

# Response Organization And Control Strategies During Oil Spills

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**Abstract:** The response organization must be able to react at short notice for an effective response to oil spills at sea and the key elements must be stated. Responsibilities, lines of command and communication must be clearly identified. A Control Strategy defines when, where and how to combat oil spills. Responders on all levels must also be prepared to deal with the press at any time of incident and to respond correctly to requests from the news media. Oil spill responses are often weeks or months in duration, involve long working days, a complex number of agencies, interests and excessive demands on response team management and therefore all the people involved must be well trained in advance so that the incident occur, they know what to do and what to expect.

**Index Terms:** Response organization, Responders, Control strategy, Combatting strategy, Oil spill, Contingency plan, News media.

## 1 THE BASIC COMPONENTS IN AN OIL SPILL RESPONSE ORGANISATION

### 1.1 Contingency planning

It is the government's role to establish a legal and organizational framework for contingency planning. Usually the responsibility for overall planning arrangements is vested with a single lead government agency. The overall system is normally based on a National Oil Spill Contingency Plan supplemented by Local Contingency Plans dealing with geographical areas or potential pollution sources. The main purpose with the establishment of the national plan is to enable the authorities to evaluate and to react to any spill situation. [1] The local contingency plans should cover ports and harbors, onshore and offshore oil industry installations (e.g. oil terminals, refineries, offshore platforms), and any other oil handling installations where there is a special risk that an oil spill may occur. The starting point to elaborate a contingency plan is usually a Risk Analysis, consisting of a Risk Assessment followed by a Damage Assessment.

The main elements in a contingency plan include:

- The administrative framework
- An oil spill combat strategy
- An equipment inventory with locations of bases and depots
- Exercise procedures
- International co-operation arrangements

The national administrative contingency arrangements normally consist of two main elements:

- The permanent organization

It's responsible for strategy and policy and consists of the daily staff of the organization that establish the contingency plan and preparation of all elements which form part of an oil spill response. This includes, among other things, the legal framework, international commitments and co-operation, risk analysis, response and combatting strategies, staff training development and reimbursement for costs related to response action. As most reports on oil pollution relate to small and

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insignificant incidents requiring very limited actions, the Permanent Organisation is often structured with a view to dealing with those reports as purely routine matters and without mobilizing the ad hoc organization. This implies that the Permanent Organisation must maintain 24 hour duty 7 days a week as the contact point for all incoming reports on oil pollution. In the initial phase of a response action, the first responders will be in close contact with the staff members of the permanent organization.

- The Ad Hoc Organisation

In major oil spill situations, coordinating and controlling the response to the spill and all related activities is a very complex operation. The successful outcome of these operations depends to a great extent on an organization being able to:

- ✓ Have quick access to various experts on oil pollution matters
- ✓ Co-ordinate action taken with other authorities (including neighboring countries) and with the private sector in a flexible and effective way

In order to fulfil this demand, the ad hoc organization normally consists of:

- The management element

It consists of senior officials of the responsible authority and, in principle, takes all major strategic decisions. Responsibility may be conferred on individuals or on a management committee. However, the level and degree of delegation of responsibility will vary from country to country and from organization to organization.

- The Staff Elements

It consists normally of an "Expert Advisory Group" and the "Oil Spill Response Staff". [4] The Expert Advisory Group is established to ensure effective and fast response in combatting operations. The members may be representatives from governmental authorities, local government and organizations, which are likely to be involved or consulted in oil combatting or oil clean up operations. Private organizations should be available when needed. The members of the group may either be consulted ad hoc on an individual basis or the group may be assembled at the premises of the centre of operations to form a technical advisory committee. The Oil Response Staff act as an advising, initiating and controlling unit to assist the appointed head of operations (On Scene Commander) in the proper accomplishment of his duties. The Oil Spill Response Staff operates from the premises of the centre of the operations.

- Command and Control

The command structure for a national oil spill will include combined combatting operations involving other authorities and/or the private sector. This means that the issuing of orders and giving commands to the oil combatting units sometimes has to be relayed via each organization's own lines of command. This may complicate the responsible authority's effective control with the operation in all its aspects. [2], [5], [6] In many contingency organizations the line of command for a major (national) spill is (see Table 1):

**Table 1** Line of command

Management Level	Staff Level
Responsible Minister	Acting Head of Operations
Director General of responsible agency	On Scene Commander
	Team leaders

It must be stressed that different countries have different organizational structures to address these issues. The important thing is that the roles and responsibilities are clearly defined in the Contingency Plan. Many countries follow the Incident Command System which is a generic system which can be applied to all crisis management situations.

- Communications

In national contingency plans a vital part is the establishment of a communications centre to which all incoming reports on oil pollution are transmitted. Such a centre is normally called "The National Contact Point" and under the International Convention on Oil Pollution Preparedness, all Contracting parties are required to designate national contact points for the receipt and transmission of pollution reports. In some cases this centre will also be able to act as the communication link throughout the spill response operations. In other cases, a separate Emergency Response Centre will be established closer to the scene of the spill.

