers. This is because in some instances relatively small spills of oils and hazardous chemicals may fit the Tier Two or even Tier Three category, depending on the response capabilities and resources available, the prevailing conditions at the time of the spill and the types of environments impacted or threatened.

Allocation of any one spill to a particular Tier can only been done at the time of the spill, according to an assessment by the NOSC.

Because in reality spills do not fall into convenient categories, the boundaries between Tiers will inevitably be blurred. The NOSC must therefore be prepared to declare the next Tier from the earliest moments, as it is easier to stand down an alerted system than to escalate a response by calling up unprepared reserves.

1.1.5 Integration with Other Contingency Plans

This NATPLAN is a sub-plan of the *NDRMP 2006* as well as Tier 3 plans like PACPLAN.

The NATPLAN will provide a framework within which facility (petroleum product terminals/ports) Tier 1 contingency plans will be implemented.

1.1.5.1 National Disaster Framework

1.1.5.1.1 National Disaster Management
The National Disaster Arrangement is outlined in the Disaster Management Act 1998. This DM Act is currently being reviewed under a cabinet decision No. 140 of 2000 to include amongst other things the national response to natural and man-made disaster or emergency.

1.1.5.1.2 National Disaster Plan 1995
The National Disaster Plan 1995 is currently under review with the latest being the Draft National Disaster Risk Arrangement 2006. The objective of the plan is to enable better coordination of disaster management efforts, outlines the process for the declaration of Natural Disasters, grants special powers to the Natural Disaster Controller, assigns control of emergencies to the NDMO and sets the

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foundation for DISMAC operations. The plan also clearly demarcates responsibilities and boundaries for leading agencies to support and assist during preparation and response.

1.1.5.1.3 National Emergency Operating Centre (NEOC) SOP

The NEOC SOP objective is to address the timing of response ensuring efficient and effective response times to disasters. The NEOC SOP operationalises the National Disaster Management Plan 1995 and the National Disaster Management Act 1998. The NEOC SOP assigns responsibilities to the following disasters:

- Oil Spill Marine – Lead Agency (MSAF), Supporting Agencies (NFA, DOE, NDMO)
- Oil Spill Land – Lead Agency (NFA), Supporting Agencies (DOE, NDMO, Police)
- Hazardous and Noxious Substances – Lead Agency (MSAF), Supporting Agencies (NFA, DOE, NDMO)

NEOC SOPs will be inserted in Annex Fifteen once developed.

Figure 1: Structure for National Coordination

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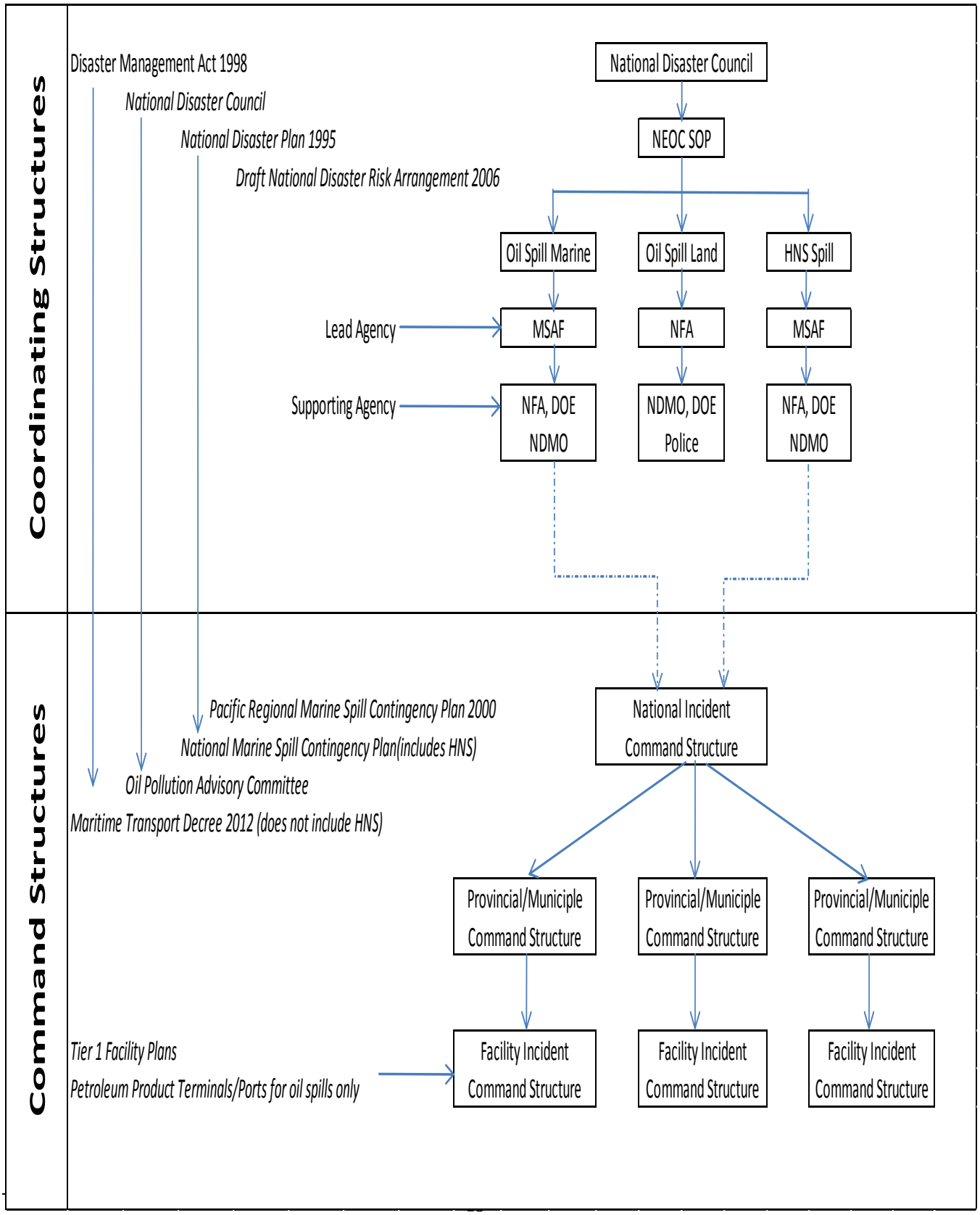
Coordinating Structures
Disaster Management Act 1998
National Disaster Council
National Disaster Plan 1995
Draft National Disaster Risk Arrangement 2006
National Disaster Council
NEOC SOP
Oil Spill Marine
Oil Spill Land
HNS Spill
Lead Agency
MSAF
NFA
MSAF
Supporting Agency
NFA, DOE NDMO
NDMO, DOE Police
NFA, DOE NDMO
Command Structures
Pacific Regional Marine Spill Contingency Plan 2000
National Marine Spill Contingency Plan(includes HNS)
Oil Pollution Advisory Committee
Maritime Transport Decree 2012 (does not include HNS)
National Incident Command Structure
Provincial/Municiple Command Structure
Provincial/Municiple Command Structure
Provincial/Municiple Command Structure
Tier 1 Facility Plans
Petroleum Product Terminals/Ports for oil spills only
Facility Incident Command Structure
Facility Incident Command Structure
Facility Incident Command Structure

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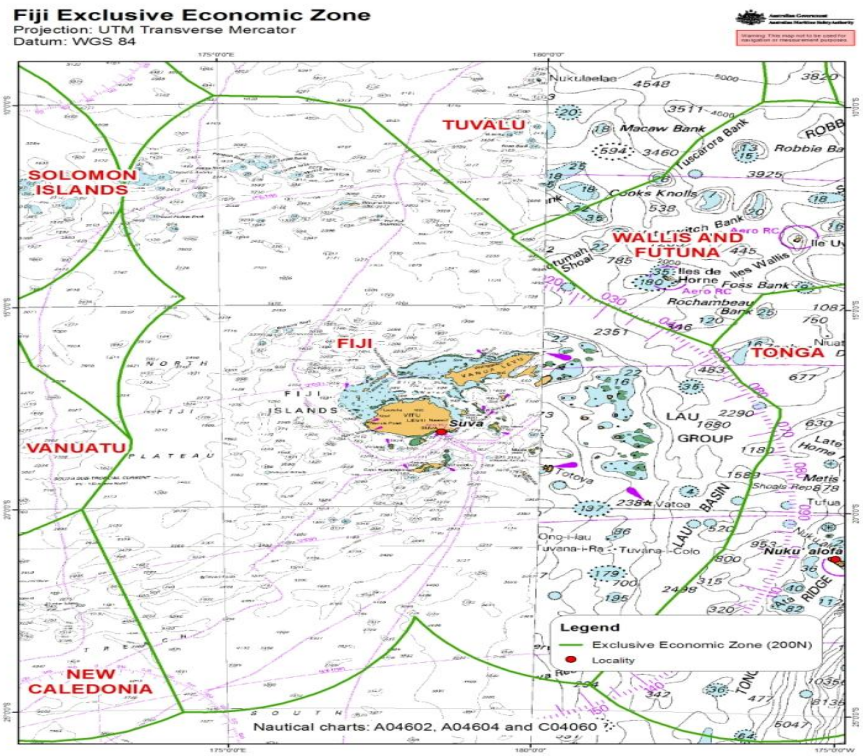
1.1.6 Geographical Scope

The geographical scope of the NATPLAN, referred to hereafter as the Plan Area, is all of the coastlines and all marine waters below highest astronomical tide within the FIJI WATERS of the Republic of Fiji.

Figure 2: The Map Area for Republic of Fiji.



1.1.7 Underlying Principles, Protection Priorities & Environmental Sensitivities

The four main underlying principles of an environmental pollution emergency plan are:

Mitigation:	regulatory and physical measures to prevent incidents or mitigate the effects of the pollutant.
Preparedness:	arrangements to mobilise and deploy all necessary resources and services.
Response:	actions taken during and immediately after a pollution emergency to minimise effects.
Recovery:	arrangements to restore the affected environment to normal.

The NATPLAN is founded on the following general principles:

- Government and Industry must make it the highest priority and make every effort to prevent spills of oil and other hazardous material.

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- When spills occur have competent contingency plans in place to deal effectively with such spills,

- The primary purpose of this NATPLAN is to provide a mechanism for the prevention and minimization of damage to marine resources and coastal environments from marine spills and to facilitate their recovery from the impacts of spills.

- Seek to maximise co-operation, co-ordination and integration between government, local authorities and industry, and to adopt the most cost-effective, efficient and practicable response options available.

In the event of a marine spill requiring a response to be mounted under the NATPLAN, the following order of protection priorities should be adhered to:

- Human life, health and safety.
- Protection of ecological habitat.
- Rare and endangered species.
- Cultural resources.
- Commercial resources.
- Non-commercial property and amenity.

Within these protection priorities, various marine and coastal environments and resources have different environmental sensitivities, requiring further prioritisation of spill response efforts.

The typical prioritisation for tropical foreshores is below:

1	Sheltered tidal flats, mangroves and Biologically sensitive areas	Most productive of coastal environments. Oil may persist for many years. Difficult to clean, protection of these environments should receive first priority.
2	Exposed tidal flats, sea grass beds and gravel beaches	Oil may penetrate and be buried. Depending on energy conditions. Oil may persist for some time.
3	Sheltered rock coasts and high amenity Areas	If not protected oil may persist for some time. Amenity areas most likely to cause public and tourist operator concern.
4	Exposed sand beaches	Oil may sink and/or buried according to sand sub Strata. Generally oil will be removed naturally within weeks. Can be removed by mechanical means.
5	Exposed rocky headlands and platforms with high wave energy	Wave swept, most oil removed by natural processes within days according to wave

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		energy.

The clean up options used must be tailored to suit the needs and sensitivities of the foreshore contaminated. Response authorities must ensure that expert environmental opinion is sought on the correct methods to use in the different coastal environments to ensure further damage is not done to sensitive ecosystems.

Further information on the advantages and disadvantages of various cleanup and response options is contained in section 3.3 Recovery and Protection.

These cleanup options can be summarised as follows.

Clean up Options

Rocky Foreshore:
If clean up action is required, the use of low pressure high volume sea water flushing to transport the oil back into the water should be considered where booms deployed in the near shore can concentrate the oil for recovery. Removal of bulk oil is advisable if applicable. Dispersant or foreshore cleaners may be used but only after specialist advice. Physical cleaning techniques are also widely used.

Sandy Beaches:
Preferred method is physical removal and disposal of oiled material. Manual removal of the oil working systematically down the beach with mechanical transport of waste is best practise. Challenge will be the manual secondary clean-up, keeping worker morale up when beaches are re-oiled everyday!

Marshlands and Mud Flats:
Expert opinion should be sought in these situations. Water flushing techniques can be used but sometimes no clean up action may be preferable. These environments are very sensitive to physical damage from the impacts of responders disturbing the roots systems of marsh plants and mangroves and trampling oil into the soft sediments.

Manmade structures:
Preferred method of cleanup can be high pressure washing with booms and skimmers for containment and recovery

1.1.8 Planning Tools

It is important to map areas that need to be prioritized during a spill response. These plans will be a key tool for planning during the spill response.

Two important areas that require mapping are coastal resources and environmental sensitivity. These are included into the Planning Section 4

1.1.9 Risk Assessment

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International data suggests that 80% of marine oil spills occur within port or harbor areas. These spills are usually small in nature resulting from normal operations such as loading/unloading and bunkering of fuels.

Factors that need to be considered are:

- Risk of collision
- Risk of groundings
- Hazard to navigation
- Records of seaworthiness of vessels (Port/State Control inspections)
- Negligence and competence of crews
- Size/type of vessels
- Type/amount of oil/chemicals carried
- Traffic density
- Environmental factors (weather, tides, severe weather events e.g. cyclone frequency)
- Environmental resources under threat
- Petroleum facilities
- Tank farms
- Offloading mechanisms e.g. wharf/fixed pipeline/floating pipeline

A detailed risk assessment can be found in Annex 5

1.1.10 Types of Petroleum Products and Chemicals in Republic of Fiji

The following petroleum products are stored and transported in the Republic of Fiji:

- Diesel
- Unleaded petrol
- Kerosene/Jet A1
- Avgas
- X55
- Heavy Fuel Oil
- Bitumen
- Lubricating Oils
- Liquid Oxygen/CO2

Caustic Soda and fertilisers are transported in bulk.

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1.2 ROLES & RESPONSIBILITIES

1.2.1 Oil Pollution Advisory Committee

The Oil Pollution Advisory Committee will be determined by the Minister.

The role of the committee and its members is to give advice to the authority as per section 145 (1) on:

- The National Oil spill Response strategy
- Fixing of oil pollution levies
- Use of oil pollution pool
- And any other matters relating to oil spills that the minister may specify.

1.2.2 Responsible Authority

MSAF is the Responsible Authority for all marine spills within FIJI WATERS.

The Responsible Authority has legal or statutory responsibility for administering and enforcing the Maritime Transport Decree 2012 and the overall management of the NATPLAN.

1.2.3 National On Scene Commander.

The Minister i shall appointthe National On Scene Commander in accordance with Sections [*numbering yet to be finalised*] of the MTD.

The responsibilities of the National On-Scene Commander shall be to manage and co-ordinate the response of, and direct the use of resources available to the Authority, in relation to any marine oil, harmful substance, and noxious liquid substance spill in respect of which the Administration is taking action. Section [*numbering yet to be finalized*] of the MTD refers.

1.2.4 Other Government Agencies

Regardless of which agency bears lead responsibility all other government agencies shall support the Responsible Authority in accordance with the organizational structure outlined in section 2 below.

1.2.5 Responsible Party (Polluter)

The party responsible for causing the spill has the following responsibilities:

- Reporting the spill immediately to the Responsible Authority.
- Taking immediate action to control or stem the source of the spill.
- Taking immediate action to contain the spill and prevent it from spreading.

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- Taking immediate action to clean up the spill.

- Co-operating fully with the NOSC in the response to the spill
- Any legal obligations and responsibilities not covered above as required by relevant legislation, including those relating to meeting the costs of the spill response and clean up and mitigation of any environmental and economic damage.

1.2.6 Oil Industry

All oil companies operating in Republic of Fiji have the following roles and responsibilities under the NATPLAN pursuant of Section [*numbering yet to be finalised*]of the MTD:

- Giving highest priority to preventing spills from tankers, pipelines, terminals, depots and other facilities owned and/or operated by them.

- Immediately reporting all spills from their facilities to the MSAF CEO.

- Developing and maintaining local marine spill contingency plans for all facilities that they own, manage and/or operate as well as ensuring that these plans are compatible and integrated with this NATPLAN.

- Establishing and maintaining stockpiles of marine spill response equipment for all facilities they own manage and/or operate, with the types and amounts of equipment being appropriate to the level of risk at each facility.

- Ensuring that personnel are appropriately trained in marine spill prevention and response.

- In the event of a spill from its facilities, the roles and responsibilities outlined in section 1.2.5 above.

- Actively participating in the oil Pollution Advisory Committee if required.

1.2.7 Role of P&I Clubs

Approximately 90% of the world's shipping fleet is entered with a Protection and Indemnity insurer, called a P&I Club. The risks covered by the P&I Clubs include;

- Liability arising from the carriage of cargo
- Pollution liability
- Liability for loss of life and injury to crew members, passengers and others such stevedores on a ship
- Damage to fixed and floating objects and to other property
- Wreck removal
- And other such parts of the liability for collision damage as is not covered under a vessel's hull policy.

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When an incident occurs a P&I Club usually appoints a correspondent to assist the P&I Club in relation to claims that arise where the correspondent operates.

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The role of the correspondent in marine pollution incidents involving vessels includes but not limited to;

- Notifying the P&I Club of incidents that occur in his area of responsibility
- To attend an incident scene if appropriate
- To appoint surveyors/experts to attend at the scene of a maritime casualty
- To liaise with governments, maritime authorities at the scene of a maritime casualty
- To monitor salvage operations, pollution containment/removal at the scene of the casualty
- To assist in posting security for claims and,
- To assist in carrying out investigations on cause of loss of vessel/cargo

The NOSC should ensure that the P&I Club and/or P&I Correspondent are fully informed of the activities being undertaken during the incident response and that they have access to running records of costs of the incident. The correspondent would also be working closely with the Salvors and ships master and will be a valuable conduit for information flow.

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2.1 INCIDENT COMMAND & CONTROL

2.1.1 Elements of Effective Control of Spill Response

Establishing effective control and initiating a spill response requires a number of actions, these include:

- Mobilising the Marine Spill Response Team,
- Establishing a suitable incident control centre,
- Establishment of effective communications,
- Effective collation, transfer, display and storage of information,
- Effective management of public and community relations (media and consultative processes).

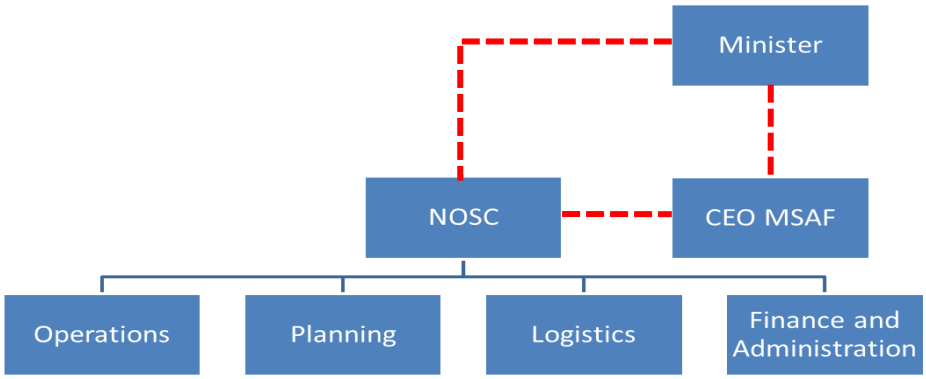
2.1.2 Incident Command Structure

Response operations cannot be effectively carried out unless there is a clear organizational structure to command and control the response and trained individuals to carry out the response plans.

