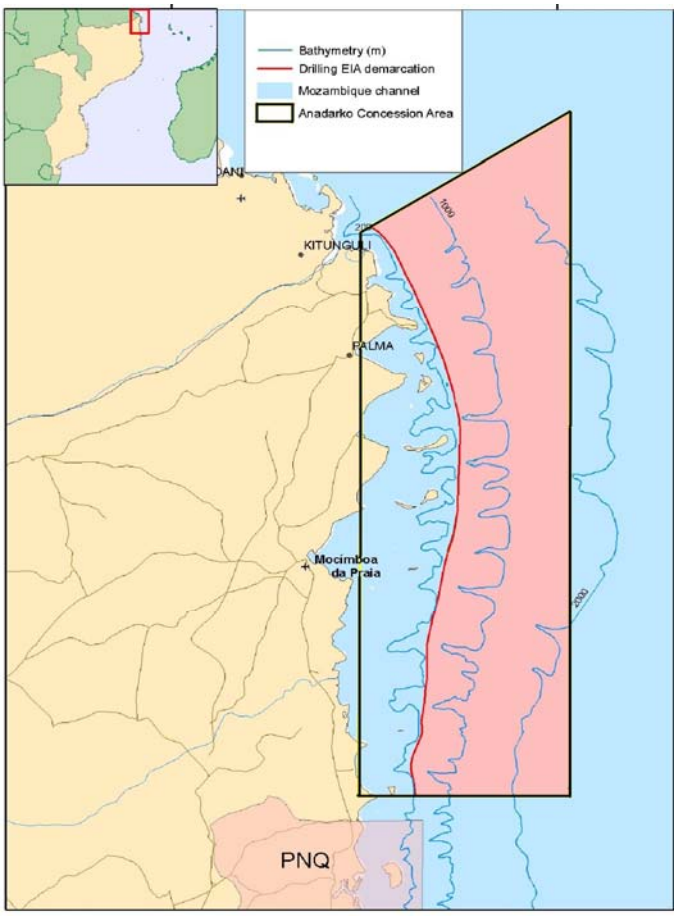
Anadarko

Moçambique Área 1, Lda

DEEPWATER EXPLORATION

DRILLING OPERATIONS IN ROVUMA OFFSHORE AREA 1



VOLUME II

PART B: ENVIRONMENTAL MANAGEMENT PLAN

October, 2008

Impacto

Projectos e Estudos Ambientais

1 INTRODUCTION

The present Environmental Management Plan (EMP)[1] contains directives for implementing the mitigation measures associated with the environmental impacts resulting from the deep water exploration drilling to be undertaken by Anadarko Moçambique Área 1, Lda (AMA1) in the Rovuma Offshore Northern Area 1.

This EMP has been prepared based on the findings of the Environmental Impact Assessment (EIA) and describes management measures designed to prevent or reduce potential environmental and socioeconomic impacts of the project. A summary of the mitigation measures and monitoring requirements is presented in Tables 1 and 2 at the end of this plan.

The EMP covers a series of general and specific recommendations that, collectively, constitute the base of the management (mitigation of the impacts) and the environmental control during the project's life cycle. It is important to highlight that most of the impacts from routine events are localized and were determined to be insignificant or of only minor significance, while most of the impacts from non-routine events were determined to be of major significance, but these are very unlikely to occur. Furthermore, no moderate or major impacts will remain if mitigation measures are adequately implemented.

The EMP lists the obligations and responsibilities of each party involved in the project; stipulates methods and procedures that will be followed; and outlines environmental management actions that will be implemented, considering that the reference framework for the environmental standards is avoiding negative impacts on the health and well-being of people and the environment.

The EMP format allows implementation to be fully monitored and audited. Monitoring requirements are included to verify that the EMP standards have been met.

Ensuring compliance with the EMP is the responsibility of the owner of the project, in this case AMA1. To meet this commitment, AMA1 will identify the relevant parties to be responsible for the implementation of the EMP during the various phases of the project.

At this point, the well locations have not been defined. Once established, this EMP may require adjustments. In addition, this EMP may be modified where warranted based on the results of the site-specific addendum studies that will be undertaken, i.e., (i) drilling and mud cuttings dispersion modeling and (ii) oil spill modeling. Other biophysical and socio-economic studies may be required. These will be determined on a case-by-case basis.

This EMP will be submitted with the AMA1 (i) Communication Plan; (ii) Oil Spill Contingency Plan (Emergency Response Plan) and (iii) Waste Management Plan. A Compensation Plan and Grievance Procedures will be submitted to MICOA at a later stage, following agreements with the relevant Government Authorities (INP, MICOA; Fisheries and Tourism sectors).

[1] This EMP also includes monitoring requirements.

Once the well sites are defined, the oil spill trajectories included in the Emergency Response Plan will be updated.

2 SCOPE OF THE EMP

Compliance with the mitigation measures presented in the EIA can be met through an Environmental Management Plan (EMP), an integral part of the EIA.

The principles enunciated in the present EMP are applicable to the deep water exploration drilling operations in the Rovuma Offshore Northern Area 1 and will be incorporated into the contracts between AMA1 and the companies and individuals hired to undertake any activities in the area under consideration, in the context of the present project.

One of the main purposes of the EMP is to ensure continual compliance with Mozambican legislation, international standards and guidelines, and the APC Environmental, Health and Safety Policy.

The EMP monitoring requirements will ensure that the EMP is effectively implemented and will provide feedback information to the stakeholders.

3 RELEVANT LEGISLATION AND STANDARDS

The EMP is defined in terms of national and international legal instruments that, directly or indirectly, establish norms for offshore exploration drilling. Please refer to details in Section 2 of the EIA. These legal instruments include:

3.1 National Level

- Environment Law (Law 20/97)
- Regulations on Environmental Impact Assessment (Decree 45/2004)
- General Directive for the Drafting of Environmental Impact Studies (Ministerial Diploma no. 129/2006)
- Regulations on Environmental Quality and Effluent Emission Standards (Decree 18/2004)
- Regulations on Waste Management (Decree 13/2006)
- Regulations on Environmental Auditing (Decree 32/2003)
- General Directive on Public Participation in Environmental Impact Assessment (Ministerial Diploma no. 130/2006)
- Petroleum Law (Law 3/2001)
- Regulation on Petroleum Operations (Decree 24/2004), of the National Petroleum Institute
- Law of the Sea (Law 4/96)

- Regulation for the Prevention of Pollution and Protection of the Marine and Coastal Environment (Decree 45/2006)

3.2 International Level

3.2.1 International Maritime Organisation (IMO), through the following normative documents:

- Code on the General Maritime Distress Signalling System (Code **GMDSS**)

- Guidelines for Handling Wastes in Machinery Spaces of ships which incorporates guidance notes for an Integrated Bilge Water Treatment System (IBTS).

3.2.2 International Convention for the Prevention of Pollution from Ships (MARPOL, 1973/1978), particularly with regards to the following annexes:

- Annex I: Prevention of Oil Pollution (which took effect on October 2nd 1983; the revised version of Appendix 1 has been in force since January 1st 2007)
- Annex II: Control of Pollution by Noxious Liquid Substances in Bulk (in force since 6th April 1987/Revised version entered into force 1st January 2007).
- Annex III: Prevention of pollution by harmful substances in packaged form (in force since 1st July 1992)
- Annex IV: Prevention of Pollution by Sewage from Ships (in force since 27 September 2003)
- Annex V: Prevention of Pollution by Ships' Waste (in force since 31 December 1988)
- Annex VI: Prevention of Air Pollution caused by Ships (in force since 19 May 2005)

3.2.3 The Nairobi Convention (ratified by Mozambique in 1996 by the Resolution No. 17/96 of 26th November).

3.2.4 International Convention on Oil Pollution Preparedness, Response and Cooperation 1990 – OPRC 90 (effective since 13th May 1995).

3.2.5 United Nations Convention on the Law of the Sea and the Agreement relating to the Implementation of Part XI of the Convention (adopted in 1982 and is in force since 1994).

3.2.6 Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation, 1988 (This Convention was adopted on 10th March 1988 and came into force on 1st March 1992. Mozambique acceded to this convention in 2003).

AMA1 will carry out their activities in compliance with the conventions above.

3.3 APC Environmental, Health and Safety Policy requirements

The Anadarko Petroleum Corporation (APC) EHS policy emphasizes the company's commitment to managing and operating its worldwide assets in a manner consistent with its core values in order to protect the health and safety of people and the environment, as well as comply with applicable EHS laws, regulations, and internal EHS principles. The EHS policy applies to all employees of APC and its subsidiaries, including AMA1. Key elements of the policy include the following:

- Design and execution – APC shall incorporate the protection of human health and safety (along with methods to mitigate community impact) and be responsible for the minimization of waste and the reduction of emissions in all phases of operations, including planning and design. Ongoing compliance activities shall include appropriate monitoring, incident investigations, and the evaluation of concerns raised by management or employees to continuously improve EHS performance.
- Training and Communication – APC shall train officers and employees in EHS-compliance policies and procedures in a manner appropriate for the position of the individual or group. Appropriate information regarding means of compliance shall be prepared and distributed to directors, officers, and employees. Officers, managers, and supervisors shall demonstrate their support by regularly communicating this Policy to their direct reports and ensure appropriate training is provided. Communication of EHS requirements, expectations, hazards, and measurements shall be made during new-employee orientation and on-assignment to a new position or location. Ongoing communication will include regularly scheduled site safety meetings, shift/tour handover briefings, written alerts, orientation and induction briefings, or refresher training. Contractors and visitors shall be informed of appropriate EHS requirements.
- Auditing – Corporate EHS shall conduct periodic audits of APC's operations to assess risk areas and determine whether employees are abiding by the Policy, EHS principles, and programs and procedures adopted hereunder. Audit results will be reviewed, any incidents of non-compliance addressed, and necessary changes to the EHS compliance system implemented.

EHS considerations and an active concern for local laws and customs are integrated into every aspect of APC's business. EHS goals are maintained through a strict system of internal management and accountability that begins with senior management personnel and extends down to individual employees and contractors. The EHS management system ensures APC maintains consistently high EHS standards wherever it operates.

APC's EHS policy is shown in Figure 1 below.

ENVIRONMENT, HEALTH AND SAFETY
AT ANADARKO PETROLEUM CORPORATION

November 1, 2007

Mission: To respect and protect the safety and health of the public, our employees, our contractors and the environment in all countries and communities in which we conduct our business.

Vision: To achieve excellence in our safety, health and environmental performance.

Policy: In achieving our ***Mission*** and ***Vision***, our ***Policy*** is to:

- Promote a culture that allows for employee involvement in maintaining a safe work environment while recognizing that safety, health and environmental incidents are preventable;
- Strive for zero injuries and incidents;
- Be a recognized leader in environmental stewardship;
- Promote continuous improvement in our processes, reducing risk to safety, health and the environment; and
- Adhere to applicable laws, regulations, Company policies and procedures, and recognized standards.

Everyone has the responsibility, and will be held accountable, to work safely and in an environmentally sound manner.

- **Our number one priority is the safety and well-being of the public, our employees, and contractors.**
- **Our business activities will be conducted to minimize our environmental impact.**

James T. Hackett
Chief Executive Officer

Karl Kurz
Chief Operating Officer

Figure 1. Anadarko Petroleum Corporation Environmental, Health and Safety Policy

3.4 Industry related environmental guidelines

3.4.1 International Association of Drilling Contractors (IADC)

This guide is designed to supplement company Health Safety and Environmental programs and operating procedures. It is based on experience and careful study over many years. Practicability has been substantiated by the adoption of the safe operating procedures by many drilling contractors and government regulatory bodies. It gives the drilling contractor a basis on which to build a Health, Safety and Environmental program.

Of particular interest for the present project are chapters 12, related to Offshore Safety, covering aspects such as medical evacuation to rough weather procedures; and chapter 14, related to the Protection of the Environment covering air emissions, waste management, spill prevention and control amongst others.

The guidelines also cover aspects related to Fire Prevention and Control, Personal Protective Equipment and Emergency Action Plan(s). These aspects are also addressed in the Mozambican Regulations for Petroleum Operations.

3.4.2 International Association for Oil and Gas Producers (OGP)

The OGP have been producing many documents and guidelines over the past few years to help its members to develop best practices in Health, Safety and Environment. Of special importance for the project are:

- Environmental Aspects of the use and disposal of non aqueous drilling fluids associated with offshore oil & gas operations – it provides a comprehensive synopsis of what is known around the world about the environmental impacts of this discharge;

- Environmental management in oil and gas exploration and production – It provides an overview of the environmental issues and the technical and management approaches to achieving high environmental performance in the activities necessary for oil and gas exploration and production around the world;

- Guidelines for the development and application of Health, Safety and Environmental Management Systems – it describes the main elements necessary to develop, implement and maintain a Health, Safety and Environmental Management System by the operators;

- Exploration and Production (E&P) Waste Management Guidelines – it provides a general description of waste management principles; an identification and overview of E&P activities and associated wastes; and options of waste reduction, recycling, treatment and responsible disposal; and

- Key questions in managing social issues in Oil & Gas Projects – it provides a tool to help with social planning issues and is targeted to: project management, by helping to identify questions that may be important in their leadership role; and business and project teams, by helping in the identification of questions that may be important in project development and management.

4 GOVERNMENT ENTITIES WITH RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT AND MARITIME SAFETY

The main entities for inter-institutional liaison and coordination during this project are described below:

- **The National Petroleum Institute (INP):** is the regulatory body for the exploration, production and transport of hydrocarbons. The INP should inspect the spaces, buildings and installations where petroleum operations take place. It should also observe implementation of petroleum operations and inspect all the goods, records, and data in the possession of the operator.

- **The Ministry for the Coordination of Environmental Affairs (MICOA):** is responsible for coordinating all environmental activities at the national level to promote the management, preservation and rational use of the country's natural resources and to propose environmental policies and strategies for integration in sectoral development plans. The Ministry promotes the sustainable development of the country through guiding the implementation of the country's environmental policy.

- **The National Directorate of Environmental Impact Assessment in MICOA (DNAIA)** has the task of issuing Environmental Licences for activities, and to coordinate the environmental impact assessment procedure. At this stage, MICOA intervenes particularly in its capacity as the entity responsible at national and provincial levels for promoting the monitoring of environmental impacts, and undertaking environmental audits of undertakings that may cause damage to the environment.

- **The National Navy Institute (INAMAR)** operates in the areas of maritime security, the protection of ships, port installations and maritime transport, the preservation of the marine environment and maritime administration. For purposes of hydrocarbon research, special attention should be paid to paragraphs 2 (Maritime Security), 4 (Maritime Transport, shipping agencies and stevedoring), 6 (Preservation of the marine environment) and 7 (Maritime Administration) of Article 3 of the Organic Statute, concerning the specific competencies of INAMAR, which detail its mandate as the Maritime Authority.

- **The National Institute of Hydrography and Shipping (INAHINA)** is the institution that issues warnings to shipping, in the form of an Information Bulletin, that informs ships located off the Mozambican coast regarding changes along the coast that may constitute a danger to navigation. The warnings are transmitted by radio and fax.

Other regulatory agencies concerned with the project include the Ministry of Tourism, IDPPE and IIP. With regards to the use of Pemba Port for various reasons, CFM (Caminhos de Ferro de Moçambique) is the managing entity.

5 BASIC PRINCIPLES OF THE ENVIRONMENTAL MANAGEMENT PLAN

The drilling will occur within the limits of Area 1 offshore in water depths greater than 200m. However the exact location of the wells will be determined based on the results of the seismic activity, which was completed in May 2008 and is currently being interpreted. The drilling operation is a short-term activity, taking up to 2 months to drill each well.

Area 1 of the Rovuma Basin Block, although located in deep waters that do not include areas formally classified as "protected areas", is located in proximity to islands surrounded by seagrass beds and coral reefs and the Quirimba Arquipelago (7.8km to the south of the concession area) and the Mnazi Bay-Ruvuma[2] Estuary Marine Park (3km to the north). Furthermore, Area 1 is located on the annual migration route of humpback whales, which crosses the region off of the Cabo Delgado coast between the months of July and November. Also important are the socio-economic uses of the area of influence of the project, which include artisanal and commercial fisheries, tourism related activities and navigation. These factors require special consideration with regard to the management and monitoring of impacts and the need for precautionary measures that should be strictly respected.

- *Principle A: Environmental Awareness and Preservation*

AMA1 shall adopt a responsible attitude towards environmental issues and is committed to guarantee that the drilling operator or any other companies contracted assume their responsibilities. The various phases of the project shall take environmental factors into consideration and not degrade to the extent possible the environmental conditions and the prevailing ecological conditions in the region. Environmental issues will form part of the contractual agreements signed between the proponent and the contractors.

- *Principle B: Mitigation of the Negative Impacts*

All activities related to the life cycle of the project will include appropriate mitigation measures to ensure that negative environmental impacts are duly mitigated, managed and monitored, and that positive impacts are enhanced. Mitigation implies identification of the best options to adopt, minimisation or elimination of negative impacts, highlighting benefits related to the proposed project and protection of public and individual rights.

- *Principle C: Environmental Responsibility*

AMA1 takes full responsibility for implementing and controlling the actions prescribed to manage the environmental impacts. The proponent and the drilling operator or other companies contracted will monitor the environmental factors during the various phases of project development, including the implementation of the mitigation measures, as required by the situation.

The Contractor responsible for drilling will be legally obliged to comply with the EMP. While this EMP supplies basic information, it is the "Rig manager's" responsibility to verify the accuracy of any supplied information and, independent of any inaccuracy or omission, to comply with the reference framework and standards. AMA1 will monitor/audit the fulfillment of the EMP, including the reference framework and the standards of the project.

Roles and responsibilities of each of the parties involved are described in Section 6, Obligations and Responsibilities in Environmental Management.

6 OBLIGATIONS AND RESPONSIBILITIES IN ENVIRONMENTAL MANAGEMENT

6.1 Obligations and Responsibilities of the Proponent (AMA1)

AMA1 is committed to ensure that the drilling activity is carried out in accordance with the recommendations of the present report and to ensure that the local community and their land, coast, marine resources and survival means are respected.

AMA1 intends to manage the operations in such a way that the environment and the health and safety of the rig workers, rig visitors and the public are protected. To attain this objective, AMA1 will:

1. Provide all managers, supervisors and workers, the specific safety, health and environment requirements, and to assure that these are held responsible for their performance;

2. Provide professional staff to assist in the commitments related to safety, health and environmental protection; and

3. Monitor, evaluate and report the performance related to safety, health and environmental protection.

AMA1 will adopt this EMP as an integral part of the drilling program from the planning phase to the end of the drilling operations. In particular, AMA1 will:

- Ensure adherence to the EMP, by providing it to all the contractors, the sub-contractors, the supervisors and the workers in general and ensuring that appropriate training is provided to ensure understanding of the EMP requirements;

- Take general responsibility for implementation of the EMP, ensuring that it is in agreement with all legislative and contractual requirements;

- Assign internal resources or hire experienced personnel to fill the role of Environmental Control and Public Relations Officer;

- Inform managers, contractors, supervisors and workers of safety, health and environmental requirements, and hold them responsible for carrying them out;

- Monitor, evaluate and report performance of the contractors in the areas of safety, health and environmental protection;
- Ensure that relations with the interested and affected parties occur in accordance with the principles of cordiality and mutual interest envisaged by Mozambican legislation;

- Ensure that a Stakeholder Forum is created and is actively involved in the project's activities through regular meetings;

- Analyze and approve when necessary the Method Statements in collaboration with the government entity responsible for the environment;

- Take general responsibility for warranting that any issues not in conformity with the EMP are entirely corrected through the implementation of corrective measures;

- Ensure that the following specialist studies are conducted once the well locations are defined and prior to the exploratory drilling programme commencement:

    - Drilling Muds and Cuttings Dispersion Modeling
    - Oil Spill Dispersion Modeling and Oil Spill Contingency Plan
    - Any other bio-physical or socio-economic study that may be required

- Ensure that details regarding the proposed drilling operations are submitted to the National Petroleum Institute (INP) well in advance of the operations, for their approval (Refer to Section 2 of the EIA for timing details);

- Ensure that crew members are trained in environmental and safety procedures prior to the beginning of the drilling operations, including emergency response procedures and the safe use of equipment;

- Ensure that an Emergency Response Plan is in place and that international resources have been included, where appropriate;

- Ensure that the drilling vessel and supply vessels to be used are certified for seaworthiness through an appropriate internationally recognised marine certification body. The certification and existing safety standards require that specific safety precautions and procedures be adhered to in order to minimise the risk of offshore accidents;

- Acquire the necessary clearance, permits, licences and approvals from the relevant authorities prior to the beginning of the drilling operations; and

- Report non-routine events (emergencies such as major leaks and spills, blowouts, explosions, and collisions with other vessels) to the relevant authorities and key stakeholders as appropriate.

6.2 Obligations and Responsibilities of the Drilling Contractor

AMA1 shall contract a company specialised in drilling operations, which shall will operate the drilling rig in the concession area and during the period envisaged. AMA1 will shall provide the drilling contractor the EMP and ensure the contractor is in compliance with the environmental directives approved in the EMP. The drilling contractor shall be bound to the following obligations:

- Establish liaison with, and answer to, the representatives of AMA1 in all matters relevant to the implementation of the EMP;

- Observe the environmental mitigations measures defined in the present EMP and apply techniques, practices and operation methods that will ensure the fulfilment of the EMP. The contractor will, in general, minimize environmental damage, control litter, avoid pollution, prevent the loss of or damage to natural resources, and minimize the effects on other activities present in the area, such as fishing and tourist related activities;

- Organize the work, plans, transport and equipment required to conduct activities in such a way as to comply with the environmental requirements;

- Ensure that activities are performed in conformity with the Project Plans, the Contract and the environmental requirements established in this EMP;

- Ensure that the areas of greatest sensitivity identified in this report (close to the western limit of the drilling area) are treated as such and the conditions defined in the EIA are implemented in full;

- Prevent or minimize the occurrence of accidents and incidents that may cause damage to the environment, prevent or minimize the effects of such accidents, and revert the environmental conditions to a state that resembles, as much as possible, the condition before the accident;

- Communicate through the channels established in the EIA any unforeseen conditions that may force changes to the route or timing of operations;

- Comply with environmental audits by AMA1 and by relevant government bodies, and provide information that facilitates the audit;

- If the Authorities consider that the operational activities performed by the "rig contractor" are causing unacceptable environmental damage, the "rig manager" should immediately consult the competent authorities and AMA1 to agree on the minimization measures to be implemented. The agreed measures should be implemented as soon as possible, in order to avoid subsequent damage and to repair any damage that might have occurred; and

- Hiring experienced staff responsible for the Environmental, Health and Safety matters during the operations

6.3 Description of Environmental Management Tasks and Responsibilities of staff recommended to be assigned

To ensure effective application of the mitigation measures, AMA1 has assigned an Environmental Control and Public Relations Officer (ECPRO), whose tasks shall include the following:

- Certify compliance with the EMP measures and report to AMA1, INP and MICOA with regards to the degree of implementation of this Management Plan;

- Ensure that the sub-contracted companies (particularly the rig) are informed and held responsible for applying the EMP's recommendations;

- Verify whether the exploration rig is in conformity with the norms of MARPOL, ensure that it has an Emergency Response Plan, an Oil Spill Contingency Plan and a Waste Management Plan;

- Certify that the Rig is equipped to perform the EMP;

- Ensure and facilitate permanent liaison between the relevant institutions (INP, MICOA, Ministry of Fisheries, INAHINA, Ministry of Tourism, INAMAR and others);

- Draft and ensure compliance with a plan of communications on drilling activities for all interested and affected parties, particularly fishing and tourist operators;

- Coordinate with the media and all channels of communication to ensure that the warnings of activity are distributed on time to all affected and interested parties;

- Provide by-weekly reports or when deemed necessary that include an assessment of compliance with the EMP, which should be sent to AMA1, INP and MICOA;

- Produce a complete environmental management report at the end of the project, giving a balance sheet of the degree of compliance with the recommendations of the EMP; and

- Establish procedures for collecting and channelling complaints presented during the drilling program.

AMA1 will audit the drilling contractor to ensure compliance with the EMP. The audit tasks are as follows:

- Conduct at least one environmental audit during each well drilling, based on site visits and analysis of existing monitoring reports;

- Prepare and submit environmental audit reports; and

- Identify required corrective actions according to the requirements of the Environmental Management Plan.

7 MONITORING

7.1 Introduction

In partial fulfillment of this Environmental Impact Assessment (EIA), AMA-1 proposes the following monitoring programme to determine the effectiveness of mitigation measures applied to the exploration drilling activities.

7.2 Monitoring Programme

Key areas requiring monitoring are:

7.2.1 Air emissions

There is no requirement for the monitoring of air emissions. However, the quantity and quality of fuel that is used shall be monitored to enable calculation of CO2. This will be done regularly, whenever fuel is transferred to the drilling vessel and/or when new fuel is acquired.

Additionally, maintenance records of the rig motors and engines as well as well test burners shall be monitored to ensure that they are operating efficiently. This will be done monthly or as per maintenance programme.

7.2.2 Drilling muds and cuttings

Monitoring of drilling muds and cuttings in order to ensure minimal impacts on the environment, shall be achieved by the following:

- Monitor the type of muds and the chemical additives used, before and during drilling operations (on a per well basis), ensuring the least toxic ones are used and that these conform to internationally accepted standards. Register the information in a Record Book, which will be regularly checked;
- Ensure that the list of chemicals is submitted to MICOA and INP for approval;
- Monitor the mud recovery system (continuously or as per maintenance programme);
- Maintain and monitor the muds and cuttings discharge Register (information to include type, volume and means of discharge) on a per well basis;
- Monitor compliance to MARPOL 73/78 and EPA (2007) on a per well basis:
    - Metal concentrations in the barite added to mud must not exceed: 1mg/kg for mercury and 3mg/kg for cadmium.
    - No discharge of drilling wastes allowed within 3 miles of shore.
    - Discharge rate not to exceed 1,000 bbls/hour.
    - Cuttings coated up with 6.9%SBMs may be discharged
    - Ester SBMs can have up to 9.4% SBM on cuttings.

7.2.3 Aqueous Discharges (sewage, deck drainage, bilge and ballast water)

- Maintain a Register of all aqueous discharges, updating it in the event of a discharge.
- Monitor compliance with MARPOL 73/78 by undertaking samples on a regular basis (weekly):
    - Treated sewage effluents shall achieve a BOD < 40 ppm, suspended solids < 50 ppm and a coliform count < 200 cells per 100 ml of effluent.

- Monitor the oil content in all drainage discharges: the concentration of oil in the water after treatment in an IMO approved oil/water separator shall not exceed 15 ppm. Samples should be taken on a weekly basis and appropriate averages calculated to ensure compliance with all relevant standards.

7.2.4 Discharge of solid waste

a) Kitchen waste

Volumes of kitchen waste shall be monitored and recorded through a kitchen waste register on a regular basis (when waste is macerated, before discharge).

b) Other solid waste

Volumes of all other solid waste shall be monitored and recorded through a solid waste register on a regular basis (on a per well basis). Registration of types and quantities, as well as means of handling and final disposal shall be done as required, for example:

- When waste is discharged to the sea (as per MARPOL 73/78)
- When waste is segregated
- When waste is incinerated (if applicable)
- When waste is transferred to the shore

7.2.5 Socio-economic impacts

Socio-economic impacts will be monitored by means of complaint registries. This will be done regularly (by-weekly), on a per well basis.

The records of all information that has been disseminated to the stakeholders (radio broadcasts, fact sheets, etc) shall also be monitored regularly (on a monthly basis).

7.2.6 Oil Spills

a) Prevention

The following should be monitored on a per well basis:

- Tank levels (weekly and/or whenever there is a fuel transfer)
- Transfer operations (whenever there is a fuel transfer). Issues to be recorded include (but are not limited to):

- Connections, types and conditions of all the equipment (pipes, hoses, tanks, drums, etc)
- Weather, sea state, visibility
- Warning signals
- Means of communication
- Compliance with the Rig fuel transfer procedure
- BOP System (continuously)

b) Response

Floating oil should be recorded in order to limit liability from external sources. This shall be done by on-going visual observations and reported by the drilling vessel and support and supply crew members and helicopter pilots. Whenever any floating oil is observed, the following information must be noted:

- Time and date of observation
- Weather and sea state
- Location of the oil and approximate extent of area covered
- Direction of movement of oil
- Photographs of the oil.

8. INDEPENDENT AUDITORS

It is the task of (i) MICOA and/or DPCA-Pemba and (ii) INP, to hold independent audits to verify compliance with the mitigation measures stated in this report. AMA1 could play an important role in training Government personnel to understand these types of projects and carry out sound Environmental Audits.

In order to ensure independence and impartiality, AMA1 should hire an Auditor that would ensure that both the rig contractor and AMA1 are complying with the EMP requirements.

A summary of the environmental impacts assessed, the respective mitigation measures and monitoring requirements identified, and the bodies responsible for the environmental management of the project, the environmental management plan, are listed in Table 1.

9 IMPLEMENTATION OF THE EMP

The mitigation measures and monitoring requirements identified to address the impacts resulting from routine and non-routine drilling activities, the bodies responsible for implementation of certain actions and the bodies that should supervise the implementation of those actions are listed in Table 1, below.

AMA1 will ensure that coordination is maintained with the relevant governmental authorities and the Stakeholder Forum throughout the project.

Table 1 Summary of Mitigation Measures and Responsibilities for Environmental Management and Monitoring

EMP Action #	Environ Aspect	Mitigation Measures	Monitoring Requirement	Impact Addressed	Responsible for Execution	Frequency/ Timing	Supervision/ Auditing
IMPACTS FROM ROUTINE EVENTS							
1	Mobilization/demobilization and drilling operations	Regularly maintain drilling rig motors and engines. Operate and maintain exhaust systems and engines in accordance with the manufacturer's specifications. Use preventative maintenance, leak detection and repair programs. Maintain and effectively control well test burners for high efficiency. Consider the use of an alternative "green burner" test flare to improve the quality of flare emissions and to minimize incomplete combustion and black smoke and to prevent hydrocarbon fallout to the sea. Limit periods of hydrocarbon burning to the operationally required minimum. Compliance to Annex VI MARPOL emission standards: • Diesel engine NO_x emissions should be limited to between 9.8 and 17 g/kWh, depending on maximum operating speed. • Substances harmful to the ozone layer (including halon and CFCs), cannot be deliberately released. New facilities can contain HCFCs until 1Jan 2020, but cannot contain other substances that harm the ozone layer.	• Test burners • Maintenance Registry	Reduction in air quality due to project emissions	Contractor	Throughout the project (monthly or as per maintenance programme)	AMA1 MICOA

EMP Action #	Environ Aspect	Mitigation Measures	Monitoring Requirement	Impact Addressed	Responsible for Execution	Frequency/ Timing	Supervision/ Auditing
2	Drilling operations (waste management)	Use mud recovery systems. The rig will have an efficient solid control and mud recirculation system with the following main components: • Shale shakers to remove large-sized cuttings • De-gasser to remove entrained gas • De-sanders to remove sand-sized cuttings; • De-silters to remove silt-sized cuttings • Centrifuge to recover fine solids and weighting materials such as barite. Use WBM and low toxicity additives. Where WBM are not feasible, use the Group III NADFs – Non Aqueous Drilling Fluids (most environmentally acceptable with low to negligible aromatic content). Synthetic fluids (SBM) that are low in toxicity, biodegradable and non-accumulative should be used. All chemicals used should conform to internationally accepted standards and submitted to MICOA and INP for approval when necessary before the drilling activities begin. The use of all drilling fluid components and other chemicals will be monitored and recorded. WBM mud and cuttings and SBM cuttings will be discharged to sea in compliance with international practices as described below. However a final decision will be made based on the results of the site-specific drilling and mud cuttings dispersion modeling so as to ensure that the environmental components described in the EIA are not affected. This is especially important if the well sites that might be located close to the western limit. • As with most oil and gas companies in their worldwide offshore operations, AMA1 will comply with the following requirements for discharge of drilling cuttings and muds (EPA, 2007): Metal concentrations in the barite added to mud must not exceed: 1mg/kg for mercury and 3mg/kg for cadmium. • No discharge of drilling wastes allowed within 3 miles of shore. • Discharge rate not to exceed 1,000 bbls/hour. • Cuttings coated up with 6.9%SBMs may be discharged • Ester SBMs can have up to 9.4% SBM on cuttings.	• Type of muds and chemical additives • Record of quantities of muds and cuttings disposed • Compliance with MARPOL 73/78 • Compliance to EPA (2007) requirements	Impacts from the discharge of drilling muds and cuttings in the marine environment (water, flora, macrobenthic communities and fauna)	Contractor	Before and during drilling operations (on a per well basis)	AMA1 MICOA INP Ministry of Fisheries INAMAR

EMP Action #	Environ Aspect	Mitigation Measures	Monitoring Requirement	Impact Addressed	Responsible for Execution	Frequency/ Timing	Supervision/ Auditing

3	Mobilization/ demobilization and drilling operations	All vessels must be certified for seaworthiness through an appropriate internationally recognized marine certification body. The rig must have adequate safety systems (alarms and automated shut-down devices), that meet regulatory and industry standards. Adequate maintenance and testing programs must be in place.
		
		Establish separate drainage systems for hydrocarbon-contaminated water (closed drains) and water from non-process areas (open drains). Bund all process areas to prevent contamination by storm waters, contain spills and leaks, and channel drainage water into the closed drains.
		Ensure that oil separators are in place and that spills are cleaned up immediately. Equip oil and water separators with sensors and an alarm to avoid exceeding the discharge limit.
		Use drip trays to collect run-off and spills from equipment not contained within a bunded area and channel runoff to the closed drainage system.
		Train crew members regarding the risks of contamination from deck water discharge and the importance of cleaning up spills as soon as they occur.
		
		Disposal of liquid waste in accordance with MARPOL 73/78 (Annexes 1-4):
		• Liquid effluents must be treated before discharged to the sea (Refer to Section 2.3.2).
		• Sewage must be treated and disinfected (on-board treatment plant) prior to discharge.
		  • Collect and adequately treat grey and black waters with a small on-board sewage treatment station before release into the sea.
		  • Treated effluents shall achieve a BOD < 40 ppm, suspended solids < 50 ppm and a coliform count < 200 cells per 100 ml of effluent.
		  • The discharge depth is variable, depending on the draught of the rig at the time, but it should not be less than 5m below the surface.
		
		• Discharge of ballast water and bilge water (water coming from machinery spaces) according to established international maritime guidance and legal requirements.
		• The discharge of residues into the ocean is forbidden, except when the ship has an operation approved device for treatment of residue or when it is discharging disinfected residues and in small amounts, using an approved system at more than 3 nautical miles from the nearest coast; or discharging non-disinfected and un-fragmented residues, at more than 12 nautical miles from the nearest coast.
		• The concentration of oil in the water after treatment in an IMO approved oil/water separator shall not exceed 15 ppm.
		• Do not discharge deck water near sensitive habitats, such as seagrass beds and coral reefs.
		• Route water from machinery spaces to the closed drainage system, or contain and treat the bilge water before discharge.
		• Untreatable waters should be contained and shipped to shore for disposal.
		• Contain oil and chemical use areas and equipment (deck, mud tanks and pumps)
		Use efficient oil and water separators in bilges.
			• Waste logs for deck, sewage, bilge and ballast water discharges
			• Compliance with MARPOL 73/78
				Impacts from deck drainage, bilge water and sewage discharge in the marine environment (water, flora and fauna)	Contractor	Throughout the project (weekly)	AMA1
							
							INP
							
							MICOA
							
							INAMAR

EMP Action #	Environ Aspect	Mitigation Measures	Monitoring Requirement	Impact Addressed	Responsible for Execution	Frequency/ Timing	Supervision/ Auditing
4	Drilling operations (waste management)	Disposal of solid waste in accordance with MARPOL 73/78: • Domestic waste must be disposed in compliance with Annex V. • Solid waste (kitchen waste) can be macerated to 25mm and then discharged to the sea. • All other solid waste must be segregated and contained for appropriate treatment and disposal according to the Waste Management Plan. • Hazardous wastes will not, under any circumstances, be discharged to the sea. • No garbage[3] can be discharged closer than 12 nautical miles (21,6km) from the nearest land.	• Waste logs for solid waste • Compliance with MARPOL 73/78	Impacts from solid waste discharge in the marine environment (water, flora, macrobenthic fauna, fauna and protected areas)	Contractor	Throughout the project (Kitchen waste: when waste is macerated, before discharge/ Other waste: Refer to Section 7 above).	AMA1 INP MICOA INAMAR
5	Drilling operations (waste management)	Comply with the MARPOL 73/78 requirements. Ensure that oil separators are in place and establish separate drainage system for hydrocarbon-contaminated water (closed drain). The concentration of oil in the water after treatment in an IMO approved oil/water separator shall not exceed 15 ppm.	• Water Quality (oil content in treated water) • Compliance with MARPOL 73/78	Reduction in water quality due to the disposal of produced water	Contractor	Before any discharge, throughout drilling	AMA1 MICOA INP INAMAR
6	Drilling operations (pre-drilling assessment of shallow hazards)	Ensure that the drilling vessel is certified for seaworthiness through an appropriate internationally recognised marine certification body. Adhere to specific safety precautions and procedures to minimise the risk of offshore accidents and/or incidents. In case a moored rig is used, the integrity of its mooring system must be ensured. The drilling contractor must be registered with the International Association for Drilling Contractors (IADC), and all responsible personnel must be qualified. Use the ROV to assist the positioning of the rig and ensure that anchoring avoids significant seafloor features.	Not Applicable	Effects of pre-drilling assessment on deep water benthic macrofauna	Contractor AMA1	Before the vessel is moored, during drilling and after decommis-sioning	AMA1 MICOA INP INAMAR
7				Effects of drilling on deep water benthic macrofauna including mooring anchors and chains (if applicable)			

[3] Under Annex V of the Convention, garbage includes all kinds of food, domestic and operational waste, excluding fresh fish, generated during the normal operation of the vessel and liable to be disposed of continuously or periodically.

EMP Action #	Environ Aspect	Mitigation Measures	Monitoring Requirement	Impact Addressed	Responsible for Execution	Frequency/ Timing	Supervision/ Auditing
8	Mobilization/ demobilization and drilling operations	Discharge of ballast water according to established international maritime guidance and legal requirements. Discharged no closer than 12 nautical miles (21,6km) from the nearest land.	Ballast water discharge Compliance to MARPOL 73/78	Impacts due to the introduction of invasive species in ballast water	Contractor	When required throughout drilling	AMA1 MICOA INP Ministry of Fisheries, INAMAR
9	Drilling operations	Periodically maintain equipment to minimize noise. Use a top drive motor on the drill string to limit drill noise.	• Complaints Registry	Noise impacts on: Marine mammals, sea turtles and fish Artisanal & commercial fisheries	Contractor	Throughout drilling	AMA1 MICOA INP
10		Not applicable	Not Applicable	Increased vulnerability of fauna attracted to the rig's lighting/flare	Contractor	Throughout drilling	AMA1 MICOA
11	Drilling operations and support operations	Inform personnel of the social conduct codes based on cultural characteristics of the resident population, of local culture and costumes and of the importance of respectful social relationships with the local community. Provide personnel with information about avoidance of sexually transmitted diseases through hygienic practices and low risk behaviour.	Complaints Registry	Social conflicts due to the presence of foreign workers	AMA1	Throughout drilling	AMA1 MICOA Provincial Directorate of Labour Provincial Directorate of Health
12		Use local goods and service providers in Pemba whenever possible.	Not Applicable	Increased revenue due to the presence of the crew in Pemba and possibly in the islands	Contractor AMA1	Throughout drilling	AMA1 MICOA

EMP Action #	Environ Aspect	Mitigation Measures	Monitoring Requirement	Impact Addressed	Responsible for Execution	Frequency/ Timing	Supervision/ Auditing
13	Drilling operations	Inform artisanal fishers, at least two months prior to the start of the drilling, of well locations, safety exclusion zones, and vessel locations, and of planned events through established means of communication. • Political forums, such as the *Foruns de Localidade* (Localidade Forums), *Conselhos Consultivos Distritais* (District Consultative Councils), and *Conselhos Comunitários de Pesca* (Community Fisheries Councils) • Traditional and other local leaders • Radio stations Provide a grievance procedure regarding the project. Consider a Plan that outlines strategies for, and means of, compensation in the event of loss of catch by artisanal fishers based on annual catches declared during previous years (a Compensation Plan will be submitted to MICOA together with Grievance Procedures).	• Loss of catch and income • Complaints Registry	Loss of access of artisanal fishers to fishing grounds due to exclusion zones	AMA1	Before and throughout drilling	AMA1 MICOA Ministry of Fisheries IDPPE IIP
14		Implementation of mitigation measures to minimize the impact on marine mammals, turtles and fish (Action # 17), will reduce the impact on catches. Coordination and communication with fishers, the establishment of a grievance procedure and the consideration of a compensation plan are also recommended (Refer to the Communication Plan included as part of the EMP). A Compensation Plan will be submitted to MICOA together with Grievance Procedures.		Temporary catch decrease due to fish displacement (artisanal and commecial fisheries)			
15		Inform maritime authorities prior to rig mobilization regarding detailed routes, rig locations, exclusion zones and scheduling plans through established means of communication. • National Maritime Authority (INAMAR), with details about vessel entry, duration of stay and exact area(s) and duration of exclusion. INAMAR should make a formal Notice to Mariners for international dissemination • Notice to Mariners through maritime communications networks and GMDSS / Inmarsat • Provide advance notice writing to the Delegation of the European Commission, Maputo, and the Ministry of Fisheries, Mozambique	Not applicable	Loss of access of commercial fishers to fishing grounds due to exclusion zones	AMA1 in conjunction with Contractor	Before and throughout drilling	AMA1 MICOA Ministry of Fisheries IIP
16	Drilling operations (abandonment)	Implement a detailed program of abandonment and decommissioning adhering to applicable Mozambique Petroleum regulations and environmental guidelines. Submit the abandonment and decommissioning plan to MICOA and INP. Inform trawling vessels operating in the area with the geographical locations of any obstructions left on the seabed. Publish a notice to mariners via INAMAR and the Ministry of Fisheries with a clear definition of the area where bottom gears (bottom trawl, bottom set gill nets) are prohibited.	• Abandonment procedures • Notification warnings of the location of the wellheads	Damage to trawl nets caused by surface structures remaining after well suspension/ abandonment	AMA1in conjuction with Contractor	On completion of well testing	AMA1 MICOA INAMAR

EMP Action #	Environ Aspect	Mitigation Measures	Monitoring Requirement	Impact Addressed	Responsible for Execution	Frequency/ Timing	Supervision/ Auditing
17	Drilling operations	Compile a Communications Plan to inform tourism interests of the drilling locations and scheduling. AMA1 will coordinate with dive operators. (Refer to the Communication Plan included as part of the EMP). A Compensation Plan will be submitted to MICOA together with Grievance Procedures.	• Create and distribute fact sheet • Addendum with well locations	Reduction in revenue due to a perceived decline in tourist potential	AMA1	Throughout drilling	AMA1 MICOA Provincial Directorate of Tourism
18		Provide a media fact sheet for use by L&A Operators to brief staff and inform clients regarding the temporary nature of the drilling program and the measures taken to mitigate environmental impacts. Helicopter flight paths will avoid tourist areas, when possible, or fly at sufficient altitude to minimize noise disturbances when rerouting is not possible.	Not Applicable	Effects of noise on recreational divers			
19	Mobilization/ demobilization and drilling operations	Apply for authorization to conduct oil exploration drilling activities at sea from the Maritime Authority (INAMAR). Inform maritime authorities prior to rig mobilization regarding detailed routes, rig locations, exclusion zones and scheduling plans through established means of communication: • National Maritime Authority (INAMAR), with details about vessel entry, duration of stay and exact area(s) and duration of exclusion. INAMAR should make a formal Notice to Mariners for international dissemination • Notice to Mariners through maritime communications networks and GMDSS / Inmarsat • Provide advance notice writing to the Delegation of the European Commission, Maputo, and the Ministry of Fisheries, Mozambique Maintain the exclusion zone using the rig and support vessel resources. Prohibit purse seine fishing in the area at least 10km up current of the drilling vessel to avoid drift into the exclusion zone. Provide a grievance procedure regarding the project. (Refer to the Communication Plan included as part of the EMP). A Compensation Plan will be submitted to MICOA together with Grievance Procedures.	• Notify & warn relevant entities • Broadcast notifications and warnings	Interference with maritime traffic	AMA1 in conjunction with Contractor	Prior to rig mobilization and throughout the drilling operations	AMA1 MICOA Ministry of Fisheries IIP INAMAR
IMPACTS FROM NON-ROUTINE EVENTS							

EMP Action #	Environ Aspect	Mitigation Measures	Monitoring Requirement	Impact Addressed	Responsible for Execution	Frequency/ Timing	Supervision/ Auditing
20	Mobilization/ demobilization and drilling operations	The aim should be in preventing the occurrence of hydrocarbon release and of fires and explosions. Compliance to the Oil Spill Contingency Plan (OSCP)/ Emergency Response Plan (ERP) is mandatory.	• Compliance to OSCP (ERP)	Reduced air quality due to hydrocarbon release or fire/explosion	Contractor	Prior to and throughout drilling	AMA1 MICOA INP
21	Mobilization/ demobilization and drilling operations	<u>Planning</u> • General Oil trajectories and an Oil Spill Contingency Plan (OSCP)/Emergency Response Plan (ERP) prepared for this project are presented in Part B of Volume II. • Prepare & submit site-specific Oil Trajectory Models and OSCP/ERP to the MICOA & the INP before drilling activities o Incorporate results of the site-specific Oil Trajectory Models in the OSCP (ERP) o The Mozambique draft National Oil Spill Contingency Plan (NOSCP) should be considered • Drilling operations will <u>not</u> commence until the OSCP (ERP) has been updated and addresses local environments. • Compliance to the OSCP/ERP is mandatory • Consider acquiring or contracting services (Southern Africa region) for rapid response to accidental oil spills as local resources are limited. <u>Prevention</u> Ensure that the rig and the supply vessel comply with the following: • International certification and approval by the Mozambican Authorities • Good operational conditions and serviced according to a service maintenance plan • Crews trained for emergency response relative to the cargo they transport and operations they perform • Maintain contact with the Port Authorities • Have updated information regarding the weather conditions in the area • Safety measures such as BOPs are in place • Fuel tanks or drums capped, not overfilled, marked with contents, and valves closed between connected fuel tanks • Store petroleum products & hazardous substances in adequately labeled approved containers • Store petroleum products & hazardous substances in bunded areas where spills can be contained & collected • Use oil collector trays or drip pans under equipment • Ensure that pipes and hoses are properly connected, closed and in good condition • Monitor tank levels throughout the program	• Floating oil • Tank levels • BOP system • Transfer operations • Compliance with OSCP (ERP) • Complaint Registry	Effects on water quality, coastal mangroves, macrobenthic fauna, marine fauna, protected areas, population, artisanal and commercial fisheries, tourism, navigation and coastal industries due to a hydrocarbon release	Contractor AMA1	Prior to and throughout drilling	AMA1 MICOA INAMAR INP

EMP Action #	Environ Aspect	Mitigation Measures	Monitoring Requirement	Impact Addressed	Responsible for Execution	Frequency/ Timing	Supervision/ Auditing
		• Make available absorbent pads near the area where spills may occur • Conduct transfer operations during calm weather conditions • Ensure that transfer hoses are of sufficient length and strength to maneuver vessels as sea conditions require • Only conduct transfer operations during the day, if possible, and hoist the "bravo" flag. • Transfer under reduced visibility conditions (night or overcast), hoist a red light flag • Conduct transfer under favorable wind and tide conditions that would carry any spill away from sensitive habitats • Post warning signals before transfer operations begin • During transfers, maintain effective communication between the supply vessel and the drilling rig and monitor the transfer • Implement drilling rig fuel transfer procedure <u>Response</u> • Response procedures will be outlined in the site-specific OSCP/ERP. . • Limit the spill at the source to the extent possible and contain or recover the material before it reaches the coastal or marine resources. • Clean-up actions are required if hydrocarbons reach shore. • Inform the port authorities immediately in the event of any spill or accident that could result in a spill. • Report all leaks and spills in accordance with the OSCP/ERP. <u>Additional Response measures for fauna include:</u> • Use marine mammal deterrents with the buoys signaling the spill to prevent the animals from entering affected areas. • Do not apply hydrocarbon dispersion agents directly onto the affected animals (cetaceans & sea turtles).					

EMP Action #	Environ Aspect	Mitigation Measures	Monitoring Requirement	Impact Addressed	Responsible for Execution	Frequency/ Timing	Supervision/ Auditing
		<u>Additional preventive and response measures for artisanal and commercial fisheries include:</u> *Prevention* • Maintain the exclusion zone using the rig and support vessel resources. • Establish and maintain radio communications with vessels fishing within 15km of drilling rig • Prohibit purse seine fishing to 10km up current from the drilling vessel to avoid drift into the exclusion zone *Response* • Radio is the first means of communication, and vessels within 15km should be advised to leave the area immediately. • Prohibit fishing in the area immediately down current or downwind of the drilling rig (temporary high risk. • Communication Strategy in EMP Actions # 14 & 16. <u>Additional Measures for Protected Areas:</u> Discuss the completed site-specific OSCP (ERP) with the authorities of the protected area. Maintain on-going liaison with the authorities of the protected area. Discuss and address potential concerns promptly with the authorities of the protected area.					

10. COMMUNICATION PLAN

The EIA and EMP make recommendations related to the communication between AMA1 and stakeholders (mainly tourist operators and commercial and artisanal fishers). This Plan summarizes the communication procedures AMA1 will establish to inform stakeholders on the location and timing of the drilling operations. It also includes the lines of communication in case of an emergency.

The Drilling Communication Plan has four sections:

1. Drilling operations– operational unit – roles and responsibilities
2. Communication with Stakeholders
3. Communication with Commercial Fishery Vessels
4. Communication of a major hydrocarbon spill or other emergency situations

11. OIL SPILL CONTINGENCY PLAN (EMERGENCY RESPONSE PLAN)

This Plan includes additional measures to be implemented to avoid or minimize the risk of accidents and incidents during the project, as well as response capabilities in the event of a spill. Only framework documents are now submitted as these will be updated once well locations are known.

12. WASTE MANAGEMENT PLAN

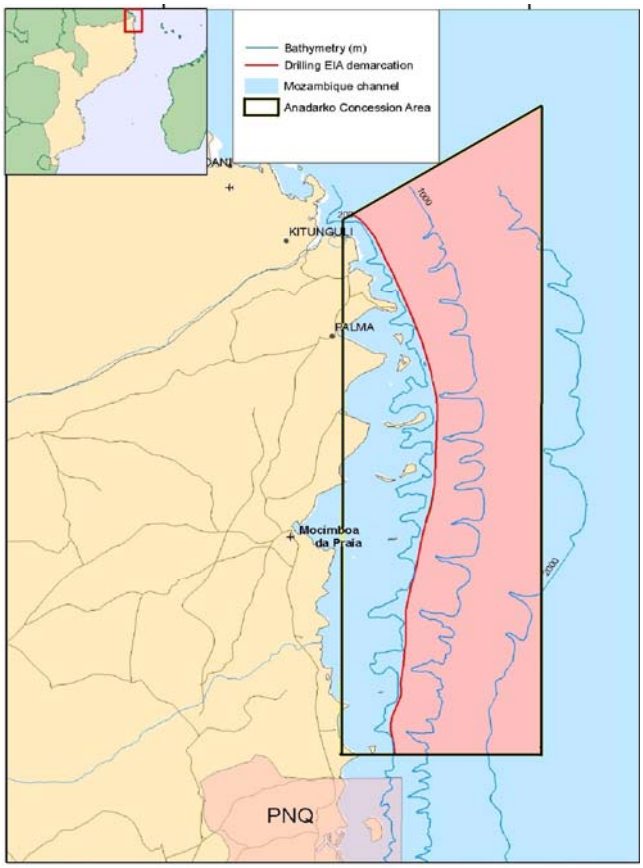
The Plan includes waste management procedures, indicating the different recommended handling and disposal procedures.

Anadarko

Moçambique Área 1, Lda

DEEPWATER EXPLORATION

DRILLING OPERATIONS IN ROVUMA OFFSHORE AREA 1



VOLUME II

PART C: COMMUNICATION PLAN

October, 2008

Impacto

Projectos e Estudos Ambientais

DRILLING COMMUNICATION PLAN

1. INTRODUCTION

The EIA and EMP make recommendations related to the communication between AMA1 and other stakeholders (mainly tourist operators and commercial and artisanal fishers). This Section summarizes the communication procedures AMA1 will establish to inform stakeholders on the location and timing of the drilling operations. These procedures are established to ensure effective communication between AMA1 and the Stakeholders, including the Provincial Government.

The Drilling Communication Procedures have four sections:

1. Drilling operations– operational unit – roles and responsibilities
2. Communication with Stakeholders
3. Communication with Commercial Fishery Vessels
4. Communication of a major hydrocarbon spill or other emergency situations

1.1 Drilling - Operational Units – Roles, Responsibilities & Reporting

There are two main units involved in executing drilling operations:

1. The Operator - Anadarko Moçambique Área 1, Lda (henceforth referred to as AMA1)

2. The Contractor who will carry out the drilling operations on behalf of AMA1

1.1.1 AMA1

AMA1 is a Mozambican-registered company and a wholly-owned subsidiary of Anadarko Petroleum Corporation (APC). AMA1 is the Operator of Area 1 and has overall responsibility for management of the drilling contract and follow-up of the drilling operations, including compliance with the EMP.

The AMA1 Director, based in Maputo, is the primary contact for overall operational issues in Mozambique and is responsible for gaining all authority approvals for the drilling program.

The Drilling Manager, based in Pemba, is responsible for all technical issues related to drilling operations. During Drilling Operations the Drilling Manager will ensure that the operations are following the APC standards.

The Environment and Public Affairs Coordinator heads the AMA1 sub-office in Pemba. The Environment and Public Affairs Coordinator is responsible for ensuring effective communication between AMA1 and stakeholders. The Environment and Public Affairs Coordinator reports to the AMA1 Director.

The Drilling Supervisor, based on board of the drilling vessel, will provide 24 hour supervision of the drilling operations on behalf AMA1. It is the Drilling supervisor that will report to the Drilling Manager in Pemba and to AMA1 Director in the event of a spill or other emergency.

AMA1's Sub- office in Pemba

AMA1 has established a Sub-office in Pemba. The Environment and Public Affairs Coordinator is responsible for liaison and communication with stakeholders including the authorities and will facilitate the rapid dissemination of information. The Sub-office will be open from 0800 – 1700 daily and queries/grievances can be delivered in person, by phone, fax or email.

Contact of AMA1 in Pemba is:
Address: Rua do Porto, 432
Tel. 272 28007.
Fax: 272 20631
Email: Mario.rassul@anadarko.com
Pemba

1.2 The Drilling Contractor who will carry out the drilling operations

The Drilling Contractor has not been identified yet.

The Drilling Operations Manager will have overall responsibility for ensuring the operation of the drilling vessel within the AMA1 Concession Area as per schedule.

The Contractor's Party Chief, based on board the drilling vessel, is responsible for the drilling operations on behalf of AMA1.

A Company Representative will be based in Pemba and will have responsibility for daily logistics as well as onshore relations.

Ongoing drilling decisions will be made by the Contractor's Operations Manager and communicated to AMA1 through their Drilling Supervisor, who will then communicate with the Drilling Project Manager in Pemba and/or the AMA1´s Director. Drilling decisions that have significance for compliance with the EMP will have to be approved by AMA1.

1.3 The Drilling Vessel and Support and Supply Vessels

The Drilling Vessel's Captain has overall responsibility over the security of personnel and equipment and the safety of the operations. This includes decisions concerning eventual emergencies. During drilling operations the Captain will ensure a secure operation but decisions concerning the drilling operations are the responsibility of the Party Chief.

The AMA1 Drilling Supervisor and Drilling Contractor's Party Chief will be based onboard the drilling vessel with responsibilities as described above.

Support and Supply Vessels will be available to provide assistance and warn other maritime users about the approaching and operations of drilling vessel. The support and supply vessels report to the Drilling Vessel.

The lines of communication between the units involved in drilling operations and between the AMA1 and stakeholders are shown in Figure 1 below.

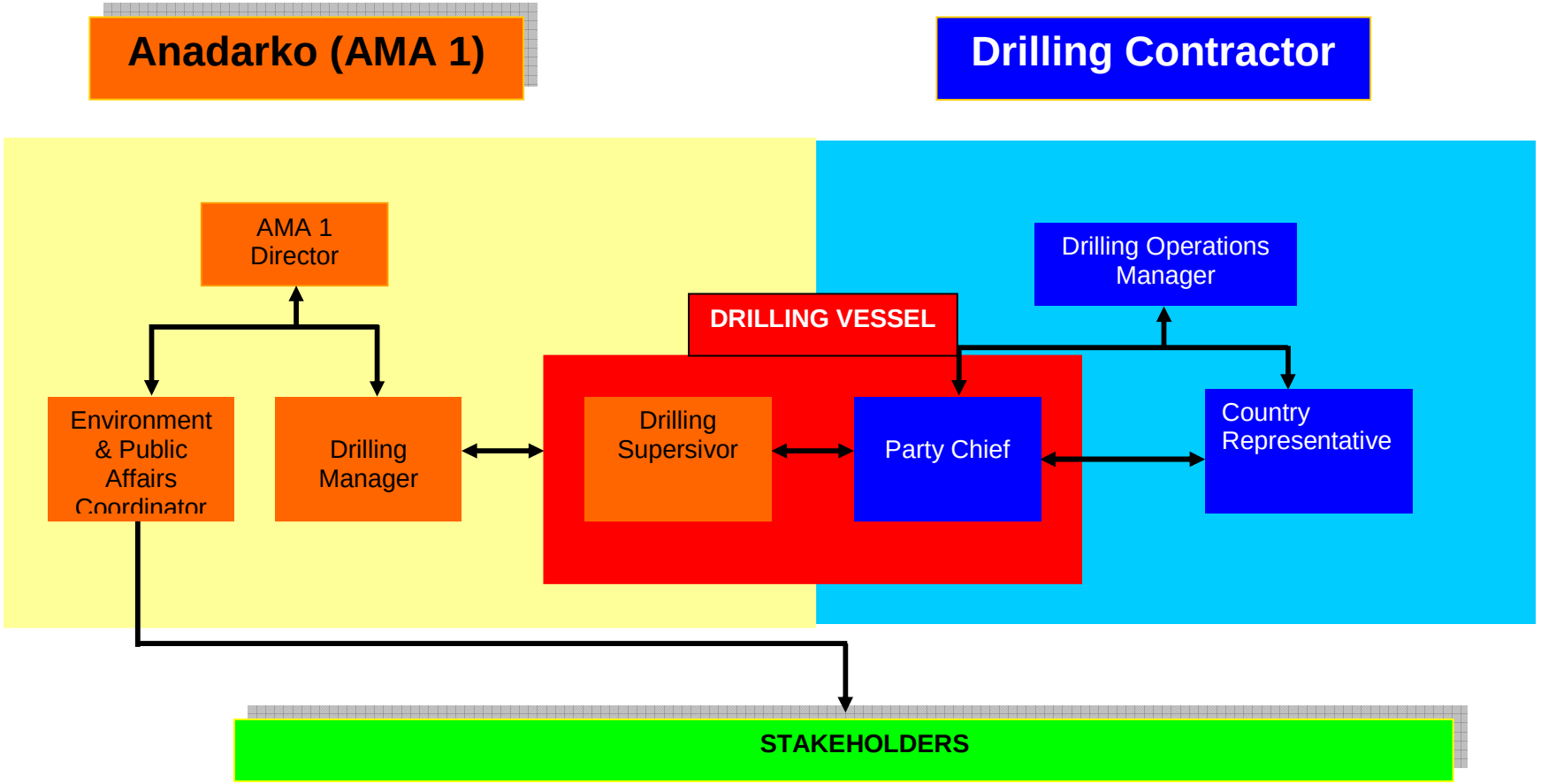


Figure 1. Communication between units involved in drilling operations and between AMA1 to Stakeholders

1.4 Communication with Stakeholders

AMA1 will use the Provincial Level Forum created for the seismic acquisition operations. The Forum includes representatives of provincial government departments, private sector entities representing the tourism and fisheries sectors and NGOs. The Forum will facilitate communication between AMA1, tourism operators, tourism industry representatives, fisheries representatives and relevant government authorities. AMA1 will be represented at the Forum by the Environment and Public Affairs Coordinator.

