

# NATIONAL OIL SPILL CONTINGENCY PLAN

## The National Contingency Plan for Bermuda

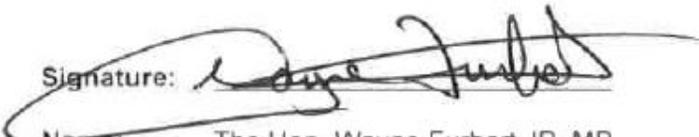
### Change Record Form

Rev.	Type of Change	Author	Date
1	First Issue	Dr Thomas Sleeter (Environmental Engineer)	2006
2	Second Issue	Dr Geoff Smith (Environmental Engineer, DENR) following RETOS™ Oil Spill Preparedness and Response Audit, alignment to the Incident Command System (ICS), review and facilitated Risk Assessment by REMPEITC CARIBE and review by Ambipar Response UK.	July 2023

### Signatures

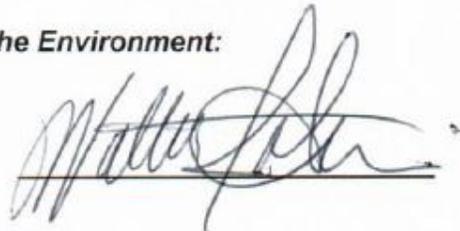
Under the Merchant Shipping Act 2002 (Sections 2(1) and 8(2)(a)) the Minister of Transport has the Authority to assign the responsibility to create a National Contingency Plan. The Minister for the Environment has Authority to ensure that Oil Pollution Emergency Plans for every statutory Harbour Authority and Oil Handling Facility, interface to the National Contingency Plan. The Minister of Transport has also extended authority to the Minister responsible for the Environment under an MOU to address functions relating to Marine Pollution in Section 8 of the Merchant Shipping Act 2002. The Ministers for Transport and for the Environment, and their designated technical personnel, are considered as being competent for setting policy for marine emergency contingency planning.

#### *Minister of Transport:*

Signature:   
 Name: The Hon. Wayne Furbert JP. MP

Date: 7/21/2023  
 Position: Minister of Transport

#### *Minister for the Environment:*

Signature:   
 Name: The Hon. Walter Roban, JP. MP

Date: JUL 19 2023  
 Position: Minister of Home Affairs

**DO NOT USE THIS NATIONAL PLAN AT THE START  
 OF A MAJOR OIL SPILL IF YOU ARE UNFAMILIAR WITH IT!  
 INSTEAD REFER TO THE INCIDENT RESPONSE STRATEGIES PROVIDED IN APPENDIX 14.**

**Distribution List**

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19	Mr Anguel Anguelov	Managing Director	RUBIS Energy (Bermuda) Ltd
20	Mr Mark Pacheco	Manager, Occupational Health Safety & Environment (OHSE)	BELCO
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24	Mr Andrew Dias	Chief Executive Officer	Bermuda Land Development Corporation

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## **DEFINITIONS**

**Bermuda Shipping & Maritime Authority (BSMA):** Under the Merchant Shipping Act 2002 the term 'Authority' refers to the BSMA as established under the Bermuda Shipping and Maritime Authority Act 2016.

**Call-Out Lists:** Lists of personnel and agencies who have agreed to respond to a marine pollution incident.

**Casualty:** A vessel or facility, including all substances it contains, which from accident, malfunction, or for some other reasons, presents a hazard to the public interest.

**Emergency Measures Organisation (EMO):** The national disaster management organisation consisting of key governmental leaders that come together in the event of an emergency to designate the most qualified person as Incident Commander (IC) and direct inter-agency participation.

**Harbour Authority:** Considered under the Merchant Shipping OPRC Regulations 2019 to be the Department of Marine & Ports Services and the Ports Authority.

**Incident Command System (ICS):** A standardised all hazard – all risk approach to managing crisis response operations and non-crisis events with principles that can be applied to all types of incidents. An oil spill response will be managed under this system and personnel managing the response should be trained to the ICS 300 Level.

**Incident Commander (IC):** The IC leads the response to an incident with full authority to deploy and control people and equipment. The IC manages resources and determines the completion of the response effort. The IC of a pollution incident will normally be the Director of the Department of Environment & Natural Resources (or his designate). The Director of Marine and Ports Services will be an alternate and/or deputy IC (or his designate). An IC is designated in writing by the Ministers for Transport and for the Environment for smaller spills (i.e. Tier 1 / 2) and by the EMO for larger spills (i.e. Tier 2 / 3).

**Lead Agency:** The agency designated by Government to organise and direct the response to a marine pollution incident. The lead agency undertakes the actions (e.g. contingency planning, training, and liaison with resource agencies, commercial organisations, and the public) necessary to deal with marine pollution incidents. The Department of Environment & Natural Resources of the Ministry of Home Affairs (previously Environment) has been designated the lead agency for this Plan.

**Local Spill:** The existence or threat of a spill of oil and/or toxic materials in Bermuda's waters of such size and character as to be capable of being prevented, contained and/or cleaned up to the satisfaction of the Incident Commander (IC) without implementation of a national or international response. A local spill requires a Tier 1 or Tier 2 response.

**Marine Emergency:** A situation triggered when a vessel or facility becomes a casualty affecting the Bermuda marine environment.

**National Oil Spill Contingency Plan (NOSCP):** The National Contingency Plan for preparing for and responding to oil spills in Bermuda, as defined under Merchant Shipping OPRC Regulations 2019. The NOSCP provides an operational plan (set out in this document) to guide the response to a marine pollution incident.

**Oil Handling Facility:** Considered under the Merchant Shipping OPRC Regulations 2019 to be the two facilities currently operated by SOL Petroleum (Bermuda) Ltd and RUBIS Energy (Bermuda) Ltd.

**Oil Pollution Emergency Plan (OPEP):** The local oil pollution plans developed by the Harbour Authority of the ports in Bermuda and the oil handling facilities. The OPEPs interface with the NOSCP.

**Resource Agency:** Any agency that owns, controls and/or has access to expertise, authority, responsibility, manpower, equipment or other resources required by the IC for the conduct of an operation in response to a marine pollution incident including, *inter alia*, local or foreign government departments or services, commercial and private organisations.

**Response:** The operations undertaken to prevent, contain, and/or clean up a spill of oil or other toxic substances in Bermuda's waters.

**Response Team:** A team of trained operatives, specialists and experts activated by the Incident Commander (IC) to undertake response operations. Members of the Response Team may include representatives from:

Department of Environment & Natural Resources; Marine & Ports Services; Ministry of Home Affairs (previously Environment); Parks Department; the Bermuda Institute of Ocean Sciences (BIOS); the Royal Bermuda Regiment; Bermuda Fire & Rescue Services, Ministry of Health (Environmental Health), representatives from Sol Petroleum (Bermuda), Rubis Energy (Bermuda) Ltd and Belco; the Coast Guard Unit; Bermuda Maritime Operations Centre (MAROPS); Tourism Authority; Ministry of Public Works; Ministry of Finance, AG's Chambers, the Bermuda Police Service; Communications and Information Services; and others. These Members are expected to fill key positions in the Incident Command System (ICS) to manage a pollution incident. Other members of the response Team will include representatives of the Responsible Party, their contractors, and any overseas assistance that may be brought in for Tier 3 MPI (e.g. USCG, OSRL, etc).

**Responsible Person (RP):** Is the person representing the entity (*i.e.* Company, Oil Handling Facility, Harbour Authority, Vessel, etc.) that is the source of a pollution incident. The RP is responsible for the cost of the clean-up and damages, and must provide a person with fiscal authority to share Incident Commander (IC) functions in a "Unified Command," along with additional personnel to manage and actively respond to a spill.

**Tier 1 Response Condition:** The existence of a spillage of oil or other toxic material in Bermuda's waters which is small in size and which can be appropriately contained by the oil spill response equipment nearest to the spill location.

**Tier 2 Response Condition:** The existence of a spillage of oil or other toxic material in Bermuda's waters which is of sufficient size and magnitude that the appropriate response requires the use of a combination of Tier 1 response equipment from Government of Bermuda and local private companies.

**Tier 3 Response Condition - Marine Pollution Incident (MPI):** The existence or threat of a spill of oil or other toxic material in the sea around Bermuda of such size and character as to pose a serious environmental threat and requiring a co-ordinated, multi-agency, national and/or international effort for prevention, containment or clean up.

**Toxic Substances:** Any substance which, when introduced into the marine or coastal environment, results in deleterious effects to marine organisms and human health, and/or hindrance to marine activities (including fishing), or a reduction in the quality of amenities.

**Unified Command (UC):** A Unified Command may exist when a private oil company, vessel owner, or facility is responsible for a pollution incident and provides people and resources to respond to the incident. The Responsible Person (RP) will designate an Incident Commander (IC) to work alongside the Bermuda IC in Unified Command to set agreed upon objectives. The RP will provide personnel to work within the Incident Command System. The Bermuda IC will have final authority.

For further definitions, including the ICS job descriptions, please refer to Appendix 4.

## 1 INTRODUCTION

The density of marine traffic, especially oil tankers, passing Bermuda and the increase in number of visits made by cargo and passenger vessels to the island present a growing risk of marine pollution. Even a limited oil spill in coastal waters could ruin beaches, impact tourism, seriously affect the fishing industry and all marine life in the intertidal zones and mangroves, foul pleasure craft and rocky shores and generally threaten the marine and coastal environment.

### 1.1 AUTHORITY

The **Designated National Authority** responsible for oil pollution preparedness is the Minister for Transport and the Minister for the Environment (*i.e.* Minister of Home Affairs). The Directors of the Department of Marine & Ports Services (M&PS) and the Department of Environment and Natural Resources (DENR) are authorized by the respective Ministers to prepare and implement this **National Oil Spill Contingency Plan** (NOSCP).

- Coordination and oversight of all spill preparedness.
- Planning and implementation of oil spill responses.
- Interagency collaboration and training.
- Developing, testing, updating, and maintaining the NOSCP.

This NOSCP provides a formal procedure for responding to spills of oil and other toxic substances in coastal waters, making maximum use of limited local resources and providing means for acquiring assistance from overseas when required.

This 'National Contingency Plan' satisfies the requirements of the:

- a) "International Convention on Oil Pollution Preparedness, Response and Co-Operation, 1990" (OPRC Convention). Specifically, Article 6 through the
- b) "*Merchant Shipping Act 2002, 2002:35.*" Specifically, Sections 2(1) and 8(2)(a).

Furthermore, the Ministry for the Environment is responsible for ensuring that the Oil Pollution Emergency Plans (OPEPs) that are required for every statutory Harbour Authority and Oil Handling Facility, interface to the National Contingency Plan in accordance with the:

- c) "*Merchant Shipping (Oil Pollution Preparedness, Response and Co-Operation Convention) Regulations 2019.*"

This plan may be invoked on behalf of the:

1. Director of the DENR (*i.e.* the Incident Commander (IC) or the designated deputy)
2. Director of Marine and Ports Services (Alternate/Deputy IC or the designated deputy).

Authority for the Minister for Transport to take steps to reduce oil pollution, or the risk of such pollution, through the implementation of this plan, in addition to seeking appropriate compensation for financial losses incurred in Bermuda, derives from the statutes listed in Appendix 1.

### 1.2 PURPOSE AND SCOPE

The overarching purpose of the NOSCP is to provide a scalable and flexible framework that governs all responses to the discharge, or threat of a discharge, of oil or other toxic substances in Bermuda's marine and coastal environment.

#### 1.2.1 OBJECTIVES

- a) To provide a system for the detection and reporting of spills of oil or other toxic substances or threats of such spills in marine and coastal waters.

- b) To co-ordinate the efforts of Government departments, service organisations and private agencies to prevent, contain and, where necessary, clean up Local Spills or Marine Pollution Incidents in a manner which will protect the public health and minimise the impact upon the environment.
- c) To provide a command structure appropriate to the magnitude of the spill.
- d) To establish a reporting procedure to provide control and decision-making information for the Incident Commander (IC) and the Emergency Measures Organisation (EMO) and to keep the public informed when a Marine Pollution Incident threatens or exists.
- e) To ensure that the incident is documented, and that complete and accurate records are maintained, including those of all expenditures to facilitate the recovery of costs.
- f) To ensure responders are adequately trained.

### 1.2.2 RESPONSE PRIORITIES

The purpose of this plan is to define priorities, responsibilities for the strategic and operational response to marine incidents, including:

- a) **Safety of All Human Life:** This is the top priority during every response action. This includes carrying out any necessary search and rescue efforts.
- b) **Stabilizing the Incident/Situation:** The next priority is precluding the event from worsening by, for example, securing the source of the spill and/or recovering the remaining oil from the container (e.g. vessel, pipe, tank) to prevent additional spillage. Stabilization of the incident reduces the need for follow-up responses and minimizes adverse impacts.
- c) **Protecting Environment & Property:** The next priority is to provide an effective and timely response to address and minimise any adverse impacts to the environmental and property.

### 1.2.3 SCOPE

The scope of the NOSCP is to address oil spills in inland waters, the Territorial Sea (Fig. 1 a,b) and also within the Exclusive Economic Zone (Fig. 1 c) if there is a risk of an off-shore spill reaching Bermuda's coast.

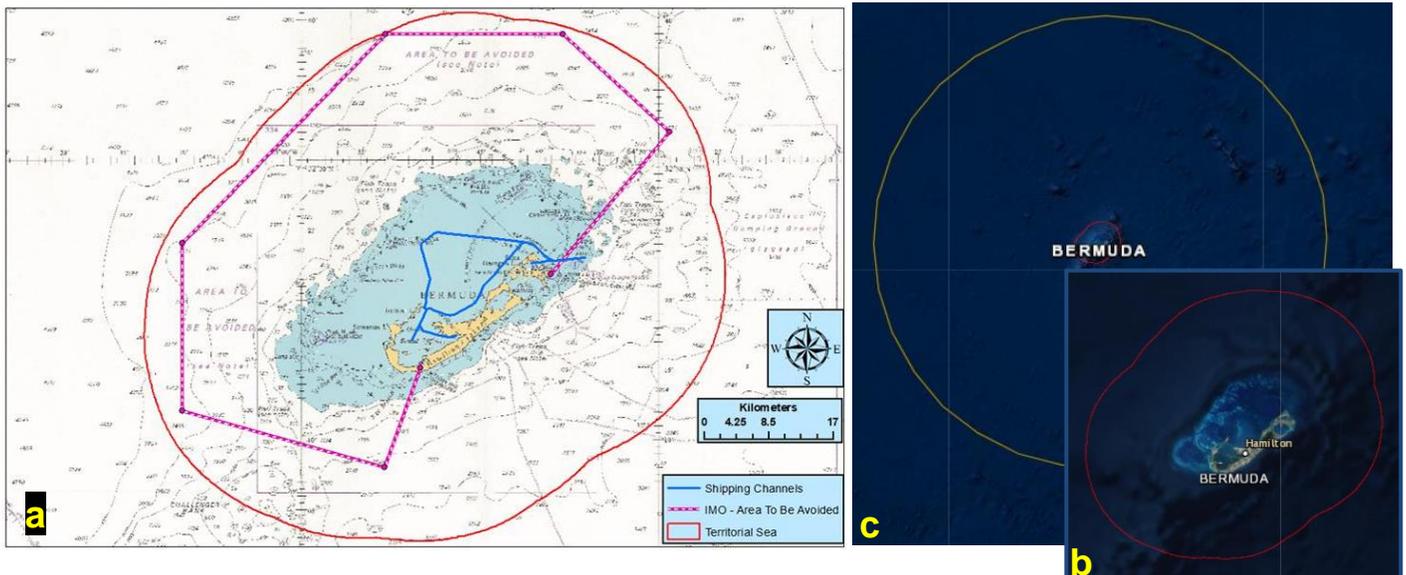


Figure 1. Bermuda's Territorial Sea (a, b) 12nm from the coast and Exclusive Economic Zone (EEZ) 200 nm from the coast (c) and IMO 'Area To Be Avoided' from transiting shipping (a).

No small island can expect (or afford) to develop and maintain a response capability to deal with major oil spills. The NOSCP assumes that international assistance will be requested and provided to deal with spills of oil or toxic

materials which pose an environmental threat and for which local (Tier 1 and Tier 2) resources are found, or expected, to be inadequate. For major Tier 3 oil spills, Appendices 6 and 7 provide agreements and an MOU for overseas assistance in the form of equipment and trained personnel. Note that an outline of the Tier rating for spills in Bermuda is provided in Section 4.4.

## 2 NOSCP ORGANIZATIONAL STRUCTURE

### 2.1 INTRODUCTION

All responses to a release of oil or hazardous substance of a Marine Pollution Incident (MPI) will be undertaken using an Incident Command System (ICS). The ICS structure provides a flexible and scalable framework to manage a variety of emergency response activities by providing a system to manage response resources and develop tactics using overarching mission objectives. Specifically, it is designed to provide the IC with the necessary personnel and authority to respond effectively to a particular MPI while keeping the Emergency Measures Organisation (EMO) advised. Members of the Response Team will fill the key positions in the ICS. The oil pollution response ICS of the NOSCP should therefore integrate into the National Disaster Management system for large and complex incidents, and for incidents associated to other disasters (See figure 2 for overall EMO responsibility).

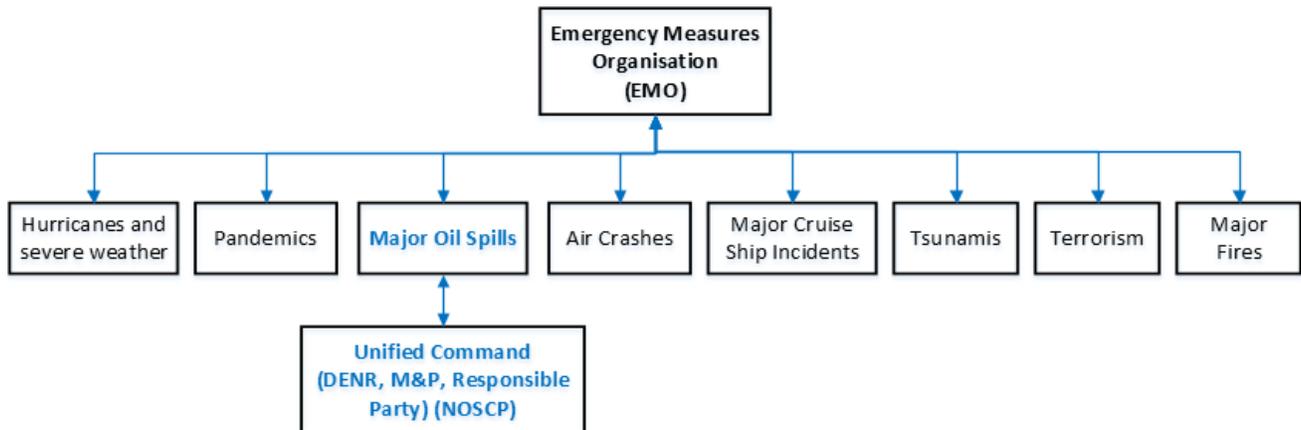


Figure 2. Overview of the relationship of the National Oil Spill Contingency Plan (NOSCP) and the Emergency Measures Organization (EMO).

### 2.2 THE INCIDENT COMMAND SYSTEM

The ICS is based in the following key concepts and principles:

- Use of a single, integrated organization to manage the response.
- Organization by function, *i.e.* Command, Operations, Planning, Logistics, Finance.
- Establishment of clear, hierarchical reporting relationships.
- Maintaining a modular and scalable organization and ensuring that it is appropriately sized to achieve the response objectives.

The ICS is based on the following management principles:

- Ensuring an objectives-driven response.
- Formulation of an Incident Action Plan.
- Use of common and consistent terminology.
- Ensuring leaders are not overburdened by maintaining a manageable “span of control.”
- Effective coordination of equipment, personnel resources, and communication

More information on the ICS system including a description of the many positions, roles and functions is provided in Appendix 4 and the ICS Planning Cycle and ICS Forms are provided in Appendix 5.

### 2.3 ICS ORGANISATION UNDER THE NOSCP

Figure 3 provides the expected organisational command structure of the NOSCP for Local Spills. All positions in the command structure need not be filled for small Tier 1 and Tier 2 responses; several ICS posts may be assumed by the IC, or some posts may not be required at all. Refer to the ICS Roles and Responsibilities and ICS glossary in Appendix 4 for the positions referred to in Figure 3. For details on the personnel that may form the Command and Response Teams, the Call-Out List is shown in Appendix 2 and details of relevant training is summarised in Appendix 3.

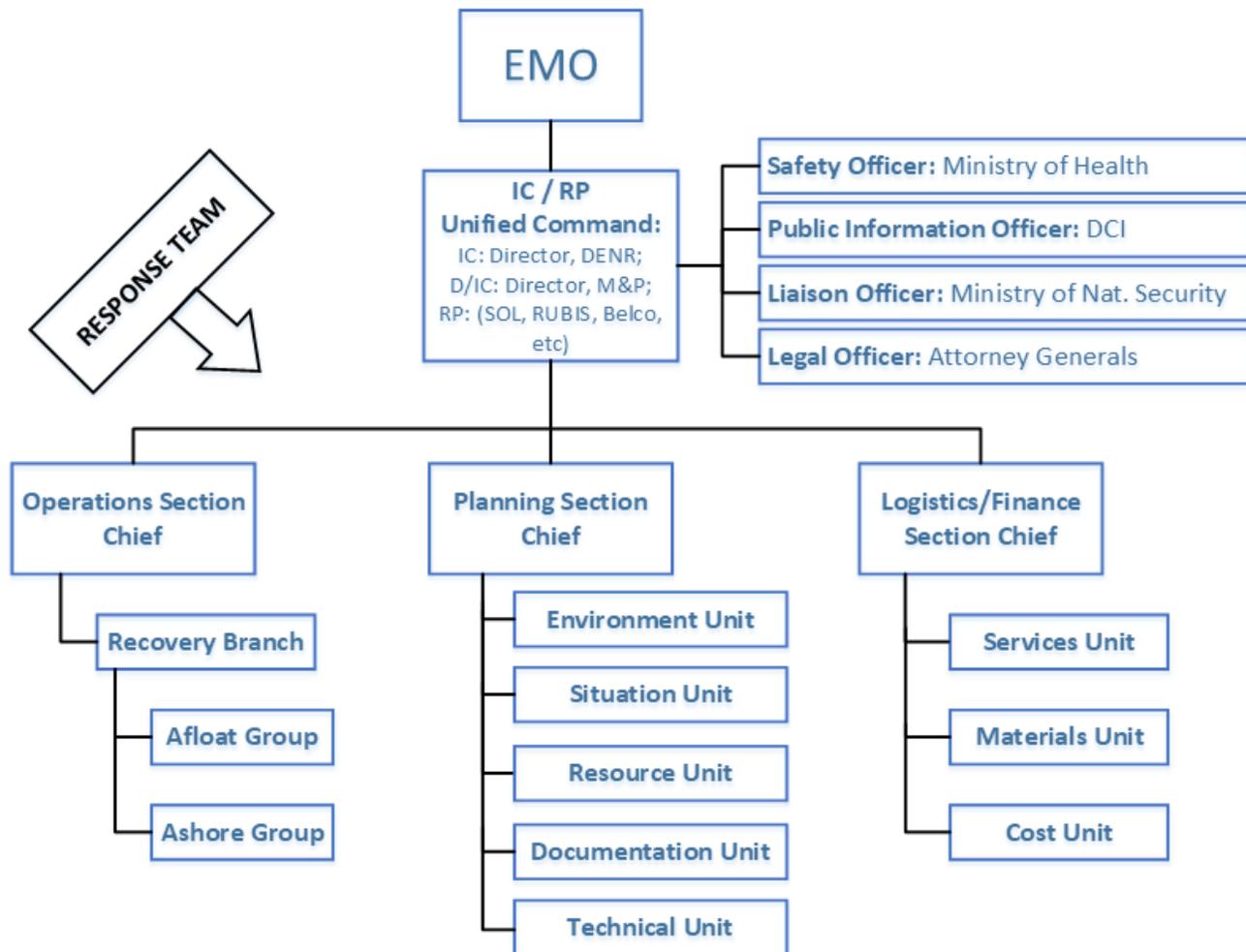


Figure 3. NOSCP Organisational Response Structure for Local Spills (Tier 1 and 2).

In the case of Tier 3 responses to an MPI, overseas experts may be asked to advise the command team on a range of issues and the entire command structure may be expanded in line with the principles of ICS. For large spills it may take some time for all necessary posts to become operational; in the interim period many of the ICS posts may be assumed by the IC or other Section Chiefs. Refer to the ICS Roles and Responsibilities and ICS glossary in Appendix 4 for the positions referred to in Figure 4 above.

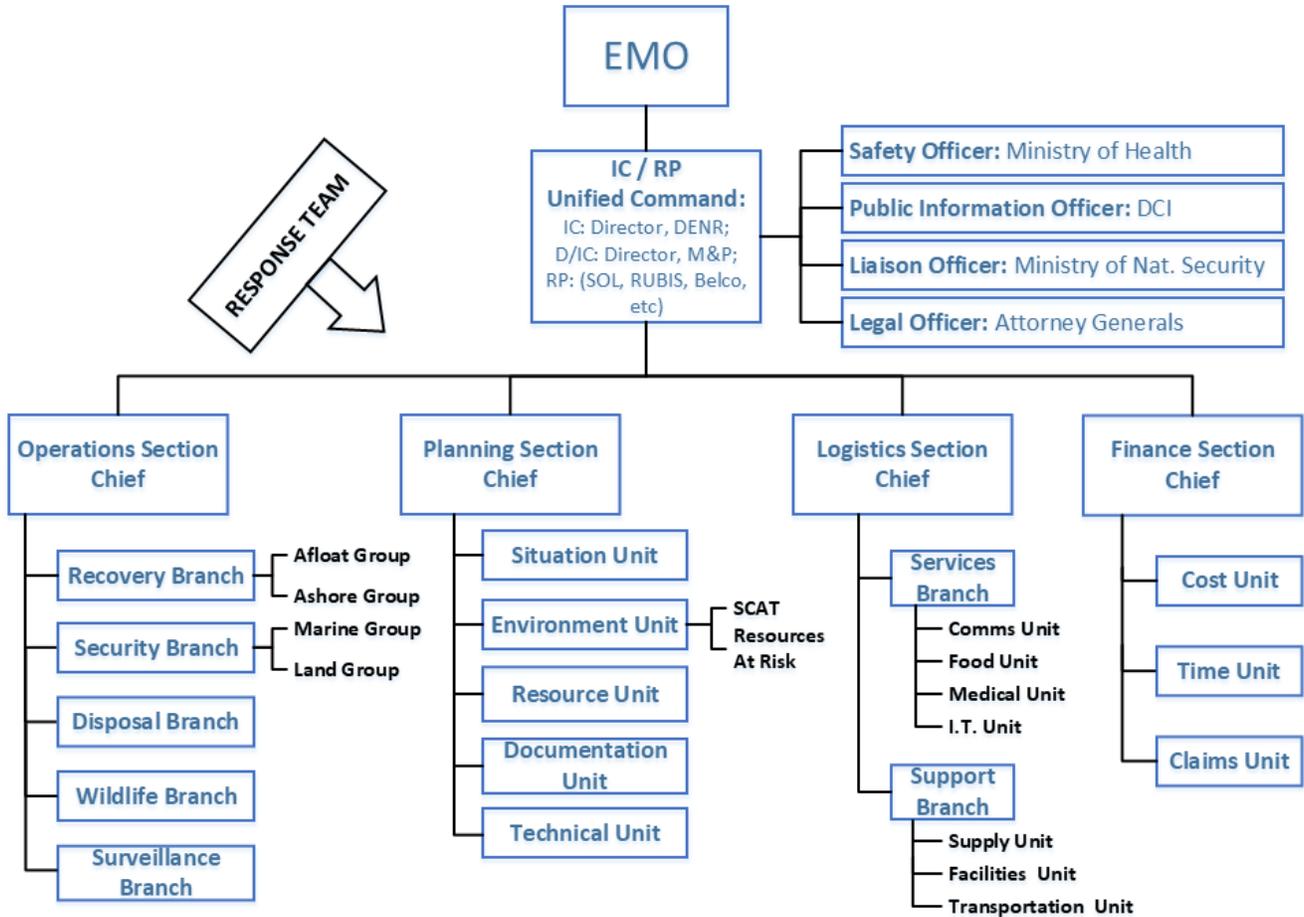


Figure 4. NOSCP Organisational Response Structure for Major Spills (Tier 3).

## 2.4 NOSCP REVIEW AND REVISION

In order to ensure that the information in this Contingency Plan is relevant and up to date, the **DENR** is overseeing the review and revision process. This process shall involve members from the following agencies:

- Department of Marine & Ports Services (M&PS)
- Bermuda Coast Guard Unit
- Ministry of National Security
- Bermuda Shipping & Maritime Services (BSMA)

This plan shall be reviewed annually to ensure changes to laws, regulations, or policies are captured and that points of contacts are still correct.

This plan shall be revised every five years collaboratively with the review committee of relevant agencies. This full review will incorporate lessons learned from real life responses and exercises.

## 2.5 LOCAL SPILLS FROM REGISTERED PORTS & OIL HANDLING FACILITIES

The Merchant Shipping (Oil Pollution Preparedness, Response and Co-Operation Convention) Regulations 2019 (OPRC, BR13/2019) under the Merchant Shipping Act 2002 sets requirements for local Oil Pollution Emergency Plans (OPEP) to be required for every statutory Harbour Authority and Oil Handling Facility.

Under the Regulations, it is the responsibility of the BSMA and Ministry responsible for the Environment to assess these plans for adequacy and means of integration into the National Contingency Plan (*i.e.* this NOSCP).

It is noted that the statutory 'Harbour Authority', as defined under the OPRC Regulations 2019, will comprise of the Department of Marine & Ports Services and The Ports Authority. The Four 'Licenced Ports' that will need to be addressed within the 'Harbour Authority' OPEP include: Corporation of Hamilton, Corporation of St George's, West End Development Corporation and Bermuda Land Development Corporation.

The local Oil Pollution Emergency Plans (OPEPs), and their relationship with this NOSCP and the EMO for large spills are described in Figure 5.

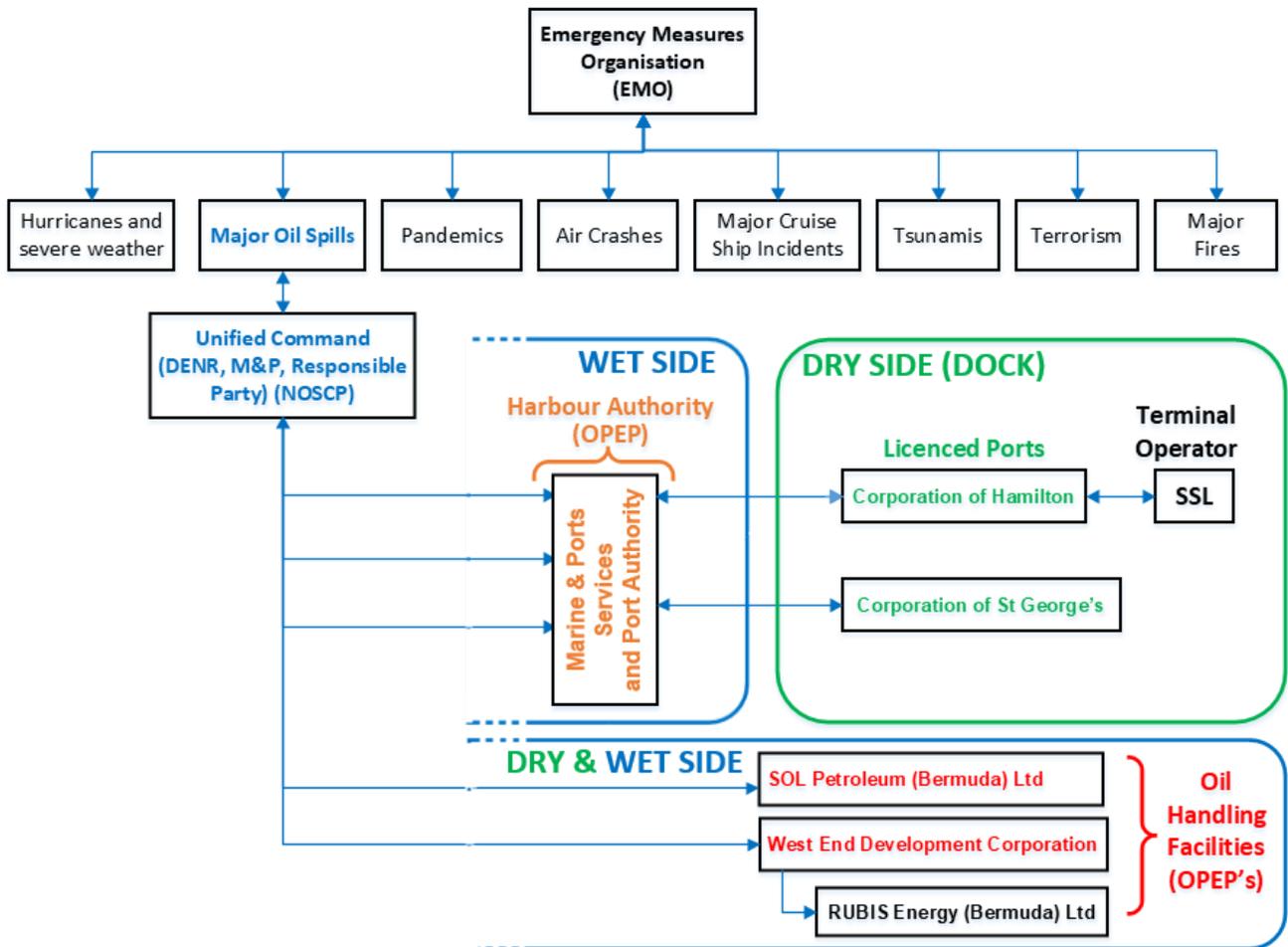


Figure 5. Overview of the relationship of the local Oil Pollution Emergency Plans (OPEP's) to the National Oil Spill Contingency Plan (NOSCP).

The 'Licenced Ports' are best placed to assess the oil pollution risks that exist at their ports from the hazardous materials that are shipped into and out of the port via shipping containers, etc. (*i.e.* dry-side). These risks should be assessed via a risk assessment process in order to create a risk register that are ranked in terms of their severity and likelihood. These dry-side risks in addition to the wet-side risks created by the ships alongside the harbour will inform the Oil Pollution Emergency Plans (OPEPs) including: (i) the necessary oil response equipment that needs to be stored nearby, (ii) training of personnel and (iii) oil spill exercises in order to address those risks. The collective risks from the dry-side and the wet-side of the licenced port are expected to feed into the local OPEP that is managed and coordinated by the statutory 'Harbour Authority.' The single OPEP of the Harbour

Authority will therefore include both general information in addition to information specific to each of the above four licenced ports and will be configured to interface with the NOSCP by the Authority.

The assessment of Government's oil spill preparedness and response under the formal RETOS™ assessment process in 2018 demonstrated that a minimum of 3,000 ft of harbour boom was required nationally to address major Tier 3 spills and that it should be split evenly across the three higher risk licenced ports (*i.e.* Corporation of Hamilton, WEDCO and Corporation of St George's). The respective ports and oil handling facilities are expected to have MOU's with the Minister for Transport and the Environment that describe the manner in which the national oil spill response equipment would be either stored at their facility and/or deployed from the dock (*i.e.* dry-side) to the wet-side where Government response vessels would be ready to receive in order to fulfil the requirement to address major pollution incidents under the OPEPs. Oil Handling Facilities are private entities and as such also hold sufficient oil spill response equipment to respond to oil spills and also have agreements in place for assistance to be provided from overseas organisations in the event that they are needed. This should also be articulated in the oil handling facility OPEPs. Therefore, integration of the local OPEPs under the NOSCP is paramount to ensure fast and efficient response soon after the start of a spill. Copies of the various MOU's are provided in Appendix 8.

The Ministers for transport and the Environment would expect that the local OPEPs follow the Incident Command System (ICS) and demonstrate that the port operator/owner also hold sufficient equipment and processes to manage and contain lower Tier 1 rated spills. For higher Tier 2 and/or 3 rated spills that have entered the wet side the licenced ports would need to rely upon external assistance from, for example, the National Oil Spill Contingency Plan (*i.e.* equipment and resources) in addition to overseas resources. Regular exercising of the local OPEPs of the licenced ports and oil handling facilities with the national plan should be prioritised.

## 3 RISK ASSESSMENT

### 3.1 INTRODUCTION

A comprehensive risk assessment is key to identifying operations and activities that could cause oil spills and areas of the marine/coastal environment that are most susceptible to damage from such spills. A risk assessment also enables identification of the measures that can be taken to reduce the impact from spills by, for example, pre-deploying equipment close to sensitive environments. Other outputs from the risk assessment include highlighting training requirements for key personnel and the development of pre-prepared localised spill response plans.

### 3.2 RISK ASSESSMENT PROCESS

In summary, the risk assessment first assessed the likelihood of different activities and operations causing a spill around Bermuda *i.e.* potential spill sources were identified and assessed according to how likely they were to occur. Then, hypothetical scenarios, assuming that the worst-case type and quantity of oil were spilled from the sources, were generated. These scenarios were considered against how vulnerable the surrounding marine/coastal environment is to damage. The combination of the likelihood of a spill and its consequences were then used to generate a risk score for each scenario; the higher the risk score, the greater the potential risk of environmental damage from a given scenario. The risk scores for each scenario were ranked and are presented in the Risk Register of Table 1, which shows the highest risk scores at the top and the lowest risk score at the bottom of the table.

The risk assessment undertaken with key stakeholders is provided in detail in Appendix 11.

### 3.3 RISK REGISTER OF RANKED SPILL SCENARIOS

Table 1 shows that the scenarios with the three highest risk scores are:

1. **Risk score 960:** the SOL Petroleum pipeline, which is used to transfer heavy fuel oil (HFO) and ultra-low sulphur diesel (ULSD) from Ferry Reach, St George's to the BELCO facility in Pembroke. Various mitigation measures are in place by SOL Petroleum to limit the size of the spill and periodic integrity tests of the pipeline occur on a regular basis.
2. **Risk score 600:** a tanker vessel colliding with the outer reef when passing Bermuda. Spills of very persistent oils, such as crude oil, could cause significant damage to Bermuda's marine and coastal environments, especially if a tanker breaks up or sinks at the outer reef.
3. **Risk score 525:** a ship having a failure when making a turn in one of Bermuda's many narrow shipping channels.

See Table 1 for other lower risk-scored scenarios.

For the oil spill scenarios with the highest ranked risk scores, response strategies have been provided in Appendix 14 that have been aligned to the Incident Command System (ICS). The ICS Response Strategies include the '*Priorities*' associated with any response, '*Problems*' to be overcome and various '*Objectives*' to address those '*Problems*' identified. The '*Strategies*' and '*Tactics*' are generated when considering how each '*Objective*' will be addressed. Section 7 also includes details of the generic response strategies that are available to Bermuda through either local resources or specialist resources imported under a Tier 3 response.

Table 1. Risk Register of Ranked Oil Spill Scenarios Considered for Bermuda.