The overall structure of incident command and control system is depicted in Figure Three. In the event of a marine spill within Republic of Fiji waters, a Marine Spill Response Team based on this structure should be immediately established by the designated NOSC. The number and nature of the individual sections and units should be flexible and tailored to suit the size and nature of the spill. Several sections may be combined under a single coordinator for small spills.

The NOSC directs response efforts and co-ordinates all efforts at the scene and is the primary decision-making authority in relation to spill response activities. This is achieved through the Incident command structure especially modified to support oil spill response called the Oil Spill Response Incident Command Structure (OSRICS).

Figure 3: Marine Spill Response Team (Oil Spill Response Incident Command Structure)



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The responsibilities of the various roles within the Marine Spill Response Team can be summarized as follows:

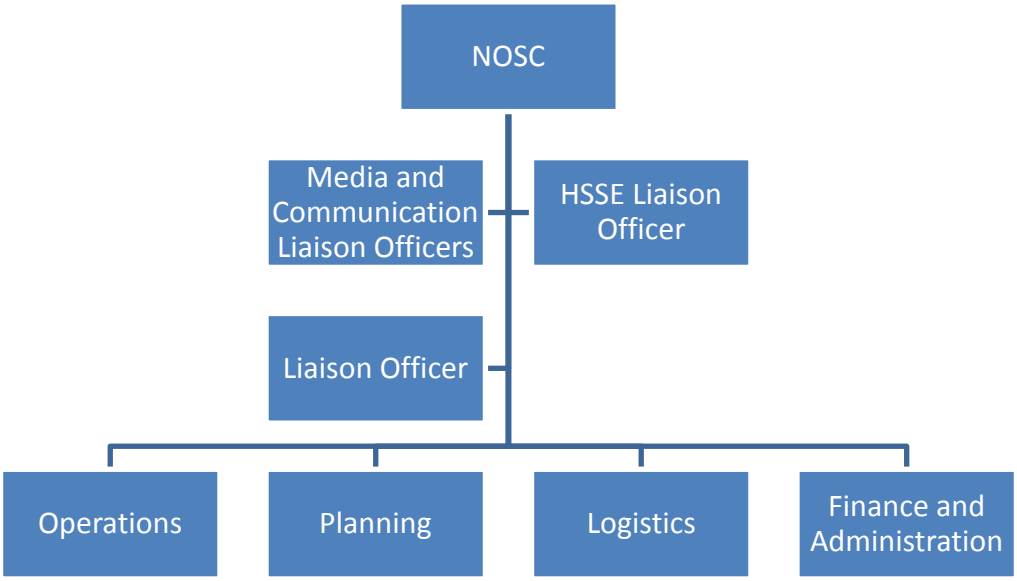
- **Planning Section** - responsible for the provision of scientific and environmental information, the maintenance of incident information services, and the development of the Incident Action Plan.
- **Operations Section** - responsible for undertaking all response operations in the field.
- **Logistics Section** - responsible for the provision of resources to sustain the response.
- **Finance & Administration Section** - responsible for maintaining financial and administrative records of the response activities.

All key positions in the Marine Spill Response Team will have Job Descriptions outlining the essential roles and responsibilities, as well essential competency requirements. These will be inserted as Annex Fourteen when developed.

2.1.3 Command Section

The command section consists of the following persons and sections as outlined in Figure Four.

Figure 4: Command Section



The roles and responsibilities the various members of the Command Team are as follows:

2.1.3.1 National On Scene Commander

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In the event the NOSC decides to respond to a spill incident, he/she will command the response to the spill and will control and direct the use of all resources. The state government invests the NOSC with the authority necessary to command all state assets and resources as deemed necessary to deal with the incident.

In carrying out his/her role, the NOSC shall be supported by an incident response team comprising the personnel and organizational structure outlined in Figure Four above.

2.1.3.2 Health Security and Safety Officer

The safety officer will also provide advice to the NOSC on safety matters. The Safety Officer function is responsible for preparation of safety plans including hazard identification and mitigation.

2.1.3.3 Liaison Officer

The Liaison Officer is the point-of-contact for various agency representation assigned to the incident by assisting or cooperating agencies. These are personnel other than those directly involved in the various functions.

2.1.3.4 Media and Public Communication Officer

The Media & Public Communication Officer is the central point for dissemination of information to the news media and other agencies and organisations.

2.1.4 Health and Safety

This section provides guidance in the preparation of a proper Site Safety and Health Plan. A guide plan is attached in Annex Seven. The protecting of personnel from serious risks to their physical safety and health while responding to a marine spill is of the highest priority.

2.1.4.1 Responder Training

Responders may be called upon to fulfil a variety of roles under changing conditions during a response. Some of these roles will involve working on vessels at or nearby the source of the spill, while others will be concerned primarily with longer-term shoreline cleanup operations. Additional personnel could be involved in "defensive-type" preparatory activities on the shoreline following a marine spill but prior to the actual deposition of oil on that section of the shoreline.

Many of these roles have different training needs. Appropriate response strategies are also required under changing conditions to safeguard the health and safety of personnel while responding quickly and effectively to limit the impact of the spill on the environment.

The cleanup of a spill or discharge should always be undertaken by trained personnel approved by the NOSC. This operational phase of the response is often characterized by changing conditions at and near the spill site. Accordingly, these oil spill responders are trained to recognize and monitor hazard conditions and implement standard operating procedures and response strategies to protect themselves while effectively responding to the emergency. A short-form Site Safety and Health Plan (typically a

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pre-formatted document only a few pages in length) is appropriate should the response extend beyond a single shift.

The operational phase of a response frequently requires substantial numbers of personnel but is characterized by limited, stable and readily identifiable hazard conditions. In such conditions, where the site has been fully characterized and a detailed Site Safety and Health Plan prepared by the safety officer, trained and approved by the NOSC, it is not usually necessary that all personnel involved have prior training. Instead, this category of responder must receive specific safety and health training for the hazards and control measures identified in the Site Safety and Health Plan, together with the job skills and procedures appropriate to their role in the cleanup operations.

This Section recognizes that the safety and health training needs are imprecise in relation to marine oil spills, and thus open to interpretation from time to time in specific situations. All training records should reflect that Occupational Health and Safety (OHS) requirements have been satisfied. Agencies such as Oil Companies, Ports and MSAF are responsible for certifying of their employees.

2.1.4.2 Volunteers

This Section also recognizes that public-interest volunteers and special interest groups will frequently seek to contribute to, and be actively involved in, mitigating the adverse effects on the environment. There is a responsibility for the Safety and Health Training Plan to address such personnel as well.

Accordingly, this Section is guided by the fundamental objective of the Health and Safety at Work Act 1996 (OHS Act 96) ensuring to protect "workers" from unreasonable risks to their physical safety and health in the performance of their duties. This plan provides a practical and thus achievable means of providing such training for each of the multiple categories of personnel identified, recognizing the unique circumstances which can exist immediately following a significant discharge of oil or hazardous materials.

The pre-spill training of prospective volunteers will greatly benefit any oil spill response effort. This training shall include shoreline cleanup operations.

The level of training depends on the risk of exposure. It is important to fully characterize the spill site and determine the health and safety risks before determining the required level of training. This is to be conducted by a qualified person as approved by the NOSC.

2.1.4.3 Site Control

For safety on site, it is important to identify the tasks the worker is assigned and what level of training they have. If the incident commander deems it necessary, he may require clothing, including hats, vests, etc. that are color-coded to designate level of training. It is important to remember that this does not necessarily designate who is in charge, but indicates level of training only.

A color-coded system for the NATPLAN is as follows:

- white - No training
- yellow – Level I training
- green – Level II training

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Documentation of training for all workers requiring any level of training must be available on site. That documentation, regardless of whom it is issued by, should have the following information:

- Level of training & expiration date.
- Picture of individual.
- Location of individual's training record.

Note: More than one document may be used to satisfy these requirements, e.g., a photo driver's license plus a training card. This Section strongly recommends the use of personal training cards with pictures whenever possible.

2.1.4.4 Site Safety

The role of the safety officer is to assess the site, determine the safety and health hazards present, and determine what OHS regulations apply.

The individual making the site characterization should communicate the hazards associated with the spill, and provide recommendations for the protection of workers' health and safety through a Site Safety and Health Plan.

The responsibility for the health and safety of personnel supporting a pollution response mission rests with the NOSC.

2.1.4.5 Personal Protective Equipment and Heat Stress

Besides training and development of a Site Safety and Health Plan, appropriate selection and use of Personal Protective Equipment (PPE) is essential for worker safety. An appropriate reference must be used to determine the appropriate PPE required for each response. For oil spill situations requiring worker respiratory protection, full compliance with product MSDS is required.

The Site Safety and Health Supervisor shall generally be guided by the OHS Act 96 in determining work/rest periods, heat stress reduction strategies, and fluid intake. It is recognized that PPE suitable to protect a worker from being exposed to either oil or chemicals, by design, will restrict the bodies natural ability to control its core temperature. Wearing full PPE in a hot and humid work environment will cause heat stress. To effectively deal with heat stress issues requires a comprehensive approach that includes full understanding and implementation of all heat stress reduction strategies. These measures include but are not limited to the following.

- Proper application of a program to supply water to site workers in a controlled manner that prevents ingestion of oil or chemicals but, supplies adequate quantities to satisfy OHS standards.
- Measures to insure that workers are in good health and can withstand the normal levels of heat stress that may be required of certain tasks.
- Work/Rest periods that consider temperature, humidity, acclimatization, wind, and required PPE must be made.
- Proper selection of PPE to minimize heat stress while still protecting the site worker from oil exposure as needed.

These Heat Stress reduction measures should be fully outlined in the Site Safety and Health Plan.

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Additional specific heat stress reduction strategies may be mandated by the Site Safety and Health Supervisor and should be included in the Site Safety and Health Plan.

2.1.5 Media

The public's perception of how a response is being handled is determined during its earliest stages. It is critical that the Command Structure display a coordinated front in deploying and managing resources. The public affairs plan is designed to demonstrate concern for human and environmental impacts of the incident; define response actions planned or underway; project a team response by all agencies and industry representatives.

Refer to Annex – Media Procedures.

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3.1 OPERATIONS

The operational aspects of the response will take place in the field, likely to be remote from the Incident Control Center where the planning process has taken place.

It is, therefore, essential that significant links are developed and maintained between the response personnel in the field, and the Operations and Planning Section staff in the Incident Control Center.

Operations in the field have been subdivided into units with responsibility for specific aspects of the response activities.

These units have been developed with quite clear operational parameters. The five units, each under the direction and control of a Coordinator who is responsible to the Operations Officer, cover the following operations as per Figure Five:

Figure 5: Operations Section

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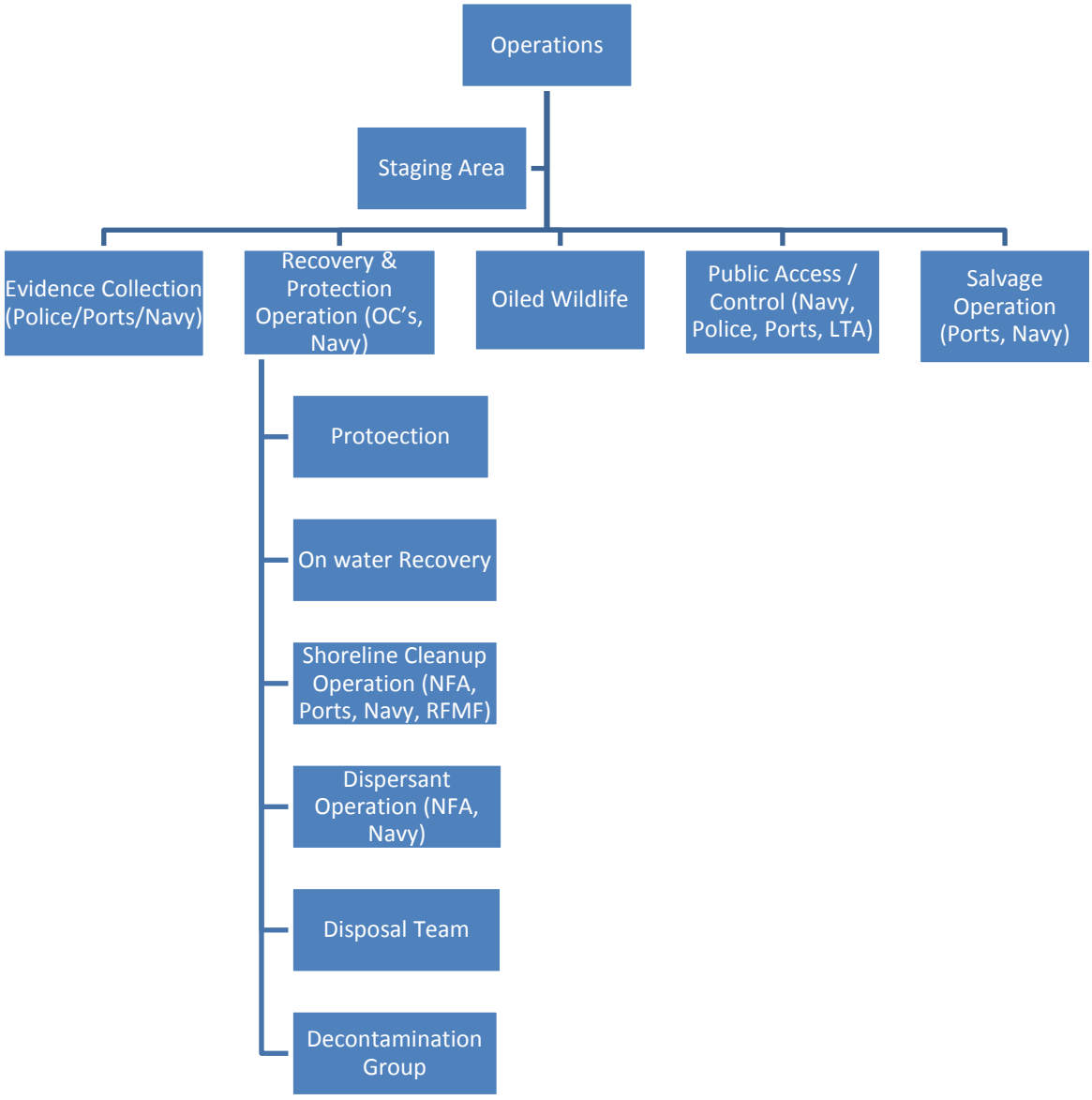

The operations section is organised as follows:

3.1.1 Staging Area Coordinator

Staging Areas are locations set up at an incident where resources can be placed while awaiting a tactical assignment

3.1.2 Evidence Collection

This involves investigation into the cause of the incident and will involve collection of evidence for finger printing of oil samples at recognised laboratories.

3.1.3 Recovery & Protection Operation

This section is responsible for the deployment and maintenance of pollutants from the environment.

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3.1.3.1 Protection Group
This group is responsible for the deployment and maintenance of equipment deployed to prevent areas from becoming contaminated.

3.1.3.2 On-water recovery group
This group is responsible for the deployment and maintenance of equipment deployed in the on-water environment.

3.1.3.3 Shore line recovery group
This group is responsible for the deployment and maintenance of equipment deployed in the shoreline environment.

3.1.3.4 Dispersant group
This group is responsible for the deployment and maintenance of equipment deployed for dispersant purposes.

3.1.3.5 Disposal Group
This group is responsible for the removal and final disposition of materials collected and contaminated during the incident

3.1.3.6 Decontamination Group
This group is responsible for the cleaning of equipment and personnel contaminated during the incident.

3.1.4 Oiled Wildlife

3.1.4.1 Wildlife Recovery group
This group is responsible for the rescue and transport of animals trapped by the incident and their transport to the rehabilitation centre.

3.1.4.2 Wildlife Rehabilitation Centre
This is where animals trapped by the incident are taken for treatment and recovery.

3.1.5 Public Access and Control

This group is responsible for controlling public access to the working areas.

3.1.6 Salvage Operations

This group is responsible for monitoring the salvage and recovery operations that occur during the incident. Salvage operations are referenced in sections 3.3.2 Intervention at Sea and 3.3.3. Declaration of a Hazardous Ship.

3.2 POLLUTION REPORTS & COMMUNICATIONS

3.2.1 Surveillance & Spill Detection

All maritime oil and chemical spills should be reported to the MSAF CEO or Municipal Council CEO and recorded systematically. Vessel incidents such as groundings, collisions, fires, explosions or other

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accidents or incidents should also be reported as these can often lead to the release of cargoes or vessel fuels and oils.

Under the *International Convention for the Prevention of Pollution from Ships (MARPOL* 73/78) there is an obligation on the master of a vessel to report any marine pollution incidents without delay, and to the fullest extent possible, to the coastal State in order to facilitate necessary counter-pollution actions. Mandatory reporting requirements for incidents involving harmful substances are contained in article 8 and Protocol 1 to MARPOL 73/78.

All personnel in industry, government agencies, members of the general public, as well as crews of civil and military aircraft, should be required to, and be able to, report a spill to MSAF 24 hours a day.

3.2.2 Initial Pollution Reports (POLREPS)

Recognizing the importance of rapid dissemination of information in the event of a marine spill, any ship's master or crew, aircraft crew, oil company employee, port personnel or any other person observing a marine spill should immediately report the spill to CEO MSAF or Municipal Council.

It is essential that a 24-hour hotline number be established and maintained to provide a focal point to government, industry and the general public.

24-Hour Emergency Hotline for Republic of Fiji

CEO MSAF 3315266(oh); 9905692(m)

MSAF Manager PR&ER 3315 266(oh); 9920392 / 9906331(m)

NFA 911

The CEO MSAF should immediately contact the NOSC who will complete a POLREP, using the standard format contained in Annex One, and urgently transmit and inform SPREP via facsimile.

The NOSC should assess the implications of the situation and make a decision on whether any response is likely to be required. The NOSC must also consider whether other parties need to be made aware of a potential pollution situation if operational personnel need to be placed on standby.

3.2.3 Situation Reports (SITREPS)

In order to provide periodic updates on pollution incidents, the NOSC should complete SITREPs, using the standard format contained in Annex Two. These SITREPs should be frequently compiled from field information and transmitted to the CEO MSAF at regular intervals throughout the spill.

3.2.4 Post-Incident Reports (POSTREPS)

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After a pollution incident, the MSAF CEO should prepare a brief report including:

- Assessment of the response operation, including reference to equipment used its effectiveness, additional equipment, and training needs.
- Documentation of clean-up costs.
- Assessment of environmental and economic damage.
- Details of problems encountered.
- Recommendations regarding amendment or revision of the NATPLAN.