In Pemba, government members of the Forum include (but are not limited to the following):

- Representative of the National Institute of Petroleum (INP) - Chairperson
- Provincial Director of Mineral Resources and Energy (DPREM)
- Provincial Director of Environment Affairs (DPCA)
- Provincial Director of Tourism (DPTUR)
- Chief of Fishery Provincial Service (SPP)
- Delegated of National Institute of Small Scale Fisheries Development (IDPPE)
- Maritime Administrator in Pemba
- Representative of Radio Mozambique in Pemba
- NGOs

The first Forum meeting will be advertised on the radio and are opened to the civil society.

Forum meetings will be held regularly as agreed by all stakeholders during the program. Minutes of all forum meetings will be produced.

Specifically with regards to tourism, a media fact sheet will be distributed to assist the tourism operators, tourism organizations and other stakeholders to convey information about the drilling operations to the media. This could also be used to assist the L&A Operators to brief members of staff as to how to convey information relating to the drilling programme, where this is necessary. Information shall include: Rig location, duration and safety exclusion zones.

Communication with the stakeholders shall be made in three distinct phases (also refer to Table 1 below):

- Before drilling operations
- During drilling operations
- After drilling operations

Table 1. Communication with the Stakeholders

	BEFORE	DURING	AFTER
WHEN	At least one month prior to the start of the drilling operations	Before and after each well is drilled/ before moving to the next well site	On completion of the drilling operations
WHO	• Stakeholders in general	• Stakeholders in general • Forum members • Districts Authorities	• Stakeholders in general • Forum members • Districts Authorities
HOW	• Radio broadcast • Fact Sheets • Internet (for tourism operators and all stakeholders with access to internet, email will be used for the dissemination of information. • District meetings will also be undertaken.	• Radio broadcast • Forum meetings • Districts meetings • Internet	• Radio broadcast • Forum meetings • Districts meetings • Internet
WHAT	• Well locations • Safety exclusion zones • Planned events	• Drilling vessel movement • Well locations • Safety exclusion zones • Planned events • Information of the existence of a grievance procedure	• Conclusion of the drilling operations • Results of the operation

AMA1 will contract Radio Mozambique to make radio broadcasts before, during and after the drilling operations. The broadcasts will be transmitted on Medium Wave/FM in five languages, Portuguese, Swahili, Makonde, Quimuane and Macua.

Feedback and grievances from the artisanal fisheries will be channeled back to the AMA1 office in Pemba through the District administrators in the area of operations.

1.5 Communications with Commercial Fishery Vessels

AMA1 Environment and Public Affairs Coordinator shall inform the National Maritime Authority (INAMAR) prior to rig mobilization regarding detailed routes, rig locations, exclusion zones and scheduling plans.

INAMAR, through established means of communication, will provide the details about vessel entry, duration of stay and exact area(s) and duration of exclusion. INAMAR should make a formal Notice to:

- Mariners for international dissemination, through maritime communications networks and GMDSS / Inmarsat
- Provide advance notice in writing to the Delegation of the European Commission, Maputo, and the Ministry of Fisheries, Mozambique
- Other vessels

1.6 Communication of a major hydrocarbon spill or other emergency situations

The emergency reporting procedures are included in Section 5 of the Oil Spill Contingency Plan.

In summary, the communication is given to the AMA1 Director who informs the APC´s Project Manager in Houston to activate the Response Team. This team will be operational in Mozambique within 48 hours.

In parallel, the INP is also informed, after which various other authorities, stakeholders and media, are informed.

It is the responsibility of the Environment and Public Affairs Coordinator to ensure that incidents are reported to the governmental agencies, using the Reporting Forms included in the Oil Spill Contingency Plan (Emergency Response Plan) – OSCP/ERP (Refer to the OSCP/ERP for further information).

Figure 2 below shows a simplified communication flow during an emergency. For details, refer to the OSCP/ERP.

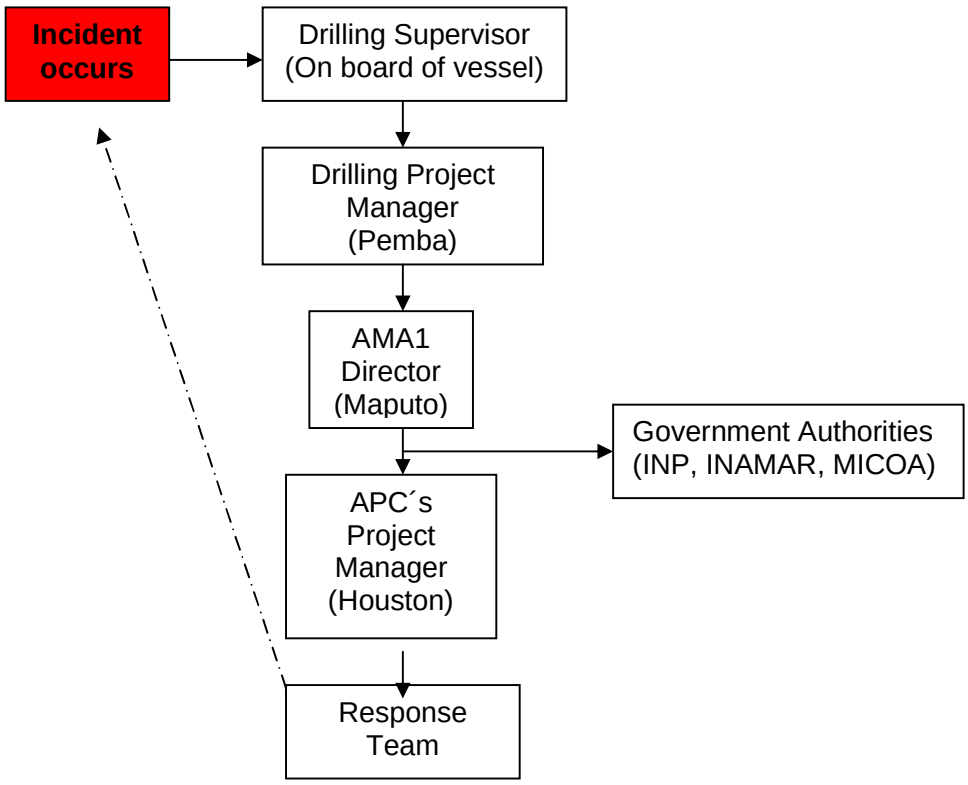


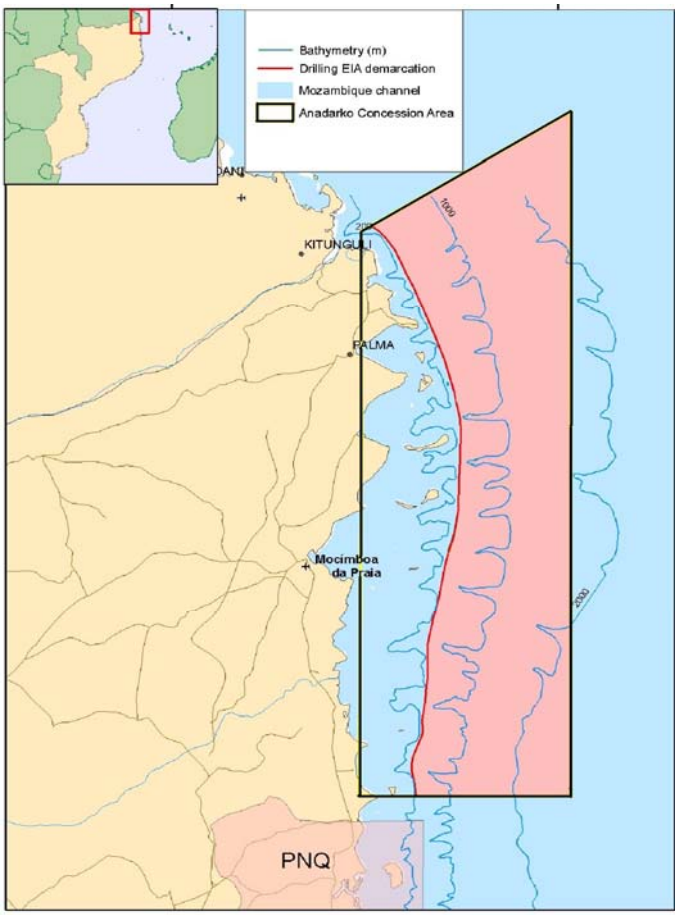
Figure 2. Communication flow in the event of an emergency

Anadarko

Moçambique Área 1, Lda

DEEPWATER EXPLORATION

DRILLING OPERATIONS IN ROVUMA OFFSHORE AREA 1



VOLUME II

PART D: OIL SPILL CONTINGENCY PLAN (EMERGENCY RESPONSE PLAN)

October, 2008

Impacto

Projectos e Estudos Ambientais

MOZAMBIQUE, AFRICA

OIL SPILL CONTINGENCY PLAN (EMERGENCY RESPONSE PLAN)

Developed by:

The Response Group
Emergency Response | Pre-Planning & Support

Houston, TX - Anchorage, AK - Boston, MA - Chicago, IL
www.responsegroupinc.com
281.880.5000

OSRL EARL

THIS PAGE INTENTIALLY LEFT BLANK

Mozambique – OSCP Table of Contents

© The Response Group – 8/2008

THIS PAGE INTENTIALLY LEFT BLANK

Section 1 – Introduction

1.1 Purpose

This Oil Spill Contingency Plan (OSCP) is designed to cover Anadarko operations by providing the members of the Mozambique Emergency Response Team (ERT) & Corporate Emergency Management Team with the information needed to respond to incidents occurring from seismic & exploration/production operations in a safe, rapid, effective, and efficient manner. Emergency incidents include injuries, spills, fires, well control, and other events that could cause harm to people, damage to the environment and/or loss of property.

For purposes of this plan, incidents are defined as events that happen within the Mozambique business unit, create unacceptable impacts on people, the environment or property, and require the conduct of emergency response operations.

Emergency response operations involve actions taken at, or in close proximity to, the site of an incident that are designed to directly address the situation and its consequences, and establish command and control over the incident scene, ensure the safety of responders, develop plans of action, and facilitate communications. Emergency response operations also include actions taken away from the incident scene to support on-scene response operations, facilitate planning, address the concerns of external parties, and manage the financial aspects of response operations.

1.2 Scope

This plan applies to emergency response operations carried out by the Mozambique Emergency Response Team & Houston Emergency Management Team (Strike Team), regardless of incident type and size.

Members of the ERT may require a wide variety of 'tools' to carry out their responsibilities. Some of these tools are included in this plan in the form of the appendices that appear at the end of this document. However, most tools reside outside this plan and may have to be accessed, along with this plan, at the time of an incident.

1.3 Objectives

The objectives of this plan are to:	
✓	Describe the Mozambique ERT and Houston Corporate ER Strike Team
✓	Define the roles and responsibilities of ERT members
✓	Detail ERT notification and activation procedures including consultants & contractors that could be utilized during an emergency
✓	Describe the Incident Management System (IMS) used to organize and manage emergency response operations
✓	Provide ERT members with rapid access to the tools needed to carry out emergency response operations

© The Response Group – 5/2008

1.4 EH&S Policy Statement

ENVIRONMENT, HEALTH AND SAFETY
AT ANADARKO PETROLEUM CORPORATION

November 1,2007

Mission: To respect and protect the safety and health of the public, our employees, our contractors and the environment in all countries and communities in which we conduct our business.

Vision: To achieve excellence in our safety, health and environmental performance.

Policy: In achieving our ***Mission*** and ***Vision***, our ***Policy*** is to:

- Promote a culture that allows for employee involvement in maintaining a safe work environment while recognizing that safety, health and environmental incidents are preventable;
- Strive for zero injuries and incidents;
- Be a recognized leader in environmental stewardship;
- Promote continuous improvement in our processes, reducing risk to safety, health and the environment; and
- Adhere to applicable laws, regulations, Company policies and procedures, and recognized standards.

Everyone has the responsibility, and will be held accountable, to work safely and in an environmentally sound manner.

- **Our number one priority is the safety and well-being of the public, our employees, and contractors.**
- **Our business activities will be conducted to minimize our environmental impact.**

James T. Hackett
Chief Executive Officer

Karl Kurz
Chief Operating Officer

Section 2 – Plan Maintenance & Review

2.1 Management of Change

This section describes the Management of Change (MOC) procedure that is followed to make changes to this plan.

The MOC Coordinator for this plan is the Director of EHS&R.

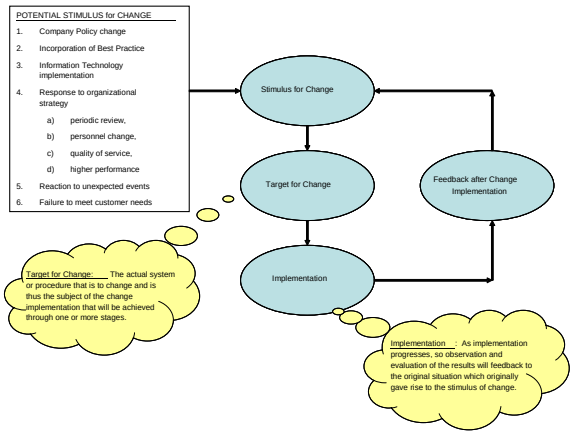
All recommended changes must be submitted in writing to the MOC Coordinator and include the following information:	
✔	Name of person submitting the change(s) and position
✔	The recommended change(s)
✔	The reason for the change(s)

The MOC Coordinator is responsible for distributing information on the proposed change(s) to appropriate members of the ERT/EMT (Emergency Response Team / Emergency Management Team) for review and comment. Strategic changes to this plan are subject to endorsement by the *Director of EHS&R*.

Strategic changes are defined as those resulting in a change to:	
✔	Company policy as it relates to emergency & crisis management operations
✔	Structure of response organizations
✔	Incident Management System
✔	Training and exercise programs or requirements

Changes that are deemed by the MOC Coordinator to be tactical or editorial in nature can be made by the MOC Coordinator without further review.

Revisions are documented in **Section 2.5 Record of Revisions** in this plan.



2.2 Plan Administration

The *Director of EHS&R* is responsible for the overall administration of the Oil Spill Contingency Plan. Overall administration shall include and ensure that this Plan contains the necessary information to effectively support an incident or event response in Mozambique.

2.3 Plan Review

This Plan shall undergo an annual review by the Director of EHS&R with input as appropriate from the Mozambique management and EHS Department. Lessons learned from training, exercises and/or event critiques shall be taken into consideration in the review process and as such provide input in the review process. Any revisions made to the OSCP will be listed on the **Record of Revisions** table in **Section 2.5**.

PRIMARY CONTACT	Steve Freemyer HSE Internacional - Houston, TX +1 713/819-5644 , +1 832/636-1645
ANNUAL UPDATES	This Oil Spill Contingency Plan (OSCP) will be updated at a minimum of every year to ensure the plan is current regarding personnel changes, contact information, contractor and available equipment changes, and other relevant information as required.
SIGNIFICANT UPDATES	Plan revisions should be made in the event of: a) Changes occur which will impact response capabilities. b) Any change occurs with regards to primary response personnel listed on the response team. c) If any change occurs with regard to the name or capabilities of the primary response contractors. d) Company name changes or significant facility updates due to mergers and acquisitions. e) Relevant modifications to the Agency Plans & Guidelines which require revisions.
PLAN REVIEW	Plan modifications will be made at least once a year and follow the **Management of Change** procedure listed in **Section 2.1**.
DOCUMENTATION & DISTRIBUTION	All revisions will be recorded on the **Record of Revisions** table in **Section 2.5**-The **OSCP Distribution List** is located in **Section 2.6.**

2.4 Distribution

Each plan shall be assigned a number and distributed as a controlled hard copy format to the Mozambique ERT & Houston Strike Team. The controlled electronic copy of this Plan shall be maintained electronically on the The Response Group intranet website.

© The Response Group – 8/2008

2.5 Record of Revisions

Revision Number	Date	Section	Type of Revision	Revision Made by	Description
1	1/2008	ALL			NEW PLAN (Seismic operations)
2	5/2008	2, 3, 5, 8	M	Joke Coen/TRG	Updates for Drilling operations
2	8/2008	TOC, 4, 5, 8,10, Appendix	M	Karina Pena/TRG	Update Table of Contents, Added OSRL response strategies & forms (4 & 10) Emergency Reporting Procedures & ERT Contacts (5), Updated Trajectories (8) Added Medical Evacuation Plan & Office Emergency Procedures Appendices

TYPE OF REVISION (*USE THE FOLLOWING CODES*)
A = Amendment (a change to the ICP pending approval)
AU = Annual Update
M = Modification (a change to approved OSCP)

2.6 Distribution List (Hardcopy & Electronic)

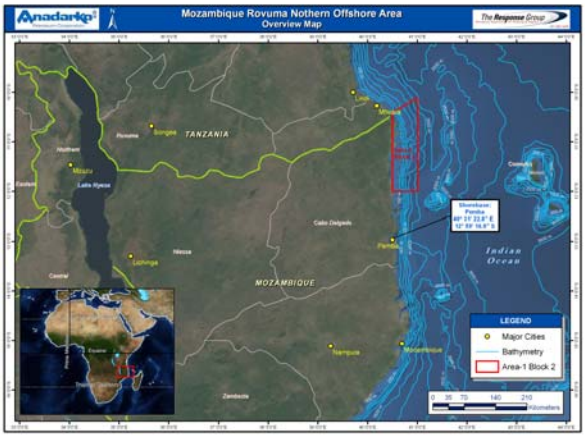
PLAN NUMBER	PERSON ASSIGNED TO	LOCATION
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

© The Response Group – 8/2008

Section 3 – Facility Information

3.1 Facility Facts – Mozambique Operations

Owner		Anadarko Petroleum Corporation
1	Mozambique Office	**Maputo Office:** Rua Antonio Jose de Almeida, 227 Zona da Sommerschield Maputo, Mozambique Tel: +258 21 487050 **Shore Base:** Rua do Porto 1/432 Pemba, Mozambique Tel / Fax +258 27 228007



3.2 Facility Facts – Offshore Mozambique Block

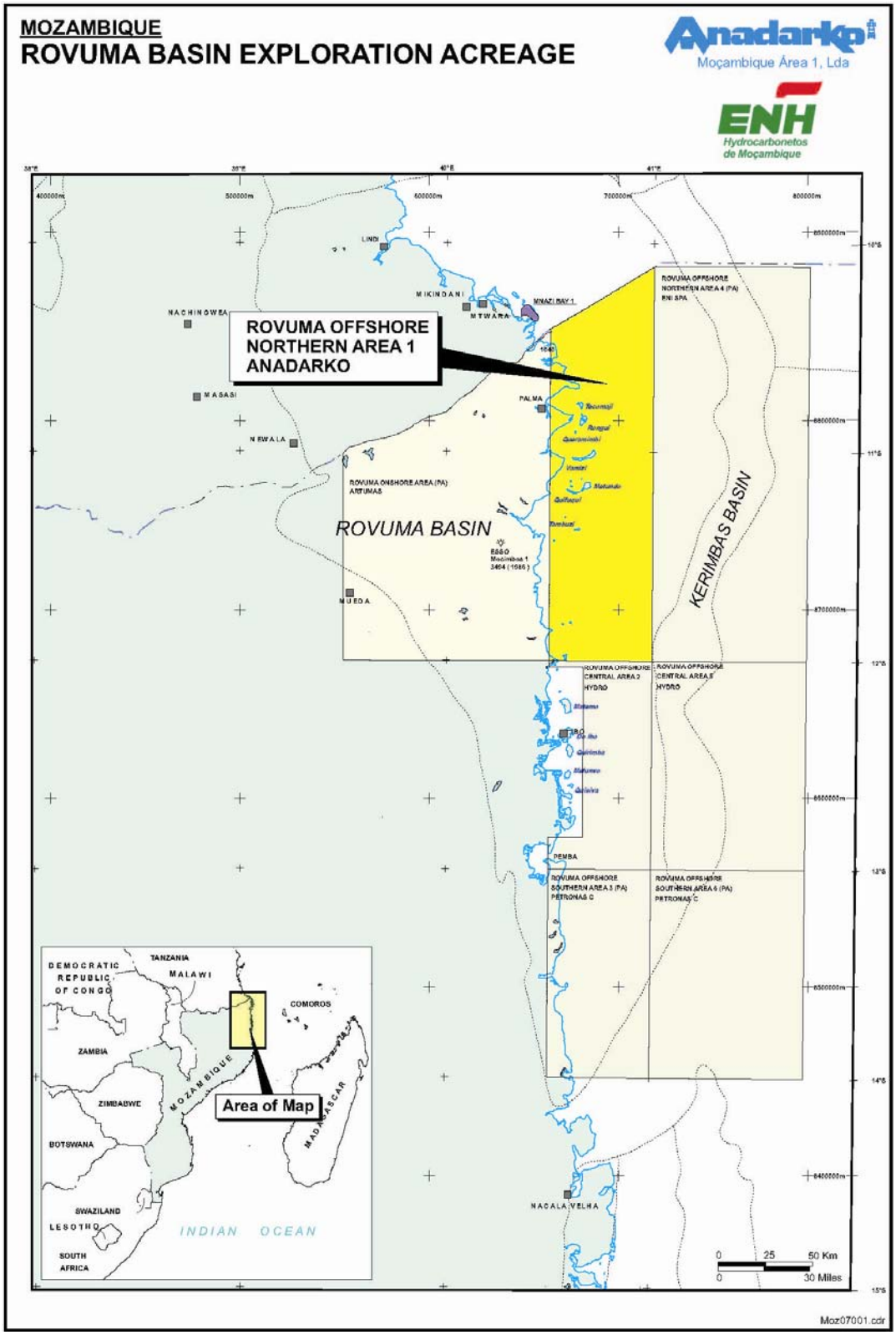
Anadarko Petroleum Company exploratory program in Mozambique Rovuma Northern Offshore Area 1 block 2.

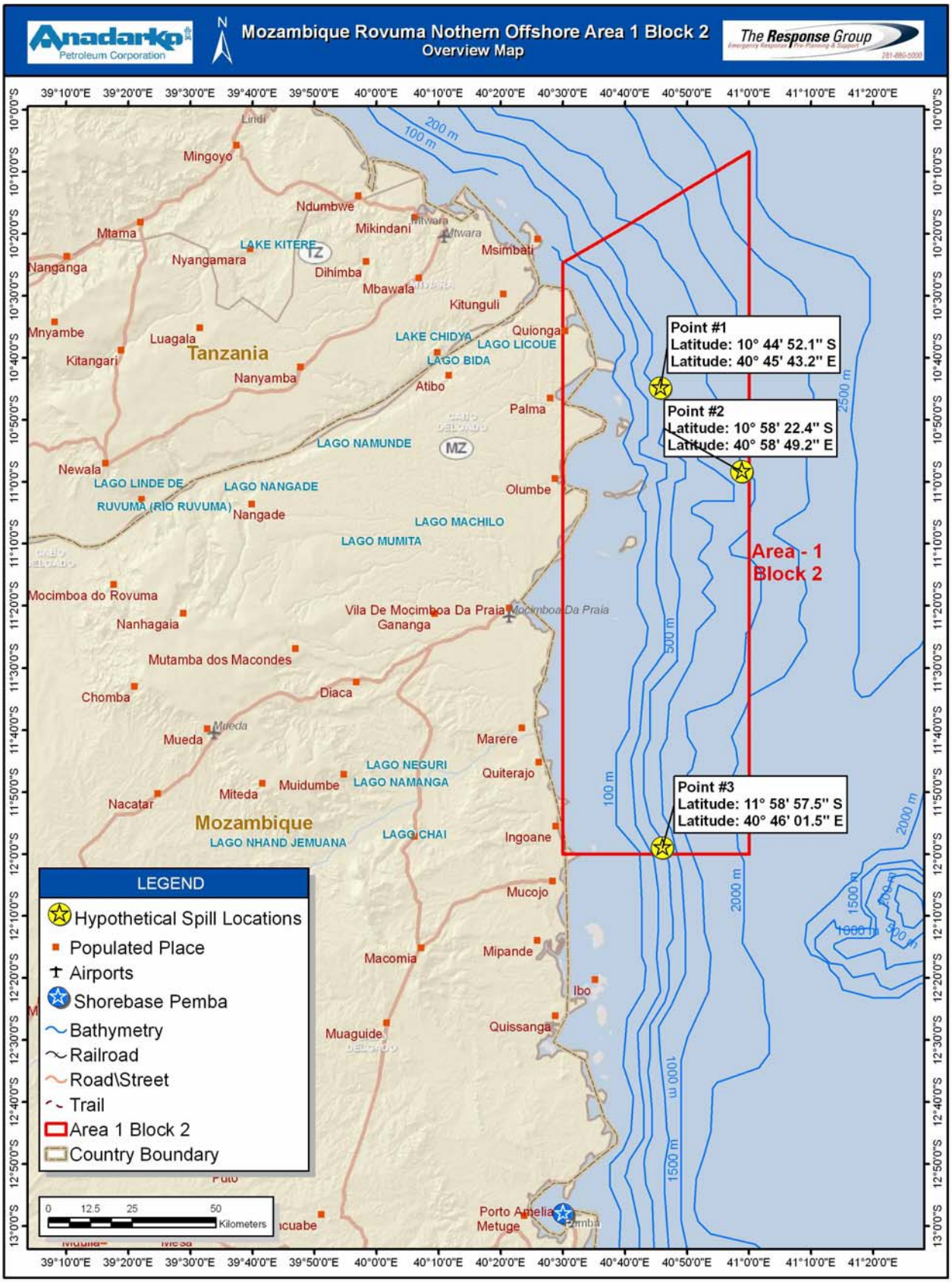
Operations will include but not limited to the following:	
	Seismic and geological operations and studies
	Environmental research
	Exploratory drilling
	Community stewardship projects

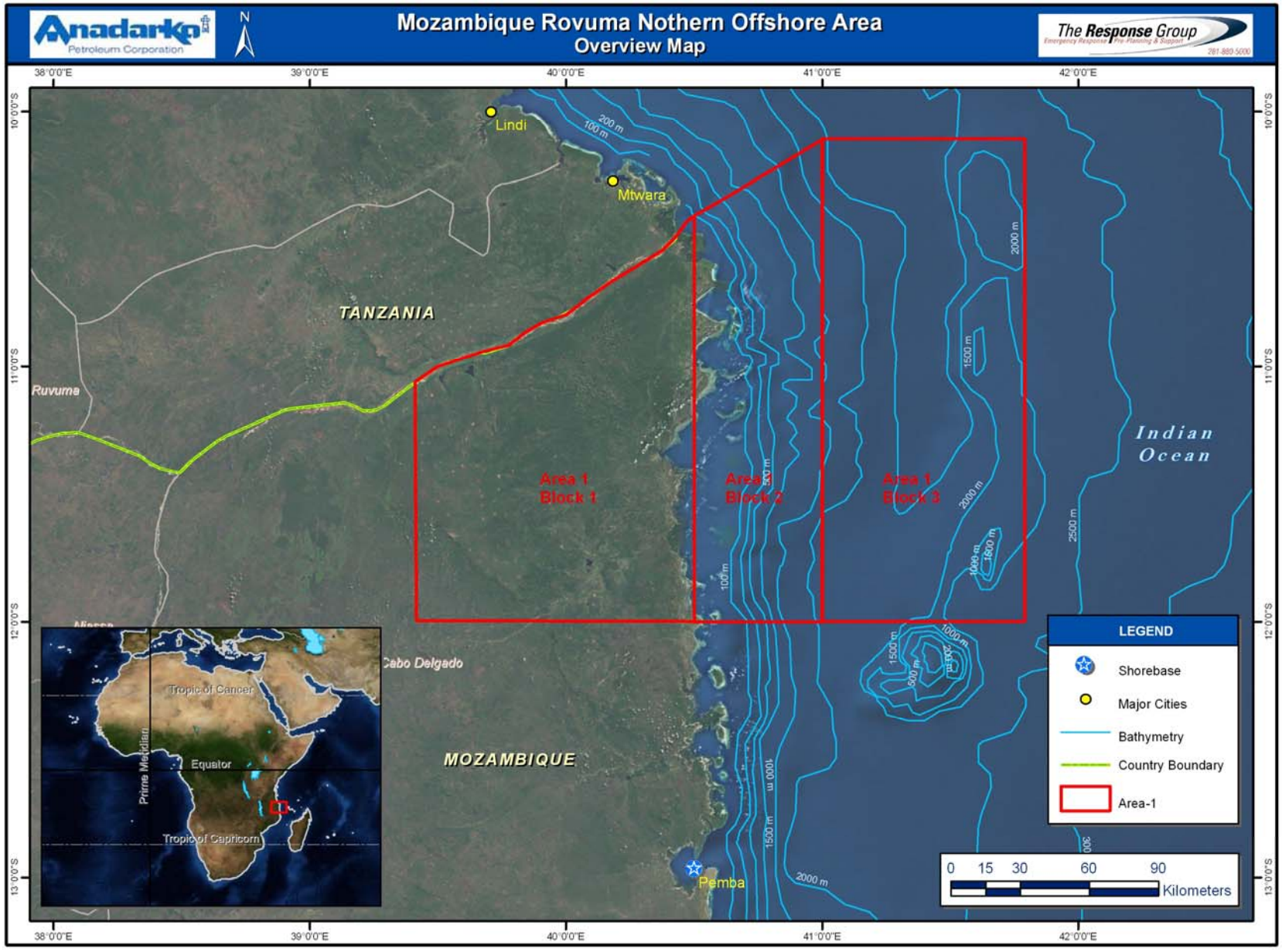
3.3 Fact Sheet – Drill Ship (To be determined)

© The Response Group – 8/2008

3.4 Facility Facts – Offshore Mozambique Overview & Staging Area Maps




Mozambique Rovuma Nothern Offshore Area 1 Block 2
Overview Map
Anadarko Petroleum Corporation
The Response Group
Point #1
Latitude: 10° 44' 52.1" S
Latitude: 40° 45' 43.2" E
Point #2
Latitude: 10° 58' 22.4" S
Latitude: 40° 58' 49.2" E
Point #3
Latitude: 11° 58' 57.5" S
Latitude: 40° 46' 01.5" E
Area - 1
Block 2
Tanzania
Mozambique
LAKE KITERE
LAKE CHIDYA
LAGO LICOUE
LAGO BIDA
LAGO NAMUNDE
LAGO LINDE DE
LAGO NANGADE
LAGO MACHILO
LAGO MUMITA
LAGO NEGURI
LAGO NAMANGA
LAGO NHAND JEMUANA
LAGO CHAI
RUVUMA (RIO RUVUMA)
Lindi
Mingoyo
Ndumbwe
Mikindani
Mtwara
Msimbati
Mtama
Nanganga
Nyangamara
Dihimba
Mbawala
Kitunguli
Mnyambe
Luagala
Kitangari
Nanyamba
Atibo
Quionga
Palma
Olumbe
Newala
Nangade
Mocimboa do Rovuma
Nanhagaia
Vila De Mocimboa Da Praia
Gananga
Mutamba dos Macondes
Chomba
Diaca
Mueda
Marere
Quiterajo
Miteda
Muidumbe
Nacatar
Ingoane
Mucojo
Macomia
Mipande
Ibo
Muaguide
Quissanga
Porto Amelia
Metuge
Pemba
LEGEND
Hypothetical Spill Locations
Populated Place
Airports
Shorebase Pemba
Bathymetry
Railroad
Road\Street
Trail
Area 1 Block 2
Country Boundary
0 12.5 25 50
Kilometers
200 m
100 m
500 m
2500 m
2000 m
1500 m
1000 m



© The Response Group – 5/2008

THIS PAGE INTENTIALLY LEFT BLANK

Section 4 – Response Procedures

4.1 Response Levels & Procedures

The purpose of this section is to quickly identify the response checklist/procedures to follow based on the type of incident that could occur, either onshore or offshore, within Anadarko Petroleum Company Mozambique operating areas. The checklists below are developed to allow the ERT the ability to make sound decisions during the initial response of an incident. The checklists are not meant to substitute for emergency response knowledge, training, or sound judgment calls and doesn't account for all circumstances.

Below are 12 categories of incidents/risks that have been identified and may occur within Anadarko's operations. Each category has a series of possible incidents listed to better define the categories.
This listing helps in identifying the types of incidents which should be evaluated for each operation, and if likely to occur, to develop an incident specific plan to properly respond to that incident. The plans should be developed based upon governmental requirements, best industry practices and Anadarko's internal requirements.

Well Control Problems
- Kick During Drilling
- Blowout of oil
- Blowout of gas
- Radioactive source loss

Evacuations
- From a remote site
- Medical
- Due to civil unrest &/or natural disaster
- Country evacuation

Security
- Civil unrest / revolution
- Strike/ labor unrest
- Kidnap / extortion
- Terrorist threat / attack
- Bomb threat / alert
- Hijacking
- War
- Criminal activity
- Piracy

Spills
- Oil spill
- Other produced product
- Chemical / refined product release
- Produced water release
- Surface or ground water impact

Natural Disasters
- Typhoons / hurricanes / tornadoes
- Floods
- Earthquakes
- Volcanic eruptions
- Forest / grass fires

Anadarko Property Loss
- Could result from any of the listed incidents in many categories

Fire and/or Explosion
- Well
- Pipeline-internal &/or external to facilities
- Facility - equipment process
- Near facility with potential to impact ops

Toxic Releases
- H_2S or SO_2 gas release
- Storage tank - explosive / toxic release
- Gas product release
- Pipeline break / rupture & release off site
- Radioactive incident or source loss

Media / Public Relations
- Could result from any of the listed incidents in many categories

Personnel
- Injury or multiple injuries
- Fatalities
- Missing person(s)
- Medical event
- Evacuation because of injury / illness

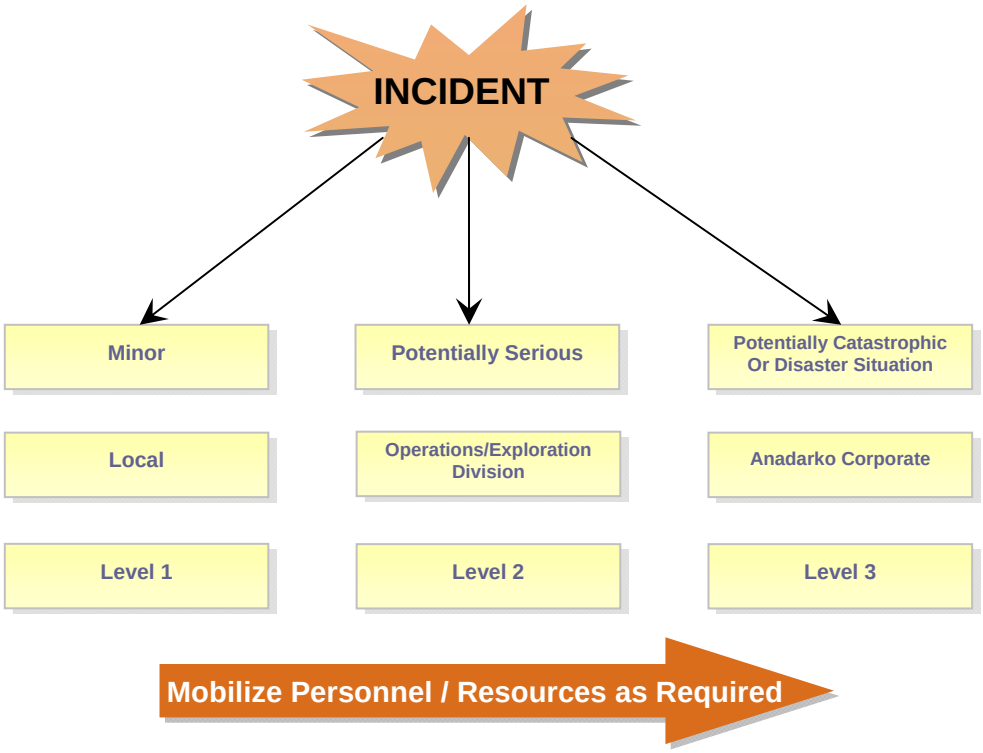
Transportation - Personnel & Equipment
- Aircraft - lost or down
- Collisions
- Vessels - work, supply, crew, or standby
- Motor vehicles - buses, autos

Public Impacts
- Public &/or private property
- Environmental impacts
- Injury - Minor or Major
- Fatality
- Third part impacts

© The Response Group & OSRL/EARL – 8/2008

4.1 Response Levels & Procedures (Cont'd)

In order to properly respond to any emergency, incidents should be classified into one of three levels. The incident level is determined by the complexity of the incident, the risks to company personnel and the public, and the impact on the environment. These level classifications will be used to communicate to all personnel within the company.



	Level 1	Level 2	Level 3
Resources	Local / Facility	External Required	National / International
Reporting Management	Area Supervisor	General Manager	Sr. VP Exploration and Production
Government Involvement	Requires Reporting w/ Minimal Follow-up	Immediate Reporting & Likelihood of Involvement	Immediate Reporting & Likelihood of Involvement
Media	Local Media Involved	Local / National Media Involved	National / International Media Involved
Public Impacts	Minor Public Injuries, Minor Environmental & Small Evacuation	Public Evac., Significant Env., Major Injuries or 1 Fatality	Major Environmental, Multiple Fatalities, Continuing Threat
Personnel Injury / Illness	1 Lost Time	Fatality or 3 or More Injuries	Multiple Injuries or Fatalities
Area of Impact	Limited to Facility	Has or May Significantly Impact Adjoining Locations	Will Impact External Locations and Pose Additional Risk to Community Locations Beyond Adjoining Locations
Material Loss	< $250,000	$250,000 to $1.5 Million	> $1.5 Million
Security	Local / Crime	Threat / Attempt to Harm Personnel / Facilities	Kidnapping, Country Crisis, Natural Disaster Interrupting Corporate Operations

© The Response Group & OSRL/EARL – 8/2008

4.1 Response Levels & Procedures (Cont'd)

Response Procedures/Checklist Table of Contents	
TYPE OF INCIDENT	
4.2	Oil Spill
4.3	Fire, Explosion, or Well Blowout
4.4	Occupational Injury & Illness
4.5	Medical or Rescue Emergency
4.6	Severe Weather
4.7	Man Overboard Incident
4.8	Evacuate/Abandon Vessel/Facility
4.9	Vessel Collision with Vessel/Facility
4.10	Bomb Threat

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill

Initial Response Checklist

Upon receiving indication of an oil spill, or other chemical release that may threaten the Waters of Mozambique, the following actions are critical to initiating and sustaining an effective response:

Detection: Anadarko company employees, contractors, and subcontractors are responsible for maintaining a vigilant watch for oil spill discharges of any magnitude and reporting all discharges to management personnel. In the event the discharge is determined to be from a Anadarko facility or operation, the person in charge (OIM and/or Senior Company Representative) as well as on duty field personnel will take immediate action which may include but is not limited to the following:

☐	Person discovering spill will: a) Sound alarm and notify Person in Charge immediately b) Shut off ignition points and restrict access to spill area; c) Isolate discharge source pending approval by Person in Charge.
☐	As quickly as possible, safely shut down the operation responsible for the discharge
☐	Conduct Hazard Assessment to determine the potential for fire, explosion, and hazardous/toxic vapors as well as to define Personal Protection Equipment (PPE) needed by responders.
☐	Identify and evacuate exclusion zone in vicinity of spill site until completion of Hazard Assessment.
☐	Initiate notification of management personnel as well as required government agencies as promptly as possible *(Notification contacts located in Section 5).*
☐	The Person in Charge will assume the duties of Incident Commander until the EMT is mobilized and will then resume duties as the On Scene Commander *(Roles & Responsibilities located in Section 6).*
☐	Use explosion proof equipment (i.e., air monitoring equipment) in high concentration vapor areas and monitor for flammable vapors until the response operation is completed.
☐	Adopt a “Safety First” attitude throughout the duration of the emergency response, and continually ensure the safety of all personnel.
☐	Notify Anadarko operations personnel (i.e., drilling/platform operators) as well as other company operations that may be impacted by the spill incident *(Notification contacts are located in Section 5).*
☐	The Person in Charge will initiate evacuation procedures in the event unsafe conditions persist to ensure personnel safety.
☐	Sample discharged material as requested by the Incident Commander by using accepted procedures to prevent sample contamination and to protect the legal validity of the sample.
☐	Initiate surveillance over flights of spill area at first light or as soon as possible with fixed wing or rotary wing aircraft to determine: a) Size and description of oil slick b) Direction of movement c) Coordinates of leading and trailing edge of oil slick d) Sensitivities endangered e) Population areas threatened
☐	Video and photograph spill area daily during surveillance over flights for documentation and operational purposes, dependent upon weather conditions.
☐	Activate the Anadarko Houston Strike Team dependent upon the severity of the emergency event.
☐	Notify Oil Spill Response Limited (OSRL) to respond to the emergency dependent upon spill response requirements (On-Water Recovery & Dispersant Operations).

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

Oil Spill Response Strategies Contents

4.2.1 Strategy Selection

The following flow chart should be used to select which main oil spill response strategy is applicable depending on the exact situation at the time of the incident.

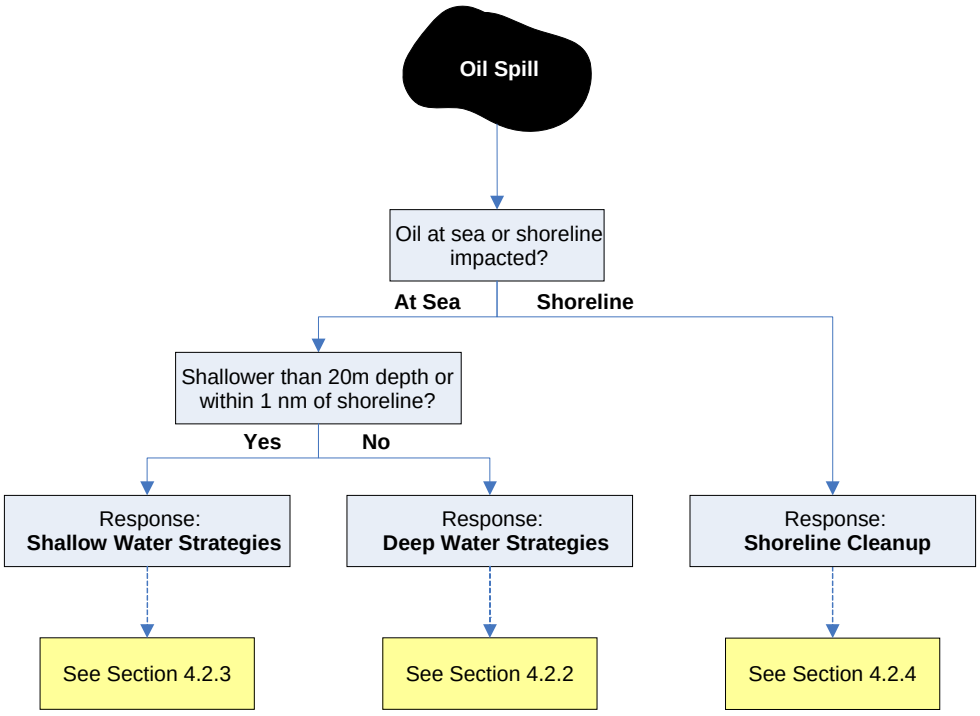


Figure 4-1: Strategy Selection Flow Chart

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.2 Deep Water Strategies Flowchart

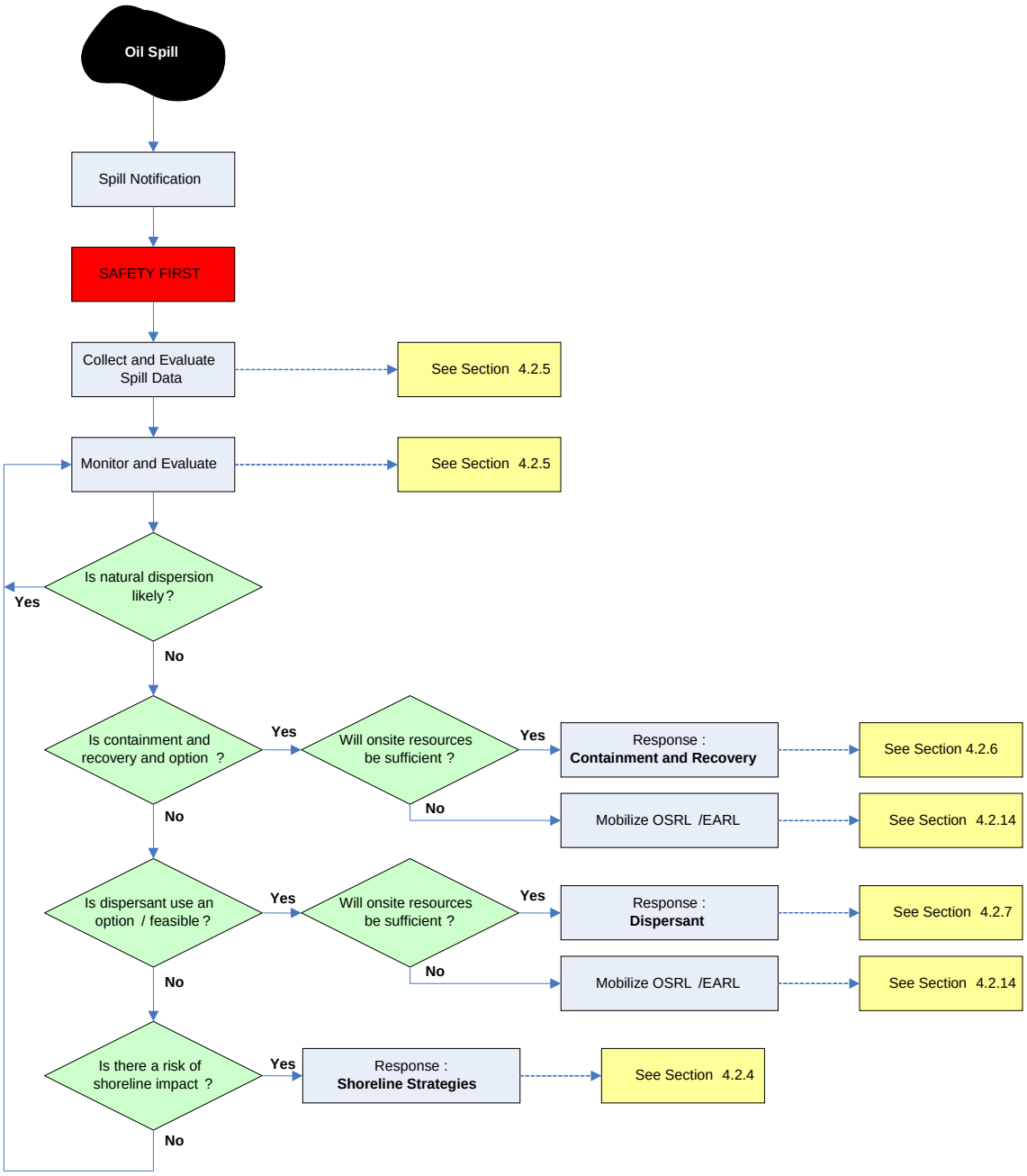


Figure 4-2: Deep Water Strategies Flow Chart

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.3 Shallow Water Strategies Flowchart

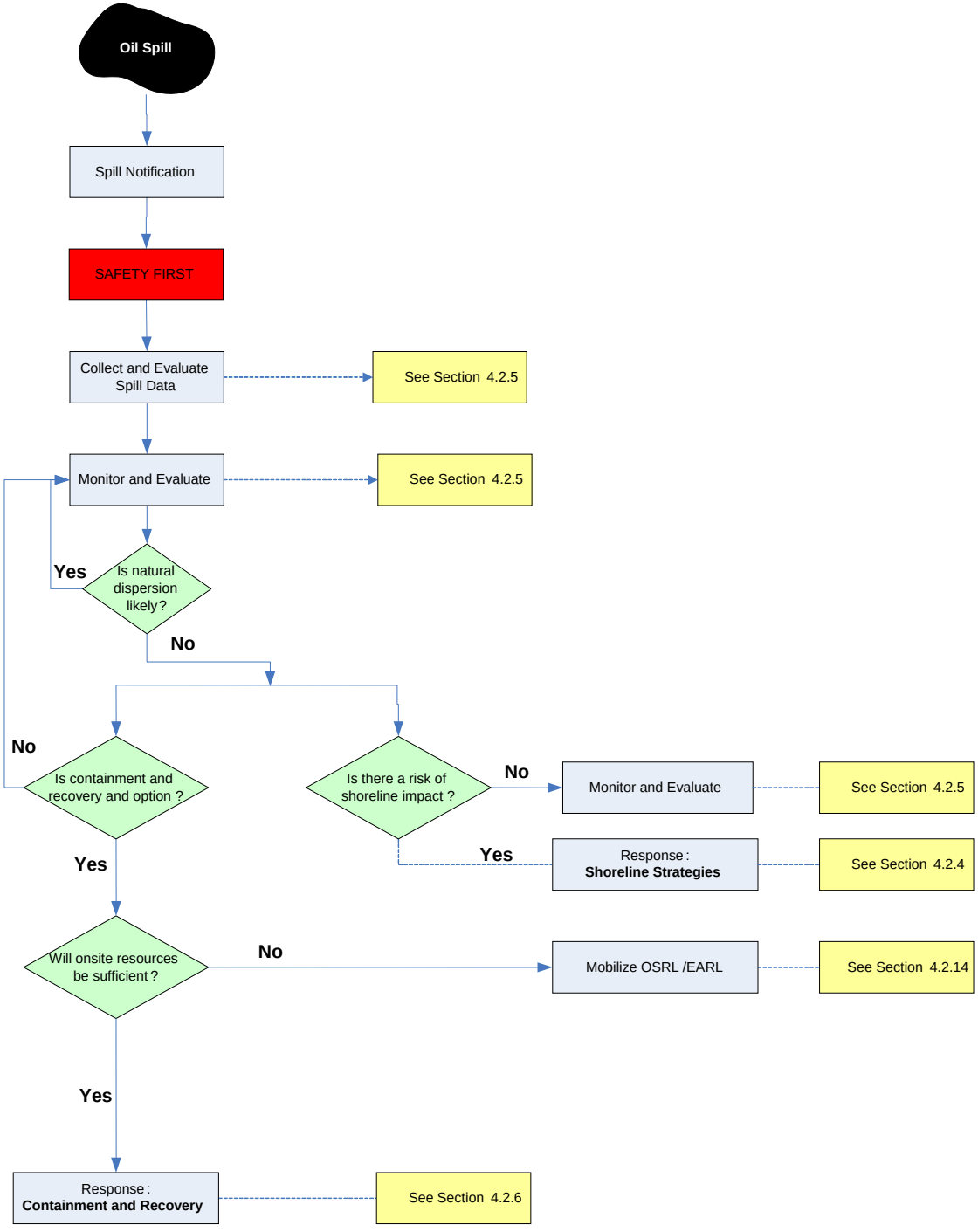


Figure 4-3: Shallow Water Strategies Flow Chart

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.4 Shoreline Cleanup Strategies Flowchart

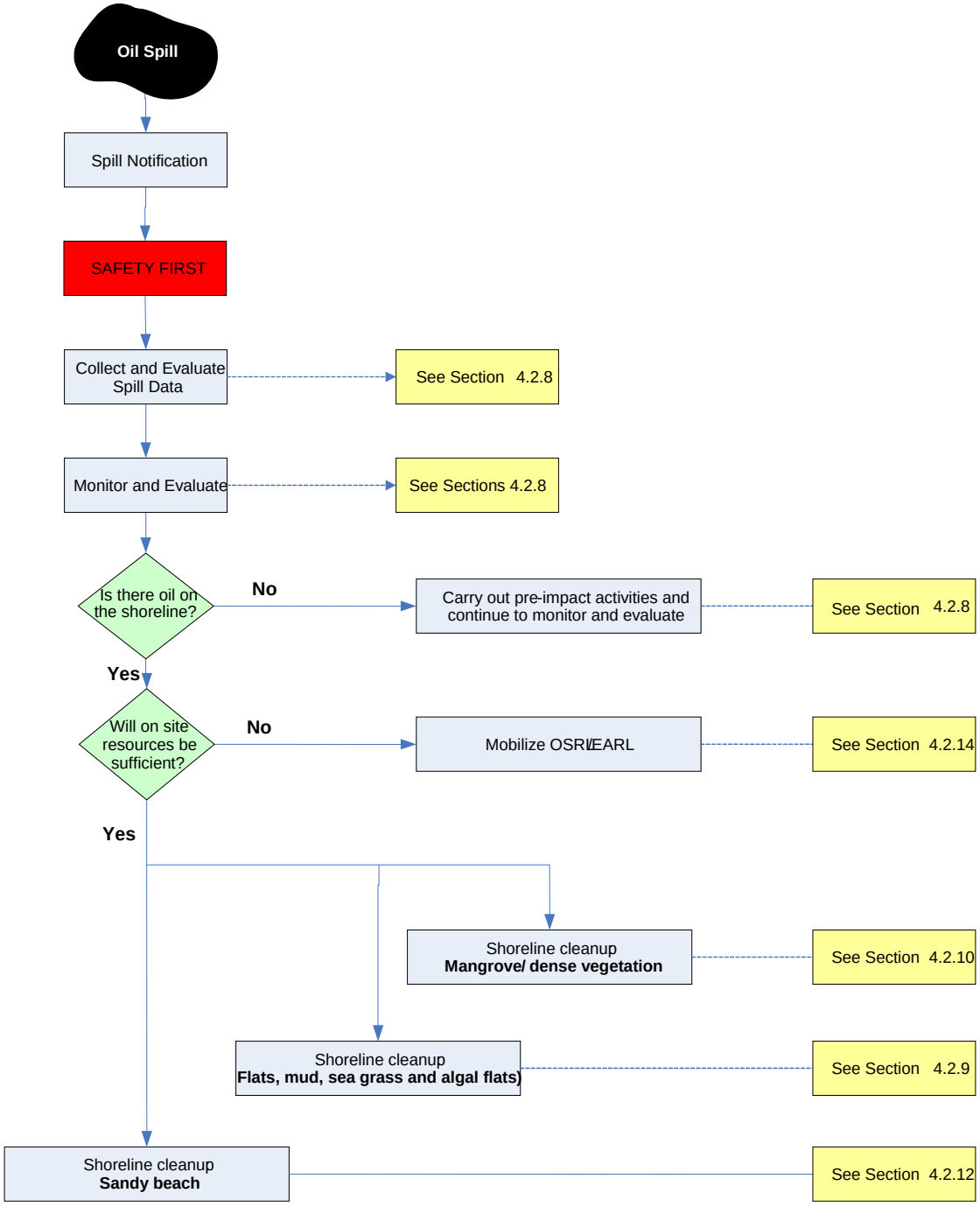


Figure 4-4: Shoreline Cleanup Strategies Flow Chart

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.5 Monitoring and Evaluation (Deep Water / Shallow Water)

4.2.5.1 Safety Considerations

Be aware of the volatile light ends and toxic gases of the oil e.g. gases such as H_2S can be potentially hazardous to life and may even be a danger during aircraft operations. Changes to a flight plan may be required to avoid the remit of the H_2S gas. Gas monitoring near the spill site / operations site will be required to detect the presence of such hazardous gases in accordance with Anadarko procedures and the guidance set out below.

Gas monitoring guidance
✓ Set up of monitors should be undertaken in accordance to manufacturer's specifications by a competent person. ✓ Ensure gas monitors are maintained by a competent person. Do not use if the monitor is not within its calibration date. ✓ Turn on gas monitors in 'clean air' before reaching site to ensure that they are reading correct background levels. ✓ Only to be use by personnel trained in the correct operation. ✓ Always use a gas monitor when you are approaching site for the first time. ✓ Approach site from up wind. ✓ Work up wind from any contaminated area and continually gas monitor. ✓ If any gas monitor alarms start ringing, remove all personnel from site until further monitoring confirms that it is safe to resume work.

4.2.5.2 Data Collection

After initial notification, data collection should be the first response to any incident following a hydrocarbon release onto water. This will enable the most suitable response strategy to be formulated. The information that needs to be collated should include, but not be limited to the following:

Oil Type and Volume	The assay sheet (contains the properties the oil) and MSDS (Material Safety Data Sheet) will primarily give safety advice and information required for both predicting the oil weathering / behavior and formulating a response plan.
Weather Conditions	These will affect the response options, safety considerations, the weathering of the oil and its trajectory.
Spill Trajectory	✓ Request a spill trajectory model from The Response Group (trajectory form found in Section 10.8). OSRL/EARL can also provide this service. This can be done at any time of the day or night. ✓ A model will give an indication of where the oil is migrating and what resources may be impacted, e.g. another rig or the shoreline. ✓ A basic trajectory can be plotted manually; on a chart, plot one point per hour using 100% of the current and 3% of the predicted wind for that time. The resultant vector represents the predicted oil trajectory:

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.5 Monitoring and Evaluation (Deep Water / Shallow Water) (Cont'd)

4.2.5.2 Data Collection (Cont'd)

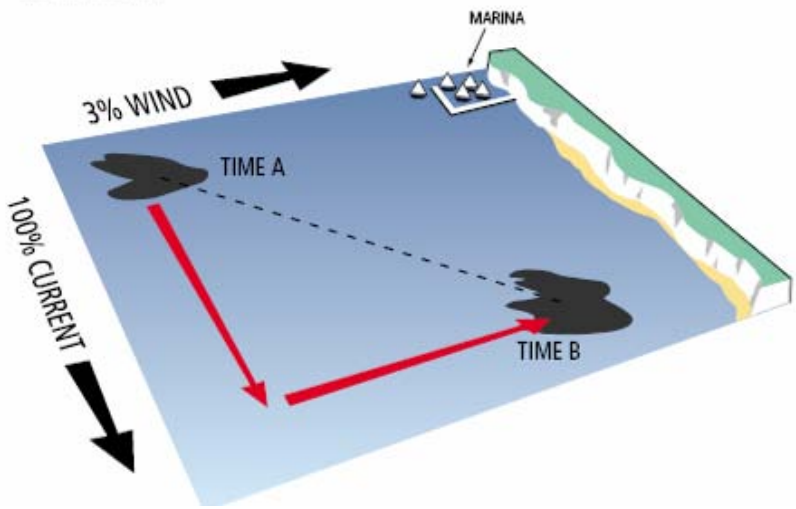


Figure 4-5 Predicting spill trajectory

4.2.5.3 Monitor and Evaluate

Oil is a naturally occurring product and, over time, will dissipate or evaporate. Especially with lighter oils that have a greater risk of explosion or release of toxic gases, if the oil is not going to impact any sensitive resources, it must be recognized that sometimes, the safest and most efficient response will be to let the product naturally dissipate. This will require regular monitoring to track the spill and ensure that other actions are taken in a timely manner if it looks likely to impact other resources, such as the coast line. Monitoring of oil spills is best carried out from a helicopter or small plane with a trained observer.