#	Source	Event	Oil Type	Spilt Volume	Impact areas (dependent on wind/current)	Likelihood	Consequence	Risk Score	Response Strategies	Tiered Resources
6	SOL Petroleum Pipeline - Marine Crossings	Failure to SOL Petroleum pipeline during pumping (Coney island x2, Baileys Bay, Flatts, Ferry Reach) during pumping of HFO / LFO.	HFO (ITOPF Group 3, API 14.1) LFO-Diesel (ITOPF Group 2, API 35) AVGAS-Jet Fuel (ITOPF Group 2, API 45)	Worst case: 150 bbls † Model Scenario: 150 bbls in 30 minutes HFO from pipeline at Coney Island.	Consider: Coney Island, Castle Harbour, Ferry Reach, St George's Harbour, Bailey Bay, Flatt's Inlet, Harrington Sound. Environmental Sensitivity Indices (ESI) of coastline.	4	240	960	Containment and recovery of oil; Shoreline cleanup operations; Dispersant considerations for off-shore winds; Aerial surveillance and monitoring.	Tier 1: All available resources. Tier 2: All available resources. Tier 3: OSRL, USCG, REMPEITC
4	Tanker - Outer Reef	Aground on outer reef / Sinking / breaking up / offshore (South Shore, North Shore options) North Rock for model	Crude Oil , Various (ITOPF Group 1 to 4) Other Bulk Cargo: TBD	Tanker: Crude Oil: 196,000 T: Model Scenario: 20% of 196,000 bbls = 40,000 bbls Generic Heavy Crude (API 14.1) at North Rock.	Consider: Rim Reefs at LWM / Low Gyre, South Shore Beaches. ESI of coastline.	2	300	600	Containment and recovery of oil; Shoreline cleanup operations; Dispersant considerations for off-shore winds; Aerial surveillance and monitoring.	Tier 1: All available resources. Tier 2: All available resources. Tier 3: OSRL, USCG, REMPEITC
2	Cruise Ship / Cargo / Car Carrier / Oil Tanker - Narrow channel/turn	Aground on reef / blocking 'Two Rock Passage / Dundonald channel' Hamilton	Marine Gas Oil (MGO) (ITOPF Group 2, API 35-41) HFO	Cruise Ship (bunker fuel), Cargo ship, Car Carrier. Model Scenario: 100 Tons HFO in Dundonald Channel.	Consider: Mills Creek, Fairylands, Paradise Lakes, Harbour, Great Sound, Little Sound. ESI of coastline.	3	175	525	Containment and recovery of oil; shoreline cleanup operations, Aerial surveillance and monitoring.	Tier 1: All available resources. Tier 2: All available resources. Tier 3: OSRL, USCG, REMPEITC
7	Tanker - at Dock	Failure to cargo hose of tanker at oil docks while delivering HFO/LFO/ AVGAS to the shoreside holding tanks at Ferry Reach, St George's. Similar hose failure at Dockyard, Freeport Drive while pumping to RUBIS holding tank.	HFO (ITOPF Group 3, API 14.1) ULSD-Diesel (ITOPF Group 2, API 35) AVGAS-Jet Fuel (ITOPF Group 2, API 45) Gasoline (ITOPF Group 1, API 58)	Maximum oil/fuel volume pumped from the tanker per visit to Bermuda. SOL Petroleum St George's: HFO: 150-180 K bbls max, White Oils: 100 k bbls. RUBIS St George's: Gas 60,000 bbls; ULSD: 11,000 bbls, 28,000 bbls. RUBIS Dockyard: RUBIS: 58,000 bbls ULSD. Tanker hose off Freeport Drive. ‡ Model Scenario: 10 Tons HFO at Oil Docks, St George's	Consider: Tobacco Bay, Fort St Catherine/St Regis, Coney Island and access to Ferry Reach, Castle harbour, etc. Bailey's Bay etc. ESI of coastline.	3	135	405	Containment and recovery of oil; Shoreline cleanup operations; Dispersant considerations for off-shore winds; Aerial surveillance and monitoring.	Tier 1: All available resources. Tier 2: All available resources. Tier 3: REMPEITC for modelling.
1	Cruise Ship / Cargo / Car Carrier / Oil Tanker - The Narrows	Aground on reef / blocking 'The Narrows' St George's. Noted that 'The Narrows' requires a change of course within.	MGO (ITOPF Group 2, API 35-41) HFO (API 14.1) ULSD (API 38) Jet Fuel (API 44.6) Gasoline	Cruise Ship (bunker fuel), Cargo ship, Car Carrier. Tanker: HFO: 150-180 K bbls max, White Oils: 100 k bbls. Model Scenario: Tanker 180,000 bbls HFO in The Narrows, St George's.	Consider: Fort St Catherine/St Regis Hotel. Tobacco Bay. St George's harbour, St Davids, mangroves, etc. Environmental Sensitivity Indices (ESI) of coastline.	3	116	348	Containment and recovery of oil; Shoreline cleanup operations; Dispersant considerations for off-shore winds; Aerial surveillance and monitoring.	Tier 1: All available resources. Tier 2: All available resources. Tier 3: OSRL, USCG, REMPEITC.
8	Ship at berth or anchored	Accidental discharge from on-board services (Murray's Anchorage, Five Fathom Hole, Great Sound, etc).	Marine Gas Oil (MGO) (ITOPF Group 2, API 35-41)	Bilges emptying. Distressed ship/repairs. M&P investigation before entry. Volume: low - TBC. Ref: MV Oleander (500ft) Model Scenario: 20 bbls MGO in The Great Sound, south of Paradise lakes. (Marine Diesel Oil Esso API 35)	Consider: Tobacco Bay, Fort St Catherine/St Regis, St George's Harbour, St Davids, Coney Island and access to Ferry Reach, Castle harbour, Great Sound, Hamilton Harbour, etc. ESI of coastline.	5	52	260	Containment and recovery of oil; Shoreline cleanup operations; Dispersant considerations for off-shore winds; Aerial surveillance and monitoring.	Tier 1: All available resources. Tier 2: All available resources. Tier 3: REMPEITC for modelling.
3	Cruise Ship / Cargo / Car Carrier - Docking	Arriving/Departing Harbour while making sharp turns. Applicable to Hamilton Harbour, St George's Harbour, DY. Grounding / Hitting Dock	Marine Gas Oil (MGO) (ITOPF Group 2, API 35-41) Heavy Fuel Oil (HFO)	Cruise Ship (bunker fuel), Cargo ship, Car Carrier. Dockyard: Rubis: ULSD: ~70 k bbls + other cargo for elsewhere. Model Scenario: 10 Tons MGO in South Basin WEDCO.	Consider: Hamilton Harbour, Foot fo the Lane, Paradise Lakes, Mills Creek, Great Sound, Dockyard, St George's Harbour, Ferry Reach, Castle harbour, Fort St Catherine, etc.	2	100	200	Containment and recovery of oil; Shoreline cleanup operations; Aerial surveillance and monitoring.	Tier 1: All available resources. Tier 2: All available resources. Tier 3: REMPEITC for modelling.
9	Large Yacht / Superyacht - Fire	Grounding, holing, sinking, more maintenance in coastal waters resulting in pollution. Also catastrophic Fire of Superyacht at Hamilton Marina	ULSD - Diesel & Bilge water (ITOPF Group 2, API 35)	The Superyacht 'Eclipse' for example has a capacity of 400 m3 ULSD. However, worst case spilt volume considered to be < 1m3. Model Scenario: 400 m3 ULSD from Superyacht Fire at Hamilton Princess Marina.	Consider: Hamilton Harbour, Foot of the Lane, Paradise Lakes, Mills Creek.	4	33	132	Containment and recovery of oil; Shoreline cleanup operations; Aerial surveillance and monitoring.	Tier 1: All available resources. Tier 2: All available resources. Tier 3: REMPEITC for modelling.

† HFO: 2 weekly, 2 grades (summer/winter), 5 days to pump (Mon-Fri), water crossing have pairs of valve isolation (closed for Hurr). Rate: startup 80-100 bbls/hr up to 300 bbls/hr mid-week. Pressure and Temp sensors at start/end of pipeline. 24hr attendance operator. Alarm if Differential Pressure from start/end of pipeline suggests a break.

‡ All Above ground fuel tanks at SOL/RUBIS St George's are surrounded with an earthen berm which would be expected to cause spilled oil/fuel to percolate through the ground to the water table (SOL ~54,000 bbls). All underground fuel tanks would be expected to also cause fuel to spill to the groundwater table (SOL StG: 2 x 75,000 bbls USTs). Damage to tanks is not expected to result in direct flow of spilled oil to the sea over the surface of the ground.

## 4 SPILL NOTIFICATION, CONSIDERATION AND REPORTING

### 4.1 INTRODUCTION

Prompt and accurate notifications of an oil spill incident are critical in order to initiate an assessment and deploy containment and mitigation measures. Prompt notification can minimize long term impacts and ensure responders can respond before weathering affects the oil and makes clean-up more difficult and expensive. Notification of a pollution incident are normally made by Government agencies, shipping or aircraft, by the public or by those directly responsible for the incident *i.e.* the responsible party (RP). It is imperative that the information received is reported without delay to enable immediate and appropriate action to be taken. The typical response procedure that should be taken for a spill is expressed in Figure 6.



Figure 6. General Pattern of a response to an oil/chemical spill.

### 4.2 INITIAL REPORTING OF A SPILL

Spills of oil or toxic substances in coastal waters are most likely to occur from vessels, but spills from shore-based facilities such as oil storage facilities, marine retail fuel stations and marinas are also a possibility. **The owner or master of a vessel or occupier of a shore facility discharging oil into inshore waters is required by Bermuda law to report such spills immediately.**

An overview of the Notification Procedure in accordance with the Government website for spills on the water (<https://www.gov.bm/spills-on-the-sea>) is provided in Figure 7.

Containment and clean-up will primarily be the responsibility of the polluter (*i.e.* RP) for locally sourced spills (*i.e.* SOL, RUBIS, BELCO, etc) with assistance from Government. For large spills originating from sources outside of

Bermuda then Government would start the containment and clean-up procedure while seeking assistance from overseas (i.e. USCG, OSRL and/or REMPEITC).

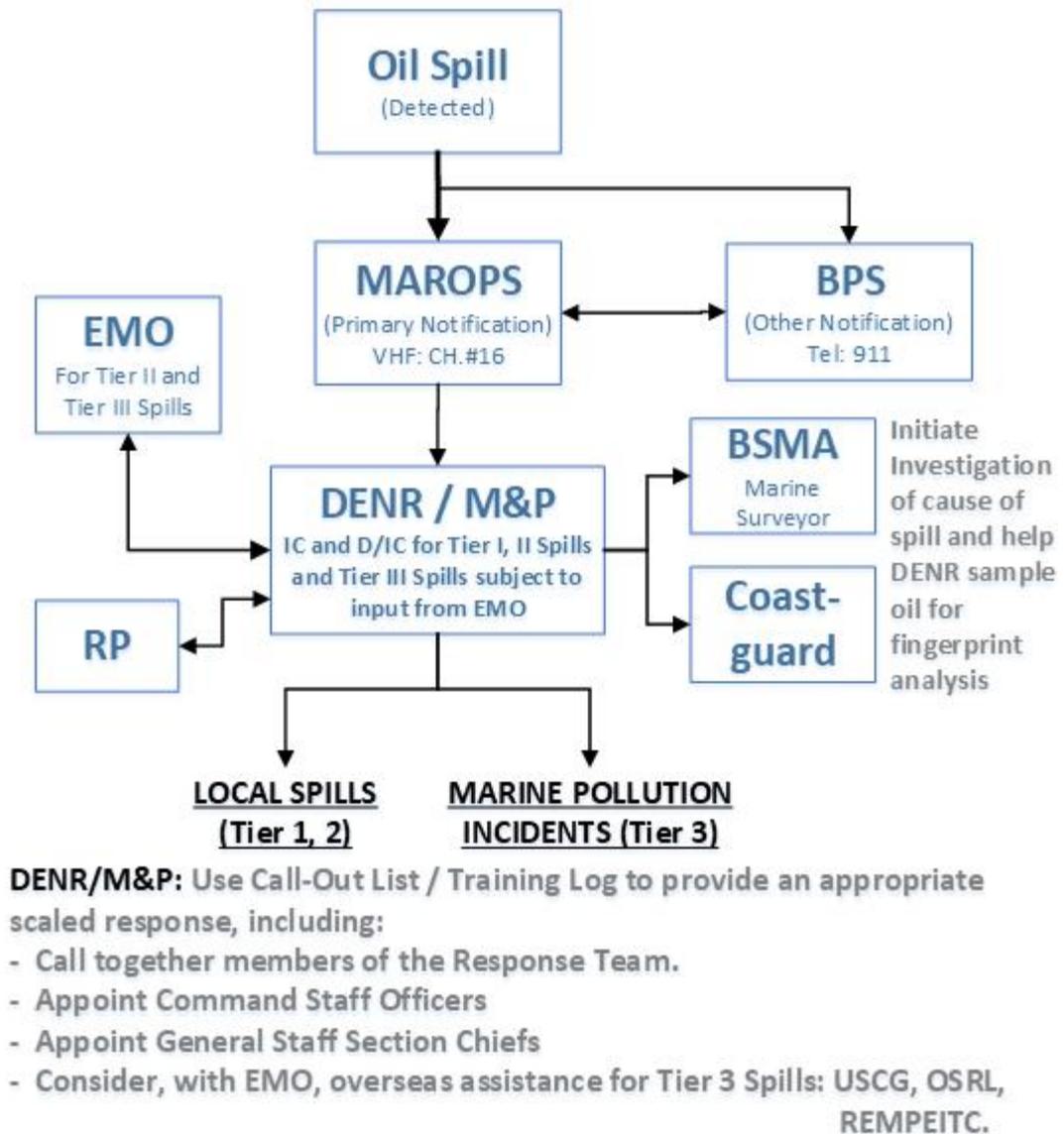


Figure 7. Spill on the Water – Notification, Assessment & Alerting Procedure

The Duty Officer of the Bermuda Marine Operations Centre (MAROPS) at Fort George, St. George's should be the primary body to notify in the event of a spill on the water and they can be contacted at any time on:

- **Tel:** (441) 297-1010 (Fax: (441) 297-1530)
- **Email:** [dutyofficer@marops.bm](mailto:dutyofficer@marops.bm)
- **VHF:** Channel #16

The Government website also includes the type of information to report, which will be prompted by the MAROPS Duty Officer. Some members of the public may also call the Bermuda Police Service at Prospect on Tel: (441) 295-0011 or 911 for immediate transmission to the Bermuda Marine Operations Centre (MAROPS).

The Bermuda Maritime Operations Centre and Police Headquarters will probably be the first to be aware of spills of oil, but other agencies or individuals including the Coast Guard Unit, captains of planes or vessels and ship's agents may also provide early warning of oil spills.

Note that upon notification MAROPS will immediately contact: DENR - Pollution Control Section; Harbour Master; Director of M&PS; COMOPS and Coast Guard.

### 4.3 INITIAL ASSESSMENT OF THE SPILL

The Coast Guard Unit shall immediately begin an investigation of the responsible person/company for the source of the spill or threatened spill. The Coast Guard Unit shall immediately advise Bermuda Radio, the Director of the Department of Environment & Natural Resources (IC) and the Director of Marine & Ports Services of a spill or threatened spill. Based upon the initial on scene assessment of the spill as relayed by telephone or radio, the IC shall designate the event a Local Spill or a Marine Pollution Incident. In the case of the latter, the appropriate state of alert shall also be declared, and the EMO shall be informed by the IC.

There are two conditions associated with a Tier 3 Marine Pollution Incident (MPI):

- **Condition (II): THREAT of a MPI: Condition of Alert.**
- **Condition (I): ACTUAL MPI has occurred and is affecting the Island.**

The Coast Guard Unit and ship surveyors from BSMA shall provide regular reports for the IC on the estimated quantity of oil or toxic material released and the estimated area of the slick. Weather and sea state reports are to be provided directly by the Bermuda Weather Service or by the Bermuda Maritime Operations Centre.

There are two spill assessment forms Spill Assessment Form (ICS Forms 2a and 2b) shall be completed as soon as possible by the Coast Guard Unit after their initial investigation (see Appendix 5). This report shall be updated by the Coast Guard Unit using radio and/or telephone communications to Command Post at regular intervals.

For most Tier I spills only a limited number of notifications will need to be made initially, and delayed reports can be provided to other agencies after the response. However, for larger spills which may require multiple immediate notifications, the IC should initiate a conference call with all applicable response and support agencies without delay to provide the following:

- **Initial Incident Briefing** (Initial Incident Report Form (ICS-201) (see Appendix 5) with supplemental spill information from the Initial Oil Spill Report Form. Form 201 will also include:
  - o **Incident Priorities and Objectives.**
  - o **Initial Response Actions and Planned Actions.**
  - o **Current ICS Organisation.**
  - o **Resources Summary, including those On-Scene and Resources available.**
  - o **Initial Tasking for Responders and Supporting Agencies.**
  - o **Decision to Set-up a Command Post and Staging Areas.**

Call-Out Lists for all individuals and agencies concerned with the NOSCP including local and overseas resource agencies and advisors are provided in Appendix 2. The qualifications and experience of personnel provided in the Call-Out list are provided in the Training Log (Appendix 3).

### 4.4 ASSESSMENT OF ACTUAL / POTENTIAL TIER LEVEL

Tiered preparedness and response to oil spills is recognized as the basis on which to establish a robust preparedness and response framework. This approach provides a scalable framework for deployment of resources and development of response strategies. The aim is to provide suitable response resources at the right place and the right time, to ensure that the response:

- Is commensurate to the risk assessment.
- Encourages cooperation, mutual assistance, and integration of shared resources.
- Is fully scalable.

- Is tested, maintained, and verified as part of a defined preparedness framework.
- Employs the most appropriated options, reflecting a Net Environment Benefit Analysis (NEBA – See Section 7.3).

Immediately upon notification of a spill, the IC is responsible for conducting a spill assessment. This information is used to determine what Tier of response is required so the measures are commensurate with the risk assessed. Figure 8 shows the simplified version of the three tiers.

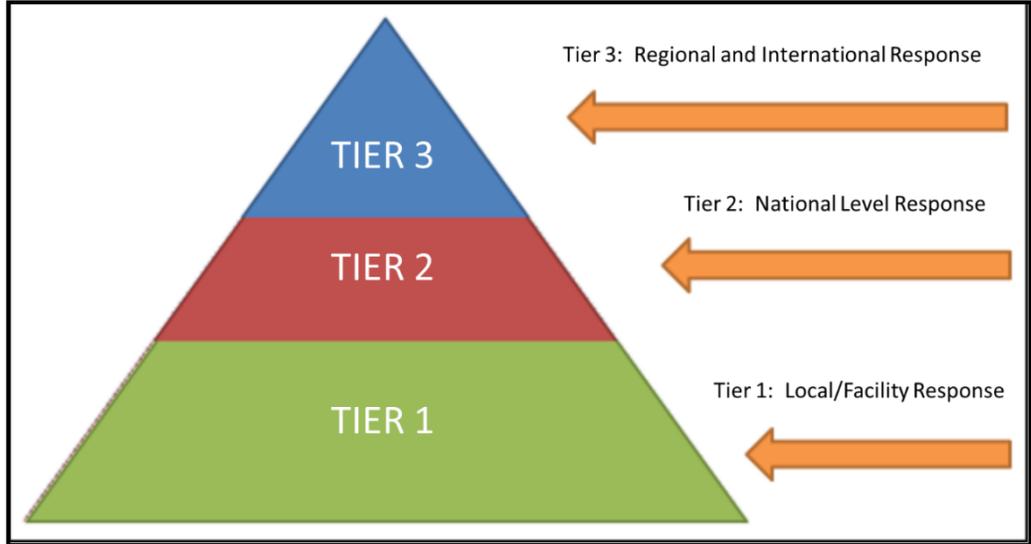


Figure 8. The Tiered Response Approach

The tiered approach considers the Response Capabilities in three categories:

1. Response personnel.
2. Equipment.
3. Additional support.

Each Response Capability can be considered independently and needs to take in to account at least the four groups of factors indicated in table 2.

Table 2. Groups of Factors and Examples.

Operational	Setting / Location	Response Capability and Logistics	Legislative / Regulatory
<ul style="list-style-type: none"> <li>• Spill Volume (<b>See Section 4</b>)</li> <li>• Oil type</li> <li>• Impact of the spill on business &amp; marine operations</li> <li>• Feasibility to mount a safe, credible response</li> </ul>	<ul style="list-style-type: none"> <li>• Proximity of the spill to operations</li> <li>• Meteorological and ocean conditions affecting oil behaviour and operations</li> <li>• Proximity to oil-sensitive ecological areas</li> <li>• Proximity to socio-economic and cultural resources</li> </ul>	<ul style="list-style-type: none"> <li>• Tier 1 resources influenced by budget, provision of personnel and logistics</li> <li>• Availability and capability of regional Tier 2 support</li> <li>• Access to Tier 3 support</li> </ul>	<ul style="list-style-type: none"> <li>• Regulatory requirements for performance</li> <li>• Regulations for specific response techniques</li> <li>• Organization of national or parish authorities</li> </ul>

It is important to note that the Tier of a spill can change throughout the incident. Therefore, it is important to periodically reassess the spill scenario to determine if the situation requires additional resources and strategies from the next higher Tier.

Table 3 provides a potential checklist of characteristics associated with the spill that can be used to determine the considered response Tier of a spill is considered to be. It is noted, however, that the volume of the oil should not be the sole consideration in this assessment process.

Usually, not all elements are at the same response tier. Some elements might be sourced locally while others require assistance at a higher tier level.

Table 3. Tiered Response Criteria / Checklist

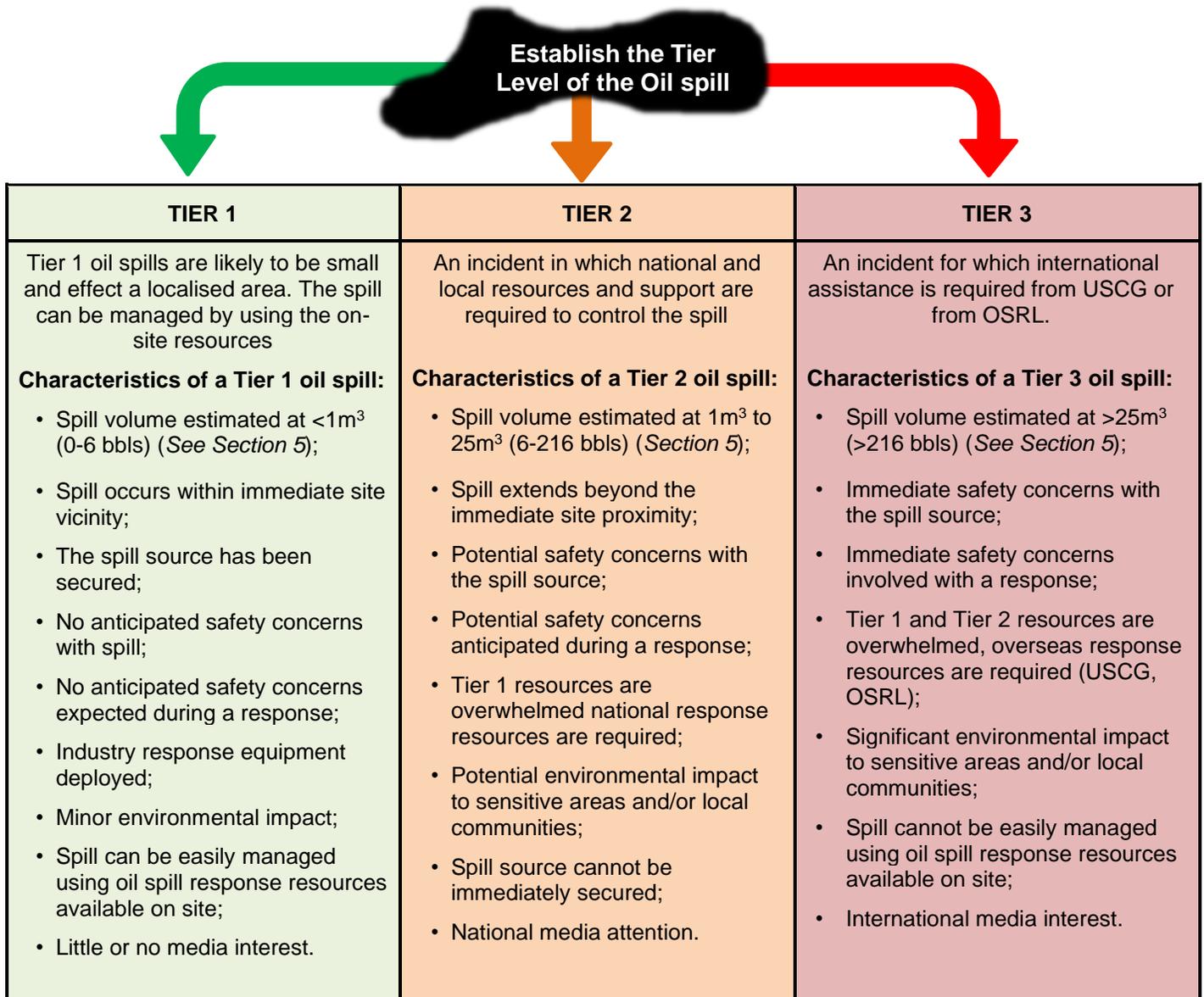


Table 4 shows 13 areas of Response Capability most commonly required and the Tier levels available in Bermuda.

Table 4. Thirteen most common response capabilities and the level available in Bermuda. Source IPIECA guideline.

Response capability	Description	Availability
<b>Surveillance modelling and visualization</b>	Collection of important data from a variety of sources, and their conversion into useful, well-presented information to enable informed decision making during a response. <i>Skymatics Ltd &amp; other drone operators.</i>	Tier 2 Tier 3
<b>Offshore surface dispersants</b>	Provided by vessel to combat oil spills rapidly. <i>M&amp;PS, DENR &amp; SOL Petroleum - boat-based dispersant wands.</i>	Tier 2
<b>At-sea containment and recovery</b>	Use of floating booms and skimmers to corral and collect surface oil. <i>Use of M&amp;PS MV Dragon for skimmers.</i>	Tier 1 Tier 2
<b>Protection of Sensitive Resources</b>	Protection of specific sensitive resources from contact with oil. <i>See Environmental Sensitivity Indices (ESI) and Coordinate with DENR Marine Conservation Section.</i>	Tier 1 Tier 2
<b>Shoreline and inland assessment</b>	Systematic collection of information about the location, nature, and the degree of oiling in order to formulate the most appropriate methods for shoreline (or onshore) clean-up. <i>Use of SCAT Trained Personnel.</i>	Tier 1 Tier 2 Tier 3
<b>Shoreline clean-up</b>	Generally non-specialist equipment and labour to remove oil from contaminated shorelines. <i>Training of MPW, Dept of Parks and NGO's.</i>	Tier 1 Tier 2 Tier 3
<b>Inland response</b>	Equipment and expertise required to minimize the impact of oil spills in various land-based scenarios.	Tier 1 Tier 2
<b>Oiled wildlife response</b>	Equipment and expertise required to locate, capture and rehabilitate oiled wildlife. <i>Coordinate with BAMZ. Wildlife Plan &amp; Staging Area TBD.</i>	Tier 2 Tier 3
<b>Waste management</b>	Facilities and expertise to manage the large volumes of waste generated during oil spill response. <i>TBWTE, Sallyport, etc.</i>	Tier 2 Tier 3
<b>Stakeholder engagement and communication</b>	Outreach and communication with a wide range of stakeholders including local communities, responders and other interested and involved parties at local, national and international levels. <i>Greenrock, KBB, BEST, NT, etc.</i>	Tier 2 Tier 3
<b>Economic assessment and compensation</b>	Collection and analysis of relevant data for the purposes of determining the economic impact caused by the oil spill. <i>Requires input from OSRL.</i>	Tier 1 Tier 2
<b>Environmental impact assessment (including sampling)</b>	Collection and analysis of relevant data for the purposes of determining the environmental impact caused by the oil spill. <i>DENR, BIOS, Fingerprinting contracts, etc.</i>	Tier 2 Tier 3
<b>Source control</b>	Salvage or intervention techniques intended to limit the release of oil from the source. <i>M&amp;PS, Crisson Ltd, other marine contractors.</i>	Tier 2

Note that any response capabilities omitted would require input from international organisations.

#### 4.5 SUPPLEMENTAL NOTIFICATIONS

For a Major Pollution Incident, where the Emergency Measures Organization (EMO) has been activated, an Incident Command Post (ICP) will provide command and control for the incident. *The IC will make a request to the EMO to stand up the ICP. It is normal for a 'Working Strategy' to be established by the IC BEFORE the ICP is setup or attended. An initial 'Working Strategy' is required to address certain priority objectives and others that may have a long-lead time to setup. While the IC is travelling to the ICP the IC may request that Bermuda Maritime Operations, or another designate, continue to contact the appropriate personnel to help ensure that the Working Strategy is implemented. The 'Working Strategy' will be amended and added to by the IC once the Incident Command Meeting has concluded.*

The Bermuda Maritime Operations, St. George's; or the Police Com-Ops Centre, Prospect; or the Police Base, Hamilton; or other place designated by the IC, shall serve as command post and operational base for the IC and command team in the event of an MPI. The Officer in Charge of the facility selected shall assume responsibility for the efficient working of the command post, where appropriate telephone, internet, and radio communications exist. The IC shall see that sufficient administrative staff (in addition to any police personnel) are on duty at the command post to implement the NOSCP.

The operational base for Tier 1 and 2 spills for oil spills that have not been designated a Marine Pollution Incident shall be determined by the IC and may include the Head Office, Department of Marine & Ports Services, East Broadway; the Head Office, Department of Environment & Natural Resources, Botanical Gardens; Ministry for the Environment Headquarters, Government Administration Building; or the Police Base Hamilton, Bermudian Waterfront, for example.

#### 4.6 REPORTING

For Tier 1 and 2 spills reporting is typically completed by MAROPS using their standard form provided in Appendix 5. For Tier 3 spills the IC would arrange for completion of the Caribbean Island Pollution Report (CARIB-POLREP) oil spill reporting form. The CARIB-POLREP template and instructions are located in the Caribbean Island OPRC Plan and on the REMPEITC webpage below and in Appendix 5:

(<http://www.racrempeitc.org/sites/default/files/Attachments/CARIB%20POLREP%20Form.pdf>).

In order to standardize communication during an oil spill incident and to assist in documentation, the IC or Planning Section Chief shall produce an initial CARIB-POLREP and daily CARIB-POLREPS for long term spills to document changes in the situation, response actions, and resource requirements. A final CARIB-POLREP is required upon completion of response operations to summarize all response actions.

The CARIB-POLREP to REMPEITC and other international notification forms for overseas assistance from OSRL (Appendix 7) and USCG (Appendix 6), are to be sent to the EMO for approval of further assistance. These reports/notification forms, together with completed form ICS201 and other ICS forms serve as an appropriate summary of the spill and will be generated under the direction of the IC.

## **5 OIL SPILL ASSESSMENT**

### **5.1 INTRODUCTION**

A detailed and accurate initial assessment is paramount to informing proper response strategy development. Initial reports can be incomplete, inaccurate, or erroneous. It is important to verify these first reports by conducting an initial oil spill assessment to determine the exact location of the spill, projected movements, spill size and characteristics. Once these reports are verified, it is important to establish what Tier of response will be required.

The Operations Section Chief / IC shall confirm the presence of an oil spill with an initial spill assessment using the Initial Spill Report Form, Field Observer and/or Aerial Observation forms located in Appendix 5. This shall be done based on the information gained from direct observation by the Surveillance Branch of the Operations Section using available equipment such as drones, aircraft, satellite, and surface vessels.

A more detailed analysis of the spill shall be commissioned by the IC / Operations Section Chief based on the findings of the initial assessment.

### **5.2 HAZARD ASSESSMENT**

The first priority for any response is safety of human life of both the public and the responders. To ensure the safety of the public and responders, an initial hazard assessment must be conducted to determine the incident specific safety hazards at the spill site. It may be necessary for the IC to appoint a Safety Officer to the Command team under the ICS organization whose sole responsibility is to identify and mitigate risk. The Safety Officer is most likely from the Ministry of Health. This assessment shall include gathering information on the product spilled from the responsible party and must include specific hazard testing and air monitoring. The output of the assessment will be to identify and mitigate the risks for the locations where the responders may enter.

### **5.3 SPILL VOLUME, AERIAL EXTENT AND VOLUMES**

To determine the size of a spill size is a major contributing factor when establishing which Tier level of response should be initiated. There are several methods for conducting an initial assessment including gathering cargo manifest documents, ship logbooks, sounding tanks, identifying flow rates from pipelines, and conducting overflights of the affected area.

To conduct an aerial assessment, the Bonn Agreement Oil Appearance Code described in table 6 is an internationally accepted tool for estimating spill volume based on a visual assessment of oil on the sea surface. A maximum and minimum volume estimate can be calculated where Bonn colour codes are utilized in order to allow a suitable assessment of potential pollution in the sea.

Taking oil spill samples can be valuable in determining oil characteristics as well as identifying the source for claims and litigation. It is important that all samples collected follow a pre-identified procedure and take into account chain of custody for future legal admittance as evidence. A detailed procedure for collecting samples from the spill, source and background is provided in Section 7.6.2 / Appendix 13.

### **5.4 SPILL MOVEMENTS**

In most spill scenarios, there will be some delay between the initial notification of a spill and when the Operations Section Chief / IC can deploy resources at the location of the release. For this reason, it is not only important to understand where the spill currently is but also where it could potentially impact given the prevailing weather conditions.

The NOAA oil spill modelling software WebGnome is available on-line and officers at REMPEITC have offered to provide assistance to DENR who have received some training. Detailed reports on the fate and transport of different oil products can be completed by the consultants at RAC-REMPEITC Caribe in Curaçao and also using the ADIOS-2 Oil Weathering Application. Such reports can help identify the effects of weathering on the oil to include estimates of evaporation and natural dispersion as well as detailed trajectories based on available meteorological data. The Bermuda Institute of Ocean Sciences (BIOS) and DENR would be used to project the trajectory of the oil spill using local data.

In the absence of detailed trajectories or when immediate decisions need to be made based on spill movements, on scene personnel can use the below formula to estimate the trajectory of the spill as the resultant vector from both the current vector and 3% of the wind vector.

- $(\text{Current} \times 100\%) + (\text{Wind} \times 3\%) = \text{Estimated spill movement}$

As the above equation shows, oil slicks are much more affected by the current than they are by the wind forces, however, in many parts of Bermuda, the water currents are relatively slow, and this effectively increases the influence of the wind vector. When estimating trajectories, it is also important to take into account the changing currents that correspond to the local tide cycle.

Once the areas of coastline expected to be impacted by the oil are known, then the Environmental Sensitivity Maps (See Section 7.4 and Appendix 10) shall be used by the Planning Section to determine (a) the areas to deploy boom in a containment configuration so as to concentrate the oil for recovery by skimming equipment, and (b) which areas to protect using boom in an exclusion configuration.

## 5.5 SPILL SURVEILLANCE

The Coast Guard Unit shall be responsible for surveillance of oil spills under the Operations Section. Surveillance and tracking are best done from the air, often being very difficult from surface vessels. The IC / Operations Section Chief shall request air surveillance from aircraft or drones available in Bermuda.

Table 5 contains details of how to recognise spills of various oil thickness on the water and to convert those images into estimates of spilled volume.

DENR is currently investigating the scope of the service that could be provided by drone operators for the surveillance of a major spill with data being expedited to the Response Team to inform the Planning Section. Quad-copters can be deployed from a boat close to the edge of a spill and will record RGB High-Definition video and photographs of the spill. Live streaming of the video to a Command Post may be possible but will require testing using suitable relay equipment between where the footage is recorded and the Command Post. Quad-copters can also be programmed to map out and photograph an appropriate grid area. Plotting the images with GPS coordinates onto a plan of the area being impacted could prove to be a versatile surveillance in understanding the scale and drift of a slick in, for example, hourly increments. Skymatics Ltd and other drone operators in Bermuda could be considered to provide such a drone surveillance service once such a system is tested during a field exercise. Their contact details are provided in the Call-Out List (Appendix 2). Other drone operators should also be investigated.

Table 5. Bonn Oil Agreement Oil Appearance Code

Colour code / Appearance	Example	Layer Thickness/Description (µm)	Litres (L)/km <sup>2</sup>
1. Sheen (silvery/grey) Appearance is due to their thickness.		0.04 to 0.30 Very thin films of oil that reflect the incoming light slightly better than the surrounding water.	40 - 300
2. Rainbow Rainbow oil appearance is independent of oil type.		0.30 to 5.0 Oil films with thicknesses near the wavelength of different coloured light exhibit the most distinct rainbow effect.	300 - 5,000
3. Metallic The appearance of the oil in this class is oil type dependent.		5.0 to 50 Metallic will appear as a quite homogeneous colour that can be either blue, brown, purple or another colour.	5000 - 50,000
4. Discontinuous true colour The broken nature of the colour is due to thinner areas within the slick.		50 to 200 For oil slicks thicker than 50 µm the true colour will gradually dominate the colour that is observed.	50,000 - 200,000
5. Continuous true colour Homogenous colour can be observed with no discontinuity as described in Code 4.		200 to > 200 The true colour of the specific oil is the dominant effect in this category. This category is strongly oil type dependent.	200,000 - >200,000

**\*Note: Layer thickness is shown in micro-metres (µm) above.**

## 6 RESPONSE RESOURCES

### 6.1 INTRODUCTION

Rapid access to response resources is critical to minimizing spill impacts and implementing an effective response. These resources should be categorized by Tier and located in areas with higher likelihood of spills, more severe consequences from spill impacts (environmentally sensitive areas, important human use, and high economic or cultural importance). An inclusive list of all national resources (equipment) is provided in Appendix 9.

Prevention of a spill should always be the objective. To this end, the IC shall direct the Responsible Party to take appropriate action to prevent or at least to minimise the risks of oil pollution.

Controlled removal of fuel and/or oil cargo from vessels at risk is to be given high priority as this contributes to the stabilization of the incident and removal of the further potential of a spill source. The following general oil spill response equipment exist in Bermuda (See Appendix 9):

- **Booms:** Harbour boom is used to contain oil or alternatively to direct oil to a selected collection site where oil receiver skimmers can be deployed. Boom is either set in place using dedicated anchors and buoys or is towed behind boats to collect and transport the oil to oil-recovery-areas. Due to the rapid nature that spills spread on water, speed of response is essential to reduce the impact of a spill.
- **Oil Recovery:** Recovery of oil from a containment boom can be managed with various commercial devices, typically referred to as “skimmers,” utilising oleophilic disks or fibres, weir collectors and vacuum systems.
- **Sorbents:** Oleophilic materials are fabricated in various forms, including mops, ropes, pads, skirts and boom and all have use in oil clean up, particularly in the final stages of an MPI or in Local Spills.
- **Pumps & Fast Tanks:** Some skimmers require dedicated pumps and for others the recovered oil needs to be transferred by pumps to holding tanks, known as fast tanks. The pumps can also be used to transfer the oil to other containers on trucks for transport to various waste management facilities.
- **Dispersants:** The decision as to whether or not to use dispersants or other spill modifiers on a particular spill and, if used, the choice of the chemical, shall be the responsibility of the IC who shall take into account the views of his environmental advisors. The dispersant policy is provided in Section 7.6.1 and areas of use and prohibition are provided in figure 10.

It is noted that the inventory in Appendix 9 provides full details of the equipment held in storage under the control of the Government of Bermuda as part of the NOSCP, in addition to resources held by SOL Petroleum (Bermuda) Ltd, RUBIS Energy (Bermuda) Ltd and BELCO.

The Government of Bermuda has national stockpiles of equipment that are sufficient to combat most spills requiring a Tier 1 and Tier 2 response in addition to the first 24-48 hours maximum of a Tier 3 response. For a Tier 3 Marine Pollution Incident, Bermuda would rely upon international assistance to provide additional equipment and personnel resources.

### 6.2 OVERSEAS SUPPORT RESOURCES

The Government of Bermuda has sufficient equipment to address typically the first 24-hours of a major Marine Pollution Incident. After this time overseas assistance would be required to provide more equipment and trained oil spill response personnel to manage many of the critical posts in the Incident Command System. The options available to the Government of Bermuda for assistance from overseas in the form of trained personnel and equipment include:

- (1) **United States Coast Guard (USCG).** As part of the US Government – Government of Bermuda Agreement concerning assistance to be rendered on a reimbursement basis by the USCG, 1976. The US National Response Center contact details is provided in the Call-Out List of Appendix 2. In 2018 meetings were held with key Government officials, the US Consulate officials and the USCG

to help define the processes for requesting international assistance. The USCG Agreement and Incident Response Guide is provided in Appendix 6.

- (2) **Oil Spill Response Ltd (OSRL)**. OSRL provides oil spill response resources and equipment to its members within 24-hours of formal notification. Both SOL Petroleum (Bermuda) Ltd and RUBIS Energy (Bermuda) Ltd are members of OSRL. The Government of Bermuda is not a member of OSRL but can request assistance whereby the full costs for personnel and equipment would be levied. Members receive a 50% discount on these costs and guaranteed response within 24-hours. The contact details for OSRL are provided in the Call-Out list in Appendix 2. The OSRL templates for use by the Government of Bermuda for overseas assistance including (i) 3rd Party Contract, (ii) Notification Form and (iii) Mobilisation Form are provided in Appendix 7. Note that as non-members any shortage of personnel and equipment due to other commitments may result in a delayed response.
- (3) **REMPEITC Caribe**. Assistance in the form of advice and oil spill trajectory modelling from personnel trained in oil spill response who have been seconded from the USCG to the IMO organisation in the Caribbean; REMPEITC.

### 6.2.1 OVERSEAS RESOURCES – ADMINISTRATIVE REQUIREMENTS

Both USCG and OSRL operate their oil spill response processes against the Incident Command System (ICS), which would be expected to align with the initial response from the Government of Bermuda. It is noted that before overseas assistance can be provided by either the USCG or OSRL that a contract will need to be signed by the Financial Secretary of the Accountant General's Department.

H.M. Customs has also provided zero percent duty rates for "Chemicals, Products and Equipment for Combating Oil Pollution" (CPC4195) and for "Humanitarian Aid" during disaster relief (CPC5025). Items imported under both of these CPC codes can have their manifests cleared by HM Customs prior to the goods arriving in Bermuda in order to expedite the transport from the Aircraft to the Incident Staging Area. See <https://www.gov.bm/guidance-importing-goods-disaster-relief> for more details.

Discussions with the Department of Immigration are also progressing to provide an acceptable process to expedite work permits at short notice for personnel required to assist in the pollution response.

## **7 RESPONSE STRATEGIES**

### **7.1 INTRODUCTION**

The strategies used to deploy both equipment and personnel to respond to the oil spill are addressed in this section. The strategy, or combination of strategies, to be employed will be incident specific and based on several factors including spill specifics, availability of equipment and personnel, and resources at risk. During long term responses, it is critical that the IC / Operations Section Chief / Planning Section Chief continue to assess the effectiveness of chosen response strategies and make adjustments based on changes to the characteristics of the product due to weathering, alterations in environmental conditions, and numerous other factors.

### **7.2 INITIAL RESPONSE ACTIONS**

The first priority in any emergency is the saving of life and ensuring that the public and responders remain safe when responding to oil spills.

Because of the variability of spills or threats of spills, there can be no standard response but, rather, there must be an “appropriate response,” that is, a response appropriate to the particular characteristics and nature of the incident. However, DENR has prepared a range of incident response templates that are based on ICS for the different oil spill scenarios considered in the risk register (See Table 1 and Appendix 14). These templates provide lists of many potential ‘Problems’ that will occur as a result of a spill with a corresponding range of ‘Objectives’ and ‘Strategies’ to address these problems. It is the responsibility of the IC to develop an appropriate response. In the case of oil spills, the most obvious measure of the response requirement will be the size of the spill or potential spill.