When the MSAF CEO has compiled this report, the NOSC and other personnel should meet with the Oil Pollution Advisory Committee to review their collective experiences and compile an overall Post-incident Report (POSTREP), including if necessary, any recommendations for amending or revising the NATPLAN.

3.2.5 Pacific Islands Regional Marine Spill Reporting Center (PACREP)

SPREP has established and maintains the Pacific Islands Regional Marine Spill Reporting Center (PACREP), at its office in Apia, Samoa.

PACREP is simply the SPREP fax number (685) 20231, which provides the focal point for receiving and relaying information concerning any marine pollution incident in the region. PACREP is a facility where:

- POLREPS of all marine spills in the region should be sent to by the NOSC where the spill occurs.

- The progress of a spill can be monitored, through the receipt of SITREPs from NOSC where the spill occurs.

POLREPS received by SPREP through PACREP are entered into a database and Geographic Information System, to provide a long-term picture of trends in marine spills throughout the region.

This will assist updating of risk assessments and targeting of prevention, education, surveillance and enforcement efforts, and provides a performance indicator for spill prevention efforts and state of the environment reporting. SPREP is responsible for reporting annual spill statistics from PACREP to interested parties.

It should be noted that PACREP is NOT an emergency response facility, and is only functional during normal business hours. Its main purpose is for the collection, analysis and dissemination of spill data. All spills within Republic of Fiji must be reported to MSAF CEO.

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3.3 RECOVERY AND PROTECTION

The responses used to recover oil and protect a shoreline determines effectiveness of the response. Both the nature of the oil and the environment determine the level and type of response mounted.

3.3.1 Response Matrixes

These matrixes are used to recommend mitigation procedures for use when planning a response strategy. The matrices give recommendations for all shore types identified in the environmental sensitivity index.

The matrixes for Offshore and Shoreline responses can be found in Annex Eight.

3.3.2 Intervention at Sea

All efforts must be focused on saving a vessel so that the problem is not compounded. Stabilizing the situation includes securing the source of the spill and/or removing the remaining oil from the vessel, tank or pipeline to prevent additional pollutant entering the sea.

With its accession to the *United Nations Convention on the Law of the Sea (UNCLOS)* the Republic of Fiji's jurisdiction extends to the Exclusive Economic Zone.

Becoming a party to the *Intervention Convention* will permit the Republic of Fiji to intervene on the high seas when necessary to prevent, mitigate or eliminate grave and imminent danger to the marine environment and coastline from pollution or threat of pollution, following a maritime casualty, which may be reasonably expected to result in major harmful consequences.

The measures taken must be proportionate to the damage, whether actual or threatened, and must not go beyond what is reasonably necessary to achieve the ends of protection and must cease when those ends have been achieved. Such measures may include:

- Move the ship or part of the ship to another place;
- Remove cargo from the ship;
- Salvage the ship, part of the ship or any of the ships cargo;
- Sink or destroy the ship or any part of the ship;
- Sink, destroy or discharge into the sea any of the ship's cargo, or
- Take over control of the ship or any part of the ship.

3.3.3 Declaration of a Hazardous ship, Structure or Operations

The CEO MSAF can declare a ship, structure or operation in the Fiji waters as a *'hazardous ship, structure or operations'* pursuant of Sections [*numbering yet to be* finalised] of the MTD.

3.3.3.1 Powers of the CEO in relation to hazardous ships:

Under Section [*numbering yet to be* finalised] the CEO may from time to time:

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(a) issue any instructions to the master, owner, or agent of the ship, or to any person in charge of any salvage operation in respect of the ship and an employee or agent of that person, with respect to the ship, or its cargo, or both;
(b) take any measures with respect to the ship, or its cargo, or both, including taking over control of the ship.

(2) Without limiting subsection (1), that subsection authorises the Chief Executive Officer to take, or to require any person referred to in paragraph (a) of that subsection to take, all or any of the following measures-
(a) the removal of the ship to another place;
(b) the removal of cargo from the ship;
(c) the salvage of the ship, or its cargo, or both;
(d) the sinking or destruction of the ship, or its cargo, or both.

(3) The Chief Executive Officer shall use reasonable endeavours to notify the master, owner, or agent of the ship of any measures the Chief Executive Officer proposes to take under subsection (1) or subsection (2) with respect to the ship, or its cargo, but the Chief Executive Officer shall not be obliged to give such notification where, in his or her opinion, the urgency of the situation is such that the measures must be taken immediately.

(4) In order to carry out, or assist in carrying out, any measures taken under this section, after making reasonable endeavours to consult the owner, or the agent, of the ship to whose master the instructions are to be given, the Chief Executive Officer may from time to time—
(a) instruct the master of any Fiji ship, or of any other ship within the internal waters of Fiji, to render assistance to a ship that, in the opinion of the Chief Executive Officer, is a hazardous ship; and
(b) instruct the master of any Fiji ship to do all or any of the following-
(i) take on board any item or equipment;
(ii) sail to any place;
(ii) render assistance to a ship assisting a ship that, in the opinion of the Chief Executive Officer, is a hazardous ship;
(iii) assist in operations for the cleaning up and control of a harmful substance.

3.3.3.2 Powers of Chief Executive Officer in relation to hazardous structures and operations
[*numbering yet to be* finalised]. (1) In the case of a structure that, in the opinion of the Chief Executive Officer, is a hazardous structure, the Chief Executive Officer may from time to time—
(a) issue any instructions to the owner of the structure with respect to the structure;
(b) take any measure with respect to the structure.

(2) Subsection (1), includes power to take or require to be taken either or both of the following measures –
(a) the removal to another place of the structure;
(b) the sinking or destruction of the structure.

(3) In the case of marine operations that, in the opinion of the Chief Executive Officer, are hazardous marine operations, the Chief Executive Officer may from time to time-
(a) issue any instructions to the owner, or the person in charge, of the marine operations;
(b) take, or require that owner or person in charge to take, any measures with respect to the marine operations.

(4) The Chief Executive Officer shall use reasonable endeavours to notify the owner of a structure, or the owner or person in charge of marine operations, of any measures the Chief Executive Officer proposes to take under this section with respect to the structure or marine operations, but the Chief

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Executive Officer shall not be obliged to give such notification where in his or her opinion the urgency of the situation is such that the measures must be taken immediately.

3.3.3.3 Exercise of power by Chief Executive Officer[*numbering yet to be* finalised]. *The Chief Executive Officer shall not issue any instructions, or take any measures, under section* [*numbering yet to be finalised*] *or section* [*numbering yet to be finalised*] *unless the issue of such instructions, or the taking of such measures, appears necessary to the Chief Executive Officer to avoid, reduce, or remedy pollution, or a significant risk of pollution, by a harmful substance that is causing, will cause, or will be likely to cause serious harmful consequences to the marine environment or marine interests.*

3.3.4 Salvage of Casualty

In the event of an incident involving a damaged or disabled ship, it is paramount that the salvage industry be involved in the response as soon as possible. Salvage activities may need to be arranged for taking the vessel in tow, refloating a grounded vessel, or reducing or stopping a discharge of pollutant to minimize environmental damage resulting from the casualty. It is essential that these operations be undertaken as soon as possible

In accordance with Republic of Fiji legislation the CEO MSAF has responsibility for safety issues relating to vessels on coastal or foreign voyages and will be responsible for ship operational matters. These functions include alerting and liaising with salvors, taking measures to minimize pollution release or outflow and other salvage activity.

The vessel's owner or master will normally appoint a salvor by signing a Lloyds Open Form Agreement. However, in cases where this does not occur, the Republic of Fiji may use its powers under the *International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Damage 1969*, to either direct the Master/Owner to engage a Salvor or alternatively contract a salvor to undertake necessary work, with costs recoverable from the owner.

3.3.5 Chemical Spills/HAZMAT Response

As outlined under section 1.1.4., the NATPLAN is designed to cover the response to spills into the marine environment of all types of pollutants, including oil, chemicals and hazardous materials (HAZMAT).

However, technical details within the NATPLAN relate primarily to marine oil spills. This reflects the fact that oil is the main pollutant likely to be spilled in Republic of Fiji. In the event of a chemical/HNS spill within the Republic of Fiji, the general procedures and arrangements of NATPLAN should be followed.

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3.4 WASTE DISPOSAL

This section identifies storage and disposal options for waste generated by the response to a pollution event. It is the goal of the NATPLAN to have oil removed from impacted areas as soon as possible and to ultimately treat or dispose of the oily waste in the most efficient and environmentally sound manner.

Annex Nine – Oily Waste Handling Arrangements, outlines the Waste Disposal Treatment options.

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3.5 DECONTAMINATION

This section identifies general guidance procedures to be followed for vessels and equipment involved with oil spill response operations. Because these operations may involve operating within oiled waters or recovery operations, we may assume that vessels, equipment, machinery, and other gear will be impacted with oil. This plan will be used for all vessels and equipment either contaminated or suspected of being contaminated with oil to return to a non-oiled state.

Note: Plan should identify decontamination location or site.

3.5.1 Concept Overview

In view of the extensive equipment inventory involved in a response effort, the NOSC will establish decontamination zones. All contaminated items will be cleaned to a condition of cleanliness mutually agreed upon by the Command Section and the equipment owner. The primary focus of this operation will be to expedite cleanup of oiled vessels and response equipment in a safe, organized and efficient manner while minimizing further damage to the environment and waste generation.

3.5.2 Equipment Decontamination

Equipment decontamination will occur in three phases:
1. Decontamination of equipment for immediate re-utilization or relocation.
2. Recovered oil is to be off-loaded from OSRV's, barges, tow-able storage bladders and cargo tanks to portable storage tanks pending disposal in accordance with section 3.4. – Waste Disposal.
3. Full decontamination prior to demobilization.

3.5.3 Decontamination Methods

Equipment decontamination will be done as follows:

- The Command Section will approve the on water decontamination of vessels.
- On water decontamination of large oil spill response vessels (OSRVs) to be conducted at berth and/or other satellite locations, as needed.
- Decontamination of portable equipment and small vessels less than 32', to be conducted in bermed areas as identified on the site layout diagram.

3.5.3.1 Oil Spill Response Vessel (OSRV)

Decontamination of large OSRVs is to occur on site. Each vessel will be placed inside standard containment boom (8x12) during decontamination process. This decontamination zone areas will utilize a boom anchoring system to prevent the collapse of the perimeter protection during tidal changes and surges.

Decontamination plan will be created for each OSRV. These plans will be added as appendices to this document. Preplanning for protection of adjacent areas shall be accomplished in order to minimize cross contamination. Floating oil from sheen-emanating vessels will be minimized with sorbents as necessary to reduce potential loss outside the containment boom. Floating sorbent materials shall be utilized in natural collection points as needed to retain free floating oil. These sorbents will be tended daily.

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Mobile decontamination teams will be assigned on an as needed basis. A mobile decon team will be comprised of one supervisor, six laborers, and a designated representative. A vessel specific plan will be developed for each OSRV to ensure that skimming equipment, storage tanks, piping systems, deck gear and the vessel hull are cleaned to agreed upon standards. A marine chemist may be utilized to determine tank entry safety.

3.5.3.2 Portable Equipment and Containment Boom

A paved area and warehouse with appropriate space shall be identified as the final decontamination area. A support zone will be established nearby to be used for consumable supplies.

3.5.3.3 Cleaning Solutions

A citrus based cleaning solution (Simple Green, CitrusSolve, PES51 or like) will be utilized as a degreaser and will be applied by either an airless sprayer or hudson sprayer as applicable.
Like Decanting, before cleaning on-water equipment, **permission must be obtained from the NOSC**.
Actual cleaning will utilize a Landa (or like) hot/cold pressure washer with a temperature range to 220F and a pressure rating up to 3000 psi. Every attempt will be exercised to mitigate noise generating equipment by placing it in insulated areas.

Oily waste/wash water will be transferred to poly storage tanks by pump.

By utilizing the PES51 product, which will not emulsify the oily water, it is possible to re-circulate reinstates back into the cleaning cycle. As each piece of equipment is cleaned, its progress is updated in the equipment resource database. Once the piece has been determined clean by the responsible party equipment owner, the equipment is transferred to the designated "clean" holding area.

As the cleaned equipment exits the decon site it is logged out on the database. A status report will be printed daily as needed.

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4.1 PLANNING

The planning officer is responsible for the management of the Planning Team and all planning activities.

The Planning section has clearly defined specific responsibilities that provide the basis for all planning activities. The Planning Section may be split into a number of sub units in a major incident to enable it to more effectively meet its responsibilities. The Planning Sector Officer is in charge of the planning section. The sub units identified in OSRICS and their roles are as follows in Figure Six below: -

Figure 5: Planning Section

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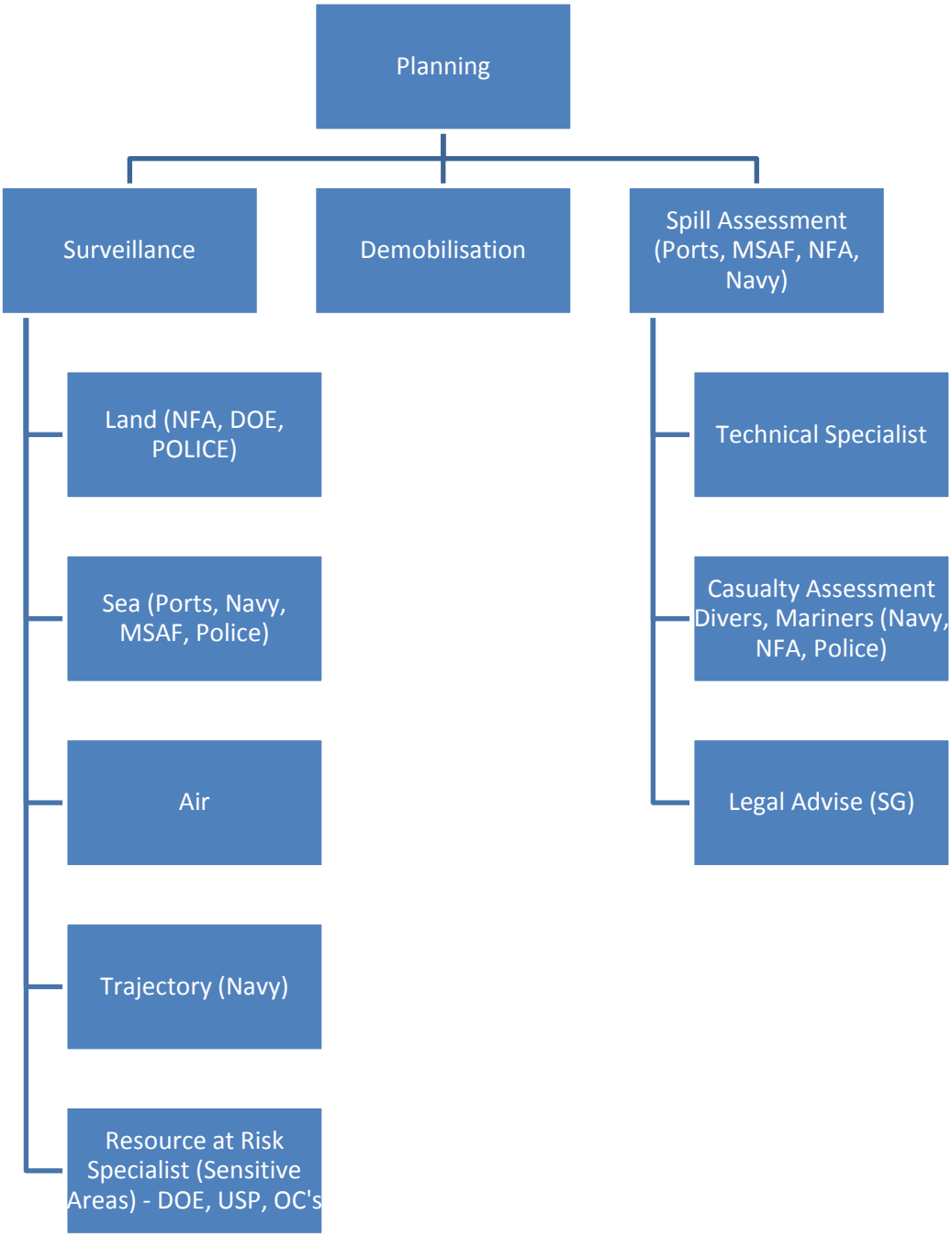

4.1.1 Surveillance Unit

The Surveillance Unit collects and processes information on the current situation, prepares situation displays and situation summaries, develops maps and projections.

4.1.1.1 Field Observer

The field observer collects information and reports from the Land, Sea and Air surveillance teams.

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4.1.1.2 Trajectory Unit
The Trajectory Unit collects and processes information needed to complete trajectory analysis

4.1.1.3 Resources at Risk Specialist
This specialist is responsible for the identification of resources thought to be at risk from exposure to the spilled oil through the analysis of known and anticipated oil movement and the location of natural, cultural, and economic resources.

4.1.2 Spill Assessment Unit

4.1.2.1 Technical Specialist
The Technical Specialists are persons or organizations that have specialized knowledge and expertise. They either function within the Planning Section or will be assigned wherever their services are required. The also provide advice regarding the best course of action during a response.

4.1.2.3 Legal Advise
The legal specialist acts as an adviser during the oil spill response.

4.1.3 Sensitive Areas

When assessing the "Sensitive Areas" it is impossible to identify a single factor that will identify the area as sensitive. Instead, multiple factors have to be evaluated to identify the sensitivities of a specific area. These factors are grouped into four categories: Environmental, Recreation, Economic and, Cultural/Archeological.

Assessments have been completed by private companies that will be added to this NATPLAN. Refer to Annex Ten for Total Fiji Limited Environmental Site Sensitivity Mapping for Suva and Vuda Point.

This information (when developed) will be reflected in an area map (reference in Annex Six) showing the sensitivity rating and protection priorities.

4.1.4 Use of Oil Spill Dispersants

In the event that containment and recovery is not possible, or is only partially effective, another possible option to prevent or minimize the spill from impacting on the coast is to disperse it at sea, using chemical dispersants. Dispersants can be applied to the spill from vessels or aircraft.

As with containment and recovery at sea, the effective use of dispersants will be limited by the nature of the spill (including the type of oil and its dispersability), the availability of dispersant stocks and application equipment, physical conditions and logistical considerations. In many instances, effective dispersal of oil at sea may not be possible.

In addition, the inappropriate use of dispersants can cause worse environmental impacts than undispersed oil. Dispersants are pollutants themselves, and their use can temporarily increase the toxicity of the oil, by increasing its surface area to volume ratio and thereby increasing the release of the toxic components of the oil into the marine environment. If used in very shallow water and on

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shorelines, they can cause the oil to penetrate into sediments, creating potential long-term pollution problems.

If dispersants are used in accordance with the proper guidelines, they represent a very useful oil spill response tool and it is advised that the nominated environmental unit (unit of the Technical Specialists) of the response team be involved in the planning and use of dispersants.

To ensure only approved dispersants are used in Republic of Fiji waters a schedule of dispersants and other response chemicals that may be authorized for use on oil spills at sea or on shorelines will be kept as per the SPREP Guidelines – refer to Annex Eleven. The use of dispersants should therefore only be used by following the protocols outlined in the Annex Eleven.

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5.1 LOGISTICS

The Logistics Officer is responsible to the NOSC for management of the Logistics Team and all logistics operations.

