

CONTINGENCY PLANNING FOR MARINE OIL SPILLS

TECHNICAL INFORMATION PAPER

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Introduction

An effective response to a spill of oil is dependent to a great extent on the preparedness of the organisations and individuals involved. This can be greatly enhanced by developing and maintaining a plan to address all likely contingencies. The process of producing a contingency plan provides the opportunity to identify roles and responsibilities and to define response strategies and operational procedures without the intense pressures that inevitably arise at the time of a spill.

This Technical Information Paper outlines the typical format and content of contingency plans for response to ship-source spills and highlights the key steps required for an effective plan.

Overview

Responding to a serious oil spill affecting a wide range of people and organisations demands that a variety of decisions are made very quickly. This can be achieved only if all participants are sufficiently prepared to appreciate the unfolding situation, can make crucial decisions and can mobilise appropriate resources without hesitation and with minimal delay. A fully developed contingency plan will assist in achieving this goal. A plan is not merely a written document but comprises all the practical requirements necessary for an immediate and effective response should a spill occur.

Functions necessary for a response should be identified together with the organisations or departments from which suitable personnel will be provided. Response techniques also have to be considered and the availability of equipment to implement the strategies confirmed. Operational aspects have to be balanced against concerns for the effects on the environment, fisheries, industry and recreational activities as well as considerations of public health and safety (*Figure 1*). Inevitably there will be conflicting interests and in many countries the media will be quick to expose any indecision, weakness or disagreement.

The International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (OPRC Convention) recognises the importance of contingency planning and prompts contracting states to develop an integrated national framework of oil spill response plans extending from individual facilities handling hydrocarbons to a major incident on a national or international scale. These arrangements are intended to provide an ability to escalate a response to an incident through a series of interlocking and compatible plans.

Developing and managing a plan

Contingency plans provide the structure for the management of response operations. While the overall aims are generic, plans should nevertheless reflect the working culture of the country within which they will be implemented and should be working documents; concise, accessible and easily



▲ *Figure 1: A major port with residential and recreational areas nearby: a case for oil spill contingency planning.*

updated. Regardless of geographic or organisational scope, plans should be reasonably self-contained with minimal reference to other publications, which could delay decision making. These requirements may be met most effectively by electronic web-based systems.

The simple existence of a plan is not sufficient preparation for responding to an oil spill. The planning process itself is important, serving to raise awareness of the issues likely to arise in a response. For this reason, a plan is best drawn up by those who will rely on the finished plan when a spill occurs. Plans need to be actively managed, regularly updated and revised, for example, in the light of lessons learnt from actual incidents or exercises or as required by changes in regulations. Once developed, plans also provide a focus for training. In order to work together as

a coherent team all responders need to understand the plan and be familiar with their own role and the roles of others within the response structure (Figure 2). This can be achieved through regular practical exercises which are critical to maintaining an effective response capability.

Scope of contingency plans

The scope of a plan is determined by the risk of spills within the geographic area that the plan is intended to cover. The responsibility for drawing up plans at a local level, for example for an individual facility, port or stretch of coastline and at a larger district or national level, will be dependent on the relevant domestic administrative arrangements. The plan holders, i.e. the organisations or agencies tasked with implementing the plan and responding to incidents at each level, should be involved from the outset if plans are to be realistic and practical. Responsibility for ensuring that all plans are compatible usually falls to a national agency.

The framework of interlocking and compatible plans is often known as 'tiered response' and is intended to ensure that the response undertaken reflects the scale of the particular spill. Usually, three tiers are recognised with Tier One plans at the facility level, Tier Two at a district or area level and Tier Three for national or international response arrangements. At each level, plans should be capable of addressing the range of potential scenarios identified in risk assessments.

Different agencies may adopt different criteria for escalating a response from one tier to the next. These may be based on the estimated amount of oil spilled or on the need for additional equipment or manpower beyond that available under a lower tier plan. In another approach, escalation might be decided by the migration of a spill from the area covered by one plan into the next, calling for a coordinated response between the two areas.