Technique	▪ Factors that should be considered when assessing oil spill movement and weathering include: ✓ Currents and tide ✓ Weather (including wind direction and speed), water temperature ✓ Spill size / volume. This can be estimated either from oil lost or from an aerial surveillance flight (see below) ✓ Type of oil spilled and its properties (viscosity, pour point, specific gravity, dispersion and evaporation. These can be found on the oil's assay sheet).

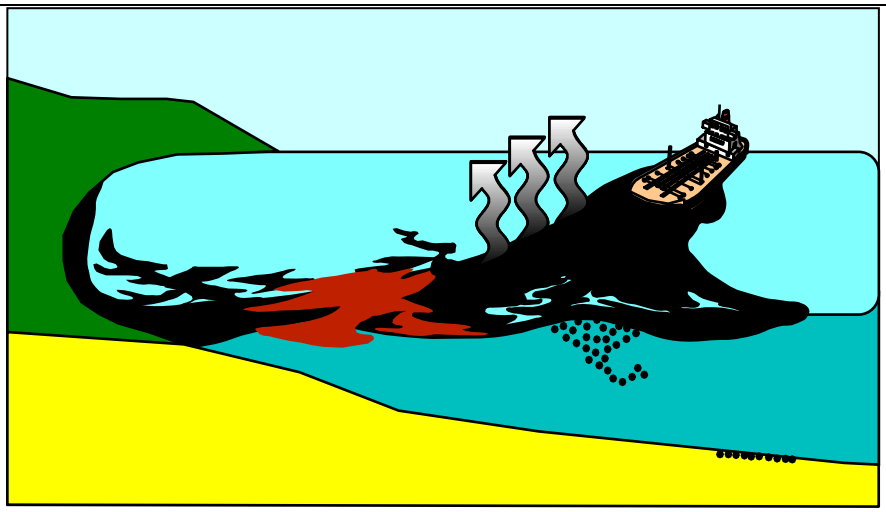
© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.5 Monitoring and Evaluation (Deep Water / Shallow Water) (Cont'd)

4.2.5.3 Monitor and Evaluate (Cont'd)

Technique (Cont'd)



- ✓ Hydrocarbons move on the water surface due to the combined influence of 100% current and 3% wind. See Figure 4-5.
- ✓ The primary aim of a surveillance flight is to estimate the location of the spill. The secondary aim is to quantify the spill. This information will help to predict where impact may occur and formulate an appropriate response strategy.
- ✓ Over flights should carried out at dawn and dusk of each day after an incident until there is not more oil at sea to be seen.
- ✓ Flight paths should be conducted in a 'ladder search pattern'.

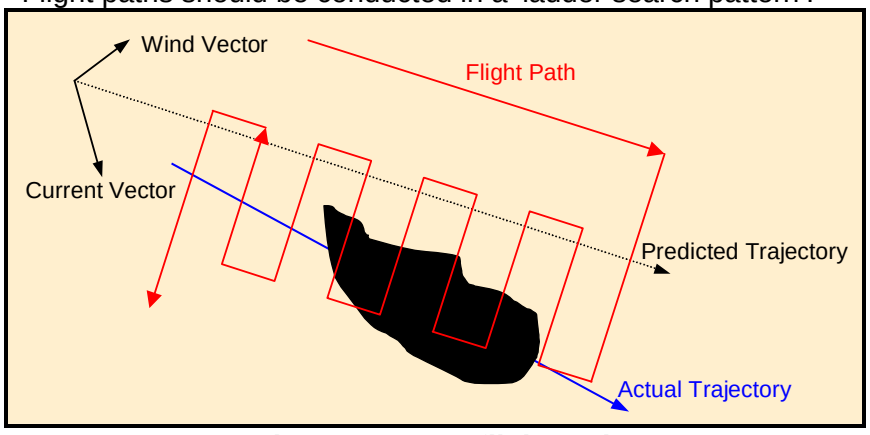


Figure 4-6 Over flight path

- ✓ All observations should be recorded, e.g. photographs, logs, GPS coordinates, etc.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.5 Monitoring and Evaluation (Deep Water / Shallow Water) (Cont'd)

4.2.5.3 Monitor and Evaluate (Cont'd)

Technique cont.

Depending on the exact incident, the spill volume may be obtainable from the source, for example by knowing the volume of the lost / damaged inventory, flow rate, etc. If the volume cannot be determined this way, it can be calculated by observing the total area covered by the spill and estimating the different thicknesses of oil from its color combined with its proportion of the overall spill area. The relationship between slick color and thickness is provided in Table 4-1.

Code	Description - Appearance	Layer Thickness Interval (µm)	Litres per km^2
1	Sheen (silvery/grey)	0.04 to 0.30	40 – 300
2	Rainbow	0.30 to 5.0	300 – 5000
3	Metallic	5.0 to 50	5000 – 50,000
4	Discontinuous True Oil Color	50 to 200	50,000 – 200,000
5	Continuous True Oil Color	> 200	> 200,000

Table 4-1 The Bonn Agreement Oil Appearance Color Code – The relationship between slick color and thickness

- ✓ Surveillance can also be undertaken from a vessel / rig, however this is not as compressive as aerial options.

Avoid

- × Avoid confusing oil with other false image observations, e.g. algal blooms, seaweed / sea grass, cloud shadow, etc.

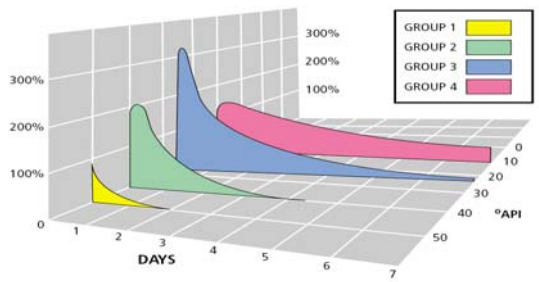
Equipment

Helicopter / fixed wing airplane, binoculars, chart / map, digital camera, GPS, sketchpad and pen.

Additional Guidance

The table below gives a useful guide to the behavior of different oil types. It is emphasized however, that this is only a guide and further oil spill computer modeling for individual product types should be carried out in the event of an incident.

Table 4-2 - Persistence guide for example products

Product	Persistence Guide
Kerosene / Jet A-1	
Gas Oil / Light Crude Oils	
Crude Oils	
Heavy Crudes / HFO	

(Source: ITOPF)

ITOPF: International Tanker Owners Pollution Federation Ltd

4.2.5.4 Waste Disposal

No waste will be generated from these activities.

4.2 Oil Spill (Cont'd)

4.2.6 Containment and Recovery Response (Deep Water / Shallow Water)

4.2.6.1 Safety Considerations

Safety considerations in this type of response include those posed by the oil e.g. toxic gas emission, risk of explosion (see product MSDS sheet), and those associated with operating at sea, using machinery and by natural hazards e.g. weather, sea, etc. If there is a risk of toxic gases or explosive gasses being present then gas monitoring should be conducted in accordance with Anadarko procedures and guidance set out below.

Gas monitoring guidance
✓ Set up of monitors should be undertaken in accordance to manufacturer's specifications by a competent person. ✓ Ensure gas monitors are maintained by a competent person. Do not use if the monitor is not within its calibration date. ✓ Turn on gas monitors in 'clean air' before reaching site to ensure that they are reading correct background levels. ✓ Only to be use by personnel trained in the correct operation. ✓ Always use a gas monitor when you are approaching site for the first time. ✓ Approach site from up wind. ✓ Work up wind from any contaminated area and continually gas monitor. ✓ If any gas monitor alarms start ringing, remove all personnel from site until further monitoring confirms that it is safe to resume work.

4.2.6.2 Containment and Recovery Options

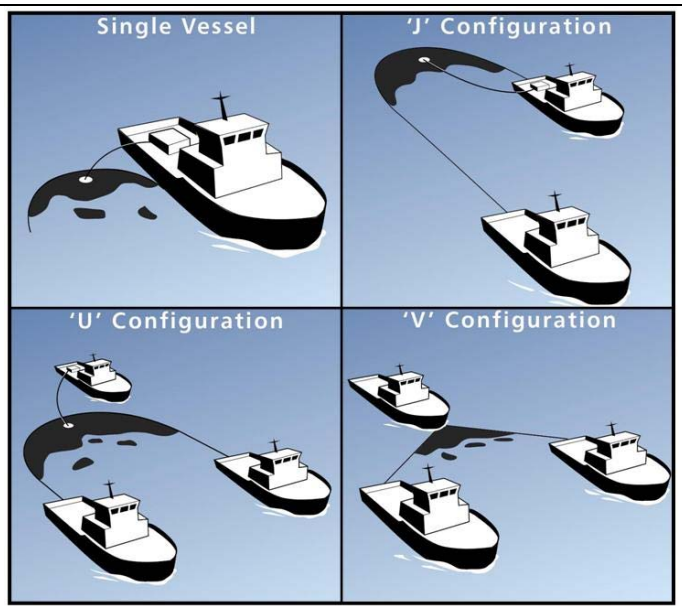
Technique	
	✓ Boom (a floating barrier) should only be deployed by personnel who have been trained in the safe operation and deployment of containment and recovery strategies. ✓ Booms should be ideally towed with the current to limit failure. ✓ Skimmer (a mechanical oil recovery device) choice will be based on the viscosity of the oil. A weir skimmer is best suited to low viscosity oils, whereas a mechanical skimmer would be better suited to high viscosity oil. Oleophilic skimmers work best with light to medium viscosity oils and have a high oil to water recovery ratio. ✓ A variety of configurations can be used for containment and recovery. The choice will depend on how many vessels and what systems are available.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.6 Containment and Recovery Response (Deep Water/Shallow Water) (Cont'd)

4.2.6.2 Containment and Recovery Options (Cont'd)

Technique (Cont'd)	 ***Figure 4-7 Possible containment and recovery options*** ✓ For offshore containment and recovery, there must be storage options available, e.g. slop tanks on the supply vessels, barges, inflatable storage barges, etc. ✓ Sorbents (material that can be used to absorb oil) could be use for absorption of very minor spills in calm conditions.
Avoid	× A boom may fail (loose oil at the apex) due to a number of possible reasons: • If the current speed is at right angles to the face of the boom and it exceeds 0.75 knots (0.36m/s). • If the boom is not flexible enough and can not flex with the swell. • If too much oil is collected in the apex of the boom it will seep underneath the boom. × Oleophilic skimmers should not be used after dispersant has been applied to the oil.
Additional Guidance	✓ Ensure there is a method for removing the oil from the boom. ✓ Ensure there is sufficient temporary storage for the oil and oily water once it has been removed from the boom by the skimmer. The figure below provides guidance on the suitability of different skimmers for different oil types

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.6 Containment and Recovery Response (Deep Water/Shallow Water) (Cont'd)

4.2.6.2 Containment and Recovery Options (Cont'd)

Additional Guidance (Cont'd)

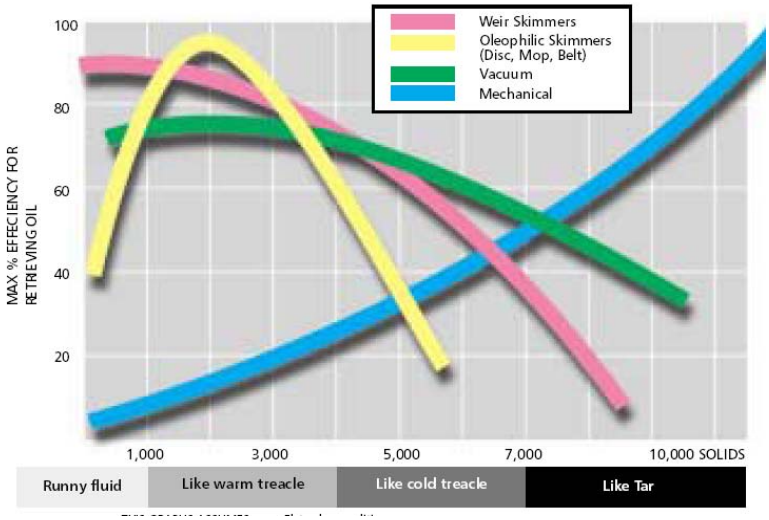


Figure 4-8 Performance of different skimmer types

✓ Following a spill incident, ensure all equipment is cleaned, serviced and consumables replaced.

4.2.6.3 Waste Disposal

Waste generated from this type of response will generate the following types of waste:

- Oil / water mix
- Oiled PPE
- Oiled debris
- Oiled sorbents

See Waste Management, Section 4.2.13, for further details.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.7 Dispersant Response (Deep Water)

4.2.7.1 Safety Considerations

Safety considerations in this type of response include those posed by the oil e.g. toxic gas emission, risk of explosion (see product MSDS sheet), and those associated with operating at sea, using machinery and by natural hazards e.g. weather, sea, etc. There will also be hazards posed by the dispersants themselves e.g. exposure of skin to the dispersants and inhalation of dispersant droplets. The dispersant MSDS sheet should be read before handling to help determine the minimum level of PPE. If there is a risk of toxic gases or explosive gasses being present then gas monitoring should be conducted in accordance with Anadarko procedures and guidance set out below.

Gas monitoring guidance
✓ Set up of monitors should be undertaken in accordance to manufacturer's specifications by a competent person. ✓ Ensure gas monitors are maintained by a competent person. Do not use if the monitor is not within its calibration date. ✓ Turn on gas monitors in 'clean air' before reaching site to ensure that they are reading correct background levels. ✓ Only to be use by personnel trained in the correct operation. ✓ Always use a gas monitor when you are approaching site for the first time. ✓ Approach site from up wind. ✓ Work up wind from any contaminated area and continually gas monitor. ✓ If any gas monitor alarms start ringing, remove all personnel from site until further monitoring confirms that it is safe to resume work.

4.2.7.2 Dispersant Application Techniques

Dispersion of oil into the water column will occur naturally under the right conditions. Dispersant is a surfactant-based chemical than can be applied onto the oil slick to enhance natural dispersion of the oil into the water column. The subsequent formation of tiny oil droplets improves the opportunity for biodegradation. Dispersant spraying requires trained and experienced personnel to assist in calculating dosages and application rates, advice on safety, and to analyze the effectiveness of the spray operation.

Technique	✓ Dispersant can be sprayed from: • A vessel with hose adaptors. Do not spray directly from fire monitors as the droplet size will be too large and penetrate through the oil, rather than settle onto the surface. • A vessel with spray arms. Ensure that the spray arms are mounted towards the bow to ensure maximum efficiency. • A helicopter carrying a dispersant spray bucket. • An aircraft (large or small) with bespoke spray arms. Accurate targeting of aerial dispersant application should be monitored by another aerial asset.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.7 Dispersant Response (Deep Water) (Cont'd)

4.2.7.2 Dispersant Application Techniques (Cont'd)

Technique (Cont'd)	✓ For modern concentrate dispersants, use an application rate of about 1: 20 – 1:50. Read manufacturers data for guidance on the correct rate. ✓ The effectiveness of the dispersant on the oil slick must be monitored, and this is best done by observing the sprayed area from the air or a vessel. The observations should be made about 30 minutes after spraying. Where there is a coffee-coloured plume in the water, this generally indicates effective dispersion of the oil. Where the oil has resurfaced there will be black patches. White clouds of dispersant in the water indicate the dispersant is not acting effectively on the oil.
Avoid	× Do not use in water depths less than 20m or within 1 nautical mile of the shoreline. × Do not use on light oils such as diesel, light products such as condensates or on sheen. Dispersants may become less efficient with oils of a higher viscosity (above 3000 – 5000 cSt) or that are emulsified. Field-testing prior to application is required on these oils, and increased and more vigilant monitoring. × Dispersant is unlikely to be effective on very heavy oils or heavily emulsified oils. × Do not spray in high winds (~35mph) or in conditions which is dangerous to do so.
Additional Guidance	✓ Ensure dispersant is approved for use by relevant authority. Appropriate authorisation must be obtained before applying any dispersant. ✓ Dispersants must be labelled, with correct health and safety supporting documentation. ✓ Ensure correct PPE is available for use by response teams. ✓ Field test effectiveness of the dispersant on the oil if there is doubt of the efficiency prior to application. ✓ Adjust the speed of vessel / aircraft and pump rate to change the dosage rate. ✓ Dispersants to be applied by spray only. Spray sets to be purpose designed to ensure correct droplet size. ✓ Following a spill incident, ensure dispersant stocks are replenished.  **Figure 4-9 Vessel delivery system**  **Figure 4-10 Airborne delivery system**

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.7 Dispersant Response (Deep Water) (Cont'd)

4.2.7.3 Waste Disposal

A small amount of waste may be generated from this response option:

- Soiled PPE
- Empty dispersant containers

See Waste Management, Section 4.2.13, for further details.

4.2.8 Data Collection, Monitoring and Evaluation (Shoreline)

4.2.8.1 Data Collection

After initial notification, data collection should be the first response to any incident following a hydrocarbon release on to water. This will enable the most suitable response strategy to be formulated. The information that needs to be collated should include, but not be limited to the following:

Oil type and volume	The assay sheet and MSDS will primarily give safety advice and formulating a response plan.
Weather conditions	These will affect the response options, safety considerations, the weathering of the oil
Spill trajectory (if oil still at sea)	Request a spill trajectory model from The Response Group (trajectory form found in Section 10.8). OSRL/EARL can also provide this service. This can be done at any time of the day or night. This will give an indication of where the oil is going and what areas, e.g. another platform or the shoreline, could become oiled / impacted. A trajectory can be plotted manually; on a chart, plot one point per hour using a vector of 100% of the current and 3% of the predicted wind for that time, or oils spill computer modeling can be requested.

4.2.8.2 Shoreline surveying

Pre-cleaning and shoreline surveying should take place, if possible, before the oil comes ashore. Basic pre-cleaning involves moving beach debris to above the high water mark and should only be done on firm substrates i.e. sandy beaches, not mud flats or mangroves. This will reduce the amount of oiled waste that needs to be disposed of. Shoreline surveying before the oil comes ashore will help the clean up return it to its original state.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.8 Data Collection, Monitoring and Evaluation (Shoreline) (Cont'd)

4.2.8.3 Monitor and Evaluate

Oil is a naturally occurring product and, over time, will dissipate or evaporate. Especially with lighter oils that have a greater risk of explosion or release of toxic gases, it must be recognized that sometimes, the safest and most efficient response will be to let the product naturally dissipate. For low energy habitats, such as mangroves, mud flats and algal flats, more harm than good can come from invasive cleaning techniques as entry to the areas will cause the oil to become entrained into the substrate. This will require regular monitoring and liaison with the local communities to help understand the response methods.

This obviously depends on the type of product, which has spilled and what resources it has impacted. Monitoring of oil spills on shorelines can be carried out by foot, boat or aircraft. Surveying by foot should only carried out over firm or solid substrates e.g. sandy or rocky beaches. Mud flats and mangroves should avoid being walked through as this will mix in the oil and damage the substrate. Be aware of the volatile light ends and toxic gases e.g. H_2S. An aircraft is a quick and efficient way to view a large amount of shoreline in a short space of time but may miss light oiling that can be seen on foot. Strategy discussions should include the advice of local stakeholders and relevant government officials.

4.2.8.4 Waste Disposal

Oiled waste is generally not generated from these activities. If there is any oiled PPE that requires disposing of from beach surveying, see Waste Management, Section 4.2.13, for further details.

4.2.9 Mudflats / Algal Flats Response Strategies (Shoreline)

4.2.9.1 Safety

Safety considerations in this type of response include those posed by the oil e.g. toxic gas emission, risk of explosion (see product MSDS sheet), by natural hazards e.g. weather, tides and machinery operation. Also be aware of personnel and equipment of becoming stuck in the mud. If there is a risk of toxic gases or explosive gasses being present then gas monitoring should be conducted in accordance with Anadarko procedures and guidance set out below.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.9 Mudflats / Algal Flats Response Strategies (Shoreline) (Cont'd)

4.2.9.1 Safety (Cont'd)

Gas monitoring guidance
✓ Set up of monitors should be undertaken in accordance to manufacturer's specifications by a competent person. ✓ Ensure gas monitors are maintained by a competent person. Do not use if the monitor is not within its calibration date. ✓ Turn on gas monitors in 'clean air' before reaching site to ensure that they are reading correct background levels. ✓ Only to be use by personnel trained in the correct operation. ✓ Always use a gas monitor when you are approaching site for the first time. ✓ Approach site from up wind. ✓ Work up wind from any contaminated area and continually gas monitor. ✓ If any gas monitor alarms start ringing, remove all personnel from site until further monitoring confirms that it is safe to resume work.

4.2.9.2 Shoreline Protection

Booms can be used to protect installations or sensitive areas from oiling and a cascade system can be used where near shore sensitive areas are at risk. Long boom lengths are required for this strategy.

Diagram	
Technique	✓ Booms can be used to redirect oil away from a sensitive site or area towards a selected location where shoreline cleanup may be easier and more effective. ✓ This may be achieved by using the cascade booming method, as in inland waterway containment. ✓ Booms can also exclude oil by providing a barrier around a resource or embayment (e.g. river mouth, lagoon entrance etc.).
Avoid	× Do not use heavy machinery to get to the shoreline, as this will cause long-term damage the structure of the flats.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.9 Mudflats / Algal Flats Response Strategies (Shoreline) (Cont'd)

4.2.9.2 Shoreline Protection (Cont'd)

Equipment	***Sorbent boom*** A sorbent boom may be deployed in areas where the current speed flows at <0.7 knots. Consider, where possible, storing sorbent booms close to areas at risk from oil spills, such as pipeline crossings. This would allow more rapid deployment in the event of a spill. Sorbent recovery is more labor intensive than other skimming methods. ***Skor Boom*** Skor Boom combines the characteristics of sorbent boom and the conventional containment boom. It is highly absorbent and can be deployed 3 times longer than conventional sorbent boom. It has a high absorbency for a wide range of crude and refined oils. ***Shore Sealing Boom*** Special booms have been designed for use in intertidal areas, which are able to move up and down with the tide and maintain a good seal between the boom and the shoreline to stop oil escaping underneath. They have an air chamber for buoyancy on top of two water ballast chambers at the base, which follow the contour of the shore / the tidal patterns when aground and form a sub-surface barrier to oil when afloat. ***Nearshore Boom*** These booms are best used in areas which are reasonably sheltered such as estuaries, rivers, shoreline, and harbors. Inflatable versions can be stored in a relatively small volume but they are prone to damage from abrasion.

4.2.9.3 Clean-up

Shoreline clean-up is usually labor intensive. Once oil is stranded onshore, a response to an oil spill normally changes from an emergency to a project and will need to be managed as such.

It is important to note that the use of inappropriate techniques and inadequate organization can aggravate rather than mitigate the extent of the damage caused by the pollution. There are three stages in the cleanup of shoreline contamination:

Stage 1 Removal of floating oil at the water's edge and thick concentrations on the shore.

Stage 2 Clean up of moderate contamination, stranded oil and oiled beach materials.

Stage 3 Clean up of lightly contaminated shorelines and final polishing (i.e. removal of oil stains).

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.9 Mudflats / Algal Flats Response Strategies (Shoreline) (Cont'd)

4.2.9.3 Clean-up (Cont'd)

Oil is a naturally occurring product and, over time, will dissipate or evaporate. Especially with lighter oils that have a greater risk of explosion or release of toxic gases, it must be recognized that sometimes, the safest and most efficient response will be to let the product naturally dissipate. Mudflats are a low energy environment and more harm than good can come from invasive cleaning techniques as entry to the areas will cause the oil to become entrained into the substrate. This will require regular monitoring and liaison with the local communities to help understand the response methods. Before attempting any shoreline clean-up operation it is most important to take guidance from recognized environmental organizations as to the most sensitive approach to adopt.

<table>
<tr><td>Technique</td><td>✓ Consult with experts familiar with the areas ecology.
✓ Use booms to protect areas not impacted.
✓ A combination of safety considerations and the possible entrainment of oil into the substrate by cleanup crews may conclude that the most effective strategy would be to allow the oil to naturally dissipate. Continue to monitor the area.
✓ Oil can be sometimes be remobilized from the shoreline by using low-pressure flushing with sea water. This is when sea water is pumped to the top of the shore and allowed to flow down to the waterline and where it can then be collected with a skimmer.
✓ Recovery operations can be carried out from a flat bottom boat.
✓ Sorbents can be used on small patches of accessible oil. Consider the use of natural sorbents to reduce the necessity of recovery and disposal the artificial sorbent materials.
✓ If approved use light equipment for manual cleanup.</td></tr>
<tr><td>Avoid</td><td>× Do not use heavy machinery or vehicles on these areas.
× Do not force oil into the substrate.
× Be aware of tidal ranges and ensure personnel are not caught out by the tide.
× People walking in these areas unless the substrate will support them and the damage is limited.</td></tr>
<tr><td>Additional Guidance</td><td>
<table>
<tr><th>Method</th><th>Light
  </th><th>Medium
  </th><th>Heavy
  </th></tr>
<tr><td>Natural</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>Low Pressure Flush</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>Manual</td><td></td><td></td><td>✓</td></tr>
<tr><td>Sorbents</td><td>✓</td><td>✓</td><td>✓</td></tr>
</table>
✓ Preferred Method ✓ Suitable for relatively small amounts of oil
</td></tr>
</table>

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.9 Mudflats / Algal Flats Response Strategies (Shoreline) (Cont'd)

4.2.9.4 Waste Disposal

Waste generated from this type of response will generate the following types of waste:

- Oil / Water mix
- Oiled PPE
- Oiled debris
- Oiled sorbents
- Oiled dead wildlife

See Waste Management, Section 4.2.13 for further details

4.2.10 Mangroves Response Strategies (Shoreline)

4.2.10.1 Safety

Safety considerations in this type of response include those posed by the oil e.g. toxic gas emission, risk of explosion (see product MSDS sheet), by natural hazards e.g. weather, tides and machinery operation. If there is a risk of toxic gases or explosive gasses being present then gas monitoring should be conducted in accordance with Anadarko procedures and guidance set out below.

Gas monitoring guidance
✓ Set up of monitors should be undertaken in accordance to manufacturer's specifications by a competent person.
✓ Ensure gas monitors are maintained by a competent person. Do not use if the monitor is not within its calibration date.
✓ Turn on gas monitors in 'clean air' before reaching site to ensure that they are reading correct background levels.
✓ Only to be use by personnel trained in the correct operation.
✓ Always use a gas monitor when you are approaching site for the first time.
✓ Approach site from up wind.
✓ Work up wind from any contaminated area and continually gas monitor.
✓ If any gas monitor alarms start ringing, remove all personnel from site until further monitoring confirms that it is safe to resume work.

4.2.10.2 Shoreline Protection

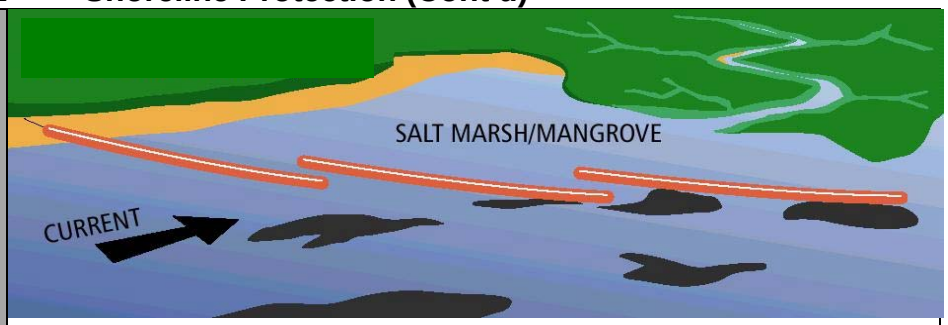
Booms can be used to protect installations or sensitive areas from oiling and a cascade system can be used where near shore sensitive areas are at risk. Long boom lengths are required for this strategy.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.10 Mangroves Response Strategies (Shoreline) (Cont'd)

4.2.10.2 Shoreline Protection (Cont'd)

Diagram	
Technique	✓ Booms can be used to redirect oil away from a sensitive site or area towards a selected location where shoreline cleanup may be easier and more effective. ✓ For example, oil could be directed away from a sensitive mangrove area towards a beach, which is easier to clean. ✓ This may be achieved by using the cascade booming method, as in inland waterway containment. ✓ Booms can also exclude oil by providing a barrier around a resource or embayment (e.g. river mouth, lagoon entrance etc.).
Avoid	× Do not use heavy machinery to get to the shoreline, as this will cause long-term damage the structure of the flats.
Equipment	***Sorbent boom*** A sorbent boom may be deployed in areas where the current speed flows at <0.7 knots. Consider, where possible, storing sorbent booms close to areas at risk from oil spills, such as pipeline crossings. This would allow more rapid deployment in the event of a spill. Sorbent recovery is more labor intensive than other skimming methods. ***Skor Boom*** Skor Boom combines the characteristics of sorbent boom and the conventional containment boom. It is highly absorbent and can be deployed 3 times longer than conventional sorbent boom. It has a high absorbency for a wide range of crude and refined oils. ***Shore Sealing Boom*** Special booms have been designed for use in intertidal areas, which are able to move up and down with the tide and maintain a good seal between the boom and the shoreline to stop oil escaping underneath. They have an air chamber for buoyancy on top of two water ballast chambers at the base, which follow the contour of the shore / tidal range when aground and form a sub-surface barrier to oil when afloat. ***Nearshore Boom*** These booms are best used in areas which are reasonably sheltered such as estuaries, rivers, shoreline, and harbors. Inflatable versions can be stored in a relatively small volume but they are prone to damage from abrasion.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.10 Mangroves Response Strategies (Shoreline) (Cont'd)

4.2.10.3 Clean up

Shoreline clean-up is usually labor intensive. Once oil is stranded onshore, a response to an oil spill normally changes from an emergency to a project and will need to be managed as such.

It is important to note that the use of inappropriate techniques and inadequate organization can aggravate rather than mitigate the extent of the damage caused by the pollution. There are three stages in the cleanup of shoreline contamination:

Stage 1 Removal of floating oil at the water's edge and thick concentrations on the shore.

Stage 2 Clean up of moderate contamination, stranded oil and oiled beach materials.

Stage 3 Clean up of lightly contaminated shorelines and final polishing (i.e. removal of oil stains).

Oil is a naturally occurring product and, over time, will dissipate or evaporate. Especially with lighter oils that have a greater risk of explosion or release of toxic gases, it must be recognized that sometimes, the safest and most efficient response will be to let the product naturally dissipate. Mangroves are a low energy environment and more harm than good can come from invasive cleaning techniques as entry to the areas will cause the oil to become entrained into the substrate. This will require regular monitoring and liaison with the local communities to help understand the response methods. Before attempting any shoreline clean-up operation it is most important to take guidance from recognized environmental organizations as to the most sensitive approach to adopt.

Technique	✓ Give priority to protection of mangroves. ✓ Consult with the experts to what (or if) a cleanup should be carried out. ✓ A combination of safety considerations and the possible entrainment of oil into the substrate by cleanup crews may conclude that the most effective strategy would be to allow the oil to naturally dissipate. Continue to monitor the area. ✓ Low pressure, salt water flushing maybe used remobilize the oil and to herd it into collection points where it can then be collected with a skimmer. ✓ If using sorbents, use natural materials, as it may be impractical to recover them. ✓ Set up devices to scare birds from the area.
Avoid	× Avoid any cosmetic cleanup. × Do not enter the area with heavy equipment. × Avoid walking/driving in the mangroves to carry out flushing. × Avoid removing any substrate, except in extreme circumstances.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.10 Mangroves Response Strategies (Shoreline) (Cont'd)

4.2.10.3 Clean up (Cont'd)

Additional Guidance	Method	Light 	Medium 	Heavy 
	Natural	✓	✓	✓
	Low Pressure Flush	✓	✓	✓
	Manual			✓
	Sorbents	✓	✓	✓
	✓ Preferred Method ✓ Suitable for relatively small amounts of oil			

4.2.10.4 Waste Disposal

Waste generated from this type of response will generate the following types of waste:

- Oil / Water mix
- Oiled PPE
- Oiled debris
- Oiled sorbents

See Waste Management, Section4.2.13 for further details

4.2.11 Sandy Beach Response Strategies (Shoreline)

4.2.11.1 Safety

Safety considerations in this type of response include those posed by the oil e.g. toxic gas emission, risk of explosion (see product MSDS sheet), by natural hazards e.g. weather, tides and machinery operation. If there is a risk of toxic gases or explosive gasses being present then gas monitoring should be conducted in accordance with Anadarko procedures and guidance set out below.

Gas monitoring guidance
✓ Set up of monitors should be undertaken in accordance to manufacturer's specifications by a competent person.
✓ Ensure gas monitors are maintained by a competent person. Do not use if the monitor is not within its calibration date.
✓ Turn on gas monitors in 'clean air' before reaching site to ensure that they are reading correct background levels.
✓ Only to be use by personnel trained in the correct operation.
✓ Always use a gas monitor when you are approaching site for the first time.
✓ Approach site from up wind.
✓ Work up wind from any contaminated area and continually gas monitor.
✓ If any gas monitor alarms start ringing, remove all personnel from site until further monitoring confirms that it is safe to resume work.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

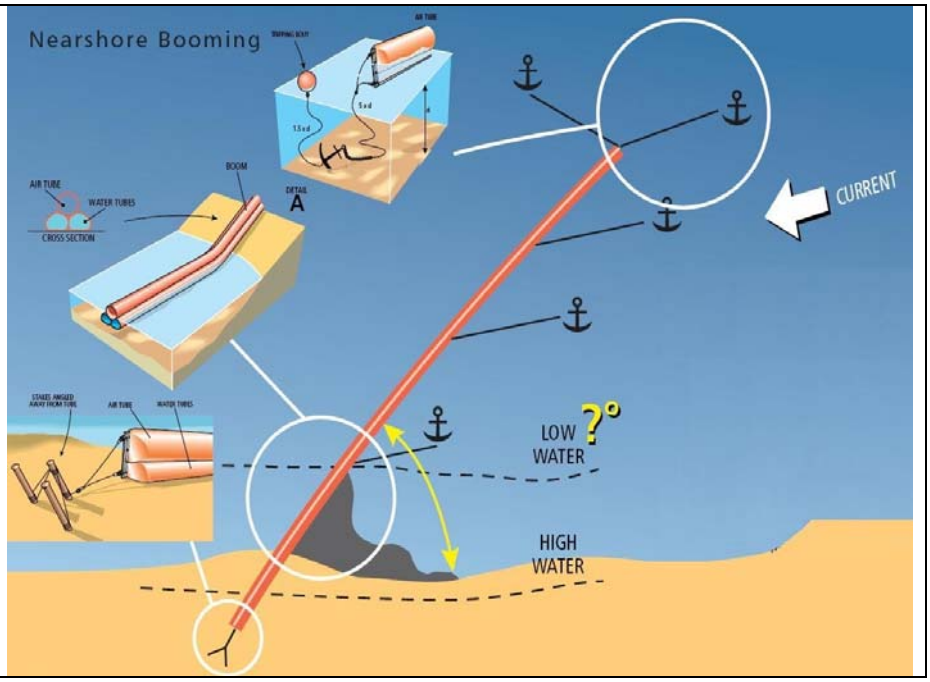
4.2.11 Sandy Beach Response Strategies (Shoreline)

4.2.11.1 Safety

Gas monitoring guidance
✓ Set up of monitors should be undertaken in accordance to manufacturer's specifications by a competent person.
✓ Ensure gas monitors are maintained by a competent person. Do not use if the monitor is not within its calibration date.
✓ Turn on gas monitors in 'clean air' before reaching site to ensure that they are reading correct background levels.
✓ Only to be use by personnel trained in the correct operation.
✓ Always use a gas monitor when you are approaching site for the first time.
✓ Approach site from up wind.
✓ Work up wind from any contaminated area and continually gas monitor.
✓ If any gas monitor alarms start ringing, remove all personnel from site until further monitoring confirms that it is safe to resume work.

4.2.11.2 Shoreline Protection

Booms can be used to protect installations or sensitive areas from oiling and a cascade system can be used where nearshore sensitive areas are at risk. Long boom lengths are required for this strategy.

Diagram	

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.11 Sandy Beach Response Strategies (Shoreline) (Cont'd)

4.2.11.2 Shoreline Protection (Cont'd)

Technique	✓ Booms can be used to redirect oil away from a sensitive site or area towards a selected location where shoreline cleanup may be easier and more effective. ✓ For example, oil could be directed away from a sensitive mangrove area towards a firm, sandy beach, which is easier to clean. ✓ This may be achieved by using the cascade booming method, as in inland waterway containment. ✓ Booms can also exclude oil by providing a barrier around a resource or embayment (e.g. river mouth, lagoon entrance etc.).
Avoid	× Do not use heavy machinery to get to the shoreline, as this will cause long-term damage the structure of the flats.
Equipment	***Sorbent boom*** A sorbent boom may be deployed in areas where the current speed flows at <0.7 knots. Consider, where possible, storing sorbent booms close to areas at risk from oil spills, such as pipeline crossings. This would allow more rapid deployment in the event of a spill. Sorbent recovery is more labor intensive than other skimming methods. ***Skor Boom*** Skor Boom combines the characteristics of sorbent boom and the conventional containment boom. It is highly absorbent and can be deployed 3 times longer than conventional sorbent boom. It has a high absorbency for a wide range of crude and refined oils. ***Shore Sealing Boom*** Special booms have been designed for use in intertidal areas, which are able to move up and down with the tide and maintain a good seal between the boom and the shoreline to stop oil escaping underneath. They have an air chamber for buoyancy on top of two water ballast chambers at the base, which follow the contour of the shore when aground and form a sub-surface barrier to oil when afloat. ***Nearshore Boom*** These booms are best used in areas which are reasonably sheltered such as estuaries, rivers, shoreline, and harbors. Inflatable versions can be stored in a relatively small volume but they are prone to damage from abrasion.

4.2.11.3 Clean up

Shoreline clean-up is usually labor intensive. Once oil is stranded onshore, a response to an oil spill normally changes from an emergency to a project and will need to be managed as such.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.11 Sandy Beach Response Strategies (Shoreline) (Cont'd)

4.2.11.3 Clean up (Cont'd)

It is important to note that the use of inappropriate techniques and inadequate organization can aggravate rather than mitigate the extent of the damage caused by the pollution. There are three stages in the cleanup of shoreline contamination:

Stage 1 Removal of floating oil at the water's edge and thick concentrations on the shore.

Stage 2 Clean up of moderate contamination, stranded oil and oiled beach materials.

Stage 3 Clean up of lightly contaminated shorelines and final polishing (i.e. removal of oil stains).

Oil is a naturally occurring product and, over time, will dissipate or evaporate. Especially with lighter oils that have a greater risk of explosion or release of toxic gases, it must be recognized that sometimes, the safest and most efficient response will be to let the product naturally dissipate. In a low energy environment and more harm than good can come from invasive cleaning techniques as entry to the areas will cause the oil to become entrained into the substrate. This will require regular monitoring and liaison with the local communities to help understand the response methods. Before attempting any shoreline clean-up operation it is most important to take guidance from recognized environmental organizations as to the most sensitive approach to adopt.

Technique	✓ Consider seasonal effect on amenity/ecological impact to determine level of cleanup required. ✓ For severe oiling, boards maybe fitted to mechanical equipment to herd the oil into storage areas. Ensure temporary storage pits are lined. ✓ With heavy oils, it is often the preferred option to manually remove the oil and oily sand. Earthmoving equipment may be used if the beach will support it. With lighter oils, such as light crudes, the surface oil can be mobilized by flushing the beach with high volumes of salt water. Lightly contaminated sand can also be moved into surf, if available. This will use natural energy within the surf to remove the oil from the sand.
Avoid	× Over cleaning or removing any more sand that is necessary. Removal may increase beach erosion and will increase disposal issues. × Machinery or personnel running over contaminated beach and pushing oil into the substrate. × Digging storage pit below the high waterline. × Avoid burying the oil in the sand. × High-pressure washing. × Re-oiling of adjacent beaches. Use booms to keep oil on site. × Avoid cross contamination of oil into clean areas. Set up clean down areas. × Disturbing wildlife especially in breeding seasons

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.11 Sandy Beach Response Strategies (Shoreline) (Cont'd)

4.2.11.3 Clean up (Cont'd)

Additional Guidance	Method	Light 	Medium 	Heavy 
	Natural	✓	✓	✓
	Low Pressure Flush	✓	✓	
	Manual	✓	✓	✓
	Mechanical		✓	✓
	Surf wash	✓	✓	✓
	Sorbents		✓	✓
	✓ Preferred Method ✓ Suitable for relatively small amounts of oil			

4.2.11.4 Waste Disposal

Waste generated from this type of response will generate the following types of waste:

- Oil / Water mix
- Oil / sand mix
- Oiled PPE
- Oiled debris
- Oiled sorbents

See Waste Management, Section 4.2.13, for further details.

4.2.12 Wildlife Protection Strategies (Shoreline)

4.2.12.1 Safety

Safety considerations in this type of response include those posed by the oil e.g. toxic gas emission, risk of explosion (see product MSDS sheet), by natural hazards e.g. weather, tides and machinery operation and by the handling of wildlife. The handling of wildlife is best left to experienced personnel as this will also reduce the stress that the animals can be put under whilst being handled. If there is a risk of toxic gases or explosive gasses being present then gas monitoring should be conducted in accordance with Anadarko procedures and guidance set out below.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.12 Wildlife Protection Strategies (Shoreline) (Cont'd)

4.2.12.1 Safety (Cont'd)

Gas monitoring guidance
✓ Set up of monitors should be undertaken in accordance to manufacturer's specifications by a competent person. ✓ Ensure gas monitors are maintained by a competent person. Do not use if the monitor is not within its calibration date. ✓ Turn on gas monitors in 'clean air' before reaching site to ensure that they are reading correct background levels. ✓ Only to be use by personnel trained in the correct operation. ✓ Always use a gas monitor when you are approaching site for the first time. ✓ Approach site from up wind. ✓ Work up wind from any contaminated area and continually gas monitor. ✓ If any gas monitor alarms start ringing, remove all personnel from site until further monitoring confirms that it is safe to resume work.

4.2.12.2 Wildlife at Risk

See Section 8.2 for details on environmental and wildlife at risk.

Technique	✓ Hazing – by scaring birds away it prevents them from becoming oiled. These can be done with noise devices (e.g. propane cannons, guns, horns) or with visual devices (e.g. helium balloons, strings of bunting, stationary figures). Hazing should be performed pre-impact as well as after impacted. ✓ Fencing and netting can be placed around small areas of contamination to prevent wildlife from wandering in and becoming oiled.
Avoid	× Avoid handling wildlife as this can cause extreme stress to the animals. × Do not use hazing around nesting areas as this will only serve to keep the adults away from feeding their young. × Vary the methods of hazing to avoid the birds getting too acclimatized to one type. × Spill response boat handlers should take care to avoid manatees when they are operating in manatee habitats.
Additional Guidance	Experienced oiled wildlife responders should be used to handle all wildlife related issues, including capture, cleaning and rehabilitation.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.12 Wildlife Protection Strategies (Shoreline) (Cont'd)

4.2.12.3 Waste Disposal

Hazing should not generate any waste but a full wildlife response will generate the following types of waste:

- Oil / water / detergent mix
- Oiled PPE
- Oiled / dead wildlife
- Oiled debris
- Other biological wastes such as food scraps.

See Waste Management, Section 4.2.13, for further details

4.2.13 Waste Management (Deep Water / Shallow Water / Shoreline)

Most oil spill operations, particularly those onshore, result in the collection of oil and oily debris, which must eventually be dealt with and disposed of in such a way to cause as minimal impact as possible for the future.

Waste management is a major logistics issue during a large oil spill and can impact the entire response operation by causing delays and increasing costs unless suitable arrangements can be made. If there is no temporary storage to deposit recovered oil, the recovery process will have to come to a halt. Similarly, if there is no transport to take oily waste away, the temporary storage facilities will become full and the response operations will have to come to an end. Oily waste is classified as a hazardous substance under Marplot 73/78 and also by Anadarko

4.2.13.1 Waste Streams

Waste collected as part of an oil spill response usually falls into one of the following five waste streams and stored accordingly:

- Oily Liquids
  - Emulsified
  - Non Emulsified
- Oil Solids
  - Biodegradable
  - Non-biodegradable
  - Sand/Pebbles

All oily waste needs to be kept in rain proof and leak proof containers for no more than 180 days. Each container must be labeled in accordance to Anadarko's procedures with contents, hazardous waste warnings, generator information and storage start date. All documents generated regarding the waste, including logs, manifest and movement forms must be kept at the facility of nearest office for no less than three years.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.13 Waste Management (Deep Water / Shallow Water / Shoreline) (Cont'd)

4.2.13.2 The Waste Hierarchy Model

A useful model for dealing with a waste stream originating from any source is the 'waste hierarchy' concept (See Figure 4.11 below). It provides a tool for structuring a waste management strategy and can be used as a model for all operations.

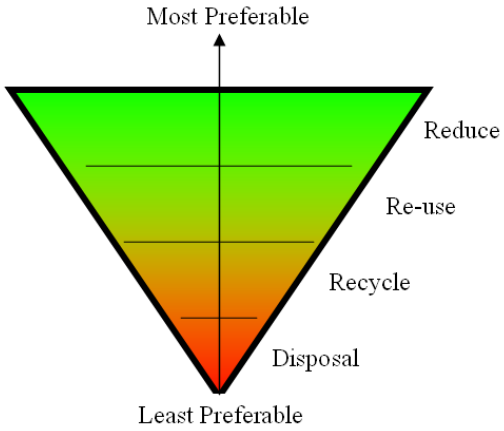


Figure 4.11 - The Waste Management Hierarchy Model

4.2.13.3 Reduce

The volume of oil spill waste can be reduced by following some basic principles:

- If oil is likely to impact an area, move all items that could become oily waste to an area that will not become impacted e.g. above the high water mark. This reduces the amount of oily waste, which requires recovery.
- Recognize the types of waste streams and plan your waste response to cope with these streams. Have a separate waste container for each type of waste stream.
- Set up temporary storage areas in anticipation of a final waste strategy. Guidance on temporary storage solutions is shown below.
- Plan the transport strategy.

4.2.13.4 Re-use

There are current no facilities in Mozambique with the ability to reuse recovered oils.

4.2.13.5 Recycle

No facilities are known to exist within Mozambique for the recycling for oil and oily wastes.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

4.2.13 Waste Management (Deep Water / Shallow Water / Shoreline) (Cont'd)

4.2.13.6 Direct Disposal

At the time of writing, the sole method for disposal of oily waste from operations in Mozambique is via direct disposal in landfill. This will be done through a contractor. As soon as it is suspected that significant quantities of oily waste are to be generated, it will be necessary to liaise with the waste contractor to ensure that this does not hold up the response chain. Waste generated at sea will be transferred to the waste contractor at Pemba Port. Transportation for waste generated on the shoreline from an oil spill should be discussed with the waste contractor on a case by case basis.

4.2.13.7 Transport and Temporary Storage

Transport of material to a disposal site can become a major cost item. It is therefore beneficial to reduce the amount of material to be transported by separating oil from water and sand during temporary storage. Water-in-oil emulsions can be broken up to liberate water, oil seeping from heaped beach material and debris can be collected in a ditch surrounding the storage area and sieving techniques can be used to separate clean sand.

Methods of transport to final disposal site include vacuum tankers, polythene-lined skips, refuse trucks, open topped tipper trucks etc. Methods of transport along a shoreline include dumpster trucks, front-end loaders, rough terrain vehicles etc. (N.B. Beware of risk of secondary contamination of roads by restricting these vehicles to the beach until they have been cleaned.). Oily waste must only be transported by an authorized and certified carrier in accordance with Anadarko's procedures.

Item	Guidance
Flexible open topped tank	Suitable for initial storage to allow operation to start. Not movable when full. Therefore, an additional transfer required. Primary use with low capacity skimmers up to 10 t/hr.
Flexible pillow tanks	With pallet support - Suitable for initial storage to start operation. Can be moved provided suitable lifting equipment available. May be difficult to remove heavy mousse from tank. Suitable for low capacity skimmers up to 10 t/hr. No pallet support - Suitable for initial storage to allow start of operation. Not movable when full. Therefore, additional transfer required - danger of being unable to remove heavy mousse once inside tank.
Polythene sheets	Continuous polythene tubing cut into lengths and sealed at end. Suitable for initial or emergency storage. Unsuitable for transportation unless very well supported - intended for single use and then disposal. Used for lining containers, skips and pits to prevent escape of oil and gross secondary contamination.

© The Response Group & OSRL/EARL – 8/2008

4.2 Oil Spill (Cont'd)

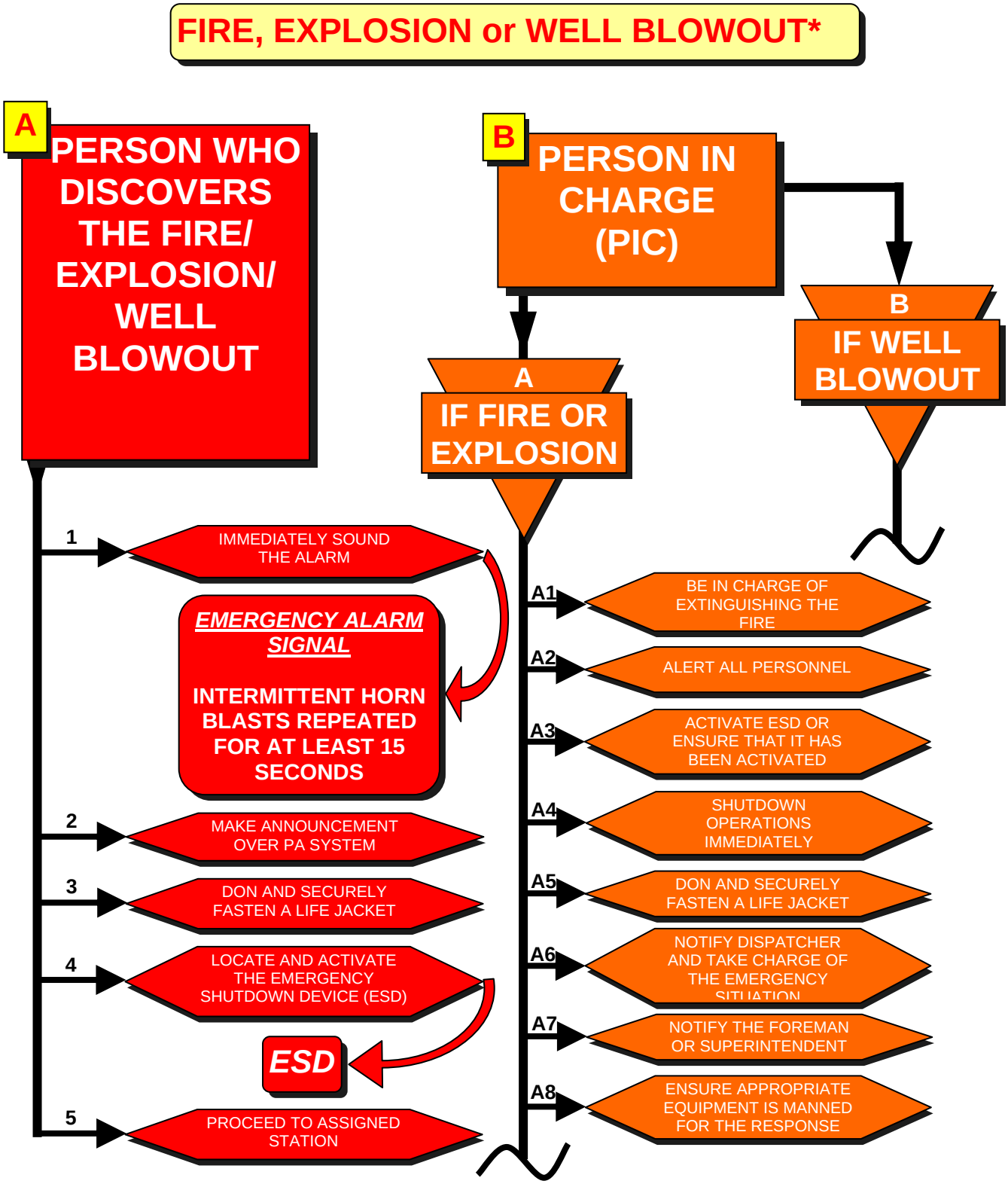
4.2.13 Waste Management (Deep Water / Shallow Water / Shoreline) (Cont'd)

4.2.13.7 Transport and Temporary Storage (Cont'd)

Item	Guidance
Buoyant rubber storage tanks	Suitable for initial storage for operations at sea. May be problems in removing mousse from them. Suitable for low to medium capacity skimming operations up to 50 t/hr, depending on size of tank.
Mobile road tanks	Well suited for operations close to the shore, especially when quays are available. They allow efficient transportation of recovered oil to disposal points. They are also used to recover oil from primary storage vessels, rubber tanks, barges, pillow tanks, etc.
Barges	Normally suitable for both small and large capacity skimmers not only because of their capacity, but also because they can provide a stable working platform from which skimmers can be operated safely.
Oil tankers	Suitable for very large spills - normally best used to collect oil already recovered in barges etc. If recovery systems with very large capacity (500 t/hr) are used, small coastal tankers will need to be used as primary storage.
Ships tanks	It is rare that masters will permit the use of their spare tankage for the reception of recovered oil. However, in a number of areas where boats have been previously identified as oil recovery vessels, some tankage is set aside for handling recovered oil.
Movable open top tanks	Suitable as first storage in separating heavily oiled solids from the bulk of the waste oil by use of coarse sieves of wire mesh. These should be covered if expecting rain as an influx of rainwater will increase amount of waste.
Plastic bags (heavy duty)	Ideally suited when clearing beaches etc. by hand. They can be manhandled when full and moved well away from the high water line for collection.
Open topped barrels	Providing some lifting facilities are available, they can be suitable for collecting debris from beaches and transporting full plastic bags to central storage/disposal areas.
Skips	Very robust containers ideally suited for the transportation of oil contaminated solid debris to disposal sites. Can be transported on boats/landing craft to get to isolated sites. If possible, line with plastic sheet. Cover if expecting rain.
Temporary storage pits	Need to be lined with plastic sheets to prevent contamination of the substrate and seepage into ground waters. Where sharp rocks/protrusions may cause damage to sheet, pre-line with sand to provide a smooth surface. Should be close to major clean-up sites to act as temporary reception for contaminated solid debris. It is recommended that pits are constructed in areas with impermeable substrate or subsoil. The excavated pit should have a flat bottom and a layer of water forming the base.