In any emergency situation there is a vital need to ensure that response personnel are provided with adequate resources to enable an effective response to be mounted and that these personnel are provided with the essential amenities. To carry out these functions, OSRICS identifies a Logistics Section that is given responsibilities for ensuring that these resources are made available as required.

The Section is under the direction of a Section Officer and, in cases where the subunits are formed, each sub unit is under the direction of a Coordinator who reports to the Section Officer.

The sub units identified in OSRICS and their roles are as follows in Figure Seven below: -

Figure 7: Logistics Section

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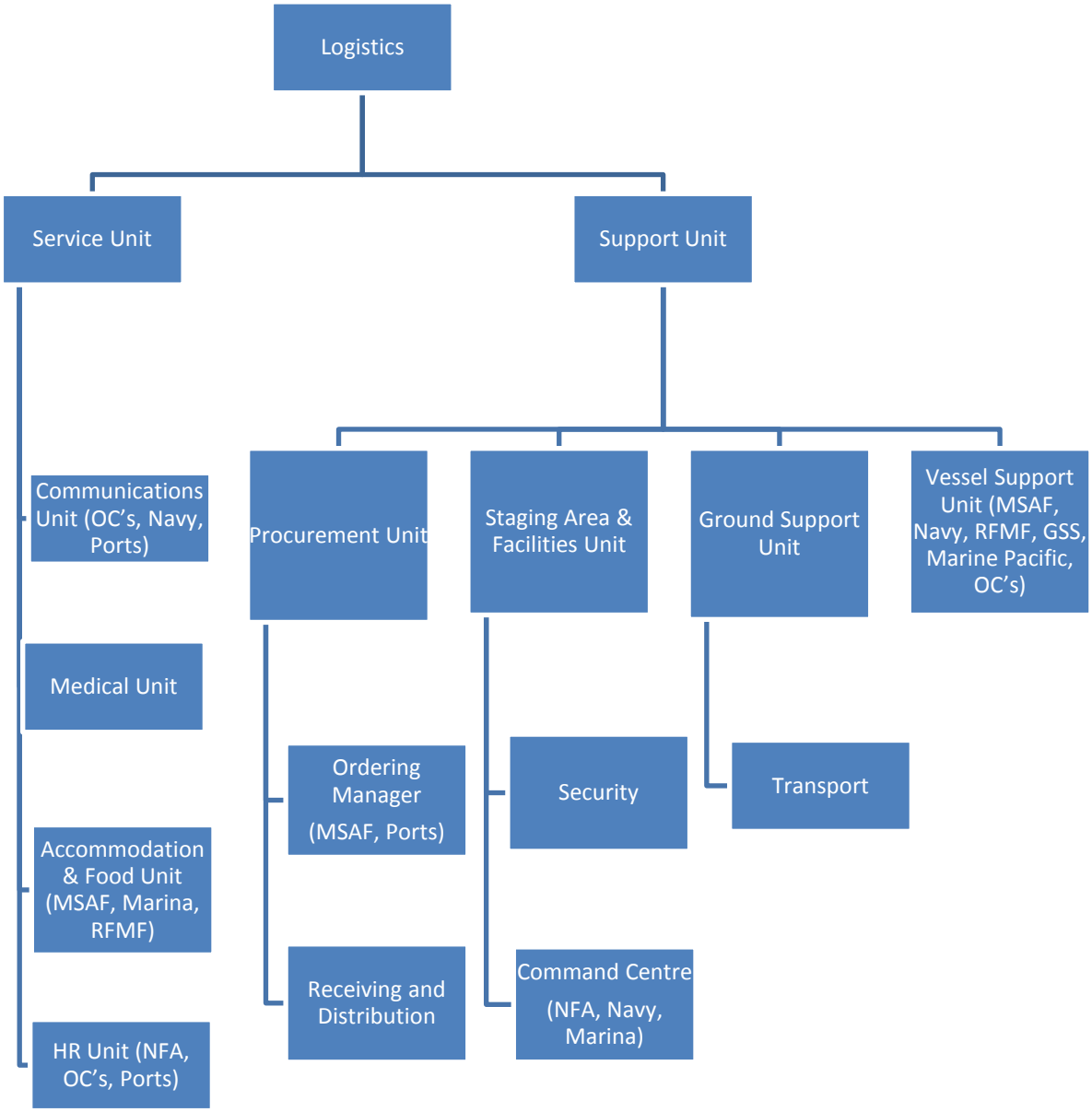

Procurement Unit – responsible for acquisition of personnel and equipment

Services Unit – responsible for the acquisition of services and facilities

Transport Unit – responsible for the provision of aviation, land and sea transport services

Communications Unit – responsible for the provision of communications services and support

Medical Unit – responsible for the provision of medical services

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Staging Area Unit – responsible for the activation and management of assembly and staging areas

Accommodation and Food Unit – responsible for supplying the accommodation and food needs for the entire incident.

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5.2 EXTERNAL ASSISTANCE

Should the NOSC assess a spill to be a Tier Three spill (refer sections 1.3 and 5.3), it should activate a Request for additional resources from the MSAF CEO. The MSAF CEO can request additional resources in accordance with the procedures laid down in PACPLAN - the Pacific Islands Regional Marine Spill Contingency Plan.

When requesting assistance, as much information as possible about the nature of the spill should be provided and the request should be as specific as possible about the type of assistance required.

5.2.1 Pacific Islands Regional Marine Spill Contingency Plan (PACPLAN)

The Pacific Islands Regional Marine Spill Contingency Plan (PACPLAN) now endorsed by SPREP member countries sets up a framework for the activation of a regional response to large marine spills that are beyond the response capability of one country or that have the potential to impact on more than one country. It allocates responsibilities in the event of marine spill incidents to the Secretariat, Pacific island members, non-island members and industry. It also provides a mechanism to address the responsibilities of countries to the Noumea Convention of 1986.

At Noumea, New Caledonia on 25 November 1986, the members of SPREP adopted the *Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (the Noumea Convention),* with associated Protocols. The Convention includes a *Protocol Concerning Co-operation in Combating Pollution Emergencies in the South Pacific Region (Noumea Pollution Protocol).* The Protocol provides a formal framework for co-operation between Pacific Island Countries and Territories when responding to marine spills.

The Noumea Pollution Protocol requires Parties to:

- Take initial action at the state and national levels to respond to pollution incidents (marine spills).
- Co-operate with other Parties in the response to pollution incidents.
- Establish and maintain, within their respective capabilities, the means of preventing and responding to pollution incidents, including;
    - Enacting relevant legislation.
    - Developing and maintaining contingency plans.
    - Designating a Responsible Authority.
- Exchange information with each other and report all pollution incidents to relevant authorities and other parties likely to be affected.
- Provide assistance, within their capabilities, to other Parties who request such assistance.
- Facilitate the movement of personnel and materials needed for the response to a pollution incident into, out-of and through its territory.

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- Develop and maintain, where appropriate sub-regional and bilateral arrangements for preventing and responding to pollution incidents.

PACPLAN now provides the framework for co-operative regional responses to major marine spills in the Pacific Islands region, including broad aims and objectives, underlying spill response philosophies and priorities, roles and responsibilities of relevant organizations, regional and international linkages and mechanisms for accessing regional and international assistance.

5.2.2 Other Mutual Aid Arrangements

Oil Companies have their own industry arrangements for Tier 2 and 3 spills.

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5.3 INVENTORY AND RESOURCES AVAILABLE IN FIJI

The national equipment inventory is a joint government/industry arrangement, with both parties contributing and having access to the equipment. In general, the oil industry provides the equipment necessary to respond to Tier One spills from its facilities, and government provides the balance of the stockpile necessary to bring the capability up to Tier Two level.

A list of equipment and resources available in Republic of Fiji, storage locations and contact details is contained in Annex Three – Inventory and Resources available in Fiji

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5.4 COMMUNICATIONS

Communications is critical to the smooth operation of a pollution incident. Today, there are numerous communications options available. Each has their advantages and disadvantages.

5.4.1 Communication Plan

The response centre will have a communications log book and response phone book. This will contain a list of all land lines, cellular and pager/beeper numbers. A list of contacts can also be found in Annex 4.

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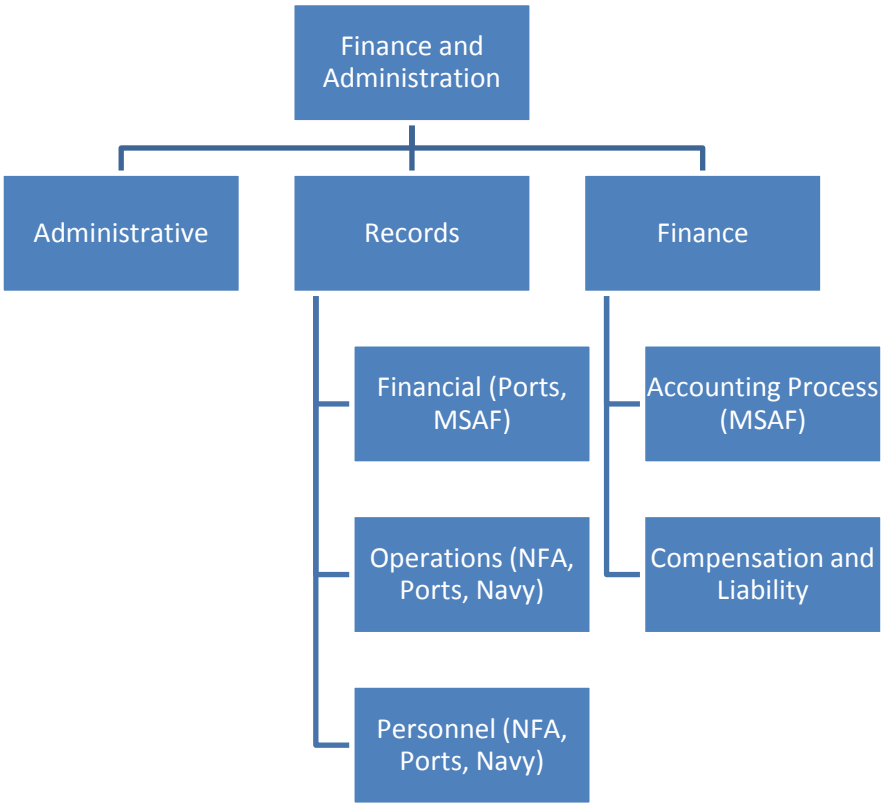
6.1 FINANCE AND ADMINISTRATION

A vital component of any incident response is the need to ensure that fully detailed records are maintained to enable full cost recovery to be achieved from the polluter. OSRICS provides for these records to be kept through a Finance & Administration section.

The Section is under the direction of a Finance and Admin Section Officer and, in cases where the subunits are formed, each sub unit is under the direction of a Coordinator who reports to the Section Officer. The Finance and Administration Officer is responsible to the NOSC for the management of the finance and administration team and all administration activities.

The sub units identified in OSRICS and their roles are as follows in Figure Eight below: -

Figure 8: Finance and Administration Section



Administration Unit – responsible for administrative services

Finance Unit – responsible for the provision of financial services

Records Unit – responsible for the collation of incident records

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6.2 COST RECOVERY & REIMBURSEMENT

It is the responsibility of the MSAF to initiate cost recovery actions direct with the polluter's representative, e.g. P&I Club correspondent. If required to negotiate or to take legal action to achieve full settlement of amounts incurred in the response. In most cases the identity of the spiller is known and a representative of the P&I Club or Fund will be aware of the Authorities response.

The reimbursement of the costs of a marine spill response should be attempted from the polluter, under existing legal regimes such as the MTD, the Civil Liability Convention1992 and the Fund Convention 1992.

To assist in the recovery of costs, detailed records of action taken and equipment and other resources used to respond to the incident, including detailed and complete records of all costs incurred must be kept by all parties. These records can be utilized both to support cost recovery, claims for compensation and for subsequent analysis of actions taken during the pollution incident, in order to upgrade the NATPLAN.

The NOSC through the Marine Spill Response team shall ensure the necessary collection and safeguarding of oil and environmental samples, information, accounts, receipts and reports for the recovery of costs through the spillers' insurer.

In a spill incident is critical that the NOSC is given a financial delegated authority. The financial procedures and processes and delegated authority is detailed in Annex Twelve.

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7.1 TRAINING & EXERCISES

7.1.1 Training of spill responders

Training of key personnel is an essential component of contingency planning and preparedness. All personnel involved in spill response should have as a minimum health and safety training. Ideally they should have sufficient training to fully understand their responsibilities during a spill response, be capable of operating all equipment and performing all duties allocated to them in a safe, timely, efficient and environmentally safe manner.

Drills will be conducted at sea or on-site using the resources that would be used in an actual spill. Hands-on experience with clean up equipment and techniques will be used where practical.

Types of exercises to be considered include:

- Deployment of selected equipment (as in a training exercises);
- Call-out of personnel who would be involved or contacted during a spill event (including other government department officers, port and harbor personnel, oil industry company personnel, etc.); and
- Full scale exercises.

A state spill response exercise/drill should be held at least on an annual basis. Such exercises should be joint government/oil industry activities and seek to further develop government/industry integration. Responsibility for organizing these on-island exercises rests with the MSAF. SPREP can provide technical advice and assistance in the development, conduct and monitoring of these exercises.

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7.2. APPROVAL, CONTROL & REVISION OF THE NATPLAN

7.2.1 Approval of the NATPLAN

The CEO MSAF shall prepare the national marine oil spill contingency plan in consultation with such persons as the CEO considers appropriate the NATPLAN pursuant to section [*numbering yet to be* finalised] and[*numbering yet to be finalised*] of the MTD.

7.2.2 Control of the NATPLAN

The NATPLAN will be a controlled document under the direction of the CEO MSAF. Full contact details for all holders of controlled copies of the NATPLAN are maintained on a register at the office of the MSAF, in order to facilitate revisions and updating.

7.2.3 Revision of the NATPLAN

The plan shall be reviewed at least once every three (3) years pursuant to section [*numbering yet to be finalised*] of the MTD.

7.2.4 Addendum to NATPLAN

It is fully recognised that the Fiji NATPLAN is not completed and that some Annexes providing tools and supporting information to assist with spill response operations and planning needs to be completed and/or further developed.

A plan to complete these Annexes is in place which will provide a platform for continuous improvement. The key components of this plan are summarised below.

7.2.4.1 Annex 3: Inventory of Oil Spill Equipment and Resources

It is essential that a list of marine spill response resources outlining the equipment and contract/agreed costs and hire charges is completed.

Initiative Owner: MSAF Manager PR&ER
Timeframe: 3mths by end of Oct 2012

7.2.4.2 Annex 5: Risk Assessment

Carrying out a risk assessment is an essential step in the process of developing a NATPLAN. It is recognised that the MTD outlines the requirement to develop a National Marine Oil Spill Strategy. The NATPLAN would then be a document that would operationalise the National Marine Oil Spill Strategy as well as the Risk Assessment. It is essential that these be both completed as part of the NATPLAN review process.

Initiative Owner: CEO MSAF
Timeframe: within 2years by 2014.

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7.2.4.3 Annex 6 Fiji Area Maps & Annex 10 Site Sensitivity Mapping

Having area maps are essential tools for marine spill response planning. It is therefore essential that these area maps be completed as soon as possible keeping in mind that there are lots of information already developed by other ministries (DOE, Fisheries), private sector (OC's) and regional agencies (SOPAC).

Initiative Owner: MSAF Manager PR&ER
Timeframe: 6mths to a year by August 2013.

7.2.4.4 Annex 8 Response Matrixes; Annex 11 Dispersant Guidelines & Annex 14 JD's for Marine Spill Response Team

Having planning tools and forms to assist the command centre in its decision making is critical to the response. Many of these tools are available and MNZ have already indicated their support in providing these tools. MNZ have also committed to providing the Job Descriptions for key positions in the marine spill response team.

Initiative Owner: MSAF Manager PR&ER
Timeframe: 1mth by end of August 2012.

7.2.4.5 Annex 12 Financial Procedures, processes, and delegated authorities

During an actual response, it is essential that those in command are given the proper authority levels to make decisions, expedite the use of financial resources to get operationalise those decisions. Having an agreed financial authority and procedures process prior to a response ensures the response is not hindered and bottle necked with bureaucracy. The financial system needs to be simple and robust.

Initiative Owner: CEO MSAF
Timeframe: 6mths by end of Jan 2013.

7.2.4.5 Annex 15 NEOC SOP's

The NATPLAN has linkages to the Disaster Management Plan. NDMO have indicated that there are existing SOP's for marine spills, land spills and HNS spills. It will be good to have copies of these SOP's that outline and is in line with the NATPLAN.

Initiative Owner: CEO MSAF
Timeframe: 1mth by end of August 2012.

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Annex One: Standard Pollution Report (POLREP) Form

Pollution Report (POLREP)

Should you observe or receive a report of a marine pollution incident, please:

1. ***complete this POLREP in as much detail as possible,***
2. ***fax it immediately to the MSAF CEO (679)3303 251.***
3. ***please also fax them to SPREP at + (685) 20231***

Name/contacts of person completing this report: _

Date/time of report: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Date/time of incident: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Location of incident: Latitude: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Longitude: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Description of location (e.g. name, distance and bearing to nearest landmark): _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

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Annex Two: Standard Situation Report (SITREP) Form

Situation Report (SITREP)

As the response to a marine pollution incident progresses, please:
1. complete these SITREPs on a regular basis,
2. fax them to MSAF CEO (679) 3303 251
3. please also fax them to SPREP at + (685) 20231.