Components of a plan

Compiling a contingency plan is generally a four-stage process, reflected in the components of the plan:

- Risk assessment – determining the risk of spills and expected consequences;
- Strategic policy – defining the roles and responsibilities and providing a summary of the rationale for operations;
- Operational procedures – establishing procedures when a spill occurs;
- Information directory – collating supporting data.

The order in which the plan is developed follows this logical progression through the stages. The result of the risk assessment will assist in determining the response strategy which in turn will assist in developing operational procedures to be followed when a spill occurs. The type of information required in the directory will become clear as these procedures are developed. The steps required to produce a comprehensive contingency plan are set out in Figure 3.

Risk assessment

Conducting a risk assessment is the first step in the contingency planning process to ensure that plans are developed in the context of the risks they are intended to address. The aim is to identify measures to reduce and manage the risk of spills and the consequences if a spill does occur. The scale of risk assessments can range from the national level to the specific investigation of risks posed by an individual facility or terminal. National risk assessments provide a good indication of where spill response efforts need to be concentrated around a coastline while the latter consider the detailed response arrangements needed locally.

The assessment of the risks presented by oil spills requires the answers to two questions to be analysed:

1. What is the likelihood of a spill occurring?
2. What are the probable consequences?

To address the first question, one approach is to examine the types of incidents that have led to oil spills in the past; their frequency and the types and quantities of oil released. Oil spills occur relatively infrequently and so there are often insufficient historical spill records in the relevant area to make a fully quantitative assessment. Nevertheless, on a global scale, historic data does provide information on the most frequent causes of spills. Applying these statistics to local circumstances helps identify the risks to which the area is exposed. For example, it has been found that most spills occur in or close to ports; they tend to be small in size and are generally the result of routine operations such as loading, discharging and bunkering. The number of calls made by tankers and other vessels to oil terminals and commercial ports and the types of oil or bunkers carried is therefore highly relevant to evaluating risk. Where the types of oil handled are known it may be possible to predict the behaviour and persistence of an oil after it has spilled.

Once areas with a higher risk of spills are identified, an estimate of the probable consequences of a spill can be



▲ Figure 2: A major response will involve personnel from many different agencies and companies. Thorough testing of the contingency plan through regular exercises will assist in ensuring all participants are familiar with their tasks.



▲ *Figure 3: Examples of the four stage components required for a comprehensive and well designed contingency plan.*

made. For example, whether oil spilled in these locations could reach sensitive natural and economic resources, such as amenity areas, seawater intakes, fisheries and mariculture facilities or seabird roosts. The locations of these resources are recorded on maps (*Figures 4 – 8*), most commonly using Geographical Information Systems (GIS). The movement of spilled oil can be forecast from knowledge of prevailing wind speed and direction, tides and currents, taking into account seasonal variations. An analysis of activities and types of oil handled or carried through the area provides the basis for a range of possible spill scenarios to be developed and the most likely outcomes to be predicted.

The final part of the risk assessment process is to gauge to what extent a contingency plan is necessary or whether existing contingency arrangements should be strengthened or revised. An important question to be asked is whether the proposed contingency measures will serve to reduce the consequences of a spill. For example, the location of equipment stockpiles can be compared against the risk scenarios to ensure that equipment could be deployed in sufficient time for response operations to be conducted before the oil reaches sensitive resources.

Strategic policy

Once the risks and need for contingency arrangements have been identified, the response strategy should be determined. Policy decisions should take into account local, national and international requirements, for example existing civil emergency arrangements as well as cooperation arrangements that may exist between countries in the event that floating oil crosses national borders.

A key policy decision to be addressed with respect to ship-source spills is whether the response is to be shipowner or government led. Since governments are responsible for the protection of a country's interests, governments usually take the lead in responding to spills. Others achieve a similar result by directing the shipowner's response. In some countries, the shipowner may be required by law to enter into contracts with response organisations before vessels are permitted to enter port. To ensure there is clarity, the role of government and the contribution that the shipowner may be expected to make to the response should be explained in the plan with reference to legislation where appropriate.