#### **7.2.1 TIER 1 AND 2 SPILLS**

When a spill has been designated a Local Spill, the IC shall assign control and clean up procedures to the Responsible Party (*i.e.* RP, ‘polluter’) or to the local resource entities such as Department of Marine & Ports Services, Fisheries Section of DENR and assisted by the Department of Parks, MPW or the local oil companies, where necessary. Internal operations orders shall be developed by these entities for response to Local Spills (Tier 1 and 2). The full NOSCP will not be initiated for Local Spills. Speed of response is essential if small spills are to be prevented from becoming Marine Pollution Incidents.

#### **7.2.2 TIER 3 MARINE POLLUTION INCIDENT CONDITION II (POTENTIAL)**

When a Marine Pollution Incident threatens and a Condition (II) alert has been declared, the expected initial response actions of the IC shall include:

- (1) Brief the EMO and advise of the potential need for interagency/overseas assistance and funding.
- (2) Call together members of the Response Team to the designated Command Post and establish the Incident Command System by appointing Command Staff and General Staff Section Chiefs from the Response Team personnel. The RP shall be represented by a senior person with fiscal authority in the Unified Command working with the IC.
- (3) Take immediate appropriate action to minimise the possibility of the threatened spill becoming an actual spill.
- (4) Advise the Director of Communication and Information (DCI) who will assume the responsibility or designate the role of Public Information Officer to handle all public relations matters relating to the MPI.
- (5) Alert local resource agencies and advise them to be in a state of readiness to respond.
- (6) Contact overseas resource agencies and advise them of the possible need for assistance.
- (7) Should US Coast Guard assistance be required, the IC shall notify the Deputy Governor’s Office of the desire to bring in the US Coast Guard. The Deputy Governor will approach the US Consulate who in turn will contact the US Coast Guard.

- (8) If time is of the essence, the IC may notify the Deputy Governor, contact the US Coast Guard directly and then inform the US Consulate later.
- (9) Confirm the operational effectiveness of communication systems.
- (10) Select additional resource personnel to strengthen the Incident Command staff taking into account the nature of the particular incident which is threatening.
- (11) Together with the Incident Command staff, establish priorities for protection of environmentally sensitive areas and for containment and clean up in the event that these are necessary.
- (12) On the basis of surveillance and on-site reports; upgrade the response to include activation of local resource agencies, the deployment of field groups with spill control and clean up equipment, and the requesting of overseas assistance as necessary.

### 7.2.3 TIER 3 MARINE POLLUTION INCIDENT CONDITION I (ACTUAL)

Upon declaration of a Condition (I) Alert, and in keeping with the principles of an “appropriate response” the IC shall:

- (1) Update the EMO on the need for overseas assistance and make arrangements for this assistance to be formulated. Note that the Financial Secretary of the Accountant Generals Department will be required to approve a limit of liability of expenditure before the any overseas assistance will be committed. The organisations offering overseas assistance (*i.e.* US Coast Guard and OSRL) for a Major Pollution Incident would provide their costs and additional costs within Government and Bermuda would also need to be determined. Note that the EMO may decide to reappoint the IC.
- (2) Deploy local resources and supplement these resources with overseas help as necessary to prevent or contain a spill.
- (3) Implement prevention and/or clean up procedures.
- (4) Together with the Incident Command staff, reassess priorities for protection of environmentally sensitive areas and for clean-up and disposal of oil and/or toxic materials and implement decisions reached.
- (5) Reassess the need for additional resources including manpower and take steps to meet assessed needs.
- (6) Maintain close liaison with the Attorney General and the Financial Secretary to ensure legal authority and funding exists for response actions planned. Both Accountant General’s and Attorney General’s chambers will need to provide approval to sign an agreement with the US Government (or OSRL – See Appendix 6) to guarantee payment to a set limit of liability for defined overseas assistance provided for a set period.
- (7) Keep EMO advised of response and work with the Public Information Officer to keep the public informed of the state of the incident and of the response.

## 7.3 NET ENVIRONMENTAL BENEFIT ANALYSIS

One of the main objectives of an oil spill response is to minimise the environmental impact of the spilled oil on marine, coastal, inshore environments in addition to socio-economic impacts. Net Environmental Benefit Assessment (NEBA) is a qualitative comparison technique that involves stakeholders to assess and compare different response options to the advantages and disadvantages of natural clean up. The process of NEBA should be conducted during all stages of the response. Damage to the environment and associated species, including health risks to humans, includes both short and long-term effects resulting from an oil spill itself or from subsequent spill response activities.

There are many historic spills that act as case studies highlighting situations where the chosen response strategies were later found to have caused significantly more harmful environmental impacts than just monitoring the situation and allowing natural recovery and biodegradation. For this reason, it is important to utilize the NEBA process to ensure the most efficient and effective response strategies are chosen for that specific spill scenario.

For more information on conducting NEBA refer to the International Petroleum Industry Environmental Conservation Association (IPIECA) website: <http://www.ipieca.org/resources/good-practice/response-strategy-development-using-net-environmental-benefit-analysis-neba/>.

When there is an imminent threat to any of these coastal resources, the use of chemical dispersants may be approved on a site-specific basis by application to the Director of the Department of Environment & Natural Resources with consideration of the IC and the Dispersant Advisor of the Planning Section Chief.

The Planning Section Chief is expected to recommend to the IC/Command team which areas of coastline to protect and which to effectively concentrate the oil for recovery operations before the spill is transported onwards by wind and current processes. These recommendations will be primarily based on the known Environmental Sensitivity of the different coast areas with respect to how long the oil will remain persistent and the protected species that may be impacted (See Section 7.4 / Appendix 10). It is noted however that other factors such as popular tourism beaches and other data may also factor into the final decisions by the Command Team and EMO. The impacts of oil to Bermuda's coastline and species including environmental and human factors have been considered in the risk register of Section 3.

#### 7.4 ENVIRONMENTAL SENSITIVITY MAPS

When considering NEBA it is important to understand the persistence that the oil might have if allowed to impact particular coastlines. Some coastlines will be easier to clean up and mobilise water-edge response tactics (*i.e.* relatively impermeable Harbour Walls) than, for example, beaches made up of boulder, Rip-Rap or very coarse sand. Fifteen types of coastal environments are ranked on a sensitivity scale to reflect the expected persistence of hazardous material spills along the coastline. These ranked coastal areas were defined and published <sup>1</sup> and have now been placed on Geographical Information System (GIS) software (*i.e.* ArcView).

Maps of Bermuda's coastline showing priority areas that require maximum effort for protection, clean-up, and conservation are available as hard copies stored at DENR HQ, Botanical Gardens and Bermuda Maritime Operations Centre, Fort George, St. George's. (*Large Scale Reusable Maps to be printed at Bermuda Blue Printing*). Digital copies are maintained on a Government Oil Spill Server for Command team personnel (See Section 10). Copies are provided in Appendix 10. *Also shown are water depths, distances across inlets for deployment of containment or deflection booms, marinas, boat slips, docks/harbour walls and stockpiles of booms, sorbents and clean-up equipment.*

#### 7.5 RESPONSE STRATEGIES AND TACTICS

All response strategies employed shall be proportionate to the tiered response. During an emergency response operation, the available information on the spill scenario and forecasts of the environmental conditions can have high levels of uncertainty and can be fragmented, making response decisions difficult. Nevertheless, the response personnel must use the available information at their disposal to determine, select and deploy equipment as soon and effectively as possible. The two key factors that shall be considered when deciding on the most effective clean up method(s) are:

- Potential environmental impacts compared to the no-action alternative.
- Potential environmental impacts associated with a response method or group methods.

The U.S. National Oceanic and Atmospheric Administration (NOAA) has a job aid which lists a detailed description of common response strategies and the effectiveness of different response strategies based on shoreline type and oil type. These job aids should be utilized to assist in response option determinations. These job aids are available at <https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/resources/job-aids-spill-response.html>.

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<sup>1</sup> Sleeter, T, Knap, A.H. and Hughes I.W. 1983. *Oil Spill Contingency Planning and Scientific Support Coordination in Bermuda: A successful model.* [www.researchgate.net/publication/269854428](http://www.researchgate.net/publication/269854428).

The clean-up technique used and agreed priorities for protection shall be determined by the IC/Command Team based on the spill assessment. Elements of the clean-up response strategy shall include but not be restricted to the following:

- Public health threats.
- Environmental, economic, social and cultural impacts.
- Prevailing weather conditions.
- Oil types and characteristics.
- Shoreline type.
- Accessibility by, and ability to, support heavy equipment.
- Amenity value, accessibility for heavy equipment and ability of the area to support such equipment shall be considerations in selecting the clean-up technique.
- Available equipment and personnel.
- Waste generation of the applied technique (e.g. at-sea response vs shoreline clean-up).

#### **7.5.1 ACTIVE MONITORING AND AERIAL SUIVEILLANCE**

In certain cases, such as (i) where timely action is not possible, (ii) where response actions will cause significant environmental impacts, or (iii) where environmental conditions pose significant safety hazards, then actively monitoring the spill and assessing natural dispersion, evaporation and degradation may be the response option with the greatest net environmental benefit.

#### **7.5.2 MECHANICAL OIL RECOVERY**

- The oil is physically contained and removed.
- This is usually the preferred method since it removes the oil without further impact in the marine environment.
- This technique has a restricted weather window of application. It produces waste that requires sound management, collection, transport and disposal. It requires specialized equipment and trained personnel.

#### **7.5.3 USE OF DISPERSANTS:**

- Dispersants are a group of chemicals designed to be sprayed onto oil slicks to accelerate the process of natural dispersion using wave energy. The oil is transferred from the surface into the water column facilitating the process of natural biodegradation.
- Dispersants rapidly remove large amounts of certain oil types from the sea surface avoiding shoreline impacts.
- This technique has a limited time window (24-48 hours) of application and requires specific weather conditions. It is applicable only to certain types of oil. It requires specialized equipment, availability of dispersants, and trained personnel. Until sufficiently diluted, the dispersed oil can still adversely impact the environment. By introducing the oil into the water column, it may harm some marine organisms, such as corals, which would not otherwise be reached by floating oil (e.g. reef ecosystems). Furthermore, if it is used on shore, it may increase the penetration of oil into the sediment.

#### **7.5.4 IN-SITU BURNING:**

- This is the process whereby oil slicks are collected at sea using specially constructed boom, ignited, and burned in a controlled manner.
- This response option has proven to remove large quantities of oil from the sea surface with extremely high efficiencies (95-99%). This tactic reduces the need for transport, storage, and treatment of oily wastes.

- However, there are several issues which can limit the viability of this response technique. Such problems include: the ignition of the oil, maintaining combustion of the slick, the generation of large quantities of toxic smoke, the formation and possible sinking of extremely viscous and dense residues, and hazard to responders and public health safety concerns. Another limiting factor is the state of the sea. This tactic requires specialized equipment and trained personnel.
- Fire Boom is not held in Bermuda and would need to be requested from the USCG or OSRL and sent with their dedicated air freight of associated ancillary equipment and personnel.

#### 7.5.5 BIO-REMEDICATION:

- In this response option a substance similar to a fertilizer is applied to the polluted area to accelerate natural biodegradation.
- Research into the effects on the environment is still new and incomplete, however initial reports show promise. Bioremediation and decomposition of oil particles should be considered as final polishing and not as a viable option for bulk oil removal.
- Bermuda has extremely low levels of nutrients in seawater such that any supplement of fertilizer could lead to phytoplankton blooms and associated impacts.

#### 7.5.6 SHORELINE CLEAN-UP METHODS:

Shoreline clean-up can have additional challenges such as site access and environmental variability. The IC/Command Team may need to employ several different tactics in the same area to have an effective response. It is important to evaluate each potential response option with comparison to natural recovery to ensure NEBA considerations are met. There is additional guidance available which explores the effectiveness and limitations of various shoreline clean-up options in much greater detail. Forms for use with the Shoreline Clean-Up and Assessment Technique (SCAT) are available in Appendix 5 for personnel who have undergone such training. A few different options for shoreline clean-up are:

- **Natural recovery (active monitoring)** – Due to the remote nature of some sites, this might be the most viable option. There have been several documented cases where shoreline clean-up operations have caused significantly more damage than natural recovery alone. This is especially true for areas with soft sediment where oil can be trampled deep into the soil with persistent negative impacts.
- **Manual removal** – This technique can be used on a wide variety of shoreline types with success. Oiled material is collected with rakes, shovels, or scrapers depending on the shoreline type, oil type, and weathering effects. Manual removal has the ability to be highly selective with collection operations to reduce overall wastes produced. Manual removal is also an excellent option for areas that are not able to be accessed by heavy equipment. However, manual removal tends to be labour intensive, very expensive and requires suitable training, oversight and significant amounts of PPE with associated decontamination areas and waste management considerations.
- **Mechanical removal** – Earth-moving machinery such as graders, scrapers, and front-end loaders can be used to remove and transport large volumes of oil product and oiled shoreline material. However, this technique is not selective and can produce large amounts of waste if not employed properly. Also, sometimes access for large equipment prevent their use in remote areas. If not employed carefully heavy machinery can cause further environmental damage.
- **Sorbents** – Sorbent material can assist in recovering thin floating layers of oil that are dislodged during clean-up operations. Sorbents can be used in conjunction with flushing operations to loosen and capture beached oil. It is preferable to not use sorbents until after manual or mechanical removal has been undertaken because more efficiently used for polishing an area of oil residues that has already been largely cleaned up. Sorbents create an additional waste stream and need to be manually deployed, maintained, and recovered.
- **Vacuum recovery** – This is the most efficient option for recovering large quantities of pooled stranded oil. The vacuum nozzle can be changed to recover different viscosities of oil with high rates

of success. To improve efficiency, decanting of collected and settled water should be considered to reduce the amount of oily water to be disposed of.

- **Sediment reworking** – This method is suitable for lightly contaminated boulders, cobble, pebble and gravel. One way to achieve this is to push the contaminated material into the surf using heavy equipment. This sediment material will be returned to the beach by wave action and tidal movements. Some of the oil will biodegrade and any remobilized oil product can be collected using skimmers or sorbents.
- **Low pressure flushing** – This method is similar to sediment reworking but instead of heavy equipment it utilizes low pressure water (e.g. from a hose) at ambient temperature. The remobilized product can be collected with skimmers or sorbents. It's important to utilize local water sources when available with similar salinity and organic load.
- **High pressure washing** – The use of high-pressure water jets can remove oil from hard surfaces. This is ideal for manmade structures and areas with low biological activity. In certain circumstances high pressure hot water washing can be used as a highly effective cleaning technique. However, this should only be done in areas with little to no flora or fauna present. Due to the high potential for a new environmental impact (e.g. by remobilising oil) this option needs to be authorized by the IC/Command Team before it can be employed.
- **Bioremediation** – Bacteria will start to biodegrade hydrocarbons soon after a spill to the environment, however, time and sometimes additional nutrients will be required for hydrocarbon-degrading bacteria to multiply to sufficient numbers. Bacteria, nutrient supplements and increased aeration may therefore be considered to speed up decomposition and natural reclamation of an area. Any bioremediation agents need to be authorised by DENR.

## 7.6 NON-MECHANICAL RECOVERY TECHNIQUE AUTHORIZATION

### 7.6.1 DISPERSANTS

Due to the potential negative impacts of these response tactics, the decision to use dispersants should result only after consideration of several key factors:

- **Authorization** – The IC/Command Team/Director of DENR shall be responsible for all approvals for use of dispersants in a way to minimize environmental impacts. An appropriate decision tree to use when considering dispersant spraying is provided in figure 9.
- **Details Associated with any Approval** - The authorization shall clearly state the (i) type and amount of dispersants that are authorized for use, (ii) the window of time the application is authorized for, and (iii) the location for application. The authorization can have other additional stipulations such as daytime application only, requirements for test sprayings to be analysed before full authorization will be granted, or immediate revocation if certain sensitive species are found in the response area. Prior to any consideration by Incident Command to use a dispersant that a test will be required to determine if the dispersant will be effective against the oil in question at its current weathered state. A field test method and log sheet is provided in Appendix 12 to inform Incident Command.
- **Locations of Pre-Approved Dispersant Application subject to Authorization** - The areas where the use of chemical dispersant is pre-approved, subject to completing the decision tree of figure 9, are as follows:
  - a) The area outside the 10-fathom line around the Bermuda platform (*i.e.* >18.3 metres deep).
  - b) Areas a minimum of 1,000 metres from shore.
  - c) Areas a minimum of 500 meters from a shallow reef (less than 5.5 metres deep [three fathoms]).
  - d) Areas within the Bermuda platform where the water is a minimum of 5.5 metres deep [three fathoms].

- e) The area a minimum of 100 metres from shore along the northwest coast of St. George's Island. This is an area with relatively high-risk of an oil spill due to the proximity of the shipping channel and oil terminal.

The areas for pre-approved dispersant use are shown in Figure 10 and are subject to the dispersant approval decision tree being completed (*i.e.* figure 9). Only dispersants that have been registered with DENR may be used in these areas. See Appendix 12 for a pre-approved list of dispersants to be used for oil spills. It is noted that trials of dispersed oil using Corexit and Arabian Light Crude have been undertaken on brain corals in Bermuda. Trials demonstrated that the corals would largely recover from 24-hour exposure of dispersed oil at 20ppm once returned back to the marine environment. Other species such as polychaetes, bivalves and decapod crustaceans showed mortality within 24-hours of dosing of oil at 20ppm that was either physically dispersed via turbulence or chemically dispersed with Corexit (*Knap, A.H., R.E, Dodge, T. Sleeter and S.R. Smith (1985). The effects of chemically and physically dispersed oil on the brain coral diploma strigose (DANA) – A Summary Review. International Oil Spill Conference Proceedings 547-551. (<http://www.researchgate.net/publication/269956949>).*

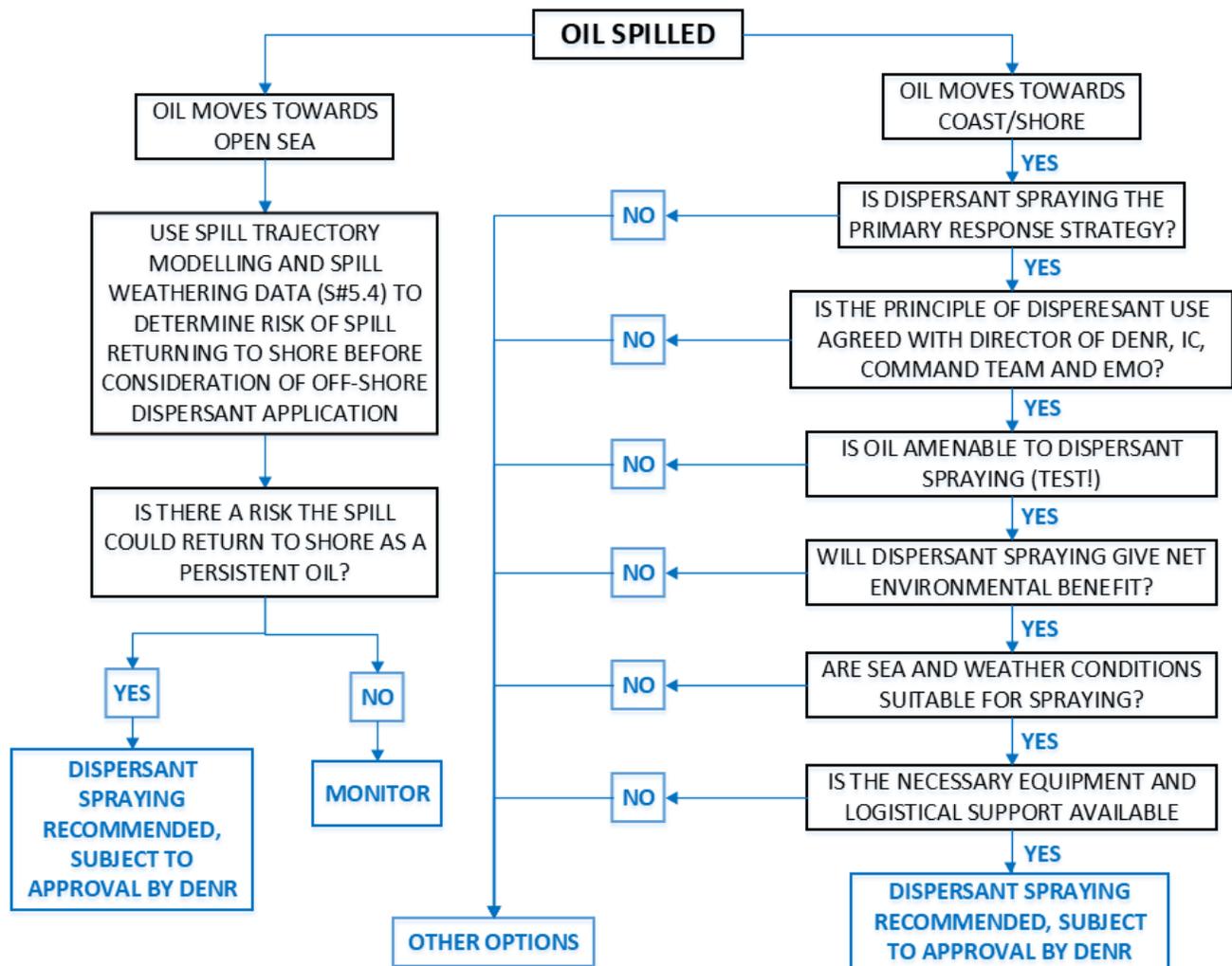


Figure 9. Dispersant Spraying Decision Tree. Adapted from REMPEITC.

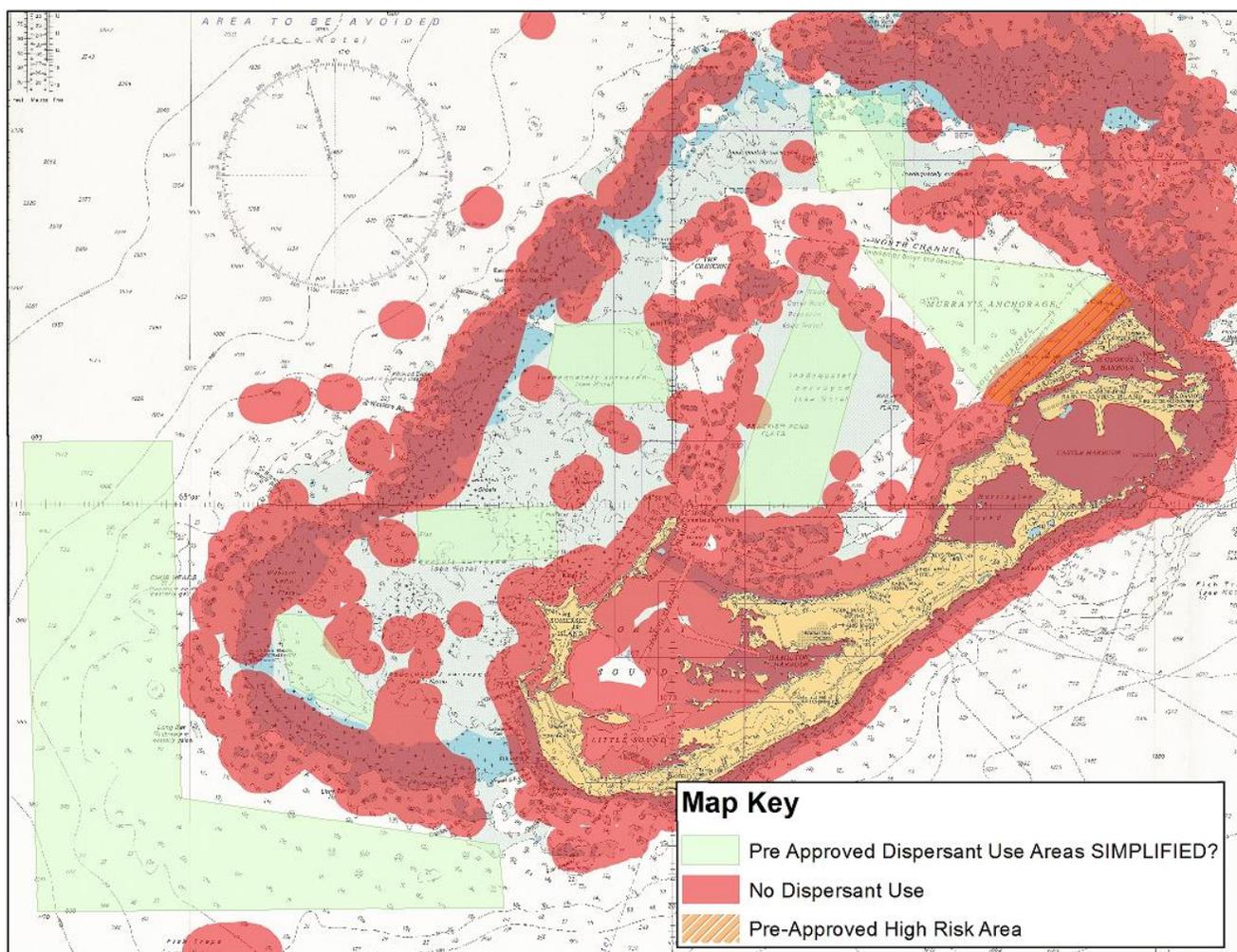


Figure 10. Pre-Approved Dispersant-Use-Areas for dispersants that have been authorised for use in specified quantities by DENR and subject to the decision tree being completed in figure 9.

## 7.6.2 IN-SITU BURNING

Due to the potential negative impacts of this response option, the use of this tactic requires evaluating several key factors:

- **Authorization** – The IC/Command Team/EMO shall be responsible for all approvals in-situ burning.
- **Considerations** - It is the responsibility of the IC/Command team including the Safety Officer to ensure that no in-situ burning is approved that is likely to produce particulate matter at a concentration that exceeds the ambient air quality standards stipulated in the Clean Air Regulations 1993 for the public and responders located onshore. On approving in-situ burning as a tactical response method, Government will need to instil public and political confidence on the safety and efficacy of in-situ burning, in a manner similar to that required for communicating other environmental trade-offs or impact issues, such as related to wildlife rescue, shoreline clean-up protection and clean-up strategies, and oily waste removal. Note that to undertake in-situ burning, Fire Boom and support equipment and personnel would need to be sourced from OSRL.

### 7.6.3 PROOF OF LIABILITY – OIL SPILL FINGERPRINTING

It is important during the early stages of an oil spill to dedicate resources to collect appropriate samples to help assign liability to the spill in order to recover response costs and loss of revenue/earnings. Due to weathering evaporation, dispersion, emulsification, bioremediation, and other processes, the original spilled oil can quickly change its chemical composition. For these reasons it is important to include oil spill fingerprinting in the Response Strategies of the NOSCP.

The Coast Guard Unit shall be responsible for identifying the polluter. Providing evidence that will hold up in Court for claims (via the CLC and IOPC - See Section 9.6) requires that the oil within the ship/facility of the polluter be sampled to chemically match to the fresh oil impacting Bermuda's coastline. Samples should be collected in the following three areas:

- Oil Impacting Environment (on the water, beaches, coastline)
- Oil from the source (Ship, vicinity of the ship, pipeline)
- Background environmental sample of water/beaches where oil has not impacted.

Collecting representative samples from the polluting ship/facility will also require ship surveyors from BSMA and technical officers from the Department of Environment & Natural Resources or the Bermuda Institute of Ocean Sciences (BIOS) or a company with proven experience of environmental sampling. DENR shall have the responsibility to maintain the Chain of Custody and sample storage conditions from the point of sampling to the test facility in the US. See Appendix 13 for the details of Oil Fingerprinting Analyses and the blank sample bottles and coolers that are currently held in Bermuda.

## 8 WASTE MANAGEMENT

### 8.1 INTRODUCTION

It is likely that large volumes of waste will be produced even during Tier 1 clean-up operations. Much of this waste will be hazardous in nature. Clean-up operations will vary considerably based on a myriad of factors including type and amount of oil spilled, environmental conditions, and clean-up methods; the amount of waste produced will vary accordingly. The degree of initial site clean-up will be determined by the IC and the Incident Command staff, giving careful consideration to the environmental impact of the clean-up operation itself.

Clean up activities may include:

- Removal of oil from beaches and rocky shorelines.
- Removal of oil debris to prevent re-contamination.
- Cleaning of jetties, marinas, and private wharves and harbour walls.
- Cleaning of hulls and underwater fittings of cargo, fishing, and pleasure vessels.
- Cleaning of fishing gear.
- Cleaning of public properties such as roads, disposal sites, etc.
- Cleaning or oiled boom and skimmer equipment and disposal of oiled PPE.

A well thought out waste management plan is key in ensuring an efficient response that minimizes secondary contamination of previously clean areas and reduces the total waste stream and costs. There are three main components of a waste management plan:

- Waste designation.
- Waste handling, interim storage, and transport.
- Waste reuse, treatment, and disposal.

Each component must be well established prior to a spill and should immediately go into effect as soon as clean-up operations commence to ensure effective handling of oily wastes.

In order to minimize the total amount of waste generated it is important that waste management be considered when determining response strategies. Figure 11 shows a hierarchy of response strategies that should be considered during a response.

### 8.2 WASTE DESIGNATION

The Sallyport Facility and Tynes Bay Waste to Energy Facility (TBWTE) of the Ministry of Public Works Waste Management Department are responsible for designation of hazardous waste and for providing support within the Logistics Section of the Response Team regarding waste management and final disposal. There are several different types of response generated wastes such as:

- Fluid oil.
- Heavily contaminated beach material (sand, cobbles, shingle).
- Oily debris (flotsam and jetsam).
- Contaminated sorbent material and PPE.
- Contaminated rinse water from DECON stations.
- Non-oil response generated wastes.

Each type of oily waste requires a specific treatment and disposal technique.

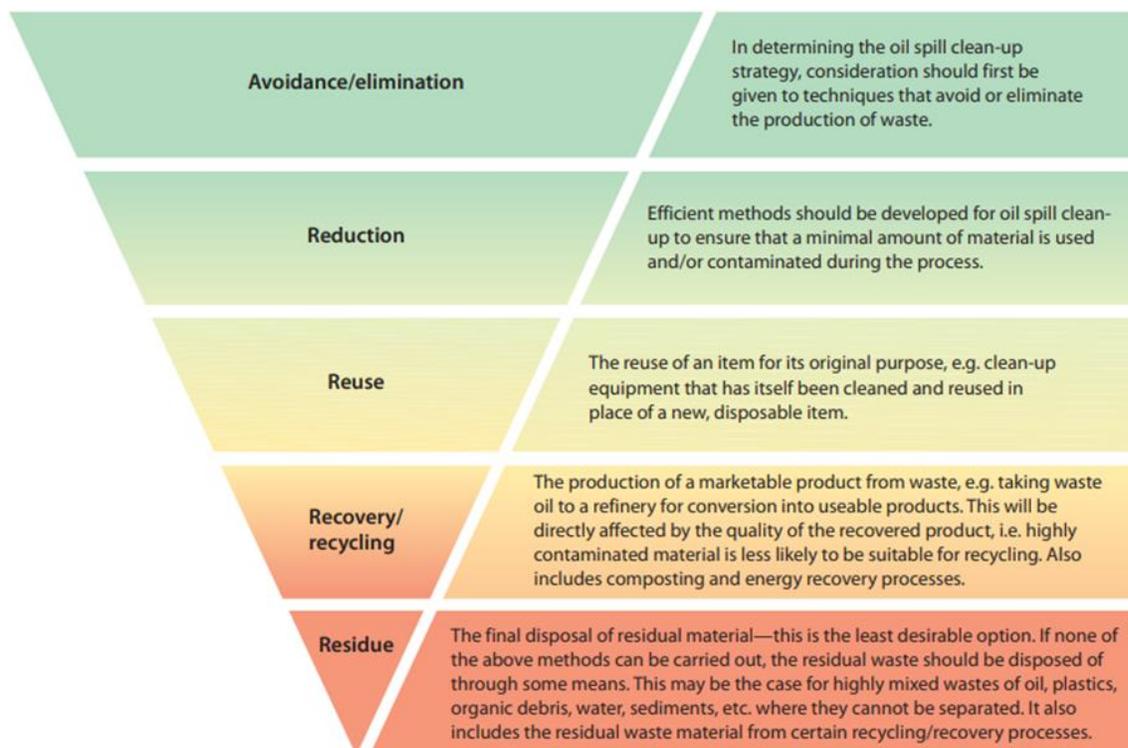


Figure 11. The “waste hierarchy” is a tool for structuring an efficient waste management strategy.

### 8.3 WASTE HANDLING, INTERIM STORAGE AND DISPOSAL

It is imperative to ensure that each oily waste type is collected and stored separately since each may demand the use of different disposal techniques and may have different safety or public health concerns. Following collection, it may be necessary to store the oily waste temporarily to allow time for logistics to be developed to support the optimum transport and disposal route. In the event of a large oil spill, the quantity of oil waste generated can exceed the holding capacity of waste disposal sites. Consequently, a larger temporary storage site may be needed. Storage acts as a buffer between the rate of collection and the usually slower rate of final disposal.

A range of storage containers can be used, e.g. drums, barges and skiffs. However, it is worthy to note that heavy or emulsified oils may pose a problem since oil requires heat to retain its liquid phase. The disposal of recovered oil or of other toxic substances will be a challenge after an MPI. The following oil/water storage containers as well as a full inventory of storage containment options and equipment available locally for use in the containment and clean-up of spills of oils or hazardous substances is provided in Appendix 8:

- Fast Tanks (1000 and 2000 USG – See Inventory in Appendix 9)
- Storage tanks on ships (*i.e.* MV Dragon @ 30 Tonnes)
- Totes (275 USG). Available at MPW Sallyport (~20) and the National Sports Centre (~90)
- Eurotainers (~5000 USG). Available at MPW Sallyport and Belco.
- Vacuum trucks. Dedicated oily water systems at MPW Sallyport and also at Belco (ELASTEAC PACS1000 USG). *With agreement and approval of a suitable clean-out process some commercial sanitation vacuum trucks could be re-purposed to waste oil collection over the short term for an MPI.*

If the mentioned storage containers are insufficient then a lined pit can be effective, but caution must be taken with this application since rain and water runoff can cause an overspill into the surrounding environment. Special consideration must be made to avoid open containers for interim storage.

Every effort should be made to reduce the amount of material for final disposal. For instance, where contamination by tar balls occurs, the sand may be cleaned by sieving the material, separating the sand from the oil. The clean sand can be returned to the beach.

When considering road transport to suitable disposal/storage areas of the recovered oil, it is important to note that contamination of roads and groundwater could occur. In addition, to ensure proper accountability of produced wastes there should be a tracking system which follows the materials from origin to disposal (Waste Tracking Form TBD - Appendix 5).

#### **8.4 WASTE RE-USE, TREATMENT AND DISPOSAL**

In consultation with the Waste Management Section of the Ministry of Public Works the IC / Logistics Section Chief will determine the most appropriate disposal option for the various waste products produced and recovered.

Any oil stored in the containers listed in the previous section, will first have to be collected by vacuum truck (See Appendix 8), before being disposed of via:

- MPW Sallyport for placement into Eurotainers for shipment to US.
- MPW Sallyport for dewatering of the oil before placing the dewatered oil in Eurotainers for shipment to the US.
- Other facilities that could be approached in the event of an MPI include: SOL, RUBIS, BELCO.

Disposal of oiled PPE and other materials may be disposed at Tynes Bay Waste to Energy Facility. However, approval by the IC and MPW manager for this facility must be sought to ensure that the calorific loading requirements are not exceeded.

On scene burning of oiled wood and other debris is a method of reducing the quantity of material which must be removed from the site of an incident. However, burning of anything other than horticultural waste is prohibited under the Clean Air Regulations 1993 unless a permit is requested by the IC and approved by DENR / The Environmental Authority.

Decanting water from the underside of a settled mixture of oil and water is an effective way to reduce the amount of waste produced by response options and ensure more efficient use of available resources. The IC / Operations Section Chief are responsible for authorizing decanting operations in consultation with DENR. The decision to authorize decanting shall be made on a case-by-case basis under NEBA while taking into account the following factors:

- Environmental sensitivity of the area for proposed decant water discharge.
- Availability of temporary storage and timely final disposal options.
- Demand for resources.
- Type of product discharged.
- Available mitigation measures for decanted water.

Temporary storage, transportation and final disposal methods shall be arranged to comply with government waste disposal approvals. Ideally, final disposal sites should be located as close as practical to those areas where oil pollution could most likely occur. TBWTE Facility is expected to have sufficient storage space for oiled debris, providing the site is not bailing municipal waste at that time.

## 9 DEMOBILIZATION AND RESPONSE TERMINATION

### 9.1 INTRODUCTION

Demobilization is important to ensure personnel and equipment are accounted for and properly serviced and stored. It is important to have a demobilization plan developed prior to a spill so the guidance is already in place for response termination. A post-incident debrief can also help identify lessons that can be applied to future responses.

### 9.2 DEMOBILIZATION

The appropriate Section Chief within the Incident Management System will make recommendations to the Incident Commander for demobilization of specific personnel and equipment.

Upon receiving authorization from the IC, personnel will return any incident specific gear and equipment to the staging area manager and conduct an informal debrief with their local supervisors.

### 9.3 END POINTS

It is important to establish an *end point* for determining when to terminate a response. Having a clear pre spill environmental assessment is important to determine this threshold. For industrial areas with large amounts of legacy contamination, the end point require much less clean-up than for an especially sensitive environmental area or an area used for recreation. It is important to engage with stakeholders early in a response to determine end points for the specific spill scenario. Doing so will assist the Lead Agency in developing incident objectives and determining response requirements.

A final report shall be prepared for the EMO by the IC for every MPI after the clean-up procedures have completed.

### 9.4 POST SPILL ASSESSMENTS

Post spill assessment is key in determining the long-term damages to the environment as well as the efficacy of response techniques. This should be undertaken by the Responsible Party (*i.e.* polluter). **DENR** (Marine Conservation and Terrestrial Ecology Sections, BAMZ and Pollution Control Section) and the Department of Health can oversee operations.

Data from the post spill assessment should be directly applied to future responses by incorporating lessons learned into future revisions of this plan.

### 9.5 TERMINATION

An incident response will be terminated under the authority of the IC / Command Staff and EMO.

### 9.6 COST RECOVERY:

#### 9.6.1 RECORD KEEPING AND PREPARATION OF CLAIM

Accurate record keeping of each clean up location with details on all key decisions/actions taken, the justification for such decisions/actions, personnel and equipment deployed, and consumable materials used is essential. The minutes for all meetings held must also be documented and receipts of any purchases made should be safeguarded for future reference. This avoids delay in preparing for any financial claims. Each agency is responsible for maintaining their internal response records. **Accountant Generals Department** will have overall responsibility for ensuring that these very important records are collected and maintained.

In the occurrence of a spill from a tanker or vessel, The International Tankers Owners Pollution Organization (IOTPF), the P&I club, and the IOPC must be involved at an early stage to ensure that claims for damages meet IOPC Fund guidelines. The Bermuda Shipping & Maritime Authority (BSMA) is responsible for this coordination.

It is anticipated that personnel would also be utilised from OSRL Ltd within the ICS Finance Section to help manage the setting up and completion of claims.

## 9.6.2 RECOVERY OF EXPENDITURE

The polluter should be financially responsible for the pollution caused. However, this is generally easier to say than to enforce. It is important that for an MPI the IC engage an experienced claims person to coordinate the evidence gathering necessary to make an appropriate claim to the following funds in sections 9.6.3. and 9.6.4. Many of the forms to be used to capture man-hours and equipment expenditure when tackling an oil spill are provided in Appendix 5. For an MPI, insurance claims would be expected to include:

- (i) Oil Spill Response man-hours (Government and Private),
- (ii) Oil spill response equipment replacement,
- (iii) Tourism / hotel financial losses and cancellations,
- (iv) Oiled boat cleaning, etc.

Personnel who are experienced in making such claims and could assist Bermuda through this process are available for hire from OSRL.

## 9.6.3 SPILLS OF OIL CARRIED AS CARGO

Bermuda is covered by two international conventions which provide compensation to those who incur clean-up costs or suffer pollution damage as a result of a spill of persistent oil from a laden tanker—the International Convention on Civil Liability for Oil Pollution Damage, 1992 (1992 CLC) and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1992 Fund).

- The ship-owner (RP) would initially be required to meet the cost of compensation payments up to the limit on liability determined by the CLC 1992.
- If this is not sufficient, additional compensation would then be paid by the 1992 IOPC Fund up to a total amount of 203 million special drawing rights equivalent on 3rd January 2005 to approximately £164,000,000.

## 9.6.4 SPILLS OF OIL FROM SHIPS OTHER THAN TANKERS

The recovery of clean-up costs where the spill originates from a cargo ship may be very difficult. The responsibility for compensation of clean-up costs and damages lies with the ship-owner (RP), but in practice claims often have to be settled with the insurer. Appropriate contact with the Protection and Indemnity Clubs is essential in such cases. The level of cover will be in accordance with the limits established under the Convention on Liability for Maritime Claims, 1976, as amended by the protocol of 1996. Accurate records documenting all expenditures including damage to the environment are essential for cost recovery action. The IC has responsibility to see that these records are maintained.

The manual on Oil Pollution at Sea, Securing Evidence on Discharges from Ships (the Bonn Agreement) of 1993 which was later updated to the North Sea manual on Maritime Oil Pollution Offences<sup>2</sup> is very useful in showing how evidence should be collected in a form acceptable for courts.