© The Response Group & OSRL/EARL – 8/2008

4.3 Fire, Explosion, or Well Blowout

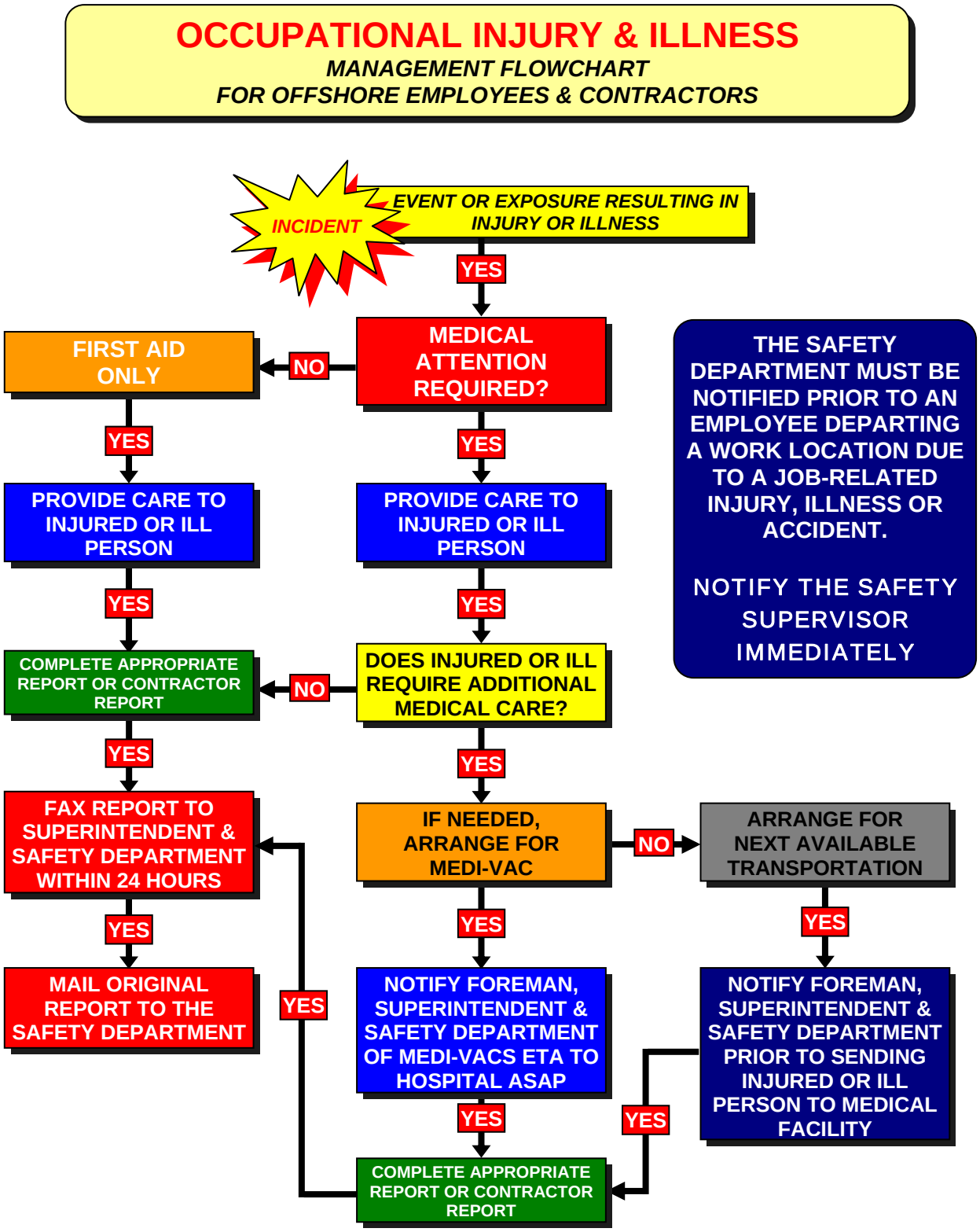


© The Response Group & OSRL/EARL – 8/2008

4.3 Fire, Explosion, or Well Blowout (Cont'd)

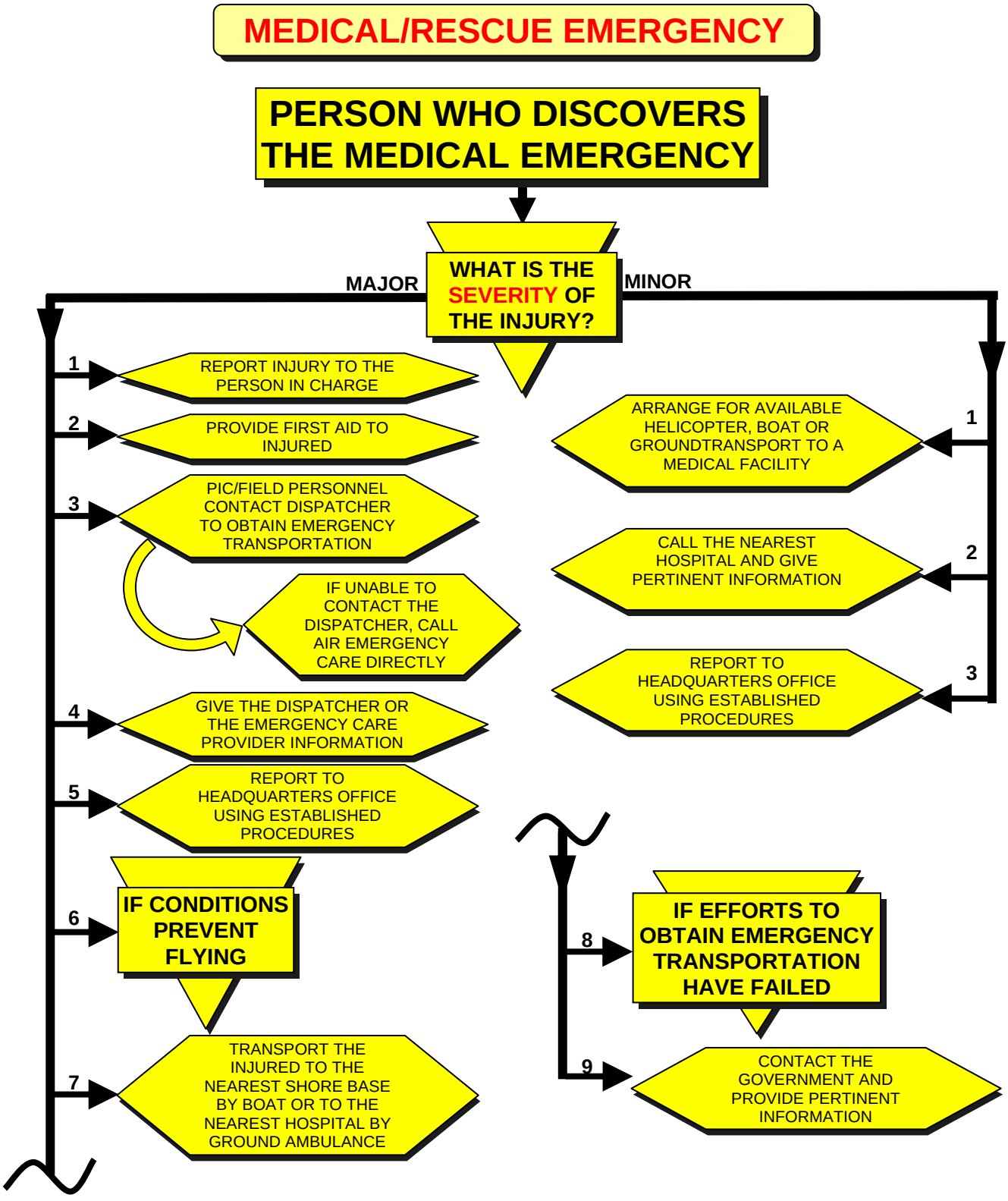
© The Response Group & OSRL/EARL – 8/2008

4.4 Occupational Injury and Illness



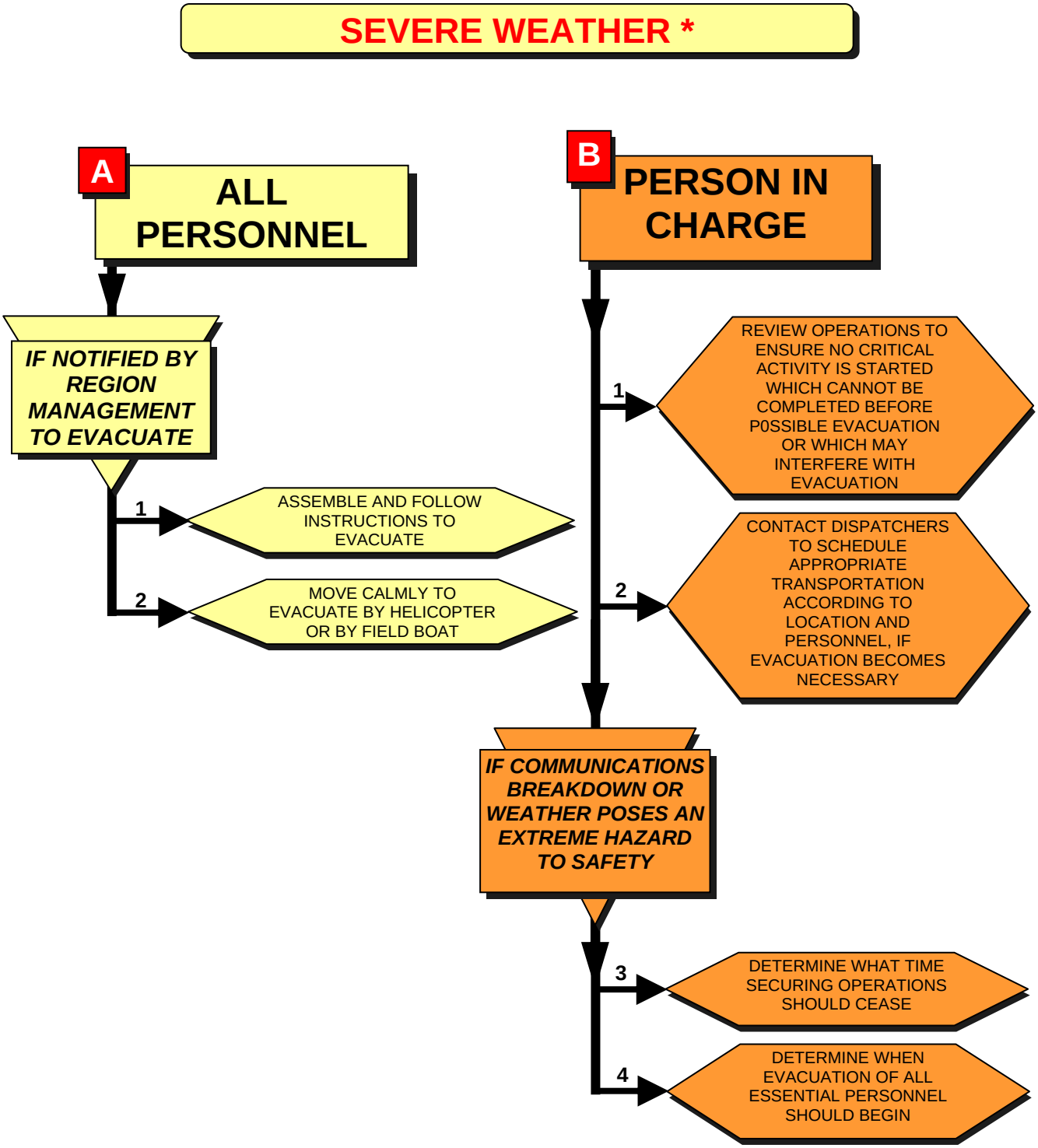
© The Response Group & OSRL/EARL – 8/2008

4.5 Medical or Rescue Emergency



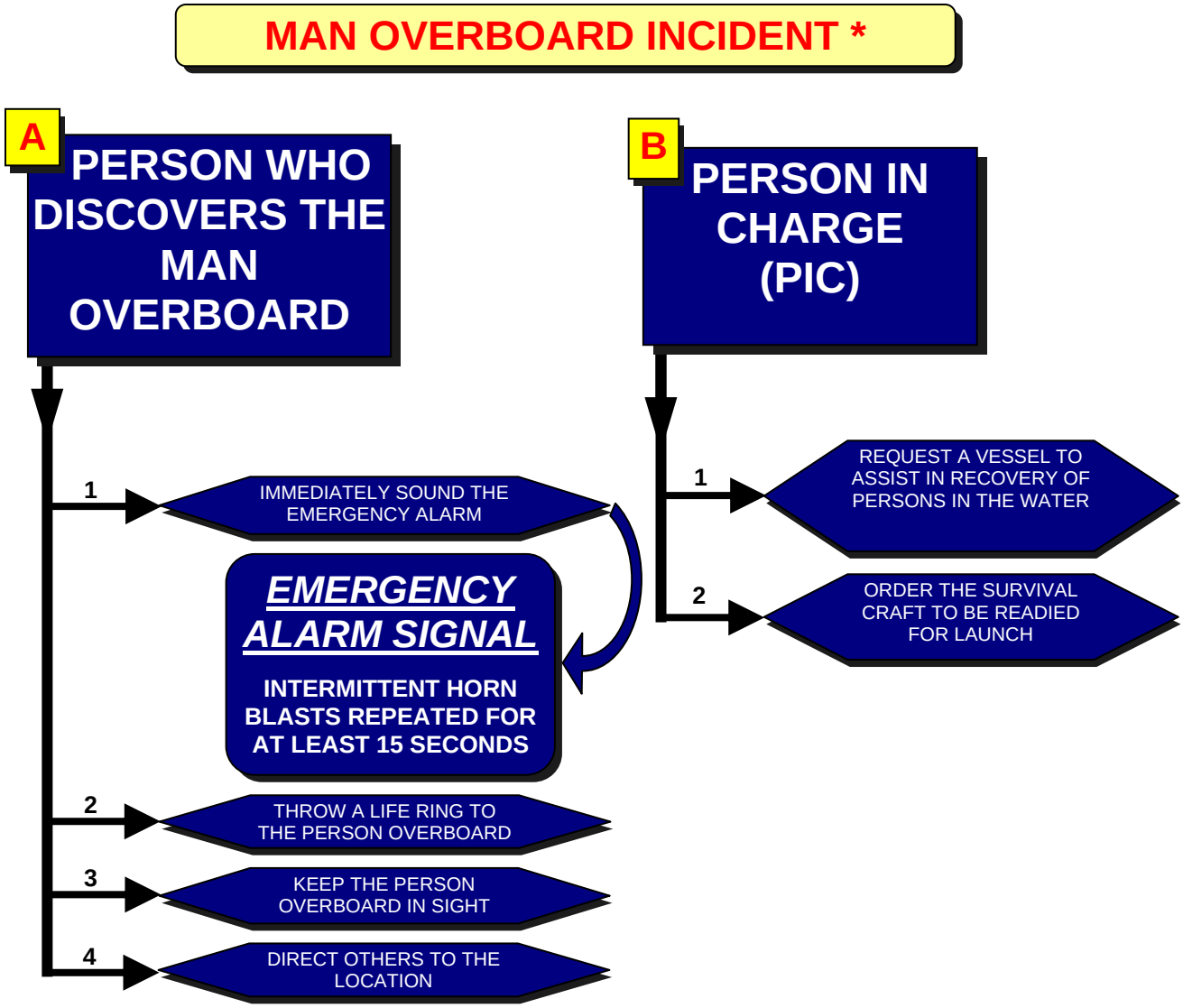
© The Response Group & OSRL/EARL – 8/2008

4.6 Severe Weather



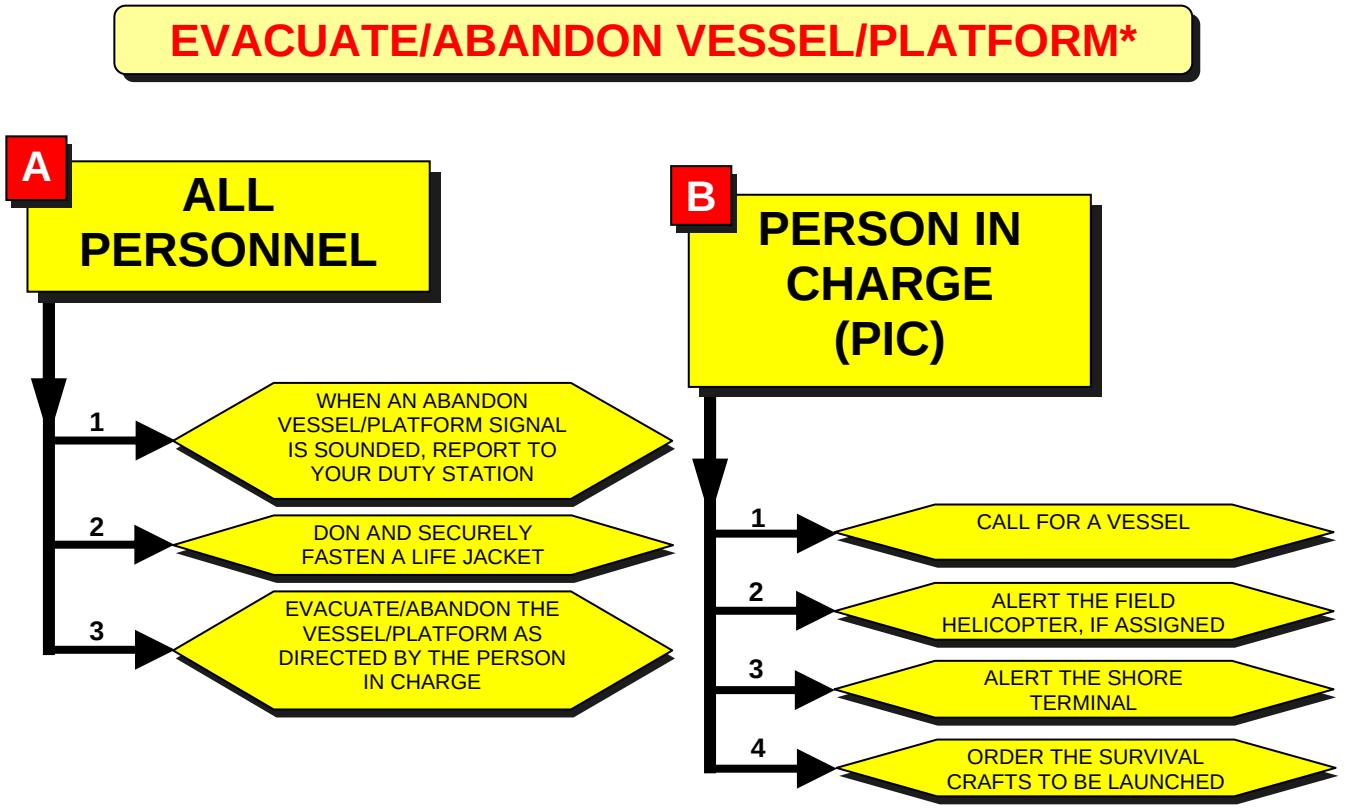
© The Response Group & OSRL/EARL – 8/2008

4.7 Man Overboard Incident

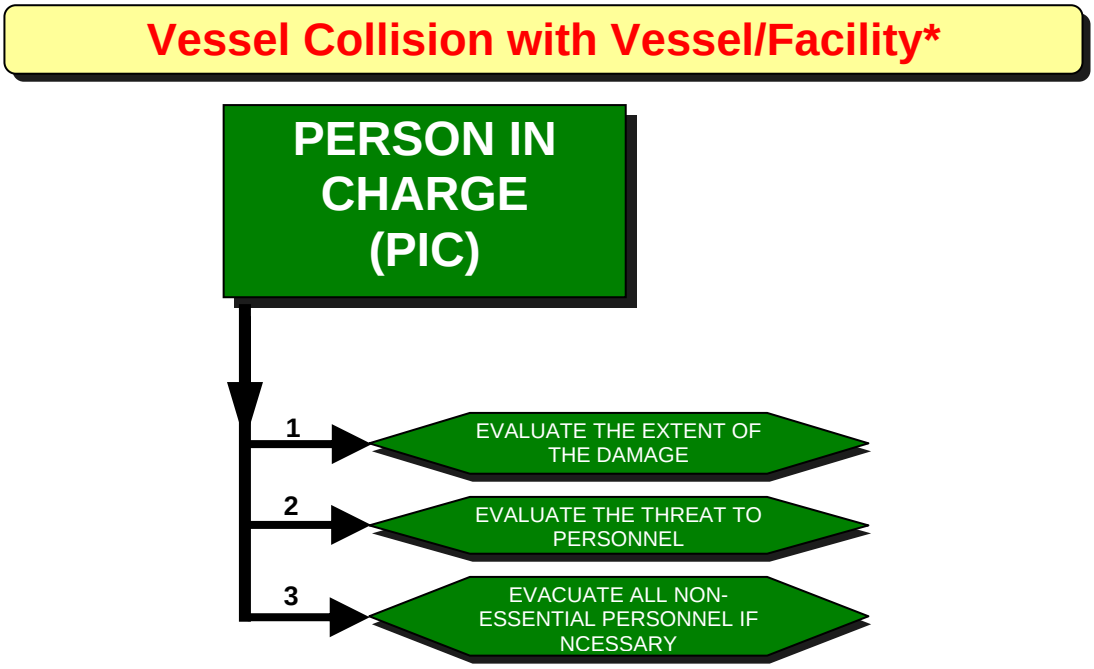


© The Response Group & OSRL/EARL – 8/2008

4.8 Evacuate/Abandon Vessel/Platform

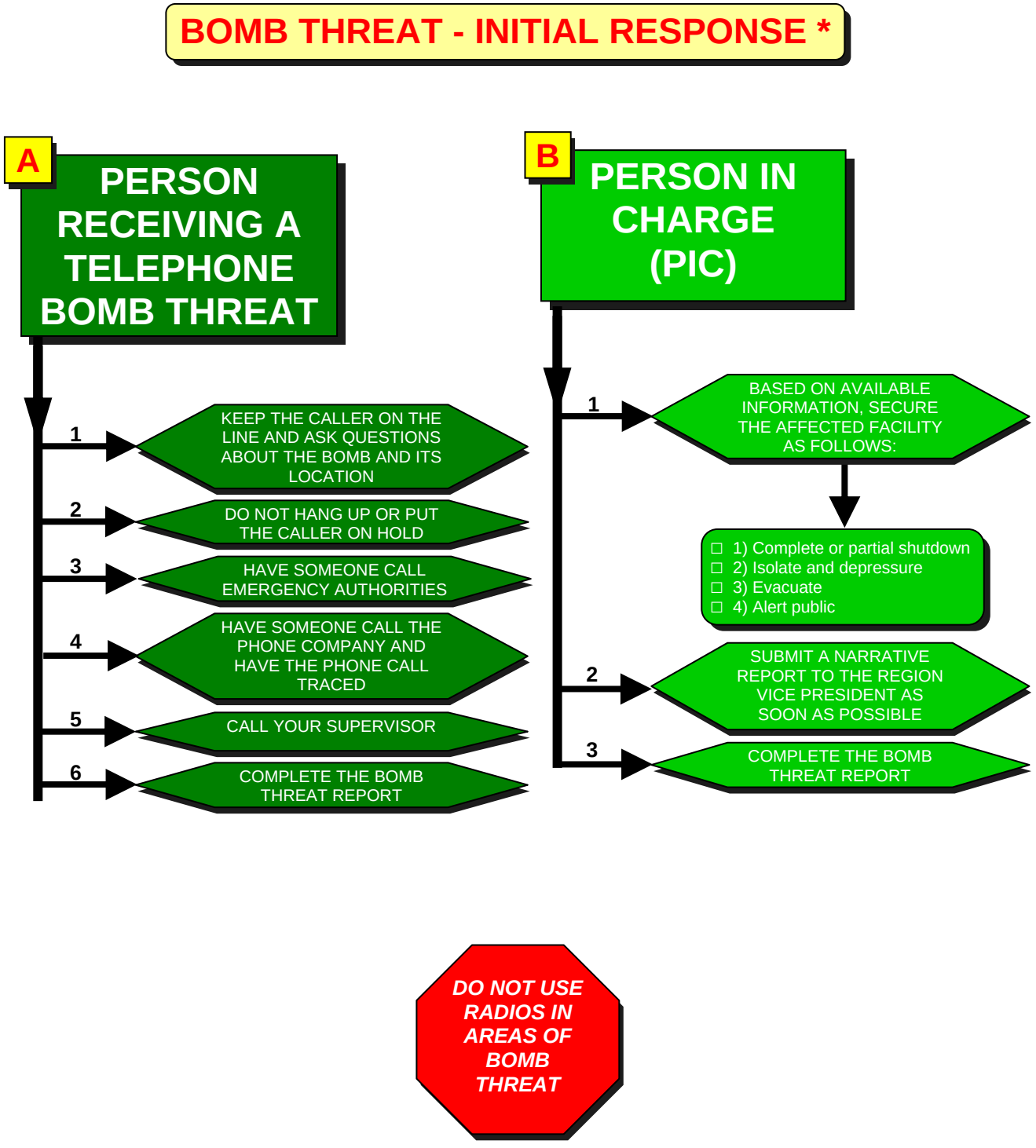


4.9 Vessel Collision with Vessel/Facility



© The Response Group & OSRL/EARL – 8/2008

4.10 Bomb Threat



© The Response Group & OSRL/EARL – 8/2008

THIS PAGE INTENTIALLY LEFT BLANK

Section 5 – List of Contacts

5.1 Emergency Reporting Procedures

It is the responsibility of the Incident Commander/Country Manager to activate the Houston Strike Team during an incident. Once the Houston Strike Team is in place, they will make all notifications as assigned to their position and as the need is defined by the incident type. The Incident Commander/Country Manager will also take the responsibility to notify the Houston Strike Team via the 24hr security number.

Anadarko activities in Mozambique involve operational risks. Certain incidents may require the involvement of trained Houston personnel to cover certain responsibilities. The following procedure will be followed to engage Houston resources when deemed appropriate by the Incident Commander. The Incident Commander will call the primary Houston security contact number (+1-832-636-1111) when an incident occurs that requires involvement by the Houston Strike Team (complete Houston Strike Team personnel list in Table 5-3).

	It will be the job of the security officer on duty to complete the following:
✓	The Security Officer answering the call will ask very basic questions, such as: • What type of incident occurred • When did it occur? • Is anyone injured?
✓	The Security Officer will take the information provided and start calling the primary contacts in Table 5-3
✓	If nobody answers, leave a message stating the following: • Security officer's name and company position • Telephone number at which to return a call • "I am calling to inform you that an incident has occurred in Mozambique. Since I was unable to reach you, I will call (*say the next name and number on the list)*" Do not speculate, add to, or take away anything from the information previously provided.

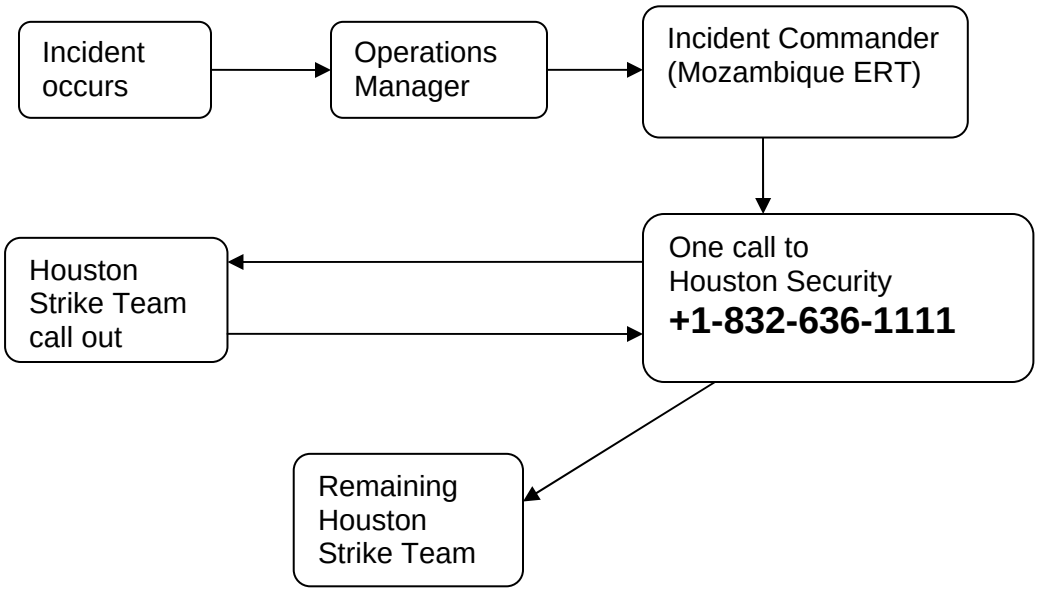
As soon as the security officer makes contact with the first person and delivers the information, this initial contact will make the decision on how many other people need to be notified.

© The Response Group 8/2008

5.1 Emergency Reporting Procedures (Cont'd)

The security officer on duty will have an organizational chart with all team members included. The security officer will execute the initial contact's instructions by calling each person and either leaving a message or telling them that an incident has occurred. The initial contact will also instruct the security officer to inform these individual(s) whether or not they need to immediately go to the Houston Incident Command Center.

The Houston Strike Team organization as seen in Table 5-3 represents only a limited number of personnel that are trained and ready to assist in any incident. When an incident occurs, the Operations Manager will notify the Incident Commander. The Incident Commander will then determine if the Houston Strike Team needs to be notified. If so, the Incident Commander will call the 24-hour security number at the Houston office (+1-832-636-1111). In turn, the security person will notify the Houston Strike Team. At this point, the Incident commander determines which people on the Houston Strike Team organizational chart need to be notified. Afterwards, security will make the notifications that are determined by the Houston Strike Team Incident Commander, and everyone will gather in the Houston Incident Command Center. In order to minimize any confusion during the response activities, the Houston Strike Team will not take on any emergency response management responsibilities unless requested to do so by the Mozambique ERT. The Mozambique ERT will provide support in the form of additional personnel, finance, legal, public relations, etc., as well as decisions that need to be made on a corporate level.



It is the responsibility of the Safety Officer and/or Liaison Officer to ensure incidents are reported to the governmental agencies referenced below. Reporting checklists are provided in **Section 5.3**. Report all oil spill incidents internally and externally to appropriate agencies using the Reporting Forms found in **Section 10** of this plan respectively. **Agency phone numbers are located in Section 5.3 of this plan.**

© The Response Group 8/2008

5.2 Emergency Response Team Personnel

The organizational structure of the ERT operates within a tiered response framework, which allows for the mobilization of resources at varying levels as dictated by incident circumstances. The following, **Table 5-2 & 5-3**, is a list of names, phone numbers and positions for the Anadarko ERT members. **Figure 5-4 & 5-5**, is the organizational structure of command for the ERT.

Mozambique Emergency Response Team – ERT Table 5-2

Mozambique ERT				
Position	**Name**	**Office**	**Cell Phone**	**Home**
Incident Commander	John Peffer	+258 21487050	+258 8483 42410	+ 258 214 97023
Operations / Planning	Mike Pace	+258 21487050	+ 258 8483 49140	+ 258 21486076
Safety Officer	Mario Rassul	+258 21 487050	+258 8230 69340	+ 258 21 333341
Security Manager	Bob Pease	+258 21487050	+258/847-658-105	N/A
Logistics	Assif Mussa	+258 21487050	+258 82 30 00 410	+258 21306421
	Rick Harlan	+258-21-487050	+ 258 82 83 42 411	

© The Response Group 8/2008

Corporate Crisis Management Team – Strike Team Table 5-3

Emergency situations within Mozambique may require a coordinated response throughout Anadarko.
In such cases, prompt notification of Anadarko resources is critical. The following is a listing of internal contacts within Anadarko, who have the ability to activate additional resources.

Corporate Crisis Management Team (Strike Team) Houston Activation Contacts				
Position	**Name**	**Office**	**Cell Phone**	**Home**
Houston hotline (24/7)	Houston	+1 832-636-1111		
Incident Command Center (Houston)	Houston	+1 832-636-2250		
V.P. EHS	David McBride	+1 832-636-4896	+1 832-474-1926	+1 281-367-0260
Project Manager	Carol Law	+1 832-636-4716	+1 281-744-9393	
Incident Commander - 1st	John Moran	+1 832-636-3247	+1 281-387-7558	+1 281-395-9135
Incident Commander - 2nd	Roger Reagan	+1 832-636-1347	+1 281-415-4835	+1 281-367-8164
Safety Officer – 1st	Steve Freemyer	+1 832-636-1645	+1 713-819-5644	+1 281-361-0237
Safety Officer – 2nd	Dennis Cowen	+1 832-636-2600	+1 713-819-8625	+1 281-719-0789 +1 830-669-2608
Operations Section Chief – 1st	Don Vardeman	+1 832-636-8645	+1 281-705-8411	+1 281-251-9817
Operations Section Chief – 2nd	OSRL representative	24h ER contact: +44/2380-331-551		
Planning Section Chief	Karina Pena	+1 832-636-3167	+1 832-755-7319	
ICS Specialist	The Response Group	+1 281-880-5000	+1 713-906-9866	+1 800-651-3942
Information Officer (Public Relations) – 1st	John Christianson	+1 832-636-8736	+1 832-434-6884	+1 281-252-8594
Information Officer (Public Relations) – 2nd	Paula Beasley	+1 832-636-8736	+1 281-728-4426	
Logistics Section Chief	John O'Brien	+1 832-636-1331	+1 202-378-6079	+1 281-379-4215
IC Assistant -1st	Heather Fair	+1 832-636-1363	+1 281-702-4922	+1 936-588-4559

© The Response Group 8/2008

Corporate Crisis Management Team (Strike Team) Activation Contacts (Cont'd)				
Position	**Name**	**Office**	**Cell Phone**	**Home**
IC Assistant - 2nd	Melanie Russell	+1 832-636-1252	+1 281-639-1599	+1 281 528 7495
Legal – 1st	Dave Owens	+1 832-636-7539	+1 832-239-0006	+1 281-353-8583
Legal – 2nd	Linda Kuhn	+1 832-636-7506	+1 281-630-4800	
Legal – 3rd	Reena Mohamedi	+44/1895-209-574	+44/7738-696-372 or +44/7903-715-172	+44/2072-881-121
Corporate Communication – IT	Nathalie Brandt	+1 832-636-7114	+1 281-702-1756	+1 281-356-7114
Corporate Communication – Phone	Marcelo Gutierrez	+1 832-636-7246	+1 281-732-1844	+1 281-648-1437
Corporate Communications - Radio	Bobby Schulin	+1 281-673-6640	+1 281-224-8815	+1 936-321-2328
Humanitarian Assistance – 1st	Jay Hawkins	+1 832-636-3354	+1 281-380-2400	405-848-8440
Humanitarian Assistance – 2nd	Jeff Rohloff	+1 832-636-2735	+1 281-796-3501	+1 281-852-4038
Medical Services – 1st	Joe Basinger	+1 832-636-4002	+1 832-274-7036	+1 832-274-7036
Medical Services – 2nd	Mary Gleinser	+1 832-636-2657	+1 281-387-7173	+1 713-772-1195
Security Hotline	Houston	+1 832-636-3500		
Security – 1st	Peter Codyre	+44/7917-630-969	+61/410-569-709	+ 61 3 5776 4336
Security – 2nd	Ron Hicks	+1 832-636-1207	+1 832-867-3968	936-449-6039
Finance – 1st	Darrell Havill	+1 832-636-4362	+1 281-703-7432	
Finance - 2nd	Jim Davoli	+1 832-636-2315	+1 713-291-8484	

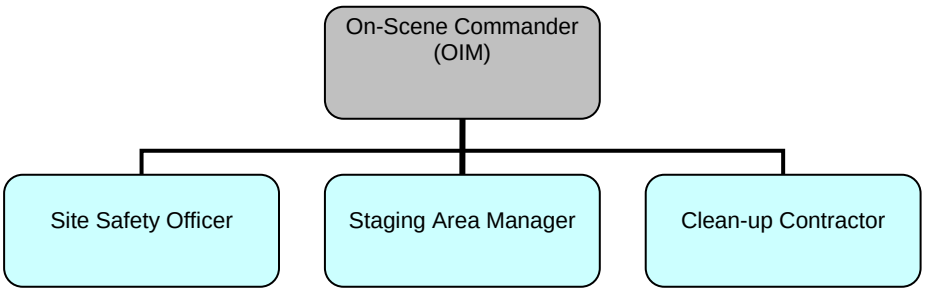
© The Response Group 8/2008

Drilling Contractor Contact List — Table 5-4

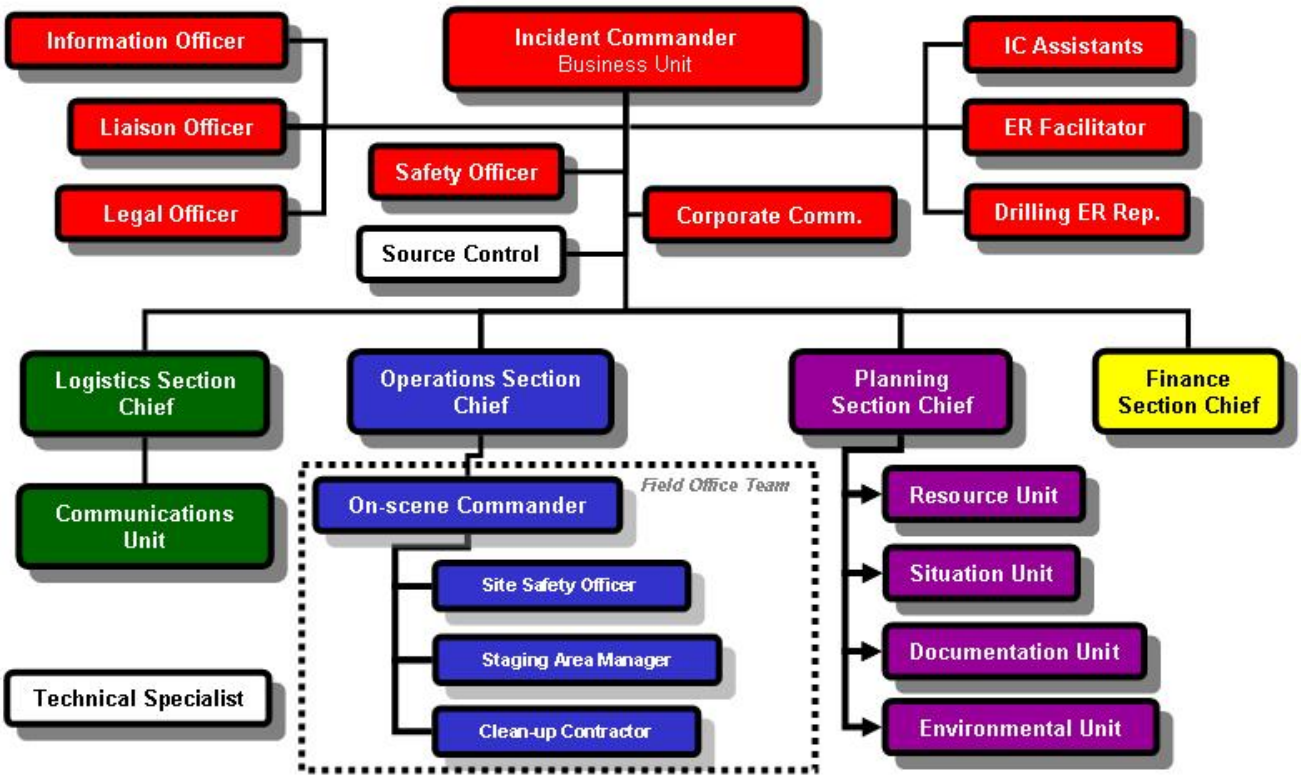
Drilling Contacts				
Contact	**Name**	**Office**	**Cell Phone**	**Fax**
*Drilling rig contractor TBD				

© The Response Group 8/2008

Emergency Response Team Org Chart — Figure 5-5



Houston Strike Team Org Chart — Figure 5-6



© The Response Group 8/2008

5.3 Agency Notifications

All offshore and onshore personnel are responsible for assuring that all required notifications/reports are completed in a timely manner for all incidents. All contacts with regulatory agencies must be properly documented.
Typical information to report would be Location of incident, type and size of spill, date & time of the incident, and other relevant information.

#	Agency / Entity	Phone	Alt.	Fax
1	**Maritime Administration & Safety Authority (SAFMAR)** (Ministry of Transport and Communications) *~ Responsible for oil pollution at sea within the 12 nm territorial limit*	+258 21 301963 / 420552		+258 1 424007
2	**Pemba Port Authority**	+258 27 220453		
3	**INP (National Petroleum Institute)**	+258 21 320932 /5		
4	**Mozambique Ports and Railway (CFM)**	+258 27 220710	+258 27 220712	
5	**MICOA** (Ministério para a Coordenação da Acção Ambiental)	+258 27 220353 +258 27 22 0173	+258 27 22 1256 +258 27 22 0395	

5.4 Response Contractor Listing

Response Contractors		
Contact	**Phone**	**Alt.**
Oil Spill Response Limited (OSRL)	44 23 8033 1551	
National Response Corporation	(800) 899-4672	877-334-4466
The Response Group – IAP Software, Trajectories, & Planning Support	+1 281-880-5000	+1 713-906-9866

© The Response Group 8/2008

5.5 Other External Local Notifications

Local Contact Listing		
Contact	**Phone**	**Alt.**
Medical Assistance		
Emergency: International SOS Assistance, Inc	Johannesburg: Tel: +27 11- 541-1300	
	Paris: Tel: +33 1 55 63 31 55 Fax: +33 1 55 63 31 56	London: Tel: +44 208 762 8008 Fax: +44 208 748 7744
Hospital Maputo	+258 21-49-2922	+258 82-300-26100
Hospital Pemba	+258 272-20796	+258 272 21702 +258 272 20623
Netcare (Maputo)	Local: 84911	+258 21-313103
Kenyon Europe, Africa and Middle-East Kenyon House 1 The Western Centre, Western Road, Bracknell Berkshire, UK RG12 1RW	+44 (0) 134 431 6650	Fax: +44 (0) 134 431 6699
Police / Fire Department		
Police Service	Emergency: 119	
Fire Department	197 / 198	
Medevac		
Medevac - International SOS Assistance, Inc	Contact info above	
Medevac – Pemba John Missionary Pilot		
Embassies & Consulates		
U.S. Embassy 193 Avenida Kenneth Kaunda Maputo	(258) 21 49 2797 Emergency after hours: 21 49 0723 or 82 310 7190	Fax: (258) 21 49 0448
French Embassy Av. Julius Nyerere, 2361 Maputo, Moçambique CP 4781	(258-1) 491 774, 693, 490 444	Fax: (258-1) 491 727
Bristish High Commission Av Vladimir I Lenine 310 (Box 55) Maputo	+258 21 356000	Fax: +258 21 356060
Australian Consulate Avenida Zedequias Manganhela 95-3rd Floor Maputo	+258 1 322 780	Fax: +258 1 307 369

© The Response Group 8/2008

5.5 Other External Local Notifications (Cont'd)

Local Contact Listing (Cont'd)		
Ports		
Pemba Port Authority	+258 27 220453	
Weather		
www.aviation.weathersa.co.za		
Consulting		
Impacto (Environmental)	+258.21.499.636	
Communications		

© The Response Group 8/2008

Section 6 – Incident Management System

6.1 Purpose

The purpose of this section is to provide background information on Anadarko's concept of operations for responding to incidents, regardless of nature, severity, or location. Although it is flexible in nature, acceptance and application of the concept is viewed as a critical success factor in the ability of the Mozambique & Houston Emergency Response Team to organize and manage emergency response operations.

The vast majority of incidents occur without warning. As a result, members of the Mozambique Emergency Response Team (ERT) usually must begin their work in a reactive mode. The first priority is to move from a reactive to a proactive mode of operations, as safely and quickly as possible. This is done by engaging in a fully integrated ***Incident Management System (IMS)*** whose primary objective is the establishment and maintenance of command and control over the incident and emergency response operations.

6.2 Principles of Incident Command System (ICS)

The organizational and management approach to incident response operations is based on the principles of the *Incident Command System (ICS)*. By design, the *ICS* can be used to manage incidents of any type or magnitude. The system has considerable internal flexibility by being modular, and can readily grow or shrink to meet the needs of any incident. This makes it a very cost-effective and efficient management system.

The ICS organizational principles that have been adopted are:	
	Ability to address all risks and hazards
	Ability to mobilize an organization that is functional (i.e., one that is organized to perform the tactical and strategic work necessary to address the incident and to protect people, the environment and property
	Ability to activate and deactivate the functional organization in a modular fashion
	Maintenance of a hierarchical structure that has a clear Chain-of-Command and well defined reporting relationships
	Ability to establish and maintain a Unified Command with involved incident response organizations

6.2 Principles of Incident Command System (ICS) (Cont'd)

The *ICS* Management principles that have been adopted by ANADARKO are:	
	Use of common terminology
	Maintenance of a manageable Span-of-Control
	Preparation of Incident Action Plans
	Use of comprehensive resource management techniques
	Designation (or pre-designation) of incident facilities
	Use of comprehensive resource management techniques
	Establishment of integrated communications (Tier 1, 2 & 3)

6.3 Onsite Emergency Response Teams (ERTs)

6.3.1 Site Command and Control

On – Scene Commander

At-the-scene tactical response operations are carried out by one or more Onsite Emergency Response Teams (ERTs) composed of personnel from the affected facility or operation, Emergency Response Team (ERT), security, medical, and other personnel under the direction of an *On-Scene Commander (OC)*. In compound incidents (having more than one component to the incident), there may be more than one *On-Scene Commander*. The *On-Scene Commander's* primary responsibility is to ensure that Onsite ERT response operations are carried out safely, effectively, and efficiently.

The individual who initially observes an incident assumes the role of *On-Scene Commander* until relieved by an equally or more qualified individual. Depending upon the initial observer's qualifications, the discharge of the *On-Scene Commander* function may be limited to reporting observations and taking defensive actions until a more qualified *On-Scene Commander* arrives on scene. On the other hand, if the initial observer is properly trained and equipped, the observer may assume an immediate, more proactive response posture.

At the time of an incident, selection of the most qualified individual to serve as *On-Scene Commander* generally is based upon the location and/or nature of the incident.

Change of Command

On-scene command may change as an incident escalates. *Changes in command* are handled in a structured fashion. On-scene command is not transferred until the incoming On-Scene Commander is on scene. Whenever possible, *changes in command* are:

6.3 Onsite Emergency Response Teams (ERTs) (Cont'd)

6.3.1 Site Command and Control (Cont'd)

	Whenever possible, *changes in command* are:
✓	Carried out in a face-to-face fashion
✓	Accompanied by a verbal briefing designed to bring the incoming On-Scene Commander up-to-date on: • Status of the situation • Nature and location of ongoing and planned *Onsite ERT* response operations • On-scene command structure • Progress being made • Problems being encountered • Any unique/special safety considerations

A change in command is announced over the Tactical and, if the Local and/or Corparate ERT's are activated, Command communications networks.

Safe Approach Guidelines

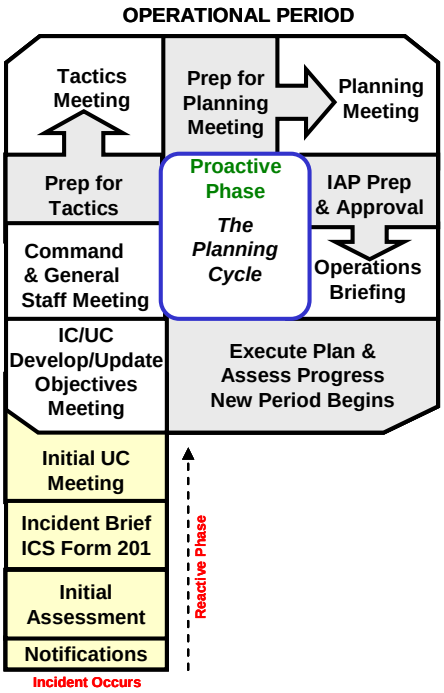
	An On-Scene Commander and On-scene ERT members approaching an incident scene must observe the following *safe approach guidelines*:
✓	Always presume that the incident scene is a hazardous working environment
✓	Always approach an incident scene from an upwind direction
✓	Avoid direct or indirect body contact with any spilled or emitted materials
✓	Avoid the introduction of ignition sources into the area, shut down ignition sources and, when safe, remove ignition sources from the area
✓	Isolate the area and initiate site characterization procedures to identify chemical, physical, and operational hazards
✓	Institute personnel accountability procedures to keep track of *On-scene ERT* personnel, particularly when they are operating in a "hot" zone

© The Response Group – 1/2008

6.3 Onsite Emergency Response Teams (ERTs) (Cont'd)

6.3.1 Site Command and Control (Cont'd)

The Planning Cycle process to manage large events will be followed to ensure the field is supported and plans are in place to manage the incident in a safe manner.



Isolation Perimeter

The On-Scene Commander controls the movement of all personnel into, within, and out of the incident scene. To do so, the On-Scene Commander establishes and secures an *isolation perimeter* that is a safe distance around the incident scene. Ideally, all non-responders are positioned in (an) area(s) located outside the *isolation perimeter*.

The quickest, most efficient way to isolate an incident scene is to initiate procedures for the involved or threatened facilities and/or operations. Safe muster areas usually are located outside the isolation perimeter. Safe shelter areas, however, are frequently located inside the perimeter and must be closely monitored to ensure that they are properly sealed and remain safe to sheltered personnel.

© The Response Group – 1/2008

6.3 Onsite Emergency Response Teams (ERTs) (Cont'd)

6.3.1 Site Command and Control (Cont'd)

Resource Check-In

All ERT personnel and response resources dispatched to an incident scene are required to *check in* with the On-Scene Commander when they arrive at their prescribed destination. *Check in* can be handled verbally (i.e., face-to-face or over a radio or some other communications mechanism) and/or in writing by using a standard Resource Check-In Form (ICS 211). When forms are used, they are regularly forwarded to the ERT *Field Operations Center* to keep the On-Scene Commander apprised of resources available to carry out at-the-scene response operations.

Staging Areas

Ideally, checked-in *ERT* personnel and response resources are rapidly assigned by the On-Scene Commander to carry out specific tasks. However, until the On-Scene Commander has sized up the situation, identified and addressed hazards, developed an action plan, and decided how to safely deploy ERT personnel and response resources to implement the plan, resources ready for assignment are staged. The On-Scene Commander designates a *Staging Area Manager* to manage each area.

6.3.2 Site Safety

Site Safety Officer

The On-Scene Commander is responsible for the safety of the On-site ERT personnel. In many situations, the On-Scene Commander is able to perform the actions necessary to ensure a safe response without the assistance of a safety professional. There are, however, situations where the safety issues and/or the complexity of the response dictate the need for a *Site Safety Officer (SSO)* who concentrates on safety, and nothing else, during response operations.

Characterization of Hazards

Prior to committing ERT personnel to carry out tasks in potentially hazardous working environments, a *site characterization* is carried out to identify and quantity the chemical, physical, and operational hazards present in the area where the work is to be performed. *Site characterizations* are performed off-site and/or on-site.

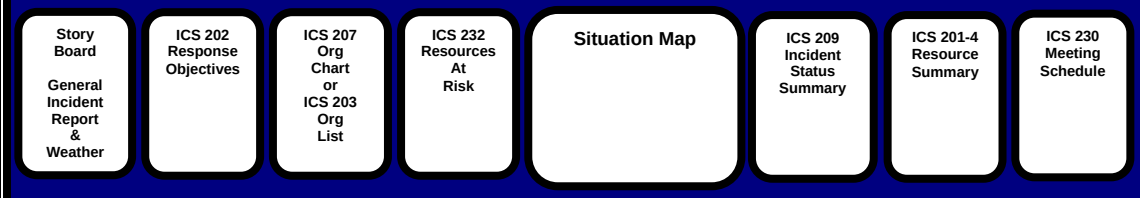
© The Response Group – 1/2008

6.3 Onsite Emergency Response Teams (ERTs) (Cont'd)

6.4.5 Set Up and Maintain Local ERT Command Center Info Center

As information is gathered on the incident and the ERT response operations, it is displayed in a prominent location for use by ERT members in their efforts to establish and maintain command and control over emergency response operations. This location is referred to as the *Situation Display*, and it is the one place where anyone can go, at any time, to learn about the nature and status of an incident and emergency response operations. The suggested layout for the display is presented in Figure 6-0.

FIGURE 6.0 TYPICAL WALL SITUATION DISPLAY (SIT-STAT)



The focal point of the ERT Command Center *Information Center* is a situation map that is posted in the middle of the display and visually presents the following information:

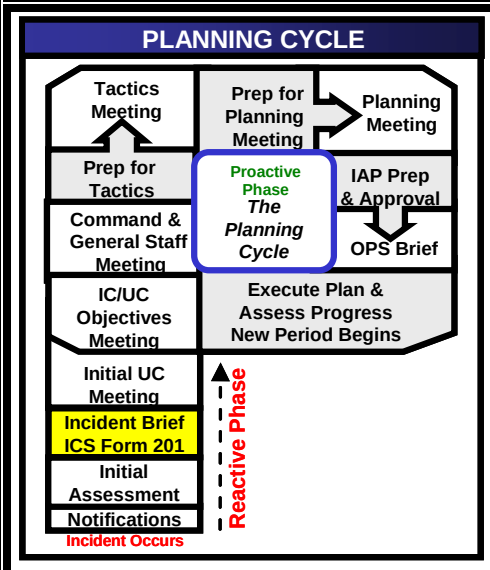
✓	Location of source
✓	Location of spilled or emitted materials
✓	Location of an isolation perimeter and hot line
✓	Location of incident facilities, including muster and/or shelter areas
✓	Location of tasks underway, broken down by branch, division/group

The *Situation Display* is set up by the Planning Section Chief, and the map and status boards are maintained by members of the response team as described below:

Status Board		Person Responsible
1.	General Incident Report	OIM/Incident Commander
2.	Weather Report	Situation Unit Leader
3.	Notification Report	OIM/Liaison Officer
3.	ICS 202 Response Objectives	Incident Commander & Planning Section Chief
4.	ICS 203/207 Organization Chart	Resource Unit Leader
5.	ICS 232 Resources at Risk	Planning Section Chief
6.	Situation Map	Operations & Situation Unit Leader
7.	ICS 209 Incident Status Summary	Situation Unit Leader
8.	ICS 201-4 Resource Summary	Resource Unit Leader
9.	ICS 230 Meeting Schedule	Planning Section Chief

6.4 Planning Cycle Overview

INCIDENT BRIEFING (ICS 201) OVERVIEW



PURPOSE:

1. Provides the incoming incident commander & unified command, command staff, and section chiefs with basic information regarding the incident specifics, status of response operations including resources allotted for the incident, response priorities and objectives, and recommended actions to be taken by the incoming response team.
2. ICS 201 Briefing Forms acts as the IAP for the initial response and is utilized/updated until planning prepare the first incident IAP that is approved by Unified Command. Establishes a permanent record of the initial response to the incident.
3. Is suitable for briefing individuals newly assigned to Command and General Staff, as well as needed assessment briefings for the staff.

WHEN:	New IC/UC; staff briefing as required
DURATION:	20 to 30 minutes
FACILITATOR:	Current Incident Commander (or Planning Section Chief, if available)
ATTENDEES:	Incoming Incident Commander, Unified Command, General Staff, as available

ICS FORMS:

Prepared by: Initial Response Team

PSC	Initial IC	SITL	SITL	IC & PSC	RESL	RESL	PSC
Incident Report	Notification Report	IAP Cover Sheet	General Incident Report	Weather Report	ICS 201-1 Incident Map	ICS 201-2 Current Actions	ICS 201-3 Org Chart	ICS 201-4 Resource Summary	ICS 202 Response Objectives

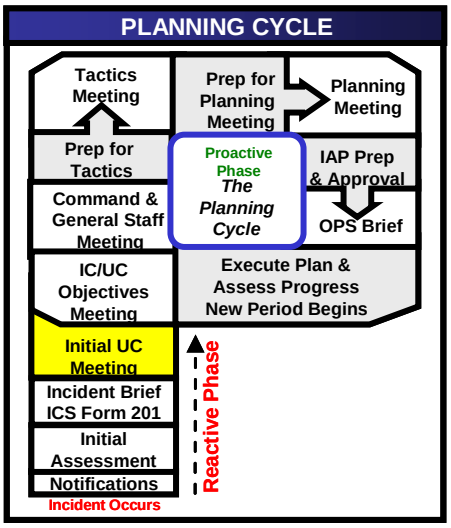
MEETING AGENDA:

USING ICS 201 FORMS & SIT-STAT:

1. Incident Summary
2. Current situation
3. Initial objectives and priorities
4. Current and planned actions (strategies and tactics)
5. Current field organization
6. Resource assignments
7. Facilities established
8. Status of communications
9. Constraints and concerns
10. Incident potential
11. Safety status/concerns
12. Delegation of authority

6.4 Planning Cycle Overview (Cont'd)

INITIAL UNIFIED COMMAND OBJECTIVES MEETING OVERVIEW



PURPOSE:

1. Provides UC officials with the opportunity to discuss and concur on important issues prior to joint incident action planning. The meeting should be brief and important points documented. Prior to the meeting, parties should have an opportunity to review and prepare to address the agenda items. Planning meeting participants will use the results of this meeting to guide the operational efforts prior to the first tactics meeting.
2. Present initial ICS 202 Response Objectives for review and modifications if needed from Unified Command. Propose & agree of ICS 230 Meeting Schedule & timeframe for the next operational period before the meeting adjourns.

WHEN:	After the ICS 201 Incident Briefing when UC is formed & prior to UC Objectives Meeting
DURATION:	<1 Hour
FACILITATOR:	Incident Commander/Unified Command (or Planning Section Chief, if available)
ATTENDEES:	Incoming Incident Commander, Unified Command, General Staff, as available

ICS FORMS:

(Documents to bring & review at Initial Unified Command

SITL Weather Forecast & Traiectorv
SITL Map Based on Current
RESL ICS 203/207 Org. Chart
RESL ICS 201-4 Resource Summary
PSC Initial ICS 202 Response
PSC Draft ICS 230 Meeting

Outcome of meeting
Final Objectives for the current period

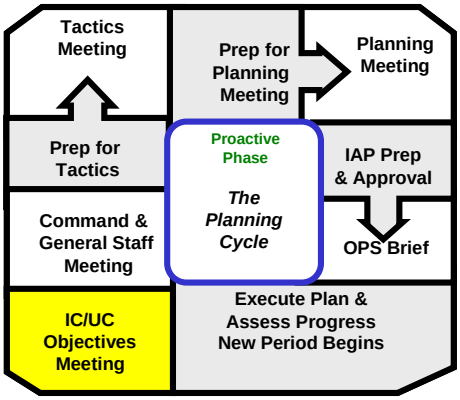
Final ICS 202
ICS 203/207 Org. Chart

MEETING AGENDA:

1. Bring meeting to order.
2. Role call.
3. Validate makeup of new Unified Command.
4. Clarify UC roles and responsibilities.
5. Agree on UC area of responsibility.
6. Agree on name of incident, response organization, incident facilities, and other needed support.
7. Determine operational period length/start time and work-shift hours.
8. Designate the best qualified Operations Section Chief.
9. Designate lead organization for PIO, Safety, Intelligence, and Liaison.
10. Situation briefing update: Map (current operations), trajectories, weather forecast.
11. Review initial objectives.
12. Present limitations/concerns.
13. Update incident objectives (or establish) and agree on priorities.
14. Agree on resource ordering, cost sharing procedures, and informational matters.
15. Define timeframe and meeting schedule for next operational period.

6.4 Planning Cycle Overview (Cont'd)

UNIFIED COMMAND OBJECTIVES MEETING OVERVIEW



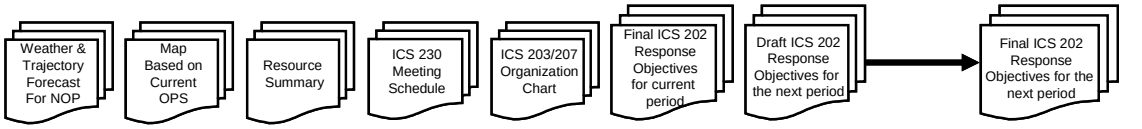
PURPOSE:

1. Objectives from the initial or previous operational period are reviewed and new objectives are identified as needed.

2. The IC/UC will review/identify and prioritize objectives for the next operational period.

WHEN:	Prior to the Tactics Meeting
DURATION:	~30 Minutes
FACILITATOR:	Incident Commander/Unified Command (or Planning Section Chief, if available)
ATTENDEES:	Incoming Incident Commander, Unified Command, General Staff, Documentation Unit Leader

ICS FORMS: **(Recommended documents to display at the Unified Command Objectives Meeting)**



MEETING AGENDA:

1. Bring meeting to order & conduct role call.
2. Cover ground rules:
   a. No side conversations.
   b. Cellular phones off.
   c. Pagers on vibrate.
   d. Stick to agenda.
3. Agree on next operational period.
4. Review/develop objectives for next operational period.
5. Develop tasks for Command/General Staff to accomplish.
6. Agree on division of IC/UC workload.
7. Define components of IAP (ICS Forms & additional plans to include) for next operational period.
8. Review status of open action items and additional issues/concerns.
9. Adjourn.

© The Response Group – 1/2008

6.4 Planning Cycle Overview (Cont'd)

Conduct Assessment Meetings

Throughout the conduct of emergency response operations, the Incident Commander and members of the Command and General Staff meet every one to four hours to discuss progress being made in addressing strategic objectives and response priorities. These meetings are referred to as an *Assessment Meetings*.

The objectives of the ERT *Assessment Meetings* are to:	
✓	Keep members of the Command (i.e., Officers) and General Staff (i.e., Section Chiefs) focused on strategic objectives and response priorities
✓	Keep members of the Command and General Staff informed about the nature and status of response operations
✓	Provide the Incident Commander with information on the status of Command and General Staff efforts to address strategic objectives and response priorities
✓	Identify problems that are impeding acceptable progress
✓	Identify needs
✓	Define what the team will focus on before the next meeting

These meetings last no more than 15-30 minutes.

© The Response Group – 1/2008

6.4 Planning Cycle Overview (Cont'd)

Prepare Incident Action Plans

Initial Incident Action Plan

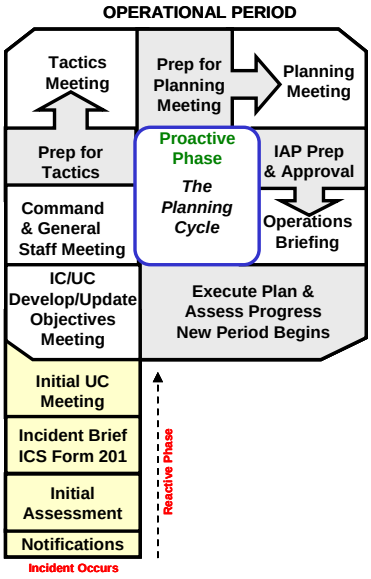
At the outset of emergency response operations, an *Initial Incident Action Plan* is usually developed by the OIM and/or On-Scene Commander and typically covers the first minutes to hours of these operations. Guided by training and the applicable Response Plan, the OIM and/or On-Scene Commander prepare(s) the plan by sizing up the situation, identifying problems, and defining the tasks that need to be performed to effect solutions to the problems. As work on existing tasks unfolds and new tasks are identified, they are incorporated by the OIM and/or On-Scene Commander into revised versions of the plan.