Plan overview

The strategy section of the document provides an overview of the plan, including its geographical scope, explains its rationale and defines the adopted spill response policies. The plan holders should be identified, making reference to any regulations ascribing their responsibilities and legal jurisdiction. The interaction with plans for adjacent areas and at other levels in a tiered response should be made clear as well as setting out areas of cooperation with others not directly involved in clean-up operations.

Priorities for protection

Setting priorities is probably the most important part of the planning process since, in a major spill, it is unlikely that all the resources at risk can be defended successfully. Therefore, priorities for protection need to be determined in advance. In order to set these priorities, the vulnerable economic and environmental resources identified in the risk assessment should be ranked according to their importance to the community. Whilst the various bodies likely to be affected by a spill would normally be consulted, generally, only governmental authorities will be in a position to take the necessary decisions. It is essential to take into account not only the desire to protect a resource but also the extent to which the defence and protection of the resource is practicable. Provision should be made for response priorities to be altered, for example, if oil has reached these resources before the plan can be implemented.

Seasonal variation can greatly alter protection priorities. For example, priority given to an amenity beach during the approach to and during the summer season may not apply in winter. Similarly, certain biologically sensitive areas may be given high priority during breeding or spawning seasons or when migratory species are known to be present. Maps denoting sensitive areas and priorities for protection should be clearly annotated with any known seasonal variances (*Figure 4*).

Response techniques

Policies on clean-up strategy at-sea, in harbours or on-shore etc. should be determined, identifying favoured response techniques and any restrictions which might be applied, for example, whether the use of dispersants and other chemicals would be permitted and if so, the conditions under which they may be applied (e.g. the permits required and depth restrictions). The strategies adopted should complement the assessment of the risk of spills and should address the agreed priorities for protection.

For local plans, the shoreline types within the plan area should be described and the most appropriate clean-up techniques for each considered. Factors to be taken into account might include a location's amenity value, its accessibility and suitability for heavy equipment and the presence of flora and fauna. Maps and photographs of shoreline types can be included within the Information Directory to show where each technique could be used and where restrictions might apply. Detailed guidance on individual clean-up techniques can be appended as necessary.

A provision for dealing with oiled wildlife, particularly birds, needs to be carefully considered and a response policy decided. Plans should include contact details for vets or specialist care organisations and, at a local level, should also identify existing treatment centres or potential locations for establishing temporary centres. Contact details for suppliers of equipment and feed that may be required should be incorporated into the Information Directory.