## 9.6.5 LIABILITY OF RESPONDER

No person, firm, corporation, entity or resource agency which renders assistance or advice, at the request of the IC, in mitigating or attempting to mitigate the effects of an actual or threatened discharge of oil or toxic material in coastal waters and the sea around Bermuda, or which assists in preventing, cleaning up or by other provision of law, is liable for civil damages as a result of any act or omission by him in rendering such assistance or advice, except acts or omissions amounting to gross negligence or wilful or wanton misconduct. This shall not apply in instances where the person, firm, corporation, or resource agency is compensated for such assistance or advice for more than the actual expenses.

<sup>2</sup> OSPAR Commission, 2010. North Sea Manual on Maritime Oil Pollution Offences. 89pp. <http://www.bonnagreement.org/site/assets/files/3948/north-sea-manual-on-maritime-oil-pollution-offences.pdf>

## 9.7 DEBRIEF

Following the termination of the clean-up response for a specific incident, all agencies involved shall be responsible for submission of an initial After-Action Report to the Emergency Measures Organisation (EMO) not later than three days following closing of the response. The EMO and the Lead Agency shall be jointly responsible for submission of a comprehensive After-Action Report, incorporating reports from all responsible agencies within 60-days of closing of response. This final report shall be submitted to the Ministers for Transport and the Environment for final approval and dissemination. The outcomes from this report should provide the basis for revision to this plan.

## 10 COMMUNICATIONS

Bermuda Maritime Operations Centre (MAROPS) are the primary notification centre under the NOSCP (see Section 4.2.). MAROPS operates many forms of marine communications, including VHF, MF, HF and IMARSAT.

MAROPS communicates directly with the Bermuda Coast Guard Unit and Marine & Ports Services and other agencies through the Multi-Channel VHF as described in the ICS form 205 of Table 6. Note that these communication channels are also provided on the oil response vessel and boats listed in Appendix 9.

It is noted that the 'blue-light' services of Bermuda Police Service (BPS), Bermuda Fire & Rescue Service (BFRS) and the Ambulance Service operate a relatively new Sepura "Blue Light" Communications System which operates at UHF frequencies as a digital signal. Initial communications by MAROPS to these blue-light services will be via telephone:

- 296-7559 for Fire Dispatch;
- 247-1624 for the Ambulance Service;
- 911 for BPS Land Units via COMOPS.

Once the Command Staff are based in the Incident Command Post, the communications to the respective parts of the response team as directed by the Command Staff and Section Chiefs. All contact details including email, cell numbers and home phone numbers of the Command Staff, Response Team personnel and contacts for overseas assistance are provide in the 'Call Out List' of Appendix 2.

Digital copies of the NOSCP, including the Call-Out List, equipment inventories and locations, Environmental Sensitivity Maps and other information related to oil spill response are provided on a Government server titled "Oil Spill" ([\cvsr-072-env301NOSRP\\$](#)) with access permission provided to key members of the Command Team via the Government IT Department, IDT.

Personnel who have access to the Oil Spill server from any Government PC include:

- Dr Geoff Smith, [gcsmith@gov.bm](mailto:gcsmith@gov.bm) (DENR, Environmental Engineer)
- Ms Patricia Hollis, [phollis@gov.bm](mailto:phollis@gov.bm) (DENR, Environmental Officer)
- Dr Shaun Lavis, [slavis@gov.bm](mailto:slavis@gov.bm) (DENR, Hydrogeologist)
- Mr Andrew Pettit, [apettit@gov.bm](mailto:apettit@gov.bm) (DENR, Director)
- Mr Scott Simmons, [ssimmons@gov.bm](mailto:ssimmons@gov.bm) (M&PS, Safety & Security Coordinator)
- Mr David Simmons, [dcsimmons@gov.bm](mailto:dcsimmons@gov.bm) (M&PS, Harbour Master)
- MAROPS, [rccbda@gov.bm](mailto:rccbda@gov.bm) (M&PS, Bermuda Radio)
- Disaster Risk Reduction Team, [emogroup@gov.bm](mailto:emogroup@gov.bm) ([refrancis@gov.bm](mailto:refrancis@gov.bm); [lraynor@gov.bm](mailto:lraynor@gov.bm); [lirubaine@gov.bm](mailto:lirubaine@gov.bm))
- Mr Rudy Cann, [rwcan@gov.bm](mailto:rwcan@gov.bm), (M&PS, Director)
- Cpt Jeff Patterson, [jhpatterson@gov.bm](mailto:jhpatterson@gov.bm), (Coast Guard Unit, Commander)
- Cpt Harrell, [jharrell@gov.bm](mailto:jharrell@gov.bm), (Coast Guard Unit, 2IC)
- VACANT, (Dept. of Health, Senior Port Health Preparedness Manager)

Files on "Oil Spill" ([\\cvsr-072-env301\NOSRP\\$](#)) are presented as:

-  DRAFT - BERMUDA National Oil Spill Contingency Plan
-  APPENDIX 2 - CALL OUT LIST
-  APPENDIX 3 - TRAINING LOG
-  APPENDIX 4 - ICS ROLES and RESPONSIBILITIES
-  APPENDIX 5 - FORMS and TEMPLATES
-  APPENDIX 6 - US GOVT - BDA GOVT AGREEMENT
-  APPENDIX 7 - OSRL AGREEMENT TEMPLATE
-  APPENDIX 8 - MEMORANDA OF UNDERSTANDING
-  APPENDIX 9 - EQUIPMENT LOCATIONS and INVENTORIES
-  APPENDIX 10 - ENV. SENSITIVITY INDICES (ESI)
-  APPENDIX 11 - ENVIRONMENTAL RISK PROCESS
-  APPENDIX 12 - DISPERSANT USE MAP CRITERIA AND PROCESS
-  APPENDIX 13 - OIL FINGERPRINTING PROCESS
-  APPENDIX 14 - ICS STANDARD OPERATING PROCEDURES
-  1. Instructions for updating information

Table 6. Incident Command System form ICS205 showing communications links from MAROPS

<b>1. Incident Name</b> █		<b>2. Operational Period (Date / Time)</b> From: █ To: █		<b>INCIDENT RADIO COMMUNICATIONS PLAN</b> ICS 205	
<b>3. BASIC RADIO CHANNEL USE</b>					
SYSTEM / CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS
Sepura Communications System	Digital	Interagency	UHF - Digital	Private Channels	Bermuda Coast Guard / Interagency
Marine VHF Radio Comms	Channel 16	Public Communications	156.8 Mhz	Public	Intership Communications as required
Marine VHF Radio Comms	Channel 27	Coast radio station	157.350 161.950	Public Correspondance	RCC Bermuda - working channel
Marine VHF Radio Comms	Channel 22	Public Communications/duplex	157.100 161.700	Public	Coast Guard / Marine Police working channel
Marine VHF Radio Comms	Channel 12	Port Operations	156.6Mhz	Port Operations	Marine & Ports - Pilot operations
Marine VHF Radio Comms	Channel 10	Port Operations	156.5Mhz	Port Operations	Marine & Ports - Tug Operations
Marine VHF Radio Comms	Channel 80	Port Operations	156.4Mhz	Port/Ferry Operations	Marine & Ports - Ferry Operations
Marine VHF Radio Comms	Channel 14	Commercial Port Operations	156.7Mhz	Public - BYS	Bermuda Yacht Services working channel
█	█	█	█	█	█
<b>4. Prepared by: (Communications Unit)</b> MAROPS				<b>Date / Time</b> 23 <sup>rd</sup> December 2020	
<b>INCIDENT RADIO COMMUNICATIONS PLAN</b>					<b>ICS 205 (Rev.07/04)</b>

## 11 PUBLIC COMMUNICAITONS & RELATIONS

### 11.1 OFFICIAL OUTREACH TO THE PUBLIC

Public relations must be an integral part of the NOSCP and it is essential that the Director of Communication and Information or a designated alternate (*i.e.* Public Information Officer) work closely with the EMO, the IC and the Command Team to facilitate the flow of accurate and timely information to the news media and ultimately to the public. The Public Information Office shall ensure that information released to the public is consistent with policies, directives, and legal and security requirements of the EMO.

### 11.2 COMMUNICATING WITH THE PUBLIC

It is the responsibility of the Command Team and respective Section Chiefs and Leaders to provide clear instruction to all official responders that the release of images of the spill and uncontrolled opinions, except by Public Relations, is prohibited.

## 12 TRAINING AND EXERCISES

It shall be the responsibility of the Director, Department of Environment and Natural Resources (IC) to arrange for appropriate training for key personnel in this Plan to enable them to respond effectively in the case of Local Spills and an MPI. Such training may be provided locally or overseas. The following courses should be completed and refresher training provided every three years:

- **IMO Level 1:** Personnel who may physically respond to the oil spill and engage in actions afloat and ashore.
- **IMO Level 2:** Incident Commanders and members of the Response Team who may serve as ICS Section Chiefs, Branch Directors, Group and Unit Leaders.
- **IMO Level 3:** Members of the Emergency Management Organization who may be directly related to oversight of a pollution incident.
- **Shoreline Clean-up Assessment Technique (SCAT) training:** Environmental Officers, and members of the Response Team who may serve as Operations or Planning Chiefs, and Leaders of the Environmental Unit.
- **ICS Level 100 and 200:** Personnel of all agencies who may be involved in emergency response including administrative support functions.
- **ICS Level 300:** Members of the Response Team

Periodic exercises, both on paper and in the field, shall be staged to determine the effectiveness of this Plan. A Table-top exercise with a pollution incident scenario that practices Incident Command System management, should be conducted annually by the IC, alternate IC, and the Response Team. Semi Annual equipment deployment exercises should be conducted by the Harbour Authority for the licenced ports and Oil Handling Facilities. These exercises shall be observed, assessed and recorded by DENR. Every training exercise shall have a post-exercise review meeting with key stakeholders to review and critique the exercise and the application of the National Plan in order to amend the plan or training regime where necessary. Members of the Response Team should participate in at least one of these exercises per year. A Training Log is provided in Appendix 3.

## APPENDIX 1. THE MINISTER FOR TRANSPORT STATUTES OF AUTHORITY

- (1) Merchant Shipping Act 2002, BR35/2002. Bermuda.
- (2) Merchant Shipping (Oil Pollution Preparedness, Response and Cooperation Convention) Regulations 2019, BR13/2019. Bermuda
- (3) Merchant Shipping (Accident Reporting and Investigation) Regulations 2019 (Bermuda)
- (4) Merchant Shipping (Compulsory Insurance of Ship Owners for Maritime Claims) Regulations 2019. BR11/2019. Bermuda.
- (5) Merchant Shipping (Compulsory Insurance) Regulations 2004. BR50/2004. Bermuda.
- (6) Merchant Shipping (Mandatory Ship Reporting) Regulations 2004. BR51/2004. Bermuda.
- (7) Merchant Shipping (Port State Control) Regulations 2019. BR14/2019. Bermuda.
- (8) Merchant Shipping (Prevention of Oil Pollution) Regulations 2010. BR74/2010. Bermuda.
- (9) Merchant Shipping (Prevention of Pollution; Substances other than oil) (Intervention) Order 2004. BR54/2004. Bermuda.
- (10) Merchant Shipping (Prevention of Pollution from Noxious Liquid Substances in Bulk) Regulations 2019. BR17/2019. Bermuda.
- (11) Merchant Shipping (Prevention of Pollution) (Limits) Regulations 2002. BR49/2002. Bermuda.
- (12) Merchant Shipping (Ship-To-Ship Transfers) Regulations 2019. BR20/2019. Bermuda.
- (13) BR-1995. The Merchant Shipping (Prevention of Oil Pollution) Amendment Regulations 1995.
- (14) S.I. 1997 No. 2578. The Merchant Shipping (Liability and Compensation for Oil Pollution Damage) (Transitional Provisions) (Overseas Territories) Order 1977.
- (15) S.I. 1982 No. 1666. The Merchant Shipping (Prevention of Pollution) (Intervention) (Overseas Territories) Order 1982.
- (16) S.I. 1983 No. 1106. The Merchant Shipping (Prevention of Oil Pollution) Order 1983.
- (17) S.I. 1987 No. 220. The Merchant Shipping (Indemnification of Ship-owners) Order 1987.
- (18) The Merchant Shipping Oil Pollution Regulations 1988 (Government Notice No. 374, 1988).
- (19) S.I. 1988 No. 1084 Marine Pollution (The Environment Protection) (Overseas Territories) Order 1988.

**APPENDIX 2: CALL-OUT LIST:**

**Note:** *Call Out List with full contact details of all personnel including Ministers and Permanent Secretaries is omitted from this copy of the National Oil Spill Contingency Plan to provide confidentiality.*

**Contact DENR – Pollution Control Section ([PollutionControl@gov.bm](mailto:PollutionControl@gov.bm)) for Digital copies of the NOSCP, including the Call-Out List.**

**All details are also provided on the Government server titled “Oil Spill” ([\\cvsr-072-env301\WOSRP\\$](\\cvsr-072-env301\WOSRP$)) for personnel with access permission provided to key members of the Command Team via the Government IT Department, IDT.**

APPENDIX 3: TRAINING LOG:

NAME	POTENTIAL ROLE FOR: OIL SPILL RESPONSE	INCIDENT COMMAND SYSTEM: APPLICABLE SECTIONS						CURRENT JOB TITLE	FORMAL TRAINING						EXERCISES & SPILLS																								
		Command Team	Public Information Officer (IO)	Safety Officer (SO)	Operations	Planning	Logistics		Support	IMO / OSRL Oil Spill Management Workshop			Incident Command System (ICS Training)			Shoreline Cleanup Assessment Technique (SCAT) (NOAA Program)	9th Feb 2023	18th March 2022	12th Aug 2021	12th Jan 2020	17th Oct 2018	30th Jan 2018	23-Jan-18	30th Oct 2017	29th June 2017	1st April 2017	27th Oct 2016	4th Sept 2016	16th Mar 2016	8th Dec 2015	13 & 14 Mar 2013	12-Mar-13	11-Mar-13	6-Mar-13					
										Level 3	Level 2	Level 1	ICS 300	ICS 200	ICS 100		Offshore Boom Deployment - South Basin	Whalebone Bay Pipeline / Oil Dock Spill	SOL-BELCO Pipeline Failure - Craw Hill Railway Trail	Dockyard Boat Fires	RBR / Rubis Dockyard Exercise	Skyport - Gov't Exercise	SOL Petroleum - HFO Spill	Gasoline Spill - RUBIS Van Buren's Flatts Inlet	"Sum Girl" Boat Recovery y Mills Creek	Gov't - ACBDA Dockyard Exercise	SOL/BIOS exercise - boom deployment training incl skimmer	Sunken Boat - Ferry Reach	RBR / Rubis Morgans Point Exercise w/USCG oberseve	SOL Richardson Bay - Jet A1 spill exercise incl. DENR reps	ESSO NARRT Table Top Exercise	ESSO NARRT Theoretical Training Day (IMO Level 1)	ESSO NARRT Boom & Skimmer Deployment	MPCP Skimmer and Boom Equipment Familiarisation					
Training POC - Highlighted in BLUE								See "MPCP\TRAINING\IMO Oil Spill Response Courses & Qualifications" AND "MPCP\TRAINING\Oil Spill IMO Level 1 Course - 2019\Course Certificates"																															
<b>BERMUDA MARITIME OPERATIONS CENTRE</b>																																							
Scott Simmons		C			O	P		Coordinator, Maritime Safety & Security Office	Jan-23											Yes									Yes						Yes	Yes	Yes	-	
Peter Strickland						P		BMO		Mar-23	Mar-23																												
<b>ROYAL BERMUDA REGIMENT</b>																																							
CO Lt Col. Ben Beasley		C			O		L	Commanding Officer												Yes																			
MajTomas Woods	Manager Field Groups Ashore	C			O		L	Staff Officer Bermuda Regiment																															
Maj. Dwight Robinson		C			O		L	B Company Commander		Mar-20	Feb-20																												
WO1 Jason Harrell					O		L	Regimental Sergeant Major																															
Maj. K L Wainwright					O		L	Quartermaster																															
WO1 Pete Ramm						P		War. Off., Training Officer																															
<b>COAST GUARD RBR</b>																																							
Capt. Jeffrey Patterson	IC/DIC/OPS Chief	C			O	P	L	CG Commander		Mar-23	Mar-23		Nov'16	Nov'16		Yes				Yes	Yes																		
Capt Harrell	2IC	C			O	P	L	PTS CG 2IC		Mar-23						Yes																							
WO2 DeMelo	Boat Operator				O			PTS CG			Mar-23																												
CSgt Spanswick	Boat Operator				O			PTS CG			Mar-23			Mar'19																									
CSgt Jason Smith	Boat Operator				O			Outward Bound Paget Island			Mar'19			Mar'19																									
Sgt Smith Tyler	Boat Operator				O			FTS CG 21C		Mar-23	Mar-23			Mar'19																									
ASgt Sean Wheatley	Boat Operator				O			FTS CG Police Constable			Mar-23			Mar'19	Jan-20	Yes	Yes								Yes														
Sgt Richardson	Boat Operator				O			FTS CG			Mar-23			Mar'19		Yes																							
Cpl Forrest Williams	Boat Operator				O			FTS CG			Mar-23			Mar'19	Jan-20																								
Cpl Frick	Boat Operator				O			PTS CG			Mar'19			Mar'19																									
Cpl Smith DA	Boat Operator				O			PTS CG																															
Cpl Philpott	Deck Hand				O			PTS CG																															
Cpl Fox	Deck Hand				O			PTS CG																															
Cpl Vanderpool	Boat Operator				O			PTS CG			Mar-23																												
LCpl Trott-Burchall	Boat Operator				O			PTS CG																															
LCpl Woolf	Boat Operator				O			PTS CG			Mar'19			Mar'19					Yes						Yes	Yes													
LCpl Amos	Deck Hand				O			PTS CG																															
LCpl Roach	Deck Hand				O			PTS CG																															
LCpl Medeiros LEM	Deck Hand				O			PTS CG			Mar-23																												
LCpl Gaunlett	Deck Hand				O			PTS CG																															
Pte Goins	Deck Hand				O			PTS CG			Mar'19			Mar'19																									
Pte J.D. Symonds	Boat Operator				O			FTS CG			Mar-23			Mar'19																									
Pte Wright J	Deck Hand				O			PTS CG			Mar'19			Mar'19																									
Pte Adderly	Boat Operator				O			FTS CG			Mar-23		20-Nov	Mar'19																									
Pte Best	Boat Operator				O			PTS CG																															
Pte Hill	Deck Hand				O			PTS CG																															
Pte Smith CA	Deck Hand				O			PTS CG			Mar-23																												
Pte Burgess	Deck Hand				O			PTS CG			Mar-23																												
Pte Roach	Deck Hand				O			PTS CG																															
Pte Bean	Deck Hand				O			PTS CG																															
Pte Burrows	Deck Hand				O			PTS CG																															
Pte Easton	Deck Hand				O			PTS CG																															
Pte Smith NR	Deck Hand				O			PTS CG																															
Pte Wright KE	Deck Hand				O			PTS CG																															
Daniel Wideman					O			PTS CG			Mar-23																												
Justus Anderson					O			PTS CG			Mar-23																												
Nathan Frick					O			PTS CG			Mar-23																												
PC Linnell Williams	Boat Operator				O			FTS CG Police Constable			Mar-23			Mar'19																									
PC Medeiros	Boat Operator				O			FTS CG Police Constable			Mar-23																												
PC Peterkin	Boat Operator				O			FTS CG Police Constable			Mar-23																												
<b>BERMUDA SHIPPING &amp; MARITIME AUTHORITY</b>																																							
Taran Card					O	P		Senior Surveyor		Mar-20	Mar'19	Feb-20		Mar'19																									
Edward Robinson					O	P		Surveyor			Mar'19			Mar'19																									









## APPENDIX 4: ICS ROLES & RESPONSIBILITIES AND GLOSSARY

The following roles and responsibilities have been derived from FEMA in the US and adapted accordingly to the requirements of the Bermuda Government. Figure 1 provides a high level organisational structure of the ICS system for use in small to large oil spill pollution incidents.

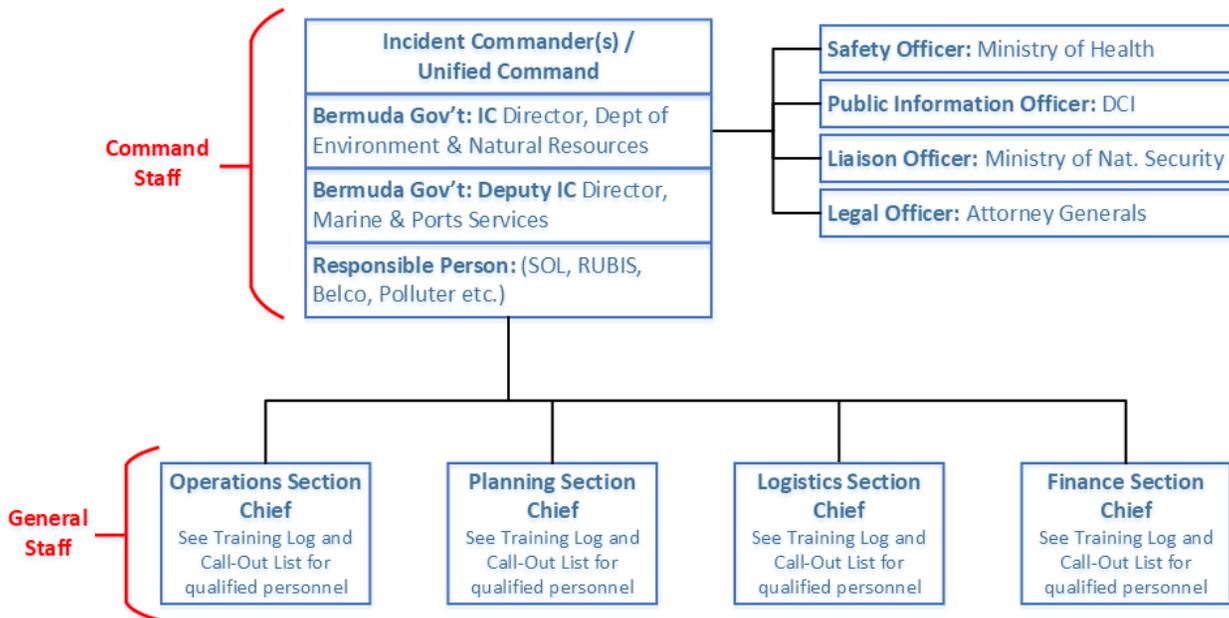


Figure A4.1. High Level Incident Command System (ICS) Organisational Structure

### INCIDENT COMMANDER

The Incident Commander is technically not a part of either the General or Command Staff. The Incident Commander is responsible for:

- Having clear authority and knowing agency policy.
- Ensuring incident safety.
- Establishing an Incident Command Post.
- Setting priorities and determining incident objectives and strategies to be followed (**ICS-202, ICS-234**).
- Establishing the ICS organization needed to manage the incident (**ICS-203, ICS-207**).
- Approving the Incident Action Plan (**IAP: ICS-202, ICS-202A, ICS-203, ICS-204, ICS-205, ICS-206, ICS-208**).
- Brief Command and General Staff (**ICS-201**) and Coordinate activities.
- Approving resource requests and use of volunteers and auxiliary personnel.
- Ensuring after-action reports are completed.
- Authorizing information release to the media.
- Ordering demobilization as needed (**ICS-221**).

### COMMAND STAFF

Command Staff carry out staff functions needed to support the Incident Commander. Command Staff positions are established to assign responsibility for key activities not specifically identified in the General Staff functional elements. These positions may include the Public Information Officer (PIO), Safety Officer (SO), and Liaison Officer (LNO), in addition to various others, as required and assigned by the Incident Commander. All Command Staff shall maintain a unit log (**ICS-214**) in addition to other stated ICS forms.

## GENERAL STAFF

The General Staff is responsible for the functional aspects of the Incident Command structure. The General Staff typically consists of the Operations, Planning, Logistics, and Finance/Administration Sections. In some incidents the General Staff may also include the Intelligence/Investigations Function, either operating under a staff section, or as a stand-alone section. All General Staff shall maintain a unit log (**ICS-214**) in addition to other stated ICS forms.

General guidelines related to General Staff positions include the following:

- Only one person will be designated to lead each General Staff position.
- General Staff positions may be filled by qualified persons from any agency or jurisdiction.
- Members of the General Staff report directly to the Incident Commander. If a General Staff position is not activated, the Incident Commander will have responsibility for that functional activity.
- Deputy positions may be established for each of the General Staff positions. Deputies are individuals fully qualified to fill the primary position. Deputies can be designated from other jurisdictions or agencies, as appropriate. This is a good way to bring about greater interagency coordination.
- General Staff members may exchange information with any person within the organization. Instructions are given according to the chain of command.
- General Staff positions should not be combined. If there is only one person initially available to cover the roles of both "Planning" and "Logistics" sections then it is better to create the two separate functions, and if necessary, for a short time place one person in charge of both. That way, the transfer of responsibility can be made easier.

## PUBLIC INFORMATION OFFICER RESPONSIBILITIES

- Determine, according to direction from the IC, any limits on information release.
- Develop accurate, accessible, and timely information for use in press/media briefings.
- Obtain IC's approval of news releases.
- Conduct periodic media briefings.
- Arrange for tours and other interviews or briefings that may be required.
- Monitor and forward media information that may be useful to incident planning.
- Maintain current information, summaries, and/or displays on the incident.
- Make information about the incident available to incident personnel.
- Participate in planning meetings.

## SAFETY OFFICER RESPONSIBILITIES

- Identify and mitigate hazardous situations.
- Ensure safety messages and briefings are made.
- Exercise emergency authority to stop and prevent unsafe acts.
- Review the Incident Action Plan (IAP) for safety implications (**ICS-206, ICS-208, ICS-215**).
- Assign assistants qualified to evaluate special hazards.
- Initiate preliminary investigation of accidents within the incident area.
- Review and approve the Medical Plan (**ICS-206**).
- Participate in planning meetings.

## LIAISON OFFICER RESPONSIBILITIES

- Act as a point of contact for agency representatives.
- Maintain a list of assisting and cooperating agencies and agency representatives.
- Assist in setting up and coordinating interagency contacts.
- Monitor incident operations to identify current or potential inter-organizational problems.
- Participate in planning meetings, providing current resource status, including limitations and capabilities of agency resources.
- Provide agency-specific demobilization information and requirements.

## ASSISTANTS

- In the context of large or complex incidents, Command Staff members may need one or more assistants to help manage their workloads. Each Command Staff member is responsible for organizing his or her assistants for maximum efficiency.

## ADDITIONAL COMMAND

- Additional Command Staff positions may also be necessary depending on the nature and location(s) of the incident, and/or specific requirements established by the Incident Commander. For example, a Legal Counsel may be assigned directly to the Command Staff to advise the Incident Commander on legal matters, such as emergency proclamations, legality of evacuation orders, and legal rights and restrictions pertaining to media access. Similarly, a Medical Advisor may be designated and assigned directly to the Command Staff to provide advice and recommendations to the Incident Commander in the context of incidents involving medical and mental health services, mass casualty, acute care, vector control, epidemiology, and/or mass prophylaxis considerations, particularly in the response to a bioterrorism event.

## OPERATIONS SECTION CHIEF RESPONSIBILITIES

The Operations Section Chief is responsible for managing all tactical operations at an incident. The Incident Action Plan (IAP) provides the necessary guidance. The need to expand the Operations Section is generally dictated by the number of tactical resources involved and is influenced by span of control considerations.

Major responsibilities of the Operations Section Chief are to:

- Assure safety of tactical operations.
- Manage tactical operations.
- Develop the operations portion of the IAP.
- Supervise execution of operations portions of the IAP.
- Request additional resources to support tactical operations.
- Approve release of resources from active operational assignments.
- Make or approve expedient changes to the IAP.
- Maintain close contact with IC, subordinate Operations personnel, and other agencies involved in the incident.

## PLANNING SECTION CHIEF RESPONSIBILITIES

The Planning Section Chief is responsible for providing planning services for the incident. Under the direction of the Planning Section Chief, the Planning Section collects situation and resources status information, evaluates it, and processes the information for use in developing action plans. Dissemination of information can be in the form of the IAP, in formal briefings, or through map and status board displays.

Major responsibilities of the Planning Section Chief are to:

- Collect and manage all incident-relevant operational data.
- Supervise preparation of the IAP.
- Provide input to the IC and Operations in preparing the IAP.
- Incorporate Traffic, Medical, and Communications Plans and other supporting materials into the IAP (**ICS-205, ICS-206**).
- Conduct and facilitate planning meetings.
- Reassign personnel within the ICS organization.
- Compile and display incident status information.
- Establish information requirements and reporting schedules for units (e.g., Resources and Situation Units).
- Determine need for specialized resources.
- Assemble and disassemble Task Forces and Strike Teams (or law enforcement Resource Teams) not assigned to Operations.
- Establish specialized data collection systems as necessary (e.g., weather).
- Assemble information on alternative strategies.
- Provide periodic predictions on incident potential.

- Report significant changes in incident status.
- Oversee preparation of the Demobilization Plan (**ICS-221**).

## **LOGISTICS SECTION CHIEF RESPONSIBILITIES**

The Logistics Section Chief provides all incident support needs with the exception of logistics support to air operations. The Logistics Section is responsible for providing:

- Facilities.
- Transportation.
- Communications.
- Supplies.
- Equipment maintenance and fueling.
- Food services (for responders).
- Medical services (for responders).
- All off-incident resources.

Major responsibilities of the Logistics Section Chief are to:

- Provide all facilities, transportation, communications, supplies, equipment maintenance and fueling, food and medical services for incident personnel, and all off-incident resources.
- Manage all incident logistics.
- Provide logistical input to the IAP.
- Brief Logistics Staff as needed.
- Identify anticipated and known incident service and support requirements.
- Request additional resources as needed.
- Ensure and oversee the development of the Communications, Medical, and Traffic Plans as required.
- Oversee demobilization of the Logistics Section and associated resources.

## **FINANCE/ADMINISTRATION SECTION CHIEF RESPONSIBILITIES**

The Finance/Administration Section Chief is responsible for managing all financial aspects of an incident. Not all incidents will require a Finance/Administration Section. Only when the involved agencies have a specific need for finance services will the Section be activated. Major responsibilities of the Finance/Administration Section Chief are to:

- Manage all financial aspects of an incident.
- Provide financial and cost analysis information as requested.
- Ensure compensation and claims functions are being addressed relative to the incident.
- Gather pertinent information from briefings with responsible agencies.
- Develop an operating plan for the Finance/Administration Section and fill Section supply and support needs.
- Determine the need to set up and operate an incident commissary.
- Meet with assisting and cooperating agency representatives as needed.
- Maintain daily contact with agency(s) headquarters on finance matters.
- Ensure that personnel time records are completed accurately and transmitted to home agencies.
- Ensure that all obligation documents initiated at the incident are properly prepared and completed.
- Brief agency administrative personnel on all incident-related financial issues needing attention or follow up.
- Provide input to the IAP.

The size of the IMS organization that develops under the Command function depends on the number, type and scope of operations being conducted, and the types of support functions required. Considering the operations might last for weeks, the response structure must be sustainable on the long term. Therefore, Command and the different sections represent functions, not a person. Nevertheless, leadership is paramount in the IMS. Table 5 shows the relation among the different organizational elements and leadership titles. A person might supervise, be leader, of more than one unit

**ICS ORGANISATION NOMENCLATURE:**

<b>Organizational element</b>	<b>Leadership title</b>
<b>Command</b>	Incident Commander (and Deputy)
<b>Command Staff</b>	Officer (and Assistant)
<b>Section – General Staff</b>	Chief (and Deputy)
<b>Branch</b>	Director (and Deputy)
<b>Division/Group</b>	Supervisor
<b>Unit</b>	Leader
<b>Strike Team/Task Force</b>	Leader

**Mobilisation**

Quick mobilization of response resources is key to ensuring an effective and efficient clean-up. The authority and financial limitations must be clearly outlined for all government and non-government resources. The responsibility of supporting organizations to make such resources available must be clearly outlined in national policy. All requests, justifications, and associated costs shall be documented to facilitate claims and reimbursement procedures. This would be where you would expand on who has the authority to mobilize resources and make purchases or contracts. And what the limitations of those authorities are.

## ICS GLOSSARY OF TERMS

TERM	DEFINITION
<b>Allocated Resources</b>	Resources dispatched to an incident.
<b>All-Risk</b>	Any incident or event, natural or human-caused, which warrants action to protect life, property, environment, and public health and safety, and minimize disruption of governmental, social, and economic activities.
<b>Assigned Resources</b>	Resources checked-in and assigned work tasks on an incident.
<b>Assignments</b>	Tasks given to resources to perform within a given operational period, based upon tactical objectives in the Incident Action Plan.
<b>Available Resources</b>	A resource assigned to an incident, checked in, and available for assignment.
<b>Base</b>	The location at which primary Logistics functions for an incident are coordinated and administered. There is only one Base per incident. (Incident name or other designator will be added to the term Base.) The Incident Command Post may be collocated with the Base.
<b>Branch</b>	The organizational level having functional and/or geographic responsibility for major incident operations. The Branch level is organizationally between Section and Division/Group in the Operations Section and between Section and Units in the Logistics Section. Branches are identified by roman numerals or by functional name (e.g., service and support).
<b>Buying Team</b>	A team that supports incident procurement and is authorized to procure a wide range of services, supplies, and equipment.
<b>Camp</b>	Geographical site(s) within the general incident area, separate from the incident base, equipped and staffed to provide sleeping, food, water, and sanitary services to incident personnel.
<b>Chain of Command</b>	A series of management positions in order of authority.
<b>Check-In</b>	Process whereby resources first report to incident response. Check-in locations include: Incident Command Post (Resources Unit), Incident Base, Camps, Staging Areas, Helibases, Helispots, or Division/Group Supervisors (for direct tactical assignments).
<b>Chief</b>	The Incident Command System title for individuals responsible for the command of functional Sections: Operations, Planning, Logistics, and Finance/Administration.
<b>Command</b>	The act of directing, ordering, and/or controlling resources by virtue of explicit legal, agency, or delegated authority. May also refer to an Incident Commander or to the Unified Command.
<b>Command And Control</b>	The exercise of authority and direction by a properly designated Incident Commander/Unified Command over assigned resources to accomplishment the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by the Incident Commander/Unified Command in planning, directing, coordinating, and controlling resources and operations.
<b>Command Post</b>	See Incident Command Post.
<b>Command Staff</b>	A group of incident personnel that the Incident Commander or Unified Command assigns to support the command function at an ICP. Command staff often include a PIO, a Safety Officer, and a Liaison Officer, who have assistants as necessary. Additional positions may be needed, depending on the incident.

<b>Common Operational Picture (COP)</b>	COP is a capability for sharing dynamic, geospatially-referenced situational awareness information. A common operational picture provides timely, fused, accurate displays of data, shared across the enterprise, which facilitates collaborative planning and support situational awareness for all stakeholders. Data disseminated through a common operational picture is drawn from authoritative data sources, allowing stakeholders to filter and contribute to the common operational picture according to their area of responsibility, mode, or role.
<b>Communications Unit</b>	An organizational Unit in the Logistics Section responsible for providing communication services at an incident. A Communications Unit may also be a facility (e.g., a trailer or mobile van) used to provide the major part of an Incident Communications Centre.
<b>Complex Incident</b>	Two or more individual incidents located in the same general proximity, which are assigned to a single Incident Commander or Unified Command to facilitate management.
<b>Compensation/Claims Unit</b>	Functional Unit within the Finance/Administration Section responsible for financial concerns resulting from property damage, injuries, or fatalities at the incident.
<b>Contamination Control Line</b>	The established line around the Contamination Reduction Zone that separates the Contamination Reduction Zone from the Support Zone.
<b>Contamination Reduction Corridor (CRC)</b>	That area within the Contamination Reduction Zone where the actual decontamination is to take place. Exit from the Exclusion Zone is through the Contamination Reduction Corridor. The CRC will become contaminated as people and equipment pass through to the decontamination stations.
<b>Contamination Reduction Zone</b>	That area between the Exclusion Zone and the Support Zone. This zone contains the Personnel Decontamination Station. This zone may require a lesser degree of personnel protection than the Exclusion Zone. This area separates the contaminated area from the clean area and acts as a buffer to reduce contamination of the clean area.
<b>Control Zones</b>	The geographical areas within the control lines set up at a hazardous substance incident. The three zones most commonly used are the Exclusion Zone, Contamination Reduction Zone, and Support Zone.
<b>Cooperating Agency</b>	An agency supplying assistance other than direct tactical, support functions, or resources to the incident control effort (e.g., Red Cross, telephone company, etc).
<b>Corrective Actions</b>	Implementing procedures that are based on lessons learned from actual incidents or from training and exercises.
<b>Cost Unit</b>	Functional Unit within the Finance/Administration Section responsible for tracking costs, analysing cost data, making cost estimates, and recommending cost-saving measures.
<b>Crisis Management</b>	From a business continuity planning perspective, this term refers to the overall coordination of an organization's response to a crisis in an effective, timely manner, with the goal of avoiding or minimizing damage to the organization's profitability, reputation, and ability to operate.
<b>Critical Information Requirements</b>	Critical Information Requirements are a comprehensive list of information requirements that the Incident Commander/Unified Command has identified as critical to facilitating timely decision making.
<b>Critical Infrastructures</b>	Systems and assets, whether physical or virtual, so vital to the U.S. that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters.
<b>Damage Assessment</b>	An appraisal or determination of the effects of a disaster on people, property, the environment, the economy and/or services.

<b>Delegation of Authority</b>	A statement provided to the Incident Commander by the Agency Executive delegating authority and assigning responsibility. The Delegation of Authority can include objectives, priorities, expectations, constraints, and other considerations or guidelines as needed. Many agencies require written Delegation of Authority to be given to Incident Commanders prior to their assuming command on larger incidents.
<b>Demobilization</b>	The orderly, safe, and efficient return of an incident resource to its original location and status.
<b>Demobilization Unit</b>	Functional Unit within the Planning Section responsible for assuring orderly, safe, and efficient demobilization of incident resources.
<b>Deputy</b>	A fully qualified individual who, in the absence of a superior, could be delegated the authority to manage a functional operation or perform a specific task. A Deputy could act as relief for a superior and, therefore, must be fully qualified in the position. Deputies can be assigned to the Incident Commander, General Staff, and Branch Directors.
<b>Director</b>	Incident Command System title for individuals responsible for supervision of a Branch.
<b>Discharge</b>	Discharge means any emission (other than natural seepage), intentional or unintentional, and includes, but is not limited to, spilling, leaking, pumping, pouring, emitting, emptying, or dumping.
<b>Dispatch</b>	The implementation of a command decision to move a resource or resources from one place to another.
<b>Dispatch Center</b>	A facility from which resources are ordered, mobilized, and assigned to an incident.
<b>Division</b>	Organization level used to divide an incident into geographical areas of operation. The Division level is established when the number of resources exceeds the span-of-control of the Operations Section Chief and is organizationally between the Task Force/Team and the Branch. (See also: Group)
<b>Documentation Unit</b>	Functional Unit within the Planning Section responsible for collecting, recording, and safeguarding all documents relevant to the incident.
<b>Emergency Measures Organisation (EMO)</b>	As part of the Ministry of National Security, the EMO prepares all Government departments and non-government agencies for severe weather events and other disasters (i.e. major oil spills) that may affect Bermuda and coordinates emergency response and recovery.
<b>Evacuation</b>	Organized, phased, and supervised withdrawal, dispersal, or removal of civilians from dangerous or potentially dangerous areas, and their reception and care in safe areas.
<b>Exclusion Zone</b>	The area immediately around a spill or release where contamination does or could occur. It is the innermost of the three zones of a hazardous substance/material incident. Special protection is required for all personnel while in this zone.
<b>Exercise</b>	A simulated emergency in which players carry out actions, functions, and responsibilities that would be expected of them in a real emergency. Exercises can be used to validate plans and procedures, and to practice prevention, mitigation, preparedness, response, and recovery capabilities.
<b>Facilities Unit</b>	Functional Unit within the Support Branch of the Logistics Section that provides fixed facilities for the incident. These facilities may include the Incident Base, feeding areas, sleeping areas, sanitary facilities, etc.
<b>Facilities Response Plan (FRP)</b>	The Facility Response Plan (FRP) rule requires certain facilities that store and use oil are required to prepare and submit an FRP. An FRP demonstrates a facility's preparedness to respond to a worst case oil discharge.
<b>Finance/Administration Section</b>	The section responsible for all administrative and financial considerations on an incident.