When the Houston ERT is activated, the Local ERT is integrated into and constitutes the bulk of the ERT's Operations Section.

Working in conjunction with the Planning Section Chief, the Operations Section Chief evaluates the plan generated by the OIM and/or On-Scene Commander to ensure it is being carried out in a manner consistent with strategic objectives, and that the plan's scope is broad enough to fully address all of the problems that must be addressed at the incident scene. If they identify revised or new tasks, they must revise the plan and communicate the revisions to the OIM and/or On-Scene Commander.

Planning Cycle

An Incident Action Plan is prepared in response to stated, task-specific, tactical objectives, and primarily consists of field task assignments designed to address the objectives. An IAP for a next operational period (NOP) is completed and approved by the Incident Commander before the NOP begins. While an IAP is being implemented, work is underway on an IAP for the NOP; this is a cyclical process that continues until the end of emergency response operations.



6.4 Planning Cycle Overview (Cont'd)

Incident Action Plan Development Process

Schedule

Typically, the Planning Section with support from the other sections will work on a plan for a next operational period begins about halfway through a current operational period. Waiting until this point is necessary to allow work on the Incident Action Plan currently being implemented to progress to a point where sound judgments can be made on what will be accomplished before the next operational period, and what work needs to progress into or start during the next operational period. This means the Planning Section Chief has approximately six hours to prepare a plan, get it approved, and transmit it to the field for execution. For this reason, it is important for those working on the plan to work against a *schedule*.

Initial Meeting with Incident Commander

With a schedule in hand, the Planning Section Chief will meet with the Incident Commander to discuss the duration of the next operational period; determine the applicability of existing strategic objectives for the NOP, and review the IAP preparation schedule. If changes are made in the strategic objectives, the Leader records the changes on the General Response Objectives Form (i.e., ICS 202).

Identify Existing Tasks

Following the meeting with the IC, the Planning Section Chief briefs the other personnel working on the plan on the duration of the NOP, the strategic objectives that must be addressed by the plan, and the schedule. Task Assignments to obtain information on field tasks currently underway, and meet with the Operations Section Chief and/or Source Control to confirm that the information is accurate and up-to-date.

Planning Assumptions

Next, the Planning Section Chief identifies *planning assumptions* for the NOP. *Planning assumptions* focus on factors such as: resource availability; weather; the spread of spilled and/or emitted materials; the persistence of problems & the ongoing success of response efforts.

Identify Tasks for NOP

Planning assumptions are used to identify the field tasks that will continue into or start during the NOP.

© The Response Group – 1/2008

6.4 Planning Cycle Overview (Cont'd)

Develop Tactical Objectives

Once the field tasks to be covered in the IAP are identified, the Operations Section Chief & Planning Section Chief develops a draft *tactical objective* for each task that clearly defines what the field will be asked to accomplish during the NOP. Once the *tactical objectives* are formulated, they are recorded on the "Objective" line that appears on the Field Task Assignment Form (i.e., ICS 204).

Once the *tactical objectives* are formulated, they are presented to the Incident Commander by the Planning Section Chief for review and approval either during the next scheduled Assessment Meeting or in a special meeting held with the Incident Commander to go over the objectives and nothing else.

Tactical Planning

Tactical objectives for the NOP provide the direction needed for the Planning Section Chief to determine whether a field task to be continued into the NOP will continue "as is" in terms of level of intensity (i.e., as measured by resource allocations), or whether the level of intensity will increase or decrease.

Field Task Assignments

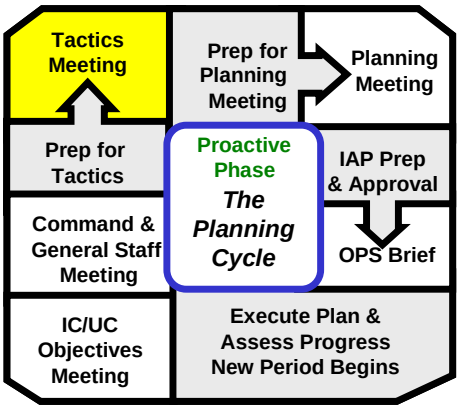
After decisions regarding field tasks and resource allocations for the NOP are made, the Planning Section Chief may elect to prepare either a verbal or written *field task assignment* for each task that will be undertaken during the NOP. If they are written, they are initially recorded on a *Field Assignment Form (i.e., ICS 204).* A written *field task assignment* provides the field with the information needed for the implementation of the assignment for the NOP.

When verbal or written *field assignments* for the NOP are completed, they are presented to the Incident Commander by the Planning Section Chief for review and approval either during the next scheduled Assessment Meeting on in a special meeting held with the Incident Commander to go over the assignments and nothing else.

© The Response Group – 1/2008

6.4 Planning Cycle Overview (Cont'd)

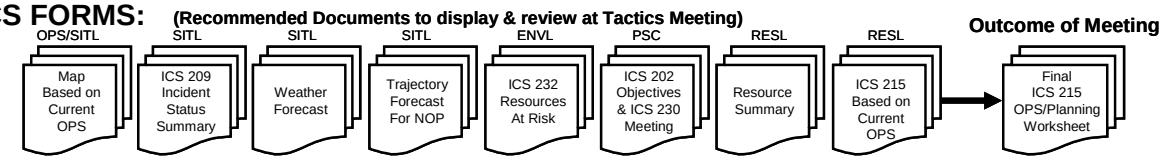
TACTICS MEETING OVERVIEW



PURPOSE:
1. Meeting to create the blueprints for tactical operations and deployment during the next operational period. Primary and alternate strategies to meet objectives for consideration at Planning Meeting.
2. Review the objectives for the next operational period and develop strategies (primary and alternatives).
3. Review/prepare draft ICS Form 215 to identify additional resources that should be ordered through Logistics for the next operational period to discuss in the Planning Meeting.

WHEN:	After the Unified Command Objectives Meeting & Prior to the Planning Meeting
DURATION:	~30 Minutes
FACILITATOR:	Planning Section Chief
ATTENDEES:	Operations Section Chief, Logistics Section Chief, RESL, SITL, ENVL, Safety, COML, DOCL, & Technical Specialist

ICS FORMS: **(Recommended Documents to display & review at Tactics Meeting)**



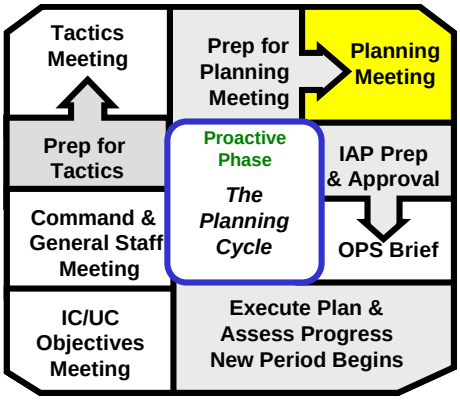
MEETING AGENDA:

1. Bring meeting to order – PSC
2. Role call – PSC
3. Ground rules/Agenda – PSC
4. No side conversations – stick to agenda
5. Cellular phones/pagers off
6. Situation briefing
7. Map (current operations) – OPS
8. ICS 209 update/weather - SITL
9. Trajectories – SITL
10. Resources at risk – ENVL
11. Review objectives - PSC
12. Review strategies/tactics - ICS 234 work matrix- OPS
13. Review/modify ICS 215 work assignments/resources – OPS
14. Review operations organization chart - OPS
15. Safety issues – SOFR
16. Environmental issues - ENVL
17. Logistics issues - LSC
18. Validate tactics with objectives – PSC

© The Response Group – 1/2008

6.4 Planning Cycle Overview (Cont'd)

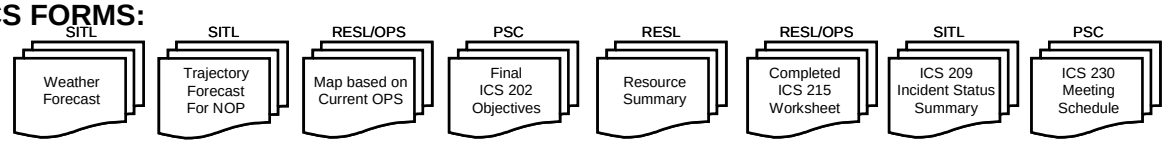
PLANNING MEETING OVERVIEW



PURPOSE:
This meeting provides an overview of the tactical plan to achieve Command's current direction, priorities, & objectives. The Operations Section Chief will present the proposed plan for review and comment, which includes the strategies & tactics to best meet Command's objectives for the next operational period, to Unified Command and soliciting UC support. Work assignments and resources to implement the proposed plan will be presented to Command to discuss & resolve any issues or concerns prior to assembling the IAP.

WHEN:	After the Tactics Meeting & Prior to the IAP Approval
DURATION:	~45 Minutes
FACILITATOR:	Planning Section Chief
ATTENDEES:	Unified Command, Command Staff, General Staff, RESL, SITL, ENVL, DOCL, COMMS Unit, Technical Specialist

ICS FORMS:



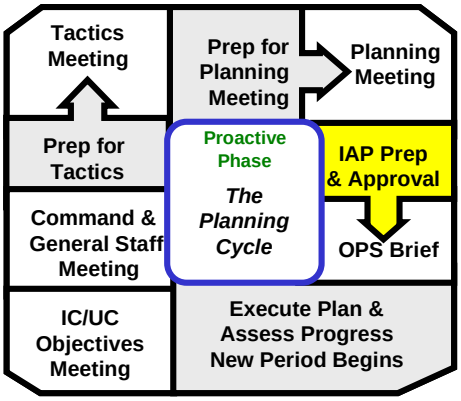
MEETING AGENDA:

1. Bring meeting to order – PSC
2. Conduct role call – PSC
3. Review ground-rules – PSC (No side conversations, cell phones/pagers off, stick to agenda)
4. Review agenda – PSC
5. IC/UC remarks/policy issues
6. Situation status briefing
   a. Briefing (current ops) - OPS
   b. Trajectories & weather - SITL
   c. Resources at risk – ENVL
7. Review objectives & priorities - PSC
8. Objectives progress - OPS
9. Review strategies/tactics – OPS
   a. Tactics to meet NOP objectives
   b. Work assignments/resource needs
   c. Staging/reporting locations
10. Review/compare proposed plan with Command objectives - PSC
11. Validate management objectives & open actions/tasks – PSC
12. Conduct discussion of Command & General Staff regarding proposed plan - PSC
13. IC/UC Approval/comments on plan
14. Open items & issues - PSC
15. IAP document preparation and deadline – PSC

© The Response Group – 1/2008

6.4 Planning Cycle Overview (Cont'd)

INCIDENT ACTION PLAN PREPARATION & APPROVAL OVERVIEW

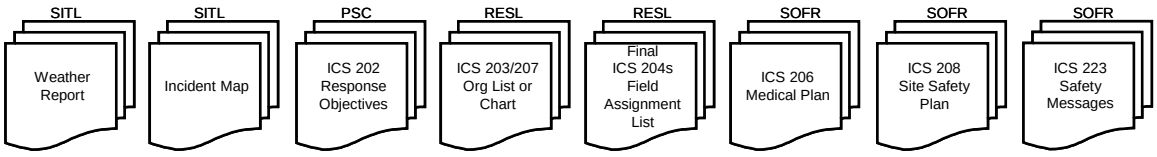


PURPOSE:
1. Planning Section Chief coordinates with section chiefs and their staff members to ensure appropriate ICS forms required for the incident action plan are prepared.
2. Submit IAP for Unified Command approval.
3. Once the IAP is approved by unified command, sufficient copies of the plan are made for the operations briefing.

WHEN:	After the Planning Meeting & Prior to the Operations Briefing
DURATION:	~2 Hours
FACILITATOR:	Planning Section Chief
ATTENDEES:	Incident Commander / Unified Command

ICS FORMS:

Pro-active Phase – Detailed Incident Action Plan



MEETING AGENDA:
1. Review IAP - UC
2. IC/UC approval / comments
3. Review open items - PSC
4. Adjourn

© The Response Group – 1/2008

6.4 Planning Cycle Overview (Cont'd)

Incident Action Plan Implementation

Once an IAP is approved, the implementation process begins. The plan is forwarded to the OIM or On-Scene Commander (OC), either verbally or in writing, for distribution to and discussion with ERT members, and reviewed with the balance of the ERT during a Shift Change Briefing. In addition, the situation map and status boards in the Command Center are updated immediately before the beginning of the NOP to reflect the contents of the plan.

Personnel Shift Change

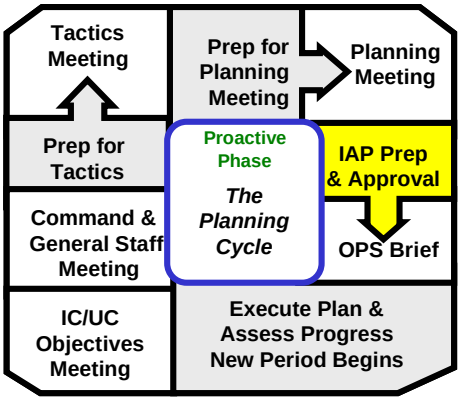
The overall objective during a shift change of personnel is to ensure the continuity of the emergency management process for the current response operations. It is the transfer of a team member's responsibilities to another team member who will serve in the same or higher level position.

The on-coming team member shall share equally in the responsibility for an effective transfer of incident information with the current team member in that position.	
✓	Shift change will generally take place at routine intervals in order to provide relief and an adequate rest cycle for team members. ➢ Should be accomplished through face-to-face discussion. ➢ Should include documentation that summarizes current events and any pending action items.
✓	An Incident Status Briefing may be held during a shift change (or immediately after) by the on-coming Incident Commander to update the ERT on the issues and priorities for the next shift.
✓	Personnel coming on-shift should arrive 30 minutes prior to shift change and out-going members should anticipate remaining up to 30 minutes after shift change in order to ensure an effective exchange of information.
✓	On-coming personnel are responsible for ensuring that Organizational Charts (or Assignment Lists) reflect the change of personnel.
✓	If a shift change occurs and a position is to be left vacant, the member leaving the position shall approach the next occupied position up the chain-of-command and communicate with the on-coming team member holding that position.

© The Response Group – 1/2008

6.4 Planning Cycle Overview (Cont'd)

OPERATIONS BRIEFING OVERVIEW



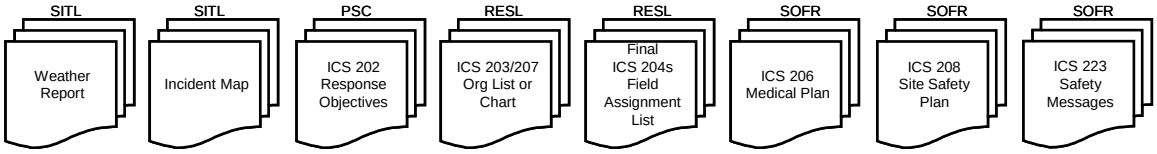
PURPOSE:

1. Meeting to present the IAP to the oncoming shift supervisors of the response organization.
2. After this meeting, off-going supervisors should be interviewed by their relief and by Operations in order to further confirm or adjust the course of the oncoming shift's IAP. Supervisors may adjust tactics or reallocate resources to adapt to changing conditions.

WHEN:	After the IAP Approval
DURATION:	30 minutes
FACILITATOR:	Planning Section Chief
ATTENDEES:	IC, Command Staff, General Staff, SITL, RESL, Staging Area Manager, COMMS UNIT, *Branch Directors, Task Force/Strike Team Leaders, Group Leaders.*

ICS FORMS:

Pro-active Phase – Detailed Incident Action Plan



MEETING AGENDA:

1. Open briefing, ground-rules, agenda, and role call.
2. Review IC/UC objectives and changes to the IAP.
3. IC/UC provide remarks.
4. Conduct situation briefing - SITL
5. Discuss current response actions and accomplishments - OPS
6. LSC covers support, FSC covers fiscal issues, SOFR covers safety issues, PIO covers public issues, LNO covers interagency issues, INTO covers intelligence issues.
7. PSC solicits final comments and adjourns briefing.

Demobilization and Documentation

The Incident Commander will authorize demobilization of the ERT. Upon demobilization, ERT members will submit all documentation associated with the incident to the Documentation Unit for filing. The Documentation Unit will distribute the incident files to the appropriate Operating Department (or as directed by the Incident Commander) upon demobilization of the ERT.

6.5 Emergency Response Organization - Levels of Response

The Emergency Response Team consists of Onsite Emergency Response Team in Mozambique and the Corporate Emergency Management Team in Houston. If needed, these teams can be supplemented by personnel available from Anadarko or contractor resources located outside of Mozambique. The Houston Strike Team embraces all activities undertaken by Anadarko. It provides a structured framework to provide support to facility Emergency Response Teams at remote locations.

Emergency Response (Tier 1 Response Concept)	
Local Response Team (On-Site)	Actions taken by tactical responders at an incident scene to directly attack the problem and its consequences
Corporate Emergency Response Team (Off-Site)	Actions taken at and/or away from the incident scene to support tactical response operations, facilitate planning, and address the concerns of the public and government agencies.
Incident Support (Tier 2 Response Concept)	
Houston Corporate Strike Team (On-Site)	Actions taken at the scene to support the local emergency response team, facilitate planning, and address concerns of the public and government agencies. Support to backfill and provide assistance to the local response team.
Crisis Management (Tier 3 Response Concept)	
Crisis Management Team (Houston)	Actions taken by management personnel to address the address the implications of the problem and its potential on the company's viability, operability, and credibility.

© The Response Group – 1/2008

6.6 Incident Command System

Anadarko will be utilizing the Incident Command System or ICS as the tool that facilitates the entire process of tiered response. It would be difficult for Anadarko's Tiered response concept to work effectively without the standardization of response titles and terminology afforded by the ICS thus seamless integration of Tier 1, Tier 2 and Tier 3 Incident Management Plans.

Classification of Incidents

The Anadarko approach to all response management from a personnel or resource perspective is based upon a layered or tiered concept.

Tier 1 Response Concept

A **Tier 1** incident or response is one that may be successfully managed or mitigated by local management or operating department personnel and resources. The Emergency Response Team (ERT) developed by operating departments or business units are by definition Tier 1 response teams.

Tier 2 Response Concept

A **Tier 2** incident or response **exceeds** Tier 1 capability, that is, it exceeds the ERT capability and requires additional resources to manage. Additional resources may include the Anadarko Strike Team & Response Contractors to support the local ERT effort.

Tier 3 Response Concept

In a Tier 3 type of incident, corporate and/or external response resources beyond the Tier 2 capability may be called in by the Businesses' management. The response to any Tier 3 incident will be different depending upon the type of incident, its size and impacts, the businesses involved, the country the incident is situated in, etc. In any given Tier 3 incident, only those elements of the system appropriate to mitigating the particular problem should be activated or utilized.

© The Response Group – 1/2008

6.7 Mozambique Emergency Response Team

The On-site ERT organization may expand due to the complexity of the incident and/or the arrival of additional resources. When it does, the On-Scene Commander delegates critical functions to subordinate personnel.

The On-Scene Commander is responsible for the direct management of tasks, unless the On-Scene Commander delegates this responsibility to Branch Directors and/or Division and Group Supervisors.

A moderate incident triggers the activation of the Response Team that is led by an Offshore or Onshore Installation Manager (OIM) who operates out of an ERT Command Center. When an ERT is activated, the ERT is assimilated into, and becomes the bulk of the Operations Section for the ERT.

The primary responsibilities of the Local ERT include but are not limited to:	
✓	Shutting down the affected facility or operation to isolate the source
✓	Ordering the evacuation of Muster and/or Shelter Areas
✓	Securing the incident scene
✓	Assisting in the acquisition of additional response resources
✓	Reporting the incident to Line Management
✓	Briefing and facilitating integration with the ERT, if activated
✓	Result in complex financial transactions

Specific job descriptions and checklists are presented later in this section of this Plan.

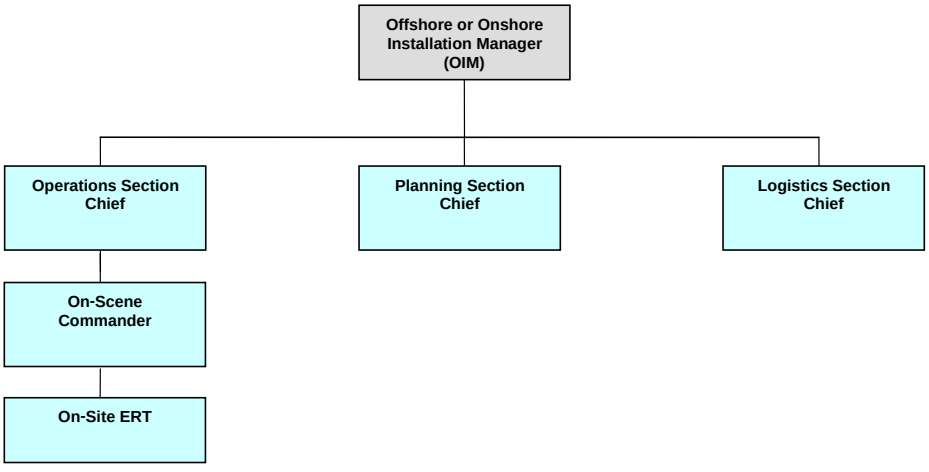


Figure 6 -7: Local Emergency Response Team

© The Response Group – 1/2008

6.8 Corporate Emergency Response (Strike Team) Team (ERT)

A Corporate Emergency Response Team is strategically oriented and should have the capacity to deal with major incidents that:	
✓	Disrupt or interrupt normal operations over an extended period of time
✓	Generate active interest at the business level, within government agencies, and among the public
✓	Necessitate repetitive short- and/or long-term planning
✓	Require the acquisition of response resources beyond those immediately available to the affected Asset
✓	Place unusual demands on services, facilities, and communications/IT equipment
✓	Create complex social, environmental, and/or economic impacts that must be assessed and remediate over an extended period of time
✓	Result in complex financial transactions

The Mozambique & Houston ERT is organized to carry out the following major functions: command, operations, planning, logistics, and finance.

The Command function is strategic in nature. It generates strategic objectives, determines response priorities and ensures that emergency response operations are carried out in a safe fashion. The Command function may also interact with government agencies and the public, and handle legal matters if instructed to do so by the CMT.

The Operations function encompasses and provides strategic direction to the work of the ERT as it relates to at-the-site tactical response operations.

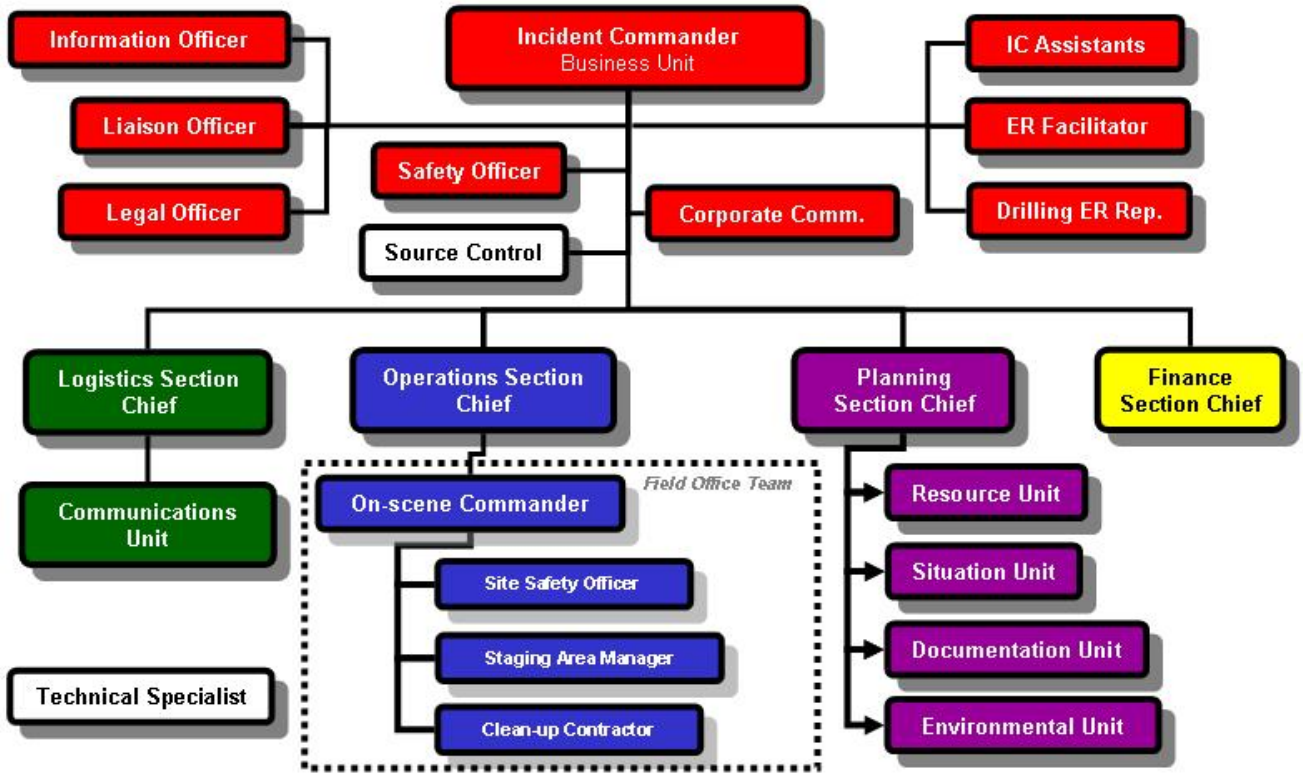
The Planning function takes the lead in the conduct of short-term (e.g., preparation of Incident Action Plans) and long-term (e.g., preparation of a General Plan) planning. In addition, the Planning function manages information associated with emergency response operations by establishing and maintaining the Information Center, and collecting and preserving documentation.

The Logistics function has two key responsibilities. First, it supports emergency response operations by requisitioning or procuring the personnel, equipment, materials, and supplies needed to carry out the operations. Second, it arranges for the services necessary to sustain emergency response operations, including: food, water, housing, clothing, transportation, security, fuel, spare parts, and anything else needed to keep people and equipment working in a safe and productive fashion.

The Finance function manages all financial transactions associated with emergency response operations. This responsibility includes the compilation of documentation needed to support requests for reimbursement from insurance carriers, and the receipt and processing of third party claims.

© The Response Group – 1/2008

6.8 Corporate Emergency Response (Strike Team) Team (Cont'd)



This section contains a job description for each member of the Local ERT and Corporate Emergency Response (Strike Team) Team.

Each job description in each part is broken down into two components – a role statement and a list of responsibilities. The role statement defines what the person performing the function is expected to do, and the list of responsibilities provides direction on how to perform the role.

Each checklist in each part is broken down into categories that reflect the Anaadarko Incident Management System of this plan. The actions listed under each category are those that a person in the position can take to help implement the IMS.

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

COMMON RESPONSIBILITIES

✳	Response Actions
	Receive assignment from your agency, including:
	➢ Job assignment (e.g., Strike Team designation, position, etc.).
	➢ Brief overview of type and magnitude of incident.
	➢ Resource order number and request number.
	➢ Reporting location & time.
	➢ Travel instructions/TONO.
	➢ Any special communications instructions (e.g., travel, radio frequency).
	➢ Monitor incident related information from media, internet, etc., if available.
	➢ Assess personal equipment readiness for specific incident and climate (e.g.) medications, money, computer, medical record, etc.). Maintain a checklist of items and possible a personal Go-Kit.
	➢ Inform others as to where you are going and how to contact you.
	➢ Review the Incident Management Handbook.
	➢ Take advantage of available travel to rest prior to arrival.
	Upon arrival at the incident, check-in at the designated check-in location. Check-in may be found at any of the following locations:
	➢ Incident Command Post (ICP), Base/Camps, Staging Areas, Helibases
	➢ If you are instructed to report directly to a line assignment, check-in with the Division/Group Supervisor.
	Receive briefing from immediate supervisor.
	Agency Representatives from assisting or cooperating agencies report to the Liaison Officer (LNO) at the ICP after check-in.
	Acquire work materials.
	Abide by organizational code of ethics.
	Participate in IMT meetings and briefings as appropriate.
	Ensure compliance with all safety practices and procedures. Report unsafe conditions to the Safety Officer.
	Supervisors shall maintain accountability for their assigned personnel with regard as to exact location(s) and personal safety and welfare at all times, especially when working in or around incident operations.
	Organize and brief subordinates.
	Know your assigned communication methods and procedures for your area of responsibility and ensure that communication equipment is operating properly.
	Use clear text and ICS terminology (no codes) in all radio communications.
	Complete forms and reports required of the assigned position and ensure proper disposition of incident documentation as directed by the Documentation Unit.
	Ensure all equipment is operational prior to each work period.
	Report any signs/symptoms of extended incident stress, injury, fatigue or illness for yourself or coworkers to your supervisor.
	Brief shift replacement on ongoing operations when relieved at operational periods or rotation out.

COMMON RESPONSIBILITIES (CONTINUED)	
	Respond to demobilization orders and brief subordinates regarding Demobilization.
	Prepare personal belongings for demobilization.
	Return all assigned equipment to appropriate location.
	Complete Demobilization Check-out process before returning to home base.
	Participate in After-Action activities as directed.
	Carry out all assignments as directed.

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

UNIT RESPONSIBILITIES	
✳	**Response Actions**
	Review Common Responsibilities.
	Upon check-in, receive briefing from Incident Commander, Section Leader, or Branch Director as appropriate.
	Participate in incident planning meetings and briefings, as required.
	Determine current status of unit activities.
	Order additional unit staff, as appropriate.
	Determine resource needs.
	Confirm dispatch and estimated time of arrival of staff and supplies.
	Assign specific duties to staff; supervise staff.
	Complete forms and reports required of the assigned position and send through the supervisor to the Documentation Unit.
	Develop and implement accountability, safety and security measures for personnel and resources.
	Supervise demobilization of unit, including storage of supplies.
	Provide Supply Unit Leader with a list of supplies to be replenished.
	Maintain unit records, including Unit/Activity Log (ICS Form 214).
	Individual responders may want to maintain personal log of actions, decisions and events.
	Carry out all assignments as directed.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

OFFSHORE OR ONSHORE INSTALLATION MANAGER (OIM)

Responsible for the overall management of emergency response operations and ensuring that they are carried out safely, effectively, and efficiently.

✳	Response Actions
	If necessary, designate On-Scene Commander.
	Work with Operations Section Chief to establish a direct line of communications with On-Scene Commander.
	Ensure that personnel safety is accorded the highest priority.
	Provide management direction to, and support for, On-Scene Commander and On-Site ERT.
	Supervise emergency response operations and ensure that they are carried out in a manner consistent with Site-Specific Emergency Response Plan.
	Define On-Site Emergency Response Team (ERT) tactical objectives and response priorities, and ensure that all operations are carried out in a manner consistent with objectives and priorities.
	Order and supervise shutdown of any and all operations necessary to isolate source of incident.
	Order activation of mustering and/or shelter-in-place procedures, if necessary.
	Order evacuation of muster and/or shelter areas, if necessary.
	Work with Operations Section Chief to determine whether isolation perimeter defined by On-Scene Commander needs to be expanded to further isolate incident scene (e.g., closing waterway, road, or air space); work with Operations Section Chief to secure new perimeter.
	Maintain ERT Status Board: Tactical Objectives, Notifications, Activations, Critical Contact Numbers.
	Keep appropriate asset management informed about nature and status of incident and emergency response operations; submit routine Field Reports.
	Monitor and evaluate effectiveness of emergency response operations.
	Receive information on incident and work with appropriate asset management to determine need to activate ERT.
	Work with Incident Commander to define roles of Local ERT members in ongoing response operations.
	Announce ‘all clear’ for end of Local ERT response operations.
	Compile and maintain appropriate documentation.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

INCIDENT COMMANDER/DEPUTY IC (IC/QI)
(Qualified Individual)

The IC(s) responsibility is the overall management of the incident. On most incidents, the command activity is carried out by a single IC. The IC is selected by qualifications and experience. The IC may have a deputy, who may be from the same agency, or from an assisting agency. Deputies may also be used at section and branch levels of the ICS organization. Deputies must have the same qualifications as the person for whom they work, as they must be ready to take over that position at any time.

✳	Response Actions
	Review Common Responsibilities.
	Obtain a briefing from the prior IC (201 Briefing).
	Determine Incident Objectives & general direction for managing the incident.
	Establish the immediate priorities and incident potential.
	Establish an ICP.
	Brief Command Staff and General Staff.
	Establish an appropriate organization.
	Ensure planning meetings are scheduled as required.
	Approve and authorize the implementation of an IAP.
	Ensure that adequate safety measures are in place.
	Coordinate activity for all Command and General Staff.
	Coordinate with key people and officials.
	Approve requests for additional resources or for the release of resources.
	Keep agency administrator informed of incident status.
	Approve the use of trainees, volunteers, and auxiliary personnel.
	Authorize release of information to the news media.
	Ensure ICS 209 is completed and forwarded to appropriate higher authority.
	Order the demobilization of the incident when appropriate.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

SAFETY OFFICER

The SOFR function is to develop and recommend measures for assuring personnel safety, and to assess and/or anticipate hazardous and unsafe situations. Only one primary SOFR will be assigned for each incident. The SOFR may have specialists, as necessary, and the assistants may also represent assisting agencies or jurisdictions. Safety assistants may have specific responsibilities, such as air operations, hazardous materials, etc.

✳	Response Actions
	Review Common Responsibilities.
	Ensure initial Site Assessment has been conducted by the ERT and execute a plan for ongoing monitoring.
	Ensure compliance with Personal Protective Equipment (PPE) requirements for all response operations.
	Develop the Site Safety Plan and publish Site Safety Plan summary (ICS Form 208) as required.
	Review and approve the medical plan (ICS Form 206).
	Identify hazardous situations associated with the incident.
	Review the tasks or IAP for safety implications.
	Provide safety advice in the IAP for assigned responders.
	Exercise emergency authority to stop and prevent unsafe acts.
	Investigate accidents that have occurred within the incident area.
	Assign assistants, as needed.
	Participate in tactics and planning meetings, and other meetings and briefings as required.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

PUBLIC INFORMATION OFFICER

The Public Information Officer (PIO) is responsible for developing and releasing information about the incident to the news media, to incident personnel, and to other appropriate agencies and organizations. Only one primary PIO will be assigned for each incident, including incidents operating under UC and multi-jurisdiction incidents. The PIO may have assistants as necessary, and the assistants may also represent assisting agencies or jurisdictions. Agencies have different policies and procedures relative to the handling of public information.

✳	Response Actions
	Review Common Responsibilities.
	Determine from the IC if there are any limits on information release.
	Develop material for use in media briefings.
	Obtain IC approval of media releases.
	Inform media and conduct media briefings.
	Arrange for tours and other interviews or briefings that may be required.
	Manage a Joint Information Center (JIC) if established.
	Obtain media information that may be useful to incident planning.
	Maintain current information summaries and/or displays on the incident and provide information on the status of the incident to assigned personnel.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

LIAISON OFFICER

Incidents that are multi-jurisdictional, or have several agencies involved, may require the establishment of the LNO position on the Command Staff. Only one primary LNO will be assigned for each incident, including incidents operating under UC and multi-jurisdiction incidents. The LNO may have assistants as necessary, and the assistants may also represent assisting agencies or jurisdictions. The LNO is assigned to the incident to be the contact for assisting and/or cooperating Agency Representatives.

✳	Response Actions
	Review Common Responsibilities.
	Be a contact point for Agency Representatives.
	Maintain a list of assisting and cooperating agencies and Agency Representatives, including name and contact information. Monitor check-in sheets daily to ensure that all Agency Representatives are identified.
	Assist in establishing and coordinating interagency contacts.
	Keep agencies supporting the incident aware of incident status.
	Monitor incident operations to identify current or potential inter-organizational problems.
	Participate in planning meetings, providing current resource status, including limitations and capability of assisting agency resources.
	Coordinate response resource needs for Natural Resource Damage Assessment and Restoration (NRDAR) activities with the OSC during oil and HAZMAT responses.
	Coordinate response resource needs for incident investigation activities with the OSC.
	Ensure that all required agency forms, reports and documents are completed prior to demobilization.
	Brief Command on agency issues and concerns.
	Have debriefing session with the IC prior to departure.
	Coordinate activities of visiting dignitaries.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

LEGAL OFFICER

The Legal Officer is responsible for providing advice and direction on all matters of a legal nature including claims, legal requirements relating to the emergency response, investigations, Natural Resource Damage assessment (NRDA), major procurement contracts, insurance coverage, and review of information releases to the media, government agencies and the public.

✳	Response Actions
	Review Common Responsibilities.
	Obtain briefing from the Incident Commander.
	Advise the Incident Commander (IC) and the Unified Command (UC), as appropriate, on all legal issues associated with response operations.
	Establish documentation guidelines for and provide advise regarding response activity documentation to the response team.
	Provide legal input to the Documentation Unit, the Compensation/Claims Unit, and other appropriate Units as requested.
	Review press releases, documentation, contracts and other matters that may have legal implications for the Company.
	Participate in Incident Command System (ICS) meetings and other meetings, as requested.
	Participate in incident investigations and the assessment of damages (including natural resource damage assessments).
	Maintain Individual/Activity Log (ICS Form 214a).

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

OPERATIONS SECTION CHIEF

The Operations Section Chief (OSC), a member of the General Staff, is responsible for the management of all operations directly applicable to the primary mission. The OSC will normally be selected from the organization/agency with the most jurisdictional responsibility for the incident and will work in the Incident Command Post (ICP).
The OSC activates and supervises organization elements in accordance with the IAP and directs its execution. The OSC also directs the preparation of Unit operational plans, requests or releases resources, makes expedient changes to the IAP, as necessary; and reports such to the IC.

✳	Response Actions
	Review Common Responsibilities.
	Obtain briefing from IC.
	Request sufficient Section supervisory staffing for both operational and planning activities.
	Convert operational incident objectives into strategic and tactical options through a work analysis matrix.
	Coordinate and consult with the PSC, SOFR technical specialists, modeling scenarios, trajectories, etc., on selection of appropriate strategies and tactics to accomplish objectives.
	Identify kind and number of resources required to support selected strategies.
	Subdivide work areas into manageable units.
	Develop work assignments and allocate tactical resources based on strategy requirements.
	Coordinate planned activities with the SOFR to ensure compliance with safety practices.
	Participate in the planning process and the development of the tactical portions (ICS 204 and ICS 220) of the IAP.
	Assist with development of long-range strategic, contingency, and demobilization plans.
	Supervise Operations Section personnel.
	Monitor need for and request additional resources to support operations as necessary.
	Coordinate with the Liaison Officer and Safety Officer to ensure compliance with approved safety practices.
	Evaluate and monitor current situation for use in next operational period planning.
	Interact and coordinate with Command on achievements, issues, problems, significant changes special activities, events, and occurrences.
	Troubleshoot operational problems with other IMT members.
	Supervise and adjust operations organization and tactics as necessary.
	Participate in operational briefings to IMT members as well as briefings to media, and visiting dignitaries.
	Develop recommended list of Section resources to be demobilized and initiate recommendation for release when appropriate.
	Receive and implement applicable portions of the incident Demobilization Plan.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

ON-SCENE COMMANDER

Is under the direction of the OIM or Operations Section Chief or Deputy, and is responsible for providing input into IAP develop; and, implementation of the IAP for all field tactical operations.

✳	Response Actions
	Review Common and Unit Leader Responsibilities.
	Ensure response activities are implemented in accordance with the IAP.
	Ensure all response personnel are aware of and follow guidelines set forth in the Site Safety Plan (ICS 208).
	Report all injuries to the Safety Officer.
	Coordinate site access control with the Security Officer.
	Review Division/Group Assignment Lists (ICS Form 204) and modify based on effectiveness of current operations.
	Direct response contractors.
	Request maps and charts of impacted areas as required for supporting field operations.
	Assign specific work tasks to Task Force/Strike Team Leaders and/or Division/Group Supervisors.
	Resolve logistic problems reported by subordinates.
	Receive Incident Status Summary input from the Task Force/Strike Team Leaders and/or Division/Group Supervisors and forward to the Situation Unit.
	Report to Operations Section Chief when the IAP is to be modified and significant change in status or events.
	Approve accident and medical reports originating from the field.
	Maintain Unit Log (ICS 214).

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

STAGING MANAGER

The STAM is responsible for managing all activities within a Staging Area.
The Staging Area Manager works closely with the Resource Unit, Operations, and Logistics.
Several staging areas may be required depending on the incident.

✳	Response Actions
	Review Common Responsibilities.
	Proceed to Staging Area.
	Establish Staging Area layout.
	Obtain briefing from person you are relieving, if applicable.
	Determine any support needs for equipment, feeding, sanitation and security.
	Establish check-in function as appropriate.
	Ensure security of staged resources.
	Post areas for identification and traffic control.
	Request maintenance service for equipment at Staging Area as appropriate.
	Respond to request for resource assignments. (Note: This may be direct from the OSC/DOSC or via the Incident Communications Center.)
	Obtain and issue receipts for radio equipment and other supplies distributed and received at Staging Area.
	Determine required resource levels from the OSC/DOSC.
	Advise the OSC/DOSC when reserve levels reach minimums.
	Maintain and provide status to Resource Unit of all resources in Staging Area.
	Maintain Staging Area in orderly condition.
	Demobilize Staging Area in accordance with the Incident Demobilization Plan.
	Debrief with OSC/DOSC or as directed at the end of each shift.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

BRANCH DIRECTOR (OPBD)

The OPBD's when activated, are under the direction of the OSC or DOSC as directed, and are responsible for the implementation of the portion of the IAP appropriate to the Branches.

Branch – That organizational level having functional/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.

✳	Response Actions
	Review Common Responsibilities.
	Receive briefing from OSC/DOSC.
	Identify Divisions, Groups, and resources assigned to the Branch.
	Obtain briefing from person you are relieving.
	Ensure that Division Supervisors (DIVS) have a copy of the IAP.
	Implement IAP for Branch.
	Develop with subordinates alternatives for Branch control operations.
	Review Division/Group Assignment Lists (ICS 204) for Divisions/Groups within the Branch. Modify lists based on effectiveness of current operations.
	Assign specific work tasks to DIVS.
	Supervise Branch operations.
	Resolve logistic problems reported by subordinates.
	Attend planning meetings at the request of the OSC/DOSC.
	Ensure through chain of command that Resources Unit is advised of changes in the status of resources assigned to the Branch.
	Report to OSC/DOSC when: the IAP is to be modified; additional resources are needed; surplus resources are available; or hazardous situations or significant events occur.
	Approve accident and medical reports (home agency forms) originating within the Branch.
	Consider demobilization well in advance.
	Debrief with OSC/DOSC and/or as directed at the end of each shift.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

EMERGENCY RESPONSE BRANCH

The Emergency Response Branch is primarily responsible for overseeing and implementing emergency measures to protect life, mitigate further damage to the environment, and stabilize the situation.

✳	Response Actions
	Review Common Responsibilities.
	Develop with subordinates alternatives for Branch control operations.
	Attend planning meetings at the request of the OPS.
	Review Division/Group Assignment Lists (ICS Form 204) for Divisions/Groups the within the Branch. Modify lists based on effectiveness of current operations.
	Assign specific work tasks to Division/Group Supervisors.
	Supervise Branch operations.
	Resolve logistic problems reported by subordinates.
	Report to OPS when: the IAP is to be modified; additional resources are needed; surplus resources are available; or hazardous situations or significant events occur.
	Approve accident and medical reports (home agency forms) originating within the Branch.
	Maintain Unit/Activity Log (ICS Form 214).

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

DIVISION/GROUP SUPERVISOR (DIVS)

The DIVS reports to the OSC/DOSC (or OPBD when activated). The DIVS is responsible for the implementation of the assigned portion of the IAP, assignment of resources within the Division/Group, and reporting on the progress of control operations and status of resources within the Division/Group.

Division – The organizational level having responsibility for operation within a defined geographic area or with functional responsibility. The Division level is organizationally between the Task Force/Team and the Branch.

Group – Groups are 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 region. Groups are located between Branches (when activated) and Resources in the Operations Section.

✳	Response Actions
	Review Common Responsibilities.
	Receive briefing from supervisor.
	Obtain briefing from person you are relieving.
	Identify resources assigned to the Division/Group.
	Provide the IAP to subordinates, when available.
	Review Division/Group assigned tasks and incident activities with subordinates.
	Implement IAP for Division/Group.
	Supervise Division/Group resources.
	Ensure through chain of command that Resources Unit is advised of all changes in the status of resources assigned to the Division/ Group.
	Coordinate activities with adjacent Division/ Group.
	Determine need for assistance on assigned tasks.
	Submit situation and resources status information to the Branch Director or the OSC/DOSC as directed.
	Report hazardous situations, special occurrences, or significant events, e.g., accidents, sickness, discovery of unanticipated sensitive resources, to the immediate supervisor.
	Ensure that assigned personnel and equipment get to and from assignments in a timely and orderly manner.
	Resolve logistics problems within the Division/ Group.
	Participate in the development of Branch plans for the next operational period, as requested.
	Consider demobilization well in advance.
	Debrief as directed at the end of each shift.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

STRIKE TEAM/TASK FORCE LEADER (STCR/TFLD)

The STCR/TFLD reports to an OIM, OPBD, or DIVS and is responsible for performing tactical assignments assigned to the Strike Team or Task Force. The Leader reports work progress, resources status, and other important information and maintains work records on assigned personnel.

***Task Force** – A group of resource with common communications and a leader assembled for a specific mission.*

***Strike Team** – Specified combinations of the same kind and type of resources with common communications and a leader.*

✳	Response Actions
	Review Common Responsibilities.
	Review Common Unit Leader Responsibilities
	Obtain briefing from person you are relieving, if applicable.
	Review assignments with subordinates and assign tasks.
	Monitor work progress and make changes when necessary.
	Coordinate activities with adjacent Strike Teams, Task Forces and single resources.
	Travel to and from active assignment area with assigned resources.
	Retain control of assigned resources while in available or out-of-service status.
	Submit situation and resource status information to OPBD/DIVS.
	Debrief as directed at the end of each shift.
	Review Common Responsibilities.
	Review Common Unit Leader Responsibilities
	Obtain briefing from person you are relieving, if applicable.

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

SOURCE CONTROL

Under the direction of the On-Scene Commander and/or Emergency Response Branch Director, the Salvage/Source Control Group Supervisor is responsible for coordinating and directing all salvage/source control activities related to the incident.

✳	Response Actions
	Review Common Responsibilities.
	Review Division/Group Supervisor Responsibilities.
	Coordinate the development of Salvage/Source Control Plan.
	Determine Salvage/Source Control resource needs.
	Direct and coordinate implementation of the Salvage/Source Control Plan.
	Manage dedicated salvage/Source Control resources.
	Maintain Unit Log (ICS 214).

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

FIRE SUPPRESSION

The Fire Suppression Branch Director, when activated, is under the direction of the On-Scene Commander and/or Operations Section Chief. The Fire Department's initial Operations Section Chief at a maritime fire is often re-designated the Fire Suppression Branch Director under a UC. The Director is responsible for the assigned portion of the IAP that deals with fire suppression activities, assignment of resources within the branch, and reporting progress of control activities, and status of resources within the branch.

✳	Response Actions
	Review Common Responsibilities.
	Prioritize responses to incident-related fires.
	Determine resource needs.
	Direct and coordinate firefighting mission.
	Manage dedicated firefighting resources.
	Brief Emergency Response Branch Director on activities.
	Maintain Unit/Activity Log (ICS Form 214).

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

MEDICAL

The Medical Group/Division Supervisor supervises the Medical Emergencies on-scene. The Medical Group/Division Supervisor establishes command and controls the activities within a Medical Group/Division, in order to assure the best possible emergency medical care to patients during a multi-casualty incident.

✳	Response Actions
	Review Division Group responsibilities.
	Participate in Multi-Casualty Branch/Operations Section Planning Activities.
	Establish Medical Group/Division with assigned personnel. Request additional personnel and resources sufficient to handle the magnitude of the incident.
	Designate Treatment Team Leaders and treatment area locations as appropriate.
	Isolate Morgue and Minor Treatment Area from Immediate and Delayed Treatment Areas.
	Request law enforcement/coroner involvement as needed.
	Determine amount and types of additional medical resources and supplies needed to handle the magnitude of the incident (medical caches, backboards, litters, cots).
	Establish communications and coordination with Logistics.
	Ensure activation of hospital alert system, local EMS/health agencies.
	Direct and/or supervise on-scene personnel from agencies such as Coroner's Office, Red Cross, law enforcement, ambulance companies, county health agencies, and hospital volunteers.
	Ensure proper security, traffic control, and access for the Medical Group/Division area.
	Direct medically trained personnel to the appropriate team leader.
	Maintain Unit Log. (ICS 214).

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

PLANNING SECTION CHIEF - PSC

The PSC, a member of the General Staff, is responsible for the collection, evaluation, dissemination and use of incident information and maintaining status of assigned resources. Information is needed to: 1) understand the current situation; 2) predict the probable course of incident events; 3) prepare alternative strategies for the incident; and 4) submit required incident status reports.

✳	Response Actions
	Review Common Responsibilities.
	Collect, process, and display incident information.
	Assist OSC in the development of response strategies.
	Supervise preparation of the IAP.
	Facilitate planning meetings and briefings.
	Assign personnel already on-site to ICS organizational positions as appropriate.
	Establish information requirements and reporting schedules for Planning Section Units (e.g., Resources, Situation).
	Determine the need for any specialized resources in support of the incident.
	Establish special information collection activities as necessary (e.g., weather, environmental, toxics, etc.).
	Assemble information on alternative strategies.
	Provide periodic predictions on incident potential.
	Keep IMT apprised of any significant changes in incident status.
	Compile and display incident status information.
	Oversee preparation and implementation of the Incident Demobilization Plan.
	Incorporate plans (e.g., Traffic, Medical, Communications, and Site Safety) into the IAP.
	Develop other incident supporting plans (e.g., salvage, transition, security).
	Review PSC Job Aid.
	Maintain Unit Log (ICS 214).

© The Response Group – 1/2008

Anadarko Emergency Response Team Duties and Responsibilities Checklist	
RESOURCE UNIT LEADER - RESL	
The RESL is responsible for maintaining the status of all assigned tactical resources and personnel at an incident. This is achieved by overseeing the check-in of all tactical resources and personnel, maintaining a status-keeping system indicating current location and status of all these resources.	
✳	**Response Actions**
	Review Common Responsibilities.
	Review Unit Leader Responsibilities.
	Establish the check-in function at incident locations.
	Prepare Organization Assignment List (ICS 203) and Organization Chart (ICS 207).
	Prepare appropriate parts of Division Assignment Lists (ICS 204).
	Maintain and post the current status and location of all tactical resources.
	Maintain master roster of all tactical resources checked in at the incident.
	Maintain Unit Log (ICS 214).
	Review Common Responsibilities.

Anadarko Emergency Response Team Duties and Responsibilities Checklist	
SITUATION UNIT LEADER - SITL	
The Situation Unit Leader is responsible for collecting, processing and organizing incident information relating to the growth, mitigation or intelligence activities taking place on the incident. The SITL may prepare future projections of incident growth, maps and intelligence information.	
✳	**Response Actions**
	Review Common Responsibilities.
	Review Unit Leader Responsibilities.
	Begin collection and analysis of incident data as soon as possible.
	Prepare, post, or disseminate resource and situation status information as required, including special requests.
	Prepare periodic predictions or as requested by the PSC.
	Prepare the Incident Status Summary Form (ICS 209).
	Provide photographic services and maps if required.
	Conduct situation briefings at Command & General Staff, Tactics, Planning, and OPS Briefing.
	Conduct situation briefings at other meetings/ briefings as required.
	Develop and maintain master chart(s)/map(s) of the incident.
	Maintain chart/map of incident in the common area of the ICP for all responders to view.
	Maintain Unit Log (ICS 214).

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

DOCUMENTATION UNIT LEADER - DOCL

The DOCL is responsible for the maintenance of accurate, up-to-date incident files. Examples of incident documentation include: Incident Action Plan, incident reports, communication logs, injury claims, situation status reports, etc. Thorough documentation is critical to post-incident analysis. Some of the documents may originate in other sections. This unit shall ensure each section is maintaining and providing appropriate documents. The DOCL will provide duplication and copying services for all other sections. The Documentation Unit will store incident files for legal, analytical, and historical purposes.

✳	Response Actions
	Review Common Responsibilities.
	Review Unit Leader Responsibilities.
	Set up work area; begin organization of incident files.
	Establish duplication service; respond to requests.
	File all official forms and reports.
	Review records for accuracy and completeness; inform appropriate units of errors or omissions.
	Provide incident documentation as requested.
	Organize files for submitting final incident documentation package.
	Maintain Unit Log (ICS 214).

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

TECHNICAL SPECIALIST - THSP

Certain incidents or events may require the use of THSP's who have specialized knowledge and expertise. THSP's may function within the Planning Section or be assigned wherever their services are required.

✳	Response Actions
	Review Common Responsibilities.
	Provide technical expertise and advice to Command and General Staff as needed.
	Attend meetings and briefings to clarify and help to resolve technical issues.
	Provide expertise during the development of the IAP and other support plans.
	Work with the Safety Officer to mitigate unsafe practices.
	Work closely with Liaison Officer to help facilitate understanding among stakeholders and special interest groups.
	Be available to attend press briefings to clarify technical issues.
	Work with Operations Section to monitor compliance with planned actions.
	Research technical issues and provide findings to decision makers.
	Provide appropriate modeling and predictions as needed.
	Trouble-shoot technical problems and provide advice on resolution.
	Review specialized plans and clarify meaning.
	Maintain Unit Log (ICS 214).

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

ENVIRONMENTAL UNIT LEADER - ENVL

The ENVL is responsible for environmental matters associated with the response, including strategic assessment, modeling, surveillance, and environmental monitoring and permitting. The ENVL prepares environmental data for the Situation Unit.

✳	Response Actions
	Review Common Responsibilities.
	Review Unit Leader Responsibilities.
	Obtain a briefing and special instructions from the PSC.
	Identify sensitive areas and recommend response priorities.
	Following consultation with natural resource trustees, provide input on wildlife protection strategies (e.g., removing oiled carcasses, pre-emptive capture, hazing, and/or capture and treatment).
	Determine the extent, fate, and effects of contamination.
	Acquire, distribute, and provide analysis of weather forecasts.
	Monitor the environmental consequences of response actions.
	Develop shoreline cleanup and assessment plans. Identify the need for, and prepare any special advisories or orders.
	Identify the need for, and obtain, permits, consultations, and other authorizations, including Endangered Species Act (ESA) provisions.
	Following consultation with the FOSC's Historical/Cultural Resources Technical Specialist identify and develop plans for protection of affected historical/cultural resources.
	Evaluate the opportunities to use various response technologies.
	Develop disposal plans.
	Develop a plan for collecting, transporting, and analyzing samples.
	Maintain Unit Log (ICS 214).

Environmental Specialist	Provide environmental expertise to Environmental Unit
Sampling Specialist	Sampling plan development & implementation
Response Technologies Specialist	Mechanical Containment & Recovery, dispersant application, in-situ burning, & bio-remediation
Remediation Technology Specialist	Provide technical expertise regarding long-term and future environmental remediation issues
Trajectory Analysis Specialist	Oil spill trajectories, air plume modeling, & fates and effects of spilled material
Weather Forecast Specialist	Real-time and forecasted weather reports
Resources at Risk Specialist	Identification and prioritization of effected & potentially effected resources at risk
SCAT Specialist	Shoreline Cleanup Assessments & cleanup recommendations
Historical/Cultural Resources Specialist	Identification and prioritization of effected & potentially effected historical or cultural sites
Disposal Specialist	Disposal plan development & implementation

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

LOGISTICS SECTION CHIEF

The LSC, a member of the General Staff, is responsible for providing facilities, services, and material in support of the incident. The LSC participates in the development and implementation of the IAP and activates and supervises the Branches and Units within the Logistics Section.

✳	Response Actions
	Review Common Responsibilities
	Plan the organization of the Logistics Section.
	Assign work locations and preliminary work tasks to Section personnel.
	Notify the Resources Unit of the Logistics Section Units activated, including names and locations of assigned personnel.
	Assemble and brief Logistics Branch Directors and Unit Leaders.
	Determine and supply immediate incident resource and facility needs.
	In conjunction with Command, develop and advise all Sections of the IMT resource approval and requesting process.
	Review proposed tactics for upcoming operational period for ability to provide resources and logistical support.
	Identify long-term service and support requirements for planned and expected operations.
	Advise Command and other Section Chiefs on resource availability to support incident needs.
	Provide input to and review the Communications Plan, Medical Plan and Traffic Plan.
	Identify resource needs for incident contingencies.
	Coordinate and process requests for additional resources.
	Track resource effectiveness and make necessary adjustments.
	Advise on current service and support capabilities.
	Develop recommended list of Section resources to be demobilized and initiate recommendation for release when appropriate.
	Receive and implement applicable portions of the incident Demobilization Plan.
	Ensure the general welfare and safety of Logistics Section personnel.
	Maintain Unit Log (ICS 214).

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

COMMUNICATIONS UNIT LEADER - COML

The COML is responsible for developing plans for the effective use of incident communications equipment and facilities; installing and testing of communications equipment; supervision of the Incident Communications Center; distribution of communications equipment to incident personnel; and the maintenance and repair of communications equipment.

✳	Response Actions
	Review Common Responsibilities.
	Review Unit Leader Responsibilities.
	Determine Unit personnel needs.
	Prepare and implement the Incident Radio Communications Plan (ICS 205).
	Ensure the Incident Communications Center and the Message Center is established.
	Establish appropriate communications distribution/maintenance locations within the Base.
	Ensure communications systems are installed and tested.
	Ensure an equipment accountability system is established.
	Ensure personal portable radio equipment from cache is distributed per Incident Radio Communications Plan.
	Provide technical information as required on: adequacy of communications, systems currently in operation, geographic limitation on communications systems, equipment capabilities/limitations, amount and types of equipment available, anticipated problems in the use of communications equipment.
	Supervise Communications Unit activities.
	Maintain records on all communications equipment as appropriate.
	Ensure equipment is tested and repaired.
	Recover equipment from Units being demobilized.
	Maintain Unit Log (ICS 214).

© The Response Group – 1/2008

Anadarko Emergency Response Team
Duties and Responsibilities Checklist

FINANCE SECTION CHIEF

The FSC, a member of the General Staff, is responsible for all financial, administrative and cost analysis aspects of the incident and for supervising members of the Finance/Admin Section.