For effective communications two main rules must be respected:

- ✓ Proper and adequate communication is mandatory for the accomplishment of an operation
- ✓ Misuse of established lines of communication can seriously delay an operation

In general, the communications network will be based on existing lines of communication for sea, air and shoreline operations. However, some radio frequencies may be specially earmarked for use in oil combatting operations. All lines of communication except those used conventionally must be approved by the operational centre. On all lines of communication a strict radio discipline must be maintained in order to avoid the collapse of communication.

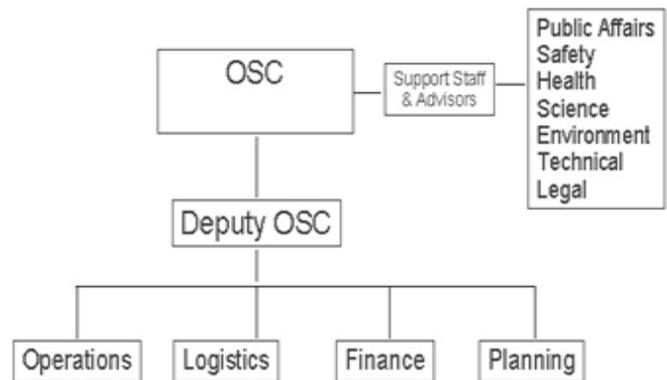
### 1.2 The Response Organisation structure

The Responsibilities of the On Scene Commander (OSC) are as follows:

- ✓ To take overall control of the incident
- ✓ Decision maker – has to make decisions quickly during crisis situations

The OSC is generally under a great deal of pressure and requires a Deputy OSC to provide relief and a support team of advisors to assist in assimilating information (see Figure 1),[4].

**Figure 1** Response Organisation Structure



Multiple agencies are involved during an oil spill. The response organization must be capable of providing co-ordination of their role in response. A response organization has basically four divisions of functions:

- ✓ Operations
- ✓ Logistics
- ✓ Finance
- ✓ Planning

Each division should have the capacity of expanding or contracting as required due to the size and complexity of the incident. The advisory groups may also expand into full divisions, or may be assigned to specific divisions under the Deputy OSC or Operations manager. Examples would be scientific advisors assigned to specific cleanup operations, or technical advisors to such operational units as chemical treatment operations.

## 2 MAIN COMPONENTS OF RESPONSE ORGANIZATION STRUCTURE

### 2.1 Operations command centers

- ✓ Overall command centre should be established for command and control operations
- ✓ Separate from centers established by civil authorities for other emergency responses (prevents conflicts should local emergencies arise)
- ✓ Response may be active for a long time

Command centre must have the following equipment, facilities or information available:

- Communication hardware (e.g. telephones, radios, facsimile, satellite communications)
- Information display boards
- Charts
- Oil sighting reports
- Situation reports/updates
- Equipment status/location
- Security arrangements

### 2.2 Logistics

Logistics should include all aspects of personnel and equipment support:

- Personal needs of staff (food, hygiene, safety, etc.)

- Transportation, special consideration, training for workers unaccustomed to air or vessel transportation
- Customs and documentation
- Equipment storage and maintenance
- Personnel and equipment cleaning
- Billeting, etc.

The logistics group should be prepared to expect the unexpected and to solve support problems without encumbering the response decision making process.

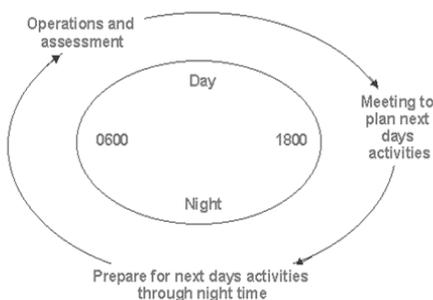
### 2.3 Planning

Planning involves the collection, evaluation, dissemination and use of information about the development of the incident and the status of resources. Short range planning involves the daily collection of information about the progress of the cleanup, spill movement, etc. through:

- Over flights
- Environmental assessments
- Assessment of the progress of operations

Preparation of the next day's activities should be developed at the end of the day's activities and adjusted, if necessary, first thing the following morning on the basis of the latest reports. Incident Action Plans should be reviewed and disseminated at the commencement of the day's activities. (see Figure 2), [3]

**Figure 2** Planning schedule



In the long term, planning involves:

- Area and site impact assessments, site surveys
- Slick monitoring
- Prioritization of protection and cleanup sites
- Selection of response strategies
- Prioritization of response activities
- Development of a long term response activities and site status
- Development of a clearly defined cleanup objective and response strategy

All plans should be written and disseminated to the OSC, response team and appropriate team leaders. The role of outside agencies, local officials and affected individuals and groups should be involved in contingency planning and the development of response strategies. Local officials, affected individuals and groups can provide valuable information about the area affected by the spill such as identifying natural collection points for oil, shoreline access etc.) In some cases, their approval may be required for obtaining access to a soiled site. They may also have conflicting priorities and may voice

concerns. They can be a distraction if no efforts are made to make them part of the contingency planning process. As part of this process, they might develop an understanding of the prioritization process and the efforts of the response organization. Outside agencies bring different expertise to the planning process which is essential for the response organization in assessing the:

- Impact of the spill
- Potential impact of response strategies
- Potential short and long term effects on the environment

## 3 OIL SPILL CONTROL STRATEGIES AND RESPONSE OPTIONS

### 3.1 Control strategy

The determination of the oil spill control strategy is partly of a political nature and is based on various calculations and assumptions which provide important parameters for this decision-making process. [1] A main element in these calculations is the evaluation of what can happen and where, followed up by calculations on the environmental impact and costs related to the calculated incidents, known as Risk Analysis. This Analysis will then form the parameter for the political decision on the dimension of the contingency set-up with regard to combatting capability, response times and means. The oil spill control strategy is fundamental feature of the contingency plan. It states:

- ✓ What the contingency set-up should be able to manage as regards the type and size of pollution
- ✓ The geographic area in which this response shall be feasible
- ✓ The methods to be used in various situations

### 3.2 Combatting strategy

Based on the political decision, the combatting strategy can be developed further to determine where, when and how the pollution should be fought.

#### • Where

When planning to combat oil pollution the location of where the response should be made must always be considered.

Various options are possible; for instance, combatting close to the source or combatting close to sensitive areas or in between these two positions. Combatting could take place in a combination of these areas. The choice is highly dependent on factors such as the source of pollution, amount and type of oil, weather conditions, special local features such as type of shoreline and sensitive areas. An option is to respond between the pollution source and the coastline, which is the normal response area when confronted with an incident such as a ship grounding or collision causing oil release into the sea. The response area will often be chosen at the place where the major part of the pollution is situated at the time of the arrival of the response units. The response area can also be determined as an area which, although it is not yet polluted, is an important area to protect.

#### • When

In all oil spill response situation, quick response is of vital importance for a successful outcome.

This is mainly due to the fact that oil on the sea surface normally spreads very quickly and any delay in the response contributes to increasing the problems to be met by the responder. However, it should be noted that the "do nothing" response option is often the most reasonable response. This is

due to factors such as the amount and type of oil, geographical position and non-sensitivity of threatened areas. This option is often not possible for political reasons but, if chosen, the progress of the pollution should nevertheless always be monitored. The actual combating method chosen will also be influenced by the time factor. Some combating methods (e.g. use of dispersants) are only effective during a very limited period of time. Recovery also becomes more complicated as time goes by (e.g. mechanical recovery is greatly complicated if the oil emulsifies)

#### •How

This is the selected combating method chosen for the specific situation, e.g. mechanical recovery, dispersing, absorbing, in-situ burning, biodegradation, etc. The national contingency plan should give guidance as to which methods should be used in various situations. This guidance will be based on the national environmental policy and an evaluation of the actual situation.

### 3.3 Media communications

The degree of interest from the press (newspapers, television, radio) in a specific oil pollution incident is unpredictable but normally closely related to the number of other news items at the time of the incident. Experience shows that even quite extensive pollution does not always attract the attention from the media, while minor, rather insignificant, pollution can create a media storm when there is little else to report. The media can be an effective means of ensuring that the public is kept informed of the incident, its effects and what is being done. Therefore, proper attention to the media and providing the correct information is very important. However, the responsibilities of First Responders do not include dealing with the media. Therefore, if at all possible, any question should be referred to the responsible officer in charge of the operation. This should be identified in the appropriate Contingency Plan. But the media, for their part, will approach all levels of the organization and use extensive ingenuity and pressure to get the information they want.

It has to be noted that even precise information can be misinterpreted or misunderstood. It is therefore recommended to obtain the name and telephone number of members of the press who have received information in order to verify or correct wrong news stories based on misunderstood information.

## 4 FACTORS INVOLVED IN COMMANDING AND CONTROLLING OIL SPILL RESPONSE

### 4.1 Gathering of information

- ✓ Prompt and accurate gathering of information is most critical at the early stages of a spill. Prompt gathering and dissemination of information must be arranged. The OSC should put in place a system for gathering, recording and verifying the information received.
- ✓ As the response moves into its project phase, information processes become more regularized and less subject to contradictions and misleading reporting.
- ✓ Information and directions must be disseminated in a clear and expedient fashion. There must be

adequate communication facilities for transmission of instructions and information.

- ✓ The logging and verifying of orders given, received and actions taken, is critical to the ongoing management of the response planning.

### 4.2 Response decisions

- ✓ Decision makers must be available to receive information continually throughout the response.
- ✓ Decision makers must have sufficient authority to initiate action to deal with a spill, or an incident which may lead to a spill.
- ✓ Decision makers must be authorized to coordinate activities of other agencies.
- ✓ Decision makers must be capable of controlling substantial numbers of personnel and a variety of equipment.

The responsibilities of the different divisions of the response organization must be clearly defined in the contingency plan to facilitate the decision making process.

### 4.3 Resources readily available

- ✓ Additional personnel, equipment and materials should identified in advance to deal with large incidents
- ✓ Arrangements must be made in advance to obtain resources

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