<b>First Responder</b>	The first responding unit to arrive at an incident scene. This term has traditionally been used to describe public safety emergency responders who have duties related to preservation of life and property. As transportation agencies become more actively involved in traffic incident response and take active roles in Incident Command (as partners in Unified Command), they are becoming accepted as first responders for traffic incidents. For example, service patrols may be first on the scene of an incident and many are trained to provide traffic control to stabilize the scene and to provide emergency first aid. Some service patrols are also permitted limited use of emergency lights and sirens to get to an incident.
<b>Food Unit</b>	Functional Unit within the Service Branch of the Logistics Section responsible for providing meals for incident personnel.
<b>General Staff</b>	A group of incident personnel organized according to function and reporting to the Incident Commander or Unified Command. The ICS General Staff consists of the Operations Section Chief, Planning Section Chief, Logistics Section Chief, Finance/Administration Section Chief.
<b>Geographic Information System</b>	A geographic information system is an electronic information system which provides a geo-referenced database to support management decision-making.
<b>Ground Support Unit</b>	Functional Unit within the Support Branch of the Logistics Section responsible for the fueling, maintaining, and repairing of vehicles, and the transportation of personnel and supplies.
<b>Group</b>	An organizational level established to divide the incident into functional areas of operation. Groups are composed of resources assembled to perform a special function not necessarily within a single geographic division. A Group is located between Branches (when activated) and Resources in the Operations Section. (See also: Division)
<b>Hazard</b>	A phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. These may include natural, technological or human-caused incidents or some combination of these.
<b>Helibase</b>	A location within the general incident area for parking, fueling, maintenance, and loading of helicopters.
<b>Helispot</b>	A location where a helicopter can take off and land. Some helispots may be used for temporary loading.
<b>Hierarchy of Command</b>	See Chain of Command.
<b>ICS-201, Incident Briefing</b>	Provides the Incident Command/Unified Command and General Staffs with basic information regarding the incident situation and the resources allocated to the incident. This form also serves as a permanent record of the initial response to the incident. Generally prepared by the Initial Incident Commander.
<b>ICS-202, Incident Objectives</b>	Describes the basic strategy and objectives for use during each operational period. Generally prepared by the Planning Section Chief.
<b>ICS-203, Organisational Assignment List</b>	Provides information on the response organization and personnel staffing. Generally prepared by the Resource Unit Leader.
<b>ICS-204, Field Assignment</b>	Used to inform personnel of assignments. After Incident Command/Unified Command approve the objectives, staff members receive the assignment information contained in this form. Generally prepared by the Resource Unit Leader and Operations Section Chief.
<b>ICS-204a, Assignment List Attachment</b>	Attachment to ICS-204 to allow for more specificity on work assignment special instructions, special equipment,/supplies needed, special environmental considerations, and special site specific safety considerations. Generally prepared by the Operations and Planning Section Chiefs.

<b>ICS-205, Incident Communication Plan</b>	Provides, in one location, information on the assignments for all communications equipment for each operational period. The plan is a summary of information. Information from the Incident Communications Plan on frequency assignments can be placed on the appropriate Assignment form (ICS Form 204). Generally prepared by the Communications Unit Leader.
<b>ICS-205a, Incident radio Communications Plan</b>	Records methods of contact for personnel on scene. Generally prepared by the Communications Unit Leader.
<b>ICS-206, Medical Plan</b>	Provides information on incident medical aid stations, transportation services, hospitals, and medical emergency procedures. Generally prepared by the Medical Unit Leader.
<b>ICS-207, Incident Organisational Chart</b>	Provides information on units that are currently activated and the names of personnel staffing each position/unit. Not all positions need to be filled. The size of the organization is dependent on the magnitude of the incident and can be expanded or contracted as necessary. Generally prepared by the Resources Unit Leader.
<b>ICS-208, Site Safety and Health Plan</b>	Designed for safety and health personnel. Generally prepared by the Safety Officer.
<b>ICS-209, Incident Status Summary</b>	Summarizes incident information for staff members and external parties and provides information to the Public Information Officer for preparation of media releases. Generally prepared by the Situation Unit Leader.
<b>ICS-211, Check-In/Out List</b>	Used to check in personnel and equipment arriving at or departing from the incident. Check-in/out consists of reporting specific information that is recorded on the form. Generally prepared by the Resources Unit/Check-In Recorder.
<b>ICS-213, General Message</b>	Used by: - Incident dispatchers to record incoming messages that cannot be verbally transmitted to the intended recipients. - EOC and other incident personnel to transmit messages via radio or telephone to the addressee. Incident personnel to send any message or notification that requires hard-copy delivery to other incident personnel. Generally prepared by any message originator.
<b>ICS-213-RR, Resource Request Message</b>	Used to formally request tactical and non-tactical resources. Generally prepared by any resource requestor.
<b>ICS-214, Unit Log</b>	Provides a record of unit activities. Unit Logs can provide a basic reference from which to extract information for inclusion in any after- action report. Generally prepared by all Sections and Units.
<b>ICS-215, Operational Planning Worksheet</b>	Documents decisions made concerning resource needs for the next operational period. The Planning Section uses this Worksheet to complete Assignment Lists, and the Logistics Section uses it for ordering resources for the incident. This form may be used as a source document for updating resource information on other ICS forms such as the ICS 209. Generally prepared by the Operations Section Chief.
<b>ICS-215a, Incident Action Plan Safety Analysis</b>	Communicates to the Operations and Planning Section Chiefs safety and health issues identified by the Safety Officer. Generally prepared by the Safety Officer.
<b>ICS-220, Air Operations Summary</b>	Provides information on air operations including the number, type, location, and specific assignments of helicopters and fixed-wing aircraft. Generally prepared by the Operations Section Chief or Air Branch Director.
<b>ICS-221, Demobilization Check-Out</b>	Provides the Planning Section information on resource releases from the incident. Generally prepared by Demobilization Unit Leader.
<b>ICS-230, Daily Meeting Schedule</b>	Records information about the daily scheduled meeting activities. Generally prepared by the Situation Unit Leader.

<b>ICS-232, Resources At Risk Summary</b>	Provides information about sites in the incident area which are sensitive due to environmental, archaeo-cultural, or socio-economic resources at risk, and identifies incident-specific priorities and issues. Generally prepared by the Environmental Unit Leader with input from resource trustees.
<b>ICS-233, Incident Open Action Tracker</b>	Used by Incident Commander/Unified Command to assign and track tasks/actions to IMT personnel that do not rise to level of being an Incident Objective. Generally prepared by the Documentation Unit Leader.
<b>ICS-234, Work Analysis Matrix</b>	Designed to help select the best strategies and tactics to achieve the operational objectives. Optional form that assists staff in carrying out incident objectives by outlining the who, what, where, when, and how of the response. Generally prepared by the Operations and Planning Section Chiefs.
<b>Incident</b>	An occurrence either man-made or natural phenomenon, that requires action or support by emergency service personnel to prevent or minimize loss of life or damage to property and/or natural resources.
<b>Incident Action Plan (IAP)</b>	An oral or written plan containing general objectives reflecting the overall strategy for managing an incident. It may include the identification of operational resources and assignments. It may also include attachments that provide direction and important information for management of the incident during one or more operational periods.
<b>Incident Awareness and Assessment</b>	The planning and execution of various information capabilities that provide situational awareness and assessment to civil authorities in support of domestic operations. It includes the tasking, collection, processing, analysis, and dissemination that provide critical information to the appropriate local, State, Tribal, and Federal authorities within an affected area.
<b>Incident Base</b>	Location at the incident where the primary logistics functions are coordinated and administered. The Incident Command Post may be collocated with the base. There is only one base per incident.
<b>Incident Command</b>	Responsible for overall management of the incident and consists of the Incident Commander, either single or unified command, and any assigned supporting staff.
<b>Incident Commander (IC)</b>	The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources. The Incident Commander has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site. (See also: Unified Command)
<b>Incident Command Post (ICP)</b>	The field location at which the primary tactical-level, on-scene incident command functions are performed. The Incident Command Post may be collocated with the incident base or other incident facilities.
<b>Incident Command System (ICS)</b>	A standardized on-scene emergency management construct specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations.
<b>Incident Management</b>	The broad spectrum of activities and organizations providing effective and efficient operations, coordination, and support applied at all levels of government, utilizing both governmental and nongovernmental resources to plan for, respond to, and recover from an incident, regardless of cause, size, or complexity.

<b>Incident Objectives</b>	Statements of guidance and direction necessary for the selection of appropriate strategies, and the tactical direction of resources. Tactical incident objectives address the tactical response issues while management incident objectives address the incident management issues. Tactical incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed. Incident objectives must be achievable and measurable, yet flexible enough to allow for strategic and tactical alternatives.
<b>Incident Situation Display</b>	The Situation Unit is responsible for maintaining a display of status boards, which communicate critical incident information vital to establishing an effective command and control environment.
<b>Information Management</b>	The collection, organization, and control over the structure, processing, and delivery of information from one or more sources and distribution to one or more audiences who have a stake in that information.
<b>Information Security</b>	The protection of information and information systems against unauthorized access or modification of information, whether in storage, processing, or transit, and against denial of service to unauthorized users. Information security includes those measures necessary to detect, document and counter such threats. Information Security is composed of Computer Security and Communications Security.
<b>Information Technology (IT)</b>	The technology involving the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data
<b>Initial Action</b>	The actions taken by the first resources to arrive at the incident. Initial actions may be to size up, patrol, monitor, withhold from any action, or take aggressive initial measures.
<b>Initial Response</b>	Resources initially committed to an incident.
<b>Intelligence/Investigations Function</b>	Efforts to determine the source or cause of the incident (e.g., disease outbreak, fire, complex coordinated attack, or cyber incident) in order to control its impact and/or help prevent the occurrence of similar incidents. In ICS, the function may be accomplished in the Planning Section, Operations Section, Command Staff, as a separate General Staff section, or in some combination of these locations.
<b>Intelligence Officer</b>	The intelligence officer is responsible for managing internal information, intelligence, and operational security requirements supporting incident management activities. These may include information security and operational security activities, as well as the complex task of ensuring that sensitive information of all types (e.g., classified information, law enforcement sensitive information, proprietary information, or export-controlled information) is handled in a way that not only safeguards the information, but also ensures that it gets to those who need access to it to perform their missions effectively and safely.
<b>Leader</b>	The Incident Command System title for an individual responsible for a Task Force/Strike Team or functional unit.
<b>Liaison Officer (LNO or LOFR)</b>	A member of the Command Staff responsible for coordinating with representatives from cooperating and assisting agencies. The Liaison Officer may have Assistants.
<b>Logistics</b>	Providing resources and other services to support incident management.
<b>Logistics Section</b>	The Logistics Section is responsible for providing facilities, services, and materials in support of the incident.
<b>Management By Objectives</b>	A management approach, fundamental to NIMS, that involves (1) establishing objectives, e.g., specific, measurable and realistic outcomes to be achieved;(2) identifying strategies, tactics, and tasks to achieve the objectives; (3) performing the tactics and tasks and measuring and documenting results in achieving the objectives; and (4) taking corrective action to modify strategies, tactics, and/or performance to achieve the objectives.
<b>Managers</b>	Individuals within Incident Command System organizational units that are assigned specific managerial responsibilities (e.g. Staging Area Manager).

<b>Marine Pollution Contingency Plan (MPCP)</b>	Renamed National Oil Spill Contingency Plan (NOSCP). The National Contingency Plan as defined under the Merchant Shipping Act 2002 (Sections 2(1) and 8(2)(a)) and the International Convention on Oil Pollution Preparedness, Response and Co-Operation, 1990 (OPRC Convention).
<b>Marine Pollution Incident (MPI)</b>	A large oil spill event considered to be or risk becoming a Tier 3 impact.
<b>Medical Unit</b>	Functional Unit within the Service Branch of the Logistics Section responsible for the development of the Medical Emergency Plan, and for providing emergency medical treatment of incident personnel.
<b>Mitigate</b>	Any action to contain, reduce, or eliminate the harmful effects of a spill or release of a hazardous substance/material.
<b>Mobilisation</b>	The process and procedures used by all organizations (Federal, State, and local) for activating, assembling, and transporting all resources that have been requested to respond to or support an incident.
<b>Mobilization Center</b>	An off-incident location at which emergency service personnel and equipment are temporarily located pending assignment, release, or reassignment.
<b>Multi-Agency Incident</b>	Is an incident where one or more agencies assist a jurisdictional agency or agencies. May be single or Unified Command.
<b>National Oil Spill Contingency Plan (NOSCP)</b>	National Oil Spill Contingency Plan (NOSCP) as defined under the Merchant Shipping Act 2002 (Sections 2(1) and 8(2)(a)) and the International Convention on Oil Pollution Preparedness, Response and Co-Operation, 1990 (OPRC Convention).
<b>National Response Center (NRC)</b>	The point of contact for the Government of Bermuda to request assistance from the US Coast Guard (USCG) as part of the 1976 agreement. A national communications centre for activities related to oil and hazardous substance response actions. The National Response Center, located at Department of Homeland Security/Coast Guard Headquarters in Washington, DC, receives and relays notices of oil and hazardous substances releases to the appropriate Federal Operations Section Chief.
<b>Objectives</b>	The Incident Commander/Unified Command's desired outcomes. The Incident Commander/Unified Command sets incident objectives that are specific, measurable, attainable, realistic, and time sensitive (i.e., verb such as commence, continue, complete). The objectives are also flexible enough to allow for strategic and tactical alternatives.
<b>Officer</b>	The Incident Command System title for personnel responsible for the Command Staff positions of Safety, Liaison, and Public Information.
<b>Operational Period</b>	The period of time scheduled for execution of a given set of operation actions as specified in the Incident Action Plan. Operational Periods can be various lengths, usually not over 24 hours. The Operational Period coincides with the completion of one planning "P" cycle.
<b>Operations Coordination Centre</b>	The primary facility of the Multi-Agency Coordination System. It houses staff and equipment necessary to perform Multi-Agency Coordination functions.
<b>Operations Section</b>	The Section responsible for all operations directly applicable to the primary mission. Directs the preparation of Branch and/or Division operational plans, requests or releases resources, makes expedient changes to the Incident Action Plan as necessary and reports such to the Incident Commander.
<b>Personal Protective Equipment (PPE)</b>	That equipment and clothing required to shield or isolate personnel from the chemical, physical, and biological hazards that may be encountered at a hazardous substance/material incident.

<b>Pipeline</b>	Pipeline means pipe and any associated equipment, appurtenance, or building used or intended for use in the transportation of oil located seaward of the coastline, except those used for deep-water ports. Pipelines do not include vessels such as barges or shuttle tankers used to transport oil from facilities located seaward of the coastline.
<b>Planning Meeting</b>	A meeting held as needed throughout the duration of an incident, to select specific strategies and tactics for incident control operations, and for service and support planning. On larger incidents, the Planning Meeting is a major element in the development of the Incident Action Plan.
<b>Planning Section</b>	The section that is responsible for the collection, evaluation, and dissemination of tactical information related to the incident, and for the preparation and documentation of incident action plans. The section also maintains information on the current and forecasted situation, and on the status of resources assigned to the incident.
<b>Pre-positioned Resources</b>	Resources moved to an area near the expected incident site in response to anticipated resource needs.
<b>Procurement Unit</b>	Functional Unit within the Finance/Administration Section responsible for financial matters involving vendor contracts.
<b>Public Information</b>	Processes, procedures, and systems for communicating timely, accurate, accessible information on the incident's cause, size, and current situation; resources committed; and other matters of general interest to the public, responders, and additional stakeholders (both directly affected and indirectly affected).
<b>Public Information Officer (PIO)</b>	A member of the Command Staff responsible for interfacing with the public and media or with other agencies with incident-related information requirements.
<b>Recorders</b>	Individuals within ICS organizational units who are responsible for recording information. Recorders may be found in Planning, Logistics, and Finance/Administration Units.
<b>Recovery</b>	The development, coordination, and execution of service- and site-restoration plans; the reconstitution of government operations and services; individual, private-sector, nongovernmental, and public-assistance programs to provide housing and to promote restoration; long-term care and treatment of affected persons; additional measures for social, political, environmental, and economic restoration; evaluation of the incident to identify lessons learned; post-incident reporting; and development of initiatives to mitigate the effects of future incidents.
<b>Reimbursement</b>	A mechanism to recoup funds expended for incident-specific activities.
<b>Reporting Location</b>	Any one of six facilities/locations where incident assigned resources may check-in. The locations are: Incident Command Post-Resources Unit, Base, Staging Area, Helibase, or Division/Group Supervisors (for direct line assignments). Check-in occurs at one location only.
<b>Resource Tracking</b>	The process that all incident personnel and staff from associated organizations use to maintain information regarding the location and status of resources ordered for, deployed to, or assigned to an incident.
<b>Resources Unit</b>	Functional Unit within the Planning Section responsible for recording the status of resources committed to the incident. The Unit also evaluates resources currently committed to the incident, the impact that additional responding resources will have on the incident, and anticipated resource needs.
<b>Responder Rehabilitation</b>	Also known as "rehab," a treatment of incident personnel who are suffering from the effects of strenuous work and/or extreme conditions.
<b>Responsible Person/Party</b>	Is the person, business, or entity that has been identified as owning the vessel or facility that caused the spill. The term does not imply criminal negligence.
<b>Risk</b>	The product of the probability of the occurrence of a hazard and its consequences.

<b>Risk Assessment</b>	A methodology to determine the nature and extent of risk by analysing potential hazards and the evaluation of vulnerabilities and consequences.
<b>Safety Officer</b>	A member of the Command Staff responsible for monitoring and assessing safety hazards or unsafe situations, and for developing measures for ensuring personnel safety. The Safety Officer may have Assistants.
<b>Section</b>	The organizational level having responsibility for a major functional area of incident management, e.g., Operations, Planning, Logistics, Finance/Administration, and Intelligence (if established). The section is organizationally situated between the Branch and the Incident Command.
<b>Segment</b>	A geographical area in which a Task Force/Strike Team Leader or Supervisor of a single resource is assigned authority and responsibility for the coordination of resources and implementation of planned tactics. A segment may be a portion of a Division or an area inside or outside the perimeter of an incident. Segments are identified with Arabic numbers.
<b>Service Branch</b>	A Branch within the Logistics Section responsible for service activities at the incident. Includes the Communication, Medical, and Food Units.
<b>Situation Assessment</b>	The evaluation and interpretation of information gathered from a variety of sources (including weather information and forecasts, computerized models, geographic information system data mapping, remote sensing sources, ground surveys, etc.) that, when communicated to emergency managers and decision makers, can provide a basis for incident management decision making.
<b>Situation Report (SITREP)</b>	Confirmed or verified information regarding the specific details relating to an incident.
<b>Situation Unit</b>	Functional Unit within the Planning Section responsible for the collection, organization, and analysis of incident status information, and for analysis of the situation as it progresses. Reports to the Planning Section Chief.
<b>Span Of Control</b>	A Command and Control term that means how many organizational elements may be directly managed by one person. Span of Control may vary from one to seven, and a ratio of five reporting elements is optimum.
<b>Staging Area</b>	That location where incident personnel and equipment are assigned awaiting tactical assignment. Staging Areas are managed by the Operations Section Chief.
<b>Standard Operating Procedure (SOP)</b>	Complete reference document or an operations manual that provides the purpose, authorities, duration, and details for the preferred method of performing a single function or a number of interrelated functions in a uniform manner.
<b>Status Report</b>	Reports, such as spot reports, that include vital and/or time-sensitive information. Status reports are typically function-specific, less formal than situation reports, and are not always issued on a specific schedule.
<b>Strategic Goals</b>	Strategic goals are broad, general statements of intent.
<b>Strategic Plan</b>	Is a plan that addresses long-term issues such as impact of weather forecasts, time-phased resource requirements, and problems such as permanent housing for displaced disaster victims, environmental pollution, and infrastructure restoration.
<b>Strategy</b>	The general plan or direction selected to accomplish incident objectives.
<b>Strategic</b>	Strategic elements of incident management are characterized by continuous long-term, high-level planning by organizations headed by elected or other senior officials. These elements involve the adoption of long-range goals and objectives, the setting of priorities, the establishment of budgets and other fiscal decisions, policy development, and the application of measures of performance or effectiveness.
<b>Strike Team</b>	A set number of resources of the same kind and type that have an established minimum number of personnel, common communications, and a leader. In the law enforcement community, strike teams are referred to as resource teams.

<b>Supervisor</b>	Incident Command System title for individuals responsible for command of a Division or Group.
<b>Supervisor Of Salvage And Diving</b>	A salvage, search, and recovery operation established by the Department of Navy with experience to support response activities, including specialized salvage, firefighting, and petroleum, oil, and lubricants offloading.
<b>Supply Unit</b>	Functional Unit within the Support Branch of the Logistics Section responsible for ordering equipment and supplies required for incident operations.
<b>Support Branch</b>	A Branch within the Logistics Section responsible for providing personnel, equipment, and supplies to support incident operations. Includes the Supply, Facilities, and Ground Support Units.
<b>Supporting Materials</b>	Refers to the several attachments that may be included with an Incident Action Plan, e.g., Communications Plan, Map, Safety Plan, Traffic Plan, and Medical Plan.
<b>Support Resources</b>	Non-tactical resources under the supervision of the Logistics, Planning, or Finance/ Administration Sections, or the Command Staff.
<b>Support Zone</b>	In a hazardous substance response, the clean area outside of the Contamination Control Line is a support zone. Equipment and personnel are not expected to become contaminated in this area. Special protective clothing is not required. This is the area where resources are assembled to support the hazardous substances/materials release operation.
<b>System</b>	Any combination of processes, facilities, equipment, personnel, procedures, and communications integrated for a specific purpose.
<b>Tactical Direction</b>	Directions given by the Operations Section Chief that includes: the tactics appropriate for the selected strategy, the selection and assignment of resources, tactics implementation, and performance monitoring for each operational period.
<b>Tactics</b>	Deploying and directing resources during an incident to accomplish the objectives designated by strategy.
<b>Task Force</b>	A group of resources with common communications and a leader assembled for a specific mission.
<b>Technical Specialists</b>	Personnel with special skills who can be used anywhere within the Incident Command System organization.
<b>Threat</b>	A natural or manmade occurrence, an individual, an entity, or an action having or indicating the potential to harm life, information, operations, the environment, and/or property.
<b>Tiered Response Concept</b>	First developed by the International Petroleum Industry Environmental Conservation Association (IPIECA) in the 1980's as a mean to ensure that appropriate response capabilities were available to deal with oil spills.
<b>Time Unit</b>	Functional Unit within the Finance/ Administration Section responsible for recording time for incident personnel and hired equipment.
<b>Unified Area Command</b>	A Unified Area Command is established when incidents under an Area Command are multi-jurisdictional.
<b>Unified Command</b>	An application of Incident Command System used when there is more than one agency with incident jurisdiction or when incidents cross political jurisdictions. Agencies work together through the designated members of the Unified Command to establish their designated Incident Commanders at a single Incident Command Post and to establish a common set of objectives and strategies and a single Incident Action Plan. This is accomplished without losing or abdicating authority, responsibility, or accountability.
<b>Unit</b>	That organizational element having functional responsibility for a specific incident planning, logistics, or finance/administration activity.

<b>Unit Leader</b>	The individual in charge of managing Units within an Incident Command System (ICS) functional section. The Unit can be staffed by a number of support personnel providing a wide range of services. Some of the support positions are pre-established within ICS (e.g. Base Camp Manager), but many others will be assigned as Technical Specialists.
<b>Unity of Command</b>	The concept by which each person within an organisation reports to one and only one designated person. The purpose of unity of command is to ensure unity of effort under one responsible commander for every objective.
<b>Vessel Owner</b>	Vessel Owner is the owner/ operator of the vessel or source which precipitated the incident.
<b>Volunteer</b>	Any individual accepted to perform services by an agency that has authority to accept volunteer services when the individual performs services without promise, expectation, or receipt of compensation for services performed.

DRAFT

**APPENDIX 5: FORMS/TEMPLATES:****SPILL REPORTING FORM - TIER 1 AND 2 SPILLS: MAROPS***RCC Bermuda Checklist***POLLUTION REPORT**

Name of caller: _____
Contact Number: _____
Date & Time of Call: _____
Location of pollution: _____
Type of Pollution/ <del>Colour</del> /Size of Area/Thickness/Viscosity: _____
_____
Possible source of pollution: _____
Weather conditions on scene including tide changes: _____
_____
Coast Guard/PMB/Other Source tasked to investigate sighting: _____
Is pollution serious enough to warrant activation of Pollution Response Team: _____
_____
Additional Information: _____
_____
_____
_____
_____
_____

Note that if the ship in distress is scheduled to arrive in Bermuda then MAROPS will hold all relevant information on the ship, including hazardous cargos, on the ISPS Pre-Arrival Form.

**SPILL REPORTING FORM - TIER 3 SPILLS - CARIB POLREP REMPEITC.**

**Caribbean Pollution Report**

**CARIBPOLREP**

**HEADING**

Date: [ ] Time: [ ]  
To: [ ]  
Copy: [ ]  
From: [ ]

**SITUATION**

Date (of incident): [ ] Time (of incident): [ ]  
Position: [ ]  
Incident Description:  
[ ]  
Outflow (source secured?): [ ]  
Characteristics of pollution:  
[ ]  
Source and cause of pollution:  
[ ]  
Wind direction and speed: [ ]

Tides and direction of current: [redacted]

Sea state: [redacted] Visibility: [redacted]

Drift of pollution:  
[redacted]

Forecast: [redacted]

Reporting Source: [redacted]

**ACTION TAKEN**

Implementation of National Contingency Plan:  
[redacted]

Incident surveillance: [redacted]

Photographs or samples: [redacted]

Names of other states informed:  
[redacted]

**FUTURE PLANS**

[redacted]

**ASSISTANCE REQUESTED**

Source of assistance: [redacted]

Estimated cost: [redacted]

Prearrangement for delivery:  
[redacted]

Assistance to where and how:

Other states requested:

Personnel names, passport info:

Description of equipment:

ETA and arrival information:

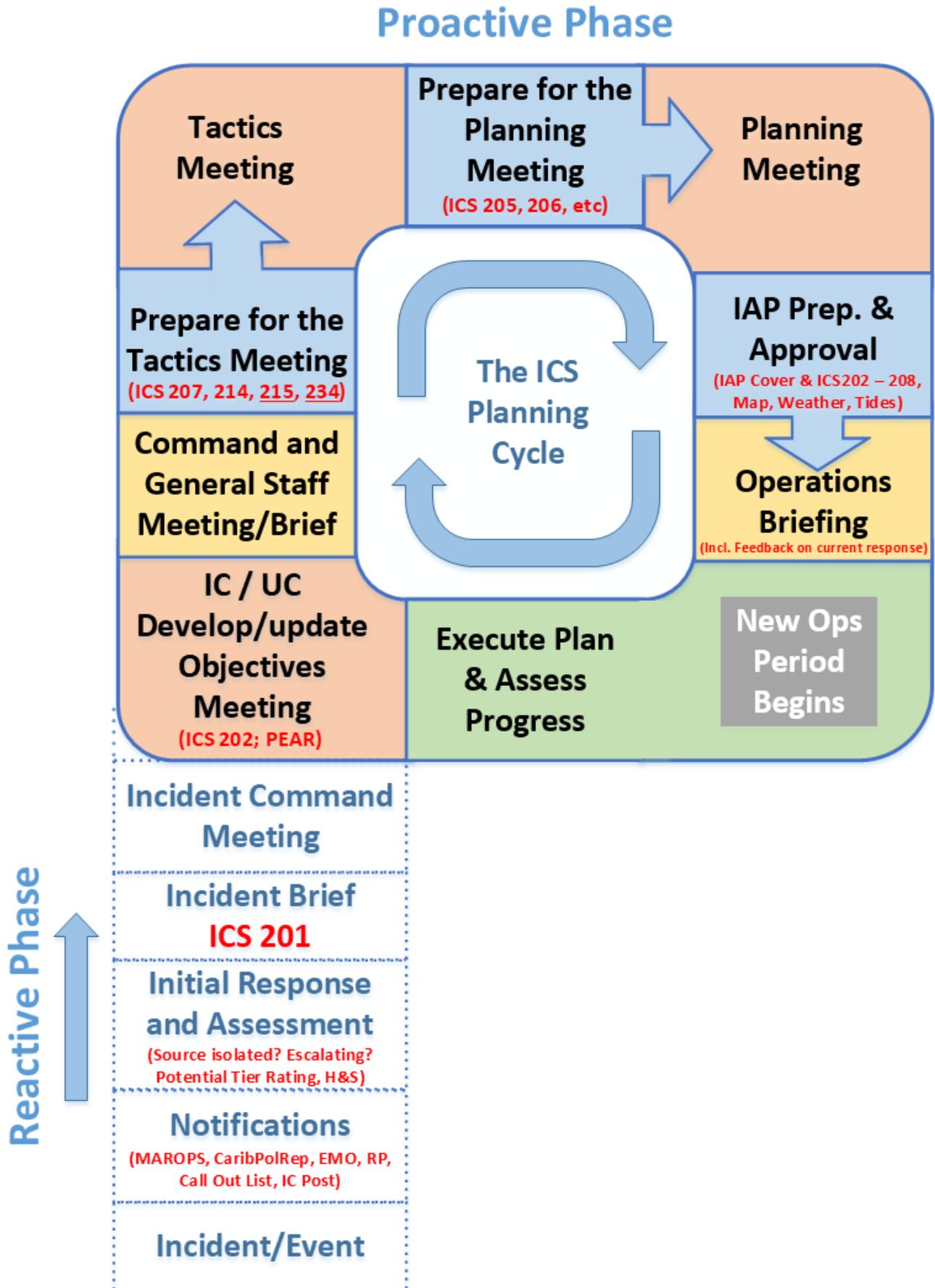
Place of embarkation:

Place of disembarkation:

Spare:

**CLICK TO SUBMIT**

THE ICS PLANNING CYCLE



<b>1. Incident Name</b> █	<b>2. Prepared by: (name)</b> █ Date: █ Time: █	<b>INCIDENT BRIEFING</b> ICS 201-CG
<b>3. Map/Sketch</b> (include sketch, showing the total area of operations, the incident site/area, overflight results, trajectories, impacted shorelines, or other graphics depicting situational and response status) █		
<b>4. Current Situation:</b> █		
█		
█		
█		
█		
█		
█		
█		
█		
█		
█		



<b>1. Incident Name</b> _____	<b>2. Prepared by: (name)</b> _____ Date: _____ Time: _____	INCIDENT BRIEFING ICS 201-CG
<b>6. Current Organization (fill in additional appropriate organization)</b>  <div style="text-align: center;"><p>_____</p><p>_____</p><p>_____</p><p>_____</p><p>_____</p></div> <div style="display: flex; justify-content: space-between;"><div style="width: 20%;"><p>— Safety Officer _____</p><p>— Liaison Officer _____</p><p>— Public Information Officer _____</p></div><div style="width: 60%; text-align: center;"><pre>graph TD; Root[ ] --- SO[Safety Officer]; Root --- LO[Liaison Officer]; Root --- PIO[Public Information Officer]; Root --- Ops[Operations Section]; Root --- Plan[Planning Section]; Root --- Log[Logistics Section]; Root --- Fin[Finance Section];</pre></div><div style="width: 20%;"></div></div>		



<b>1. Incident Name</b> [Redacted]	<b>2. Operational Period (Date/Time)</b> From: [Redacted] To: [Redacted]	<b>INCIDENT OBJECTIVES</b> <b>ICS 202</b>
<b>3. Objective(s)</b> [Redacted]		
<b>4. Operational Period Command Emphasis (Safety Message, Priorities, Key Decisions/Directions)</b> [Redacted]		
<b>5. Prepared by: (Planning Section Chief)</b> [Redacted] <b>Date/Time</b> [Redacted]		

## INCIDENT OBJECTIVES (ICS 202)

**Purpose.** The Incident Objectives form describes the basic incident strategy, control objectives, command emphasis/priorities, and safety considerations for use during the next operational period.

**Preparation.** The Incident Objectives form is completed by the Planning Section following each Command and General Staff Meeting conducted in preparing the Incident Action Plan.

**Distribution.** The Incident Objectives form will be reproduced with the IAP and given to all supervisory personnel at the Section, Branch, Division/Group, and Unit levels. All completed original forms MUST be given to the Documentation Unit.

<u>Item #</u>	<u>Item Title</u>	<u>Instructions</u>
1.	Incident Name	Enter the name assigned to the incident.
2.	Operational Period	Enter the time interval for which the form applies. Record the start and end date and time.
3.	Objective(s)	Enter clear, concise statements of the objectives for managing the response. These objectives are for the incident response for this operational period and for the duration of the incident. Include alternatives.
4.	Operational Period Command Emphasis	Enter clear, concise statements for safety message, priorities, and key command emphasis/decisions/directions. Enter information such as known safety hazards and specific precautions to be observed during this operational period. If available, a safety message should be referenced and attached. At the bottom of this box, enter the location where approved Site Safety Plan is available for review.
5.	Site Safety Plan Prepared By Date/Time	Note location of the approved Site Safety Plan. Enter the name of the Planning Section Chief completing the form. Enter date (month, day, year) and time prepared (24-hour clock).

NOTE: ICS 202, Incident Objectives, serves as part of the Incident Action Plan (IAP)



## ORGANIZATION ASSIGNMENT LIST (ICS 203) Instructions for filling out the form

**Purpose.** The Organization Assignment List provides ICS personnel with information on the units that are currently activated and the names of personnel staffing each position/unit. It is used to complete the Incident Organization Chart (ICS form 207) which is posted on the Incident Command Post display. An actual organization will be event-specific. **Not all positions need to be filled.** The size of the organization is dependent on the magnitude of the incident and can be expanded or contracted as necessary.

**Preparation.** The Resources Unit prepares and maintains this list under the direction of the Planning Section Chief.

**Note:** Depending on the incident, the Intelligence and Information function may be organized in several ways: 1) within the Command Staff as the Intelligence Officer; 2) As an Intelligence Unit in Planning Section; 3) As an Intelligence Branch or Group in the Operations Section; 4) as a separate General Staff Intelligence Section; and 5) as an Intelligence Technical Specialist. The incident will drive the need for the Intelligence and Information function and where it is located in the ICS organization structure. The Intelligence and information function is described in significant detail in NIMS and in the Coast Guard Incident Management Handbook (IMH).

**Distribution.** The Organization Assignment List is duplicated and attached to the Incident Objectives form (ICS 202) and given to all recipients of the Incident Action Plan. All completed original forms **MUST** be given to the Documentation Unit.

<u>Item #</u>	<u>Item Title</u>	<u>Instructions</u>
1.	Incident Name	Enter the name assigned to the incident.
2.	Operational Period	Enter the time interval for which the form applies. Record the start and end date and time.
3.	Incident Commander and Staff	Enter the names of the Incident Commander and Staff. Use at least the first initial and last name.
4.	Agency Representative	Enter the agency names and the names of their representatives. Use at least the first initial and last name.
5. thru 8.	Section	Enter the name of personnel staffing each of the listed positions. Use at least the first initial and last name. For Units, indicate Unit Leader and for Divisions/Groups indicate Division/Group Supervisor. Use an additional page if more than three branches are activated. If there is a shift change during the specified operational period, list both names, separated by a slash.
9.	Prepared By Date/Time	Enter the name and position of the person completing the form Enter date (month, day, year) and time prepared (24-hour clock).



## ASSIGNMENT LIST (ICS 204)

**Purpose.** The Assignment List(s) informs Division and Group supervisors of incident assignments. Once the Unified Command and General Staff agree to the assignments, the assignment information is given to the appropriate Divisions and Groups.

**Preparation.** The Assignment List is normally prepared by the Resources Unit, using guidance from the Incident Objectives (ICS 202), Operational Planning Worksheet (ICS 215), and the Operations Section Chief. The Assignment List must be approved by the Planning Section Chief and Operations Section Chief. When approved, it is included as part of the Incident Action Plan (IAP). Specific instructions for specific resources may be entered on an ICS 204a for dissemination to the field. A separate sheet is used for each Division or Group. The identification letter of the Division is entered in the form title. Also enter the number (roman numeral) assigned to the Branch.

**Special Note.** The Assignment List, ICS 204 submits assignments at the level of Divisions and Groups. The Assignment List Attachment, ICS 204a shows more specific assignment information, if needed. The need for an ICS 204a is determined by the Planning and Operations Section Chiefs during the Operational Planning Worksheet (ICS 215) development.

**Distribution.** The Assignment List is duplicated and attached to the Incident Objectives and given to all recipients of the Incident Action Plan. In some cases, assignments may be communicated via radio/telephone/fax. All completed original forms MUST be given to the Documentation Unit.

Item #	Item Title	Instructions
1.	Incident Name	Enter the name assigned to the incident.
2.	Operational Period	Enter the time interval for which the form applies.
3.	Branch	Enter the Branch designator.
4.	Division/Group/Staging	Enter the Division/Group/Staging designator.
5.	Operations Personnel	Enter the name of the Operations Chief, applicable Branch Director, and Division Supervisor.
6.	Resources Assigned	Each line in this field may have a separate Assignment List Attachment (ICS 204a). Enter the following information about the resources assigned to Division or Group for this period:
	Identifier	List identifier
	Leader	Leader name
	Contact Information	Primary means of contacting this person (e.g., radio, phone, pager, etc.). Be sure to include area code when listing a phone number.
	# Of Persons	Total number of personnel for the strike team, task force, or single resource assigned.
	Reporting Info/Notes/Remarks	Special notes or directions, specific to this strike team, task force, or single resource. Enter an "X" check if an Assignment List Attachment (ICS 204a) will be prepared and attached. The Planning and Operations Section Chiefs determine the need for an ICS 204a-CG during the Operational Planning Worksheet (ICS 215) development.
7.	Work Assignment	Provide a statement of the tactical objectives to be achieved within the operational period by personnel assigned to this Division or Group.
8.	Special Instructions	Enter a statement noting any safety problems, specific precautions to be exercised, or other important information.
9.	Communications	Enter specific communications information (including emergency numbers) for this division /group. If radios are being used, enter function (command, tactical, support, etc.), frequency, system, and channel from the Incident Radio Communications Plan (ICS 205). Note: Phone numbers should include area code.
10.	Prepared By	Enter the name of the person completing the form, normally the Resources Unit Leader.
	Date/Time	Enter date (month, day, year) and time prepared (24-hour clock).
11.	Reviewed by (PSC)	Enter date (month, day, year) and time prepared (24-hour clock).
	Date/Time	Enter date (month, day, year) and time prepared (24-hour clock).
12.	Reviewed by (OSC)	Enter the name of the operations person reviewing the form, normally the Operations Section Chief.
	Date/Time	Enter date (month, day, year) and time prepared (24-hour clock).

<b>1. Incident Name</b> █		<b>2. Operational Period (Date/Time)</b> From: █ To: █		<b>ASSIGNMENT LIST ATTACHMENT</b>	
<b>3. Branch</b> █		<b>4. Division/Group</b> █			
<b>5. Strike Team/Task Force/Resource (Identifier)</b> █		<b>6. Leader</b> █		<b>7. Assignment Location</b> █	
<b>8. Work Assignment Special Instructions, Special Equipment/Supplies Needed for Assignment, Special Environmental Considerations, Special Site Specific Safety Considerations</b> █					
<p>Approved Site Safety Plan Located at: █</p> <p><b>9. Other Attachments (as needed)</b></p> <p><input type="checkbox"/> Map/Chart █ <input type="checkbox"/> Weather Forecast/Tides/Currents █ █</p> <p><input type="checkbox"/> █ <input type="checkbox"/> █ █</p>					
<b>10. Prepared by:</b> █		<b>11. Reviewed by (PSC):</b> █		<b>12. Reviewed by (OSC):</b> █	
Date/Time █		Date/Time █		Date/Time █	

<b>1. Incident Name</b> █		<b>2. Operational Period (Date / Time)</b> From: █ To: █		<b>INCIDENT RADIO COMMUNICATIONS PLAN</b> ICS 205	
<b>3. BASIC RADIO CHANNEL USE</b>					
SYSTEM / CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS
Sepura Communications System	Digital	Interagency	UHF - Digital	Private Channels	Bermuda Coast Guard / Interagency
Marine VHF Radio Comms	Channel 16	Public Communications	156.8 Mhz	Public	Intership Communications as required
Marine VHF Radio Comms	Channel 27	Coast radio station	157.350 161.950	Public Correspondance	RCC Bermuda - working channel
Marine VHF Radio Comms	Channel 22	Public Communications/duplex	157.100 161.700	Public	Coast Guard / Marine Police working channel
Marine VHF Radio Comms	Channel 12	Port Operations	156.6Mhz	Port Operations	Marine & Ports - Pilot operations
Marine VHF Radio Comms	Channel 10	Port Operations	156.5Mhz	Port Operations	Marine & Ports - Tug Operations
Marine VHF Radio Comms	Channel 80	Port Operations	156.4Mhz	Port/Ferry Operations	Marine & Ports - Ferry Operations
Marine VHF Radio Comms	Channel 14	Commercial Port Operations	156.7Mhz	Public - BYS	Bermuda Yacht Services working channel
█	█	█	█	█	█
<b>4. Prepared by: (Communications Unit)</b> MAROPS				<b>Date / Time</b> 23 <sup>rd</sup> December 2020	
<b>INCIDENT RADIO COMMUNICATIONS PLAN</b>					<b>ICS 205 (Rev.07/04)</b>



**UNIT LOG (ICS FORM 214)**

**Purpose.** The Unit Log records details of unit activity, including strike team activity or individual activity. These logs provide the basic reference from which to extract information for inclusion in any after-action report.

**Preparation.** A Unit Log is initiated and maintained by Command Staff members, Division/Group Supervisors, Air Operations Groups, Strike Team/Task Force Leaders, and Unit Leaders. Completed logs are submitted to supervisors who forward them to the Documentation Unit.

**Distribution.** The Documentation Unit maintains a file of all Unit Logs. All completed original forms MUST be given to the Documentation Unit.

<u>Item #</u>	<u>Item Title</u>	<u>Instructions</u>
1.	Incident Name	Enter the name assigned to the incident.
2.	Check-In Location	Enter the time interval for which the form applies. Record the start and end date and time.
3.	Unit Name/Designators	Enter the title of the organizational unit or resource designator (e.g., Facilities Unit, Safety Officer, Strike Team).
4.	Unit Leader	Enter the name and ICS Position of the individual in charge of the Unit.
5.	Personnel Assigned	List the name, position, and home base of each member assigned to the unit during the operational period.
6.	Activity Log	Enter the time and briefly describe each significant occurrence or event (e.g., task assignments, task completions, injuries, difficulties encountered, etc.)
7.	Prepared By	Enter name and title of the person completing the log. Provide log to immediate supervisor, at the end of each operational period.
	Date/Time	Enter date (month, day, year) and time prepared (24-hour clock).