SITREP No. _ _ _ _ Name/contacts of person completing this report: _

Date/time of SITREP: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Date/time of incident: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Location of incident: Latitude: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Longitude: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Description of location (e.g. name, distance and bearing to nearest landmark): _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

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Annex Three: Inventory of Oil Spill Equipment (TBC)

Appendix 3A: Equipment Inventory (last updated July 19th 2012)

MOBIL OIL

MALAU TERMINAL EMERGENCY

OIL SPILL RESPONSE EQUIPMENT	
ZOOM BOOM	4 x 30m = 120m
FENCE DW 600 BOOM	8 x 20m = 160m
YELLOW FLOATER	7
ANCHOR	5
DIESEL PUMP	1
PUMP HOSES	2 x 4m x 75mm
SKIMMER	1
SKIMMER HOSES	10m x 75 mm
ROPES	10 x 21m
FLOATER (white/blue)	2
SUCKLES	32 x 25m
BOOM FLOATER	2
FIRE FIGHTING EQUIPMENT	
FIRE FIGHTING SUITS	5
FIRE HELMET	5
GUM BOOT	5
B.A SET	3
B.A CYLINDER (Spare)	2
HARNESS	2
LANYARD	1 x 1.5m
SLING	1
ROPE	1 x 15m/1 x 24m
TERMINAL	
FIRE HYDRANTS	4
FIRE MONITOR	5
FOAM FIGHTING EQUIPMENT	2
FOG NOZZLES	8
FIRE FIGHTING HOSES	8 x 40mm
FIRE FIGHTING HOSES	8 x 65mm
DRY POWDER EXTINGUISHERS	2 x 50kg
DRY POWDER EXTINGUISHERS	16 x 9kg
FOAM FIRE EXTINGUISHERS	1 x 9kg
CONCENTRATE FOAM (3%)	8 x 200 ltrs
CONCENTRATE FOAM (6%)	2 x 200ltrs
CONCENTRATE FOAM (3%)	16 x 20ltrs
DISPERSANTS	9 x 20ltrs

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SPILL TRAILER CONTENTS	
OIL CONTAINMENT BOOM	20m
ABSORBENT PAD	2 x 100m
SHOVAL	2
HAMMER	1
KNIFE	1
ROPE	2 x 200m
PVC OVERALL	3
GAUNTLETS	1
DISPOSAL BAGS	10
GUM BOOTS	2
DISPERSANTS	2 x 20lt
OVERALL	3
GARDEN RAKE	1
GALVANISED BUCKETS	2
KNAPSACK SPRAYER	1
FIRST AID BOX	1
DRY POWDER EXTINGUISHER	2 x 9kg
FOAM EXTINGUISHER	2 x 9kg
STRAPING MACHINE	1

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Mobil Oil

Suva Terminal

Oil Spill Equipment	In - Stores	Comments
Deflection Boom	180 meters (9 x 20 m)	
Boom Reels	400 meters	
Towing Bridles	6	
Anchor Sets	20 sets	
Ropes	2 x 200 meters	
Skimmers	1 x Brush skimmer	
Suction pump / power pack to accompany skimmer	1 Set	
Absorbent Boom	60 meters	
Absorbent Pads	2 Bales (100 / pk)	
Absorbent Roll / Weep	3 roll (50 x 0.75m)	
Fuel Dispersants – Spersol 680N	1 x 200 ltrs plus 21 x 20ltrs	
Storage Tank – fast tank	5000 ltrs	
Towable Tank	2000 ltrs	
Dispersant Sprayer	1 set	
Saw Dust	2 bags	
Stand-by Equipment		
Power pack	1 set	
Skimmer	1x disc skimmer	
Booms	Old Boom bags	
Spate pump	1 set	
Foam		
3% Fluoro foam	18 x 210 ltrs (plastic drums) 20 x 20ltrs	
AFFF Coreentrate – light water 3%	15 x 200 ltrs 30 x 20ltrs	
Asulite Foam – 3%	3 x 20ltrs	

Mobil Oil

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Vuda erminal

Oil Spill Equipment	In - Stores	Comments
20 x 20m length of DW600 on reel		
Tidal Boom 3 x 20m length		
Honda Pump, petrol driven		
Boom reel, hydraulic		
Towing bridle for booms		
Anchor Set, 15kg		
Skimmer, Lamor brush minimax 20W with hydraulic coupling and camlock coupling for suction hose		
Diesel hydraulic power pack with 10HP Yanmar diesel engine		
60m sorbent boom in packs of 4.		
Sorbent pads – 200pads		
Sorbent roll 1 x 50m roll		
Corexit 9500, 3x200Ltr Drum		
Fast-tank		
Towable tank, 5000ltr.		
Knapsack spray kit for Corexit 9500		

MSAF OIL SPILL

RESPONSE EQUIPMENT LAUTOKA

OIL SPILL RESPONSE EQUIPMENT	
MAZADA TWIN CAB 4X4	1
20 FOOT CONTAINER	1
BOAT WITH TRAILER & 90HP MERCURY	1

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OUTBOARD	
YELLOW FLOATER	6
ANCHOR WITH 10 METER ROPES	4
DIESEL WATER PUMP	1
PUMP HOSES	4 x 3m x 75mm
SKIMMER WIER SKIMMER	1
ROPES	2 x 25m
FENCE BOOM	7 X 15meters
BEACH BOOM	6 X 2 meters
ABSORBENT PADS	11 Bales
FIRE FIGHTING EQUIPMENT	
DRY POWDER 1KG FOR BOAT	NIL
FIRE HELMET	NIL
GUM BOOT WITH PVC OVERALL COMPLETE	6
B.A SET	NIL
B.A CYLINDER (Spare)	NIL
HARNESS	NIL
LANYARD	NIL
SLING	NIL
ROPE	NIL

RESPONSE EQUIPMENT SUVA

OIL SPILL RESPONSE EQUIPMENT	
MAZADA TWIN CAB 4X4	1
ALUMINIUM CARAVAN	1
BOAT WITH TRAILER & 90HP MERCURY OUTBOARD	1
YELLOW FLOATER	6
ANCHOR WITH 10 METER ROPES	4
DIESEL WATER PUMP	2
PUMP HOSES	4 x 3m x 75mm
SKIMMER WIER SKIMMER	1
ROPES	2 x 25m
FENCE BOOM	7 X 15meters
BEACH BOOM	6 X 2 meters
ABSORBENT PADS	11 Bales
FIRE FIGHTING EQUIPMENT	
DRY POWDER 1KG FOR BOAT	1
FIRE HELMET	NIL
GUM BOOT WITH PVC OVERALL COMPLETE	6
B.A SET	NIL
B.A CYLINDER (Spare)	NIL
HARNESS	NIL
LANYARD	NIL
SLING	NIL
ROPE	NIL

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PE Suva Terminal Spill Equpiment Stock As At 07/10/11					
Item	**Description**	**Required Stock**	**Quantity**	**Existing Stock**	**Comments**
1	20m length Fence boom DW 600B	10	200 m	9	Checked, tested okay.
2	20m length Fence boom DW 800	10	200 m	11	Checked, tested okay.
3	20m Shore line barrier boom	4	80 m	4	Checked, tested okay.
4	Anchor sets	10	10 no:	11	Checked okay
5	Towing brackets	4	4 no:	4	Checked - Good condition
6	Multi skimmer 12tph	1	2 no:	1	Checked - Good condition
7	Pacific Weir skimmer & 40 ft hose.	1	2 no:	1	Checked - Good condition
8	American towable floating tank - 5000 ltrs	1	5000L	1	Checked - Good condition
9	Absorbent pads - 100 packs	10	10 no:	0	None in stock
10	Absorbent pad wringers	1	1 no:	1	Checked - Good condition
11	Absorbent incinerators	1	1 no:	1	Checked - Good condition
12	Dispersant - LTSW- 20 litrs	10	200 L	0	None in stock.
13	Backpack spray unit for dispersant	1	1 no:	0	Not in the container.
14	Roll of 75 heavyduty plastic bags	1	75 no:	1	Checked - Good condition
15	12mm yacting braid 200m plus two knives	1	1 set	1	No knives in stock.
16	Hand unit - Lamour beach broom	5	5 no:	5	Checked - Good condition
17	Pacific Multi Cleaner	1	1 no:	1	Checked - Good condition
18	Spill Trailer - First Response	1	1 no:	1	Checked - Good condition
19	Boat Spray - AF	1	1 no:	1	Checked - Good condition
20	Spill Boat and Trailer	1	1 no:	1	Checked - Good condition
21	75 HP Outboard Engine 4 Stroke	2	2 no:	2	Checked - Good condition
22	Storage - Containers	2	2 no:	2	Checked - Good condition

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23	Tool Box with Spares	1	1	1	Checked some content missing.
24	Bouys (large)	10		10	Checked - Good condition
25	Bouys (small)	5		5	Checked - Good condition
26	Life Jacket	8		8	Checked - Good condition
27	STIHL Blower	1		1	Checked - Good condition
28	Water Bouy (Yellow)	9		9	Checked - Good condition
29	Water Bouy (Red)	11		11	Checked - Good condition
30	Nylon rope with Sackel	20		20	Checked - Good condition

Vuda Point Spill Trailer
Equipment

Container 1	Item	Description	Existing Stock
	1	Broom	1
	2	Beach Spade	2
	3	9kg Dry Powder Extinguisher	1
	4	9kg Foam extinguisher	1
	5	Cobra Coil	2
	6	Spill Bucket	1
	7	Backpack sprayer	1
	8	20L Oil Spill Disinfectant	1
	9	Blackroll carpet	1
	10	Oil Spill Barrier Boom	1
	11	Spill Box- Knife	1
	12	250g Granular	5

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	13	Wash Bottle	3
	14	Absorbent pads	2 boxes
	15	Oil barrier booms	2
	16	Cobra Coil - long length	1
	17	Coil rope	
	18	Kleen sorb natural diatomite	4
	19	Moulded plastic bins	0
	20	Hand Unit- Lamor Beach broom with buckets	5
	21	Boom Marker lights	0
	22	Pacific Multi Cleaner	1
	23	Spill trailer first response	1
	24	Boat Spray-AF	1
	25	Spill Boat and Trailer	1
	26	75 HP Outboard Engine 4 Stroke	2
	27	Storage - Containers	2
	28	Tool Box with Spares	1

Container 2	Item	Description	Existing Stock
	1	20m length Fence boom DW 600B	10
	2	20m length Fence boom DW 800	10
	3	20m Shore line barrier boom+ 1 blower+ 1pump	4
	4	Anchor sets	8
	5	Towing brackets	0
	6	Canadyne Multi skimmer 12/18	1
	7	Pacific Weir skimmer & 40 ft hose.	0
	8	American towable floating tank - 5000 ltrs	1
	9	Absorbent pads - 100 packs	12
	10	Absobent booms - 125 mm dia* 12m per pack	8

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	11	Absorbent pad wringers	2
	12	Absorbent incinerators	1
	13	Dispersant - LTSW- 20 litrs	8
	14	Backpack spray unit for dispersant	1
	15	Roll of 75 heavyduty plastic bags	1
	16	12mm yacting braid 200m plus two knives	1
	17	12 mm Nylon rope	17
	18	Road Trailer	1
	19	Moulded Plastic Bins	0
	20	Hand unit - Lamor beach broom with buckets	5
	21	Boom Marker Lights	0
	22	Pacific Multi Cleaner	1
	23	Spill Trailer - First Response	1
	24	Boat Spray - AF	1
	25	Spill Boat and Trailer	1
	26	75 HP Outboard Engine 4 Stroke	2
	27	Storage - Containers	2
	28	Tool Box with Spares	1

Savusavu Oil Spill Container		
Container 1	Description of Item	Quantity
	Shoreline barrier boomTB300/300	4
	Blower	1
	5000L towerable floating tank	1

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	Absorbent Pads [100's]	4
	Fence Boom DW600	7
	Shallow Booms	3
	Anchors with chain attachement	9
	Marker bouys with ropes	11

Savusavu Oil Spill Container		
Container 2	Description of Item	Quantity
	Canadyne 12/18 Multiskimmer	1
	Disc Head	1
	Brush Head	1
	Hose 10m x 50mm	2
	Floating Hose [size L87cm x W102cm x H112cm @ W 70kg	2
	Canady Powerpack for Skimmer [Hydraulic]	1
	Pacific Weir Skimmer	1
	Hydraulic Hose	4
	Hose 10m x 40mm	1
	Absorbent Incinerators	1
	Dispersant 25ltr	10
	Beachbroom	5
	Pacific Multicleaner	1
	Engine Pump	1

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	Motor	1
	Offroad trailer	1
	Wheelbrace	1
	Boatspray including nozzles	1
	Box with fittings	1
	2 coils ropes	2
	Plastic bunkets	5

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TOTAL OIL SPILL RESPONSE EQUIPMENT 2012

Item	*Pack Size*	*Suva*	*Vuda*	*Labasa*	*Taveuni*
Absorbent Granules	10kg bag	10	11	5	5
Oil Sorbent Material (Roll)	800mm x 50m	1	1	1	1
Oil Sorbent Material (Pads)	0.5 x .5m (bag of 100)	5	5	2	2
Oil Sorbent Material (pillows)	350mm	10	15	5	5
Oil Sorbent Boom (Land Use)	100mm x 1.5m	10	10	5	5
Oil Sorbent Boom (Water Use)	100mm x 1.5m	10	10	5	5
Waste Disposal Bags Heavy Duty (Anti-static)	*1*	*10*	*10*	*5*	*5*
Offshore booms	length of booms (m)	150	210		
Dispersant	quantity available (L)	200	400		
Small work boat with outboard engine		1	1		
Storage trailers		1	1	1	1

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APPENDIX 3 B

AVAILABLE RESOURCES LISTED BY COMPANY / DEPARTMENT

(Listing arranged by alphabetical order)

Resources list include:

1) Accommodation
2) Transportation – Vessels (sea) , land transport and Air.
3) Food, clothing, safety equipment
4) Access Points
5) Staging Areas
6) Command Centre locations
7) Contractors
- ***a) Communication***
- ***b) Generators – power***
- ***c) Heavy equipment – backhoe, loader, dump truck***

8) Fuel Trucks
9) Portable Toilets
10) Barge, Crane
11) People – work crew

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Available Resources For Help in Case of an Oil Spill

Name of Company:

Date of Compilation:

Data Compiled by:

MANPOWER	
Number	Type/Availability inc. specific Qualification and Name
example	
4	**Instructor / Divemasters (Diving)** **Names change regularly**

EQUIPMENT

Description	*Size*	*Manufacturer*	*Quantity*	*Location*	*Condition*	*Costs*	*Contact Details*
Example							
Scuba Gear		***Various***	***7***		***Good***	***Short term - NIL***	
Scuba Tanks		***Various***	***60***		***Good***		
Compressors (one portable)		***Various***	***3***		***Good***		

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Name of Company:

Date of Compilation:

Data Compiled by:

MANPOWER	
Number	Type/Availability inc. specific Qualification and Name

Description	*Location*	*Condition*	***Costs***	*Contact Details*

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Annex Four: Emergency Contacts

24 Hours/7 days Number – (679) 3304449/ 3315 266 /9920392/9906331

Organisation/ Department	Name	Fax	Phone/Mobile
MSAF	Philip Hill	3303251	As above 24/7
FPCL	Jeke Vakararawa Suva Emosi Navusolo Lautoka Meli Volau (Levuka) Makereta Taoi (FSHIL)	3300520 6665799 3309420	7088916 6662160 / 7088935 3440189 7088984
Environment	Laisani Lewanavanua		3311699/8640152
NFA	Control Room	3310621	911/ 3312877/ 9925877
NDMO	Joji Satakala Emergency/planning/coordination	3319315	3318078/9624402
Fisheries	Sanaila Naqali	3300435	3301611 / 9906909
Total	Eroni Verevukivuki	3313933	3313933/9997717
Pacific Energy South West	Asish Ashok	3300933	3311622/9957624
Mobil	Luke Niumataiwalu (Vuda) Sefanaia Fuakilau (Suva)	6660607 3303305	3314977/9906570 3314236/9906566
Attorney General			
Foreign Affairs			
Ministry of Defence	George Washington	3300346	3211621/
Red Cross	Vasemaca Vuki/Leilovo	3303818	3314133/9992579
St. Johns	Rahmat Khan	3304425	3301439/7328711
Fiji Navy	Cmdr John Fox	3306295	3315679/9905414
Fiji Police	Command Centre		3311222 / 919
FIRCA	Jo Qalubau	3302130	3243775/9249962
Ship Owners Representative	Durga Prasad	3309516	3309515/9920515
Shipping Agents Representative	Bernie Hong Ty	3301615	9999743
Suva City Council	Josifini Koroi	3308434	3313423/9986423
Lami Town Council	Seleima Maitoga	3362755	3361666/7085528
Lautoka City Council	Senivasa Waqairamasi	6663288	6660433/9906432
Levuka Town Council	Suli Sandy	3440288	3440099/9964203
Savusavu Town Council	Darmendra Lal	8850872	9990969/8850261
Maritime NZ (Rescue	Duty Officer		+6445778030 (24hr)

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Coordination Centre)			
SPREP	Pollution Adviser	+685 20231	+685 21929

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Annex Five: Risk Assessment (TBD)

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Annex Six: Fiji Area Maps (TBD)

Coastal Resource Map.

[These Maps can be adapted from existing maps]

Environmental Sensitivity Ratings & Protection Priorities

[These Maps can be adapted from existing maps].

Total – Vuda and Suva
PE – to be developed.
Ministry of natural resources
SOPAC –
Ministry of Lands
Department of Environment

High Risk Areas for Marine Pollution Incidents

[Add maps showing location of shipping lanes, vessel refuelling and tanker discharge/loading facilities, pipelines and oil terminals in your country. A map may be required for each major port].

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Annex Seven: Site Safety and Health Plan

Site Safety and Health Plan			
Incident Name Location Group/Division		Operational Period From: Date: Time: To: Date: Time:	
National On Scene Commander			
Name	Company/Organisation	Phone/Radio	Operational Area
Site Safety Officer			
Name	Company/Organisation	Phone/Radio	Operational Area
Site Operating Companies			
Name	Company/Organisation	Phone/Radio	Operational Area
Description of site			
Location of site			
Description of surrounding area			
Description of surrounding population			
Description of tasks to be carried out:			
Identification of Tools to be used			
Identification of Significant Hazards			
Identification of Controls Hazards			

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Health and PPE Requirements (Matrix on reverse side)

☐ Outer Gloves	☐ Face shield	☐ Site Characterisation	☐ First Aid Station	☐ Zone Control
☐ Inner gloves	☐ Sun Hat	☐ Air Purifying Resp		☐ Security
☐ Rubber Boots	☐ Sun Tan Lotion	☐ Supplied Air Resp	☐ Shade Station	☐ C/S Ent. Permit
☐ 2/3 Body Cover	☐ Tapped Leg Joints	☐ Safety Glasses	☐ Life Vest	
☐ Full Body Cover	☐ Hard Hat	☐ Heat Stress Program	☐ Prework Medical	

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HAZARD IDENTIFICATION SHEET

SITE:	ACTIVITY:
LOCATION:	TASK:

HAZARD

CHEMICAL	GRAVITATIONAL	ELECTRICAL	THERMAL	KINETIC	PRESSURE	RADIATION	VIBRATION	ENVORNMENT
Motor spirit	Scaffolding	Power Tools	Suns heat	Skill saw	Fuel lines	Sun/UV light	Passing Traffic	Work at height
Diesoline	Ladders	Extension leads	Welding	Nail gun	Compressed air	Thermal radiation	Compressors	Confined space
LPG/CNG	Saw Horse	Static electricity	Friction grinders	Power tools	LPG/CNG plant	Reflection from Bright sufaces	Generators	Excavation
Kerosine	Planks	Mains power:	Power Tools	Moving vehicles	Cylinders		Compactor	Flamm/toxic vapours
Mineral Turps	Canopy	Expsed cables	Welded surface	Flying debris	Ramset gun	Welding arc	Jack hammer	Low oxygen level
White Spirit	Lifting devices	Mutli boxes	Soldering iron	Jack hammers	Nail gun	Magnetic source	Hammer drill	Moving vehicles
Mthylated Spirits	Work at height	Temp supply	Heat gun	Hiab cranes	Oxyacetylene	X-ray testing	Pile driver	Public access
Paint- spray, cans	Demolition	Old wiring	Blow torch	People moving	Fire extinguisher	Electric arc andHigh voltage		Wind dust
Solvent/adhesive	Manual lifting	Damagd fittngs	Hot water	Cranes/hooks Chains/swinging Loads	Water pipes			Rain
Chemical cleaner	Ceiling tiles	Switch rooms	Steam		Refrigeratn gas			Hot/cold
Automotive Oils	Load bearing walls	Faulty tools	LPG/CNG		Hydraulic fluid			Congested area
PCB's	Glass removal	Cell phnes/pagers	Fire, heater	Ramset gun	Compressor			Untidy work area
CRC Spray on	Lifting jacks	Generator	Petrol engines	Concrete cutters	Water blaster			Spills
		Buried cables	Diesel engines	Buzzers	Grit blaster			Poor ventilation
			Hot exhaust		Paint sprayer			Neighbours