Response resources

Implementation of the strategy requires identification of the

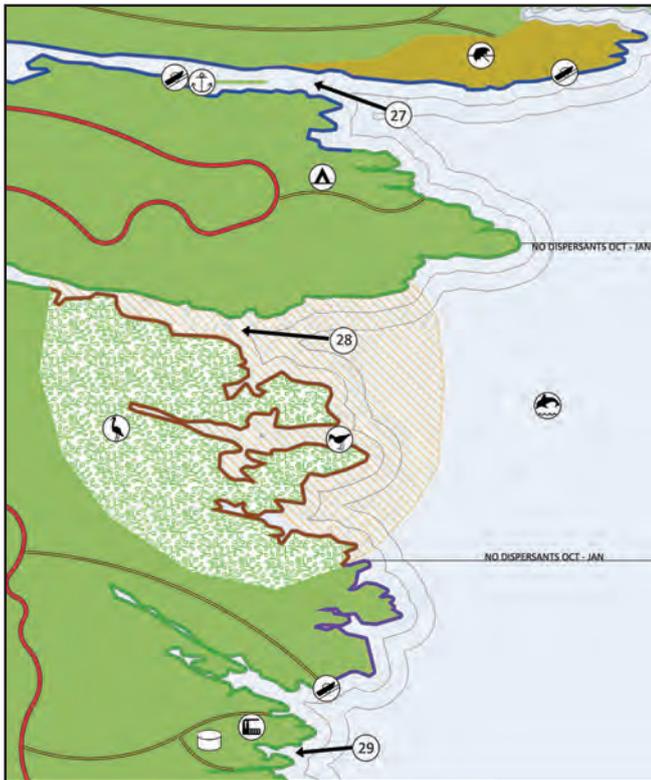


Figure 4: Sensitivity map. The number of maps required in the plan and their scale will depend upon the size of the area covered by the contingency plan and the complexity of the features to be illustrated. Maps in national plans will usually only give a broad indication of the main features of the coastal region, the resources at risk and potential sources of spills. Maps in local plans will provide more detailed information, such as the probable movement of surface slicks, agreed response strategies, shore access points and temporary storage and disposal sites. For clarity it may be appropriate to divide information between two or more maps. Reference may also be given to additional sketches or photographs illustrating elements of the response arrangements in more detail. GIS offers a more convenient means of combining all this information. An example sensitivity map is shown with photographs below corresponding to priority areas for spill response on the map.



Figure 5: Boom deployment site near the river mouth. The boom is being set to deflect oil to a collection point with good access on the shore.



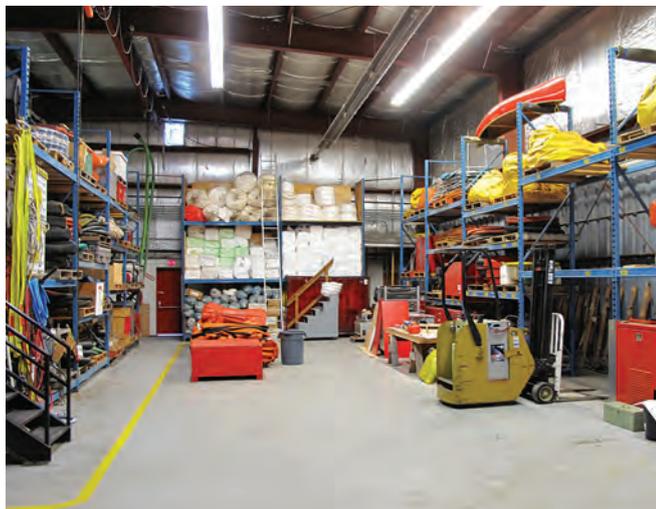
Figure 6: Power station with a water intake in the foreground. Several deflection booms are deployed to prevent the ingress of oil.



Figure 7: Tidal flat backed by mangroves and wetlands forming a nature reserve for bird life. Whilst the use of dispersants may be considered on oil approaching this area, consideration should be given to spawning in nearshore waters that may limit its use at certain times of the year. The soft mud may not support vehicles and clean-up equipment.



Figure 8: Bathing beach adjacent to hotels and apartment blocks. In the event of pollution, the beach will require priority attention, particularly during the summer months. Good access for vehicles.



▲ *Figure 9: As part of the planning process, suitable and sufficient response equipment and materials to respond to various scenarios should be identified in the plan.*

resources required to mount an effective response, taking into account the anticipated range of weather conditions, oil types and areas of expected use. These resources may be provided by the plan holder or purchased/contracted-in as necessary.

An inventory of available equipment should be appended to the plan and procedures for mobilisation outlined within the Operational section. Descriptions are most easily presented as a table within the Information Directory, detailing for each location the equipment type, dimensions, capacity, transport requirements and a contact point for its release. A description of the suitability of the equipment with different types of oils, current velocities, shoreline types etc. may allow rapid selection of correct equipment. Entry of this information into computer databases and linked GIS permits equipment closest to the spill site to be identified and all equipment of a particular type to be located quickly. Potential suppliers of non-specialised equipment, such as construction and agricultural machinery, which could be used in beach cleaning and waste handling operations, should also be identified. For equipment and services owned or provided by contractors, industry or other parties, agreed contractual terms could be appended to the plan.

The choice of optimum location for stockpiles of specialised equipment (*Figure 9*) should balance the benefits of placing equipment in identified high risk areas or at a central location. Centrally located stockpiles may offer benefits of scale for equipment maintenance and operators may gain more practical experience from frequent call-outs. Against this, response times are likely to be longer and associated transport costs higher than if equipment were to be stockpiled locally. Distributing stockpiles close to identified higher risk areas would inevitably necessitate multiple purchases of some types of equipment.