✳	Response Actions
	Review Common Responsibilities.
	Participate in incident planning meetings and briefings as required.
	Review operational plans and provide alternatives where financially appropriate.
	Manage all financial aspects of an incident.
	Provide financial and cost analysis information as requested.
	Gather pertinent information from briefings with responsible agencies.
	Develop an operating plan for the Finance/Admin Section; fill 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) administrative headquarters on Finance/Admin matters.
	Ensure that all personnel time records are accurately completed and transmitted to home agencies, according to policy.
	Provide financial input to demobilization planning.
	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 prior to leaving incident.
	Develop recommended list of Section resources to be demobilized and initial recommendation for release when appropriate.
	Receive and implement applicable portions of the incident Demobilization Plan.
	Maintain Unit Log (ICS 214).

© The Response Group – 1/2008

Section 7 – Media Relations

7.1 Media Relations

Only Anadarko designated spokespersons may speak with the media on behalf of Anadarko.

This policy is all encompassing and covers both routine press inquiries regarding company operations and activities in addition to negative incidents or issues. Company-approved media training will be provided for selected individuals who may have to act as a spokesperson for a specialized area of the business, or during the early stages of a crisis incident. Only persons who receive this training will be authorized to speak on behalf of the company and provide information to outside representatives, including the media.

Any ANADARKO employee who may be contacted by the media should immediately refer the individual to a company-designated spokesperson.

This should be done in a diplomatic and professional manner without offering any information. A listing of authorized spokespersons will be provided to all employees at each operating location as a reference.

No one should release any written information in the form of an official statement or press release, under any circumstances, without prior clearance and approval from (the designated corporate representative) with communications responsibility during an incident.

Release of information concerning emergency conditions at Company facilities or operations will be provided in accordance with Corporate Procedures.

Employees

Company employees at the scene of an emergency should:	
✓	Contact immediate supervisor or next higher level of management
✓	Maintain site security. Do not allow anyone into ANADARKO facilities except those personnel and equipment required to handle the emergency
✓	Under NO circumstances should the following information be released: • Cause of emergency • Speculation regarding cause • Dollar estimate of physical damage • Names of injured or dead, prior to notification of Next-of-Kin
✓	Refer media inquiries to the Incident Commander until "Designated Spokesperson/Public Information Officer" is appointed

© The Response Group – 11/2007

Incident Commander

The Incident Commander should:	
✓	Notifies Line Management
✓	Informs employees not to allow anyone into the facility except those personnel and equipment required to handle the emergency
✓	Directs inquiries from media to Media Relations or designated spokesperson
✓	Relays all information gathered at emergency scene to Media Relations or designated spokesperson

Designated Spokesperson

The Designated Spokesperson should:	
✓	Set up room or office outside emergency location for press. If possible, press should have access to telephones for outside calls.
✓	Check credentials of all media before admittance.
✓	Delegate company escorts to accompany media visiting the emergency area.
✓	Issue statements to news media based on suggested outline from Corporate Media Relations.

Public Information Officer

The Public Information Officer is responsible for all communications and contact with the media during an emergency, until an alternate contact ("Designated Spokesperson") is identified by Incident Commander.

The Public Information Officer will maintain communications with the media in accordance with the requirements of this Section.

Communication and public affairs are best handled by persons trained in dealing with the media. There will be times when it is not practical to refer all questions from the media and public to our headquarters. Indeed, a factual, short response can help reduce the time and effort ultimately needed to respond to the media and public.

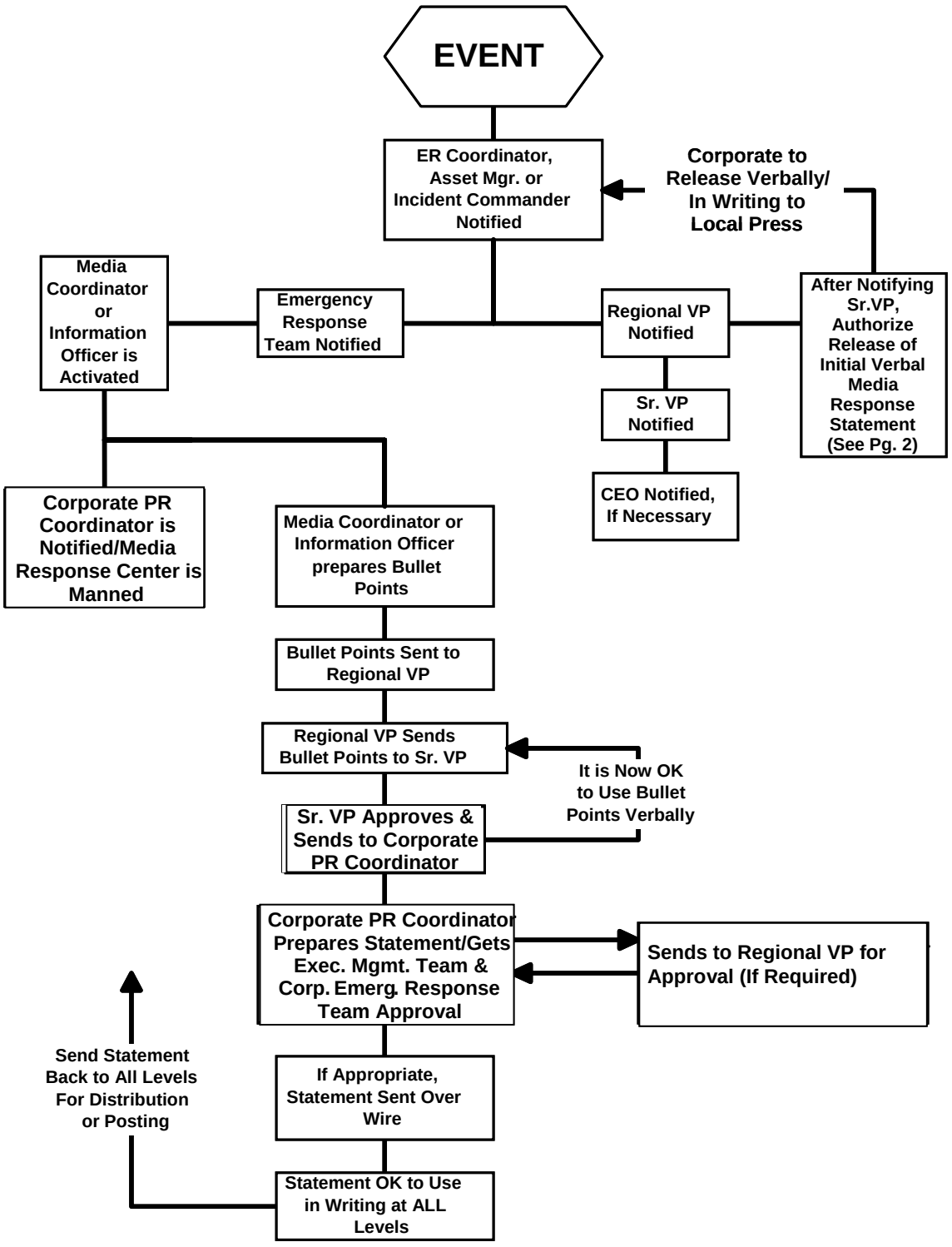
© The Response Group – 11/2007

The senior ranking Anadarko onsite employee or his/her designate, if approached for a statement, may respond to questions from the media.

1	The response should be a short statement of the facts.
2	Estimates or speculations as to cause or size of the problem must not be made.
3	Information requests for more than the facts relating directly to the immediate emergency (such as our future plans, amount of damage, what other hazards might exist, previous inspections done at the facility, any citations we may have received, etc.) shall be addressed by indicating that a company representative/spokesperson will address the media when more information is known about the incident.
4	If you are going to be questioned in front of a camera, consider your appearance and what will be in the background (behind you) of your interview.
5	If possible, your interview should be done with a neutral or non-threatening background (see following page for example).

© The Response Group – 11/2007

MEDIA RELATIONS PROCESS — Figure 7.1



© The Response Group – 11/2007

Section 8 – Receptors at Risk

8.1 Resources at Risk

The purpose of this section is to quickly identify the sensitivities that could potentially be affected during an incident.

The resources at risk from are described in detail in The Environmental Impact Assessment (EIA) that has been prepared for seismic & drilling operations. The EIA was used as a planning aid in determining response strategies for spills and is currently located at www.anadarko.com/mozambique.

PLACE HOLDER for reference to future ***Environmental Sensitivity Maps for Coastal Areas of Mozambique*** (either part of a National Contingency Plan or strategic plan from Environmental Protection Agency).

© The Response Group –8/2008

8.2 Environmental

The risk of accidental hydrocarbon spillage to the marine environment is one of the main environmental concerns associated with oil-industry developments. The impacts upon marine organisms arising from oil spills are well documented, and a summary of these impacts and their effects is given in the following ***Table 8-2****: Potential impacts on components of the marine environment from an oil spill.* **Figure 8.3** is a list of shoreline response methods used in coastal environments to protect the resources at risk to the extent possible. **Section 8.4** contains spill trajectory modeling showing potential shoreline impacts from the Rovuma Northern Offshore Area 1 Block 2 based on historical weather data from Pilot Charts.

Potential Impacts		Table 8-2
Component	**Type of effect**	**Level of impact**
Seabirds	Physical fouling of feathers; potential toxicity by ingestion; damage to eyes etc.	Potential fatalities of sensitive offshore species, may arise, especially among diving birds and waders, although this will heavily depend on the quantity of oil spilled, and the probability of oil reaching the coast.
Fish	Direct effects are rare offshore.	Fish may leave the immediate area. Tainting of fish flesh is not proven, but public perception can damage commercial fisheries.
Sea turtles	Effects on turtles include increased egg mortality and developmental defects, direct mortality due to oiling in hatchlings, juveniles, and adults; and negative impacts to the skin, blood, digestive and immune systems, and salt glands.	Potential fatalities due to turtles' inability to avoid contaminated areas.
Fisheries	Loss of fishing access, and potential loss of fishing resources.	Potentially severe impacts on subsistence fishing communities.
Manatees	Found in coastal marine and estuarine habitats as well as fresh water along the coast.	Oil could contaminate the food sources or oil could be ingested as well as adhering to the skin as the animal surfaces for breathing.

© The Response Group –8/2008

Potential Impacts		Table 8-2
Component	**Type of effect**	**Level of impact**
Aquaculture	Potential toxicity by ingestion/ filter feeding; physical damage to gills etc; oxygen reduction in pond area.	Potential mass mortality in cases of extreme contamination partly due to high stocking densities and enclosed area. Taint leading to loss of income. Longer term impact on reproduction.
Algae	Oil may be trapped in the algal mat during low tide causing severe biological impacts	The oil will be removed by wave action and natural degradation, but the biological impacts can be immediate and severe. In exposed rocky flats with tidal pools, oil can be trapped in the pools. This habitat is very important as nursery area for fish. Intertidal rocks covered by abundant algal growth, which is exposed at low tide, are encountered in a wide zone along the coast.
Invertebrates	In exposed rocky flats with tidal pools, oil can be trapped in the pools.	The oil will be removed by wave action and natural degradation, but the biological impacts can be immediate and severe. This habitat is very important as nursery area for fish.
Fish and fish eggs and larvae in confined environments	Oil and the oil components tend to adhere to the tidal flats, preventing removal by tides. Oil may persist for years.	The lagoons are important and vulnerable ecosystems, housing a wide variety of fish, shrimps, crabs and mollusk species. Lagoons are almost impossible to clean up due to the soft substrate and limited access. Usually any cleanup effort will mix oil deeper into the sediment prolonging recovery. Natural removal rates are very slow because there is no wave action to remove the oil and the oil components.
Bird eggs and young birds	Reduction in number of eggs, Fertility of eggs, Reduced thickness of shell. Transfer of oil to young birds can cause death.	Feeding, roosting and nesting sites for thousands of migratory and resident birds. The reproduction of the birds can also be affected when adult birds have been in contact with oil.
Mangroves	Important breeding and nursery areas for fish and crustaceans and essential habitats for numerous birds. Exposed root systems are sensitive.	Oil can enter during high tide and coat the aerial roots and sediment surface as the tide goes out. The oil clogs the pores in the aerial roots and collapses the respiratory system and cause the tree to die. Fresh oil can cause death by toxicity of oil components.

© The Response Group –8/2008

8.3 Coastal Response Methods

It is vital to protect environmentally sensitive areas from the harmful effects of an oil release. Many of the organisms living in the area have a limited ability to cope with changes in their environment. Therefore, it is important to keep spills contained in open water and minimize shoreline exposure to the extent possible.

The focus of response efforts will be to protect human life and health, sensitive environmental and ecological areas, and economic entities. Recommended practical steps to take toward achieving these efforts are:

•	Stop further pollution at the source
•	Contain the pollutant discharge released
•	Remove the product

A. Shoreline Protection Methods – Offshore/ Near shore/Shoreline

In the event that open water techniques do not recover or remove all of the oil, plans will be developed by the Operations & Planning sections to implement shoreline protection strategies. These strategies will be used to protect marine and shoreline resources and areas of special environmental or economical importance as identified in the (placeholder for Mozambique National Contingency Plan) and the Offshore/Shoreline protection methods developed by The Response Group are detailed in **Figure 8-3-1 & 8-3-2**.

If shoreline/near shore areas are to be impacted, it might be viable to take advantage of natural collection areas. These are areas where a released substance will accumulate with limited assistance from human intervention. Some such areas might include (but are not limited to): sand bars, land cuts, solid piers and debris piles. Generally, if these areas are accessible to removal equipment, they provide a convenient and economical location for recovery.

B. Waterfowl and Wildlife Protection

Anytime oil is spilled on water, methods to protect waterfowl and wildlife will be considered. Although these methods may be used in open waters, a considerable amount of effort will be spent providing waterfowl and wildlife protection in their living habitats along shorelines and natural nesting areas. Some of the methods that will be considered for waterfowl and wildlife protection are detailed in **Figure 8-3-3**.

Offshore/Shoreline Protection Methods — Figure 8-3-1

Method	Applicability	Limitations
Protection/Exclusion Booming	Used to exclude the spill from impacting a sensitive resource. Various techniques may be used depending on the conditions at the time of the incident.	Can be successful in excluding all types of oil in water sea states of 0-3 feet. Used in all sizes of spills.
Containment Booming ("V", "J", "U", & Teardrop)	Used to contain or trap oil to prevent further spreading. Various techniques may be used depending on the conditions at the time of the incident.	Can be successful in containing all types of oil in water sea states of 0-3 feet. Used in all sizes of spills.
Diversion Booming	Boom deployed at an angle to approaching slick to divert oil from entering waterways, canals, water intakes or other environmental sensitive areas.	Wave heights less than 1ft. protects shoreline resources (i.e., tidal inlets, salt marshes, sand/mudflats, etc.). Used in all sizes of spills.
Sorbent Booming & Padding	Used to protect sensitive areas or collect oil in calm water. Also used in conjunction with hard boom at recovery or natural collection sites to prevent sheen and recover oil. Can also be used to contain & recover oil in shallow tidal and marsh areas (passive recovery).	Used mainly in calm waters. Can absorb all types of oil.
Chemical Dispersion	Application of chemical to disperse oil from surface into suspension in the water column. May be applied by airplane or boat. Requires regulatory agency approval.	Limited by weather conditions, thickness and volatility of oil. Must be conducted within first several hours of spill.
Mechanical Diversion	Pumps can be used to spray water at spills to direct oil to desired areas for collection or away from areas to be protected.	Used mainly in calm waters on small spills. Can be used on all types of oils.
Mechanical Recovery	Oil spill I.D. boats and skimming systems with various containment booming methods. Shallow water vessels and skimming systems used to recover oil collected by various containment booming methods.	Can be successful in removing all types of oil from water in sea states of 0-3. Used in all sizes of spills.
In-Situ Burning	Burning oil to prevent spreading	Limited by weather conditions, thickness and volatility of oil. Must be conducted within first several hours of spill.
Natural Dispersion	Allow natural elements (i.e., wave action, evaporation, etc.) to remove oil from water.	No limitations. Used in circumstances of small and large spills that pose no threat to sensitive areas.

© The Response Group –8/2008

Protection Methods Versus Physical Setting — Figure 8-3-2

Physical Resources V = Viable Method C = Conditional Method - = Not Applicable	Oil Recovery		Floating Barriers					Solid Barriers						Other		
	Open-Water Skimming	*Netting*	*Shallow water Boom*	*Inland Boom*	*Harbor Boom*	*Open-Water Boom*	*Sorbent Boom*	*Earthen Barrier*	*Underflow Dam*	*Overflow Dam*	*Trench*	*Flow gate*	*Locks*	*Air/Water Streams*	*Bubble Barriers*	*Improvised Barrier*
Open-Water	V	C	-	-	C	V	-	-	-	-	-	-	-	-	-	-
Open Exposed Shoreline	V	C	-	-	C	V	-	C	-	-	C	-	-	-	-	-
Sheltered Shoreline	C	C	C	V	C	C	-	V	-	-	C	V	-	C	C	C
Rivers and Banks	C	-	V	V	C	-	-	C	-	-	C	-	C	-	-	C
Entrances	V	C	-	C	V	V	-	-	-	-	C	-	-	-	-	-
Salt Water Marshes and Creek Mouths	-	-	V	C	-	-	C	V	C	C	C	C	-	-	-	V
Freshwater Marshes and Swamps	-	-	V	C	-	-	C	C	C	-	C	-	-	-	-	C
Tidal Inlets	C	-	V	C	C	-	-	C	-	-		-	-	-	-	-
Intermittent Creeks	-	-	V	C	-	-	C	V	C	C	C	C	-	-	-	V
Streams	-	-	V	C	-	-	C	C	C	C	C	-	-	-	-	C
Vegetated Shorelines	-	-	C	V	C	-	C	-	-	-	-	-	-	-	-	-
Sand/Mud Flats	C	-	V	C	C	-	C	C	-	-	-	-	-	-	-	C
Submerged Habitats and Resources	C	-	C	C	C	C	-	-	-	-	-	-	-	-	-	C

© The Response Group – 8/2008

Protection-Methods for Waterfowl And Wildlife — Figure 8-3-3

Method	Applicability	Limitations
Noise Devices (propane cannons, guns, alarms, horns, etc.)	Devices used to provide noise to keep birds away from impact areas may be used onboard boats or at shorelines	Long term use reduces results. Birds/wildlife may become acclimated to sound; not practical in nesting areas.
Vehicles and Boats	Noise from motors and horns may keep birds and wildlife away from impact areas.	Limited use in shoreline areas; not practical in nesting areas.
Over flights	Noise from airplanes and helicopters may keep birds and wildlife away from impact areas.	Limited by weather conditions; not practical in nesting areas.
Fencing and Netting	Fencing and netting may be placed around impact areas to keep nestlings from entering.	Limited to areas accessible for fencing and netting
Remove Sea Turtle Nests	Remove nests from impact areas within 2 days	Element of time is essential
Notify spill response personnel in boats to watch for manatees	Conduct safety meeting to discuss safety issues concerning wildlife including manatees	Poor light & inclement weather conditions
Helium filled balloons stationary figures	Place balloons & figures in impact areas	
Play recorded sounds of alarmed birds	Play recorded sounds of alarmed birds in impact areas	

© The Response Group – 8/2008

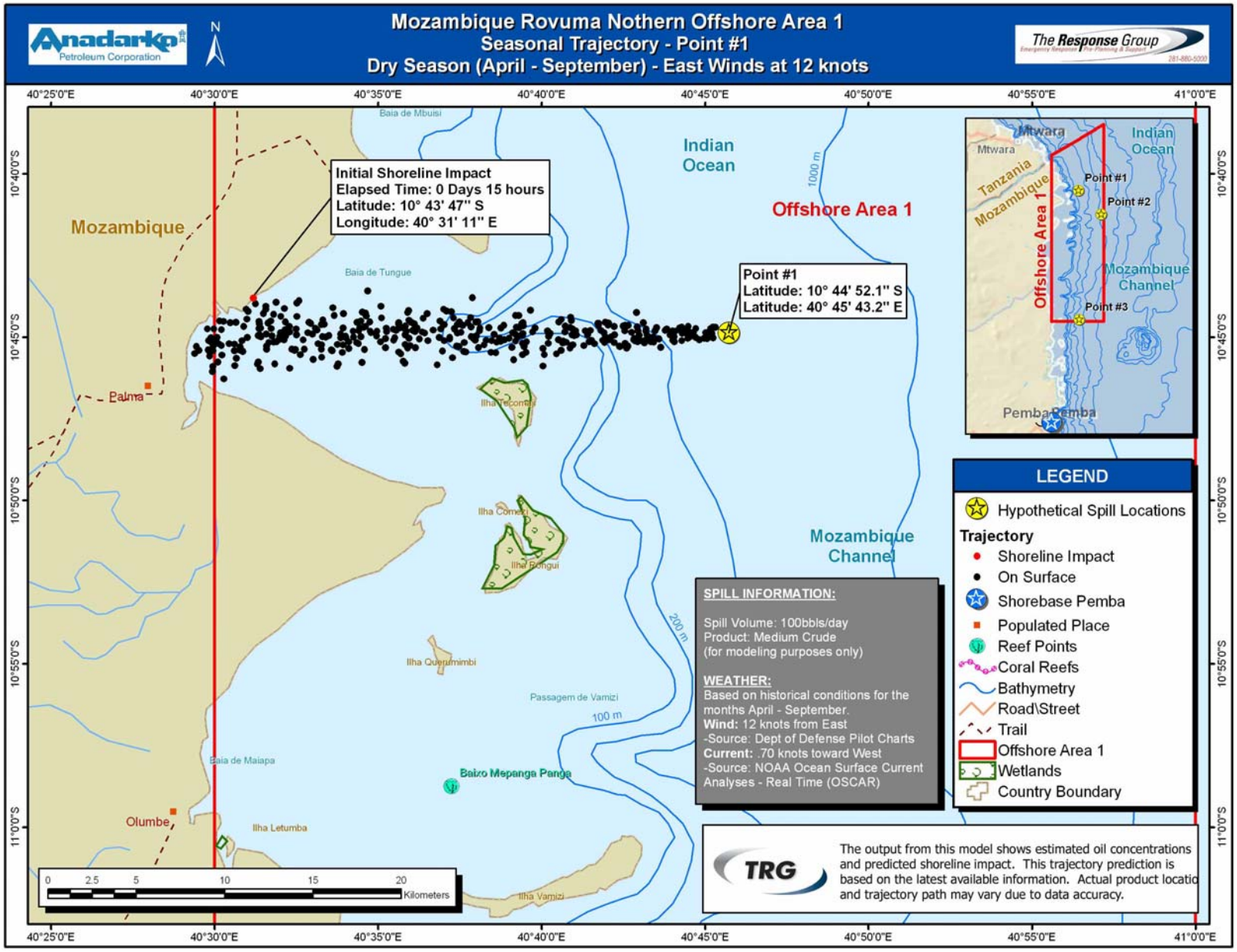
8.4 Seasonal Trajectories

Dry Season (April – September)	
	East winds at 12 knots
	Southeast winds at 16 knots
Wet Season (October - March)	
	North winds at 11 knots
	Northeast winds at 10 knots

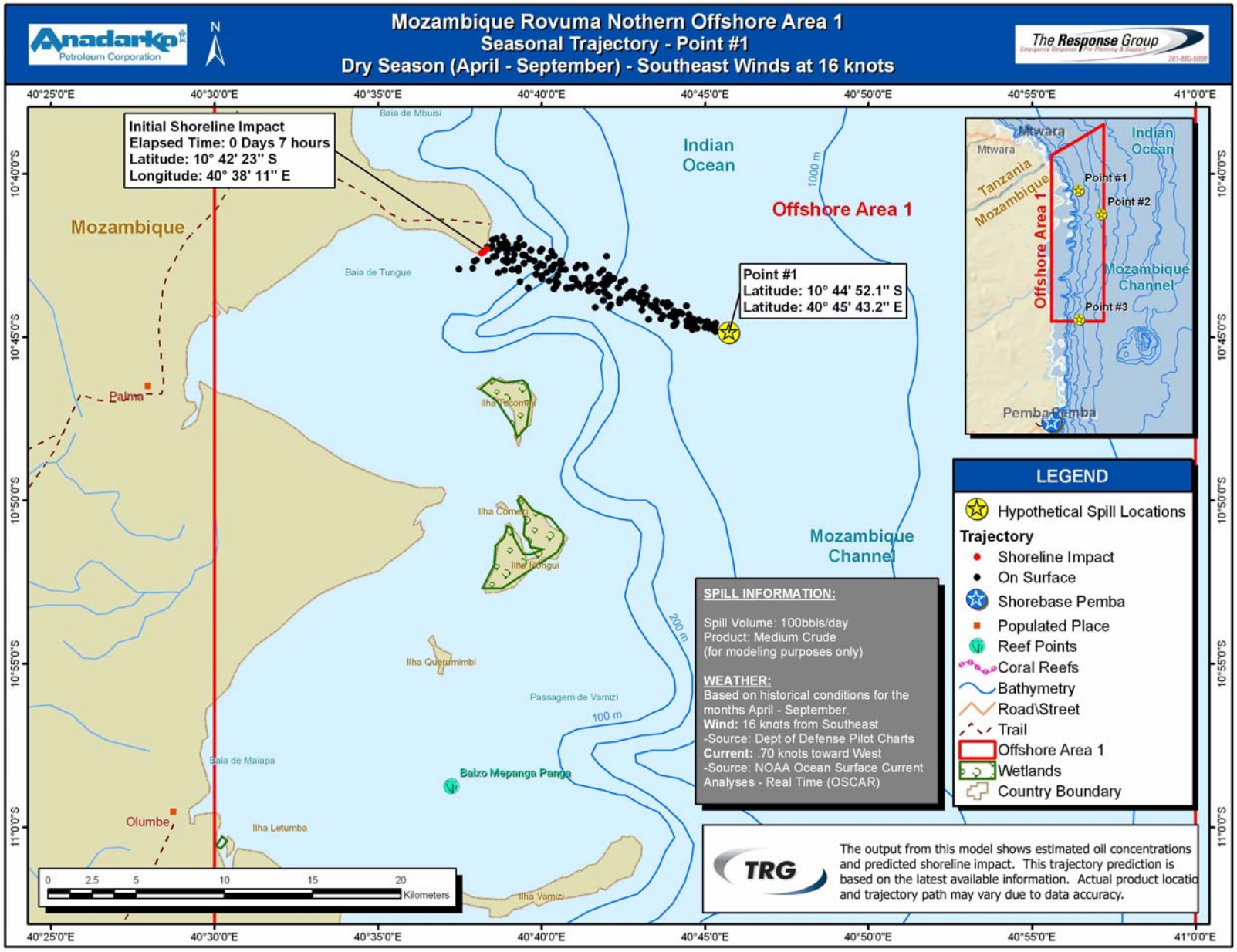
***3 deepwater points used for each wet & dry season**

* Surface Currents are consistent year round at approximately 0.6 to 0.75 knots towards the West.

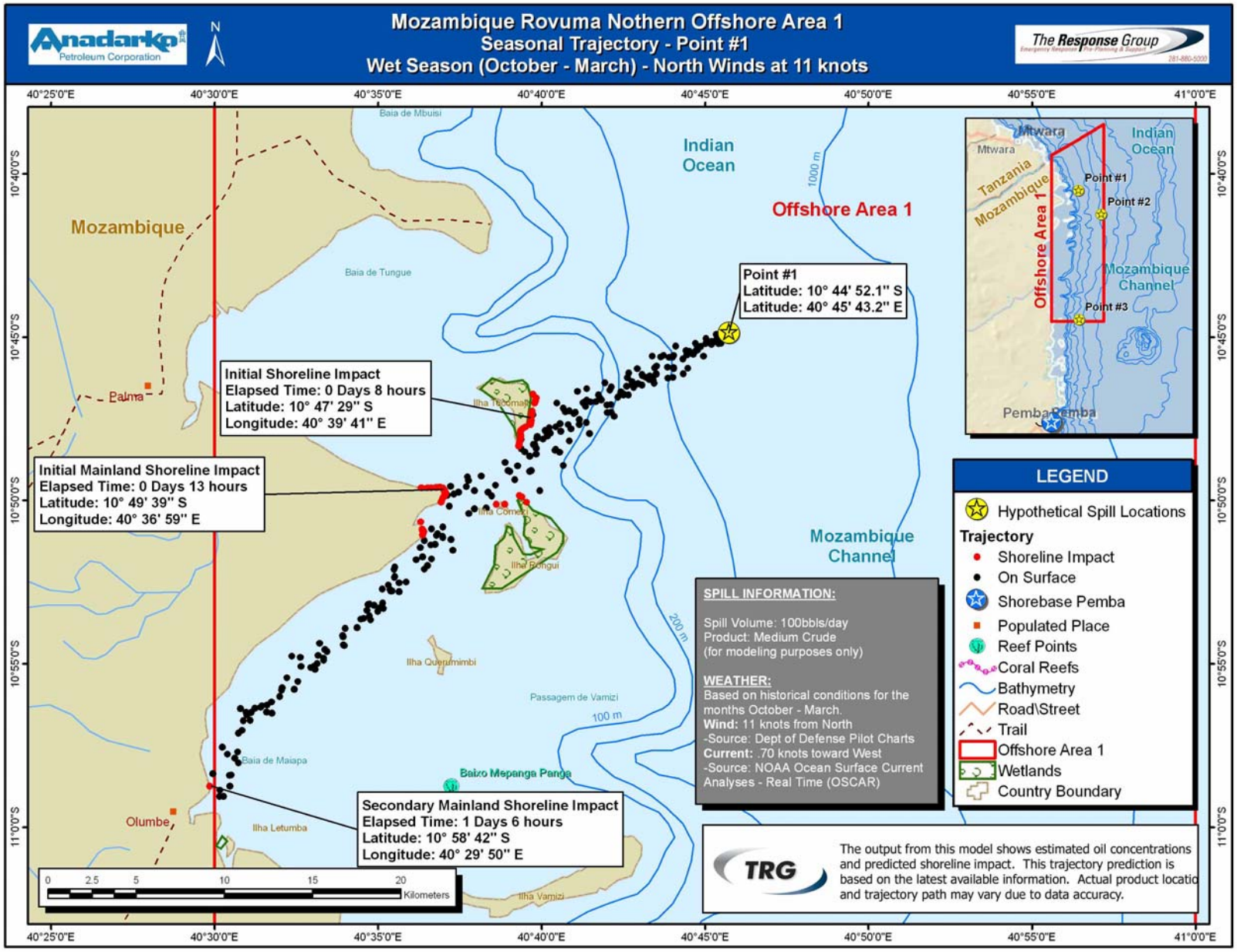
© The Response Group – 8/2008



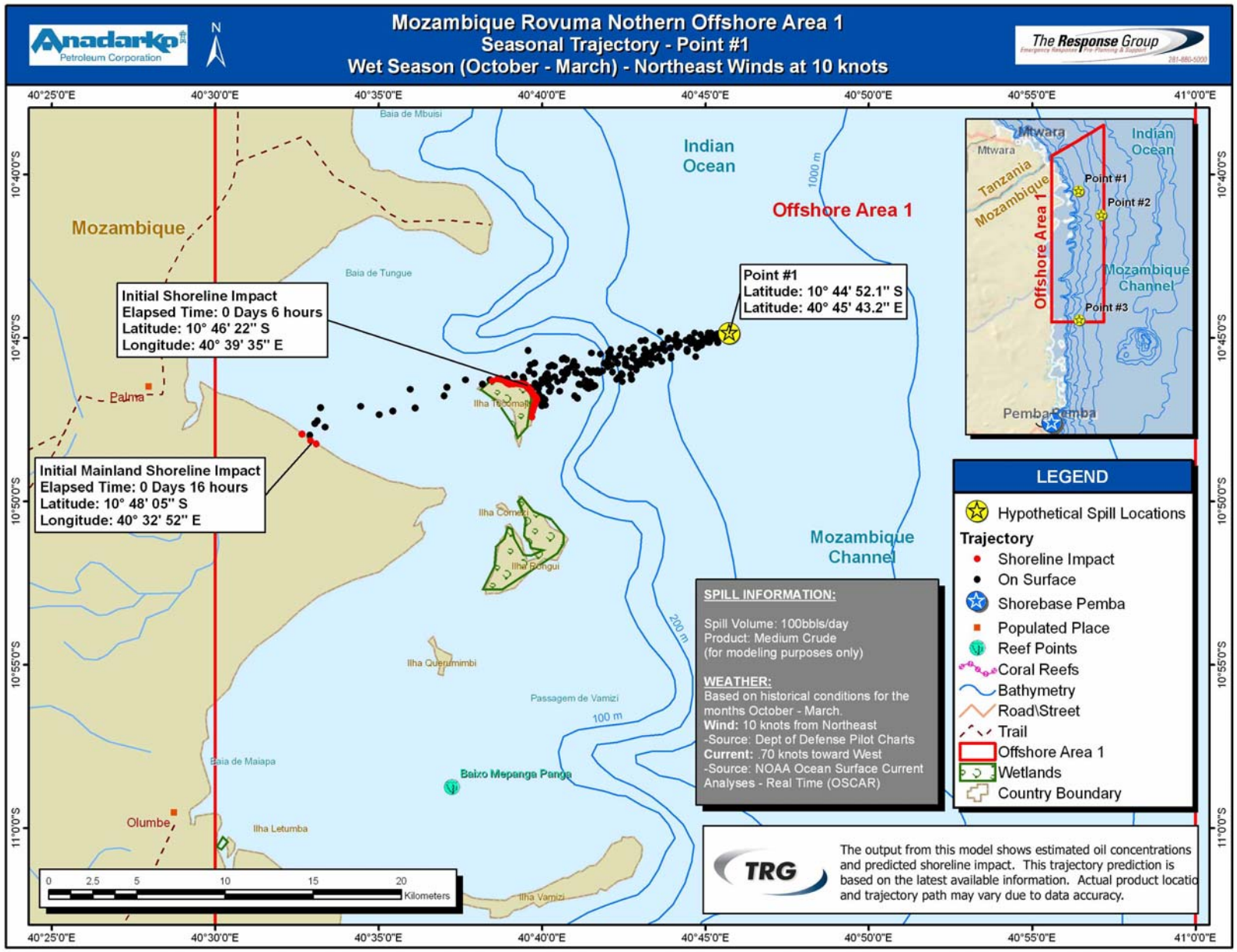
© The Response Group – 8/2008



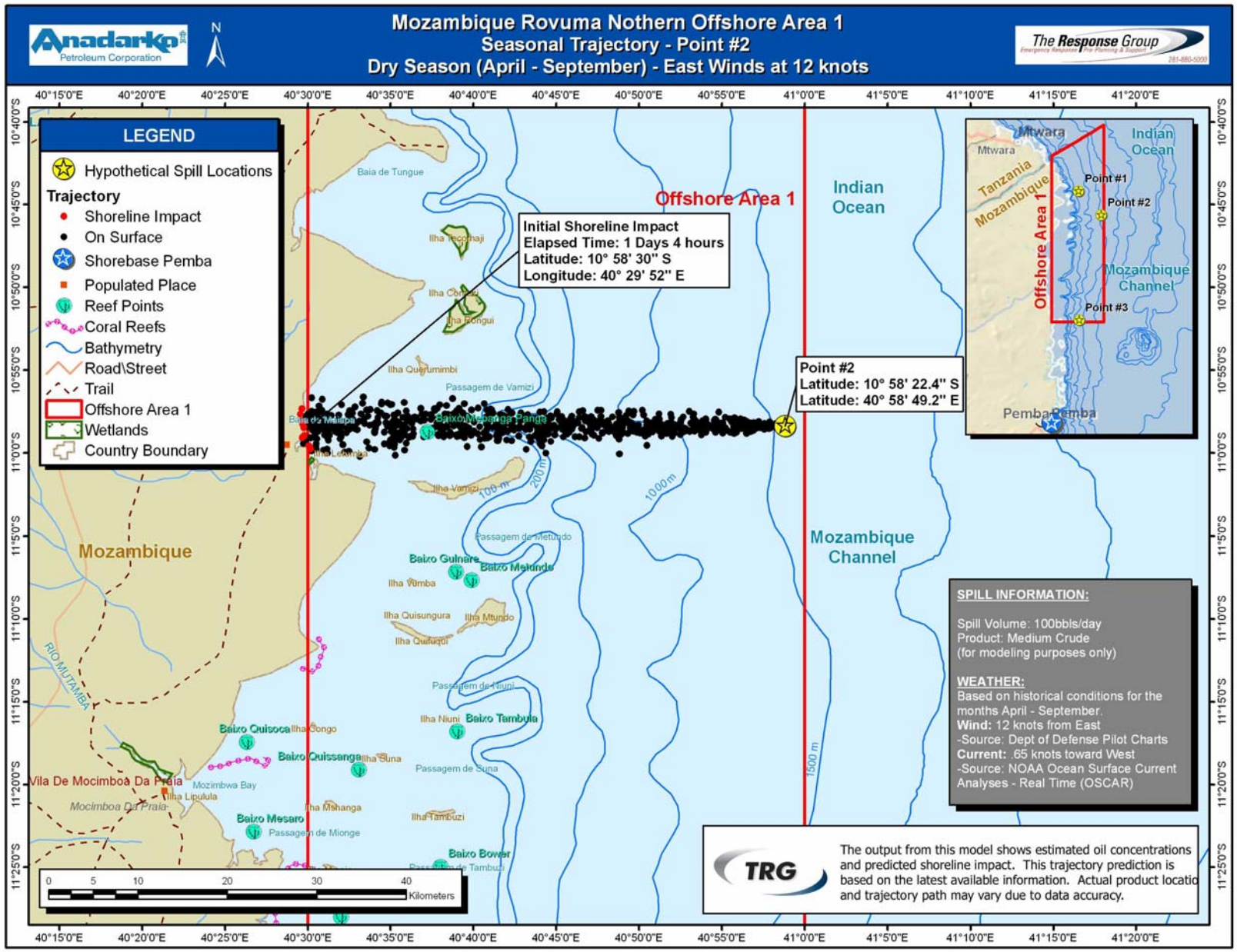
© The Response Group – 8/2008



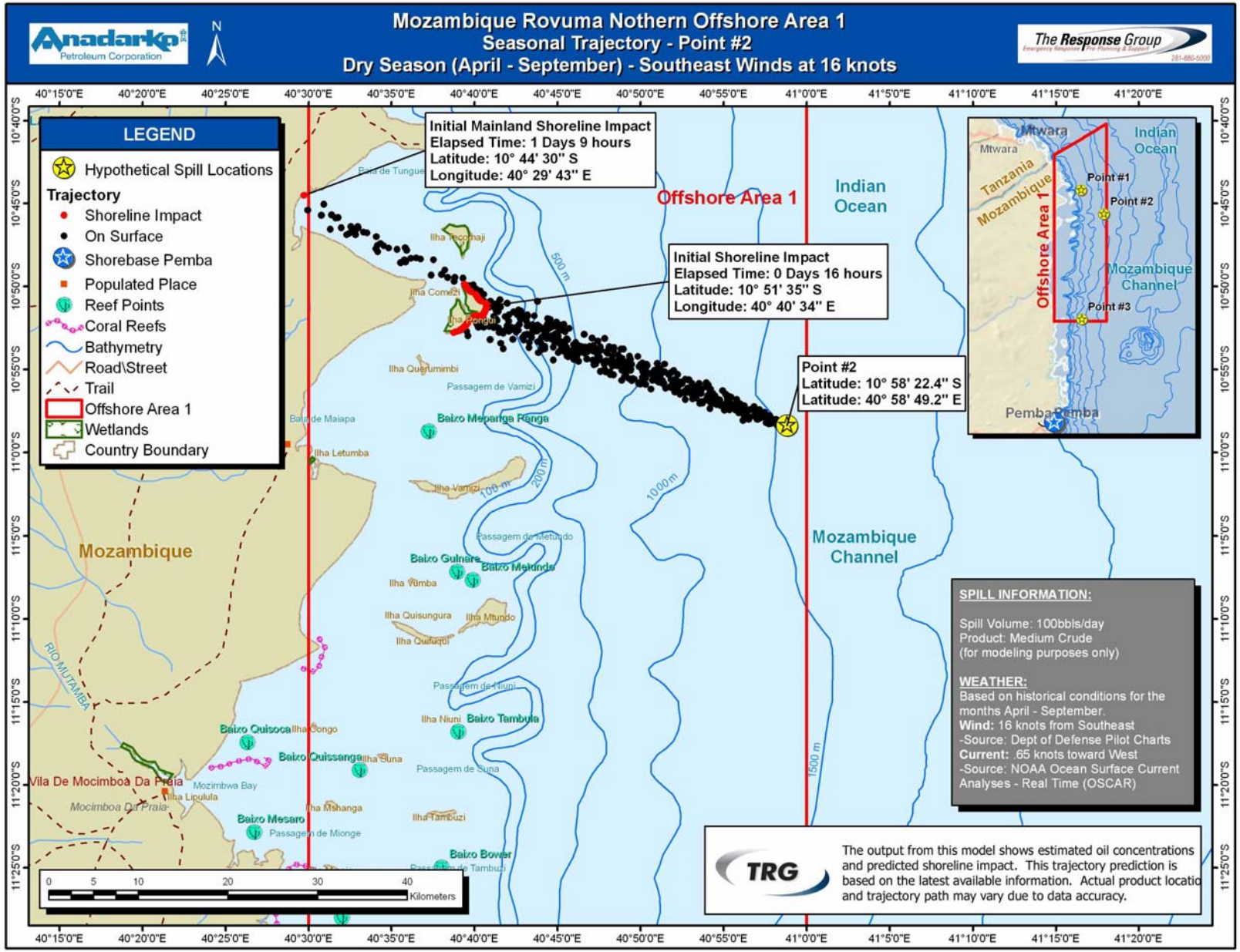
© The Response Group – 8/2008



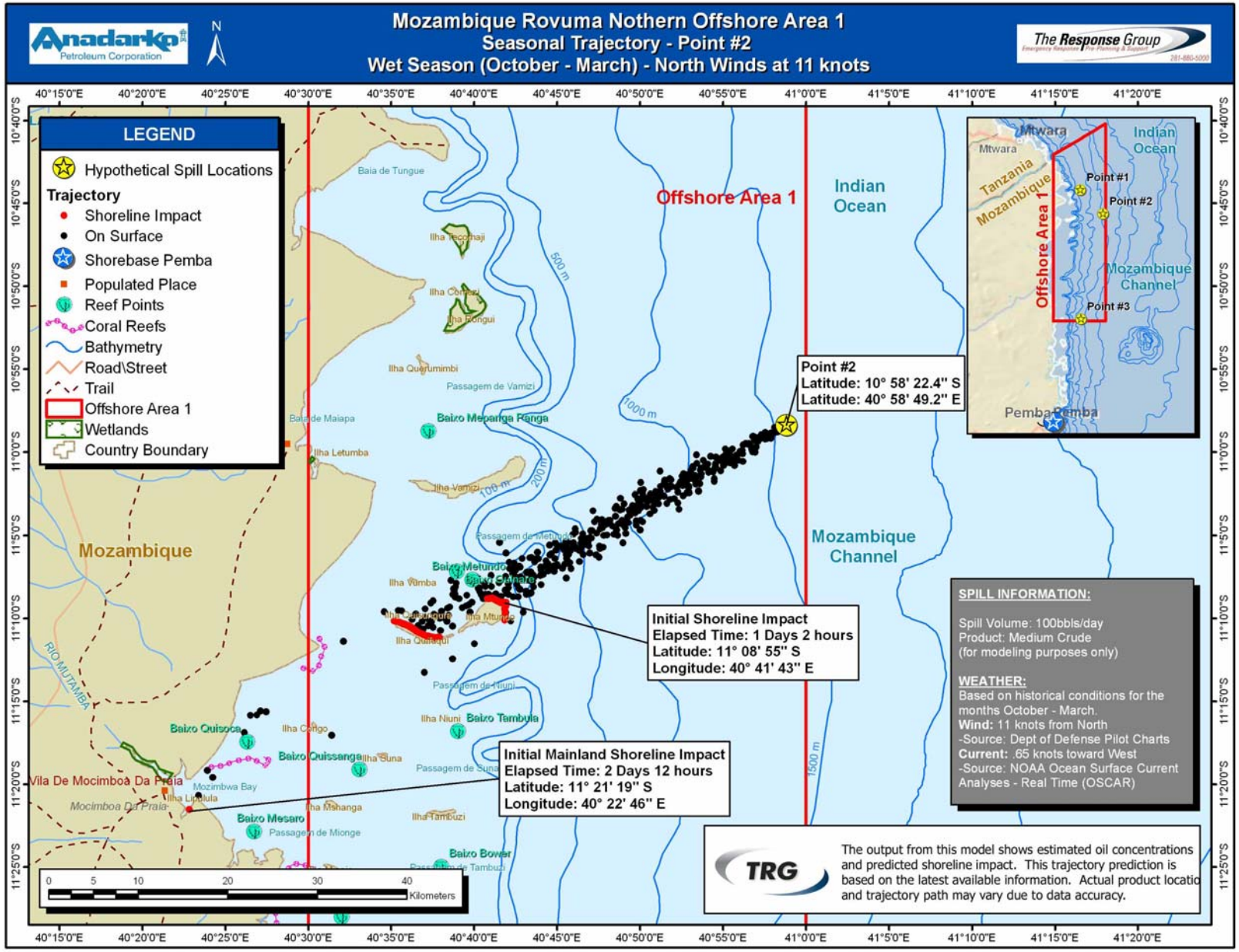
© The Response Group – 8/2008



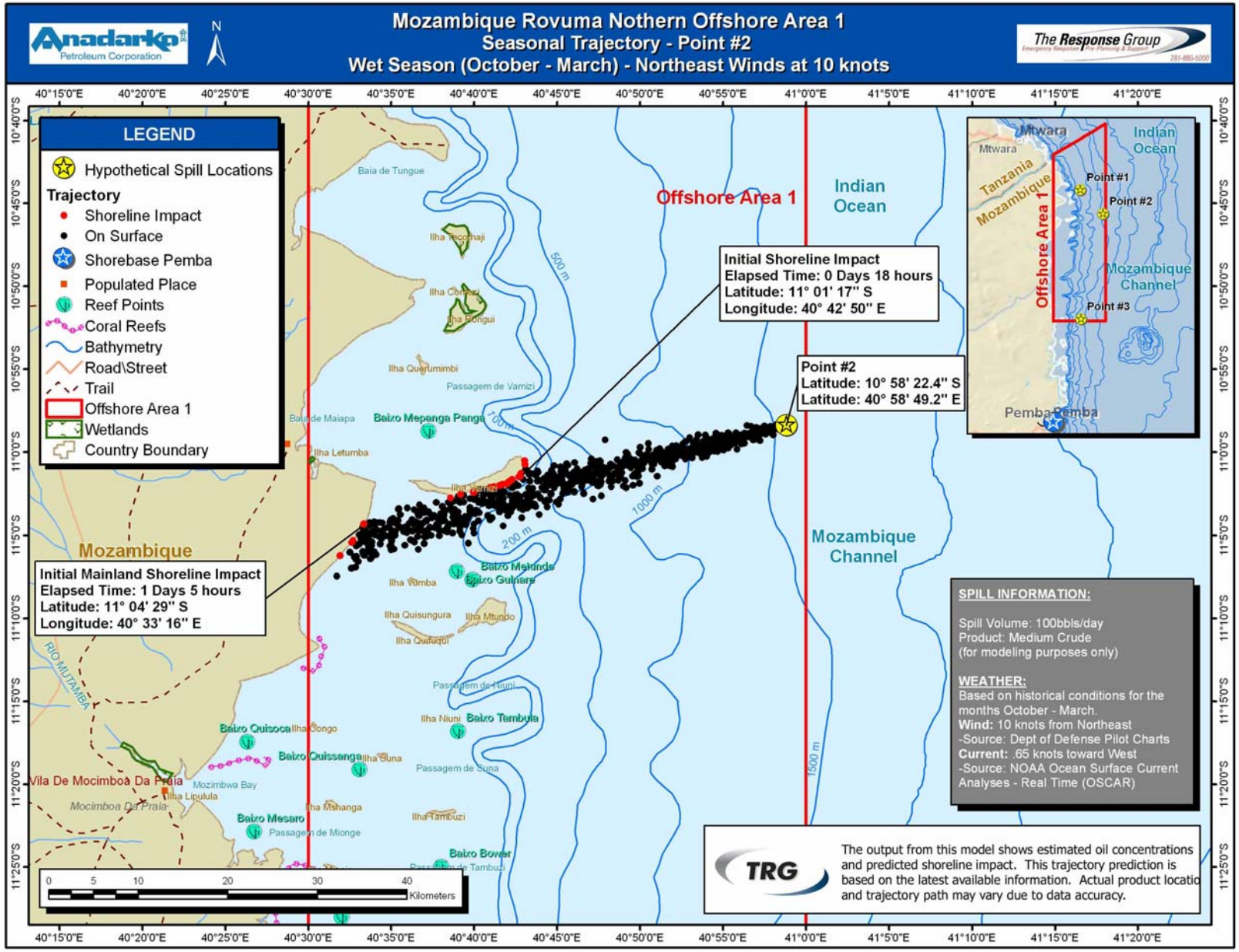
© The Response Group – 8/2008



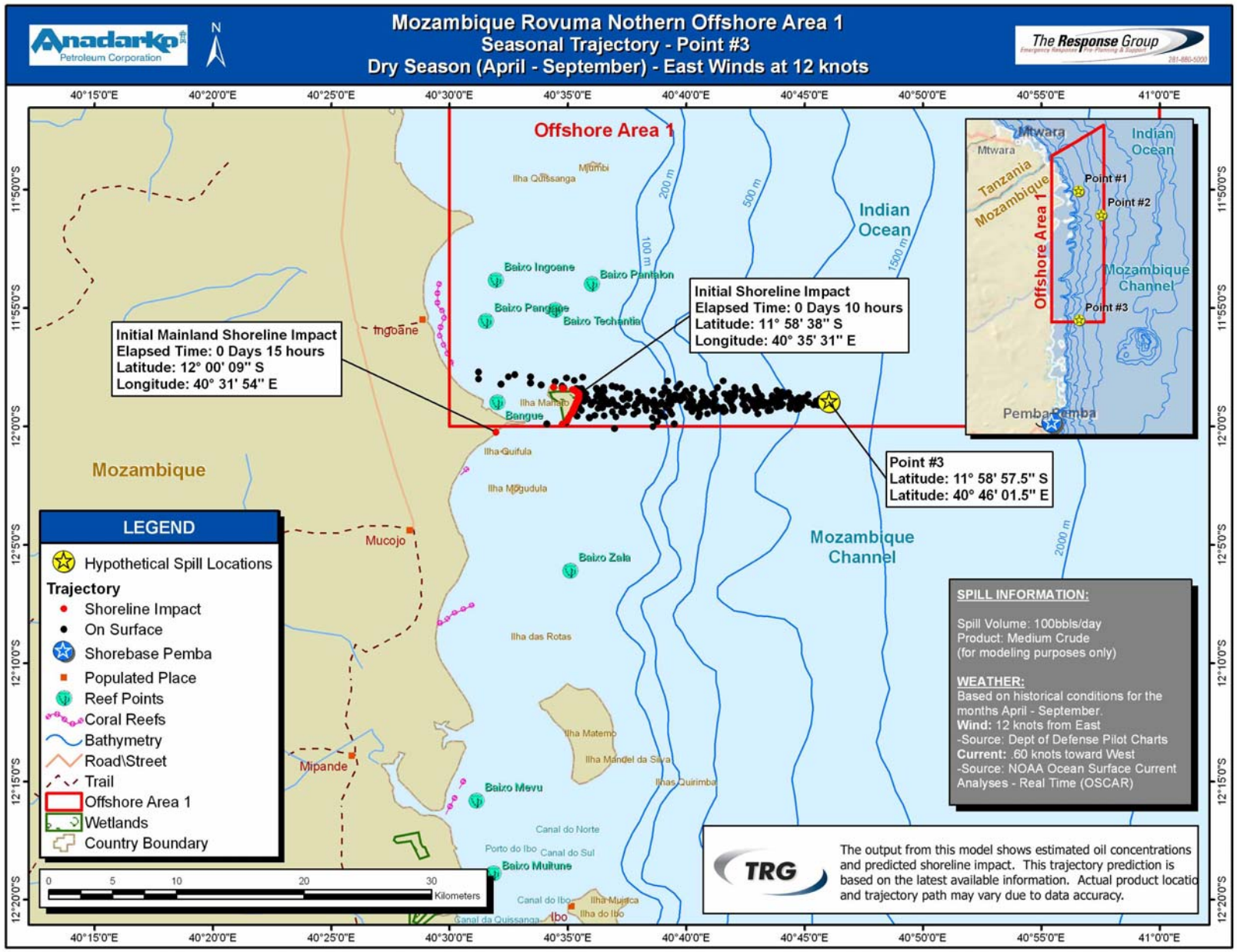
© The Response Group – 8/2008



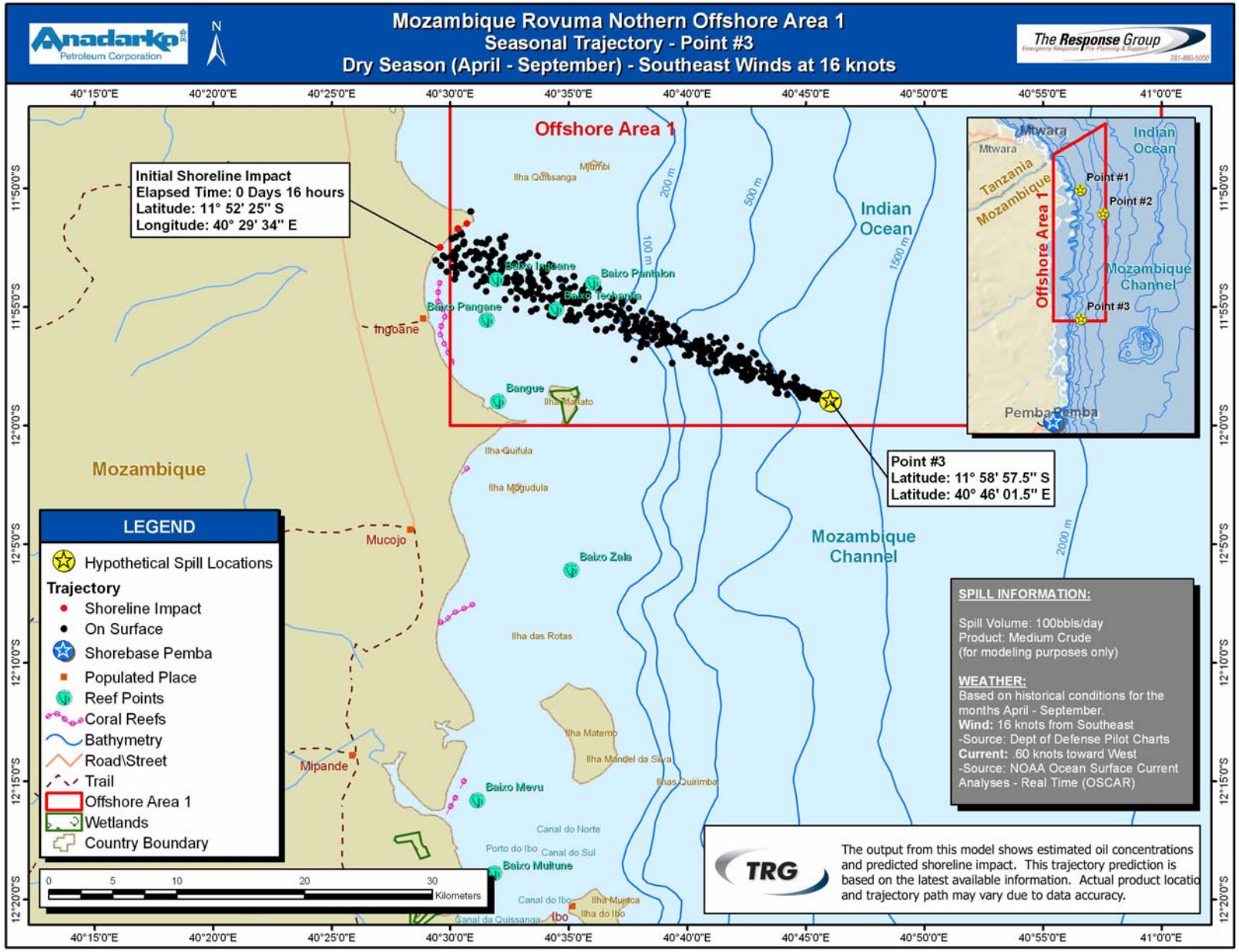
© The Response Group – 8/2008



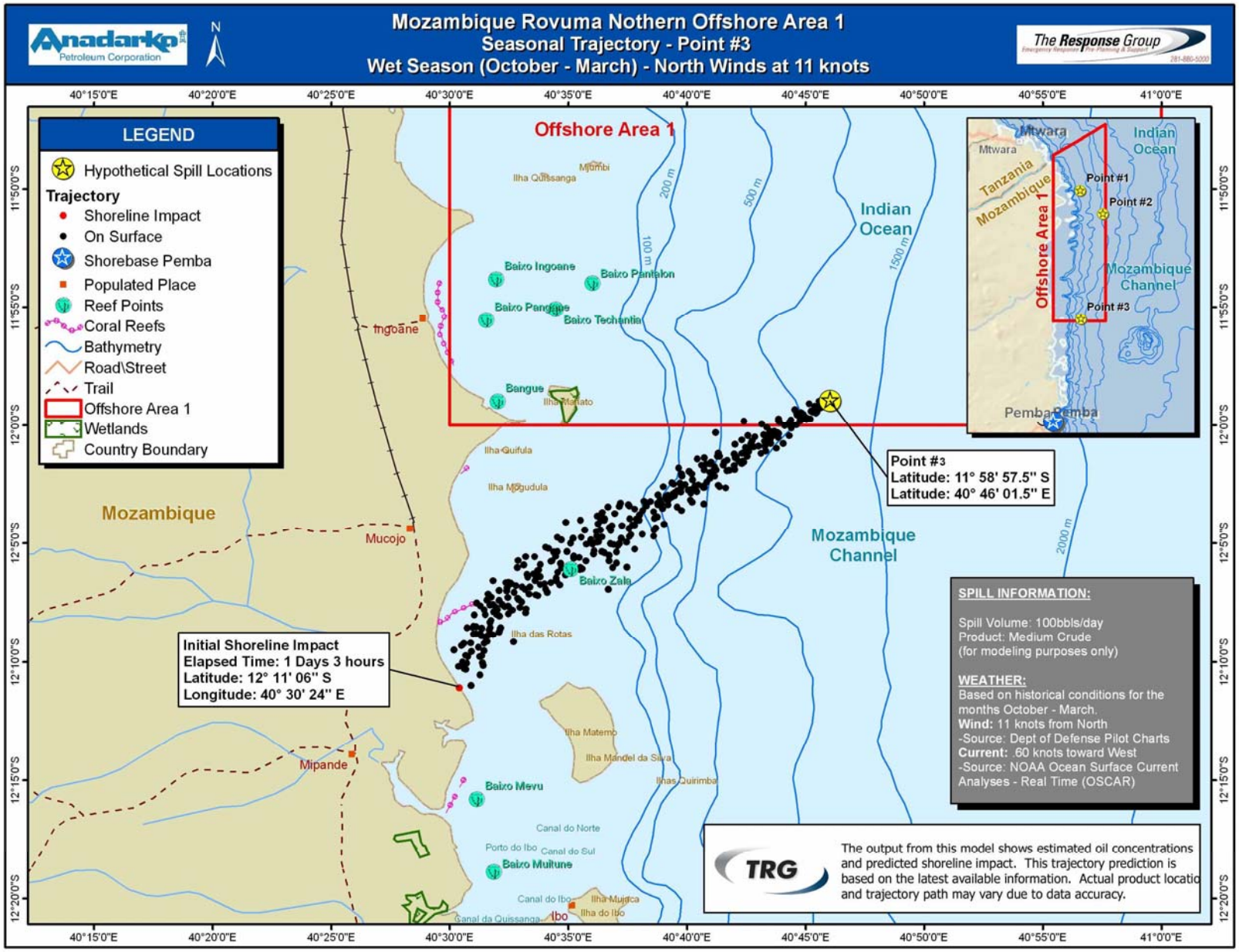
© The Response Group – 8/2008



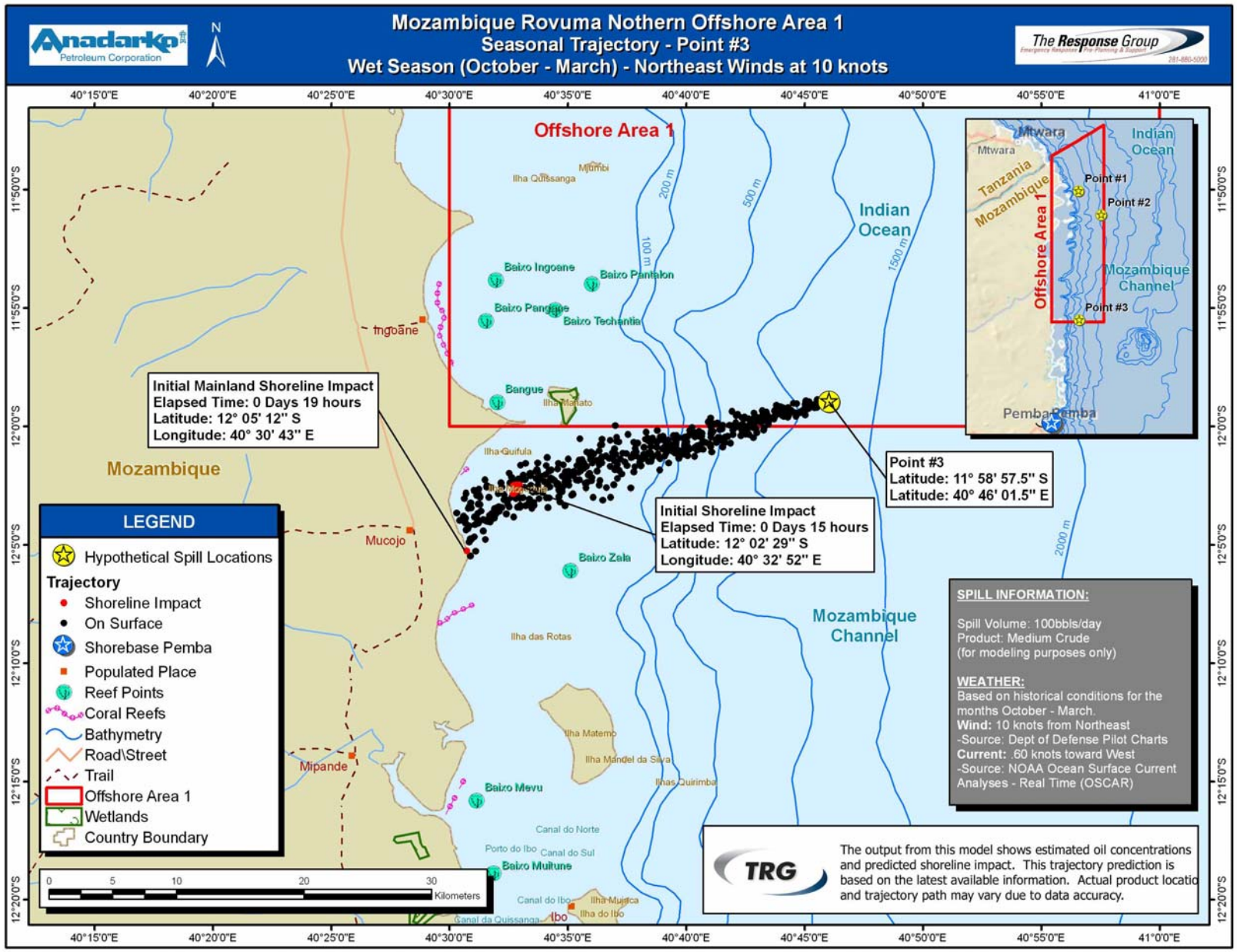
© The Response Group – 8/2008



© The Response Group – 8/2008



© The Response Group – 8/2008



© The Response Group – 8/2008

Section 9 – Training & Exercise Procedures

9.1 Training

Employee Training

Anadarko's training consists of an implemented and effective incident response / management training system for ERT personnel. This training process includes a training needs analysis, identified training requirements including topics and content, positions which require training, frequency of training, a consistent and thorough training documentation process, demonstration of competency methods, and appropriate instructors. Effectiveness of training should be verifiable through knowledge and implementation as well as through "demonstration" of skills during exercises and/or actual responses.