CONSEQUENCE

Exposure to spill	Drop hand tools	Electrocution	Ignitn sources for Flammable vapours & building material	Injury from tools	Equipt failure	Sun burns	Excavtion collapse	Man falls from
Fire/Explosion	Fall off	Ignition source		Electric discharge	Leaking tanks/lines	Radiation burns From welders arc.	Loose scaffolding	Falling objects
Asphyxiation	Slips, trips, falls	Short circuit		Ignition source	Static discharge		Loosened mounts	Restricted exit
Toxic poisioning	Fall on to	Asset damage	Skin burn hot/cold	Collision…..	Breached lines	Skin rash	Noise pollution	Asphyxiation
Skin chemi burns	Hit by falling objects		Electrocution	Person/vehicle	Fire/explosion	Arc eye	Hearing damage	Toxic poisoning
Eye damage	Back injuries		Blast injuries	Vehicle/vehicle	Incorrect:….	Melanoma	White finger	Collision
Corrosion	Head injuries		Friction burns	Person/hardware	Gun charge	Skin & eye irritation	Building damage	Damage to assets
Fluorescent tubes	Damage to assets		Asset damage	Striking structures	Type	Reduced visibility	Disturbance to neighbours	Injuries
Cold burns				Rolling down slope	Missiles	Radiation sickness		Contamination Of ground/air
Heat burns				Hearing damage	High pressure jets		Head/eye injuries	
				Being struck by:.....	Flailing hoses			High wind gusts
								Fire/explosions
								Hypothermia
								Hypothermia
								Slips/trips/falls

CONTROLS

Contain/control	Secure:	RCD's	Exclude from Hazardous zone	Isolation barriers	Maintenance	Sunblock lotion	Sound deadening barriers	Plant/scaffold certification
Clean up	Scaffold	Hot Work Attchmnt		Security zone	Safe storage	Protective clothing Hats, gloves, o/alls		
Use in well ventilated area	Ladders	Isolation zone	Remove/dissipate	Signs	Good ventilation		Hearing protection	Isolation area
	Tools	Equip maintenance	Cotton overalls	Licensed operators	Licensed operators	Sun galsses	Isolation zone	Hard hats
Protect skin & eyes with PPE eqpt	Isolation zone	Ban cellphones	Sunblock, hat, etc	Exclude flammables	Certified equipmt	Welders mask	Minimise exposure	Safety shoes
	Certified:	Ban pagers	Isolation area	Protective clothing:	Hot work permit	Lead apron	Batter/shore excvtn	Forced ventilation
Handle with care	Cranes	Regd Electricians	Thermal/electric isolation	Hard hats	PPE eyes, face, Head, hearing, Hands, feet	Safe procedures	Secure glass etc	Comp. Air, BA
Minimise quantity	Strops	Consult power auth		Safety boots		Barriers/screens	Time of operation	Work within crane Tolerances.
Gas testing	Chains	Intrinsically safe	Exclude flammable vapours	Eye/face mask		Isolation, signage	PPE	
Personal hygiene	Scaffolds	Tools and equip		Goggles	Appropriate training		Antivibration gloves	ELCB protection
Vapour barrier	Correct bracing	Inspection	Minimise exposure	High vis vests	Cylinders chained			Stop arc welding In wet.
Cold water supply	Correct lifting	Certification	Use right tools	Hearing protection	Isolation distance			
Bag/Tag/Dispose	Get help to lift		Use tools correctly	Pedestrian zones				Safety canopy
	Notifiable work?		Fire extinguishers					Exclude ignition
	Protective barriers							High vis clothing
								Housekeeping
								Claim workspace
								Restrict exposure

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Personal Protective Equipment and Heat Stress

Besides training and development of a Site Safety and Health Plan, appropriate selection and wearing of Personal Protective Equipment (PPE) is essential for worker safety. The following matrix is provided to assist the Site Safety Supervisor in using his hazard analysis to determine appropriate PPE and work procedures. No attempt is made to address respiratory protection; normally oil spills do not require use of a respirator.

	SHORELINE							VESSEL				
PPE Decision Matrix Key "R" = Required "S" = Suggested	Sun Exposure	Non Splashing Oil	Splashing Oil	LO Energy Surf Zone	HI Energy Surf Zone	Crane / Rigging Work		Sun Exposure	Non Splashing Oil	Splashing Oil	Working on Vessel	Crane / Rigging Work
High Gauntlet Gloves		R	R	R	R	R			R	R	R	R
Inner Gloves		S	S	S	S	S			S	S	S	S
Sun Hat	R	R	R	R	R	R		R	R	R	R	R
Sun Screen	R	R	R	R	R	R		R	R	R	R	R
Sun Glasses	S	S	S	S	S	S		S	S	S	S	S
Rubber Boats		R	R	R	R	R			R	R	R	R
Vinyl Coverall Bottoms		R	R	R	R	R			R	R	R	R
Vinyl Jacket			R							R		
Steel Toe Shoes						S						S
Goggles or face shield			R							R		
Work vest type PFD				S	R				R	R	R	R
Hard Hat						R						R
Heat Stress plan in the Can The Automatic Heat Stress Reduction Program to be implemented when people wear PPE.												
2/3's PPE Coverage		R							R			
Cold Water Always Available		R							R			
Shade Stations		R							R			
Sun Protection		R							R			
Bathroom Facilities		S							S			

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Personal Protective Equipment and Heat Stress Reduction

Site Safety Supervisors need to review the Site Safety and Health Plan with concern for heat stress reduction considerations. The moment personnel are required to wear PPE as recommended under the matrix, an automatic Heat Reduction Program shall be implemented. This program is called the **Heat Stress Plan in the Can**. It is described in the bottom section of the matrix and essentially includes 2/3 PPE, cold water always available, shade stations, sun protection and bathroom facilities as soon as possible. It is the intention that these minimum basic heat stress reduction measures be automatically implemented whenever personnel begin to wear protective covering. Personal water bottles are approved for use within the hot zone given they need not be opened by an individual with oily hands.

Potential Heat Stress Factors

The provided matrix assumes a normal work force under normal circumstances. Site Safety Supervisors should consider additional heat stress reduction control measures if extraordinary Heat Stress Factors exist. A number of factors that should be considered when reviewing a given heat stress reduction program. These include but are not limited to the following.

- Unknown contracted work force.
- Un-acclimated work force.
- Unusually not weather.
- Character of the work load.
- Longer distances from support.
- Duration of the work shift.

Heat Stress Factors such as these may require the use of additional Heat Stress Control Tools to ensure the heat stress reduction program adequately protects the work force during extraordinary circumstances.

Potential Additional Heat Stress Control Tools

If additional Heat Stress Factors indicate that the heat stress reduction program needs to be enhanced, listed below are some additional Heat Stress Control Tools that may be beneficial. They are not listed by priority rather any or all of them may be beneficial under varying circumstances.

- Personal water bottles.
- Work break periods.
- First aid monitoring.
- Risk specific "Heat Stress" safety meetings.
- Cooling vests, hats or kerchiefs.
- Cool zone fans.

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Annex Eight: Response Matrixes (TBC)

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1. Offshore Response matrix

Response Options	Harbors			Nearshore			Open Sea		
	1	2	3	1	2	3	1	2	3
Natural Processes	R	R		R	R			R	
Sorbent Recovery	F	R	R		R	R			
Skimmers - Weir	F	R	R		R	R			R
- Oleophilic		R	R		R	R			R
- Vacuum		R	R		R	R			R
Booming	C	R	R	F	R	R			F
Dispersant Application		C	C		F	F		F	F

Oil Type Codes	Response Options
1. Very Light Oils (Gasoline) 2. Light Oils (Diesel) 3. Heavy Oils (Bunker Fuel oil)	R. Recommended – may be preferred alternative F. Feasible – If logistically possible, may not be the preferred alternative C. Conditional – Possible useful but may result in adverse effects to environment If empty, response option not recommended.

Special Notes:
All Dispersant options must be done in compliance with Annex Eight – SPREP Dispersant Guide

2. Boom Characteristics Matrix

		Boom Type				
		Fence Boom	Land/Sea	Rapid	Ro-Boom	Troilboom
Operating Environment	Rough Water	x	x	x	-	-
	Protected water	-	✓	-	✓	✓
	Calm Water	✓	✓	✓	✓	✓
	Strong wind	x	✓	-	✓	✓
Performance	Ease of deployment	✓	-	✓	-	-
	Wave following	x	✓	x	✓	-
	Shoresealing	x	✓	x	x	X
	Towable Containment	-	-	x	✓	✓
Physical	Strenght/Robustness	✓	-	-	✓	✓
	Buoyancy	X	✓	-	✓	-
	Shallow water > 1m	X	✓	✓	x	X
	Section length	15m / 20m	20m			

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		Weir Skimmers		Oleophillic Skimmers			Mechanical	
		Passive	Fixed	Disc	Rope	Ro-Disc	Brush	Brush
Operating Environment	Rough weather	x	x	-	✓	-	x	x
	Protected water	-	-	✓	✓	-	-	-
	Calm Water	✓	✓	✓	✓	✓	✓	✓
	High current	x	-	x	-	-	-	-
	Debris	x	✓	x	✓	x	x	x
Oil Viscosity	High Viscosity	x	-	x	x	x	✓	✓
	Medium Viscosity	✓	✓	✓	✓	✓	-	-
	Low Viscosity	-	-	-	-	-	x	x
Oil thickness	< 5mm	x	x	✓	✓	✓	x	x
	>5mm	✓	✓	✓	✓	✓	✓	✓
Skimmer Characteristics	% oil in recovered product	x	x	✓	✓	✓	-	✓
	Recovery rate (pumping capacity)	-	✓	-	x	✓	x	✓
	Ease of deployment	✓	-	✓	-	-	✓	-

2. Shoreline Response Options

2.1. Very Light Response Option

- Includes: Jet fuels, Gasoline, typical type 1
- Highly volatile (should evaporate within 1-2 days
- High concentration of toxic (soluble) components
- Result: Localized, severe impacts to water column and inter-tidal resources
- Duration of impact is a function of the resources recovery rate
- No dispersion necessary
- No cleanup necessary

Response Options	Shoreline Type									
	A	B	C	D	E	F	G	H	I	J
Natural Processes	R	R	R	R	R	R	R	R	R	R
Manual Removal										
Passive Collection (Sorbents)	F	F				F	F	F	F	F
Debris Removal	F	F	F	F	F	F	F	F	F	F
Trenching										
Sediment Removal			C	C	C					
Sediment Reworking			C	C	C					
Sand Berming/Defense Measures										
Ambient Water Flooding (Deluge)						F		F	F	F
Washing (<50 PSI)						C		F	C	C
Washing (>50 PSI)								C		
Heated Water Washing (<50 PSI)								C		
(>50 PSI)										
Slurry Sand Blasting										
Vacuum										
Excavation, Cleaning and Replacement										
Cutting Vegetation									C	C
Chemical Treatment Oil Stabilization with Elastomers										

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Protection of Beaches										
Cleaning of Beaches										
Nutrient Enhancement										
Microbial Addition										

Shoreline Type Codes	**Countermeasure Codes**
A -- Exposed rocky shores and sea-cliffs B -- Exposed wave-cut platforms C -- Fine-grained sand beaches D -- Coarse-grained sand beaches (including gravel) E -- Gravel and mixed sand/coral beaches F -- Boulder beaches and rip-rap structures G -- Exposed tidal/reef flats H -- Sheltered rocky shores/reef flats I -- Sheltered tidal flats J -- Wetlands, marshes, mangroves	R -- Recommended - may be preferred alternative. F -- Feasible - If logistically possible, may not be the preferred alternative. C -- Conditional - Possibly useful but may result in adverse effects to environment. If empty, countermeasure is Not Recommended

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2.2. Light Oils Response Options

- Includes: Diesel, No. 2 Fuel Oils, Light Crudes, typical type 2
- Moderately volatile: will leave residue (up to 1/3rd of spilled amount)
- Moderate concentrations of toxic (soluble) components
- Result: "Oiling" of inter-tidal resources with long-term contamination potential
- Has potential for sub-tidal impacts (dissolution, mixing, sorption onto the suspended sediments
- No dispersion necessary
- Cleanup can be very effective

Response Options	Shoreline Type									
	A	B	C	D	E	F	G	H	I	J
Natural Processes	R	R	R	R	R	R	R		R	R
Manual Removal										
Passive Collection (Sorbents)	F	F	F	F	F	F	F	R	R	R
Debris Removal	R	R	R	R	R	R	R	R	R	R
Trenching										
Sediment Removal										
Sediment Reworking										
Sand Berming/Defense Measures			C	C						
Ambient Water Flooding (Deluge)		F	F	F	F	F	F	F	F	F
Washing (<50 PSI)				F	F	F		F		
Washing (>50 PSI)						F		F		
Heated Water Washing (<50 PSI)										
(>50 PSI)										
Slurry Sand Blasting										
Vacuum							R	R	R	R
Excavation, Cleaning and Replacement										
Cutting Vegetation								C	C	C
Chemical Treatment Oil Stabilization with								C	C	
Elastomers										
Protection of Beaches										
Cleaning of Beaches										
Nutrient Enhancement										
Microbial Addition										

Shoreline Type Codes	**Countermeasure Codes**
A -- Exposed rocky shores and sea-cliffs B -- Exposed wave-cut platforms C -- Fine-grained sand beaches D -- Coarse-grained sand beaches (including gravel) E -- Gravel and mixed sand/coral beaches F -- Boulder beaches and rip-rap structures G -- Exposed tidal/reef flats H -- Sheltered rocky shores/reef flats I -- Sheltered tidal flats	R -- Recommended - may be preferred alternative. F -- Feasible - If logistically possible, may not be the preferred alternative. C -- Conditional - Possibly useful but may result in adverse effects to environment. If empty, countermeasure is Not Recommended

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J -- Wetlands, marshes, mangroves	

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2.3 Heavy Oils Response Options

- Includes: No. 6 Fuel, Bunker Fuel, typical type 4
- Heavy Oils with little or no evaporation or dissolution
- Water-soluble fraction likely to be <10 ppm
- Heavy contamination or inter-tidal areas likely
- Sever impacts to waterfowl and fur-bearing mammals (coating and ingestion)
- Long-term contamination of sediments possible
- Weathers very slowly
- Dispersion seldom effective

Response Options	Shoreline Type									
	A	B	C	D	E	F	G	H	I	J
Natural Processes										
Manual Removal	F	F	R	R	R	F		R		
Passive Collection (Sorbents)	F	F	R	R	R	R	R	R	C	C
Debris Removal	F	F	R	R	R	R	C	R	C	C
Trenching			C	C						
Sediment Removal		F	C	C						
Sediment Reworking		C	C	C	C					
Sand Berming/Defense Measures			C	C						
Ambient Water Flooding (Deluge)		F	R	R	R	F		F	C	C
Washing (<50 PSI)		F	C	C	C	C		C	C	C
Washing (>50 PSI)	F	C				C		C		
Heated Water Washing (<50 PSI)		C				C		C		
(>50 PSI)	F	C				C		C		
Slurry Sand Blasting								C		
Vacuum		F	F	F	F		F	R	F	F
Excavation, Cleaning and Replacement			C	C	C					
Cutting Vegetation	C	C				C	C	C	C	C
Chemical Treatment Oil Stabilization with								C	C	
Elastomers										
Protection of Beaches										
Cleaning of Beaches										
Nutrient Enhancement			C	C	C				C	C
Microbial Addition										

Shoreline Type Codes	**Countermeasure Codes**
A -- Exposed rocky shores and sea-cliffs B -- Exposed wave-cut platforms C -- Fine-grained sand beaches D -- Coarse-grained sand beaches (including gravel) E -- Gravel and mixed sand/coral beaches F -- Boulder beaches and rip-rap structures G -- Exposed tidal/reef flats	R -- Recommended - may be preferred alternative. F -- Feasible - If logistically possible, may not be the preferred alternative. C -- Conditional - Possibly useful but may result in adverse effects to environment.

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H -- Sheltered rocky shores/reef flats I -- Sheltered tidal flats J -- Wetlands, marshes, mangroves	If empty, countermeasure is Not Recommended

Annex Nine: Oil Waste Handling Arrangements

1. Introduction

1.1 These procedures are issued for the Oily Waste Management and Handling Arrangements. Proper waste and handling is imperative to prevent cleaned areas from becoming re-contaminated and to protect unaffected areas. Waste disposal operations at major spills will be coordinated with the Maritime Safety Authority of Fiji and the Department of Environment and where appropriated local residents and non-landowning residents affected by the incidents.

2. Waste Characteristics

2.1 Response operations will create liquid and solid/semi solid wastes which are further classified as Oily and non-oily. The following is a summary of these types of wastes and associated response operations that generate the wastes.

2.2 Liquid Wastes

- Oily – Oily liquid wastes (i.e. recovered oil, oily water and emulsions) can be handled, stored and disposed of in a similar way to those generated during normal oil production, refining and terminal operations. The largest volumes will be produced by vacuum devices and skimmers. Additionally, oily water and emulsions will be generated by vessel and equipment cleaning operations.

- Non-Oily – Response operations will also produce quantities of non-oily liquid wastes generated by the temporary storage area and storm water collection systems, vessel and equipment cleaning and office and field operations (i.e. sewage).

2.3 Solid/Semi – Solid Wastes.

- Oily–Oily solid/semi – solid wastes that will be generated by containment and recovery operations include damaged or worn-out booms, non-cleanable equipment, used sorbent materials, saturated soils, contaminated beach sediments, driftwood and other debris

- Non-Oily – Non-Oily solid/semi-solid wastes will be generated by spill response support operations and office and field operations (i.e. rubbish).

3. Safety Considerations

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3.1 Care must be taken to avoid or minimise direct contact with oily wastes. All personnel handling or coming into contact with oily wastes should wear protective clothing. A barrier cream can be applied prior to putting on gloves to further reduce the possibility of oily waste absorption. Safety goggles should be worn by personnel involved in waste handling activities where splashing might occur. Hydrocarbon vapour exposure from waste storage and handling areas should be monitored and personal respirators worn if necessary.

3.2 Oily liquids or solids must be treated as flammable material and stored away from potential ignition and heat sources.

4. Separation of Waste Types

4.1 The different types of waste materials generated during response operations require different disposal methods. To facilitate disposal of wastes they will be separated by type for temporary storage, transport and disposal. Table J1 lists some options available to segregated oily wastes. The table also indicates the method that may be used to separate free and/or emulsified water from the oily liquid waste.

5. Transfer

5.1 During response operations it may be necessary to transfer recovered oil and oily debris from one point to another several times before the wastes are ultimately incinerated or disposed of at an appropriate disposal site. Depending on the location of response operations; any or all of the following may occur:

- from portable or vessel – mounted skimmers into portable steel tanks, the storage tanks of the skimming vessel; or a barge,
- directly into the storage tank of a vacuum device;
- From a skimming vessel to barge;
- from vacuum device storage tank to a barge;
- from a barge to a tank truck or portable tank;
- from a tank truck to a processing system (oil/water separator);
- from a processing system to a recovery system and/or incinerator;
- directly into impermeable bags that, in turn, are placed in impermeable containers;
- from containers to trucks;

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- from trucks to lined pits; and
- from lined pits to incinerators and/or land fills.