Organisations that could satisfy the immediate demand for labour to deploy equipment and undertake the clean-up need to be identified in advance. The extent to which personnel requirements can be met from the organisation implementing the plan will depend upon the ability to release personnel

from other activities, the supervisory needs of the workforce, and the amount of specialised equipment to be deployed. Sources of additional support personnel from contractors, government departments, local industry, etc. should be listed in the Information Directory and should be considered as part of the tiered response approach.

Logistic support to clean-up crews such as personal protective equipment (PPE), food, accommodation and medical resources are issues to be considered during the development of the plan. Suppliers of equipment and materials likely to be required, as well as services such as the transport of resources and waste, will need to be procured. The names and addresses of potential suppliers, both within the area of the plan and beyond should be included in the Information Directory. In the event resources may be required from abroad, immigration and customs procedures, allowing the urgent clearance of personnel and equipment in an emergency, should be identified in the plan. Sources of adequate funding for operations, for example purchases of food and fuel and the payment of wages, invoices etc., should be identified to ensure the response can continue for as long as may be necessary.

In developing the plan, decisions on waste storage and the options for treatment, disposal or reuse of waste should be made, taking into account environmental considerations and legal requirements, including licensing. If available, details of the capacity and probable unit costs for each option could be appended to the plan. Usually, separate disposal routes are identified for liquid and different types of solid wastes and plans should allow for their segregation into distinct waste streams from the start of the response. To minimise transport costs, temporary storage sites for oil and oily waste should be identified as near as possible to the potential clean-up sites identified in the risk assessment and shown on relevant maps. Contact details for licensed waste transporters and disposal facilities should be included as well as for national licensing authorities.

Leadership, command and management

In any incident there are a number of functions that have to be fulfilled. In a major spill each of these may require a team to complete the necessary tasks, whereas in a smaller incident these functions can be combined and undertaken by a smaller group or individual. The key functions are planning operations, controlling or managing ongoing operations, providing logistics support and administration. A single government organisation, with an established chain of command or existing management structure, which has complete responsibility for the entire operation, will help to avoid confusion that may be generated by divisions of responsibility. However, the wide ranging interests in the utilisation of the marine environment and the customary division of responsibilities between response operations at-sea and on-shore usually result in several organisations being involved. Therefore, procedures for co-ordination of these various organisations need to be put in place and their roles clearly defined. It is essential that all participants fully understand where in the organisational structure the responsibility lies for the different decisions that have to be made during the response. For example, some issues will



▲ *Figure 10: Public and media demand for information from the response team can be intense and may affect the ability to respond effectively. A plan should incorporate procedures for addressing these issues. (Image courtesy USCG).*

have to be passed up the chain of command while others can be decided at an operational level.*

One or more offices or buildings to accommodate the response team have to be identified. The command centre serves as the focal point for the management of the response and for liaison with outside interests including the public and media. The facilities will require space for the large numbers of people involved in the management of a major incident, with meeting rooms and communication systems; telephone lines, internet connections and radio links, sufficient to ensure the free flow of information into and out of the command centre. Separate communications and briefing areas for the media within the command centre should be considered.

Where clean-up operations are conducted over extended distances, a number of temporary command centres located close to the scene of each operation may be required. All information on the clean-up operations and logistic requirements should be channelled through the command

centre. In a major spill, operations at sea, on shore and in the air may occur simultaneously and radio communications between the command centre and each of these sectors will be essential to maintain the rapid transfer of information and instructions. Operations in more remote areas may call for temporary communications stations to be established or the use of satellite communication systems. The ability for vessels at sea to communicate directly with surveillance aircraft requires particular attention and specialised equipment. Communications equipment and procedures, including designated radio frequency channels, should all be considered within the plan.

The work of other parties involved in the response to an incident may affect or be affected by clean-up operations and liaison arrangements should be included in the plan. In ship-source incidents, regular contact with salvors is a vital element of the overall response enabling developments in salvage work to be monitored and the likelihood of further releases of oil to be assessed. Coastal fisheries and mariculture are often affected and government authorities responsible for ensuring the safety and marketability of marine produce may need to consider imposing fishery restrictions. The planning process also provides an opportunity for such organisations to work through their own contingency arrangements, such as the criteria under which fishing restrictions would be imposed and later lifted. Other groups, including tourism and wildlife organisations, will have a keen interest in the response and arrangements to keep them informed should be made.

