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Contingency Planning For Oil Spills

General Response Planning

Oil spills can arise from a number of different sources ranging from small operational spills like overloading tanks and burst hoses to the more serious such as a catastrophic failure in a large tanker's hull integrity due to a collision or a grounding.

There are also other non operational sources such as urban runoff and natural seepage.

However this presentation will be dealing with the former sources of pollution.

Without doubt the most crucial aspect of dealing with any emergency is to be prepared. However unlike most emergencies that occur with little warning but are over in a relatively short period of time an oil spill incident can also occur with little warning but may extend for weeks, months or even years.

Therefore planning for oil spills must not only look at the immediate tactical response and managing the immediate aftermath but must be prepared to cater for a much lengthier tactical response and must have a more strategic view with regard to an aftermath that may extend for years.

It is extremely important also to ensure that your planning process is not done in isolation but includes all of those constituents who would be affected by the oil spill. The Exxon Valdez incident showed how important it is to have pro-active relationships with local authorities, communities and the environmental lobby.

Any company either large or small operates in a working environment made up of the general public, legislators, regulators, customers, stakeholders in the company and the communities in which it's facility operates.

When an incident occurs and depending on the consequences there is an explosion of impacts on the operating environment as shown in Figure 1.

IMPACT ON CONSTITUENCIES

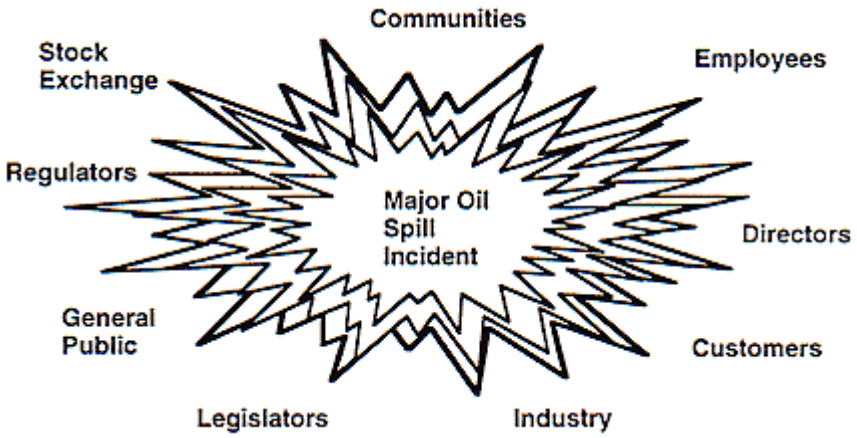

Fig 1

Depending on how a company manages the reaction from the impacts (Figure 2.) on these constituents will determine whether the company is effectively managing the incident and whether the incident will have a short term or a long term effect.

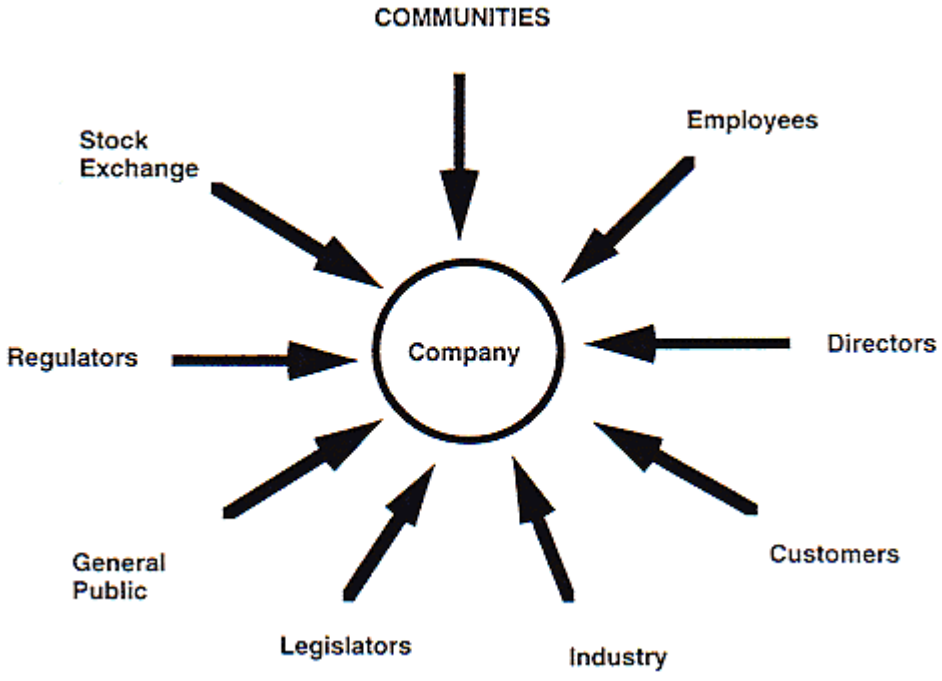

Fig 2

Thus by including those constituents in your response planning the relationship and interaction between the company and the constituents in an emergency is well established.

Tiered Response Planning

It is obvious that the response to a minor spill will be completely different to that of a major incident. The strategy for managing the incident, response time and the level of resources required to effectively respond will not be the same for both ends of the scale.

However this does not mean that planning for a small spill is any less important than for a large one although certainly it will not be as complex.

The Tiered Response concept of planning for oil spills is an effective (both cost wise and tactical) method and is now generally accepted throughout the oil industry. It also allows you to preposition an appropriate amount of equipment in appropriate locations.

If you look at the diagram shown in Figure 3 you will see that the size of spill and it's proximity to operations influences the spill category.