Emergency Management Team Training

The following provides elements that should be incorporated into the training modules for the Emergency Management Team (EMT)/Strike Team. The material should not be considered all-inclusive. Team members receiving this training will have an excellent educational foundation to help them play a highly pro-active role in the incident. It is recommended that this training be performed on an annual basis.

Response Training elements for Emergency Management Team include:	
✓	Notification procedures/requirements for facility operations, internal response organization, National and State agencies, contractors, and the information required for those organizations.
✓	Communication system used for the notifications and response.
✓	Information on the products stored, used, or transferred by the plant including familiarity with the material safety data sheets, special handling procedures, health and safety hazards, spill and fire fighting procedures.
✓	Potential incident scenarios and response procedures.
✓	The operational capabilities of the contractors to respond to different types of incidents and how to manage.
✓	The Incident Management System that will be used to manage responses.
✓	Human impact and media relations.
✓	Resources at risk.

© The Response Group – 11/2007

Emergency Response Team Training

The following provides elements that should be incorporated into the training modules for the Emergency Response Team (ERT). The material should not be considered all-inclusive. Team members receiving this training will have an excellent educational foundation to help them play a highly pro-active role in the incident. It is recommended that this training be performed on an annual basis.

1. First Responder Awareness Level - First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. First responders at the awareness level shall have sufficient training or have had sufficient experience to objectively demonstrate competency in the following areas:

✓	An understanding of what hazardous substances are, and the risks associated with them in an incident.
✓	An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.
✓	The ability to recognize the presence of hazardous substances in an emergency.
✓	The ability to identify the hazardous substances, if possible.
✓	An understanding of the role of the first responder awareness individual in the employer's emergency response plan including site security and control.
✓	The ability to realize the need for additional resources, and to make appropriate notifications to the communication center.

2. First Responder Operations Level - First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level:

✓	Knowledge of the basic hazard and risk assessment techniques.
✓	Know how to select and use proper personal protective equipment provided to the first responder operational level.
✓	An understanding of basic hazardous materials terms.
✓	Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.
✓	Know how to implement basic decontamination procedures.
✓	An understanding of the relevant standard operating procedures and termination procedures.

© The Response Group – 11/2007

3. HAZMAT Technician - Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas:	
✓	Know how to implement the employer's emergency response plan.
✓	Know the classification, identification and verification of known and unknown materials by using field survey instruments and equipment.
✓	Be able to function within an assigned role in the Incident Command System.
✓	Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician.
✓	Understand hazard and risk assessment techniques.
✓	Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with the unit.
✓	Understand and implement decontamination procedures.
✓	Understand termination procedures.
✓	Understand basic chemical and toxicological terminology and behavior.

4. HAZMAT Specialist - Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. Hazardous materials specialists shall have received at least 24 hours of training equal to the technician level and in addition have competency in the following areas:	
✓	Know how to implement the local emergency response plan.
✓	Understand classification, identification and verification of known and unknown materials by using advanced survey instruments and equipment.
✓	Know the National or State emergency response plan.
✓	Be able to select and use proper specialized chemical personal protective equipment provided to the hazardous materials specialist.
✓	Understand in-depth hazard and risk techniques.
✓	Be able to perform specialized control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.
✓	Be able to determine and implement decontamination procedures.
✓	Have the ability to develop a site safety and control plan.
✓	Understand chemical, radiological and toxicological terminology and behavior.

© The Response Group – 11/2007

On-Scene Incident Commander - Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas:	
✓	Know and be able to implement the employer's incident command system.
✓	Know how to implement the employer's emergency response plan.
✓	Know and understand the hazards and risks associated with employees working in chemical protective clothing.
✓	Know how to implement the local emergency response plan.
✓	Know of the National or State emergency response plan.
✓	Know and understand the importance of decontamination procedures.

Those employees who are trained will receive annual refresher training of sufficient content and duration to maintain their competencies.

Training Documentation

All training should be documented using authorized forms (see example in **Figure 9.1**). Documentation of training for individual employees will be located in the plant files and are available upon request from the supervisor of the plant. Training files for each affected employee will be maintained on file for a period of three (3) years.

TRAINING DOCUMENTATION FORM & ROSTER		Figure 9.1
Course Title:		**Training Date:**
Training Location:		**Duration:**
Instructor(s):		
EMPLOYEE NAME	**TITLE**	**CONTACT NUMBER/EMAIL**

© The Response Group – 11/2007

9.2 Exercise/Drills

Exercises

Anadarko requires exercises to ensure effectiveness of the written emergency response/ support plan(s) and the capability of the response team(s). As a result, the ERT will develop and maintain a multi-year program.

Exercises will simulate scenarios and risks identified in the Oil Spill Contingency Plan. Exercises should include all activated elements of the ERT and should present a variety of problems that should challenge all segments of the ERT.

Tabletop Exercise

A Tabletop Exercise is an informal gathering of appropriate incident response team personnel to discuss incident response/management issues. The intent of a tabletop exercise is to allow the participants to evaluate plans, procedures, policies and resolve issues of coordination, assignment of responsibilities, interaction between departments and organizations, etc. in a non-threatening environment and under a minimum of stress.

Functional Exercise

A Functional Exercise is designed to focus on testing and evaluating centralized emergency operations capabilities and the response of the various units of government, private industry, and volunteer organizations in a simulated, real time environment. This level of exercise involves (1) EOC personnel who carry out actions and coordination as though the incident were real; (2) a team of controllers and simulators who track exercise events and related objective assessment and represent the incident, responding field units, levels of government not active in the exercise; (3) a team of evaluators who assess operational capabilities based on required criteria for successful performance based on the oil spill contingency plan.

Full Scale Exercise

The Full Scale Exercise is designed to test and evaluate the operational capability of emergency management systems in an interactive manner. The full-scale exercise includes all the components of the functional exercise with the addition of the actual responding field units and personnel. This level of exercise activity should test all components of the emergency management system that would be involved in the response given the scenario selected for the exercise.

© The Response Group – 11/2007

The impact on a community from an incident can be greatly reduced by having good communication between the company and all of the stakeholders (neighbors, emergency response personnel and local officials).

Exercises should be designed to:	
✓	Test the ERT and EMT's ability to act as expected and required to emergencies that could occur.
✓	Provide response personnel with an opportunity to apply their training and exercise/get comfortable with their roles & responsibilities and the Incident Management System.
✓	Identify gaps, limitations, and areas of concern to address with the response team, plans, equipment, and response tools.
✓	Build on lessons learned from previous experience from previous drills or actual spill response events.

Following any exercise or actual incident, the ERT will conduct a critique to determine how the response went, how the OSCP was used and followed, and if any improvements could be made. All improvements should be documented on an Individual Critique Form (See **Figure 9.6**) and provided to the primary contact for the OSCP listed in **Section 2.3, Plan Review**.

Exercise documentation will be *prepared in the following format as suggested by* **Figures 9.2 thru 9.6**.

Exercise documentation should include the following:	
✓	Type of exercise/response
✓	Date and time of exercise/response
✓	Description of exercise/response
✓	Objectives met
✓	Lessons learned

© The Response Group – 11/2007

Figure 9.2 Emergency Response Exercise Documentation Form

Emergency Response Exercise Documentation Form	**Figure 9.3**
Exercise Name:	**Exercise Date:**
Exercise Location:	**Exercise Duration:**
Type of Exercise: ☐ Announced Exercise ☐ Unannounced Exercise ☐ Actual Response	

Response plan scenario used (check one):
☐ Average most probable discharge
☐ Maximum most probable discharge
☐ Worst case discharge

Size of simulated release_____Bbls / Gals

Objectives exercised during event:
Did the response team demonstrate knowledge of the response plan?
☐ Yes ☐ No

Were proper notifications made?
☐ Yes ☐ No

Were communications systems adequate?
☐ Yes ☐ No

Did the response team access contracted oil spill removal organizations?
☐ Yes ☐ No

Did response team coordinate response with applicable agencies?
☐ Yes ☐ No

Did response team access sensitive site and resource information from the Area Contingency Plan?
☐ Yes ☐ No

Identify which of the 15 core components of the response plan were exercised during this event:_____
_____
_____

Attach a description of lessons learned, procedures and schedule for implementation, and person(s) responsible for follow up of corrective measures.

Certifying Signature:_____

© The Response Group – 11/2007

Figure 9.3 Equipment Deployment Exercise Documentation

Equipment Deployment Exercise Documentation Form	**Figure 9.4**
Exercise Name:	**Exercise Date:**
Exercise Location:	**Exercise Duration:**
Type of Exercise: ☐ Announced Exercise ☐ Unannounced Exercise ☐ Actual Response	

Deployment Location(s):_____

_____

_____

_____

_____

_____

_____

Time Started:_____

Time OSRO was called_____

Time on-scene_____

Time boom deployed_____

Time recovery equipment arrived on-scene_____

Time completed_____

Equipment deployed was:

☐ Facility-owned

☐ OSRO-owned If so, which OSRO? _____

☐ Both

List type and amount of all equipment (e.g., boom and skimmers) deployed and number of support personnel employed:_____

_____

_____

_____

_____

_____

_____

Describe goals of the equipment deployment and list any tactical strategies tested. (Attach a sketch of equipment deployments and booming strategies):_____

_____

_____

_____

_____

_____

_____

© The Response Group – 11/2007

Equipment Deployment Exercise Documentation Form (Continued) Figure 9.4

For facility-owned equipment, was the amount of equipment deployed at least the amount needed to respond to your facility's average most probable spill?
☐ Yes ☐ No

Was equipment deployed in its intended operating environment?
☐ Yes ☐ No

For OSRO equipment, was a representative sample (at least 1000 feet of each boom type and at least one of each skimmer type) deployed?
☐ Yes ☐ No

Was equipment deployed in its intended operating environment?
☐ Yes ☐ No

Are all facility personnel that are responsible for response operations involved in a comprehensive training program, and all pollution response equipment involved in a comprehensive maintenance program?
☐ Yes ☐ No

If so describe the program:_____
_____
_____
_____

Date of last equipment inspection:_____

Was equipment deployed by person(s) responsible for deployment in an actual spill?
☐ Yes ☐ No

Was all deployed equipment operational? If not, Why?
☐ Yes ☐ No
_____
_____
_____

Identify which of the 15 core components of the response plan were exercised during this event:_____
_____
_____
_____
_____

Attach a description of lessons learned, procedures and schedule for implementation, and person(s) responsible for follow up of corrective measures.

Certifying Signature:_____

© The Response Group – 11/2007

Figure 9.4 Exercise Critique Form

EXERCISE CRITIQUE FORM	Figure 9.5
Exercise Name:	**Exercise Date:**
Exercise Location:	**Exercise Duration:**
Scenario:	

Please complete the following critique covering the points as indicated in the attached format. This form should be presented to the drill facilitator at the end of the exercise.

Section Name: Command	**Operations**	**Planning**	**Logistics**	**Finance**
Top 5 Areas that Went Well				
1.				
2.				
3.				
4.				
5.				
Top 5 Areas for Improvement				
1.				
2.				
3.				
4.				
5.				
Additional Comments				

© The Response Group – 11/2007

Figure 9.5 Individual Critique Form

INDIVIDUAL CRITIQUE FORM	Figure 9.6
Exercise Name:	**Exercise Date:**
Exercise Location:	**Exercise Duration:**

Please complete the following critique covering the points as indicated in the attached format. This form should be presented to the drill facilitator at the end of the exercise. A debriefing session will be held after the exercise to review the suggestions, proposals, concerns, or anything that a team member feels would be relevant to improve the OSCP.

1. Was there confusion regarding roles and responsibilities and, if so, what was the cause?

2. What would you have done differently if this had been an actual emergency?

3. What actions or revisions would you recommend to the emergency manuals and plans?

© The Response Group – 11/2007

INDIVIDUAL CRITIQUE FORM (continued)	Figure 9.6
4. How could communications be improved?	
5. From your view, what went well during the exercise?	
6. Are there any other issues that you feel should be addressed?	
Additional Comments & Suggestions:	
Please complete and turn in to the drill Facilitators at the end of the exercise.	
Page 2 of 2	

© The Response Group – 11/2007

THIS PAGE INTENTIALLY LEFT BLANK

Section 10 – Incident Reporting Forms

Anadarko Reporting Forms	
10.1	Anadarko Reporting Form Instructions
10.2	Employee Injury/Illness Report (APC 412)
10.3	Vehicle Incident Report (APC 252)
10.4	Property Damage/Loss Report (APC 403)
10.5	Third Party Injury/Illness (APC 186)
10.6	Report a Release (APC 416)
10.7	Near Miss Report
10.8	Oil Spill Trajectory Request Form
10.9	OSRL Notification Form
10.10	OSRL Mobilization Authorization

The reporting of incidents described in this section does not constitute an incident investigation. It is only a report of the facts known at the time when completing the report. An incident investigation will be conducted with the depth of the investigation determined by the severity or potential severity of the incident.

Incident Command System (ICS) Forms (Reactive Phase)	
10.11	Notification Status
10.12	ICS 201 (-1, -2, -3, -4) – Initial Briefing Forms
10.13	Weather Report
10.14	ICS 202 – General Response Objectives
10.15	ICS 206 – Medical Plan
10.16	ICS 208 – Site Safety Plan
10.17	ICS 214a – Individual Log

For a complete listing of ICS forms, please reference the Incident Action Plan (IAP) software (www.iapsoftware.com).

© The Response Group 8/2008

10.1 Anadarko Reporting Form Instructions

I. EMPLOYEE INJURY/ILLNESS REPORT

A. Employees must immediately report any occupational injury or illness to their supervisor, no matter how slight the injury or illness may be.

B. The supervisor will review the circumstances related to the injury or illness and complete the Employee Injury/Illness Report form APC 412 as soon as possible, preferably on the same day as the incident.

C. Serious injury or illness (loss of life or limb, 3 or more persons injured in the same incident or 2nd or 3rd degree burns) must be reported by telephone, as soon as possible, to the division or subsidiary office, which will in turn notify the Corporate Safety and Health Department, the Legal Department and the Risk Management Department.

D. Names and addresses of witnesses to accidents or injuries must be included on the form APC 412.

II. VEHICLE ACCIDENT REPORT

A. Employees involved in a vehicle accident must stop, render assistance and notify appropriate authorities.

B. Accidents involving Anadarko vehicles, or with any vehicle while on Anadarko business, must be immediately reported to the driver's supervisor.

C. The supervisor shall review the circumstances related to the vehicle accident and complete the Vehicle Accident Report form APC 252 as soon as possible, preferably on the same day as the incident.

D. Serious vehicle accidents (fatality of occupants in vehicles or pedestrians, or serious injury) must be reported by telephone, as soon as possible, to the division or subsidiary office, which will in turn notify the Corporate Safety and Health Department, the Legal Department and the Risk Management Department.

E. Names, addresses and telephone numbers of witnesses to vehicle accidents must be included on the form APC 252.

III. PROPERTY DAMAGE/LOSS REPORT

A. Incidents involving damage to or loss of Anadarko property (fires, explosions, etc.) must be reported on Anadarko's Property Damage/Loss Report form APC 403.

B. Theft or vandalism of Anadarko property should be reported to the Anadarko Corporate Security Department. Contact Corporate Security for the appropriate reporting form.

© The Response Group 8/2008

10.1 Anadarko Reporting Form Instructions (Cont'd)

IV. THIRD PARTY INJURY/ILLNESS REPORT

A. Any and all contractors shall provide the Anadarko site supervisor with an immediate verbal report of every injury or illness that occurs on Anadarko premises or while conducting business on behalf of Anadarko.

B. The site supervisor shall review the circumstances related to the injury or illness and complete the Third Party Incident Report form APC 186 as soon as possible, preferably on the same day as the incident.

C. Serious injury or illness (loss of life or limb, 3 or more injured persons in the same incident, or 2nd or 3rd degree burns) must be reported by telephone, as soon as possible, to the division or subsidiary office, which will in turn notify the Corporate Safety and Health Department, the Legal Department and the Risk Management Department.

D. Names, addresses and telephone numbers of witnesses to an accident or injury must be included on the form APC 186.

V. THIRD PARTY PROPERTY DAMAGE REPORT

A. Incidents involving damage or loss of property belonging to others must be reported on Anadarko's Third Party Incident Report form APC 186.

© The Response Group 8/2008

10.2 Employee Injury/Illness Report (APC 412)

APC 412 (rev 02/07)

Employee Injury/Illness Report

Anadarko Petroleum Corporation

Employee's Base of Operations							
Type of Operation							
Satellite Office / Area and Block							
Address or Rig Name (street, city, state/country, zip)							

For Office Use Only

Reference #

Injury Class: ☐ Non-occupational ☐ First Aid ☐ Medical Treatment ☐ Restricted/Transfer ☐ Lost Time ☐ Fatality

Employee Information

1	Injured Employee's Name (Last, First, MI)			2	Sex ☐ Male ☐ Female	Race	
3	Employee I.D. #	4	Date of Birth (mm/dd/yyyy)	5	Date of Hire (mm/dd/yyyy)	Hired or Recruited in Texas? ☐ Yes ☐ No	
6	Work Schedule: First day of last shift:	7	Department: Supervisor:	8	Does employee speak English? ☐ Yes ☐ No If No, specify:		
9	Occupation of injured employee	10	Length of service in occupation _____Years _____Months	11	Length of service in current position _____Years _____Months		
12	Home Phone Number	13	Home Mailing Address (street, city, state/country, zip)				

Injury Information

14	Date of Injury (mm/dd/yy) Time of Injury (hh/mm) _____ ☐ AM ☐ PM Time began work on date of injury (hh/mm) _____ ☐ AM ☐ PM	15	Date Lost Time Began: (mm/dd/yy) End: (mm/dd/yy) Days Away: _____ ☐ Act. ☐ Est.	16	Date Restricted Time Began: (mm/dd/yy) End: (mm/dd/yy) Days Restricted: _____ ☐ Act. ☐ Est.	17	Return to work date (mm/dd/yy)
18	Name of lease/facility where injury occurred Exact Location of incident		County	19	Was place of accident or exposure on employer's premises? ☐ Yes ☐ No	20	Did employee die? ☐ Yes ☐ No If yes, on what date? (mm/dd/yyyy)
21	***Nature of Injury, Part of Body,*** **and** ***Cause of Injury*** **are to be completed on the back of this form.**						
22	How and why Injury/Illness occurred					23	Was employee doing regular job? ☐ Yes ☐ No
24	Medical Professional (Dr, Medic, etc.) Phone Number:		Mailing Address (street, city, state/country, zip)				
25	Treated in Emergency Room? ☐ Yes ☐ No	Hospitalized overnight? ☐ Yes ☐ No	Treatment Facility (Hospital, Clinic, etc.) Phone Number:		Mailing Address (street, city, state/country, zip)		
26	Treatment Provided:						

Witness Information

27	Name	Address (street, city, state/country, zip)
	Employer	Address (street, city, state/country, zip)
28	Name	Address (street, city, state/country, zip)
	Employer	Address (street, city, state/country, zip)

Information about when Injury / Illness was reported to APC Representative

29	Reported To	Title	Phone Number	Date Reported (mm/dd/yy)

10.2 Employee Injury/Illness Report (APC 412) (Cont'd)

APC 412 (rev 10/06)

Injured Employee's Name (Last, First, MI)	Date of Injury (mm/dd/yy)

Nature of Injury (Check all that apply)

_ Abrasions, Scratches	_ Concussion	_ Hearing Loss or Impairment	_ Musculoskeletal Disorders
_ Allergic Reaction	_ Contusions (Bruised, Crushed, etc	_ Heat Stroke, Sun Stroke, etc	_ Poisoning
_ Amputation	_ Dermatitis	_ Hernia, Rupture	_ Puncture Wound
_ Asphyxiation	_ Dislocation	_ Infection	_ Sprains (ligaments)
_ Bite, Sting	_ Drowning	_ Inflammation of Joints, etc	_ Strains (muscular)
_ Burns (chemical)	_ Electrical Shock	_ Internal Injuries	_ Trauma Conditions (shock)
_ Burns (radiation, sunburn)	_ Fracture	_ Irritation (eye, ear, etc	_ Whiplash Other
_ Burns (thermal)	_ Frostbite	_ Laceration (skin)	_ Other:_____

Part of Body (Check all that apply)

_ Abdomen	_ Elbow L	_ Hand L	_ Nose
_ Arm L	_ Ear R	_ Head	_ Pelvis R
_ Arm R	_ Ear L	_ Hip R	_ Pelvis L
_ Ankle R	_ Eye R	_ Hip L	_ Respiratory System
_ Ankle L	_ Eye L	_ Internal	_ Skin
_ Back	_ Face	_ Jawbone	_ Shoulder R
_ Brain	_ Finger	_ Knee R	_ Shoulder L
_ Buttocks R	_ Foot R	_ Knee L	_ Spinal Column
_ Buttocks L	_ Foot L	_ Leg R	_ Toe
_ Chest	_ Groin R	_ Leg L	_ Throat
_ Digestive Tract	_ Groin L	_ Mouth (including lips and teeth)	_ Wrist R
_ Elbow R	_ Hand R	_ Neck	_ Wrist L
			_ Other: _____

Cause of Injury (Check all that apply)

_ Alcohol / Drugs	_ Ladders, fixed or portable, stairs, handrails
_ Animal, insect, reptile, bird	_ Machinery
_ Bolts, nuts, screws, nails, other small hardware	_ Noise
_ Chemicals	_ Person
_ Containers	_ Pipe and pipe fittings
_ Drilling equipment not otherwise classified	_ Plant life
_ Electrical equipment	_ Process equipment
_ Fences, gates, etc.	_ Pumping unit
_ Fire	_ Radiation, welder's arc
_ Floors, walks, walkways, marine decks	_ Rods and tubing
_ Fumes, vapors, smoke, particulates, dust	_ Scaffolds and platforms
_ Furniture	_ Tanks and storage equipment
_ Grease or oil spills	_ Terrain
_ Hand tools	_ Transportation equipment
_ Hoisting equipment	_ Weather conditions
_ Hose	_ Wire line, ropes, cables, chains
_ Hydrogen sulfide	_ Other: _____
_ Infections and parasitic agents	

© The Response Group 8/2008

10.3 Vehicle Incident Report (APC 252)

APC 252 (rev 10/06)

Vehicle Accident Report

Anadarko Petroleum Corporation

Employee's Base of Operation									
Type of Operation									
Satellite Office / Area and Block									
Address or Rig Name (street, city, state/country, zip)									
Time and Place									
1	Date (mm/dd/yyyy)	2	Time (hh/mm)	3	Location of Incident				
4	Purpose of Trip								
Company Driver									
5	Name (Last, First, MI)					6	Injured? ☐ Yes ☐ No		
7	Employee I.D. #	8	Driver's License No.	9	Driver's License State/Country	10	Seat Belts Worn? ☐ Yes ☐ No		
11	Occupation	12	Department	13	Hire Date (mm/dd/yyyy)	14	Air Bag(s) Deploy? ☐ Yes ☐ No		
Company Vehicle									
15	Type of Vehicle	16	Unit Number	Mileage	17	Is DOT Accident Report Required? ☐ Yes ☐ No	18	Vehicle presently located at:	
19	Damages ☐ Actual ☐ Estimated	Vehicle was ☐ Replaced ☐ Repaired	20	Description of Damage					
Passenger Information – Company Vehicle									
21	Name		Address (street, city, state/country, zip)						
	Employer	Injured ☐ Yes ☐ No	Address (street, city, state/country, zip)						
22	Name		Address (street, city, state/country, zip)						
	Employer	Injured ☐ Yes ☐ No	Address (street, city, state/country, zip)						
Other Vehicle									
23	Make	Model	Year of Vehicle	License Plate #	License Plate State/Country				
24	Vehicle Identification Number								
25	Driver's Name (Last, First, MI)	Injured ☐ Yes ☐ No	Driver's License #	D.L. State/Country	26	Home Phone Number			
27	Drivers Address (street, city, state/country, zip)								
28	Vehicle Owner (Name/Company)				29	Phone Number			
30	Vehicle Owner Address (street, city, state/country, zip)								
31	Insurance Company	32	Insurance Agent	33	Insurance Phone Number	34	Insurance Policy Number		
35	Description of Damage				36	Estimated Damages			

10.3 Vehicle Incident Report (APC 252) (Cont'd)

APC 252 (rev 10/06)

Company Driver Name (Last, First, MI)	Date of Incident (mm/dd/yyyy)

Passenger Information – Other Vehicle			
37	Name		Address (street, city, state/country, zip)
	Employer	Injured? ☐ Yes ☐ No	Address (street, city, state/country, zip)
38	Name		Address (street, city, state/country, zip)
	Employer	Injured? ☐ Yes ☐ No	Address (street, city, state/country, zip)

Witness Information		
39	Name	Address (street, city, state/country, zip)
	Employer	Address (street, city, state/country, zip)
40	Name	Address (street, city, state/country, zip)
	Employer	Address (street, city, state/country, zip)

Police Information					
41	Officer Name (Last, First, MI)	42	Badge Number	Police Report Date	Police Report Number
43	Agency Name Phone Number:	44	Agency Address (street, city, state/country, zip)		
45	Citation Issued ☐ Vehicle 1 ☐ Vehicle 2	46	Description of Citation		

Incident Conditions (Check as applicable, Company Vehicle #1, Other Vehicle #2)

1	2	Action of Vehicles
		Turning
		Passing
		Being passed
		Going straight ahead
		Backing
		Stopped

1	2	Type of Roadway
		City Street
		Main highway
		Rural road
		Private or company property
		Off roadway
		Narrow or winding
		Lease road

1	2	Type of Accident
		Head on
		Side swiped
		Right angle
		Rolled or backed into fixed object
		Rear-ended another

1	2	Roadway Conditions
		Under repair
		Holes or ruts
		Icy
		Muddy
		Snowy
		Wet
		Road lighted
		No defects

	Weather
	Daylight
	Dark
	Clear
	Snowing, sleeting
	Raining
	Foggy
	Cloudy

Diagram
Describe fully what happened

Submitted By / Prepared By			
47	Name	Title	Date submitted (mm/dd/yyyy)

10.4 Property Damage/Loss Report (APC 403)

APC 403 (rev 10/06)

Property Damage/Loss Report

Anadarko Petroleum Corporation

Base of Operations	
Type of Operations	
Satellite Office / Area and Block	
Address or Rig Name (street, city, state/country, zip)	☐ Fire ☐ Explosion ☐ Other _____

Time and Place					
1	Date (mm/dd/yyyy)	2	Time (hh/mm)	3	Injuries ☐ Yes ☐ No
4	Facility/Lease where loss occurred (lease name, survey, coordinates, etc.)				State/Country

Description			
5	Identify or Describe damage to property		
6	Extent of Damage/Loss		
7	Cause of Damage/Loss		
8	Estimated Cost of Property Damage/Loss	Labor $	Repair/Replacement $

Submitted By / Prepared By			
9	Name	Title	Date submitted (mm/dd/yyyy)

© The Response Group 8/2008

10.5 Third Party Injury/Illness (APC 186)

APC 186 (rev 10/06)

Third Party Incident Report

Anadarko Petroleum Corporation

Base of Operation							
Type of Operation							
Satellite Office / Area and Block							
Address or Rig Name (street, city, state/country, zip)						☐ Property Damage	☐ Injury/Illness
Time and Place							
1	Date (mm/dd/yyyy)	2	Time (hh/mm)	3	Location of Incident		
4	Operation being performed at time of incident				5	Department	
6	Description of Incident						
Injured Person							
7	Name (Last, First, MI)				8	Sex ☐ Male ☐ Female	
9	SSN or I.D. #	10	Birthdate (mm/dd/yyyy)	11	Injury Class	☐ Non-occupational ☐ Medical Treatment ☐ First Aid ☐ Fatality ☐ DART (Lost Time, Restricted, Transfer)	
12	Home Phone Number	13	Home Address (street, city, state/country, zip)				
14	Employer Phone Number:	15	Occupation	16	Employer Address (street, city, state/country, zip)		
The Injury							
17	What was injured doing when hurt?						
18	***Nature of Injury, Part of Body,* and *Cause of Injury* are to be completed on the back of this form.**						
19	Where was injured taken after the incident?	20	Date Returned to Work (mm/dd/yyyy)	21	Treatment Given		
22	Attending Physician Phone Number:		Mailing Address (street, city, state/country, zip)				
23	Hospital Phone Number:		Mailing Address (street, city, state/country, zip)				
Property Damage							
24	Property Owner (Last, First, MI) Phone number	25	Address (street, city, state/country, zip)				
26	Description of Damage				27	Estimated amount of loss	
Witnesses							
28	Name	Address (street, city, state/country, zip)					
	Employer	Address (street, city, state/country, zip)					
29	Name	Address (street, city, state/country, zip)					
	Employer	Address (street, city, state/country, zip)					
30	Additional Remarks						
Submitted By / Prepared By							
31	Name	Title	Date submitted (mm/dd/yyyy)				

10.5 Third Party Injury/Illness (APC 186) (Cont'd)

APC 186 (rev 10/06)

Injured Person's Name (Last, First, MI)	Date of Injury (mm/dd/yyyy)

Nature of Injury (Check all that apply)

_ Abrasions, Scratches	_ Concussion	_ Hearing Loss or Impairment	_ Musculoskeletal Disorders
_ Allergic Reaction	_ Contusions (Bruised, Crushed, etc	_ Heat Stroke, Sun Stroke, etc	_ Poisoning
_ Amputation	_ Dermatitis	_ Hernia, Rupture	_ Puncture Wound
_ Asphyxiation	_ Dislocation	_ Infection	_ Sprains (ligaments)
_ Bite, Sting	_ Drowning	_ Inflammation of Joints, etc	_ Strains (muscular)
_ Burns (chemical)	_ Electrical Shock	_ Internal Injuries	_ Trauma Conditions (shock)
_ Burns (radiation, sunburn)	_ Fracture	_ Irritation (eye, ear, etc	_ Whiplash Other
_ Burns (thermal)	_ Frostbite	_ Laceration (skin)	_ Other:_____

Part of Body (Check all that apply)

_ Abdomen	_ Elbow L	_ Hand L	_ Nose
_ Arm L	_ Ear R	_ Head	_ Pelvis R
_ Arm R	_ Ear L	_ Hip R	_ Pelvis L
_ Ankle R	_ Eye R	_ Hip L	_ Respiratory System
_ Ankle L	_ Eye L	_ Internal	_ Skin
_ Back	_ Face	_ Jawbone	_ Shoulder R
_ Brain	_ Finger	_ Knee R	_ Shoulder L
_ Buttocks R	_ Foot R	_ Knee L	_ Spinal Column
_ Buttocks L	_ Foot L	_ Leg R	_ Toe
_ Chest	_ Groin R	_ Leg L	_ Throat
_ Digestive Tract	_ Groin L	_ Mouth (including lips and teeth)	_ Wrist R
_ Elbow R	_ Hand R	_ Neck	_ Wrist L
			_ Other: _____

Cause of Injury (Check all that apply)

_ Alcohol / Drugs	_ Ladders, fixed or portable, stairs, handrails
_ Animal, insect, reptile, bird	_ Machinery
_ Bolts, nuts, screws, nails, other small hardware	_ Noise
_ Chemicals	_ Person
_ Containers	_ Pipe and pipe fittings
_ Drilling equipment not otherwise classified	_ Plant life
_ Electrical equipment	_ Process equipment
_ Fences, gates, etc.	_ Pumping unit
_ Fire	_ Radiation, welder's arc
_ Floors, walks, walkways, marine decks	_ Rods and tubing
_ Fumes, vapors, smoke, particulates, dust	_ Scaffolds and platforms
_ Furniture	_ Tanks and storage equipment
_ Grease or oil spills	_ Terrain
_ Hand tools	_ Transportation equipment
_ Hoisting equipment	_ Weather conditions
_ Hose	_ Wire line, ropes, cables, chains
_ Hydrogen sulfide	_ Other: _____
_ Infections and parasitic agents	

10.6 Report a Release (APC 416)

APC 416 (08/07)

Anadarko Petroleum Corporation

Report a Release

Classification:	☐ Agency Reportable				☐ Non-Reportable				
Release Type:	☐ Spill	☐ NPDES Exceedance			☐ Excess Emission			☐ Offshore Sighting	
Facility Information									
Facility							Cost Center		
Office							Type of Facility		
Current Operator									
Qtr/Qtr		Section/ TX Survey		Township/ TX Block		Range/ TX Sec.			
API#		State/ Survey/Country					County/ Block/Parish		
Latitude		Longitude					Field/OCSG#		
Release Information									
Field Contact									
Discovered			Approximate Released Date/Time				Controlled		
Date		Time	Date		Time		Date		Time
Describe Release									
Describe Probable Cause of Release									
Describe Actions to Control Release									
Type of Operation:	☐ Production ☐ Drilling	☐ Midstream ☐ Construction	☐ Other	Apparent Cause		Apparent Source			
Spill									
Material Released		Qty Released		Qty Into Waterway		Qty Recovered			
☐ Produced Water		bbl		bbl		bbl			
☐ Condensate ☐ Crude Oil		bbl		bbl		bbl			
☐ Other:		bbl		bbl		bbl			
Excess Emission									
Type of Excess Emission:	☐ Equipment Malfunction ☐ Startup		☐ Process Upset ☐ Shutdown				Expected to last more than 24 hours?	☐ Yes ☐ No	
Amt Flared:	scf	Amt Vented:	scf				Permit Number:		
Supp Gas Amt:	scf	Supp Gas Heat Content:	BTU/scf				Opacity %:	%	
Impact									
Length:	ft	Width:	ft	Depth:	in		Size of Area Impacted:	ft^2	
Contained within berm?	☐ Yes ☐ No	Onto Federal Land?	☐ Yes ☐ No				Onto Indian Land?	☐ Yes ☐ No	
Did the release enter or threaten surface water?	☐ Threatened surface water		☐ Entered surface water				☐ No, did not threaten or enter surface water		
Did the release contact groundwater?	☐ Yes	☐ No	☐ Unknown						
Select Affected Media:	☐ Air ☐ Wetlands ☐ Deck	☐ Wellsite / Facility Pad ☐ Tundra ☐ Subsurface		☐ Offsite Soil ☐ Ice / Snow ☐ Lined Impoundment		☐ Ice Pad / Road ☐ Unlined Impoundment			
Corrective Actions									
Clean up Start				Clean up Stop					
Date		Time		Date		Time			
Describe Clean-up Measures (Who / What / How)									
Describe preventive measures planned to prevent future spills									
Weather									
Temp:	°F	Visibility:	☐ Clear ☐ Rain	☐ Cloudy ☐ Sleet	☐ Dusty ☐ Snow	☐ Fog	Wind Direction:	Wind Velocity:	knot
Contact Log									
Agency Contacted	Phone Number	Contact	Date / Time	Reference #	Who made call				
Remarks:									
Report Prepared by:			Date Prepared:						

10.6 Report a Release (APC 416) (Cont'd)

APC 416s (08/07)

Anadarko Petroleum Corporation

Report a Release (Supplemental Information)

EPA Clean Water Act Section 308 (a) Request					
Discovered By?			Discovered How?		
Nearest Water Elevation			Source Elevation		
Location:	Latitude	Longitude		During Photo	After Photo
Source of Spill:					
End of Source:					
Draw:					
Temp Safety Pit:					
Perm Safety Pit:					
Nearest Water:					

Total Capacity of Source:	bbls	FRP # and Date:	
Facility Above Ground Oil Storage Capacity:	bbls	Facility Under Ground Oil Storage Capacity:	bbls

Source – Pipeline Info:		From		To	
Diameter:	in	Construction:		Throughput:	bbl/day
Reach a drainage feature?	☐ Yes ☐ No	Impact Sensitive Area?	☐ Yes ☐ No	SPCC Plan?	☐ Yes ☐ No

What was the condition of the drainage feature at the time of the release?	☐ Damp ☐ Dry ☐ Flowing ☐ Frozen ☐ Standing / Pooling
How often does the drainage feature have water flow?	☐ Continuous ☐ Seasonal ☐ Only after rainfall which is times a yr
Describe Damages to Animals or Vegetation	
Describe Environmental Impact	
Describe type of water entered	
Describe the flow path from the end point of the release to the nearest water	
Describe upstream and downstream waters to which affected water is connected	
Describe the appearance of the water after release entered the water	
Describe the appearance of the adjacent soils / shoreline after the release entered the water or drainage feature	
Describe Oil handling training program	
Material Analyzed (Include locations / time, individual, lab name)	
How was quantity released determined?	
Materials Reference Information	
Permit ID, Issuing Agency, Issue Date	
Agency, Fine Amount, Fine, Date	
All other individuals that may have information	

Agency	Agent on Site	When?

© The Response Group 8/2008

10.6 Report a Release (APC 416) (Cont'd)

APC 416s (08/07)

Anadarko Petroleum Corporation

Report a Release (Supplemental Information)

Offshore							
Facility Phone Number							
If Source is Continuous, Estimate Rate:	bbls/hr						
Name of Vessel				Captain Name			
Wave Height:	ft	Water Temp:	°F	Current Speed:	knots	Current Dir. To:	
Ceiling:	ft	Sheen Length:	ft	Sheen Width:	ft		
Sheen Appearance and Percentage covered:	☐Dark ____% ☐Barely Visible ____%	☐Silvery ____% ☐Slightly colored ____%		☐Dull ____% ☐Brightly Colored ____%			
All other individuals that may have information							

NPDES Exceedance	
Permit No. - Outfall No.:	
NPDES Source:	☐Produced Water ☐Deck Drainage/Sump ☐Sanitary/Domestic Wastewater ☐Drilling Fluids/Drill Cutting ☐Well Treatment/Completion/Workover Fluids ☐Fire Pump Water ☐Other

Excess Emission			
Equipment Source ID		Type of Pollutant (NOx, CO, SO2, etc.)	

Cost			
Cleanup Estimated Cost:	$	Total Cleanup Costs to Date:	$
Preventive Measures Estimated Cost:	$	Total Repair Costs:	$
Agency, Fine Amount:	$	Associated Projects (P.A. / Cost Center / AFE#):	

Colorado OGCC Form 19					
Well Name		OGCC Operator No.			
Depth to Groundwater:	FT	Distance to Livestock:	FT	Distance to Surface Water:	FT
Distance to Water Wells:	FT	Distance to Wetlands:	FT	Distance to Buildings:	FT
Soil/Geology Description		Current Land Use			
Release Manager Phone		Release Manager Fax		Release Manager E-Mail	

© The Response Group 8/2008

10.7 Near Miss Report

Operation	
Division	
Office	
Type of Operation	
Address (street, city, state/country, zip)	

Anadarko Petroleum Corporation

Near Miss Report

Time and Place					
1	Date (mm/dd/yyyy)	2	Time (hh/mm)		
3	Facility/Lease where near miss occurred (lease name, survey, coordinates, etc.)				
Description					
4	Incident Description				
5	Potential Injury/Property Damage				
6	Key Message				
Submitted By					
7	Name	Title	Phone	Date submitted (mm/dd/yyyy)	

© The Response Group 8/2008

10.8 Oil Spill Trajectory Request Form

Oil Spill Trajectory Request Form

THE RESPONSE GROUP	OFFICE: (281) 880-5000	EFAX: (281) 596-6976
(800) 651-3942 - 24 HR.	EMAIL ADDRESS: trajectory@responsegroupinc.com	
ROY BARRETT	MOBILE: (713) 906-9866	HOME: (281) 213-8840

COMPANY INFORMATION

Company Name:

Company Contact Name:

Phone #: _____ **Fax #:**

Alternate # (i.e.: Mobile, Pager):

Email Address:

SPILL SITE INFORMATION

Source Type (Circle): Platform/Well Pipeline Vessel Facility

Source Name & Location (Name/Area/Block):

Latitude: ____° ____‘ ____“ **Longitude:** ____° ____‘ ____“

Date & Time of Incident (mm/dd/yyyy): __/__/__ ____:____ **(Military)**

Type of Product (i.e.: Medium Crude): **API Gravity:** ____

Estimated Volume of Release: _____ **Barrels or Gallons**

Continues Release Rate: _____ **bbls/hr** **How Long:** _____ **hrs.**

WEATHER CONDITIONS

Wind Direction (From the):	**Wind Speed:** _____ **MPH or Knots**
Current Direction (Toward):	**Current Speed:** _____ **MPH or Knots**
Air Temperature: _____°	**Water Temperature:** _____
High Tide: ____:____ **(Military)**	**Low Tide:** ____:____ **(Military)**

Weather Forecast:

OVERFLIGHT INFORAMTION

Date & Time of Over flight (mm/dd/yyyy): __/__/__ ____:____ **(Military)**

Leading Edge Location: Latitude: ____° ____‘ ____“ **Longitude:** ____° ____‘ ____“

Trailing Edge Location: Latitude: ____° ____‘ ____“ **Longitude:** ____° ____‘ ____“

Length: _____ **Feet / Yards / Miles**	**Width:** _____ **Feet / Yards / Miles**

Slick Appearance (Percent & Estimated Length & Width)

Barely Visible: ____% **L x W:**	**Silvery:** ____% **L x W:** _____
Slight Color: ____% **L x W:**	**Bright Color:** ____% **L x W:** _____
Dull: _____% **L x W:**	**Dark:** _____% **L x W:** _____

10.9 OSRL Notification Form (page 1 of 2)

WARNING! Ensure telephone contact has been established with the Duty Manager before using e-mail and fax communications. **Telephone: Southampton +44 (0)23 8033 1551 / Singapore +65 6266 1566**

To:	Southampton / Singapore* Duty Manager *Delete as appropriate	Name of Duty Manager:	
Email of Duty Manager		Date:	
Southampton Emergency Fax:	+44 (0)23 8072 4314	Singapore Emergency Fax:	+65 6266 2312
From:		Position:	
Company:		Contact Number:	
Subject:		Incident Name:	

OBLIGATORY INFORMATION REQUIRED – PLEASE COMPLETE ALL DETAILS

Name of person in charge			
Position			
Company			
Contact telephone number		**Contact fax number**	
E-mail address			
Spill details			
Location of spill			
Description of slick (size, direction, appearance)			
Latitude / longitude			
Situation (cross box)	☐ Land ☐ River ☐ Estuary ☐ Coastal ☐ Offshore ☐ Port		
Date & time of spill	☐ GMT ☐ Local		
Source of spill			
Quantity (if known)	☐ Cross box if estimate		
Spill status (cross box)	☐ On-going ☐ Controlled ☐ Unknown		
Action taken so far			
Oil type characteristics			
Product name			
Viscosity		API / SG	
Pour point		Asphaltene	
Weather			
Wind speed & direction		Sea state	
Sea temperature			
Tides			
Forecast			

© The Response Group 8/2008

10.9 OSRL Notification Form (page 2 of 2)

ADDITIONAL INFORMATION REQUIRED – PLEASE COMPLETE DETAILS IF KNOWN			
Resources at risk			
Clean-up resources on-site / ordered			
Nearest airport (if known)			
Runway length			
Handling facilities			
Customs		Handling agent	
Vessel availability			
Equipment deployed			
Recovered oil storage			
Equipment logistics			
Transport			
Secure storage			
Port of embarkation			
Location of command centre			
Other designated contacts			
Special requirements of Country			
Security			
Visa			
Medical advice			
Vaccinations			
Others (specify)			
Climate Information			
Other Information			

© The Response Group 8/2008

10.10 OSRL Mobilization Authorization

To:	**Southampton / Singapore* Duty Manager**	**Name of Duty Manager**	
Date:			
Southampton Emergency Fax:	**+44 (0)23 8072 4314**	**Singapore Emergency Fax:**	**+65 6266 2312**
From:		**Position:**	
Company:		**Contact Number:**	
Subject:	**Mobilization of OSRL/EARL**	**Incident Name:**	

I, ……(Name in Block Capitals) hereby authorize the activation of OSRL/EARL (Southampton / Singapore)* and its resources in connection with the oil spill incident of ……(Name of Ship, Oil Rig, Terminal etc.) as of …… (Time) on …… (Date).

OSRL/EARL (Southampton / Singapore)* shall work under the direction of:

Name: ……..

Position: ……..……

Company: ……..

……..……..

Signature

……..……..

Company name

*Delete as appropriate

10.11 Notification Status

Notification Status

Incident:	Prepared By: at
Period:	Version Name:

Organization Notified	Phone	Date/Time Notified	Person Contacted	Case No.	Follow Up	ETA On Site	Notified By
Notes:							
Notes:							
Notes:							
Notes:							
Notes:							
Notes:							
Notes:							

Notification Status			© 1997-2008 dbSoft, Inc.

10.12 ICS 201 (-1,-2,-3,-4)

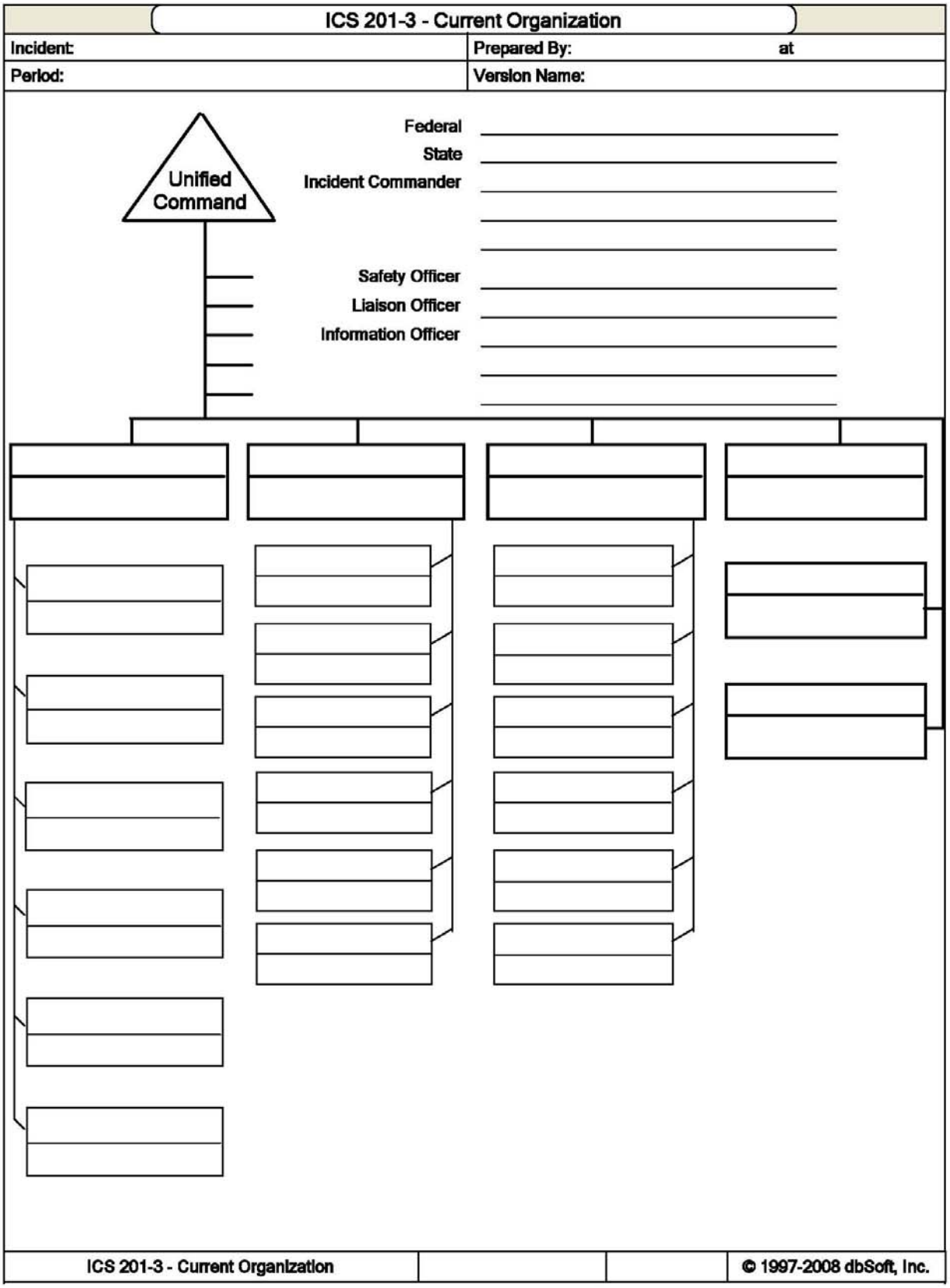
ICS 201-1 - Incident Briefing Map/Sketch	
Incident:	Prepared By: at
Period:	Version Name:

ICS 201-1 - Incident Briefing Map/Sketch			© 1997-2008 dbSoft, Inc.

10.12 ICS 201 (-1,-2,-3,-4) (Cont'd)

ICS 201-2 - Summary of Current Actions		
Incident:	Prepared By:	at
Period:	Version Name:	
Incident Information		
Initial Incident Objectives		
Summary of Current Actions		
Date/Time	Action/Note	
ICS 201-2 - Summary of Current Actions		© 1997-2008 dbSoft, Inc.

10.12 ICS 201 (-1,-2,-3,-4) (Cont'd)



10.12 ICS 201 (-1,-2,-3,-4) (Cont'd)

ICS 201-4 - Resources Summary

Incident: Period:

Supplier	Resource Type	Description	Quantity	Area of Operation	Status	Status Date/Time

ICS 201-4 - Resources Summary | | | © 1997-2008 dbSoft, Inc.

10.13 Weather Report

Weather Report			
Incident:		Prepared By:	at
Period:		Version Name:	
Present Conditions			
Wind Speed:		Wave Height:	
Wind Direction From The:		Wave Direction:	
Air Temperature:		Swell Height:	
Barometric Pressure:		Swell Interval:	
Humidity:		Current Speed:	
Visibility:		Current Direction Toward:	
Ceiling:		Water Temperature:	
Next High Tide (Time):		Next Low Tide (Time):	
Next High Tide (Height):		Next Low Tide (Height):	
Sunrise:		Sunset:	
Notes:			
24 Hour Forecast			
Sunrise:		Sunset:	
High Tide (Time):		High Tide (Time):	
High Tide (Height):		High Tide (Height):	
Low Tide (Time):		Low Tide (Time):	
Low Tide (Height):		Low Tide (Height):	
Forecast:			
48 Hour Forecast			
Sunrise:		Sunset:	
High Tide (Time):		High Tide (Time):	
High Tide (Height):		High Tide (Height):	
Low Tide (Time):		Low Tide (Time):	
Low Tide (Height):		Low Tide (Height):	
Forecast:			
Weather Report			© 1997-2008 dbSoft, Inc.

10.14 ICS 202

ICS 202 - General Response Objectives		
Incident:	Prepared By: at	
Period:	Version Name:	
Overall and Strategic Objectives		
	Assigned To	Status
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
Approved By		

ICS 202 - General Response Objectives			© 1997-2008 dbSoft, Inc.

10.15 ICS 206

ICS 206 - Medical Plan

Incident:	Prepared By: at
Period:	Version Name:

First Aid Stations

Name	Location	EMT (On-Site)	Phone	Radio

Transportation (Ground and/or Ambulances Services)

Name	Location	EMT	Phone	Radio

Air Ambulances

Name	Location	Doctor/Nurse EMT	Phone	Radio

Hospitals

Name	Location	Helipad Burn Center	Phone	Radio

Special Medical Emergency Procedures

ICS 206 - Medical Plan			© 1997-2008 dbSoft, Inc.

10.16 ICS 208

ICS 208 - Site Safety Plan		
Incident:	**Prepared By:**	**at**
Period:	**Version Name:**	

Revision:

Applies To Site:

Products: (Attach MSDS)

SITE CHARACTERIZATION

Water:

Wave Height: **Wave Direction:**

Current Speed: **Current Direction:**

Land: **Use:**

Weather: **Temp:**

Wind Speed: **Wind Direction:**

Pathways for Dispersion:

Site Hazards

- ☐ Boat safety
- ☐ Chemical hazards
- ☐ Cold Stress
- ☐ Confined Spaces
- ☐ Drum handling
- ☐ Equipment operations
- ☐ Electrical operations
- ☐ Fatigue
- ☐ Other
- ☐ Fire, explosion, in-situ burning
- ☐ Heat stress
- ☐ Helicopter operations
- ☐ Lifting
- ☐ Motor vehicles
- ☐ Noise
- ☐ Overhead/buried utilities
- ☐ Plants/wildlife
- ☐ Other
- ☐ Pump hose
- ☐ Slips, trips, and falls
- ☐ Steam and hot water
- ☐ Trenching/Excavation
- ☐ UV Radiation
- ☐ Visibility
- ☐ Weather
- ☐ Work near water
- ☐ Other

Air Monitoring

%O2: **%LEL:** **ppm Benzene:**

ppm H2S: ☐ **Other (Specify):**

CONTROL MEASURES

Engineering Controls

- ☐ Source of release secured
- ☐ Site secured
- ☐ Valve(s) closed
- ☐ Facility shut down
- ☐ Energy sources locked/tagged out
- ☐ Other

Personal Protective Equipment

- ☐ Impervious suit
- ☐ Inner gloves
- ☐ Outer gloves
- ☐ Flame resistance clothing
- ☐ Hard hats
- ☐ Respirators
- ☐ Eye protection
- ☐ Personal floatation
- ☐ Boots
- ☐ Other

Additional Control Measures

- ☐ Decontamination
- ☐ Sanitation
- ☐ Illumination
- ☐ Medical Surveillance
- ☐ Stations established
- ☐ Facilities provided - OSHA 29 CFR 1910.120n
- ☐ Facilities provided - OSHA 29 CFR 1910.120m
- ☐ Provided - OSHA 29 CFR 1910.120f

ICS 208 - Site Safety Plan			**© 1997-2008 dbSoft, Inc.**

10.16 ICS 208 (Cont'd)

ICS 208 - Site Safety Plan

Incident:	**Prepared By:** **at**
Period:	**Version Name:**

WORK PLAN

- ☐ Booming ☐ Skimming ☐ Vac trucks ☐ Pumping ☐ Excavation
- ☐ Heavy equipment ☐ Sorbent pads ☐ Patching ☐ Hot work ☐ Appropriate permits usec
- ☐ Other

TRAINING

- ☐ Verified site workers trained per OSHA 2! CFR 1920.120

ORGANIZATION

Title	Name	Telephone/Radio
Incident Commander:		
Deputy Incident Commander:		
Safety Officer:		
Public Affairs Officer:		
Other:		

EMERGENCY PLAN

- ☐ Alarm system
- ☐ Evacuation plan
- ☐ First aid location

Notified

- ☐ Hospital Phone:
- ☐ Ambulance Phone:
- ☐ Air ambulance Phone:
- ☐ Fire Phone:
- ☐ Law enforcement Phone:
- ☐ Emergency response/rescue Phone:

PRE-ENTRY BRIEFING

- ☐ Initial briefing prepared for each site

INCLUDING ATTACHMENTS/APPENDICES

Attachments

- ☐ Site Map
- ☐ Hazardous Substance Information Sheets
- ☐ Site Hazards
- ☐ Monitoring Program
- ☐ Training Program
- ☐ Confined Space Entry Procedure
- ☐ Safe Work Practices for Boats
- ☐ PPE Description
- ☐ Decontamination
- ☐ Communication and Organization
- ☐ Site Emergency Response Plan

Appendices

- ☐ Site Safety Program Evaluation Checklist
- ☐ Confined Space Entry Checklist
- ☐ Heat Stress Consideration
- ☐ Cold Stress and Hypothermia Consideration
- ☐ First Aid for Bites, Stings, and Poisonous Plant Contact
- ☐ Safe Work Practice for Oily Bird Rehabilitation
- ☐ Spill Site Pre-Entry Briefing
- ☐ Personnel Tracking System

ICS 208 - Site Safety Plan			**© 1997-2008 dbSoft, Inc.**

10.17 ICS 214a

ICS 214a - Individual Log			
Incident:		Prepared By:	at
Period:		Version Name:	
Activity Log			
Date/Time	Events/Notes		
ICS 214a - Individual Log			© 1997-2008 dbSoft, Inc.