In many countries the pressure applied through the media cannot be under-estimated but if provision is made for keeping journalists and the public well-informed, interference with the conduct of the response may be reduced. Dedicated press and public relations officers can deal with enquiries while briefings by the head of operations or another senior

*Please refer to the separate *Technical Information Paper on Leadership, Command & Management of Marine Oil Spills*.

Information requirements	Information source
The location and type of incident.	Vessel master, vessel operator, salvors, port authority or coast guard.
Type of oil.	Bunker certificate or cargo manifest (available from the vessel master, operator or owner, the cargo owner or the vessel insurer). Once the oil name is known its characteristics may be obtained from the oil's assay.
Currents, tides and weather forecasts.	Tidal stream atlases, tide tables, local marine charts and pilot books, port and airport authorities and national meteorological services.
Location and seasonal sensitivity of environmental and socio-economic resources and priorities for protection.	Information Directory/GIS, appended to the plan.
Contact details for those with interests in resources under threat.	Information Directory/GIS, appended to the plan.

▲ *Table 1: Potential sources of information that may be required to evaluate and respond to an incident.*

member of the organisation give a public face to the response and can add to its credibility (*Figure 10*). In a major spill, consideration should be given to establishing a dedicated website where regular bulletins can be posted, allowing accurate information to be made available within minutes of developments occurring. The various social media, networking and web logging services available should also be considered to publicise information and may be useful to monitor public comment.

Not only is it essential to document actions taken but minutes of meetings should be kept and communications logged to record how decisions were reached during the response. These can be examined in the light of the outcome and the decisions justified should they be queried at a later date. Accurate records regarding the use of labour, equipment, materials, and expenditure are also very important. For the sake of consistency, it is worth preparing examples of record forms and including these in the Information Directory. Comprehensive documentation will assist in formulating claims for cost recovery.*

Training, exercises and review

A timetable for training and exercises needs to be set out in the plan. Training programmes should be developed for all levels and include marine and shoreline response teams and interested parties. Regular and realistic exercises will help to ensure that contingency arrangements function properly and that the roles and responsibilities of all parties are thoroughly tested and understood. Equipment should be mobilised and deployed regularly to assess its availability and performance (*Figure 11*). Such exercises also ensure that contact details and equipment listings are current. Plans should be reviewed and, if appropriate, amended in the light of lessons learnt from exercises or actual incidents. All those involved need to be made aware of any changes to the plan.

Operational procedure

Upon notification of an incident, activities to be followed for the subsequent evaluation and initiation of the response should be clearly described in chronological order in the operations section of the plan. This section will be the first point of reference once notification of an incident is received and should be clearly identified and easily accessed within the plan.

Notification

In many instances, reports from the vessel crew to a local coast guard station or port authority may be the first indication of a spill. Alternatively, reports of spills may originate from a variety of sources including the general public. The plan should indicate the route by which reports should be passed to the plan holder.

Once alerted to a spill, assigned individuals should seek to establish the exact circumstances of the incident. This section of the plan should include a checklist of the information necessary to make the preliminary evaluation, including:



▲ *Figure 11: Regular deployment of equipment as part of exercises will help to ensure it is maintained and ready when a spill occurs.*

- Date and time of observation: Local time or GMT/ UTC;
- Position of the incident (e.g. latitude & longitude, location relative to a landmark or stretch of coast);
- Source and cause of pollution (e.g. name and type of vessel; collision or grounding);
- Estimate of the amount of oil spilled, its type and characteristics;
- Description of the spilled oil including direction, length, breadth and appearance of slicks;
- Current and forecast weather and sea conditions;
- Status of the vessel and details of salvage operations;
- Distribution of oil cargo and/or bunkers relative to the area of damage and risk of further spillage; and
- Action taken to combat pollution.