5.2 Generally there are four classes of transfer systems that may be used to effect oily waste transfer operations:

- pumps;
- vacuum systems;
- belt/screw conveyors; and
- wheeled vehicles

5.3 TABLE J2: shows comparative evaluation of sixteen types of transfer systems that might be available for transfer operations. A brief discussion of each of the transfer systems follows:

5.3.1 PUMPS: rotary pumps, such as centrifugal pumps, may be used when transferring large volumes of oil, but may not be appropriate for pumping mixtures of oil and water. The extreme shearing action for centrifugal pumps tends to emulsify oil and water, thereby increasing the viscosity of the mixture and causing low, inefficient transfer rates. The resultant emulsion would also be more difficult to separate into oil and water fractions. Lobe or "positive displacement" pumps work well on heavy, viscous oils, and do not emulsify the oil/water mixture. Double acting piston and double acting diaphragm pumps are reciprocating pumps that can also be used to pump oily wastes.

5.3.2 VACUUM SYSTEMS: a vacuum truck may be used to transfer viscous oils, but without the use of a skimming device, they usually pick up a very high water/oil ratio.

5.3.3 BELT/SCREW CONVEYORS: Conveyors may be used to transfer oily wastes containing a large amount of debris. These systems can transfer weathered, debris- laden oil either horizontally or vertically for short distance (e.g. 30 metres) but are bulky and difficult to set up and operate.

5.3.4 WHEELED VEHICLES: Wheeled vehicles may be used to transfer liquid wastes or oily debris to storage or disposal sites. Such vehicles have limited transfer rate (e.g. 100 barrels per load) and require good site access.

6. Storage

6.1 Temporary storage of oil and oily debris may be required until a final disposal method has been selected. Segregation of wastes according to type will facilitate subsequent incineration and/or disposal. Storage method used depends on:

- type and volume of material to be stored;

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- duration of storage; and
- access

6.2 During an oil spill incident, the volume of oil recovered and dealt with effectively will depend upon the storage capacity available. Some short-term storage options are summarised in Table J3. Most of these can be used onshore or offshore. It bags or drums are used for storage, the container must be clearly marked and/or colour-coded to indicate the type of materials/waste contained and/or the ultimate disposal option. Ensure that the space available is capable of supporting the weight of both the container and the waste content.

6.3 Storage pits must be lined with a liner that extends over the whole area (see Figure J1), and located on ground that is as level as possible, at least 2 metres above the high water mark of streams, rivers and lakes, and where surface drainage is dispersed, not concentrated.

7. Transport

7.1 Oily wastes and debris may be transported by boats, trucks, or in some cases by helicopter. However, precautions must be taken to ensure that transport operations do not result in a spill in a non-affected area.

8. Disposal

8.1 There are a number of disposal alternatives available for recovered oil and oily debris from large scale clean-up operations, but the most practical in [country] involve.

- Recovery to production, terminal or storage tank facilities;
- in-situ burning;
- on-site incineration;
- disposal in pits; and
- land farming

8.2 TABLE J1 shows treatment and disposal options for oil and oily wastes. Oily debris containing vegetation, rubbish or other materials would be burned on-site or transported to an appropriate site for incineration and/or disposal.

8.2.1 RECEOVERY TO STORAGE FACILITIES: Wherever practical, oil should be reclaimed. Oil that has been recovered by oil/water separation, either on-site or at the treatment facility, may be transported to an oil company terminal for storage and/or reclamation. Disposal of large volumes of recovered oil/water

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from offshore response activities will have to be arranged at a refinery or other facility.

8.2.2 ON-SITE INCINERATION: There are a variety of incinerators that can be considered for disposal of oily debris in the field. The one chosen depends on the location of the spill and incinerator site, the materials to be disposed of, overall size of the clean-up operations, and environmental considerations.

- Incineration Equipment – three types of field incinerator systems are most commonly used for on-site incineration, rotary kiln, air-curtain incinerator, open flame oil burner. TABLE J4 summarises the materials that each type of incinerator can burn.

- Field Incineration Process – usually a field incineration process consists of four major steps

  (i) planning the operation;
  (ii) preparing the site;
  (iii) operating the site; and
  (iv) restoring the site on completion

The complexity of each step will depend on many factors including, spill size, type of clean-up operation, equipment available, terrain, weather environmental, government and landowners requirements.

- personnel and Public Safety – Due to the heat and flame generated by most field-usable incinerators, and potential flammability of oil-soaked debris, safety of the public and personnel safety is of primary importance. In may situation, heavy plant equipment will be operating in conjunction with site preparation and operation, requiring additional safety consciousness and consideration. A site safety officer should be designated to establish a site safety programme and continually monitor safety or hygiene related problems. Such person can also be placed in charge of site security. Safety items addressed must include:

- *fire control systems;*
  - personnel protective equipment;
  - protection of the general public;
  - noise protection;
  - general safety procedures; and
  - exposure to hydrocarbon liquid, vapour or smoke

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8.2.3 DISPOSAL IN PITS. - Depending on the local situation and ability to obtain approval from the appropriate government authorities, agencies and landowners, disposal in a landfill in proximity to the spill site should be considered. A landfill site can be developed, as illustrated in **Figure J5,** if a suitable location can be found close enough to the spill site. Considerations include volume of contaminated materials and accessibility to heavy equipment. Small hand dug or formed pits may be practical depending on the total volume to be disposed.

8.2.4 LAND FARMING. – Land farming uses the natural forces of hydrocarbon degradation by bacteria. Degradation rate can be improved by aeration and nutrient addition. Land farming the preparation of a field(s) surrounded by water run-off collection ditches which are led to a central oil/water separator. Oily sludge and oiled materials are spread on the filed(s) up to a maximum thickness of approximately 30 cm. Sludge and soil are mixed by ploughing, tilling, etc. Nutrient (containing nitrogen) is sprayed on and preferably harrowed in. After periodic aeration (ploughing, tilling, etc.) Biodegradation will take place and another sludge layer may be applied.

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TABLE J 1 : OILY WASTE SEPARATION AND DISPOSAL METHODS

TYPE OF MATERIAL	SEPERATION METHODS	DISPOSAL METHODS
Liquids		
Non-emulsified oils	Gravity separation of free water	Incineration Reclamation of oil
Emulsified oils	Emulsion broken to release water by: * heat treatment * emulsion breaking chemicals * mixing with sand * centrifuge * filter/belt press	Incineration Reclamation of recovered oil
Solids		
Oil mixed with sand	Collection of liquid oil leaching from sand during temporary storage Extraction of oil from sand by washing with water or solvents Removal of solid oils by sieving	Incineration Reclamation of recovered oil Direct disposal to landfill Stabilisation with inorganic material Degradation through land farming composting
Oil mixed with cobbles or pebbles	Screening Collection of liquid oil leaching from materials Extraction of oil from materials by washing with water or solvent	Incineration Reclamation of recovered oil
Oil mixed with wood, seaweed and sorbents	Screening Collection of liquid oil leaching from debris during temporary storage	Incineration Direct disposal to landfill Degradation through land farming or composting
Oil mixed with seaweed or natural sorbents	Flushing of oil from debris with water	Degradation through land farming or composting
Tar balls	Separation from sand by sieving	Incineration Direct disposal to landfill

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TABLE J 2 : COMPARATIVE EVALUATION OF OIL SPILL TRANSFER SYSTEM

CHARACTERITICES OF TRANSFER SYSTEMS	CENTRIFUGAL PUMP	LOBE PUMP	GEAR PUMP	SCREW PUMP	VANE PUMP	FLEXIBLE IMPELLER	SCREW/AUGER PUMP	PROGRESSING CAVITY	PISTON PUMP	DIAPHRAGM PUMP	AIR CONVEYOR	VACUUM TRUCK	PORTABLE VACUUM	CONVEYOR BELT	SCREW CONVEYOR	WHEELED VEHICLES
High Viscosity Fluids	1	5	5	5	3	2	5	5	5	3	5	4	4	5	4	5
Low Viscosity Fluids	5	2	2	2	3	4	1	3	3	4	5	5	5	1	1	5
Transfer rate	5	2	1	1	3	4	1	2	2	3	4	5	3	2	2	2
Debris tolerance																
* silt/sand	5	3	1	1	1	4	5	5	3	4	5	5	5	5	5	5
* gravel/particles	5	2	1	1	1	2	5	3	2	3	5	5	4	5	4	5
* seaweed/string matter	2	3	4	3	2	2	4	4	2	3	4	4	3	5	4	5
Tendency to emulsify fluids	1	4	3	3	3	3	5	5	3	3	5	5	5	5	5	5
Ability to run dry	5	3	2	1	2	3	4	3	2	5	5	5	5	4	3	-
Ability to operate cont'ly	5	3	2	2	2	3	3	3	3	2	3	3	3	3	2	4
Self priming	1	3	2	2	2	5	1	5	4	4	5	5	5	5	5	-
Suction/head	2	3	2	2	3	4	1	5	4	4	5	4	3	-	-	-
Back pressure/head	1	5	5	5	4	3	4	5	5	2	1	1	1	3	3	-
Portability	5	3	3	2	4	4	3	2	2	4	-	-	2	1	1	-
Ease of repair	5	3	2	2	3	4	3	2	3	5	1	1	2	3	2	3
Cost	5	3	2	2	3	3	1	2	3	5	1	1	2	2	2	3
Comments	E	B	B	B	-	F	A	B	B	A	F	F	F	-	-	G
Comments	J	-	-	J	-	-	-	-	D	C	G	G	G	-	-	H
Comments	-	-	-	-	-	-	-	-	-	D	1	1	-	-	-	I

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Key to ratings: 5 = Best; 1 = Worst

Key to comments:

A. Normally require remote power sources, thus safe near flammable fluids.
B. Should have a relief valve in the outlet line to prevent bursting hoses.
C. Air powered units tend to freeze up in sub-freezing temperatures.
D. Units with work ball valves are difficult to prime
E. Some remotely powered types are designed to fit a tanker's butter worth hatch
F. Can also pump air at low pressure
G. Transfer is in batches not continuous
H. Waste must be in separate container for efficient transfer
I. Transportable with its own prime mover
J. High shear action tends to emulsify oil and water mixes

TABLE J 3 : TEMPORARY STORAGE METHODS

Container	On shore	Off shore	Solids	Liquids	Notes
Barrel	X	X	X	X	May require handling devices.
Tank Trucks	X	X		X	Consider road access.
Dump/Flat Bed Trucks	X		X		May require impermeable liner and cover. Consider flammability of vapours at exhaust.
Barges		X	X	X	Liquids only in tanks. Consider venting of tanks
Portable oil storage tanks	X	X		X	Consider problems of large volumes of water in oil. Requires handling equipment or helicopters for movement.
Bladders	X	X		X	May require special hoses or pumps for oil transfer.
Pits	X	X	X	X	Lines required.

TABLE J 4 : INCINERATORS USED FOR DIFFERENT OIL SPILL WASTES

Waste Material Categories	Liquid	Physical State Semi-solid	Solid

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OILS			
Uncontaminated (crudes, refined products)	**2,3**	**1,2**	
Emulsions (crudes, some refined products)	**1,2,3**	**1,2**	
Weathered (tar balls, burned oil residue)		**1,2**	**1,2**
OIL DEBRIS			
Small combustible (sticks, cups, sorbent pads)		**1,2**	**1,2**
Large combustibles (logs, seaweed, mats, pilings)		**1,2**	**1,2**
Small non-combustible (sand, rocks, metal, soil)			**1**

KEY

Field Incinerator types:

1. Rotary kiln 2. Air-curtain incinerator 3. Open flame oil burner

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Annex Ten: Environmental Site Sensitivity Mapping (TBC)

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Annex Eleven: Dispersant Guidelines (SPREP Guidelines)

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1. Introduction

The response to marine oil spills requires the application of a variety of techniques in order to prevent/minimize damage to the environment and marine and coastal resources from the oil spill.

In the event of an oil spill at sea, the best option is often to leave the spill alone and monitor its movement, allowing natural processes to degrade the oil slick over time.

Should surveillance and forecasting indicate that the spill may impact on coastlines, the possibility of physically containing and recovering the oil at sea to prevent such impact should be pursued.

The ability to conduct effective containment and recovery operations at sea will be limited by the nature of the spill, available equipment, physical conditions and logistical considerations. In many instances, especially in open water, containment and recovery at sea may not be possible.

In the event that containment and recovery is not possible, or is only partially effective, another possible option to prevent or minimize the spill from impacting on the coast is to disperse it at sea, using chemical dispersants.

Dispersants can be applied to the spill from vessels or aircraft. The techniques and equipment available for the application of dispersants should be outlined in the relevant national marine spill response plan (NATPLAN) for the county/territory where the spill has occurred.

As with containment and recovery at sea, the effective use of dispersants will be limited by the nature of the spill (including the type of oil and its dispersability), the availability of dispersant stocks and application equipment, physical conditions and logistical considerations. In many instances, effective dispersal of oil at sea may not be possible.

The inappropriate use of dispersants can cause worse environmental impacts than undispersed oil. Dispersants are pollutants themselves, and their use can temporarily increase the toxicity of the oil, by increasing its surface area to volume ratio and thereby increasing the release of the toxic components of the oil into the marine environment. If used in very shallow water and on shorelines, they can cause the oil to penetrate into sediments, creating potential long-term pollution problems.

Pacific island countries are endowed with valuable marine and coastal resources which may be extremely sensitive to pollution, including the inappropriate use of chemicals such as oil spill dispersants. Even the best-intentioned oil spill responders can cause more environmental damage than they prevent if proper procedures are not followed.

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The use of dispersants in the Pacific islands region should therefore only occur under strict supervision by competent environmental and scientific authorities, and in accordance with the SPREP Environmental Guidelines for the Use of Oil Spill Dispersants (this document).

If dispersants are used in accordance with these guidelines, they represent a very useful oil spill response tool.

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2. General Guidelines

- When sensitive environments, including reefs and coastal resources, are under threat from an oil spill at sea, the use of chemical dispersants to prevent the oil from reaching the sensitive environment should be considered.

- The decision to use or not to use dispersants should be made by the designated National On Scene Commander (NOSC), in accordance with advice from the designated Environment Unit (A Technical Specialist)and in accordance with these guidelines.

- The decision to use or not to use dispersants should be based on an evaluation of the impacts that may occur if dispersants are used versus the impacts that may occur if dispersants are not used.

- It may be necessary to accept impacts on one resource in order to minimize impacts on a more valuable resource.

- Dispersants should NOT be used if:

    - Physical/mechanical containment and recovery techniques are possible and effective.

    - The oil is not amenable to dispersant. Highly viscous oil and oil that has weathered for two days or more may not be amenable to dispersant. A simple field test to check the dispersability of oil is outlined in Appendix One of these guidelines.

    - The area is shallower than five metres at lowest tide during the time of the spill.

    - The area is enclosed, such as a lagoon, bay and/or harbour, and does not have an active water exchange rate.

    - The area contains eggs or larvae of ecologically important species (e.g. corals) or commercial fisheries species.

- To assist and speed-up dispersant use decision making, pre-designated dispersant use/non-use zones will be included as a map(s) in the NATPLAN as part of Annex 6.

- The determination and mapping of dispersant use/non-use zones should be based on the criteria presented in these guidelines.

3. Habitat-Specific Guidelines

3.1 Coral Reefs

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- Generally, dispersed oil is MORE DAMAGING to coral reefs than un-dispersed oil.
- Dispersant should NOT be used on oil that is over a coral reef, unless:
    - The oil is likely to impact on mangroves downstream of the reef (i.e. the impact of dispersed oil on coral reefs is preferable to the impact of un-dispersed oil on mangroves).
- Dispersant SHOULD be used to prevent oil in OPEN WATER from reaching a coral reef (providing the general guidelines above are followed).

3.2 Seagrass Beds

- Generally, dispersed oil is MORE DAMAGING to seagrass beds than un-dispersed oil.
- Dispersant should NOT be used on oil that is over a seagrass bed, unless:
    - The oil is likely to impact on mangroves downstream of the seagrass bed (i.e. the impact of dispersed oil on seagrasses is preferable to the impact of undispersed oil on mangroves).
    - The area containing the seagrasses is well flushed.
- Dispersant SHOULD be used to prevent oil in OPEN WATER from reaching seagrass beds (providing the general guidelines above are followed).

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3.3 Mangroves

- Generally, dispersed oil is LESS DAMAGING to mangroves than un-dispersed oil.
- Dispersant MAY be used on oil that has already impacted on mangroves, providing:
    - The general guidelines above are followed.
    - The dispersant can be applied manually in a controlled manner to prevent defoliation of the mangrove trees and penetration of oil into mangrove sediments.
- Dispersant SHOULD be used to prevent oil in open water or even oil over other sensitive resources, such as coral reefs and seagrass beds, from reaching mangroves (providing the general guidelines above are followed).

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3.4 Sandy Beaches

- Oil threatening to impact on a sandy beach should be allowed to.

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- Beaches provide the best oil containment and collection barrier, and physical/mechanical recovery of beached oil is relatively straightforward.

- Dispersants SHOULD NOT be used to prevent oil from beaching. This will cause unnecessary pollution of the marine environment when the oil can be readily recovered after it has beached.

- However, in many situations, beaches in the Pacific islands region will be closely associated with fringing coral reefs and sometimes mangroves and seagrass beds. In such circumstances the guidelines above relating to those habitat types should take precedence.

- Where a beach has high amenity/commercial value (e.g. for recreation and tourism), protection of ecological resources should take precedence as it is far easier to clean an oiled beach than an oiled reef, seagrass bed or mangrove.

- Dispersants SHOULD NOT be used on oil that has already impacted on a sandy beach, unless:

    - The maximum amount of oil possible has been removed by physical/mechanical means.

    - The dispersant is applied in a highly controlled manner, just before the advancing tide, to prevent oil penetrating into the substrate.

3.5 Rocky Shores

- By nature, rocky shores are usually high energy environments.

- High energy environments are best suited to self-cleaning if impacted by an oil spill.

- Dispersants SHOULD NOT be used to prevent oil from impacting a rocky shore. This will cause unnecessary pollution of the marine environment when the oil may be readily removed by natural forces after it has impacted a rocky shore.

- However, in many situations, rocky shores in the Pacific islands region will be closely associated with fringing coral reefs and sometimes mangroves and seagrass beds. In such circumstances the guidelines above relating to those habitat types should take precedence.

3.6 Bird & Turtle Rookeries

- Generally, dispersed oil is FAR LESS DAMAGING to wildlife than un-dispersed oil.

- Un-dispersed oil can cause severe impacts on wildlife.

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- Dispersant SHOULD be used to prevent oil in open water or even oil over other sensitive resources, such as coral reefs and seagrass beds, from reaching bird and turtle rookeries (providing the general guidelines above are followed).

3.7 Physical Structures

- It is possible to use dispersants to remove oil from physical structure such as seawalls, wharves, bouys and boat hulls, and also to clean oiled pollution response equipment.

- However, a number of non-toxic, biodegradable de-oilers are now available that are more effective and less harmful than dispersants for this purpose.

- If dispersants must be used for this purpose, any resulting run-off should be contained and physically/mechanically collected for proper disposal.