ICS 215A-CG INCIDENT ACTION PLAN SAFETY ANALYSIS				P H A Z A R D S																		8. ORM				
1. Incident Name		2. Operating Period																				7 C O N T R O L S	S E V E R I T Y	P R O B A B I L I T Y	E X P O S U R E	T o t a l  X P O S E
3. DIVISION/ GROUP/ OTHER LOCATION	4. Work Assignments		5. Gain																							
		Human Health		Check																						
		Security																								
		Environment																								
		Economy																								
		Human Health		Check																						
		Security																								
		Environment																								
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		Security																								
		Environment																								
		Economy																								
ICS 215A-CG (rev 2/15)	Operational Risk Management Key	Scale	1	2	3	4	5	ORM Scale	#	1-19	20-39	40-59	60-79	80-100	9. Prepared by (Name and Position)											
		Severity	Slight	Minimal	Signif- icant	Major	Cata- strophic		Risk	Slight	Possible	Substantial	High	Very High												
		Probability	Remote	Un-likely	50/50	>50	Very Likely		Color	Green	Amber	Red	Red	Red												
		Exposure	Below Avg	Avg	Above Avg	Great	N/A		Action	Possibly Acceptable	Attention Needed	Correction Required	Immediate Correction	Discontinue/ Stop												

## ICS 215A-CG INCIDENT ACTION PLAN SAFETY ANALYSIS (rev 2/15)

### Instructions for filling out the form

**Purpose:** The purpose of this worksheet is to aid the Safety Officer in completing an operational risk assessment to prioritize hazards and develop appropriate controls. The 2015 change removed the GAR terminology from the form – this is the only change from the 2006 version.

**Preparation:** During the Incident Action Planning cycle where the Operations Section Chief (OSC) is preparing for the tactics meeting, the Safety Officer works alongside the OSC and completes the Incident Action Plan Safety Analysis. This sheet mirrors the ICS 215 form. Work assignments are listed along with associated hazards. A calculation is made that determines what level of risk each work assignment poses. For those assignments having significant risk, controls are developed for safeguarding responders. The net risk is evaluated against the gain. The Incident Commander should be alerted to all safety hazards that receive high risk rating (e.g. red) after controls have been established.

**Distribution:** The Operational Hazard Worksheet is attached to the Incident Site Safety Plan and is distributed according to the instruction for Site Safety Plans.

#### Instructions:

Item #	Item Title	Instructions
1	Incident Name	Print the name assigned to the incident.
2	Date/Time Prepared	Enter date (month, day, year) and time prepared.
3	Division/Group	Enter the Branch, Division or Group title in abbreviated form.
4	Work Assignment	List the work assignment for each Branch, Division or Group.
5	Gain	Check the gain that is achieved when the work assignment is accomplished. There MUST be a gain if personnel will be put at risk.
6	Hazards	Using the IAP Safety Analysis Aid (page 2), list the type of hazards likely to be encountered for the work assignment. Place a check mark in the box below the hazard.
7	Controls	Using the IAP Safety Analysis Aid (page 2), list the type of controls likely to be used for addressing the hazards listed. Place a check mark in the box below the control.
8	ORM	Using the "Key", assign a number from 1 to 5 based on the level of severity, probability and exposure. <b>Multiply</b> all numbers together to get a total. Enter this number into the total column. Using the scale on the bottom of the sheet, assign a color, risk level or action phrase in this block.
9	Prepared by	Enter the name of the person who completed this worksheet.

## ICS-215A-CG INCIDENT ACTION PLAN SAFETY ANALYSIS AID

## HAZARDS:

Physical	Chemical/Biological	Human
• Slipping	• Explosion	• Violence
• Tripping	• Flammable	• Poor Lifting
• Fall	• Air Reactive	• Repetition
• Overhead	• Water Reactive	• Excessive Force
• Heat Stress	• Chem Reactive	• Poor posture
• Cold Stress	• Alpha Rad	• Awkward motion
• Electrical	• Beta Rad	• Fatigue
• Blunt Objects	• Gamma Rad	• Poor hygiene
• Sharp Objects	• X Rad	• Illness
• Noise	• Bio-weapon	• Alcohol/Drugs
• Vehicle	• Chem-weapon	• Over crowding
• Fire	• Irritant	• Poor comms
• Sun/UV Glare	• Asphyxiant	• Noise interference
• Sun Burn	• Oxidizer	• Smoking
• Moving Pinch Points	• Carcinogen	• Driving
• Unguarded Machinery	• Corrosive	<b>Animal/Plant</b>
• Lightning	• Cryogenic	• Bites/Stings
• Drowning	• Toxic	• Poison
• Engulfment	• Biomed/pathogen	• Thorns/burrs
• Limited Egress/Access	• Particulates	• Swarms
	• Fumes (weld etc.)	• Disease
	• O2 Deficiency	• Feces/Coliforms

## Types of Engineering Controls:

• Barriers	• Shields	• Dams
• Capping	• Covering	• Fencing
• Terminating	• Shutting	• Blocking
• Chocks	• Enclosures	• Diverters
• Flanging	• Guarding	• Substitution
• Scaffolding	• Grounding	• Substitution
• Bonding	• Insulation	• Lighting
• Locks, Tags	• Kill-switches	• Shut-off valves
• Taglines	• Circuit Breakers	• Process change
• Plugging, patching	• Sealing	• Absorbers

## Types of Administrative Controls:

• Reduced work duration	• Worker rotation	• Safety plans
• Training	• Safety briefs	• Relief personnel
• Maintenance	• Drinking fluids	• Work/rest periods
• Good housekeeping	• Roving security	• Signs
• Warning lights	• Alarms	• Break areas
• Pre-inspections	• Field checks	• Buddy system
• Line of sight comms	• Comms schedule	• Equip staging
• Load shifting	• Hazard marking	• Placarding
• Labeling	• Hand signals	• Safety observers
• Fendering	• Work plans	• Replenish fluids
• Handcarts/trolleys	• Fire extinguishers	• Drum bulking
• Eye Wash Station	• Hand washers	• Showers

## Types of Personal Protective Equipment Controls:

• Hard hats	• Steel-toed shoes	• Safety glasses
• Safety goggles	• Face shields	• Hearing Protection
• Life jacket	• Fall arrests	• SCBA
• APRs	• Chemical suits	• Flash suits
• Fire resistant suits	• Work gloves	• Chemical gloves
• Sun glasses	• Sun-block	• Life rings
• Eye wash stations	• Night vision	• Thermal protection
• Dry/wet suits	• Hand warmers	• Wind breaker coat
• Knee pads	• Over garments	• Coveralls
• Booties	• Cooling vests	• Chap lip protection
• Hats for warming	• Gloves (warmth)	• Clothing (warmth)

<b>1. Incident Name</b> █		<b>2. Operational Period (Date/Time)</b> From: █ To: █		<b>DAILY MEETING SCHEDULE</b> ICS 230	
<b>3. Meeting Schedule (Commonly-held meetings are included)</b>					
Date/ Time	Meeting Name	Purpose	Attendees	Location	
█	Unified Command Objectives Meeting	Review/ identify objectives for the next operational period.	Unified Command members	█	
█	█	█	█	█	
█	Command & General Staff Meeting	IC/UC gives direction to Command & General staff including incident objectives and priorities	IC/UC, Command & General Staff	█	
█	█	█	█	█	
█	Tactics Meeting	Develop/Review primary and alternate Strategies to meet Incident Objectives for the next Operational Period.	PSC, OSC, LSC, RESL & SITL	█	
█	█	█	█	█	
█	█	█	█	█	
█	Planning Meeting	Review status and finalize strategies and assignments to meet Incident Objectives for the next Operational Period.	Determined by the IC/UC	█	
█	█	█	█	█	
█	█	█	█	█	
█	Operations Briefing	Present IAP and assignments to the Supervisors / Leaders for the next Operational Period.	IC/UC, Command & General Staff, Branch Directors, Div/Gru Sups., Task Force/Strike Team Leaders and Unit Leaders	█	
█	█	█	█	█	
█	█	█	█	█	
█	█	█	█	█	
<b>4. Prepared by: (Situation Unit Leader)</b> █			<b>Date/Time</b> █		
<b>DAILY MEETING SCHEDULE</b>				<b>ICS 230 (Rev.07/04)</b>	

## DAILY MEETING SCHEDULE (ICS 230)

**Purpose.** The Daily Meeting Schedule records information about the daily scheduled meeting activities.

**Preparation.** This form is prepared by the Situation Unit Leader and coordinated through the Unified Command for each operational period or as needed. Commonly-held meetings are already included in the form. Additional meetings, as needed, can be entered onto the form in the spaces provided. Time and location for each meeting must be entered. If any of these standard meetings are not scheduled, they should be crossed out on the form.

**Distribution.** After coordination with the Unified Command, the Situation Unit Leader will duplicate the schedule and post a copy at the Situation Status Board and distribute to the Command Staff, Section Chiefs, and appropriate Unit Leaders. All completed original forms MUST be given to the Documentation Unit.

<u>Item #</u>	<u>Item Title</u>	<u>Instructions</u>
1.	Incident Name	Enter the name assigned to the incident.
2.	Operational Period	Enter the time interval for which the form applies.
3.	Meeting Schedule	For each scheduled meeting, enter the date/time, meeting name, purpose, attendees, and location. Note: Commonly-held meetings are included in the form. Additional meetings, as needed, can be entered onto the form in the spaces provided. Time and location for each meeting must be entered. If any of the standard meetings are not scheduled, they should be deleted from the form (normally the Situation Unit Leader).
4.	Prepared By	Enter name and title of the person preparing the form, normally the Situation Unit Leader.
	Date/Time	Enter date (month, day, year) and time prepared (24-hour clock).

		WORK ANALYSIS MATRIX ICS 234-CG	
1. Incident Name		2. Operational Period From: _____ To: _____	
3. Operation's Objectives DESIRED OUTCOME	4. Strategies HOW	5. Tactics/Work Assignments WHO, WHAT, WHERE, WHEN	
6. Prepared by: (Operations Section Chief)		7. Date/Time:	

## WORK ANALYSIS MATRIX FORM INSTRUCTIONS (ICS FORM 234-CG) Rev. 8/05

**Purpose.** The Work Analysis Matrix is designed to help select the best strategies and tactics to achieve the operational objectives. This optional form assists staff in carrying out incident objectives by outlining the who, what, where, when, and how of the response. The tactics from this form carry forward to the "Work Assignment" on the ICS-215. Another purpose of the ICS-234 is that it presents alternative (or what-if) strategies and tactics to respond to bad weather, sudden changes in operational conditions, etc. This form is simply a formalized version of how most OSCs tend to think in order to turn objectives into tactical field work.

**Preparation.** The Work Analysis Matrix, if used, is usually completed by the Operations Section Chief and Planning Section Chief prior to the Tactics Meeting.

**Distribution.** All completed original forms must be submitted to the Documentation Unit.

Item #	Item Title	Instructions
1.	Incident Name	Enter the name of the incident
2.	Operational Period	Enter the time interval for which the form applies. Record the start and end date and time.
3.	Operational Objectives	Enter the relevant Operational Objectives from the ICS 202, with numbers
4.	Strategies	Enter all strategies that could be used to meet the objective ("how")
5.	Tactics/Work Assignments	Enter details, including as much as possible, who, what, where, and when, of work assignments to carry out Operational Strategies
6.	Prepared By	Enter the name and position of the person preparing the form
7.	Date/Time	Enter the date and time (24-hour format) the form was prepared



## SHORELINE CLEAN-UP AND ASSESSMENT (SCAT) FORMS

### PRE-OILING SCAT FORM

#### TRAINING - Shoreline Segmentation Survey Form (*Tropical Coasts*) (page 1)

1 GENERAL INFORMATION					
Area:		Location:		Sector: Segment:	
Survey Date:		Survey Time:		Segment Length (est.):	
Observer Name:				Tide Level:	
Participants:				Weather / Wind Conditions:	
GPS: Start (WP) _____		Lat: _____		Long: _____	
End (WP) _____		Lat: _____		Long: _____	

2 PHYSICAL CHARACTER <i>One Primary (P) per zone and as many Secondary (S) as apply</i>						
SUBSTRATE (SHORE) TYPE				COASTAL CHARACTER		
	Lower (LI-MI)	Upper (MI-UI)	Supra (SU)		FRINGE	INLAND
Bedrock (beach rock)				Cliff		
Man-made Solid (impermeable)				Platform		
Sand Beach (or Shell/Coral Hash)				Man-made		
Mixed Sand Gravel Beach				Estuary-Channel-Inlet		
Pebble-Cobble Beach				Delta		
Mixed Sand <del>Pb-Cb</del> Beach				Beach-Dune		
Boulder Beach or Rip Rap				Tidal Flats		
Man-made Permeable (wharf: pilings)				<u>Overwash</u>		
Mud Tidal Flat				Marsh-Mangrove		
Sand Tidal Flat				Lagoon		
Salt Marsh				Field		
Mangrove				Forest		

POTENTIAL OIL BEHAVIOUR	
Natural Bay or Embayment: Y / N	Marsh - Wetland - Mudflat: Y / N Type: _____
Tidal Inlet or Channel: Y / N (see inlet table)	Sea Grass Beds: Y / N
Tidal Lagoon or Estuary: Y / N (see inlet table)	Natural Alongshore Barrier: Y / N
Barrier Beach / Lagoon: Y / N (see inlet table)	Man-Made Alongshore Barrier: Y / N
<u>Overwash</u> Evident / Possible: Y / N	Natural Collection Site (trash): Y / N
Coral Reef: Y / N	Burial Potential (sand): Low / Moderate / High
High tidal range (> 3m): Y / N	Penetration Potential ( <u>pcb</u> -riprap): Low / Moderate / High
Fresh Water Outlet in Segment: Y / N Type: _____	Remobilization Potential ( <u>bld</u> /riprap): Low / Moderate / High
Other:	

<b>Inlet Category:</b>	Open (stable)	Open (migrating)	Open (closed at some point)	Closed (open at some point)	Ephemeral
<b>Inlet Channels:</b>	Single Channel		Multiple Channel		
<b>Inlet Character:</b>	Simple		Overlapping		
<b>Inlet Width:</b>	< 50 m	50 - 250 m	250 - 1000 m	>1000 m - est.	Est. _____ m
<b>Barrier Category:</b>	Stable	Vegetated	<u>Overwashed</u>	Breached	
<b>Lagoon Category:</b>	Open		Closed		

3 RESOURCE ISSUES:		
	Primary Resource(s) at Risk	Response Constraints
Environmental/Wildlife		
Cultural/Historical		
Human Use/Economic		

4 COMMENTS

5 VISUALS
SKETCH: yes / no    PHOTOS/VIDEO: yes / no    TRACKLINE: yes / no    PHOTOGRAPHER(S):

## TRAINING - Shoreline Segmentation Survey Form (page 2)

<b>6 OPERATION CHARACTERISTICS / ISSUES</b>	
<b>Human Use Activities (if any):</b> Natural / Agricultural / Commercial / Residential / Recreational	
<b>Access Constraints/Limitations:</b>	
Describe the amount of pre-impact debris pickup/relocation work? ( light / moderate / heavy ) No. of bags?	
Alongshore Access to adjacent segment : yes / no Alongshore Access within segment: yes / no Staging Areas (in segment): yes / no Staging Areas (in adjacent segment): yes / no Access Constraints: yes / no Type: _____ Direct Access: yes / no Type: _____ Road Access: yes / no Type: _____ Water Access: yes / no Helicopter Access: yes / no	Remote Area: yes / no Nearshore shoals/reefs: yes / no Narrow intertidal zone: yes / no Exposed Coast: yes / no Backshore Cliff or Manmade impediment: yes / no Strong Currents: yes / no High Tidal Range: yes / no Wetlands/Mudflats: yes / no Shore zone suitable for machinery: yes / no
Comments:	

<i>IF ROAD ACCESS YES: check where appropriate</i>							
To/From:	Foot	ATV	4WD P/U	Small Equipment	Special (marsh buggy etc)	Large Truck	Heavy Equipment
Staging Area/Backshore							
Intertidal							

<i>IF WATER ACCESS YES: check where appropriate</i>		
Skiff	Shallow Draft (landing barge)	Deep Draft

<i>IF HELICOPTER ACCESS YES: check where appropriate</i>		
RESTRICTED: Hot drop/pickup possible if required	SHORT-TERM: Safe landing areas with tidal constraints	SHUT DOWN: Long term staging area

<i>IF STAGING AREA YES: check where appropriate</i>				
Bags	Super Sacks	Small Equipment	Heavy Equipment	Operations Base

<i>IF SHOREZONE SUITABLE FOR MACHINERY: check where appropriate</i>							
ATV	Trucks	Bobcat	Backhoe	Special (beach cleaner etc)	Front-end Loader	Bulldozer	Grader

Boat Ramp: Y / N WP: _____	Dock or Wharf: Y / N	Dry-land Storage Facility: Y / N	Industrial Intertidal Complex: Y / N
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<b>7 SAFETY CONSIDERATIONS</b> <i>Note Safety Constraints Beyond Normal</i>

<b>8 ADDITIONAL COMMENTS</b>

Revised 20 January 2020

**OILED MANGROVE SCAT FORM**

MANGROVE OILING SUMMARY FORM for \_\_\_\_\_ spill Page \_\_\_ of \_\_\_

<b>1 GENERAL INFORMATION</b>		Date (dd/mm/yy)	Time (24hr):	Tide Height (m/ft)																	
Segment ID:			Daylight: ___ hrs to ___ hrs	Rising/falling																	
Ops. Division:																					
Survey by: foot/ ATV/ Boat/ Helo/ Overlook Others			Sun/ Cloud/ Rain/ Windy/ Calm																		
<b>2 SURVEY TEAM #</b> _____		Team members: Name, Organisation, Contact Phone Number																			
<b>3 SEGMENT</b>		Total Length (m) _____	Length Surveyed (m) _____	Datum: _____																	
Start GPS		Lat: _____° _____' min	Long: _____° _____' min	Area (m <sup>2</sup> )																	
End GPS		Lat: _____° _____' min	Long: _____° _____' min																		
<b>4A SHORE FEATURE</b>		Consider ONLY the location of the mangroves																			
<input type="checkbox"/> Delta <input type="checkbox"/> Fringe		<input type="checkbox"/> Lagoon <input type="checkbox"/> Estuarine Lagoon	<input type="checkbox"/> Estuary <input type="checkbox"/> Estuarine Delta	<input type="checkbox"/> Delta																	
<b>4B MANGROVE TYPE</b>		Select only ONE oiled primary (P) type and any secondary (S)																			
<input type="checkbox"/> Overwash <input type="checkbox"/> Fringing		<input type="checkbox"/> Riverine <input type="checkbox"/> Basin	<input type="checkbox"/> Hammock <input type="checkbox"/> Scrub																		
<b>4C ROOT TYPES</b>		<input type="checkbox"/> Stilt Roots 	<input type="checkbox"/> Pneumatophores 	<input type="checkbox"/> Buttress Roots 																	
<b>4D BACKSHORE CHARACTER</b>		Select only ONE oiled Primary (P) type and any Secondary (S) types																			
<input type="checkbox"/> Beach <input type="checkbox"/> Barrier Beach		<input type="checkbox"/> Delta <input type="checkbox"/> Dune	<input type="checkbox"/> Tidal Inlet <input type="checkbox"/> Channel	<input type="checkbox"/> Wetland <input type="checkbox"/> Others _____																	
<b>5 OPERATIONAL FEATURES</b>		Suitable backshore or alongshore staging Y / N																			
Direct backshore access		Y / N	Surface bearing capacity suitable for:																		
Alongshore access from next segment		Y / N	personnel / marsh / vehicles / other _____																		
Access restriction		Y / N	If YES – add note in Comment Box 8 (Circle only those applicable)																		
<b>6 SURFACE OILING CONDITIONS</b>		Enter Oil on Substrate versus Oil on Vegetation on different lines, using (S) or (V) after the Zone ID. Indicate the position of each ZONE on the cross-section below.																			
OIL ZONE ID	TIDAL ZONE				OIL COVER			OIL THICKNESS					OIL CHARACTER					OILED PLANT PARTS			
					Length	Width	Dist.											All B T S L *Base, trunk, stem, leaf			
	LI	MI	UI	SU	m	m	%	T	C	C	S	F	F	M	T	T	T		S	A	NO
								O	V	T	T	L	R	S	B	P	C	R	P		
<b>7 SUBSURFACE OILING CONDITIONS</b>		Is subsurface oil present Y / N																			
IF 'Y', describe in Comment Section (box 8) and indicate location in cross-section																					
<b>8 COMMENTS</b>		Cleanup recommendation ecological / recreational / cultural / economic issues & constrains / wildlife																			
Approx Total Oiled Area _____ km <sup>2</sup>  Show: High tide level (HTL) Low tide level (LTL) Surface oil (SO) Subsurface oil (SSO) Key vegetation zones Scale																					

Sketch Yes / No      Photos Yes / No      Video Yes / No (Tape # \_\_\_\_\_)



## "SHORT" SCAT SURVEY FORM – SHORELINE TROPICAL

1. GENERAL INFORMATION					
Date: (dd/mm/yyyy)		Location:		Weather:	Sun / Clouds / Fog / Rain
Time Start: (24hr EST)		Segment ID:		Tide Height:	H / M / L Rising / Falling
Time End: 24hr (EST)		Operations Division:		Survey by:	Foot / ATV / Boat / Helicopter / Overlook
2. SURVEY TEAM # _____					
Name		Organization		Name	
3. SEGMENT DATA					
Total Length:	_____ meters	Length Surveyed:	_____ meters	Datum:	
Survey Start GPS:	WP:	LAT:		LONG:	
Survey End GPS:	WP:	LAT:		LONG:	
4. SHORELINE INFORMATION <i>Select only one primary (P) oiled shoreline type and any secondary (S) - circle if multiple choices</i>					
	Shoreline Type		Coastal Character		
Physical	Slope	<5° / 5-30° / >30°	Slope	<5° / 5-30° / >30°	
Bedrock	Platform/ Ramp/ Cliff/ Beach Rock		Platform / Ramp / Cliff		
Unconsolidated	Bank / Cliff / Talus		Bank / Cliff / Talus		
Beach / Flats	Mud		Beach		
	Sand		Dune		
	Mixed Fine		Forest / Jungle		
	Mixed Coarse		Grass/Shrubs		
	Pebble - Cobble		Agricultural Fields		
	Boulder / Rubble		Tidal Channel / Inlet		
	Organics		Lagoon / River Channel		
Wetlands	Marsh		Estuary / Wetlands / Delta		
	Mangrove		Marsh - Mangrove		
Manmade	Permeable		Permeable		
	Impermeable		Impermeable		
5. OPERATIONAL FEATURES					
Debris?	Y / N	Oiled?	Y / N	Debris Amount	_____ bags or _____ trucks
Direct backshore access?					Y / N
Suitable backshore staging?	Y / N	Alongshore access from next segment?	Y/N	Access restrictions/nearshore coral _____	
6. ZONE ID _____ <i>Description of Oil Conditions in Supra / Upper / Mid / Lower Intertidal Zone (circle one)</i>					
Oil Band	Surface Oil Distribution	Surface Oil Thickness	Surface Oil Type	Subsurface Oil	
Width x Length: _____ m x _____ m	<1 %	Film	Fresh Liquid	Penetration	Burial
	1 – 10 %	Stain	Mousse	< 1 cm	Clean layer (above): _____ cm - _____ cm
Start Waypoint #: _____	11 – 50 %	Coat	Tar Balls	1 – 5 cm	Oiled layer: _____ cm - _____ cm
End waypoint #: _____	51 – 90 %	Cover	Tar Patties	5 – 10 cm	
Sediment type(s): _____	91 – 100 %	Thick	Asphalt Pavement	> 10 cm	Clean below? Y / N
	_____ %	_____ cm	Other _____	_____ cm	
7. ZONE ID _____ <i>Description of Oil Conditions in Supra / Upper / Mid / Lower Intertidal Zone (circle one)</i>					
Oil Band	Surface Oil Distribution	Surface Oil Thickness	Surface Oil Type	Subsurface Oil	
Width x Length: _____ m x _____ m	<1 %	Film	Fresh Liquid	Penetration	Burial
	1 – 10 %	Stain	Mousse	< 1 cm	Clean layer (above): _____ cm - _____ cm
Start Waypoint #: _____	11 – 50 %	Coat	Tar Balls	1 – 5 cm	Oiled layer: _____ cm - _____ cm
End waypoint #: _____	51 – 90 %	Cover	Tar Patties	5 – 10 cm	
Sediment type(s): _____	91 – 100 %	Thick	Asphalt Pavement	> 10 cm	Clean below? Y / N
	_____ %	_____ cm	Other _____	_____ cm	
8. COMMENTS (cleanup recommendations, ecological/human use issues and constraints, wildlife observations)					
(for ALL subsegments record: sub-segment ID, length, length surveyed, and GPS start/end points)					
Sketch? Yes / No	Photos? Yes / No (# _____ )		Completed By: _____		

REVISION DATE: 20 January 2020

**INCIDENT NAME**

**Shoreline Treatment Recommendation  
Operational Permit to Work**

STR # \_\_\_\_

Segment:

Survey Date:

**Start Latitude:**

**End Lat:**

**Start Longitude:**

**End Long:**

**Length (m):** \_\_\_\_\_

**Shoreline Type:** *Primary* \_\_\_\_\_ *Secondary* \_\_\_\_\_

**Oiled Areas for Treatment:**

*Auto entry directly populated from data base of:*

*Zone: Shoreline Type, L x W, Oil % Dist, Oil Character, Oil Thickness, Oiling Category  
e.g. Zone A: Salt marsh, 200 m x 1 m, 10% Fresh oil, pooled, Oiling Category: Heavy*

**Cleanup Recommendations:**

*(Use standard terms and definitions from a Word document or populate database with these standard statements)*

**Staging and/or Logistics Constraints/Waste Issues:**

\_\_\_\_\_

**Ecological / Wildlife Concerns:**

\_\_\_\_\_

**Cultural / Historical / Economic Concerns:**

\_\_\_\_\_

**Safety Concerns:**

\_\_\_\_\_

**Attachments:**  Segment Map  Sketch  SCAT Form  Fact Sheet  Other

Prepared by: \_\_\_\_\_ Date Prepared: \_\_\_\_\_

Date  
Time

\_\_\_\_\_  
\_\_\_\_\_

to IC

\_\_\_\_\_  
\_\_\_\_\_

to Land Mgr

\_\_\_\_\_  
\_\_\_\_\_

to Cultural

\_\_\_\_\_  
\_\_\_\_\_

to EU Leader

\_\_\_\_\_  
\_\_\_\_\_

to RP

**Final**

**Approval**

IC

D/IC or PSC

EU Leader

RP

**Submitted**

**to OPS**

**\*\* When Treatment is completed, send a Segment Completion Report to SCAT \*\***

**BERMUDA GOVERNMENT  
DAILY WORK RECORD**

**NOSCP1**

Date: \_\_\_\_\_

Work Unit: \_\_\_\_\_ Task: \_\_\_\_\_

Work Site: \_\_\_\_\_ Location: \_\_\_\_\_

Supervisor's Name	Department	Time On	Time Off	Hours

Work Crew Name	Department	Time On	Time Off	Hours

Transport and Equipment Used	Time On	Time Off	Hours

Consumable Materials Used	Estimated Cost

Certified as correct: \_\_\_\_\_ Authorised by: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Printed Name: \_\_\_\_\_



**BERMUDA GOVERNMENT  
OUTSIDE AGENCY CONTRACT**

**NOSCP3**

Date: \_\_\_\_\_

BETWEEN BERMUDA GOVERNMENT AND \_\_\_\_\_

Task: \_\_\_\_\_ Location: \_\_\_\_\_

On Site Representative: Government: \_\_\_\_\_

Agency: \_\_\_\_\_

Work To Be Performed:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Estimated Total Cost: \$ \_\_\_\_\_

**Work Force Used:**

Personnel Name	Time On	Time Off	\$ Rate	\$ Total

**Transport & Equipment Used:**

Item	Time On	Time Off	\$ Rate	\$ Total

**Consumable Materials Used:**

Item	Quantity	Cost

I certify that the above work is ordered and  
Authorised by the Bermuda Government.

I fully understand my obligation to the Bermuda  
Government for the performance of this work in  
accordance with the contract

\_\_\_\_\_  
Signature of Government Representative

\_\_\_\_\_  
Signature of Agency Representative

Print Name: \_\_\_\_\_

Print Name: \_\_\_\_\_



**BERMUDA GOVERNMENT  
ADMINISTRATION CLAIM FORM**

**NOSCP5**

Date: \_\_\_\_\_

Task: \_\_\_\_\_ Location: \_\_\_\_\_

<b>Personnel</b>	<b>Duties</b>	<b>Time On</b>	<b>Time Off</b>	<b>Hours</b>

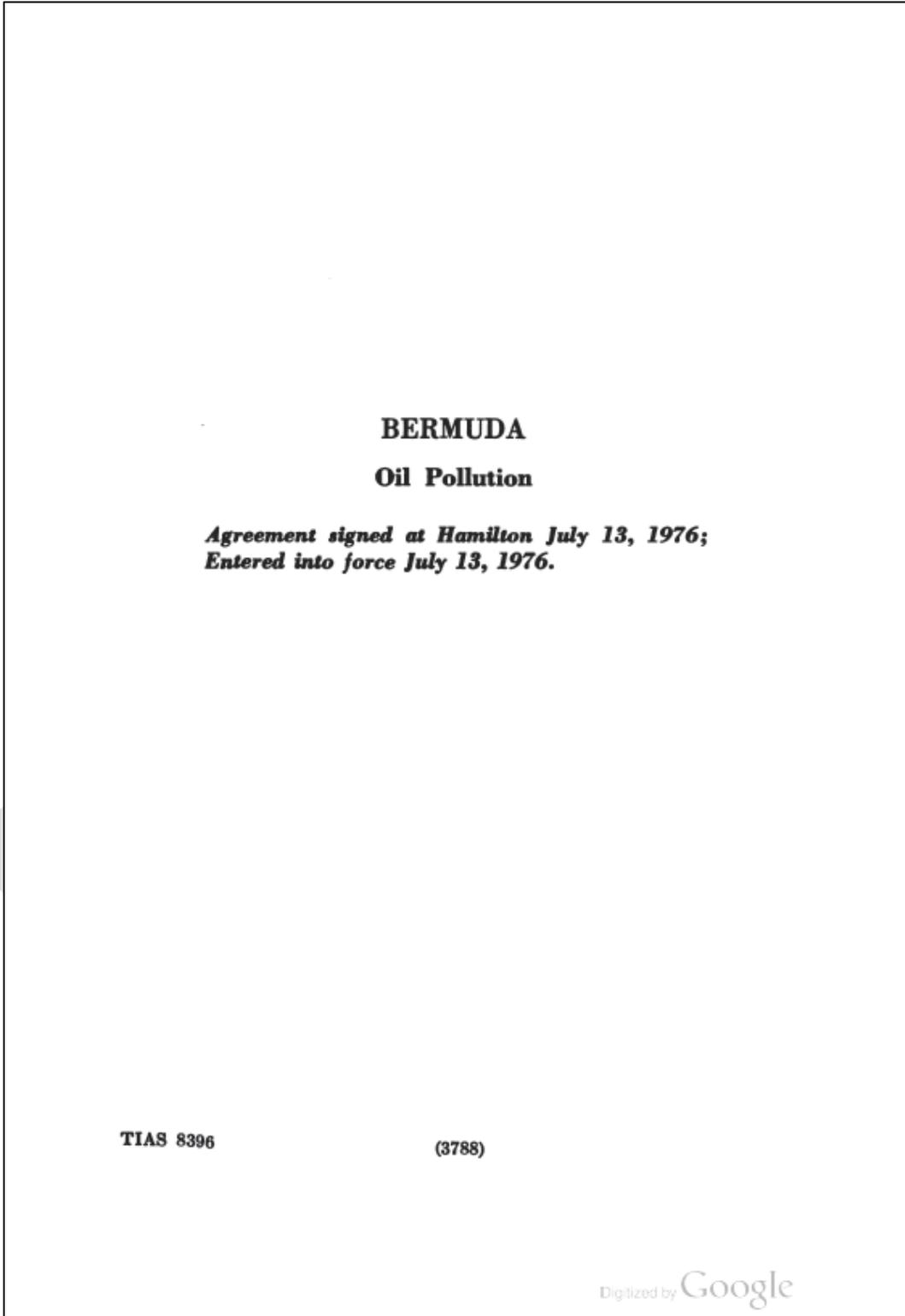
<b>OFFICE EQUIPMENT</b>	<b>ESTIMATED COST \$</b>

Submitted by: \_\_\_\_\_ Authorised by: \_\_\_\_\_

Print Name: \_\_\_\_\_ Print Name: \_\_\_\_\_

**APPENDIX 6: AGREEMENT: US GOVERNMENT (USCG) AND BERMUDA GOVERNMENT AGREEMENT AND INCIDENT RESPONSE GUIDE.**

**USCG – BERMUDA GOVERNMENT AGREEMENT (1976)**



AGREEMENT BETWEEN THE  
GOVERNMENT OF THE UNITED STATES OF AMERICA  
AND THE  
GOVERNMENT OF BERMUDA  
CONCERNING ASSISTANCE TO BE RENDERED ON A  
REIMBURSABLE BASIS  
BY THE UNITED STATES COAST GUARD

The Government of the United States of America and the Government of Bermuda have agreed as follows :

Article 1

In the event of a major discharge of oil in the waters of Bermuda or on the high seas in circumstances which could result in significant pollution damage to the waters and coastal areas of Bermuda, the Government of Bermuda may request the assistance of the Government of the United States in removing such oil and in minimizing and mitigating related damage. The request may be made by written communication or through rapid communication methods. If the request is made by other than written communication, it shall be confirmed by written communication delivered to the Government of the United States within 24 hours of the request. Upon receipt of such a request the Government of the United States may make available to the Government of Bermuda the services, including personnel and facilities, of agencies of the Government of the United States capable of providing the assistance requested in accordance with the provisions of this Agreement.

Article 2

The Government of the United States may provide assistance to the Government of Bermuda pursuant to this Agreement only to the extent that the personnel and facilities of the competent United States agencies are not otherwise committed.

Article 3

The personnel and facilities of the Government of the United States made available to the Government of Bermuda pursuant to this Agreement shall at all times remain under the control and direction of the Government

of the United States. To the extent practicable the activities of the personnel and facilities of the Government of the United States shall be coordinated with the activities of the personnel and facilities of Bermuda in order to achieve the maximum possible effectiveness and efficiency.

Article 4

The Government of Bermuda shall reimburse the Government of the United States for all costs incurred by the Government of the United States relating to the use of personnel and facilities of the Government of the United States provided pursuant to this Agreement. This reimbursement shall be made within one hundred and twenty days after receipt by the Government of Bermuda of an itemized statement of such costs provided by the Government of the United States.

Article 5

The Government of Bermuda shall release and forever discharge the Government of the United States, its agencies, officers and employees from any and all claims and causes of action arising out of the activities provided by the Government of the United States pursuant to this Agreement. The Government of Bermuda shall defend, indemnify, and hold forever harmless the Government of the United States, its agencies, officers and employees, against any and all claims and causes of action in the courts of Bermuda or the United States which hereafter at any time are made or instituted for the purpose of pursuing or enforcing a claim for damages resulting from the aforesaid activities.

Article 6

The Government of Bermuda shall facilitate the landing and activities of any personnel and facilities of the Government of the United States necessary, in the opinion of the Government of the United States, to provide assistance in response to a request made pursuant to Article 1 of this Agreement.

'TIAS 8306

Article 7

Questions of jurisdiction with respect to personnel of the United States provided in response to a request made pursuant to Article 1 of this Agreement shall be determined in accordance with the provisions of the Agreement between the Government of the United States of America and the Government of the United Kingdom relating to Leased Bases, signed at London on 27 March 1941, as modified by an Exchange of Notes at Washington dated 19 July and 1 August 1950. [1]

Article 8

This Agreement shall enter into force upon signature and shall remain in force until terminated as provided in Article 9 below.

Article 9

This Agreement may be terminated at any time by the agreement of the Government of the United States and the Government of Bermuda. Alternatively, it may be terminated, except for Article 4 and 5 thereof, by either Government upon notice given 60 days in advance of such termination to the other Government. In the latter case, unless otherwise agreed, Articles 4 and 5 of the Agreement shall remain in force until executed.

In witness whereof the undersigned, being duly authorised thereto, have signed this Agreement.

Done in duplicate at Hamilton, Bermuda this

*13<sup>th</sup>* day of *July* 1976.

 Donald B. McCue  
For the Government of the United States of America :

 John W. Swan  
For the Government of Bermuda :

<sup>1</sup> EAS 235, TIAS 2105 ; 55 Stat. 1560 ; 1 UST 585.

**USCG INCIDENT RESPONSE GUIDE.**

***Note: The US Coast Guard (USCG) 50-page Incident Response Guide is too large to place in this copy of the NOSCP.***

***It describes the process and communication channels for securing assistance by the USCG in accordance with the above agreement.***

***Contact DENR – Pollution Control Section ([PollutionControl@gov.bm](mailto:PollutionControl@gov.bm)) for Digital copies of the NOSCP, including the US National Response Team Incident Response Guide that includes agencies such as USCG, EPA, NOAA, FEMA, etc.***

***All details are also provided on the Government server titled “Oil Spill” ([\\cvsr-072-env301\NOSRP\\$](\\cvsr-072-env301\NOSRP$)) for personnel with access permission provided to key members of the Command Team via the Government IT Department, IDT.***

**APPENDIX 7: OSRL NON-MEMBERS AGREEMENT TEMPLATE: PROCESS AND PRICE LISTS**



**Contract for the Provision of Emergency Spill Response Services  
(Non-Members' Agreement)**

**SPECIAL CONDITIONS OF CONTRACT**

<p>1. Date</p>	<p>2. Client Purchase Order Number</p>
<p>3. Oil Spill Response Limited place of business for all notices: Oil Spill Response Limited Lower William Street Southampton SO14 5QE Tel: Fax:  (Hereafter referred to as "the Company")</p>	<p>4. Client/Place of business for all notices:  Tel: Fax:  (Hereafter referred to as "the Client")</p>
<p>5. Company's Address for invoicing  Tel: Fax:</p>	<p>6. Client's invoice address  Tel: Fax:</p>
<p>7. Commencement Date: On signature of this Agreement</p>	<p>8. Operation Area</p>
<p>9. Mobilisation or Destination Port/Airport</p>	<p>10. Client's Agent (If Applicable)</p>
<p>11. Equipment Freight to be arranged by Company? <input type="checkbox"/> Yes, to Mobilisation Port in box 9 <input type="checkbox"/> Yes, to Operation Area in box 8 <input type="checkbox"/> No, Client to arrange</p>	<p>12. Agreed Payment Terms with Client <input type="checkbox"/> Payment upfront (on Commencement Date) <input type="checkbox"/> Payment within _____ days of invoice date.</p>
<p>13. Estimated Freight Cost (final cost subject to agreement between Company and Carrier)</p>	<p>14. Schedule of Equipment – In accordance with the Cost Sheets</p>
<p>15. Consumables – Subject to Invoice/Cost Sheets</p>	
<p>16. Contract Terms It is mutually agreed that this Agreement shall be performed subject to and in accordance with the Special Conditions of Contract set out in the boxes above and the Terms and Conditions in Clauses 1-23 inclusive, which shall together form one contract.</p>	

**AS WITNESS** the hands of the duly authorised representatives of the Parties hereto the day and year first above written

**This document must be signed by an authorised signatory of Client and each page of the Terms & Conditions must be signed and dated.**

Company Signature:	Client Signature:
Print name:	Print name:
Position:	Position:
Date:	Date:

**Notes:** This Agreement is designed to record all relevant information in respect of a response and to provide an estimated reference for invoicing purposes. The final costs are to be subject to the final cost sheets. The clauses of the Terms and Conditions referred to in these Special Conditions of Contract are referred to for guidance only. All of the Terms and Conditions shall apply.



OSRL-OPER-CON-00024 Rev 0

**Terms and Conditions and OSRL Scale of Fees are not shown here but are held on Oil Spill Server**

## OSRL Notification Form

(Initial Incident Information)

**Warning! Please telephone the Duty Manager before e-mailing or faxing this form**

<b>To</b>	Duty Manager		
<b>OSRL Base</b>	Southampton, UK	Loyang, Singapore	Fort Lauderdale, USA
<b>Telephone</b>	+44 (0)23 8033 1551	+65 6266 1566	+1 954 983 9880
<b>Emergency Fax</b>	+44 (0)23 8072 4314	+65 6266 2312	+1 954 987 3001
<b>Email</b>	dutymanagers@oilspillresponse.com		

**Guidance:** This information will be used to develop and recommend the most appropriate response strategy. If new information should become available, or the situation changes, please inform the Duty Manager as soon as possible.