Evaluation

It is unlikely that the initial reports will include all of the information necessary to fully evaluate the threat posed by the oil to environmental and economic resources. The plan should therefore include guidelines to evaluate the threat based on a partial understanding of the incident, for example whether resources could be mobilised without an accurate estimate of the amount of oil spilled.

Technical expertise may be required to assist in the evaluation of the magnitude, severity and response to the incident. The potential sources of data required for this evaluation are outlined in Table 1. To supplement these sources, the plan should outline procedures for obtaining additional information by:

- Determining the predicted trajectory of the oil slick;
- Arranging aerial surveillance to verify these predictions and gain a better perspective of the scale of the incident;
- Establishing surveys of the affected area to verify the reports e.g. by vessel for floating oil or by foot if oil has already stranded on-shore.

* Please refer to the separate *Technical Information Paper on the Preparation and Submission of Claims*.

Response initiation

If the scale of the initial incident and the threat posed by any spilled oil are considered to be serious, the members of the response team identified in the plan should be notified and a command centre established. An organisational chart of response personnel and a list of their responsibilities, as well as a list of actions to be taken in the first few hours after the incident, will help to expedite this process. To assist with operations, additional responders may be required from outside of the immediate area and contact details of accommodation and catering facilities should be included in the Information Directory.

The callout procedure set out in the plan should allow the evaluation of the incident to continue as notification proceeds. A list of other persons and agencies to be notified according to the severity of the spill should be included together with a short description of their remit and contact details in the Information Directory.

The plan should outline the response decisions to be made:

- If no key resources are threatened and it is predicted that the oil will dissipate naturally;
- If no response is feasible, perhaps due to weather conditions; and
- If key resources are threatened or affected, for example whether the circumstances merit the use of dispersant on oil at sea or whether containment and recovery is appropriate. Similarly, when oil comes ashore, the most effective shoreline clean-up technique, for example whether low-pressure high-volume flushing or surf washing can be used to minimise the generation of waste to be sent for disposal and/or additional damage to the shoreline.

The resources at risk from the spill and the contact details of parties with interests in these resources can be identified using maps and information contained within local plans, for example fisheries, power stations, neighbouring plan holders etc. Procedures to activate a higher tier of response should be included in anticipation of an incident beyond the scope of the plan.

Mobilisation

Procedures should be defined within the plan for, *inter alia*:

- Mobilising the equipment, labour and materials necessary for the chosen response techniques, including arrangements to place response resources on stand-by while awaiting the order to mobilise;
- Deploying equipment in accordance with the response decisions, for example identifying vessels from which equipment could be deployed, and placing booms at pre-designated sites to protect key resources, with reference to booming plans annexed to the plan; and
- Ensuring records of activity, decisions and expenditure are maintained.

Clean-up support

The plan should include procedures for mobilising the logistic



▲ *Figure 12: Equipment should be cleaned and repaired, where possible, so that it can be readily mobilised for the next incident.*

support necessary for the overall success of the response, for example, the distribution of PPE and food for response teams and fuel for machinery and for the transport of labour, equipment and recovered waste, so as to minimise delays.

This section of the plan should also describe procedures for establishing integrated communications across the response operation, for example, by exchanging mobile phone numbers or the procedures for allocating VHF radio frequencies and transceivers amongst response personnel.

Guidelines should also be included for selecting the most suitable route for the storage, treatment and disposal of waste from those identified during the strategy process.

Progress review

Inputs from aerial surveillance and personnel on-site will allow the clean-up to be closely monitored and the plan should identify the required type and format of the status reports and how these can be made available to the team managing the response. The plan should incorporate procedures for the continual reassessment of the response as operations progress, in particular whether the scale of the response remains appropriate for the clean-up activity remaining to be completed.

Termination of the clean-up

As the clean-up progresses a point will arrive when some techniques become ineffective or when the desired level of clean-up has been achieved. The operational section of the plan should provide for:

- Liaison and agreement between all interested parties on the level of clean-up appropriate to each location (i.e. clean-up end points and technical criteria for termination);
- Joint surveys to be undertaken by representatives of the various interested parties to monitor progress and decide when agreed end points have been reached;
- Standing down equipment and returning it to stores for cleaning and maintenance (*Figure 12*). Re-ordering consumed materials and repairing or replacing damaged equipment; and
- Restoring temporary waste storage and other work sites.