THIS PAGE INTENTIALLY LEFT BLANK

Appendix A
Medical Evacuation Plan

ANADARKO MOZAMBIQUE AREA 1 (AMA1)
MEDICAL EVACUATION PLAN

AMA1 Emergency Contacts

- ☎ John Peffer – Anadarko Mozambique Country Manager – +258 848342410
- ☎ Mike Pace – Operations Manager Mozambique – +258 82 7280 474 Alt. +258 848349140
- ☎ Mario Rassul – EHS Mozambique – +258 82 3069340
- ☎ Bob Pease – Security Mozambique – +258 847658105
- ☎ Steve Freemyer – EHS International Houston – +1 713 819 564 440 Alt. +1 832 636 1645

Light Injury

Paper work – passport, etc.
One person should be nominated

Serious Injury

Personnel are taken care of in Mozambique. Decision of Medical Evacuation to South-Africa or Maputo is taken by AMA1 management

AMA1
Maputo Office
John Peffer /Mike Pace
- ☎ Office: +258 21.487.050
- ☎ Mobile:+258 848.342.410
- ☎ Home: +258 21.497.023

Fax: +258 21.487.054

24Hr Contact:
Houston Office
☎ +1 832.636.1111

Medical Transport within Mozambique
Netcare (Pemba to Maputo) 84911 82911
SOS International
Pemba Airport: +258 84.57.28.840 / +258 82.57.28.840 – Rodrigues Domingos
Pemba Airplane:
+258 82.575 2125 – Felix Rani Group
+258 82.386 4890 – 258 26217630 – Dave Le Poidevin

Cabo Delgado Medical Resources

☎ **Pemba Provincial Hospital** :
Dr. Egidio Banze Langa (Director)
Mobile:+258 82.49.26.960
Dr. Vladimir
Mobile :+258 84. 24.56.809

☎ **Cabo Delgado Clinic** :
Dr. Guilemo Sotolongo
Mobile : +258 82.81.35.450
Dr. Marcos
Mobile : +258 82.70.39.555

☎ **Mocimboa da Praia** :
Madeleine – Doctor (Cuba)
+258 82.76.22.784
Cundula – T. Surgeon
+258 82.30.15.916
Ermelindo – Technician
+258 82.51.62.292
Tome – Technician – Head Hospital
+258 82.52.18.714

☎ **Palma** :
Magide – Doctor
+258 82.46.38.630
Odette – Nurse
+258 82.72.49.220

Maputo Medical Resources:

- ☎ P'la Saude 800500 500
- ☎ Clinica Cruz Azul 21305146
- ☎ ICOR – 82 3274800/ 21416347
- ☎ Clinica Sommercshield 21 493924/7
- ☎ Clinica Sweca – 21492922

Medical Evacuation ISOS

IN EMERGENCY SITUATION CALL
International SOS Johannesburg
☎ +27 11541 1300
☎ +27 11541 1350
Johannesburg Satellite
☎ +881 631419 330
International SOS London
☎ +44 20 8762 8008
International SOS Paris
☎ + 33 1 55 63 3155

Anadarko Membership Number: 11BCMA 000041
Please give the following information:

- Accident location
- Injured Person's Identification
- Injury description
- Expected evacuation point
- Expected time of arrival
- Your own identity and location
- Confirm Contact numbers

Revision Date: May 7 2008

SUMMARY OF PROCEDURES

1. IN EMERGENCY SITUATION PLEASE CALL AMA 1
   a) John Peffer
   b) Optional – Mike Pace
2. PROVIDE YOUR PRECISE LOCATION – USE THE GPS
3. BASED ON YOUR LOCATION CALL, PALMA, MOCIMBOA OR PEMBA

Mozambique Rovima Northern Offshore Area
Medical Evacuation Map

Anadarko Petroleum Corporation

The Response Group — Emergency Response | Pre-Planning & Support — 281-880-5000

MEDEVAC:
ISOS to Johannesburg, back up for Mozambique internally.
Medevac will be to Maputo or Johannesburg.
NETCARE:
A helicopter will fly from the vessel to Pemba airport or Mocimboa de Paraia Airport, a doctor is on board of the vessel with extensive equipment able to stabalize a person if necessary.

HOSPITAL: Pemba
+ 258 272 20796;21702;20623

NETCARE: Maputo
+ 258 21-313103
Local dial: 84911
HOSPITAL: Maputo
+ 258 21-49-2922
+ 258 82 300 26100

JOHANNESBURG
SOS
+ 27 11-541-1300

TANZANIA
MOZAMBIQUE
ZAMBIA
ZIMBABWE
BOTSWANA
SOUTH AFRICA
Lake Nyasa
Pemba
Lilongwe
Lusaka
Zambezi
Chire
Harare
Gaborone
Pretoria
Johannesburg
Mbabne
Maputo
Mocimboa Da Praia
Niassa
Cabo Delgado
Antananarivo
Indian Ocean

1,805 km
2,099 km
1,656 km
1,959 km

LEGEND
- Hospitals
- Airports
- National Capitals
- Evacuation to Maputo
- Evacuation to Johannesburg
- Helicopter Evacuation
- Bathymetry
- Area 1 Block 2

Appendix B
Office Emergency Procedures

Anadarko
Moçambique Área 1, Lda

EMERGENCY PROCEDURES

Anadarko Moçambique Area 1 Limited
Av. Dr. Antonio Jose de Almeida, 227
Maputo,
Mozambique
Tel + 258 21 487050
Fax: + 258 21 487054

TABLE OF CONTENTS

PHONE NUMBERS - MAPUTO

EMERGENCY NUMBERS	
NETCARE SOS (AMBULANCE)	84 911 OR 82 911
PRIVATE CLINIC TBN (AMBULANCE)	21 48 6198
FIRE BRIGADE	21 32 2222
POLICE	21 32 5031

EMERGENCY NOTIFICATION TEAM	
JOHN PEFFER	84 834 2410
MIKE PACE	82 728 0474
	84 834 9140
MARIO RASSUL	82 306 9340

NON-EMERGENCY NUMBERS	
HEALTH INSURANCE COMPANY	
MOMENTUM	800 500 500
CLINICS	
Instituto do **C**oração	82 327 4800 / 21 41 6347
Clinica do **H**ospital **C**entral	82 3192640
Clinica da **S**ommershield	21 48 6198
Clinica **S**ueca	21 49 2922
Clinica **C**ruz **A**zul	82 304 0030
HOSPITALS	
Hospital **C**entral de Maputo	21 32 5000
Hospital Militar	21 41 6835

PHONE NUMBERS - PEMBA

EMERGENCY NUMBERS	
FIRE BRIGADE	2722 0223
POLICE	2722 1006 2722 0484

EMERGENCY NOTIFICATION TEAM (ENT)	
JOHN PEFFER	84 834 2410
MIKE PACE	82 728 0474
	84 834 9140
MARIO RASSUL	82 306 9340

NON-EMERGENCY NUMBERS	
HEALTH INSURANCE COMPANY	
MOMENTUM	800 500 500
CLINICS	
Pemba **P**rovincial **H**ospital	2722 0348
Cabo **D**elgado **C**linic	82 813 5450 – 82 703 9555

EMERGENCY PROCEDURES

ANADARKO MOÇAMBIQUE AREA 1 LIMITED

FIRE / EVACUATION PROCEDURES

EMPLOYEE

IF YOU:

- **See smoke or flames**
- **Smell something burning**
- **Receive such a report**

Or

- **Hear a smoke alarm**

STEP 1

Isolate the fire by closing the door if you can do so safely

Fire Extinguishers:

- Do not attempt to extinguish the fire
- Fire extinguishers are for the Fire Brigade usage ONLY

STEP 2

Close office doors, proceed to the stairways or other predetermined meeting location, and wait for instructions

STEP 3

Call Fire Brigade:

- **Maputo – 2132 2222**
- **Pemba – 2722 0223 or 800 198 198**

GIVE THIS INFORMATION:

1. **Nature of Emergency:**
   Alarm Smoke Flames
2. **Address:**
   - **AMA 1 Maputo - Av. Dr. António Jose de Almeida, 227**
   - **AMA 1 Pemba - Rua do Porto, 432**
3. **Your Telephone Number**
4. **Listen to the Dispatcher**
5. **Let Dispatcher Hang Up First**

STEP 4

Follow the instructions from the local Fire Brigade then proceed to the reunion point at the front gate

STEP 5

Report any individuals not accounted for at the reunion point to the local Fire Brigade

Reporting Fires:

- It is every individual's responsibility to report indications of fire
- All fires shall be reported to the Fire Brigade, no matter how small

STEP 6

Call the Emergency Notification Team at : 84 834 2410 / 84 834 9140 / 82 306 9340

FIRE / EVACUATION PROCEDURES

IF EVACUATION IS NECESSARY

Important Things to Know During a Fire:

- The roof is not an approved exit
- When the Fire Brigade arrives, the officer is in charge and takes over as Commander
- The most critical areas for immediate evacuation are the fire floor, the floor above, and the floor below

IN THE EVENT OF ALARM OR DRILL

1. Close office doors, proceed to the nearest stairway or some other predetermined meeting location, and wait for instructions
2. Follow the instructions from the Fire Brigade or local Fire Department
3. Report any individuals not accounted for to the front door
4. All individuals shall participate in all fire drills

IF YOU THINK YOU SMELL AN ODD OR UNFAMILIAR ODOR:

Immediately call the Emergency Notification Team

John Peffer - 84 834 2410
Mike Pace - 84 834 9140
Mario Rassul - 82 306 9340

MEDICAL EMERGENCY

EMPLOYEE (SEE THE MEDEVAC PLAN)

UPON WITNESSING A MAJOR MEDICAL EMERGENCY, CALL AND INFORM:

MAPUTO	PEMBA
NETCARE SOS: 84 911 OR 82 911 PRIVATE AMBULANCE TBN: 2148 6198	PROVINCIAL HOSPITAL: 2722 0348 OR 800 197 197 CABO DELGADO CLINIC: 82813 5450 OR 82703 9555

STEP 1

1. Your Name
2. Building Address
- **AMA 1 Maputo - Av. Dr. António Jose de Almeida, 227**
- **AMA 1 Pemba – Rua do Porto, 432**

3. Nature of the Medical Emergency
4. Exact Location of the Sick or Injured Person

STEP 2

Notify the Emergency Notification Team at (84 834 2410 / 84 834 9140 / 82 306 9340) of the medical emergency situation

STEP 3

Designate someone to go to the front of the building, and wait for Emergency Medical Technicians (EMT's) to arrive. This person will direct the EMT's to the sick or injured person

STEP 4

Apply first aid to the level to which you have been trained

An Automatic External Defibrillator (AED) is located in the EHS representative's Office

IF THE SICK OR INURED IS TO BE SENT TO THE HOSPITAL:

- **Send a friend or fellow employee along to comfort the person and help them arrive at the hospital until a relative or other responsible person arrives**
- **Follow reporting instructions for Occupational Injury or Illness, if applicable**

MEDICAL EMERGENCY

MINOR MEDICAL EMERGENCY

- Treat minor medical emergency as needed
- Follow reporting instructions for Occupational Injury or Illness, if applicable

OCCUPATIONAL INJURY OR ILLNESS

Occupational Injury or Illness Reporting by Employees

- Report any occupational injury or illness (major or minor to your supervisor as soon as possible
- Consult with your EHS Representative for guidance in reporting any occupational injuries or illnesses
- Instructions can be found on the EHS Intranet site

RETURN TO WORK

- If you have been away from work due to an Occupational Injury or Illness, contact your supervisor for the appropriate form/procedure to return to work

TELEPHONE THREATS

PHONE CALL RECIPIENT:

1. Be calm, courteous, listen, and do not interrupt the caller
2. Keep caller on the phone as long as possible and do not hang up
3. Signal to someone near you to alert the supervisor
4. Write down everything the caller says, word for word, if possible
5. As soon as possible, ask the questions on the Telephone Threat Checklist
6. After the call, write down any impressions of the caller on the Telephone Threat Checklist
7. Immediately call the Security Manager (84 765 8105). If not available, notify the ENT.

Provide the Following Information:

- Your name and phone number
- The extension where the call was received
- The exact wording of the threat and all information obtained on the Threat Report

8. Do not use radios/cell phones since bombs can be activated by this equipment
9. Inform your supervisor, but do not alarm other employees and visitors until a search has been conducted
10. Ensure that a copy of your Threat Report form is forwarded to Corporate Security

RESPONSE ACTIONS:

- **Building Security and Office Management will conduct a search**
- **Look for tampering or items that appear out of place**
- **If a package or object is found do not move or touch the object**
- **An evacation of the building may take place**
- **The decision to evacuate due to a threat is the sole responsibility of Senior Management**
- **This authority will only be superceded by Government Agencies**

EMERGENCY PROCEDURES

ANADARKO MOÇAMBIQUE AREA 1 LIMITED

TELEPHONE THREAT CHECKLIST

USE THIS CHECKLIST TO ASK SPECIFIC QUESTIONS

FOR BOMB THREATS:
When is the bomb going to explode?
Where is the bomb?
What does it look like?
What kind of bomb is it?
What will cause it to explode?
Did you place the bomb?
If no, then who?

FOR ALL THREATS:
Why do you want to do this?
Are you on your way here now?
Do you have any weapons?
What is your name?

When the caller hangs up, immediately complete the following:

Date _____ Time call received_____
Phone number where call was received_____
Sex of Caller_____ Race _____
Age_____
Exact Wording of the Threat:
_____
_____
_____
_____

Caller's Voice (check all that apply):

____Calm ____Excited ____Nasal ____Stutter
____Angry____ Slow____ Rapid ____Raspy
____Deep ____High-pitched ____Soft ____Lisp
____Loud ____ Ragged ____Deep breathing
____Clearing throat ____ Coughing ____Sniffling
____Laughter ____Crying ____Cracking Voice
____Disguised voice ____Distinct ____Slurred
____Normal ____Familiar ____Accent (Describe)

Threat Language (check all that apply):
____ Educated ____ Uneducated
____Incoherent ____Taped ____Foul
____Message was read ____Angry
____Measured ____Irrational

Background Noises (check all that apply):
____Street noises ____Airplanes ____TV
____Factory machinery ____Radio _____Music
____Dishes/Pot/Pans ____PA Announcements
____Animals (describe: _____)
_____Voices - Male? Female? Children?
Describe: _____
____ Clear Line ____Static ____ Local Call
____ Long Distance ____Cellular
____ Motor/Engine ____ Office Machines
____Office (describe any particular sounds):
_____
_____

If Necessary, Use Another Sheet of Paper to Record any Other Information About this Call

After you have completed this checklist, immediately report the threat to the Security Manager or ENT (if Security Manager is not available)

- **If the caller said that he/she was on his way to the building now, tell the Security Manager/ENT**
- **To avoid unnecessary alarm, do not say anything about the threat to employees or visitors unless instructed to do so**
- **The Security Manager/ENT will make all of the necessary notifications**
- **You will be contacted again for further instructions or information**

EMERGENCY PROCEDURES

ANADARKO MOÇAMBIQUE AREA 1 LIMITED

BIO-HAZARD THREAT

EMPLOYEE

IF YOU HAVE RECEIVED A SUSPECT PACKAGE, OR HAVE OPENED A PACKAGE AND THE CONTENTS ARE SUSPECT:

DO:

- Carefully place the item on your desk, or on the floor
- Cover or contain the item by placing something over it such as a coat, paper or trash can
- Call the Security Manager at 84 765 8105 (Alt. the Emergency Notification Team)
- Exit the office or area and close the door if possible
- Stand by the door until Security arrives
- Remain in the area and warn approaching personnel to stay back from the area
- When Security arrives, follow their instructions

DO NOT:

- Panic or over react
- Shake the item
- Open the item
- Carry through the office
- Place the item in water, or in a drawer or cabinet
- Call co-workers to verify a suspicious item
- Touch eyes, nose, mouth, or any other body part

EMERGENCY PROCEDURES

ANADARKO MOÇAMBIQUE AREA 1 LIMITED

AFTER HOURS PROCEDURES

EMPLOYEE

IF YOU SEE SMOKE OR FLAMES, SMELL SMOKE, OR HEAR A FIRE ALARM:

1. **Isolate the fire by closing the door, if you can do so safely**

2. **Call the Fire Department**

3. **Evacuate your floor, using stairs only**

4. **Never assume someone else has called for help**

If there is a medical or other emergency after hours:	If you need to contact Security after hours:
Call **Emergency Notification Team** **John Peffer – 84 834 2410** **Mike Pace – 82 728 0474** **Mario Rassul – 82 306 9340**	**Call the** **Security Manager** 84 765 8105

THIS PAGE INTENTIALLY LEFT BLANK

Mozambique - Sample Offshore Aerial Dispersant Activation List

Anadarko Petroleum Corporation

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Aerial Dispersant System	Supplier & Phone	Warehouse	Aerial Dispersant Package	Quantity	Staging Area	Distance from Warehouse to Pemba Airport (Miles)	Response Times (Hours)				
										ETA from Wharehouse to Pemba Airport	Loadout Time	ETA to Site	Deployment Time	Total ETA
	Y	Y	NIMBUS Dispersant System	OSRL +44-238-072-4312	South Hampton, UK	L-382 Hercules Aircraft	1		5,050	17.3	1	0.4	0.5	**19.2**
						NIMBUS System	1							
						Dispersant - Gallons	5000							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	2							
		Y	ADDS PACK Air Speed - 330 MPH	OSRL +44-238-072-4312	South Hampton, UK	L382 Hercules or C-130 Airc	1		5,050	17.3	1	0.4	0.5	**19.2**
						ADDS PACK	1							
						Dispersant - Gallons	5500							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	2							
		Y	Light Aircraft Dispersant Pods Spray System	OSRL +44-238-072-4312	Coventry, UK	Cessna 406 Aircraft	1		5,150	17.6	1	0.6	0.5	**19.7**
						Dispersant Pod	1							
						Dispersant - Gallons	300							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							
		Y	Light Aircraft Dispersant Pods Spray System	OSRL +44-238-072-4312	Inverness, UK	Cessna 406 Aircraft	1		5,470	18.6	1	0.6	0.5	**20.7**
						Dispersant Pod	1							
						Dispersant - Gallons	300							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							
		Y	ADDS PACK Air Speed - 330 MPH	EARL + (65) 6266 1566	Singapore, SG	USCG C-130 Aircraft	1		4,450	15.5	1	0.4	0.5	**17.4**
						ADDS PACK	1							
						Dispersant - Gallons	5500							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	2							

Mozambique - Sample Offshore Aerial Dispersant Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Aerial Dispersant System	Supplier & Phone	Warehouse	Aerial Dispersant Package	Quantity	Staging Area	Distance from Warehouse to Pemba Airport (Miles)	Response Times (Hours)				
										ETA from Wharehouse to Pemba Airport	Loadout Time	ETA to Site	Deployment Time	Total ETA
		Y	Rotortech TC3 Helicopter Spray System	OSRL +44-238-072-4312	South Hampton, UK	Helicopter w/ External Hook	1		5,050	17.3	1	1.4	0.5	**20.2**
						Rotortech TC3	1							
						Dispersant - Gallons	150							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							
		Y	Rotortech TC3 Helicopter Spray System	OSRL +44-238-072-4312	South Hampton, UK	Helicopter w/ External Hook	1		5,050	17.3	1	1.4	0.5	**20.2**
						Rotortech TC3	1							
						Dispersant - Gallons	150							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							
		Y	Rotortech TC3 Helicopter Spray System	OSRL +44-238-072-4312	South Hampton, UK	Helicopter w/ External Hook	1		5,050	17.3	1	1.4	0.5	**20.2**
						Rotortech TC3	1							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Dispersant - Gallons	150							
						Crew - Pilots	1							
		Y	Rotortech TC3 Helicopter Spray System	OSRL +44-238-072-4312	South Hampton, UK	Helicopter w/ External Hook	1		5,050	17.3	1	1.4	0.5	**20.2**
						Rotortech TC3	1							
						Dispersant - Gallons	150							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							

Mozambique - Sample Offshore Aerial Dispersant Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Aerial Dispersant System	Supplier & Phone	Warehouse	Aerial Dispersant Package	Quantity	Staging Area	Distance from Warehouse to Pemba Airport (Miles)	Response Times (Hours): ETA from Wharehouse to Pemba Airport	Loadout Time	ETA to Site	Deployment Time	Total ETA
		Y	Simplex Helicopter Spray Bucket	EARL + (65) 6266 1566	Singapore, SG	Helicopter w/ External Hook	1		4,450	15.5	1	1.4	0.5	**18.4**
						Simplex Spray Bucket	1							
						Dispersant - Gallons	220							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							
		Y	Simplex Helicopter Spray Bucket	EARL + (65) 6266 1566	Singapore, SG	Helicopter w/ External Hook	1		4,450	15.5	1	1.4	0.5	**18.4**
						Simplex Spray Bucket	1							
						Dispersant - Gallons	220							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							
		Y	Simplex Helicopter Spray Bucket	EARL + (65) 6266 1566	Singapore, SG	Helicopter w/ External Hook	1		4,450	15.5	1	1.4	0.5	**18.4**
						Simplex Spray Bucket	1							
						Dispersant - Gallons	220							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							
		Y	Simplex Helicopter Spray Bucket	EARL + (65) 6266 1566	Singapore, SG	Helicopter w/ External Hook	1		4,450	15.5	1	1.4	0.5	**18.4**
						Simplex Spray Bucket	1							
						Dispersant - Gallons	220							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							
		Y	Simplex Helicopter Spray Bucket	EARL + (65) 6266 1566	Singapore, SG	Helicopter w/ External Hook	1		4,450	15.5	1	1.4	0.5	**18.4**
						Simplex Spray Bucket	1							
						Dispersant - Gallons	220							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							

Mozambique - Sample Offshore Aerial Dispersant Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Aerial Dispersant System	Supplier & Phone	Warehouse	Aerial Dispersant Package	Quantity	Staging Area	Distance from Warehouse to Pemba Airport (Miles)	Response Times (Hours)				
										ETA from Wharehouse to Pemba Airport	Loadout Time	ETA to Site	Deployment Time	Total ETA
		Y	Simplex Helicopter Spray Bucket	EARL + (65) 6266 1566	Singapore, SG	Helicopter w/ External Hook	1		4,450	15.5	1	1.4	0.5	**18.4**
						Simplex Spray Bucket	1							
						Dispersant - Gallons	220							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							
		Y	Simplex Helicopter Spray Bucket	EARL + (65) 6266 1566	Singapore, SG	Helicopter w/ External Hook	1		4,450	15.5	1	1.4	0.5	**18.4**
						Simplex Spray Bucket	1							
						Dispersant - Gallons	220							
						Spotter Aircraft (Local)	1							
						Spotter Personnel	2							
						Crew - Pilots	1							

Mozambique - Sample Offshore Boat Spray Dispersant Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Boat Spray Dispersant System	Supplier & Phone	Warehouse	Boat Spray Dispersant Package	Quantity	Staging Area	Response Times (Hours): ETA from Wharehouse to Pemba Airport	ETA from Airport to Staging	Loadout Time	ETA to Site	Deployment Time	Total ETA
		Y	Frank Ayles Boat Spray System	OSRL +44-238-072-4312	South Hampton, UK	Dispersant Spray System	1		17.3	0.1	1	8.9	0.5	**27.9**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Boat Spray System	OSRL +44-238-072-4312	South Hampton, UK	Dispersant Spray System	1		11.7	0.1	1	8.9	0.5	**22.3**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Boat Spray System	OSRL +44-238-072-4312	South Hampton, UK	Dispersant Spray System	1		11.7	0.1	1	8.9	0.5	**22.3**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Boat Spray System	OSRL +44-238-072-4312	South Hampton, UK	Dispersant Spray System	1		11.7	0.1	1	8.9	0.5	**22.3**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Sea Spray System	OSRL +44-238-072-4312	South Hampton, UK	Dispersant Spray System	1		11.7	0.1	1	8.9	0.5	**22.3**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Sea Spray System	OSRL +44-238-072-4312	South Hampton, UK	Dispersant Spray System	1		11.7	0.1	1	8.9	0.5	**22.3**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Sea Spray System	OSRL +44-238-072-4312	South Hampton, UK	Dispersant Spray System	1		11.7	0.1	1	8.9	0.5	**22.3**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							

Anadarko Petroleum Corporation

Mozambique - Sample Offshore Boat Spray Dispersant Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Boat Spray Dispersant System	Supplier & Phone	Warehouse	Boat Spray Dispersant Package	Quantity	Staging Area	Response Times (Hours): ETA from Wharehouse to Pemba Airport	ETA from Airport to Staging	Loadout Time	ETA to Site	Deployment Time	Total ETA
		Y	Frank Ayles Sea Spray System	EARL + (65) 6266 1566	Singapore, SG	Dispersant Spray System	1		15.5	1	1	8.9	0.5	**26.9**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Sea Spray System	EARL + (65) 6266 1566	Singapore, SG	Dispersant Spray System	1		15.5	1	1	8.9	0.5	**26.9**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Sea Spray System	EARL + (65) 6266 1566	Singapore, SG	Dispersant Spray System	1		15.5	1	1	8.9	0.5	**26.9**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Sea Spray System	EARL + (65) 6266 1566	Singapore, SG	Dispersant Spray System	1		15.5	1	1	8.9	0.5	**26.9**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Sea Spray System	EARL + (65) 6266 1566	Singapore, SG	Dispersant Spray System	1		15.5	1	1	8.9	0.5	**26.9**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							
		Y	Frank Ayles Sea Spray System	EARL + (65) 6266 1566	Singapore, SG	Dispersant Spray System	1		15.5	1	1	8.9	0.5	**26.9**
						Dispersant (Gallons)	330							
						Utility Boat (≥ 110')	1							
						Personnel	1							

Mozambique - Sample Offshore On-Water Recovery Activation List

Anadarko Petroleum Corporation

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity (Meters)	Recovery Rate (Barrels/Day)	Storage (Barrels)	Staging Area	Response Times (Hours)					
											ETA from Wharehouse to Pemba Airport	ETA from Airport to Staging	Loadout Time	ETA to Site	Deployment Time	Total ETA
Y	Y	Y	Desmi 250 Skimmer w/ Ro-Disc 40 Attachment (Light/Medium Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	DS 250 Weir Skimmer	1	2,198		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
Y	Y	Y	Desmi 250 Skimmer w/ Ro-Disc 40 Attachment (Light/Medium Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	DS 250 Weir Skimmer	1	2,198		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
Y	Y	Y	Sea Skimmer 50 Disc Skimmer (Light/Medium Oil & Some Fuel Oils)	OSRL +(44) 23 8033 1551	South Hampton, UK	Disc Skimmer	1	1,570		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
Y	Y	Y	Sea Skimmer 50 Disc Skimmer (Light/Medium Oil & Some Fuel Oils)	OSRL +(44) 23 8033 1551	South Hampton, UK	Disc Skimmer	1	1,570		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
Y	Y	Y	GT 185 Weir Skimmer	OSRL +(44) 23 8033 1551	South Hampton, UK	GT185 Weir Skimmer	1	1,371		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
Y	Y	Y	GT 185 Weir Skimmer	OSRL +(44) 23 8033 1551	South Hampton, UK	GT185 Weir Skimmer	1	1,371		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
	Y	Y	Desmi 250 Skimmer w/ Ro-Disc 40 Attachment (Light/Medium Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	DS 250 Weir Skimmer	1	2,198		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
	Y	Y	Desmi 250 Skimmer w/ Ro-Disc 40 Attachment (Light/Medium Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	DS 250 Weir Skimmer	1	2,198		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									

Anadarko Petroleum Corporation

Mozambique - Sample Offshore On-Water Recovery Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Recovery Rate (Barrels/Day)	Storage (Barrels)	Staging Area	Response Times (Hours): ETA from Wharehouse to Pemba Airport (Miles)	ETA from Airport to Staging	Loadout Time	ETA to Site	Deployment Time	Total ETA
	Y	Y	Sea Skimmer 50 Disc Skimmer (Light/Medium Oil & Some Fuel Oils)	OSRL +(44) 23 8033 1551	South Hampton, UK	Disc Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,570		Pemba, Moz	17.3	1	1	8.9	0.5	**28.7**
	Y	Y	Sea Skimmer 50 Disc Skimmer (Light/Medium Oil & Some Fuel Oils)	OSRL +(44) 23 8033 1551	South Hampton, UK	Disc Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,570		Pemba, Moz	17.3	1	1	8.9	0.5	**28.7**
	Y	Y	Sea Skimmer 50 Disc Skimmer (Light/Medium Oil & Some Fuel Oils)	OSRL +(44) 23 8033 1551	South Hampton, UK	Disc Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,570		Pemba, Moz	17.3	1	1	8.9	0.5	**28.7**
	Y	Y	GT 185 Weir Skimmer	OSRL +(44) 23 8033 1551	South Hampton, UK	GT185 Weir Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,371		Pemba, Moz	17.3	1	1	8.9	0.5	**28.7**
	Y	Y	GT 185 Weir Skimmer	OSRL +(44) 23 8033 1551	South Hampton, UK	GT185 Weir Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,371		Pemba, Moz	17.3	1	1	8.9	0.5	**28.7**
	Y	Y	Weir Boom System w/ Rotary Vane Pumps	OSRL +(44) 23 8033 1551	South Hampton, UK	Rotary Vane Pumps 42" - 3 Weir Boom Personnel Utility Boat (≥ 110')	1 300m 4 1	1,962		Pemba, Moz	17.3	1	1	8.9	0.5	**28.7**
	Y	Y	Weir Boom System w/ Rotary Vane Pumps	OSRL +(44) 23 8033 1551	South Hampton, UK	Rotary Vane Pumps 42" - 3 Weir Boom Personnel Utility Boat (≥ 110')	1 300m 4 1	1,962		Pemba, Moz	17.3	1	1	8.9	0.5	**28.7**
	Y	Y	Sea Devil Disc Skimmer (Heavy Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	Toothed Disc Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	3,140		Pemba, Moz	17.3	1	1	8.9	0.5	**28.7**

Mozambique - Sample Offshore On-Water Recovery Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Recovery Rate (Barrels/Day)	Storage (Barrels)	Staging Area	Response Times (Hours)					
											ETA from Wharehouse to Pemba Airport (Miles)	ETA from Airport to Staging	Loadout Time	ETA to Site	Deployment Time	Total ETA
	Y	Y	Sea Devil Disc Skimmer (Heavy Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	Toothed Disc Skimmer	1	3,140		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
	Y	Y	Walosep WP1-30 Drum Skimmer (Heavy Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	WP1-30 Drum Skimme	1	2,198		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
	Y	Y	Walosep W2 Weir Skimmer (Light/Medium Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	W2 Weir Skimmer	1	1,256		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
	Y	Y	Walosep W2 Weir Skimmer (Light/Medium Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	W2 Weir Skimmer	1	1,256		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
	Y	Y	Termite Weir Skimmer (Light/Medium Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	Weir Skimmer	1	942		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						42" Ocean Boom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
	Y	Y	Termite Weir Skimmer (Light/Medium Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	Weir Skimmer	1	942		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						42" Ocean Boom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Sea Skimmer 50 Disc Skimmer (Light/Medium Oil & Some Fuel Oils)	OSRL +(44) 23 8033 1551	South Hampton, UK	Disc Skimmer	1	1,570		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Sea Skimmer 50 Disc Skimmer (Light/Medium Oil & Some Fuel Oils)	OSRL +(44) 23 8033 1551	South Hampton, UK	Disc Skimmer	1	1,570		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									

Mozambique - Sample Offshore On-Water Recovery Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Recovery Rate (Barrels/Day)	Storage (Barrels)	Staging Area	Response Times (Hours)					
											ETA from Wharehouse to Pemba Airport (Miles)	ETA from Airport to Staging	Loadout Time	ETA to Site	Deployment Time	Total ETA
		Y	GT 185 Weir Skimmer	OSRL +(44) 23 8033 1551	South Hampton, UK	GT185 Weir Skimmer	1	1,371		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	GT 185 Weir Skimmer	OSRL +(44) 23 8033 1551	South Hampton, UK	GT185 Weir Skimmer	1	1,371		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Sea Devil Disc Skimmer (Heavy Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	Toothed Disc Skimmer	1	3,140		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Walosep WP1-30 Drum Skimmer (Heavy Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	WP1-30 Drum Skimme	1	2,198		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Rotodrum Skimmer (Heavy Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	Drum Skimmer	1	2,198		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Rotodrum Skimmer (Heavy Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	Drum Skimmer	1	2,198		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Termite Weir Skimmer (Light/Medium Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	Weir Skimmer	1	942		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						42" Ocean Boom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Termite Weir Skimmer (Light/Medium Oil)	OSRL +(44) 23 8033 1551	South Hampton, UK	Weir Skimmer	1	942		Pemba, Moz	17.3	1	1	8.9	0.5	28.7
						42" Ocean Boom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									

Mozambique - Sample Offshore On-Water Recovery Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Recovery Rate (Barrels/Day)	Storage (Barrels)	Staging Area	Response Times (Hours): ETA from Wharehouse to Pemba Airport (Miles)	Response Times (Hours): ETA from Airport to Staging	Response Times (Hours): Loadout Time	Response Times (Hours): ETA to Site	Response Times (Hours): Deployment Time	Response Times (Hours): Total ETA
		Y	Sea Devil Disc Skimmer (Heavy Oil)	EARL + (65) 6266 1566	Singapore, SG	Toothed Disc Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	3,140		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
		Y	GT 185 Weir Skimmer	EARL + (65) 6266 1566	Singapore, SG	GT185 Weir Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,371		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
		Y	GT 185 Weir Skimmer	EARL + (65) 6266 1566	Singapore, SG	GT185 Weir Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,371		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
		Y	GT 185 Weir Skimmer	EARL + (65) 6266 1566	Singapore, SG	GT185 Weir Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,371		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
		Y	GT 185 Weir Skimmer	EARL + (65) 6266 1566	Singapore, SG	GT185 Weir Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,371		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
		Y	GT 185 Weir Skimmer	EARL + (65) 6266 1566	Singapore, SG	GT185 Weir Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,371		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
		Y	GT 185 Weir Skimmer	EARL + (65) 6266 1566	Singapore, SG	GT185 Weir Skimmer 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	1,371		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
		Y	Walosep WP1-30 Drum Skimmer (Heavy Oil)	EARL + (65) 6266 1566	Singapore, SG	WP1-30 Drum Skimme 78" Offshore Roboom Personnel Utility Boat (≥ 110')	1 150m 4 1	2,198		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**

Mozambique - Sample Offshore On-Water Recovery Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Skimming System	Supplier & Phone	Warehouse	Skimming Package	Quantity	Recovery Rate (Barrels/Day)	Storage (Barrels)	Staging Area	Response Times (Hours)					
											ETA from Wharehouse to Pemba Airport (Miles)	ETA from Airport to Staging	Loadout Time	ETA to Site	Deployment Time	Total ETA
		Y	Walosep WP1-30 Drum Skimmer (Heavy Oil)	EARL + (65) 6266 1566	Singapore, SG	WP1-30 Drum Skimme	1	2,198		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
						78" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Sea Skimmer 50 Disc Skimmer (Light/Medium Oil & Some Fuel Oils)	EARL + (65) 6266 1566	Singapore, SG	Disc Skimmer	1	1,570		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
						68" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Sea Skimmer 50 Disc Skimmer (Light/Medium Oil & Some Fuel Oils)	EARL + (65) 6266 1566	Singapore, SG	Disc Skimmer	1	1,570		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
						68" Offshore Roboom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Termite Weir Skimmer (Light/Medium Oil)	EARL + (65) 6266 1566	Singapore, SG	Weir Skimmer	1	942		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
						47" Sprint Rapid Boom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Sea Wolf Clamshell Skimmer Oil w/ Debris	EARL + (65) 6266 1566	Singapore, SG	Clamshell Skimmer	1	3,017		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
						42" Ocean Boom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
		Y	Sea Wolf Clamshell Skimmer Oil w/ Debris	EARL + (65) 6266 1566	Singapore, SG	Clamshell Skimmer	1	3,017		Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
						42" Ocean Boom	150m									
						Personnel	4									
						Utility Boat (≥ 110')	1									
														DERATED RECOVERY RATE (BBLS/DAY)		**82,302**

Mozambique - Sample Offshore Temporary Storage Activation List

Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls.)	Tier 3 (>1000 bbls.)	Storage System	Supplier & Phone	Warehouse	Storage Package	Quantity	Storage (Liters)	Storage (Barrels)	Staging Area	Response Times (Hours)					
											ETA from Wharehouse to Pemba Airport (Miles)	ETA from Wharehouse/ Airport to Staging	Loadout Time	ETA to Site	Deployment Time	Total ETA
Y	Y	Y	Towable/Inflatable Hypalon Rubber Storage Barges	OSRL +(44) 23 8033 1551	South Hampton, UK	25 cu/m Storage Barge	4	100,000	628	Pemba, Moz	17.3	1	1	8.9	0.5	**28.7**
						50 cu/m Storage Barge	4	200,000	1,260							
						Personnel	1									
						Recovery Vessel	1									
Y	Y	Y	Lancer Barge w/ Package #6	OSRL +(44) 23 8033 1551	South Hampton, UK	50 cu/m Storage Barge	1	50,000	315	Pemba, Moz	17.3	1	1	8.9	0.5	**28.7**
						Personnel	1									
						Recovery Vessel	1									
	Y	Y	Towable/Inflatable Hypalon Rubber Storage Barges	EARL + (65) 6266 1566	Singapore, SG	25 cu/m Storage Barge	3	75,000	471	Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
						50 cu/m Storage Barge	1	50,000	315							
						Personnel	1									
						Recovery Vessel	1									
	Y	Y	Waste Containment Tank w/ Heating	EARL + (65) 6266 1566	Singapore, SG	9 cu/m Frac Tank	4	36,000	226	Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
						Personnel	1									
						Recovery Vessel	1									
		Y	Towable Unitor Oil Bags	EARL + (65) 6266 1566	Singapore, SG	100 cu/m Oil Bag	3	300,000	1,887	Pemba, Moz	15.5	1	1	8.9	0.5	**26.9**
						200 cu/m Oil Bag	2	400,000	2,516							
						500 cu/m Oil Bag	1	500,000	3,145							
						Personnel	1									
						Recovery Vessel	1									
														STORAGE CAPACITY (LITERS)		**1,711,000**
														STORAGE CAPACITY (BARRELS)		**10,763**

Sample - Dispersant Stockpiles by Location (Updated 2007)						
Tier 1 (<100 bbls.)	**Tier 2 (100 to 1000 bbls)**	**Tier 3 (>1000 bbls)**	**Supplier & Phone**	**Location of Dispersants**	**Type**	**Quantity (Gallons)**
	Y	Y	OSRL WACAF Stockpile +011442380331551	Malabo, Equatorial Guinea	COREXIT 9500	1,057
	Y	Y		Abidjan, Cote D'Ivoire		1,057
	Y	Y		Sao Tome, W. Africa		1,057
	Y	Y		Port Gentil, Gabon		2,114
		Y		Luanda, Angola		1,057
		Y	OSRL DSP – Woodside Petroleum Stockpile +011442380331551	Nouakchott, Mauritania W. Africa	COREXIT 9500	7,034
		Y		Nouakchott, Mauritania W. Africa	Dasic Slickgone LTSW	1,759
	Y	Y	OSRL Southhampton Stockpile +011442380331551	Southhampton, UK	COREXIT 9500	4,866
		Y			Dasic Slickgone LTSW	2,838
		Y			Dasic Slickgone NS	1,187
		Y			Dasic Slickgone EW	4,756
		Y			Enersperse 1100	1,057
		Y			Enersperse 1583	5,284
		Y			Agma 379	1,849
		Y			Finasol OSR 51	528
		Y			Super 25	1,607
		Y	OSRL +011442380331551	SCATSA Shetlands	Dasic Slickgone LTSW	1,321
		Y		Coventry Airport	COREXIT 9500	1,321
		Y		Inverness Airport	COREXIT 9500	1,321
		Y		Lerwick, Shetlands (X-UKOOA)	Dasic Slickgone LTSW	26,156

Sample - Dispersant Stockpiles by Location (Updated 1/2007)						
Tier 1 (<100 bbls.)	Tier 2 (100 to 1000 bbls)	Tier 3 (>1000 bbls)	Supplier & Phone	Location of Dispersants	Type	Quantity (Gallons)
		Y	OSRL REPSOL [Equip. hire-18 wks] (Started 6-2006) +011442380331551	Iran	Dasic Slickgone NS	1,057
		Y	OSRL Bahrain Stockpile +011442380331551	MENAS Base, Bahrain	COREXIT 9500	4,181
		Y	NRC 1-800-899-4672	Manama, Bahrain	Slickgone	715
		Y		Fujairah, UAE	Slickgone	2,915
		Y		Puerto Rico, WI	COREXIT 9527	5,005
		Y		St. Croix, VI	COREXIT 9527	1,650
		Y	Clean Caribbean Americas (CCA) 1-954-983-9880	Port Everglades	COREXIT 9500	27,335
		Y		Port Everglades	COREXIT 9527	3,025
				TOTAL QUANTITY (GALLONS)		115,109

Mozambique Area 1 Block 2
Dispersant Application Map

Anadarko Petroleum Corporation

The Response Group — Emergency Response | Pre-Planning & Support — 281-860-5000

Time Calculation for C-130 or L-382 Hercules with Dispersant Applications System

Aerial Dispersant System	Supplier & Phone	Warehouse	Dispersant Package	Qty.	Distance to Staging Area from OSRL	Response Times (Hours)			
						Aircraft & Crew Activation to Southampton	ADDS PACK Loadout Time	ETA to Pemba	Total ETA to Pemba, Mozambique
ADDS Pack - 1 or NIMBUS -1 (5000 gal cap.) Air Speed - 330 mph	OSRL +44-(0)23-8072-4312	Southampton, United Kingdom	C130 or L-382 Hercules	1	Southampton, UK 5067 miles 8165 km	6-24	2-4	15.5	23.5-43.5
			Dispersant (gal)	5000					
			Spotter Aircraft	1					
			Spotter Personnel	2					
			Crew - Pilots	4					

Aerial Dispersant System	Supplier & Phone	Warehouse	Dispersant Package	Qty.	Distance to Staging Area from EARL	Response Times (Hours)			
						Aircraft & Crew Activation to Singapore	ADDS PACK Loadout Time	ETA to Pemba	Total ETA to Pemba, Mozambique
ADDS Pack - 1 (5000 gal cap.) Air Speed - 330 mph	EARL +65-6266-1566	Singapore	C130 or L-382 Hercules	1	Singapore 4456 miles 7168 km	6-12	2-4	13.5	21.5-29.5
			Dispersant (gal)	5000					
			Spotter Aircraft	1					
			Spotter Personnel	2					
			Crew - Pilots	4					

LEGEND

- Airports
- Timezones

Flight Path

- EARL to Pemba
- OSRL to Pemba

0 300 600 1,200 1,800 Miles

0 500 1,000 2,000 3,000 Kilometers

Time Calculation for Dispersant Application Operations from Pemba, Mozambique to Area - 1 Block 2

Staging Area	Site	Distance from Staging to Site	Response Times (Hours)					
			Dispersant Loadout Time	ETA to Site	Spray Time	ETA back to Staging	Total ETA for 1 Sortie	Total Sorties Per Day
Pemba, Mozambique	Area-1 Block	135 miles	0.5 to 1	0.25	0.5 to 1	0.25	1.5 to 2.5	3 to 4 Sorties

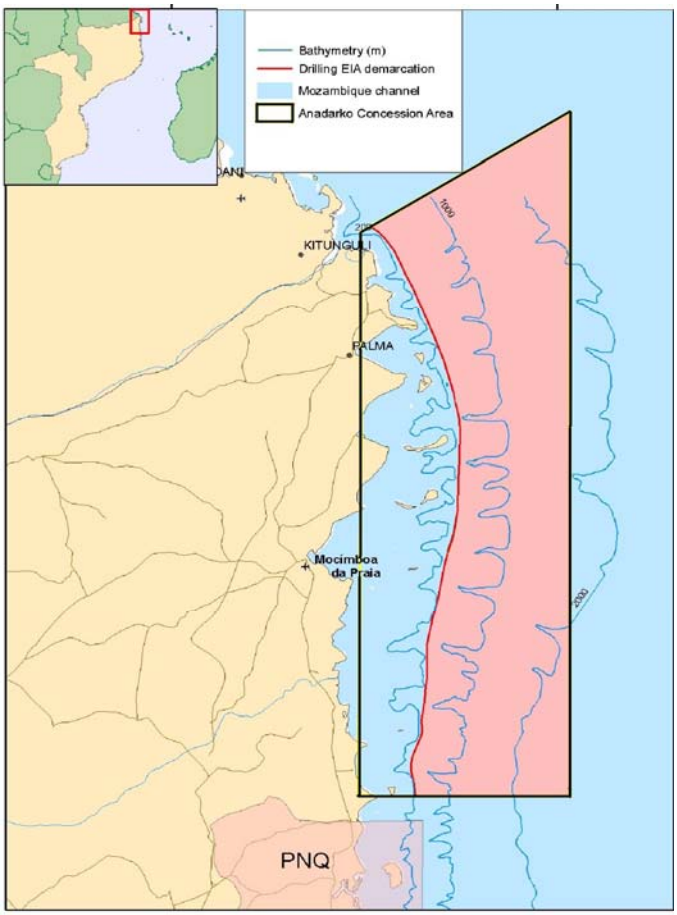
Note: 4 Sorties per day assumes C-130 or L-382 Hercules is loaded and on location at daybreak.

Anadarko

Moçambique Área 1, Lda

DEEPWATER EXPLORATION

DRILLING OPERATIONS IN ROVUMA OFFSHORE AREA 1



VOLUME II

PART E: WASTE MANAGEMENT PLAN

October, 2008

Impacto

Projectos e Estudos Ambientais

Moçambique Área 1, Lda

OVERALL WASTE MANAGEMENT PLAN

TABLE OF CONTENTS

1. GOALS

To control segregation, conditioning, temporary storage and backloading of wastes produced during the shallow water seismic survey and exploration drilling in Rovuma Area 1, Cabo Delgado. Mozambique, according to:

- Annex IV and V, MARPOL 73/78;
- Basel Convention (www.basel.int)
- Aplicaple Mozambican Environmental legislation environmental legislation;
- Anadarko requirements for waste management and all requirements established in the AMA 1 Waste Management Plan, applicable to USA and international operations (www.anadarko.com.mozambique).

2. APPLICATION

This Plan applies to all sectors and activities related to seismic survey and exploration drilling in Rovuma Area 1 throughout all the operations. Waste Management includes:

- collecting, conditioning and temporary storage at seismic survey and drilling rig, and support vessels;
- loading and backloading to and from the bilge of the seismic survey vessel and drilling rig, and transportation of the waste by support boats to the shore base;
- Final destination of the wastes.

This Plan applies to the management of the wastes onboard the seismic survey vessel and drilling rig, as well as support boats, and its transport to the shore base. It does not apply to inland transportation and final disposal of the wastes. This activity will follow the requirements established in the Waste Management Plan and in the respective Annexes, and will be implemented by the licensed contractors for the seismic surveys and exploration drilling in Rovuma Area 1.

AMA1 will audit the compliance to the Waste Management plan by the contractors.

3. DEFINITIONS

Waste: Any Solid, semi-solid or liquid material resulting from any operations and activities performed at seismic survey vessel and drilling rig, support vessels and shore base which, due to its polluting characteristics shall be segregated, collected, conditioned and shipped ashore for adequate disposal. It can not be jettisoned, burned locally or mixed with water to be treated by the sewage treatment system.

Waste classification

Hazardous Waste: presenting at least one of the following characteristics: flammability, corrosiveness, reactivity, toxicity and pathogenicity. It can cause risks to the seismic survey

vessel, drilling rig and support vessels' crew, public health and to the environment if not handled and disposed adequately. Examples:

- wasted lubricant oil
- oily waste
- paints
- fluorescent lamps
- contaminated packing materials (by oil, solvents, paints among others).

Non-Inert Waste: not classified as hazardous, but that upon decomposition by micro organisms or by action of water (solubilization), can release pollutants to the environment. Examples:

- general galley garbage
- food wastes,
- food packing, among others.

Inert Waste: that does not release pollutants to the environment under significant concentrations upon decomposition or by action of water. Examples:

- clean plastic,
- clean metal,
- clean glass,
- paper and cardboard, among others

Waste Map – Document that identifies waste types produced during normal operations and describes its classification, segregation, storage and final destination. The table is presented in Annex 1.

Columns of the Waste Map

1. Item (sequencial numbering of the waste)
2. Identification/description of the waste
3. Physical state
4. How the wastes should be conditioned onboard – in order to make feasible the temporary storage, transport, storage inland e final transport to disposal
5. Description of produced wastes, according to the general identification in column 3
6. Disposal technology onshore – as submitted to IBAMA (as part of the Pollution Control Project)

Waste Transport Manifest – Document to be issued prior to waste backloading and further transportation by supply vessels. It describes the wastes, conditioning conditions, quantities and shall be issued for each backloading, in order to allow the adequate tracking of the wastes, from the rig and supply vessels to the shore base.

4. REFERENCES

- Basel Convention
- Regulation 9 of Annex V, MARPOL 73/78;

- Environment, Health and Safety Document – assessment and compatibilization of AMA1 and drilling rig .
- APC Corporate Waste Management Program.

5. RESPONSIBILITIES AND AUTHORITIES

Captain - Has overall accountability for all aspects of waste management and is responsible for the effective implementation of this plan. It is his responsibility to allocate duties to individuals, related to waste management onboard.

Chief Mate – Is responsible for inspecting the adequate storage of wastes on the decks, keeping the storage area clean and safe and to verify the necessity of resources (containers, plastic bags, big bags, drums). Is responsible for ensuring that all waste is appropriately assessed, segregated/packed, marked/labelled and accompanied by the appropriate paperwork (e.g. waste manifest) before back loading the waste.

Deck crew – Is responsible to ensure that all wastes are appropriately segregated, identified, packed and stored prior to backloading.

EHS supervisor - Is responsible for the filling of the Waste Transport Manifest, checking information on wastes to be manifested and for requiring purchase of material, necessary for the wastes management (containers, bags, etc.). Is responsible also for the training of the key personnel in the correct use of this procedure.

Is responsible for assisting the Offshore Installation Manager (OIM) and personnel on board in the adequate implementation of this procedure

RSTC [Rig Safety & Training Coordinator] – Is responsible to inspect the waste segregation and storage in the accommodations and external areas. Is responsible for ensuring that all wastes are handled, segregated and disposed of in accordance with this procedure. All personnel shall be made aware of waste management best practices (waste identification, segregation, reduction, reuse, recycle, storage and disposal) through the safety briefing and / or specific training.

Campboss - Is responsible for ensuring that all wastes from galley and accommodations are appropriately segregated/packed and identified. It is also his (her) responsibility to ensure that all food wastes are grinded (and recorded) before being jettisoned to the sea.

Shore base Supervisor – is responsible for the receiving and checking of all wastes shipped ashore by the supply vessels. The supervisor, after checking all wastes, signs the Waste Transport Manifest. He is also responsible for the temporary storage of the wastes at the shore base, and the contact with the transport and destination contractors, defined in the PCP.

Anadarko Logistics Supervisor – is responsible for the final checking of all wastes and related documents (wastes manifests, cargo manifests, manifests for land transportation of the wastes).

6. PROCEDURES

6.1 Procedures for Waste Management

6.1.1 Wastes Identified at the Waste Map

- Use appropriate health and safety equipment
- Identify waste
- Put waste in the appropriate container. The containers for collecting and storing the wastes the shall be of different colors and appropriately labeled as established in the Waste Management Plan. Wastes shall not be mixed, as mixing could result in chemical reaction or reclassification of wastes.
- Identify container by means of the colored labels. Labels are provided by AMA1 EHS Supervisor
- Put waste in final container, for backloading to the shorebase
- Identify final container
- Remove final container to storage area
- Record types of waste
- Fill Waste Transport Manifest (Annex 2)
- Transfer waste conditioned on final container to supply vessel

Each type of waste must be separated according to the Waste Map (Annex 1).

6.1.2 Wastes not identified at the Waste Map

- Waste not described in the waste map (Table 1) and **not contaminated** with oil, grease, solvents, paints and others shall be considered as Contaminated Waste and shall follow procedures on section 6.1.1.

- Waste not described in the waste map (Table 1) and **contaminated** by oil, grease, solvents, paints and/or chemicals shall be considered as Non-recyclable Waste and shall be recorded and stored in a separate container.

6.1.3 Food Wastes

Food wastes must be:

- Collected directly in the galley in identified containers (Brown label);
- Grinded in the vessel or rig's grinder, according to MARPOL requirement (diameter 2,5cm minimum);
- Record volume (determined by volume of final container) before waste jettisoning the wastes;

6.2 Waste Transport Manifest

6.2.1 General Orientation

A Waste Transport Manifest (WTM) shall be emitted, according to the form in Annex 2 of this Plan, whenever any waste is transported from areas associated with AMA1seismic survey and exploration drilling activities in Rovuma Area1, from the seismic survey vessel or drilling rig, and from support vessels, to the supply base. This instruction does not apply to the transport or wastes from the supply base to the final destination. In this case a specific manifest, established by the local environmental authority, shall be emitted.

Each manifest emitted shall receive a number, related to the seismic survey vessel, drilling rig, or each of the support vessels. The numbers must be in sequence and recorded on the form, as follows:

- Seismic survey vessel
- Drilling rig
- Support vessel 1
- Support vessel 1

The manifest shall be emitted (form attached, Annex 2) in 5 (five) copies, and appropriately signed off by the persons in charge in charge for waste generation (seismic survey vessel, drilling rig, support vessels) and transport (support vessels).The copies will be distributed as follows:

First copy – Receiver (supply base)

Second copy – Generator (drill ship or supply vessels). This copy returns to the generator after signature of the receiver (responsible for the supply base)

Third copy – Transporter control (to be kept by the supply vessel in case the drill ship is the generator)

Fourth copy – EHS division of AMA1. This copy is kept as a register to support waste tracing actions.

Fifth copy – AMA1 Logistics supervisor in Pemba shore base

6.2.2. Tasks and Specific Responsibilities

EHS Supervisor (at the seismic survey vessel and drilling rig (Generator):

- Monitor waste handling on board
- Fill out the manifest (five copies) including transporter (supply vessel) characters.
- Date and sign all four MTR copies
- Request the transporter to confirm the information contained in the manifest (with exception for characterization and classification) and to sign all copies
- File the fourth copy, after being signed by the transporter
- Deliver the first, second and third copies to the transporter

EHS Supervisor at the Support Vessel (Transporter):

If the seismic survey or the drilling rig is the generator:

- Confirm all information contained in manifest, before the acceptance;
- Sign all manifest copies presented
- Monitor status of incoming waste (packaging, containers, etc)
- Transport and deliver the wastes to the receiver (supply base);
- Request the signature of the receiver, in the other copies
- File the respective copies for its own register.

If the supply vessel itself is the generator:

- Maintain the waste in the some conditions established by this Waste Management Plan (waste classification, handling and storage onboard)
- Fill out the manifest (five copies), being not necessary to fill the field related to transporter data);
- Date and sign all four copies;
- File the fourth copy;
- Request the signature of the receiver in all the copies, and keep one for its own register
- Provide the remaining copies to the supervisor of the shore base

EHS Supervisor in the Shore Base (Receiver):

- Monitor the condition of the packaging and containers of the income waste
- Confirm all information contained in the manifest, before its acceptance
- Sign all copies presented
- Describe in the appropriate field any additional measure or decision related to the conditioning of the wastes
- Deliver two signed copies to the transporter (one for the transporter and one for the seismic survey or drilling rig)

6.2.3 Instructions for filling the manifest

N^{o} : Number of the manifest: All forms shall be numbered sequentially with different sequences for each vessel, as described in **Section 6.2.1**(General Orientation)

Generator Data: inform whether the wastes are produced in the seismic survey , or in the drilling rig, or in the support vessels. Name and signature of the responsible person shall also be added as well as the date of emission

Transporter Data (supply vessel): provide the name of the supply vessel which will transport the wastes ashore;

Wastes Description, including:

- description and Identification of wastes that are going to be transported and the Identification Number (code), according to the Waste Map;
- description of how the wastes are conditioned (drums, big bags, tanks, boxes, skips, container and others) according to Table 1

Example: Non recyclable wastes (Code 1), in big bags.
Indicate the quantity of each waste – Example: 6 big bags (weighing of wastes will be done at the shore base);

Observations: The field "Observations" is to be used by shore base responsible person, upon arrival of wastes, to inform any additional measure, interpretation or non-conformity regarding the conditions of the wastes.

MTR VA: The field MTR VA shall not be filled out and will be used onshore by the company responsible for transporting the wastes (corresponds to the number of manifest for transport inland)

7. TRAINING

Once the gap analysis of the Contractors' EHS procedures is conducted, all field personnel and select contractor personnel will be trained on the AMA1 Waste Management Program, so they can become familiar with the reporting procedures and the entities involved in the management of waste in Mozambique, especially in the Cabo Delgado province. Training of personnel will take place at the following frequency:

- Initial Training – New Personnel will be initially trained to ensure familiarity with the AMA1 Waste Management Program prior to beginning their job assignments.
- Retraining – Retraining will be conducted whenever there are inadequacies in management of waste (classification, storage, handing) or when deviations from the AMA1 Waste Management Program are observed (i.e failure to track or report the wastes onboard). Personnel may also require retraining whenever there is a change in:
    - Their job assignment.
    - The AMA1Waste Management Program or regulatory requirements.

8. ANNEXES

Annex 1 – Waste Map

Annex 2 – Waste Transport Manifest