Section 1 – Contact Details				
Member Company				
Name of Person Notifying OSRL				
Job Title (Designation)				
Direct Phone Number	Country code		Number	
Mobile Number	Country code		Number	
Fax Number				
Email Address				
Command Centre Address				
Date and Time of Notification	Date and Time		Time Zone	

Section 2 – Location					
Country / Region of Spill					
Latitude of spill (north/south)					
Longitude of Spill (east/west)					
Area Affected	<input type="checkbox"/> Offshore	<input type="checkbox"/> Subsea	<input type="checkbox"/> Shoreline	<input type="checkbox"/> Estuary	<input type="checkbox"/> Other
	<input type="checkbox"/> Port	<input type="checkbox"/> Harbour	<input type="checkbox"/> Inland	<input type="checkbox"/> River	
Water Depth (if applicable)					

Section 3 – Spill Details						
Date and Time of Spill				Time Zone		
Source of Spill						
Cause of Spill						
Status of Spill	<input type="checkbox"/> Secured		<input type="checkbox"/> Uncontrolled		<input type="checkbox"/> Unknown	
Product Properties	Product Name / Type					State Units  <b>Provide an assay sheet if available.</b>  <input type="checkbox"/> <b>Assay sheet provided</b>
	Specific Gravity			API		
	Pour Point					
	Wax Content					
	Asphaltene					
	Sulphur Content					
Viscosity			Reference Temperature	°C		
Type of Release	Instantaneous Release	<input type="checkbox"/>	Volume			
	<b>OR</b>					
	Continuous Release	<input type="checkbox"/>	Release Rate			



Section 3 – Spill Details continued			
Description of Observed Spill	Estimated Quantity		State Units
	Size		
	Appearance		
	Direction of Travel		

Section 4 – Weather and Modelling			
Weather forecast provided? e.g. Excel/Word	<input type="checkbox"/> Yes	<input type="checkbox"/> No, OSRL to source a weather forecast	
Sea Temperature		State Units	
Sea State			
Visibility			
Cloud Base			
Do you require Oil Spill Trajectory Modelling?	<input type="checkbox"/> Surface 2D	<input type="checkbox"/> Sub-surface 3D Additional time and costs apply	<input type="checkbox"/> Not at this time
Sub-surface 3D Modelling Information if requested	Gas to Oil Ratio	Sm <sup>3</sup> /m <sup>3</sup>	Release Hole Diameter m

Section 5 – Safety and Security		
Highlight any known safety or security risks e.g. high levels of H <sub>2</sub> S, high risk country		<input type="checkbox"/> Not Applicable
Describe security arrangements for OSRL staff		<input type="checkbox"/> Not Applicable

Section 6 – Resources at Risk (if available)		
Environmental or socio-economic sensitivities that may be impacted. Provide the relevant oil spill contingency plan and sensitivity maps if available.		<input type="checkbox"/> Contingency plan included <input type="checkbox"/> Sensitivity maps included

Section 7 – Equipment (if available)	
Equipment already deployed or being mobilised (other than OSRL resources)	

Section 8 – Further Information



## Mobilisation Authorisation Form

**Please do not hesitate in contacting the duty manager at the earliest opportunity in the event of an incident or potential incident. Please ensure you telephone the Duty Manager before e-mailing or faxing this completed form**

### Safety and Security

Oil Spill Response Limited's safety policy requires us to work closely with the mobilising party to ensure all aspects of safety and security are addressed for our personnel.

<b>To</b>	Duty Manager		
<b>OSRL Base</b>	Southampton, UK	Loyang, Singapore	Fort Lauderdale, USA
<b>Telephone</b>	+44 (0)23 8033 1551	+65 6266 1566	+1 954 983 9880
<b>Emergency Fax</b>	+44 (0)23 8072 4314	+65 6266 2312	+1 954 987 3001
<b>Email</b>	dutymanagers@oilspillresponse.com		

Details of Authorised Contact			
Incident Name			
Mobilising Company			
Name of Person Authorising OSRL			
Position of Authorising Representative			
Direct Phone Number	Country Code		Number
Mobile Number			
Fax Number			
Email Address			

Invoice Address if available	
Purchase Order Number	

I, the above named Authorising Representative for the Mobilising Company, approve activation of Oil Spill Response Limited and its resources in connection with the above incident under the terms of the Agreement in place between the above stated Company and Oil Spill Response Limited.

Signature:		Date / Time:		
------------	--	--------------	--	--

**If Oil Spill Response Limited personnel are to work under another party's direction please complete details below:**

Directing Party's Details	
Company	
Contact Name	
Position in Incident	
Direct Phone Number	
Mobile Number	
Fax Number	
Email Address	



**APPENDIX 8: MEMORANDA OF UNDERSTANDING – LICENCED PORTS (AWAITING APPROVAL)**

DRAFT

**APPENDIX 9: OIL SPILL RESPONSE EQUIPMENT AND LOCATIONS:****Table A9.1. Oil Spill Response Equipment: (For use by the Resource Unit under Planning Section)**

Location	Product	Quantity	Comment	For Use by Planning Section	For Use by Planning Section
Government Quarry	Sorbent boom 3 x 10' lengths (5" Dia)	30 bales (900ft)			
	Sorbent pads (15"x 17") 200/pk	5 bales			
Fisheries Coney Island	Sorbent boom 10' lengths	<10 bales			
	DAWG oil spill kits	7			
Hamilton Harbour	Harbour Boom (Parker International) 24" - 100ft lengths	10 (1000ft)			
	Anchors (23lb), buoys, lines, trip line/buoys	5 sets			
Dockyard, Oracle Building	Offshore AirMax Boom (390m)	13 x 30m	New 2022		
	Offshore hydraulic drum skimmer	1	New 2022		
	SlickGone NS Dispersant (15m <sup>3</sup> )	15 x 1m <sup>3</sup> IBC Totes	New 2022		
	DESMI Termite Weir/Float skimmer +20m hose	1	New hydraulic hose RQD		
	25K power pack w/ road wheels for termite skimmer (20m hydraulic hoses)	1			
	DESMI Minimax weir skimmer (requires vacuum source)	1			
	Fast tank 2000 USG	1			
	55 US G Correxite # 9527	3			
Self Adjusting weir skimmer (Skimpack)	1				

	Case containing order 951910 (This is floating oil containment bag (~2000 USG) and hardware)	1 (Tested Capacity - TBD)			
	DESMI RO Clean - Rope Mop Skimmer (with new motor). 3-5 m <sup>3</sup> /hr (13-25 GPM). Max mop length 90m.	1	New Motor 2020		
	Selwood Spate diesel powered diaphragm pump (PD75) w/ suction and discharge hose. Self-priming lift with water added to flood prime manifold = 8.8m. Total head = 30.5m.	2	New 2020		
	Elastec Grooved drum skimmer (TDS 118) with pneumatic pump. Skimmer only 5-15 cfm, skimmer and pump 20-70 cfm from air compressor to operate @ 50-100psi). 61kg. Up to 170 GPM (38m <sup>3</sup> /hr) oil recovery. M4 pneumatic diaphragm pump @ 20cfm = 15GPM water at 250ft head and 40 GPM at 100ft head. @ 50cfm = 40 GPM at 100ft head and 65 GPM at 50ft head.	1	New 2020		
	Shore seal boom (300ft) with water pump and air blower to inflate	6 x 50ft	New 2020		
Dockyard - 20ft Container on South Basin (Code)	Harbour Boom (Parker International) 24" - 100ft lengths	10 (1000ft)	New 2020		
	Boom Towing bridles	2 (each)	New 2021		
	Anchors (23lb), buoys, lines, trip line/buoys	7 sets			
Penno's Wharf (Eastern 20ft Container) (XXXU3198544)	Harbour Boom (USN – Orange – 24") – 50ft Lengths	11 (550ft)			
	Harbour Boom (USN – Orange – 24") – 100ft Lengths	2 (200ft)			
	Harbour Boom (Parker International) 24" - 100ft lengths	7 (700ft)	New 2020		
	Harbour Boom (Parker International) 24" - 50ft lengths	14 (700ft)	New 2021		
	Connector (Female-Female) for USN Boom	1			
	Adsorbent ringers for drums (manual)	3			
	Boom connector Cleavis pins (ss) (small bucket of)	~100			

	Aluminium suction pipe (3pc) for weir skimmer (located DY?)	1			
	Magnetic hull connectors with universal boom connectors	2			
	Harbour Boom (24" – Parker International)	300ft	New 2020		
Penno's Wharf (Western 20ft Container) (TTSU2039440)	Sorbent boom 5" 3 x 10' lengths (5" Dia)	15 bales (450ft)			
	Sorbent pads (24"x24") (300 /bag)	5 bags			
	Sorbent boom Skirt / Sweep (100ft lengths)	16 bales (1600ft)			
	Sorbent snares (plastic) (55 USG bags)	9 bags			
	5 USG Jerry jugs (Red for gasoline)	8			
	5 USG Jerry Container (Yellow for Diesel)	1			
	Wooden Squeegees	7			
	2" shackles w/ 2" dia shank	19-15 at count date			
	Boom End Floats (black) w/ Frame	15			
	Boom towing bridles ('Z' connector) w/rope	8			
	Anchors (Small) w/ ropes and buoys	7			
	Water proof coveralls / Tyvex (7/bag)	1			
Penno's Wharf (Northern 20ft Container) (TTSU2034536)	Harbour Wall Boom Connectors with tidal travel (For USN Boom fitting) 10ft long.	12			
	Skimpak skimmer with aluminium wand and control valve	1	Serviced 2019.		
	Rollers on stand (boom deployment)	5			
	Rigid manta suction (4" connection)	3			
	Flexible manta suction (4" connection)	1			
	Manta board (operation??)	1			
	Fast tank 2000 USG (5ft tall) Boxed	1			
	Fast tank 2000 USG (5ft tall) Boxed	1			
	Fast Tank 1000 USG (low level) cw cover, ground sheet, PE liner for use as decontamination area.	1			
110' lengths suction hose, no float	1				

	10' lengths suction hose, w/floats	3			
	20' lengths 4" discharge hose (flexible)	1			
	25' length 4" suction or discharge hose (hardwall Steel wound – 150psi)	6			
	Hose end fittings (various)	5			
	Mop wringers	2 in single bucket	Need replacing		
	Shovels, Rakes, Hoes	2 of each (6 total)	Need replacing		
	Long handled boat hook	2			
	Ladder – 8ft	1			
Rubis Energy (Bermuda) Ltd Ireland Island	Containment boom XR Globe boom w/ ASTM connections, 2 portable aluminium, containers each w/ 9 x 100' sections pre-connected	3 x 900ft (2,700ft)	3 <sup>rd</sup> boom is old and for trials		
	Morris MT11-24 hydraulically powered disc skimmer w/power pack & hydraulic hoses	1			
	Spate diesel powered diaphragm pump w/ suction and discharge hose. Pump set can be used to operate Skimpac 2600 weir skimmer	1			
	Skimpac 2600 weir skimmer head	1			
	24000 USG Fast Tanks storage tanks	2			
	Bales sorbent pads	9			
	Bales sorbent pillows	9			
	Bales sorbent "sausage" boom	10			
	5 lb Danforth anchors with tag lines, anchor ropes & attached red buoys	17			
	Medium size red buoys	16			
SOL Petroleum (Bermuda) Ltd, Ferry Reach and Oil Docks	Boom/reel open harbour type, at Pier	500ft			
	Harbour boom, w/ anchors, floats, pickup lines pre-rigged & housed in storage cabinet	200ft			
	Boom in storage container (4x 200')	800ft			
	Fork lift	1			

	<b>Vikoma Komara 12K MKII Skimmer system 1100 GPH capacity</b>	<b>1</b>			
	<b>500 UGS recovery bladders</b>	<b>3</b>			
	<b>Towable oil collection bags, 500 USG capacity</b>	<b>4</b>			
	<b>Corexit 9500 Dispersant</b>	<b>4500 USG</b>			
	<b>Dispersant spray pack with boom</b>	<b>1</b>			

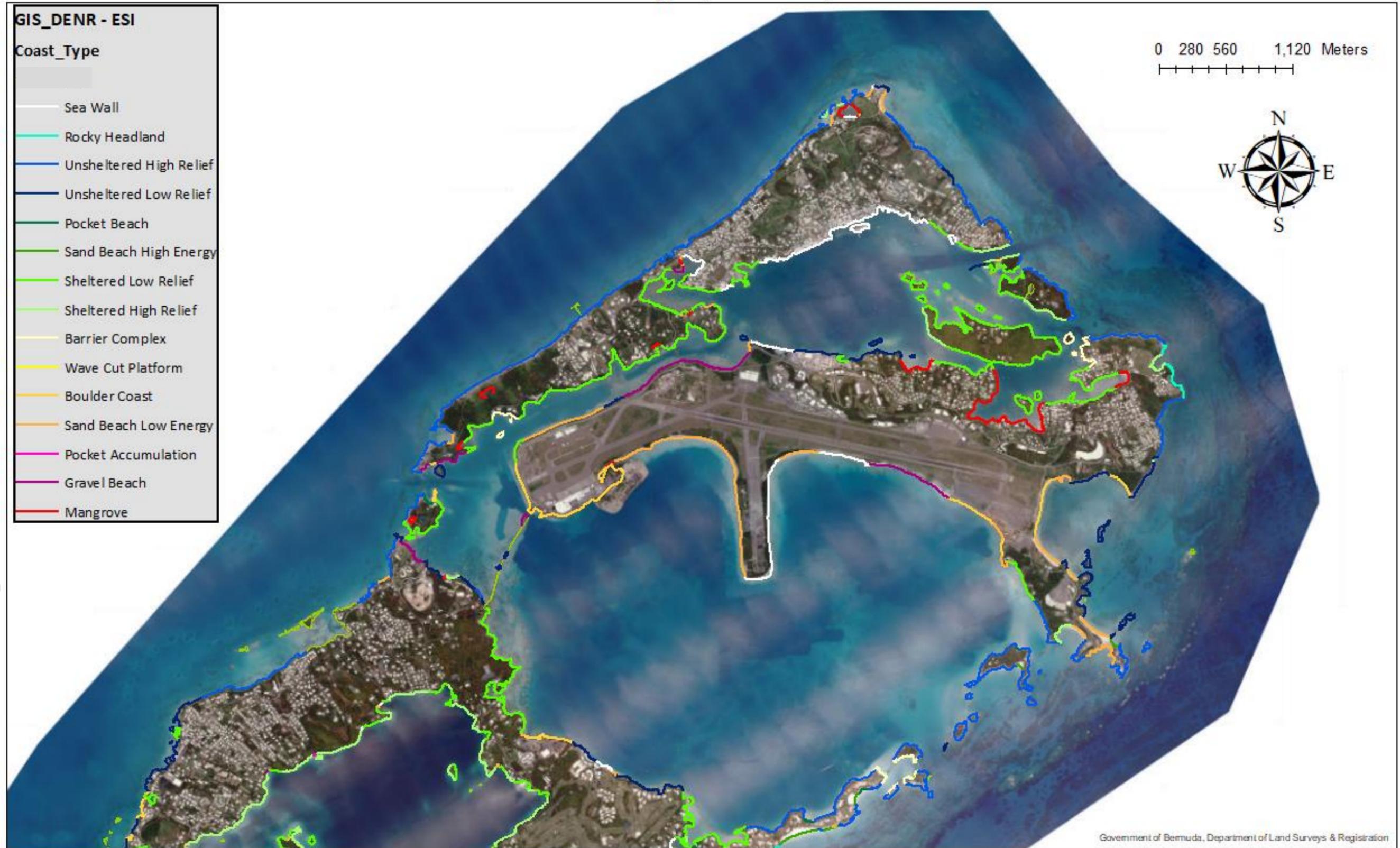
DRAFT

Table A.9.2. Boats available in Bermuda to provide Oil Spill Response and associated support (Government and Commercial)

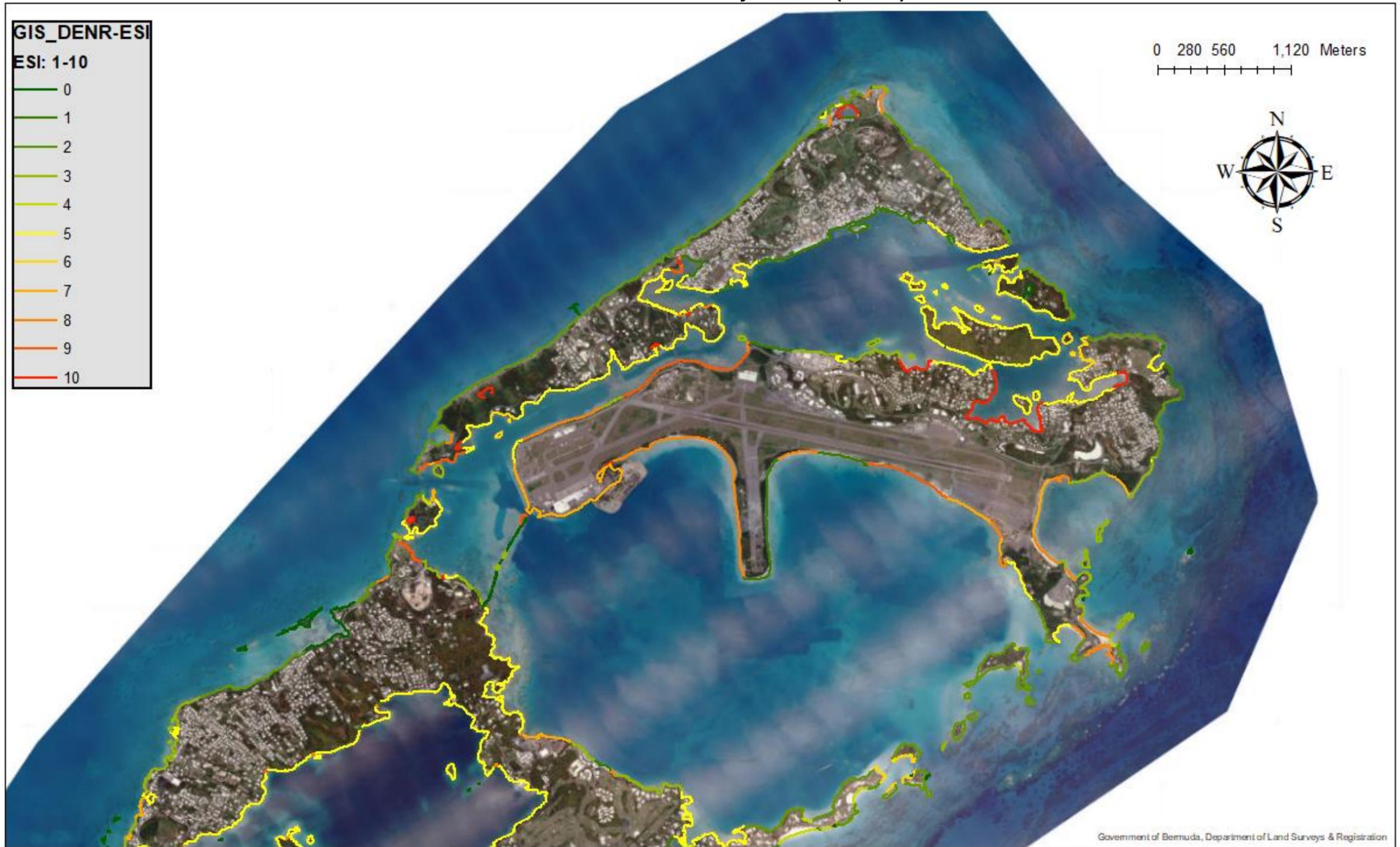
Name	Type	Length (ft)	Draft (ft)	Hull Colour	Range (N. Miles)	Max Speed (knots)	Cruise Speed (kts)	No. of Crew	VHF	VHF DF	AIS	SSB	MF DF	GPS	Radar	Illumination Flares	121.5 EPIRB	406 EPIRB	Depth Sounder	Fire Fighting Equip	Line Firing Equip	First Aid Equip	Life rafts	Mooring/Berth	Engines (hp)	Controlling Agency	Comments	
<b>Royal Bermuda Regiment</b>																												
51A	Whaler	18	2	Green	80	45	25	2	X					X		X						X		Morgan's Pt.	90 x 2	Regiment	Personnel Carrier, deploying/securing booms	
51B	Whaler	18	2	Green	80	45	25	2	X					X		X						X		Morgan's Pt.	90 x 2	Regiment	Personnel Carrier, deploying/securing booms	
51C	Dorey	17	1.5	Green	20	40	25	2	X					X		X						X		Morgan's Pt.	115	Regiment	Deploying/securing boom, fast personnel carrier Not in best condition	
51D	Dorey	17	1.5	Green	20	40	25	2	X					X		X						X		Morgan's Pt.	115	Regiment	Deploying/securing boom, fast personnel carrier Not in best condition	
51E	RIB	24	2.5	Grey/Blk	80	45	25	2	X					X		X		X				X		Morgan's Pt.	115 x 2	Regiment	Towing, boom	
51F	RIB	24	2.5	Grey/Blk	80	45	25	2	X					X		X		X				X		Morgan's Pt.	115 x 2	Regiment	Towing, boom	
<b>Marine &amp; Port Services</b>																												
Dragon	Workboat	65	6	Black	30	10	9.5	6	X Ch.#12 & 10					X									1 x 6-man	Dockyard		Marine & Ports	3 waste tanks, Large deck area, Beam 17'8", Bollard pull 8 tons	
Final Notice	Whaler	18	2			45																			140 hp 4 Str. O/B	Marine & Ports		
Inspector	Line Tug	38	6			10																				Marine & Ports	Bollard pull 2 tons	
MT Powerful	Tug	100	14		4000	13	11	6	X Ch.#12 & 10			X	X		X	X		X	X	X	X	X	2 x 8-man	Dockyard		Marine & Ports	Beam 30'6", Bollard pull 40 tons	
Princeton	Line Tug	38	6			10																				Marine & Ports	Bollard pull 2 tons	
St. David's	Pilot/Rescue	53	5		300	29	24	3	X Ch.#12 & 10		X	X		X	X	X		X	X	X	X	X	1 x 12-man	St. George's		Marine & Ports	Beam 17'8", Bollard pull 6 tons	
St. George	Pilot Rescue	50	5' 4"		30	10	9	3-4	X Ch.#12 & 10		X								X			X		St. George's		Marine & Ports	Bollard pull 6 tons	
Surveyor	Whaler	18	2			45																			140 hp 4 St, O/B	Marine & Ports		
<b>Dept of Environment &amp; Natural Resources</b>																												
Cahow		17																							Flatt's	90hp gas	DENR - Shorelands	Terrestrial Conservation boat.
Chevron		20																							Flatt's	90hp gas	BAMZ - Aquarium	Aquarium's collecting boat.
Defender	Whaler	24	3.5	grey	100	40	28	1-2	X Ch.# 16, 27, 22					X					X					Dockyard	Twin outboard	DENR - Fisheries		
Feral Cat	Catamaran	26	3		10	25	20	01-Feb	X Ch.# 16, 27, 22					X					X					Flatt's	115hp, gas	DENR - Shorelands	Small equipment, personnel carrier	
Fire Fly	Catamaran	22																						Flatt's	2 x115hp, gas	DENR - Shorelands		
Sentinel		36	3	grey/wht	200	40	25	01-Apr	X Ch.# 16, 27, 22		X			X	X			X	X			X	1 x 6-man	Coney island	2x300 O/B	DENR - Fisheries	Deploying/securing boom	
Protector	Rigid hull inflatable	28	3	Greywht	100	45	25	2	X Ch.# 16, 27, 22					X	X	X			X	X		X	X	Coney Island	2x 225 hp, gas	DENR - Fisheries	Deploying/securing boom	
<b>SOL Petroleum Ltd / RUBIS Energy Ltd</b>																												
Oil Spill Response	Auminium Whaler			Grey																					Richardson's Bay, Ferry Reach		SOL Petroleum/ RUBIS	
<b>Bermuda Yacht Services Ltd</b>																												
Monarch		35	3	Red	50	14	10	2-3	Y					Y		Y		Y					Y	StG Berth	2 x 250hp	BYS	Towing Bitt	
Custom		26	2	White	50	14	10	2-3	Y					Y		Y		Y					Y	StG Berth	2 x 150hp	BYS	Towing Bitt	
Ruffian	Barge	33	3	Red	20	8	6	2	Y							Y								StG Berth	1 x 150hp	BYS	Range inside reef, can fit under longbird bridge, towing bitt, large flat deck.	
<b>Crisson Construction Ltd</b>																												
Guardian	Austel	54	6	Gray	200	29	20	4	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	2x700hp	Crisson		
Warlock	Displacement	75	6	Black	50	15	9	4	Y					Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	2x550hp	Crisson		
Cleavelander	Displacement	65	5	black	50	12	8	3	Y					Y			Y	Y				Y				Crisson		
Barge #1	Barge/Crane	50x20																									Up to 165 Tonne Cranes	
Barge #2	Barge/Crane	140x50																									Also numerous small work boats ranging from 16-31ft	
Barge #3	Barge/Crane	50x20																										
<b>BIOS</b>																												
R/V Rumline	Newton Dive platform	36		Dark Blue					Y					Y		Y		Y	Y	Y		Y	Y	Y	CAT306	BIOS		
R/V Henry Stommel	Duffy&Duffy	42		Dark Blue					Y					Y		Y		Y	Y	Y		Y	Y	Y	Cummins 265hp	BIOS	A Frame	
Sea Dance	Sisu	26		Dark Blue					Y					Y		Y		N	Y	Y		Y	N	Y	E-Tec 250hp	BIOS		
Reef Runner	Twin-Vee	26		Dark Blus					Y					N		Y		N	N	Y		Y	N	Y	Twin 115 Yamaha 4S	BIOS		

APPENDIX 10: ENVIRONMENTAL SENSITIVITY INDICES (ESI) AND COAST TYPE:

Coast Type (Sleeter et al)



### Environmental Sensitivity Indices (1 – 10)



### Coast Type (Sleeter et al)



### Environmental Sensitivity Indices (1 – 10)



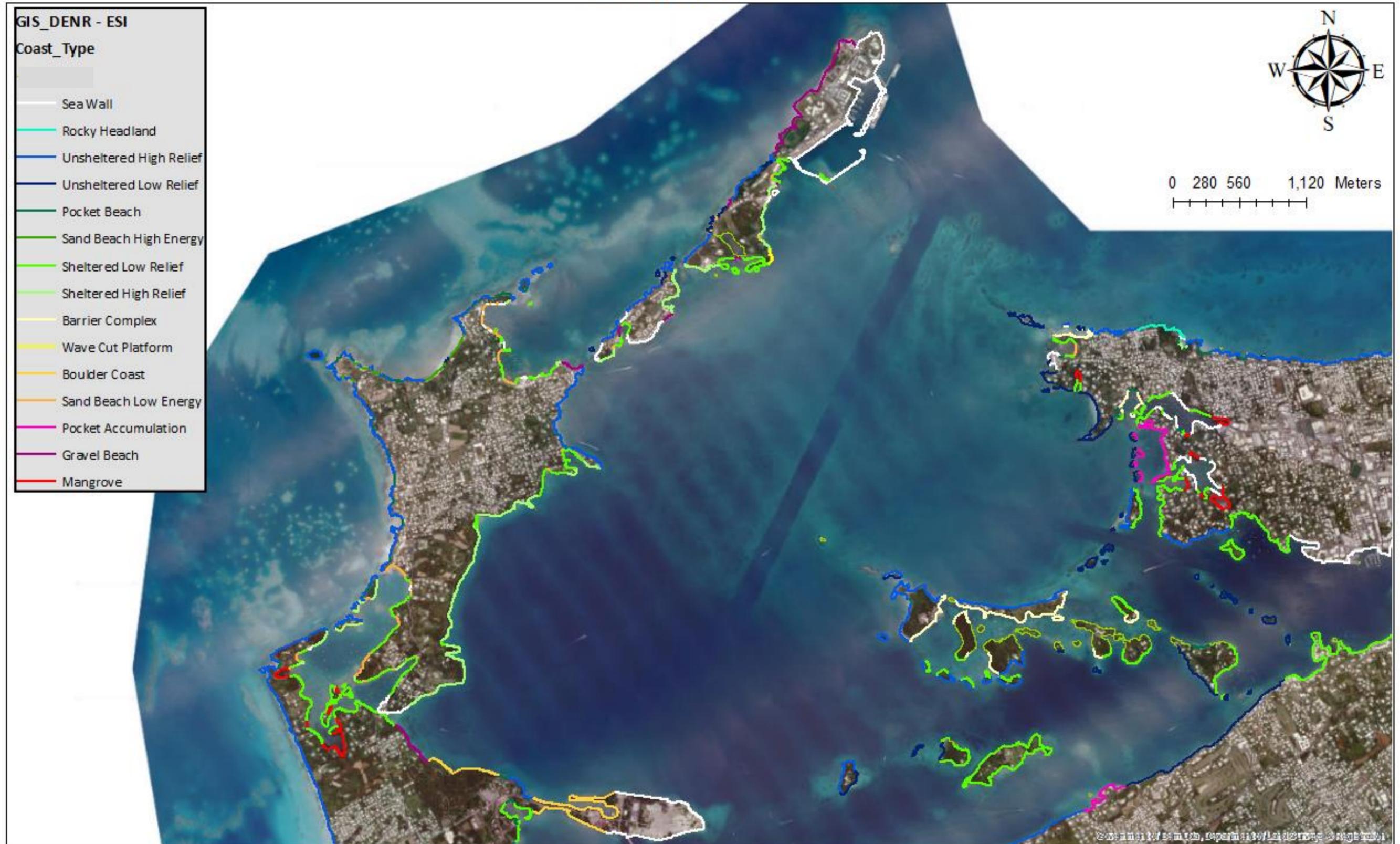
### Coast Type (Sleeter et al)



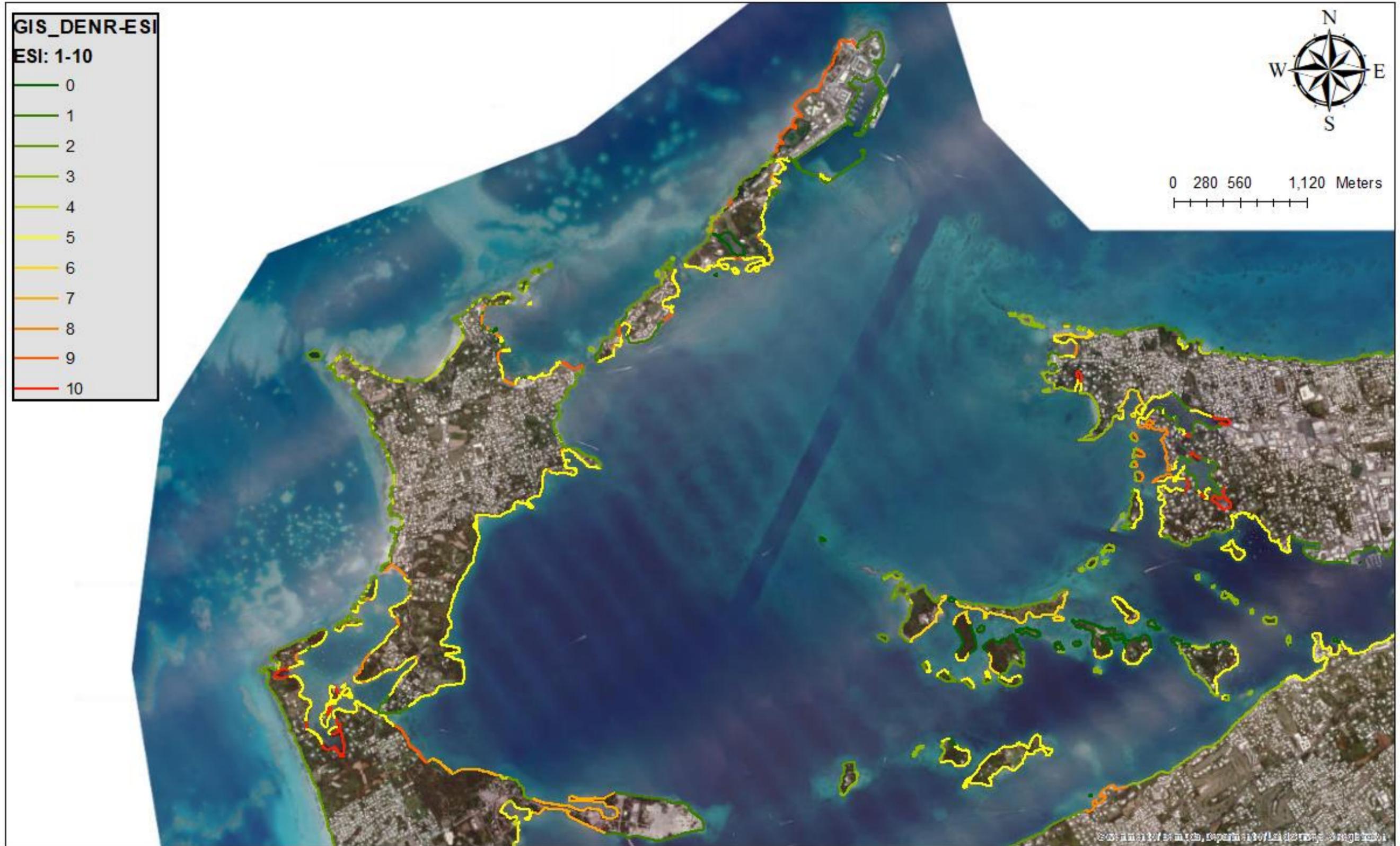
### Environmental Sensitivity Indices (1 – 10)



### Coast Type (Sleeter et al)



### Environmental Sensitivity Indices (1 – 10)



## APPENDIX 11: RISK ASSESSMENT PROCESS

### A11.1. RISK ASSESSMENT

#### Introduction

A comprehensive risk assessment is key to identifying potential locations and operations with a high risk for oil spills. Risk assessment is a process that should reflect the judgement of the main stakeholders. For this to be practical it should be conducted by key players of the main institutions involved in the response and those representing the potential impacts. The results should be consensual. Response managers use this information to set response priorities and develop strategies for prevention, mitigation, and response.

#### Process

This comprehensive risk assessment identifies major hazards and resources at risk. This information is processed by defining the likelihood and consequence for each event scenario. These likelihoods and consequences are used to produce an overall Risk Identification Number (RIN). These RINs are ranked in the risk register from highest risk to lowest. Response managers use this information to set response priorities, determine strategies and tactics for response, develop geographic response plans, and where to pre-stage equipment for each scenario. This initial risk register shall be used in the risk assessment process (Figure A11.1) to determine which scenarios require additional planning requirements and mitigation measures. This process should be regularly reviewed and updated as threats, capabilities and circumstances change.

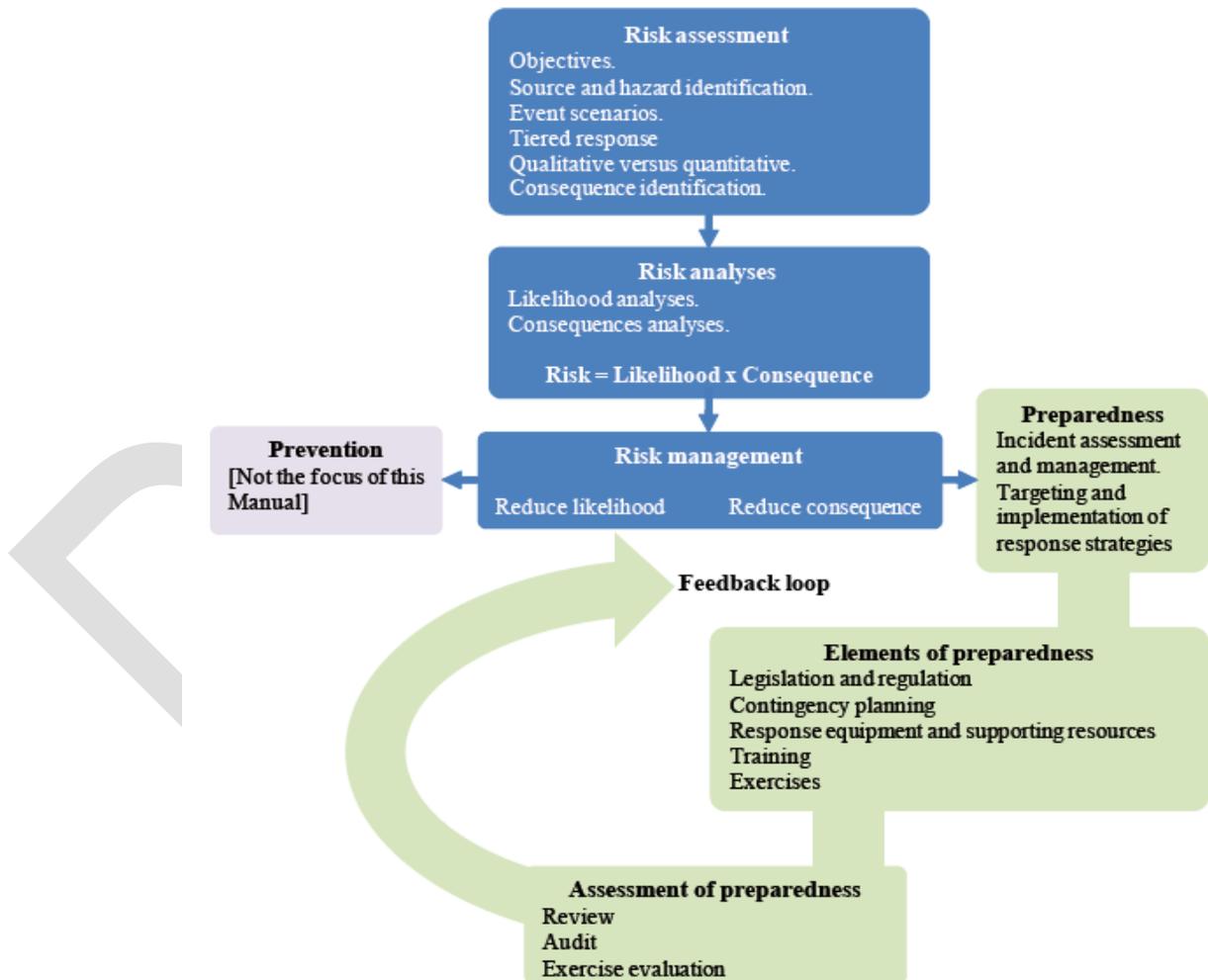


Figure A11.1. Risk Assessment Process (Source: IMO's Manual on Oil Spill Risk Evaluation and Assessment of Response Preparedness, 2010)

The defined criteria for evaluation of total risk is the combination of 'Likelihood' (as defined in Table A11.2) and 'Consequence' (as defined in Table A11.3). The values provided account for the identified known risks at the time of evaluation. It is important to note that risk is ever changing and should be continually reevaluated based on changes in operations, infrastructure capabilities, response readiness, and environmental changes.

Table A11.2. Likelihood Ranges from IMO's Manual on Oil Spill Risk Evaluation and Assessment of Response Preparedness (2010) (from REMPEITC)

Risk Rating	Descriptive Term	Likelihood ranges	
		Chances of occurring in a given year	Frequency of Occurrence
6	Certain	>99%	Annually (at least)
5	Likely	55 to 99%	1-2 years
4	Possible	5 to 50%	2-20 years
3	Unlikely	2 to 5%	20-50 years
2	Rare	1 to 2%	50-100 years
1	Extremely Rare	<1%	>100 years

Table A11.3. Consequence Ranges from IMO's Manual on Oil Spill Risk Evaluation and Assessment of Response Preparedness (2010) (Adapted to Bermuda from New Zealand Government document)

Resource Category		Consequence Level Description				
		Very Low (0)	Low (1)	Moderate (5)	Unknown or High (20)	Extreme (50)
Environment	Shoreline Character and Expected Oil Persistence †	Negligible sensitivity & Negligible Oil Persistence (Rocky Headland, man-made seawall, unsheltered high-relief bedrock coast)	Low Sensitivity & Low Oil Persistence (Unsheltered low-relief bedrock coast)	Moderate sensitivity & Moderate Oil Persistence (Pocket beach, Sand beach high energy, sheltered high-relief and low-relief bedrock coast)	High Sensitivity & High Oil Persistence (Rocky Islet with sediment accumulation, Boulder coast (incl RIP-RAP), sand beach low-energy)	Extremely High Sensitivity & Oil Persistence (Mangroves, Gravel Beach, nearby caves/karst geology)
	Plants and Animals and associated habitats	No protected species and no protected habitats present.	Few protected species present, no protected habitats. Predicted minor short-term impacts	Some protected species and no protected habitats present. Predicted medium-term impacts.	Protected species and protected habitats are present. Predicted major impact to protected habitat. Marine reserve.	Internationally protected species or habitat present (RAMSAR, IBA) or Cahow Nesting Area/Season (IUCN). Risk to species (IUCN ‡) within nearby caves/karst geology.
	Scenic Sites	No protected sites present.	Scenic site	Very popular Scenic site	Adjacent to Terrestrial Park.	Internationally recognised scenic site.
Human	Economic	No resources or activities of economic significance	Low economic significance for Parish/Bermuda	Some economic significance for Parish/Bermuda.	High economic significance for Parish/Bermuda.	Very high national economic significance.
	Cultural	No cultural importance	Some importance for local community, low national significance	Important to Parish community.	Important to Parish community and Bermuda.	Internationally recognised site & High national cultural significance. UNESCO World Heritage Site.
	Social, Amenity and Recreation	No community significance	Low community significance for the local community and country.	Some community significance for the Parish/Bermuda.	High Parish community significance, some national significance.	High national community significance.

† Oil persistence and shoreline character for Bermuda taken from Sleeter, T.D., A.H. Knap and I.W. Hughes (1983).