Plan review

Once the response is finalised, a report on the operation should be drafted to allow a review of the contingency plan and to support claims for reimbursement of expenses.

Information Directory & Annexes

The Information Directory provides support to the operations and the decision-making process through the provision of information and maps relevant to the geographic area covered by the plan. It should contain information to enable the users to evaluate the scale of an incident and to initiate a rapid, yet appropriate, level of response according to the strategy agreed during the development of the plan. The Directory should be designed so that it can be updated readily, as much of the information it contains will be subject to frequent change. As noted previously GIS and databases can facilitate this process. The Information Directory would include, for example:

- Contact details and the remit of all relevant central government, local authority and marine agencies;
- Contact details for organisations with interests in sensitive environmental and socio-economic resources;
- Dispersant use and non-use areas;
- A list of spill response equipment (e.g. skimmers, booms, dispersant, sorbents) and contact details for its release;
- Sources of auxiliary equipment (e.g. aircraft, excavators,

- vacuum trucks) and contact details of operators;
- Details of shoreline types and sensitive areas and priorities for their protection;
- Access routes to potential clean-up sites;
- Storage and disposal sites for oil and other wastes;
- Contact details for services such as computer modelling, IT and communications support and technical advice on spill response and scientific issues; and
- A list of media contacts.

Annexes might include, for example:

- A list of products approved by an Administration (e.g. dispersants or cleaning agents);
- Sample *pro forma* documents for recording observations of oiling and the progress of the clean-up;
- Guidelines for use of preferred response techniques, including boom deployment plans;
- Contractual terms for hiring third party equipment;
- Communications plans;
- Details of disposal options;
- A list of providers of support services (e.g. catering, accommodation, security, medical etc.);
- Sources of funding and compensation for cost recovery;
- A glossary of acronyms used in the plan (alternatively, this may be placed at the front of the plan).

Ten questions for assessing the adequacy of a contingency plan

- Bearing in mind the probable movement of any oil spilled, has there been a realistic assessment of the scale and severity of the possible threat, and of the resources most at risk?
- Have priorities for protection been agreed, taking into account the feasibility of the various protection and clean-up options?
- Has a strategy for protecting and cleaning the various areas been agreed and clearly explained?
- Have all the functions necessary for the response been allocated and the responsibilities of all those involved been clearly stated – are all organisations and agencies aware of their responsibilities?
- Are the levels of equipment, materials and labour sufficient to address the anticipated size of spill? If not, have back-up resources been identified and, where necessary, have mechanisms for obtaining their release and entry to the country been established?
- Have temporary waste storage sites and final disposal routes for collected debris been identified?
- Have the notification and initial evaluation procedures been fully explained and have arrangements been made for continual review of the progress and effectiveness of the clean-up operations?
- Have the arrangements for ensuring effective communication between shore, sea and air been described?
- Is the plan compatible with plans for adjacent areas and other activities?
- Have all aspects of the plan been tested?

TECHNICAL INFORMATION PAPERS

- 1 Aerial Observation of Marine Oil Spills
- 2 Fate of Marine Oil Spills
- 3 Use of Booms in Oil Pollution Response
- 4 Use of Dispersants to Treat Oil Spills
- 5 Use of Skimmers in Oil Pollution Response
- 6 Recognition of Oil on Shorelines
- 7 Clean-up of Oil from Shorelines
- 8 Use of Sorbent Materials in Oil Spill Response
- 9 Disposal of Oil and Debris
- 10 Leadership, Command & Management of Oil Spills
- 11 Effects of Oil Pollution on Fisheries and Mariculture
- 12 Effects of Oil Pollution on Social and Economic Activities
- 13 Effects of Oil Pollution on the Environment
- 14 Sampling and Monitoring of Marine Oil Spills
- 15 Preparation and Submission of Claims from Oil Pollution
- 16 Contingency Planning for Marine Oil Spills
- 17 Response to Marine Chemical Incidents

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