Further information:

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Appendix One: Field Test to Establish the Dispersability of Oil

Background

If the use of chemical dispersants to treat an oil spill is being considered, it is important to establish whether or not the spilled is amenable to dispersion. Many oils, especially highly viscous (thick) oils and oil that has been exposed to the environment for several days (and is therefore weathered), may not respond to dispersants.

The simple field test outlined below will allow response authorities to gain a rapid indication of the dispersability of the oil.

If the oil is not found to be amenable to dispersion, then dispersants SHOULD NOT be used.

If the oil is found to be amenable to dispersion, then dispersants might be used, but ONLY if all other requirements, including environmental approvals and considerations, are met.

Equipment Required

- Clean 20-25ml screw-top test tube with screw cap and neutral plug.
- Clean, wide-mouth jars for obtaining oil from the scene of the spill.
- Glass pasteur pipettes and bulbs or eye-droppers.

Test Procedure

- Collect a small amount of oil from the scene of the spill.
- Collect a small amount of dispersant from the dispersant stockpile
- Collect a small amount of clean seawater.
- Fill test tube to 2/3 with the seawater (must be at same temperature as sea-surface at the scene of the spill).
- Add 1ml of the oil to the surface of the water in the test tube with pasteur pippette or eye dropper. DO NOT let the oil touch the sides of the test tube. Note the curved under-surface of the oil as it floats on top of the water.
- With test-tube slightly above eye level, add one or two drops of the dispersant directly onto the surface of the oil, using a CLEAN pipette or eye dropper.

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- Keep the test tube very still and observe the under-surface of the oil for any change.
    - If the curved under-surface of the oil has flattened out and taken on a dull appearance, the dispersant has penetrated and combined with the oil.
    - If there is evidence of clear-liquid emanating from the underside of the oil, the dispersant has passed through the oil and not combined with it.
- Carefully screw the cap onto the test tube.
- In a smooth and steady manner, invert the test tube 180^{o} and back to the upright position six times.
- Note the appearance of the oil.
    - If the water has gone cloudy and opaque (light does not penetrate through), the dispersant has been effective.
    - If the oil is still on the surface of the water or taken the form of large particles on or near the surface, or if many small particles of oil are visible and light penetrates through, the dispersant has not been effective.
- The test tube may be placed in an upright position and left to settle for five minutes. If the water is still cloudy after five minutes, it indicates that the oil is very amenable to dispersant.
- If the test indicates that the dispersant is not effective, it is unlikely to be effective at the scene of the spill and should not be used. If another brand of dispersant is available, the test may be repeated for that brand to determine if it is effective.

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Appendix Two: The Use of and Types of Chemical Dispersants

What are chemical dispersants?

- Purpose-made chemicals that are applied to oil slicks to break them up into small droplets.
- Cause oil droplets to sink below the surface and remain suspended in the water column.
- Assist physical degradation of the oil through water movement (waves, currents, turbulence).
- Prevent formation of persistent water-in-oil emulsions and residues.
- Assist bio-degradation through increasing the surface area of the oil that can be 'attacked' by bacteria.
- A key component of dispersants is 'surface-active-agent' (surfactant).
- Surfactant has molecular structure where:
    - one part is attracted to oil (oleophilic)
    - one part is attracted to water (hydrophilic)
- Reduces interfacial tension between oil and water.
- Promotes droplet formation and prevents re-coalescing.
- To work, dispersant must be effectively distributed through the oil.
- Dispersant therefore contains a 'solvent', which carries the surfactant and penetrates the oil.
- If oil is very viscous (thick), or aged and weathered, solvent cannot penetrate the oil and dispersant will be ineffective.
- Therefore must ensure oil is dispersible before using dispersant.

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Figure One: Dispersants in Action

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Types of Dispersants

First Generation (late 1660's).

- Based on industrial cleaners and degreasers.
- Contain solvent based on aromatic hydrocarbons.
- Extremely toxic.
- Used on Torrey Canyon spill off English coast in 1967.
- Devastating impact on marine life.

Second Generation (after Torry Canyon)

- Known as 'conventional' or hydrocarbon-based dispersants.
- Purpose-made for oil spills.
- Contain solvent based on low aromatic or non-aromatic hydrocarbons.
- 1,000 x less toxic than first generation, but still toxic.
- Contain 85-75% solvent and 15-25% surfactant.
- Apply 'neat'(un-mixed) to the oil slick, at dispersant:oil ratio of between 1:1 and 1:3.
- Not suitable for application from aircraft, apply from vessels.

Example: BP-AB.

Third Generation (mid 1970's)

- Known as 'concentrate' dispersants.
- Contain solvent based on glycol or alcohol.
- Contain less solvent and more surfactant.
- Even less toxic than second generation (but still toxic).
- Can be applied neat (straight) or mixed with sea-water, at neat dispersant:oil ratio of between 1:5 and 1:30.

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- Better for application from aircraft, also good for application from vessels.

Examples: Later COREXIT range, Shell VDC/VDC Plus, ARDROX range.
Approved dispersants for Australia is at:
http://www.amsa.gov.au/me/NATPLAN/toolbox/dispersa/dispers.htm
(look at question/answer 14 on the FAQ for Oil Spill Dispersants, other links on OSDs at this site)

Approved dispersants for USA is at: http://www.epa.gov/oilspill/ncp/dsprsnts.htm

When should dispersants be used?

- Main use of dispersant is to break oil up when it is still at sea.
- Prevent oil from impacting on the shoreline.
- Physical containment & mechanical recovery of the oil is preferable.
- Use dispersants at sea only when physical containment & mechanical recovery is not possible/feasible.
- Do not use dispersants in inshore, shallow and/or enclosed waters (see SPREP Guidelines for details).
- Dispersants can be used on shorelines and structures (e.g. oiled seawalls), but can cause serious impacts and must be highly controlled (see SPREP Guidelines for details).
- Dispersant can be used for cleaning oiled pollution equipment (e.g. booms). Runoff must be contained, collected and disposed of properly to prevent further pollution of the environment.
- The decision to use or not use dispersants must balance the environmental impacts that may occur if dispersant is used, against the environmental impacts that may occur if the oil slick is left untreated.
- The On Scene Commander should obtain scientific and environmental advice when making on decision on dispersant use (refer SPREP Dispersant Guidelines).
- Each country/territory should pre-designate dispersant use/non-use areas (based on the SPREP Dispersant Guidelines) in its national plan and the On Scene Commander should comply with these.
- DO NOT use dispersants on oil that is not dispersable. This is a total waste of dispersant and causes unnecessary additional pollution.

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- Oil that is highly viscous (thick) or has been at sea more than several days (aged and weathered), is generally not dispersable.

- Conduct a small scale field test first (refer Appendix One of SPREP Dispersant Guidelines).

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Figure Two: Dispersant Use Decision Tree

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Methods of Application

- Method of application depends on:
  - Type of dispersant (conventional or concentrate).
  - Size/location of the spill.
  - Availability of vessels/aircraft and application equipment.

Apply from a vessel:

- Can use Conventional or Concentrate dispersant.
- Spill must be within range of available vessels.
- Vessels must be equipped with, or be capable of being fitted with, dispersant storage system, pumps and spray system.
- Can use fire monitors fitted to tugs boats etc, but:
  - Difficult to control.
  - High dilution rates.
  - Excessive consumption/application of dispersant.
  - Poor coverage of water jet.
  - Should not use hydrocarbon-based dispersants in fire pump system.
- Purpose-built spray booms are best.
- When spray boom fitted at bow of vessel, vessel assists mixing of the dispersant with the oil, although dispersant can be pushed out to sides of the vessel and therefore not mix thoroughly.
- When spray boom fitted towards stern, may be necessary to tow 'breaker boards' behind the vessel to assist mixing.
- Advantages include:
  - Relatively inexpensive.
  - Do not need dedicated vessels, can fit storage tank, pump and spray booms to 'vessels of opportunity' (e.g. fishing vessels).
  - Relatively low tech and flexible.
- Limitations include:
  - Low treatment rates.
  - Difficulty with locating slicks (unless assisted by an aircraft).
  - Limited range.

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- In the Pacific islands region, use of vessels in likely to be the best method for dispersant application. Each country/territory should ensure that their national plan includes arrangements for dispersant application by vessels.

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Figure Three: Application of Dispersant from Vessels

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Application from Aircraft

- Use Concentrate dispersant (can be diluted to achieve greater efficiency).
- Spill must be within range of available aircraft.
- Aircraft must be equipped with, or be capable of being fitted with, dispersant storage system, pumps and spray system.
    - Can use helicopters with purpose-built dispersant 'bucket' and spray booms.
    - Can use crop-dusting aircraft.
    - Can use purpose-fitted aircraft.
- Advantages include:
    - Allows rapid response.
    - Allows good surveillance, identification of the oil slick and evaluation of dispersant success rates.
    - Allows much higher treatment rates than vessels, can cover larger areas of an oil slick in a shorter period.
    - Allows much more efficient use of dispersant.
- Limitations include:
    - Expensive.
    - Availability of suitable aircraft.
    - Range of the aircraft.
    - Carrying capacity of the aircraft.
- In the Pacific islands region, use of aircraft to apply dispersants is unlikely due to:
    - Unavailability of suitable aircraft.
    - Low stocks of dispersants.
    - Time taken to bring aircraft and additional dispersant stocks in from outside the region likely to mean oil will have already impacted the shoreline, or weathered to the extent that it is not dispersable.

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Figure Four: Application of Dispersant from Aircraft.

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Land-based Application

- Dispersant can be used to clean-up shorelines and structures such as seawalls that have become oiled.
- However, potential to cause further environmental damage is high and alternative methods should be explored first.
- Physical/mechanical clean-up of shorelines and structures may be harder work, but may be the best option.
- If dispersants are used on shorelines/structures; remove bulk oil by physical/mechanical means first.
- Be extremely careful to ensure oil does not penetrate into the sediment (spray just ahead of the advancing tide)
- Can use Conventional or Concentrate dispersant (Concentrate better, as less toxic).
- For greatest control apply manually using personal 'back-pack' sprays.
- Do not spray dispersants around with Fire trucks or similar pumping equipment:
    - Difficult to control.
    - High dilution rates.
    - Excessive consumption/application of dispersant.
    - Poor coverage of water jet.
    - May corrode/damage fire pump system.

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Figure Five: Land-based Application of Dispersant

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Health & Safety Considerations

- Dispersants are chemicals which must be handled correctly.
- They should be stored away from heat and direct sun-light, in a dry storage area, and containers should be checked regularly for deterioration/leaks.
- Containers should be clearly marked with their contents and any necessary safety data.
- Handling should be done in well ventilated areas and personnel should keep to windward.
- Personnel must wear:
    - Closely fitting face shield or goggles with mouth/nose mask.
    - PVC loves.
    - Protective clothing (full cover plastic overalls & chemically resistant safety footwear).
- In the event of fire, use:
    - Chemical powder or carbon dioxide extinguishers, or foam.
- In the event of leak/spillage:
    - Stop leak immediately.
    - Contain with sand or absorbent material.
    - Soak-up with absorbent material and dispose of properly.
    - NB. spilled dispersant will make decks very slippery.
- In the event of skin contact:
    - Remove polluted clothing.
    - Wash with large quantities of water.
    - Call a doctor if problems develop.
- In the event of eye contact:
    - Wash with water for at least 15 minutes.
    - Do not apply anything else to the eyes unless doctor prescribes.
    - Ensure injured person checked by a doctor as soon as possible.

- In the event of inhalation:
    - Transfer injured person to well ventilated area.
    - Call a doctor immediately.
    - If breathing stops, administer artificial respiration.
- In the event of ingestion:
    - Call a doctor immediately.
    - Administer large quantities of water (unless unconscious, in which case DO NOT administer anything).
    - DO NOT administer alcohol, milk or fatty foods.
    - DO NOT induce vomiting.

NB: These are general guidelines only. All stocks of dispersants MUST have a safety data card. The specifications of the safety data card must always prevail.

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Annex Twelve: Financial Procedures, processes and delegated authorities (TBD)

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Annex Thirteen: Media Procedures

1) First Responder Responsibilities

First Responder and other operations personnel on the scene must identify circumstances surrounding the incident that can be confirmed at that time. Responders should attempt to coordinate facts with a representative of the responsible party.

After arriving on-scene, First Responder determines number and types of reporters (print, radio, TV) and provides this information to the NOSC (to the Public Information Officer if established).

If possible, First Responder or designated media liaison handles initial media inquiries and provides brief statements/remarks on what can be confirmed and coordinates this with the NOSC.

2) Public Affairs Response Actions

An initial media statement is released to establish MSAF CEO involvement and points of contact. The MTD states that potential responsible parties are to contact the MSAF CEO as soon as possible to initiate activation and identify parties involved. All press releases will be approved by the MSAF CEO.

The Public Information Officer must decide what interview format makes the most sense: individual interviews or a briefing for the entire group. PIO will not speculate on cause or quantities involved until information is provided by the Command.

If possible, First Responder or designated media liaison handles initial media inquiries and provides brief statements/remarks on what can be confirmed and coordinates this with the NOSC.

Initial messages to the news media could include:

Confirmation of an incident.

Response team on route to scene

Will notify news media of updates as information becomes available

Agencies for clean-up cooperatives have been notified.

It is the responsibility of the Command to monitor ongoing news for accuracy and to take corrective measures if misinformation is being reported.

3) Initial Action Checklist for Public Affairs Personnel

When established, these following items should be researched before beginning any public affairs activities.

3.1) Receive Initial Notification and Determine

Nature of incident (source/oil type/volume, etc.)

Personnel status (injured/missing/fatalities, etc.)

Source control status

Response operations status

Safety and health concerns

Weather conditions at source

3.2) Mobilization Checklist for Public Affairs Personnel

Airline or other flight arrangements if appropriate

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Appropriate personnel notified of departure (including on-scene staff and consultants)
Appropriate attire, including foul weather gear if needed
Information on local operations where incident occurred
Maps/charts of affected area (if available)
Latest information/assessment on crisis
Cellular phone and fax, with extra battery packs, chargers
Handheld VHF radio with extra battery packs. Chargers
Lap-top computer/battery- operated printer & batteries
Up-to-date credit cards and ample supply of cash
Name, location, phone number of top spill response manager on-scene
Name, cell phone number of on-scene media spokesperson(s)
Phone and fax number of key news media outlets
Meeting location with on-scene personnel upon arrival
Transportation arrangements upon arrival
Arrangements to transport response communications equipment to scene by air or ground vehicle.

3.3) Equipment/Supplies
The following equipment may be needed. If it is not available work with the Logistics Section to locate needed items.
Telephone lines and hardware
Fax machines (incoming/outgoing)
Work tables and chairs
Photocopier(s)
Podium and P.A. system
Multi-box connections
Area wall maps
TV set/monitors, with VCR hookup
Adequate electrical outlets
Electrical drop cables (if necessary)
Easels for foam board display
Bulletin boards and push pins
Coffee/beverage service

4) Public Affairs Duties
These are the typical duties of public affairs.
Attend regular morning and evening meetings with incident commander and operations personnel for briefing and ongoing assessment.
In coordination with the Information Officer and Deputy Information Officer, establish a daily briefing schedule. (Initially, consider two briefings per day, one at 8 a.m. and 2 p.m.) Ask media representatives when they would like to have next briefing--consider national and international scheduling.
Distribute "daily update" each morning, evening.
Update Command Center with information regarding the spill.
Periodically assess staffing needs.

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Determine "hot spots" where media will be covering and deploy team member(s) to assigned locations.
Clear all press releases with NOSC before approval by the MSAF CEO.
Identify and contact community leaders impacted.
Establish community outreach programs.

5) News Releases
It is the MSAF policy to quickly issue a news statement regarding the nature of the incident and any response efforts being initiated. The release also serves to establish the MSAF CEO as the media contact. Future releases and announcements should be coordinated through the command centre with appropriate approvals.
All news releases should have sequence numbers (i.e. Release #1), contact numbers for all appropriate parties, date and time issued.

6) Press Conferences
PIO representatives must decide what interview format is most appropriate: individual interviews or briefing an entire group. These could take place at the Command Centre, or the incident site if appropriate. PIOs will report verified information only and not speculate on cause or quantities.

7) Press Conference Checklist
The following items should be considered when setting-up for a press conference.
Work with spokespersons to agree upon key messages
Determine venue for media conference
Issue an advisory alerting media as to time/place
Be sure to notify appropriate management/spokespersons
Check on sufficient electrical outlets/accessibility
Parking arrangements
Identify location for individual interviews afterward
Prepare media kits, if required
Set up site - chairs, audiovisuals, refreshments, etc.
Tape recorder to document the conference or for playback to personnel who couldn't attend
Security (not in uniform)
Check credentials of media attending
Request that beepers and cellular phones be turned off as a courtesy to others recording, videotaping
Brief media prior to main presenters arrival
Establish time limitations with media before main presenters arrive
Ensure the opening remarks of presenters are brief and focused

8) Monitoring Ongoing News
It is the responsibility of the PIO to monitor ongoing news for accuracy and to take corrective measures if misinformation is being reported.

9) Media Logs

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A log should be maintained to track inquiries by reporters. Include basic information such as names, news organization, time of call, and information sought. Media requests that require follow up action should be highlighted and assigned to proper personnel to ensure that questions are answered in a timely manner (in consideration of deadlines). The logs will also serve as background information for new members to the command centre during shift changes.

10) Internal Information
All members are encouraged to maintain an aggressive program of information for their internal organizations. This information is essential for moral, as well as to avoid misinformation through indirect media contacts.

11) Updates for On-scene Personnel
The LO will ensure that personnel on scene are provided with information updates in the form of briefings and printed releases.

12) Media Monitoring Services
It is highly probable that within a very short period of time, the news of an incident will begin being reported by the various media. Radio will be generally be the first to report it, followed by special bulletins on television. It will be of particular benefit and interest to the Command centre and PIO to monitor news reports in order to determine the extent and slant of the coverage. In addition, any misstatements can be identified and corrective action taken.

13) Standard Questions Asked by Media
Experience has shown that the following questions are asked by the media at every press conference. The answer to all of them should be addressed in the initial statement prior to opening the floor to questions.
How much oil has spilled
Has it been contained?
What was the cause?
What time did the incident occur?
Who's fault was it?
What is the name and address of the responsible party?
What is the name and address of the owner/operator?
Who will assume responsibility for cleanup?
What's being done to clean it up?
Were there any injuries?
Is there any threat to environment?
Was the ship's captain intoxicated? (tanker incident)
How would you classify this spill? Large? Small?
How long will it take to cleanup?
How much will it cost to cleanup?
Will people who suffer losses because of the spill be reimbursed?
How many people will be involved in the response?
What is the flag of this vessel? What nationality is the crew?
Will you use dispersants?

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What is the trajectory of the oil? How long before it hits the shoreline?
What wildlife or marine life is being threatened?
What kind of insurance do you have to cover this?
What are your biggest fears?
Is this an environmental disaster?
How old is this tanker?
Was the tanker double-hulled? When was it last inspected?
Will the captain and crew be tested for drugs?
What happens if they test positive for drugs? Will they be fired?
Is this your worst nightmare? If not, what is?

14) Media Relations Training
Agencies are encouraged to provide media relations training for their senior officials, as well as for any personnel who might come in contact with print or broadcast media interviewers.

Annex Fourteen: Job Description of Marine Spill Response Team (TBD)

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Annex Fifteen: NEOC SOP's