‡ RAMSAR: Seven RAMSAR sites in Bermuda with (i) Lovers Lake, and (ii) Hungry Bay connected to the sea. IBA: International Bird Area (Castle Harbour, Castle Harbour Islands, Coopers Island and out to the reef breaker line). UNESCO: World Heritage Site, St George's. IUCN: 22 cave-dwelling species and one sea bird (Cahow) is on the Red List. See [www.Environment.bm](http://www.Environment.bm).

## **Results**

A multi-agency workgroup with various government agencies, industry representatives and environmental organizations met in December 2020 with direction provided by REMPEITC Caribe to determine all the likely spill scenarios in the country. The workgroup then took the 8 identified scenarios and evaluated several variations of each one to determine the potential likelihood, consequence, and subsequent risk for each. The values derived for each scenario have been provided in table 1 in Section 3. From the scenarios evaluated, 3 were considered at a nonacceptable level of risk. Therefore, measures were identified to reduce that risk. It should be noted that these results have the potential to change as vessel traffic, industrial activity, and other factors change in the region. It is important to view the risk register as a general impression of potential risk which is ever changing and not a firm and constant analytical measure.

Risks that are considered to have higher likelihood and consequence rating will be used to develop Response Scenario Templates in the ICS format that consider 'Priorities', 'Problems' to be addressed and specific 'Objectives' against each problem for a few key locations to protect and cleanup around Bermuda. The 'Strategies' and 'Tactics' for each 'Objective' can then be developed on the day if the spill scenario was to occur. The ICS Response Scenario Templates are provided in Appendix 14.

## APPENDIX 12: DISPERSANTS: PRE-APPROVED PRODUCTS IN BERMUDA

Refer to the following webpage <https://www.corexit.com/document-library/> or Government server ([\\cvsr-072-env301\NOSRP\\$](\\cvsr-072-env301\NOSRP$)) or DENR-Pollution Control Section for full details for the following Safety Data Sheets of Dispersants that have been pre-approved for use in Bermuda, subject to meeting the dispersant use decision tree (Figure 9) and geographic and other requirements of Section 7.6.1.

### 1. SLICKGONE NS (Page 1 of 7).

Revision date: 16/10/2018	Revision: 15	Supersedes date: 11/01/2018
 <p><b>DASIC<sup>®</sup></b> <b>INTERNATIONAL</b> SAFETY DATA SHEET Slickgone NS</p>		
<b>SECTION 1: Identification of the substance/mixture and of the company/undertaking</b>		
<b>1.1. Product identifier</b>		
Product name	Slickgone NS	
Product number	F315	
<b>1.2. Relevant identified uses of the substance or mixture and uses advised against</b>		
Identified uses	Internationally approved dispersant for treating oil spills in the marine environment.	
<b>1.3. Details of the supplier of the safety data sheet</b>		
Supplier	Dasic International OSD Ltd Winchester Hill, Romsey, Hampshire, SO51 7YD, UK +44 1794 512419 +44 1794 522346 info@dasicinter.com	
<b>1.4. Emergency telephone number</b>		
<b>SECTION 2: Hazards identification</b>		
<b>2.1. Classification of the substance or mixture</b>		
<b>Classification (EC 1272/2008)</b>		
Physical hazards	Not Classified	
Health hazards	Asp. Tox. 1 - H304	
Environmental hazards	Not Classified	
<b>2.2. Label elements</b>		
<b>Pictogram</b>		
		
Signal word	Danger	
Hazard statements	H304 May be fatal if swallowed and enters airways.	
Precautionary statements	P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P260 Do not breathe spray. P313 Get medical advice/ attention.	
Contains	Distillates (petroleum), hydrotreated light	
<b>2.3. Other hazards</b>		
<b>SECTION 3: Composition/information on ingredients</b>		
<b>3.2. Mixtures</b>		

2. **COREXIT EC9527A SDS (Page 1 of 10):**

 <b>SAFETY DATA SHEET</b> <b>COREXIT™ EC9527A</b>	
<b>Section: 1. PRODUCT AND COMPANY IDENTIFICATION</b>	
Product name	: COREXIT™ EC9527A
Other means of identification	: Not applicable.
Recommended use	: OIL SPILL DISPERSANT
Restrictions on use	: Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	: COREXIT Environmental Solutions LLC 11177 S. Stadium Drive Sugar Land, Texas 77478 USA TEL: +1 (832) 851-5164
Emergency telephone number	: (800) 424-9300 (24 Hours) CHEMTREC
Issuing date	: 08/30/2019
<b>Section: 2. HAZARDS IDENTIFICATION</b>	
<b>GHS Classification</b>	
Flammable liquids	: Category 4
Acute toxicity (Oral)	: Category 4
Acute toxicity (Dermal)	: Category 4
Eye irritation	: Category 2A
<b>GHS Label element</b>	
Hazard pictograms	: 
Signal Word	: Warning
Hazard Statements	: Combustible liquid Harmful if swallowed or in contact with skin Causes serious eye irritation.
Precautionary Statements	: <b>Prevention:</b> Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/ eye protection/ face protection. <b>Response:</b> IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth. IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/ physician if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/ attention. Wash contaminated clothing before reuse. <b>Storage:</b> Store in a well-ventilated place. Keep cool.
Other hazards	: None known.
<b>Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS</b>	
1 / 10	

## 3. COREXIT EC9500A (Page 1 of 11)

 <b>SAFETY DATA SHEET</b> <b>COREXIT™ EC9500A</b>	
<b>Section: 1. PRODUCT AND COMPANY IDENTIFICATION</b>	
Product name	: COREXIT™ EC9500A
Other means of identification	: Not applicable.
Recommended use	: OIL SPILL DISPERSANT
Restrictions on use	: Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	: COREXIT Environmental Solutions LLC 11177 S. Stadium Drive Sugar Land, Texas 77478 USA TEL: +1 (832) 851-5164
Emergency telephone number	: (800) 424-9300 (24 Hours) CHEMTREC
Issuing date	: 08/30/2019
<b>Section: 2. HAZARDS IDENTIFICATION</b>	
<b>GHS Classification</b>	
Flammable liquids	: Category 4
Acute toxicity (Inhalation)	: Category 4
Eye irritation	: Category 2A
<b>GHS Label element</b>	
Hazard pictograms	: 
Signal Word	: Warning
Hazard Statements	: Combustible liquid Causes serious eye irritation. Harmful if inhaled.
Precautionary Statements	: <b>Prevention:</b> Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wash skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/ eye protection/ face protection. <b>Response:</b> IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/ attention. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish. <b>Storage:</b> Store in a well-ventilated place. Keep cool.
Other hazards	: None known.
<b>Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS</b>	
1 / 11	

## APPENDIX 13: OIL FINGERPRINTING PROCESS

DENR has identified two companies in the US that can provide chemical fingerprinting analysis of oils to help prove liability: (i) Test America Laboratories Inc. (Nashville, TN) and (ii) NewFields Environmental Forensics Practice LLC (Rockland, MA). These companies have been placed as vendors on the Government financial system prior to future contracts and both companies are listed on the Call-Out List (Appendix 2).

To help identify the ship that is the source of a spill in order to collect the appropriate samples for fingerprint analysis it is proposed to use a satellite-radar capability that can detect the spills and link them to ship location data provided by the AIS. Appropriate satellite data is available from the European Space Agency (ESA) for their Sentinel 1A and Sentinel 1B satellites. If these satellite data sources have not captured the appropriate images around Bermuda, then further funds would be required to use Radarsat2 data from MDA Canada. This satellite data can be accessed by SkyTruth (See Call-Out List, Appendix 2), which is a non-profit, environmental monitoring and protection organisation that uses remote sensing. It is proposed that SkyTruth be used to provide appropriate satellite data to help identify the source of a major spill to determine which ship should be boarded for fingerprint analysis.

The general rule is that samples containing the oil in question shall be taken from the:

- i. Source (*i.e.* ship),
- ii. Impacted environment (water, sediment, etc)
- iii. Background environment that has not been impacted (*i.e.* water, sediment, etc)

DENR holds a set of sample bottles that are sufficient to collect five (5) sets of samples of oil, water or sediment substrate. All required documentation including chain of custody, commercial receipt and quotations are available from DENR.

Refer to the Government server ([\\cvsr-072-env301\NOSRP\\$](#)) and DENR-Pollution Control Section for full details of the methods.

This includes a detailed 10-page document on:

- How to prepare samples for international shipping to TestAmerica Laboratory Inc. including
- Example Commercial Invoices,
- TSCA Form,
- U.S. Goods return form and
- FedEx Waybill.

A 64-page quotation to carry out oil fingerprinting on water samples and solid sediment samples for a range of chemical parameters required to successfully fingerprint the oil is also included.

An example Chain of Custody form is shown below.



## APPENDIX 14: ICS RESPONSE STRATEGIES – BERMUDA SPILL SCENARIOS & SPECIFIC GEOGRAPHICAL RESPONSE PLANS

### NOSCP SOP #3 – HARBOUR SPILLS (4 Pages)

	<b>DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES</b> <b>STANDARD OPERATING PROCEDURE (SOP)</b>		
PROCEDURE FOR: <b>DIESEL / OIL SPILLS IN HARBOUR – NOTIFICATION CONTAINMENT, RECOVERY AND CLEANUP.</b>	DOCUMENT REFERENCE: <b>NOSCP SOP#3 - HARBOUR SPILL (RISK SCORE: 200)</b>	PROGRAMME & SECTION: <b>National Oil Spill Contingency Plan (NOSCP), DENR - Pollution Control.</b>	

**CHANGE RECORD FORM**

REV.	TYPE OF CHANGE	AUTHOR	DATE
	First Draft	Dr Geoff Smith (Environmental Engineer)	04 January, 2020

<b>PRIORITIES</b>	#1. Protect health and safety of First Responders and Public #2. Stabilization of the incident #3. Reduce and remediate damage to Property & Environment
<b>PROBLEMS</b>	#1. Spilled diesel/oil can present a risk to human health via inhalation, digestion or physical contact. #2. Spilled Diesel/oil will contaminate the environment and harm wildlife such as turtles, birds and various inter-tidal and protected species. #3. Spilled Diesel/oil can spread quickly on the surface of water making it difficult to contain and clean-up. #4. Spilled Diesel/oil could damage aesthetically a large area of coastline which could negatively affect Bermuda’s tourism industry from the international news. #5. Spilled Diesel/Oil will impact boats in marinas and access to the port by scheduled container ships, ferries, Cruise ships and boat tourism livelihoods. #6. The fumes from the spilled fuel may cause ‘ <i>occupational health</i> ’ issues as stipulated in the relevant Safety Data Sheet (SDS) to residents and personnel performing oil spill response duties. #7. There is a slight risk of fire from spilled Diesel/oil on seawater. Assess the appropriate Fuel/Oil Safety Data Sheets to understand temperature and ignition source risks.
<b>OBJECTIVES</b>  (WHAT to be achieved)  Use ICS 202 initially and ICS 234 later	#1. <b>Minimise</b> responders’ and public’s exposure to health and safety risks. #2. <b>Isolate</b> the source of the spill and obtain confirmation that source has been isolated. #3. <b>Contain</b> quickly spilled oil near source with appropriate equipment (i.e. harbour boom). #4. <b>Minimise</b> damage to marine and coastal environment. #5. <b>Assign</b> as required ‘Command Team’, ‘Incident Command Post’ and ‘Equipment Staging’ areas. #6. <b>Set up</b> Incident Command Post and Staging Area(s). #7. <b>Define</b> the worst potential Tier rating that could be assigned for the spill (i.e. Tier 3 = >25m <sup>3</sup> of spilled product). #8. <b>Inform</b> Minister’s/PS’s (Environment, Transport, Tourism), EMO and DCI (See NOSCP Call Out List App.#2) <b>ICS201</b> . #9. <b>Assign</b> personnel for oil spill surveillance and spill forecast prediction/modelling. #10. <b>Contact</b> the appropriate organisation (i.e. via MAROPS) for <b>Deployment</b> of further spill recovery (i.e. skimmers) & clean-up equipment/resources (See ‘ <i>Equipment Available</i> ’ below and NOSCP App.#9). #11. <b>Exclude</b> unauthorised persons from the spill and clean-up areas – request assistance from BPS / Coastguard as required. #12. <b>Contact</b> the appropriate organisation (i.e. MPW Sallyport, vacuum trucks) for <b>pump-out</b> and <b>deployment</b> of suitable replacement oil recovery containers for oil recovered by skimmers. #13. <b>Sample</b> for Oil Fingerprint Analysis – NOSCP Appendix #13. #14. <b>Document</b> daily personnel hours, duties, costs, ICS Forms and photograph damage/impact. #15. <b>Notify</b> DENR Wildlife Ecologist/BAMZ to recover and treat affected wildlife. #16. <b>Consider</b> need for subsequent Shoreline Clean-up and Assessment Techniques (SCAT). #17. <b>Monitor</b> coastline/marine environment post clean-up for oil. #18. <b>Decommission</b> staging areas and other impacted areas and clean-up (MPW Waste Management).



GOVERNMENT OF BERMUDA  
Ministry of Home Affairs

Department of Environment and Natural Resources

Standard Operating Procedure: DIESEL / OIL SPILLS IN HARBOUR – NOTIFICATION  
CONTAINMENT, RECOVERY AND CLEANUP.

<p><b>STRATEGY</b></p> <p><i>(HOW to be completed)</i></p>	<ol style="list-style-type: none"> <li>#1. <b>Monitor</b> for fumes, toxicity and lower explosive limit (LEL, PID sensors) to ensure First Responders and Public are safe.</li> <li>#2. <b>Instruct</b> Responsible Party to isolate source and confirm when completed and mechanism. Formally verify using third party that source is isolated.</li> <li>#3. <b>Instruct</b> nearest asset(s) to the oil spill response store to collect and deploy boom to contain spilled oil nearest to the source (use NOSCP for Call out List, Equipment list and Vessels available).</li> <li>#4. <b>Instruct</b> trained surveillance personnel to actively monitor the extent of the spill and approximate trajectory based on weather/tidal forecasts and report back to IC.</li> <li>#5. <b>Assign</b> personnel using Call out list to populate ICS staff positions (ICS201/203).</li> <li>#6. <b>Assign</b> IC Post and Staging Areas using NOSCP and local information.</li> <li>#7. <b>Commandeer</b> IC Post (NOSCP Section 4.5) collect IC HQ response equipment from DENR (i.e. charts.).</li> <li>#8. <b>Collect</b> appropriate information from Responsible Party, MAROPS and Surveillance personnel for IC to consider with the Command Team (IC/UC). What is the current/projected Tier rating of the spill?</li> <li>#9. <b>Inform</b> the EMO, Minister's, PS's, DCI using ICS 201 and projected Tier Rating based on surveillance data, ship/vessel data (MAROPS) and expected persistence of the oil.</li> <li>#10. <b>EMO to confirm</b> Incident Commander by name (i.e. Letter of Authority) for Tier 3 spills</li> <li>#11. <b>Decision</b> by EMO for third party Tier 3 spills whether overseas assistance will be requested. Notification forms in NOSCP Appendices 5, 6 and 7.</li> <li>#12. <b>EMO to Engage</b> Financial Secretary (Accountant General Department) as overseas assistance from OSRL and USCG requires financial approve to spend to a stated limit of liability.</li> <li>#13. <b>EMO to Instruct</b> owner of the product (i.e. RP) for Tier 3 spills to start process of requesting overseas assistance (i.e. SOL/RUBIS/BELCO).</li> <li>#14. <b>Ensure</b> that full ICS documentation is completed (using OSRL or Documentation Lead of Planning Section) to enable insurance cover for financial losses and liability claims expected for the country.</li> <li>#15. <b>Consider</b> offering Government assistance under terms of MOU (NOSCP App.#8) to the RP for OPEP Tier 3 spills (i.e. SOL/RUBIS/BELCO).</li> <li>#16. <b>Agree</b> strategy with IC/UC to identify coastal areas for protection (i.e. exclusion boom configuration) OR collection and recovery of spilled oil (i.e. containment boom configuration) Use ESI Maps (NOSCP Appendix #10).</li> <li>#17. <b>Instruct</b> agreed assets to <b>Deploy</b> oil spill response equipment to the agreed location following the specified strategy.</li> <li>#18. <b>Follow</b> ICS Planning 'P' (NOSCP Forms) for scheduled meetings and keeping Ministers, EMO and DCI informed in order to provide approved updates to the public.</li> <li>#19. <b>Complete</b> 'CaribPolRep' notification form (NOSCP App. #5) to notify REMPEITC for assistance with spill trajectory modelling (i.e. WebGnome). Use latest surveillance data (#4).</li> <li>#20. <b>Instruct</b> MAROPS, Coastguard (and owners) to move yet-to-be-impacted assets (i.e. boats).</li> <li>#21. <b>Instruct</b> Coastguard to maintain an on-water perimeter to prevent vessels and public from entering the spill area.</li> <li>#22. <b>Instruct</b> BPS to maintain an on-land perimeter, if required, and to coordinate setback distances with occupational exposure data (#1). Allow for changes to wind direction, etc.</li> <li>#23. <b>Contact</b> appropriate Recovery and Clean-up organisations (MPW, Private contractors, etc) and direct them and equipment to incident briefing and staging area. Use Call-Out list and 'Useful Contacts' below.</li> <li>#24. <b>Instruct</b> DENR personnel to follow Oil Fingerprinting SOP (NOSCP App.#13). Use equipment and sample containers held at DENR and coordinate sampling for (i) oil on water/beach, (ii) background (non-oiled samples) and (iii) sample from the source. Use BPS and BSMA to assist with sampling.</li> <li>#25. <b>Instruct</b> trained personnel (See Training Log) to use Shoreline Clean-up and Assessment (SCAT) process (Forms in NOSCP App.#5) to assess impacted coastline and to recommended clean-up strategies to PSC.</li> <li>#26. <b>Agree</b> SCAT goal for clean-up target for different beach types with IC/UC/OSC/PSC.</li> <li>#27. <b>Instruct</b> DENR to set-up on-the-job training for NGO's to assist with SCAT remediation activities (i.e.</li> </ol>
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Standard Operating Procedure: DIESEL / OIL SPILLS IN HARBOUR – NOTIFICATION  
CONTAINMENT, RECOVERY AND CLEANUP.

	<p>beach cleaning) and wildlife collection/transport to BAMZ.</p> <p>#28. <b>Instruct</b> MPW/Private Contractors to transport oil contaminated adsorbent materials and PPE etc in PE-lined trucks to the Tynes Bay Waste to Energy Facility. Store collected liquid oil in suitable containers until ready for export.</p> <p>#29. <b>Instruct</b> trained personnel (i.e. DENR, see Training Log) to monitor coastline/marine environment post-clean-up for oil.</p> <p>#30. <b>Instruct</b> MPW to remove any hazardous materials from staging areas and to subsequently decommission staging areas.</p> <p>#31. <b>Work</b> with Documentation Lead and PSC to complete documentation package and oil fingerprinting data and to submit package to Attorney General with input from Ministers/EMO/BTA, etc to start the international claims process (NOSCP Section 9.6).</p> <p style="text-align: center;"><b>Response TACTICS - Specific to each spill event.</b></p>
<p><b>EQUIPMENT RESOURCES AVAILABLE</b></p> <p>(Relevant to this SOP)</p> <p>See NOSCP Appendix #10</p>	<p>#1. <b>DENR:</b> Skimmers (Drum, Weir (x2), Rope-Mop, Drum Skimmer, Diesel pumps (x2) located at M&amp;P Dockyard. Harbour Boom (3000ft) and Adsorbent boom and pads, Fast Tanks (1000/2000 USG); Fisheries Vessels; PPE; anchors; buoys etc located across Licenced Ports (WEDCO, CoH, Pennos Wharf St George's) and Government Quarry. LEL Sensor and PPE at DENR HQ, Paget. (See NOSCP App. #9).</p> <p>#2. <b>Marine &amp; Ports Services (M&amp;P):</b> Support vessels; Adsorbent boom and pads (See NOSCP App. #9).</p> <p>#3. <b>Bermuda Coastguard:</b> Support vessels (NOSCP App.#9); Trained personnel.</p> <p>#4. <b>RUBIS Energy:</b> (Dockyard &amp; St Georges) 2x900ft sea boom, disc skimmer Booms; Pads; LEL Sensors (x2 locations – Dockyard &amp; St Georges).</p> <p>#5. <b>SOL Petroleum:</b> Boom (Harbour &amp; Adsorbent); Skimmers located at St George's North Shore Terminal and Richardson's Bay, Ferry Reach; Support Vessel, adsorbent pads, pillows; Chemical grade, earthed suction hoses, LEL Sensor; Soil remediation cell, AFFF, Corexit 9527.</p> <p>#6. <b>MPW Sallyport:</b> Intrinsically-safe impeller pump; (115v), 20 USG/min; vacuum pump, (Diesel), 35 USG/min.; Chemical grade hose; Maximum suction distance to pumps: 50-70ft with up to 6ft head; Fuel Storage Options: (i) 2000 USG with the two trucks available; (ii) 275 USG per Tote (Static Risk TBD); (iii) 24,000 Litre (6300 USG) eurotainer; Soil Remediation Cell; LEL Sensor.</p> <p>#7. <b>BFRS:</b> AFFF and Mobile spill response: Water; land-based boom; Sphag sorb; Pads.</p> <p>#8. <b>BELCO:</b> PACS1000: Non-Intrinsically safe oil vacuum suction trailer; Storage capacity (1000 USG); LEL Sensor.</p>
<p><b>SAFETY CONSIDERATIONS</b></p> <p>ICS 206 &amp; ICS 215A when tasks are assigned</p>	<ul style="list-style-type: none"> <li>• Do not enter the area of the spill/fumes from a volatile fuel such as gasoline or jet fuel unless you are confident that it is below the Lower Explosive Limit (LEL %) and PID is below OSHA occupational limit.</li> <li>• Consult SDS datasheets and LEL sensor data to ascertain risks.</li> <li>• Consider ICS 215A for health and safety considerations when assigning operational Planning worksheet.</li> <li>• Avoid entering confined spaces unless trained to do so.</li> <li>• Avoid lone-working.</li> <li>• Never operate or start non-intrinsically safe equipment within areas that may have an explosive atmosphere.</li> </ul>
<p><b>Useful Contacts</b></p>	<ul style="list-style-type: none"> <li>• <b>Bermuda Radio:</b> Tel: 297-1010 (Also use for contacts to Coastguard and blue light services if outside of Incident Command)</li> <li>• <b>Dept of Environment &amp; Natural Resources (DENR):</b> <a href="mailto:PollutionControl@gov.bm">PollutionControl@gov.bm</a>, Cell: 747 2302; 505 3286</li> <li>• <b>MPW Sallyport Hazmat Facility:</b> Mr Clarkston Trott: Tel: 278 0562, Cell: 501 3026; 501 3053; 501 3025</li> <li>• <b>SOL Petroleum:</b> Mr Nick Ball: Tel: 294 5240 or 305-9314 or Mr Jonathan Brewin: <b>297-3776</b> main.</li> <li>• <b>RUBIS: 297-1577</b>, Mr Robbie Godfrey: Tel: 299 7018 or 535-2607; Howard Williams 234-0233 or 535-2607; Justin Barritt 299-7016 or 505-7016, Anduel Anguelov 299-7028 or 534-7028.</li> <li>• <b>WEDCO:</b> 234-1709, Carmen Beach 239-0507 <a href="mailto:cbeach@wedco.bm">cbeach@wedco.bm</a>. Andrew Dias: <a href="mailto:adias@wedco.bm">adias@wedco.bm</a>.</li> <li>• <b>Meyer Agencies Ltd:</b> Joseph Simas: 296-9798/337-8384</li> <li>• <b>Bermuda Shipping Agencies Ltd:</b> 294-1401 / 705-1366</li> </ul>



GOVERNMENT OF BERMUDA  
Ministry of Home Affairs

**Department of Environment and Natural Resources**

Standard Operating Procedure: DIESEL / OIL SPILLS IN HARBOUR – NOTIFICATION  
CONTAINMENT, RECOVERY AND CLEANUP.

	<ul style="list-style-type: none"> <li>• <b>BELCO:</b> (FAO Mr Mark Pacheco): Tel: 299 2833; 292 8541 or 325-1466 – or central number 295 5111.</li> <li>• <b>BFRS:</b> Tel: 911, 292 5555</li> <li>• <b>Department of Communications &amp; Information (DCI):</b> Ms Helen Jardine <a href="mailto:hajardine@gov.bm">hajardine@gov.bm</a>, Aderonke Wilson, 297-7868 <a href="mailto:abwilson@gov.bm">abwilson@gov.bm</a>.</li> <li>• <b>Dolphin Quest, Dockyard:</b> 234-4464 / 777-4464</li> <li>• <b>See NOSCP 'Call-Out List' for other useful contacts (Appendix #2).</b></li> </ul>
<p><b>FUEL/OIL Characteristics</b></p>	<ul style="list-style-type: none"> <li>• <b>Diesel No.2 LFO:</b> LEL = 0.6% (<i>i.e.</i> 6,000 ppm). Flash Point = &gt;52°C (&gt;125°F) minimum. Auto-Ignition Temperature = 257°C (494°F). API = 35.</li> <li>• <b>Residual Fuel Oil (HFO):</b> LEL = 1% (<i>i.e.</i> 10,000 ppm). Flash Point = &gt;65°C (&gt;149°F) minimum. Auto-Ignition Temperature = &gt;400°C (&gt;752°F). API ~12-14.</li> <li>• <b>Marine Gas Oil (MGO):</b> LEL = 0.7% (<i>i.e.</i> 7,000 ppm). Flash Point = &gt;52°C (&gt;125.6°F) minimum. Auto-Ignition Temperature = 257°C (495°F). API = 35-41.</li> </ul>

## NOSCP SOP #4 – PIPELINE SPILL (3 Pages)

			<b>DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES</b> <b>STANDARD OPERATING PROCEDURE (SOP)</b>		
<b>PROCEDURE FOR: HFO PIPELINE SPILL – NOTIFICATION CONTAINMENT, RECOVERY AND CLEANUP.</b>		<b>DOCUMENT REFERENCE: NOSCP SOP#4 - HFO PIPELINE SPILL (RISK SCORE: 960)</b>		<b>PROGRAMME &amp; SECTION: National Oil Spill Contingency Plan (NOSCP), DENR - Pollution Control.</b>	

## CHANGE RECORD FORM

REV.	TYPE OF CHANGE	AUTHOR	DATE
	First Draft	Dr Geoff Smith (Environmental Engineer)	10 September, 2021

<b>PRIORITIES</b>	<ul style="list-style-type: none"> <li>#1. Protect health and safety of First Responders and Public</li> <li>#2. Stabilization of the incident</li> <li>#3. Reduce and remediate damage to Property &amp; Environment</li> </ul>
<b>PROBLEMS</b>	<ul style="list-style-type: none"> <li>#1. Spilled HFO can present a risk to human health via inhalation, ingestion or dermal contact.</li> <li>#2. Spilled HFO will contaminate the environment and harm wildlife such as turtles, birds and various intertidal and protected species.</li> <li>#3. Spilled HFO can spread quickly to coastlines with higher environmental sensitivities making it more difficult to clean-up and potentially exceed national spill response resources.</li> <li>#4. Spilled HFO could damage aesthetically a large area of coastline which could negatively affect Bermuda's tourism industry via the international news.</li> <li>#5. Spilled HFO could impact boats in marinas and access to the port by scheduled container ships, ferries, Cruise ships and boat tourism livelihoods.</li> <li>#6. The fumes from the spilled fuel may cause 'occupational health' issues as stipulated in the relevant Safety Data Sheet (SDS) to residents and personnel performing oil spill response duties.</li> <li>#7. Damage to the SOL-BELCO pipeline could impact BELCO electrical generation if not repaired in a timely manner.</li> </ul>
<b>OBJECTIVES</b>  <i>(WHAT to be achieved)</i>  <b>Use ICS 201, ICS 202, 203 and ICS 234 later</b>	<ul style="list-style-type: none"> <li>#1. <b>Minimise</b> responders' and public's exposure to health and safety risks.</li> <li>#2. <b>Isolate</b> the source of the spill and obtain confirmation that source has been isolated.</li> <li>#3. <b>Contain</b> quickly spilled oil near source with appropriate equipment (i.e. harbour boom).</li> <li>#4. <b>Assign</b> locations and personnel for 'Command Team', 'Incident Command Post' and 'Equipment/Vehicle/Personnel Staging Areas.'</li> <li>#5. <b>Set up</b> Incident Command Post and Staging Area(s).</li> <li>#6. <b>Define</b> current and potential Tier Rating of spill. Note: highest potential Tier rating that could be assigned for the spill is Tier 3 (&gt;25m<sup>3</sup> of spilled product and/or expected to exceed national resources).</li> <li>#7. <b>Inform</b> Minister's/PS's (Environment, Transport, Tourism), EMO and DCI (See NOSCP Call Out List App.#2) <b>ICS201</b>. Also <b>Inform</b> MAROPS to alert Shipping/Docks/Marinas where necessary.</li> <li>#8. <b>Assign</b> personnel for oil spill surveillance and spill forecast prediction/modelling with regular communication to Command Team.</li> <li>#9. <b>Contact</b> the appropriate organisation (i.e. via MAROPS) for <b>Deployment</b> of further spill recovery (i.e. skimmers) &amp; clean-up equipment/resources (See 'Equipment Available' below and NOSCP App.#9).</li> <li>#10. <b>Exclude</b> unauthorised persons from the spill and clean-up areas – request assistance from BPS / Coastguard as required.</li> <li>#11. <b>Contact</b> the appropriate organisation (i.e. MPW Sallyport, vacuum trucks) for <b>pump-out</b> and <b>deployment</b> of suitable replacement oil recovery containers for oil recovered by skimmers.</li> <li>#12. <b>Document</b> daily personnel hours, duties, costs, ICS Forms and photograph damage/impact.</li> <li>#13. <b>Notify</b> DENR Wildlife Ecologist/BAMZ to recover and treat affected wildlife.</li> <li>#14. <b>Monitor</b> need for subsequent Shoreline Clean-up and Assessment Techniques (SCAT).</li> <li>#15. <b>Monitor</b> for fumes to responders and public and report to SO.</li> <li>#16. <b>Inform</b> SOL and EMO to discuss pipeline repair requirements and timescales.</li> <li>#17. <b>Decommission</b> staging areas and other impacted areas and clean-up (MPW Waste Management).</li> </ul>



Standard Operating Procedure:HFO PIPELINE SPILL – NOTIFICATION CONTAINMENT,  
RECOVERY AND CLEANUP.

<p><b>STRATEGY</b></p> <p><i>(HOW to be completed)</i></p>	<ol style="list-style-type: none"> <li>#1. <b>IC to Instruct</b> Responsible Party to isolate source and confirm when completed and mechanism. Formally verify using third party that source is isolated.</li> <li>#2. <b>Operations Section Chief (OSC) to Instruct</b> Afloat and Ashore security teams to set up appropriate cordons and policing to manage public safety and first responders. Adhere to recommendations by SO.</li> <li>#3. <b>Unified Command (UT) to Consider</b> (with RP and surveillance team/MAROPS) the current and potential Tier rating of the spill. Will the spill exhaust local OPEP resources? Are National Response Resources required from Govt?</li> <li>#4. <b>OSC to Assign</b> IC Post and Staging Areas using NOSCP and local information.</li> <li>#5. <b>UT to Assign</b> personnel using Call out list to populate ICS staff positions (ICS201/203).</li> <li>#6. <b>IC to Brief</b> all response personnel from ICS201 on (i) Incident, (ii) Current Situation, (iii) Initial Response Objectives, (iv) Organisational Structure, (v) SAFETY.</li> <li>#7. <b>MAROPS/IC to Instruct</b> nearest asset(s) to the oil spill response store to collect and transport boom to the equipment staging area (use NOSCP for Call out List, Equipment list and Vessels available).</li> <li>#8. <b>IC/OSC to Instruct</b> trained surveillance personnel to actively monitor the extent of the spill and approximate trajectory based on weather/tidal forecasts and report back to IC. Use local boat assets to help estimate extent of spill away from shore.</li> <li>#9. <b>IC to Inform</b> the EMO, Minister's, PS's, DCI using ICS 201 and projected Tier Rating based on surveillance data, ship/vessel data (MAROPS) and expected persistence of the oil.</li> <li>#10. <b>IC/EMO to Inform</b> RP to start notification process of requesting overseas assistance (i.e. SOL/RUBIS/BELCO) if potential for Tier 3 spill.</li> <li>#11. <b>IC to Inform</b> US NRC via Initial Notification Form. Use MAROPs to email and for follow up call.</li> <li>#12. <b>IC to Complete</b> 'CaribPolRep' notification form (NOSCP App. #5) to <b>Inform</b> REMPEITC for assistance with spill trajectory modelling (i.e. WebGnome).</li> <li>#13. <b>IC/UT to Agree</b> strategy to identify coastal areas for protection (i.e. exclusion boom configuration) OR collection and recovery of spilled oil (i.e. containment boom configuration) Use ESI Maps (NOSCP Appendix #10).</li> <li>#14. <b>OSC to Instruct</b> Ops Afloat Team to <b>Deploy</b> oil spill response boom to the agreed location following the specified strategy.</li> <li>#15. <b>IC to Follow</b> ICS Planning 'P' (NOSCP Forms) for scheduled meetings and keeping Ministers, EMO and DCI informed in order to provide approved updates to the public.</li> <li>#16. <b>IC to Instruct</b> MAROPS, Coastguard (and owners) to move yet-to-be-impacted assets (i.e. boats).</li> <li>#17. <b>Planning Section Chief (PSC) to Instruct</b> trained personnel (See Training Log) to use Shoreline Clean-up and Assessment (SCAT) process (Forms in NOSCP App.#5) to assess impacted coastline and to recommended clean-up strategies to PSC.</li> <li>#18. <b>PSC to Agree</b> SCAT goal for clean-up target for different beach types with UC.</li> <li>#19. <b>PSC to Instruct</b> DENR to set-up on-the-job training for NGO's to assist with SCAT remediation activities (i.e. beach cleaning) and wildlife collection/transport to BAMZ.</li> <li>#20. <b>OSC to Instruct</b> MPW/Private Contractors to transport oil contaminated adsorbent materials and PPE etc in PE-lined trucks to the Tynes Bay Waste to Energy Facility. Store collected liquid oil in suitable containers until ready for export.</li> <li>#21. <b>PSC to Instruct</b> trained personnel (i.e. DENR, see Training Log) to monitor coastline/marine environment post-clean-up for oil.</li> <li>#22. <b>Logistic Section Chief (LSC) to Instruct</b> MPW to remove any hazardous materials from staging areas and to subsequently decommission staging areas.</li> </ol> <p style="text-align: center;"><b>Response TACTICS - Specific to each spill event.</b></p>
<p><b>EQUIPMENT RESOURCES AVAILABLE</b></p>	<ol style="list-style-type: none"> <li>#1. <b>DENR:</b> Skimmers (Drum, Weir (x2), Rope-Mop), Diesel pumps (x2) located at M&amp;PS Dockyard. Harbour Boom (3000ft) and Adsorbent boom and pads, Fast Tanks (1000/2 x 2000 USG); Fisheries Vessels; PPE; anchor-buoy sets (x30); located across Licenced Ports (WEDCO, CoH, Pennos Wharf St George's) and Government Quarry. PPE at DENR HQ, Paget. (See NOSCP Appendix #9).</li> <li>#2. <b>Marine &amp; Ports Services (M&amp;PS):</b> Support vessels; Adsorbent boom and pads (See NOSCP App. #9).</li> </ol>



Standard Operating Procedure: HFO PIPELINE SPILL – NOTIFICATION CONTAINMENT,  
RECOVERY AND CLEANUP.

<p><b>(Relevant to this SOP)</b></p> <p>See NOSCP Appendix #10</p>	<p>#3. <b>RBR Coast Guard:</b> Support vessels (NOSCP App.#9); Trained personnel.</p> <p>#4. <b>RUBIS Energy:</b> (Dockyard &amp; St Georges) 2x900ft sea boom, disc skimmer Booms; Pads; LEL Sensors (x2 locations – Dockyard &amp; St Georges).</p> <p>#5. <b>SOL Petroleum:</b> Boom (Harbour &amp; Adsorbent); Skimmers located at St George’s North Shore Terminal and Richardson’s Bay, Ferry Reach; Support Vessel, adsorbent pads, pillows; Chemical grade, earthed suction hoses, LEL Sensor; Soil remediation cell, AFFF, Corexit 9527.</p> <p>#6. <b>MPW Sallyport:</b> Intrinsically-safe impeller pump; (115v), 20 USG/min; vacuum pump, (Diesel), 35 USG/min.; Chemical grade hose; Maximum suction distance to pumps: 50-70ft with up to 6ft head; Fuel Storage Options: (i) 2000 USG with the two trucks available; (ii) 275 USG per Tote (Static Risk TBD); (iii) 24,000 Litre (6300 USG) eurotainer; Soil Remediation Cell; LEL Sensor.</p> <p>#7. <b>BFRS:</b> AFFF and Mobile spill response: Water; land-based boom; Sphag sorb; Pads.</p> <p>#8. <b>BELCO:</b> PACS1000: Non-Intrinsically safe oil vacuum suction trailer; Storage capacity (1000 USG); LEL Sensor.</p>
<p><b>SAFETY CONSIDERATIONS</b></p> <p>ICS 215A &amp; ICS 206 if there are casualties</p>	<ul style="list-style-type: none"> <li>• Site PPE and consideration of slips, trips and falls.</li> <li>• Consult SDS datasheets and LEL sensor data to ascertain risks.</li> <li>• Consider ICS 215A for health and safety considerations when assigning operational Planning worksheet.</li> <li>• Avoid entering confined spaces unless trained to do so.</li> <li>• Avoid lone-working.</li> <li>• Never operate or start non-intrinsically safe equipment within areas that may have an explosive atmosphere.</li> </ul>
<p><b>Useful Contacts</b></p>	<ul style="list-style-type: none"> <li>• <b>Bermuda Radio (MAROPS):</b> Tel: 297-1010 (Also use for contacts to Coast Guard and blue light services if outside of Incident Command)</li> <li>• <b>Dept of Environment &amp; Natural Resources (DENR):</b> <a href="mailto:PollutionControl@gov.bm">PollutionControl@gov.bm</a>, Cell: 747 2302; 505 3286</li> <li>• <b>MPW Sallyport Hazmat Facility:</b> Mr David Peniston: Tel: 278 0574, Cell: 501 3024; 501 3053; 501 3025</li> <li>• <b>SOL Petroleum:</b> Mr Nick Ball: Tel: 294 5240 or 305-9314 or Mr Alcindor Bonamy: <b>297-3776</b> main.</li> <li>• <b>RUBIS: 297-1577</b>, Mr Robbie Godfrey: Tel: 299 7018 or 535-2607; Howard Williams 234-0233 or 535-2607; Justin Barritt 299-7016 or 505-7016, Anduel Anguelov 299-7028 or 534-7028.</li> <li>• <b>WEDCO:</b> 234-1709, Carmen Tucker 239-0507 <a href="mailto:ctucker@wedco.bm">ctucker@wedco.bm</a>.</li> <li>• <b>Meyer Agencies Ltd:</b> Joseph Simas: 296-9798/337-8384</li> <li>• <b>Bermuda Shipping Agencies Ltd:</b> 294-1401 / 705-1366</li> <li>• <b>BELCO:</b> (FAO Mr Mark Pacheco): Tel: 299 2833; 292 8541 or 325-1466 – or central number 295 5111.</li> <li>• <b>BFRS:</b> Tel: 911, 292 5555</li> <li>• <b>Department of Communications &amp; Information (DCI):</b> Mr Michael Brangman, 297 7599, <a href="mailto:mabrangman@gov.bm">mabrangman@gov.bm</a>, Aderonke Wilson, 297-7868 <a href="mailto:abwilson@gov.bm">abwilson@gov.bm</a>.</li> <li>• <b>Dolphin Quest, Dockyard:</b> 234-4464 / 777-4464</li> <li>• See NOSCP ‘Call-Out List’ for other useful contacts (Appendix #2).</li> </ul>
<p><b>FUEL/OIL Characteristics</b></p>	<ul style="list-style-type: none"> <li>• <b>Residual Fuel Oil (HFO):</b> LEL = 1% (i.e. 10,000 ppm). Flash Point = &gt;65°C (&gt;149°F) minimum. Auto-Ignition Temperature = &gt;400°C (&gt;752°F). API ~12-14.</li> <li>• <b>Diesel No.2 LFO:</b> LEL = 0.6% (i.e. 6,000 ppm). Flash Point = &gt;52°C (&gt;125°F) minimum. Auto-Ignition Temperature = 257°C (494°F). API = 35.</li> <li>• <b>Marine Gas Oil (MGO):</b> LEL = 0.7% (i.e. 7,000 ppm). Flash Point = &gt;52°C (&gt;125.6°F) minimum. Auto-Ignition Temperature = 257°C (495°F). API = 35-41.</li> </ul>

**GEOGRAPHIC SPECIFIC RESPONSE PLANS: (SOP'S TO BE COMPLETED)**

- **Grounding/Spill at North Rock:** Off-Shore Response - TBD
- **Grounding/Spill in Narrows, St George's:** Protect St George's harbour and Castle Harbour via Coney Island - TBD
- **Spills at Oil Docks, St George's:** Protect St George's harbour and Castle Harbour via Coney Island - TBD
- **SOL – BELCO Pipeline Failure:**
  - **Coney Island:** TBD
  - **Bailey Bay:** TBD
  - **Flatts Inlet:** TBD

DRAFT