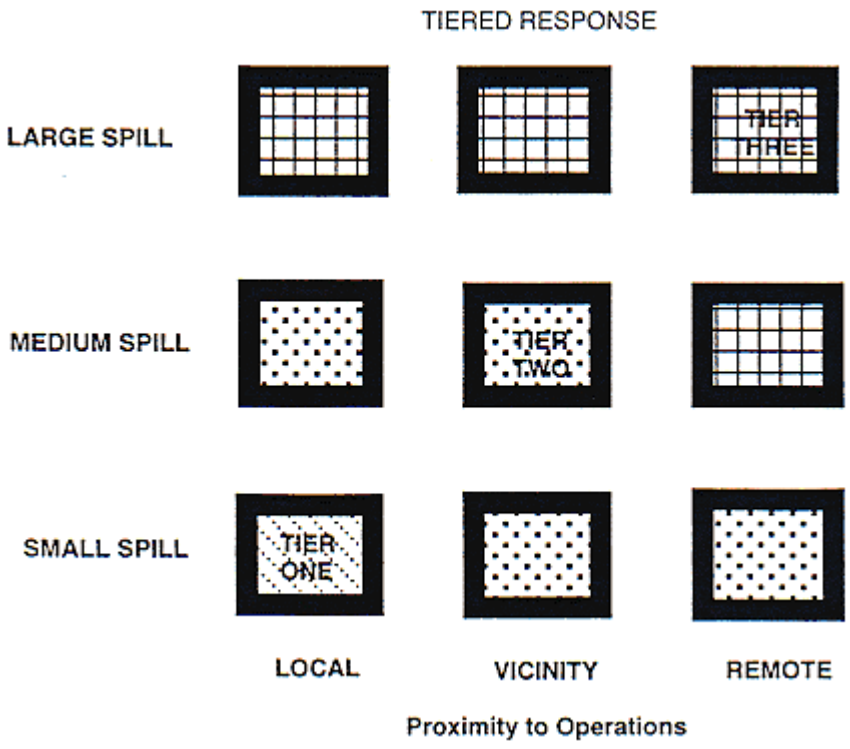

Fig 3

It should always be borne in mind that designating tiers to oil spills if for planning purpose only. When an oil spill occurs whether it is a small or a large release there are number of other complicated and sensitive factors that will determine the impact of the spill and could influence the scale of response to the spill. For instance a small spill close to an environmentally sensitive or recreational area will have substantially more impact than a large spill in the middle of the China Sea and the response to each would be different.

The media and political implications may also determine your response to an incident.

Tier 1 Contingency Plan

A Tier one plan should be prepared to cover the risk of a small local spill occurring due to normal operations within the confines of a terminal or facility operated or co-operated by a clearly designated authority or authorities.

Examples of such spills are ruptures of oil transfer hoses, thank overloading or valve leakage where the period of uncontrolled flow of oil can be quickly curtailed resulting in a spill of a relatively small amount.

However just because the spill size is small it does not lessen the need for a quick and effective response. Statistics will show that there is a greater number of Tier One type spills than any other and unless they are dealt with effectively they can have a more chronic effect on the immediate environment than any other category of spill.

Apart from the environmental effects ineffective response to operational spills attracts the attention of the local statutory authorities to the operational procedures at the terminal. In the worst case this may cause close down or at the least a curtailing of transfer operations until the authorities are satisfied that the terminal or facility has an adequate response capability.

The response to a tier one spill should be immediate if not then at least within the first hour of the spill taking place.

For instance an operator working in the high risk area such as the jetty must be designated as an authority to activate the Tier One response plan. He must be clear about the procedures to activate the resources and to set in motion the response.

Sufficient oil spill equipment capable of dealing with a Tier One incident should be kept in a state of constant readiness close to the high risk area and in such a way as there is the minimum amount of effort needed to deploy it on the water. Enough trained personnel should be readily available to carry out the deployment and maintain the response until the oil has been dealt with.

It should also be remembered that in certain circumstances when the location of the facility is appropriate and if the oil is amenable then the use of dispersant application may be the most practical Tier One response option. If dispersant application is being considered as part of your plan then it is important at the planning stage to discuss the option with local authorities and environmental groups. Because the "window of opportunity" to use dispersants is small due to the changing characteristics of the spilt oil, pre-approval for dispersant use is essential.

If a Tier One response is successful then the facility should not need to involve outside resources other than pre-arranged contractors. Of course it will need to meet the necessary reporting, information and legal requirements.

Tier Two Contingency Plan

The Tier Two plan will cover those types of incidents at a company facility or within public or multi-user facilities where the company has limited control over events and the physical size of the spill or the effect of its impact is beyond the scope of the Tier One response capability.

Examples of such risks are shipping accidents with a limited release of oil in ports and harbours or estuaries and coastal waters, pipeline failures or accidents on offshore exploration and production facilities.

In this case a company will know that the Tier One response capability is not sufficient and that it requires further resources as quickly as possible to supplement it's Tier One resources.
It may be that resources are available from local government stockpiles or by

persuading other local operators to pool their resources into a mutual aid facility.

Two good examples of such mutual aid can be found in the Arabian Gulf and in Malaysia.

In the Arabian Gulf the Gulf Area Oil Companies Mutual Aid Organisation (GAOCMAO) during 1972 formed the first mutual aid organisation of its kind -- a pioneering approach to collective response capability. When activated by the GAOCMAO secretariat thirteen companies operating in the Gulf area can donate their own Tier One oil spill equipment in a coordinated response to a major incident.

Malaysia is also developing a mutual aid strategy to deal with Tier Two type incidents on the east and west coasts of Peninsular Malaysia and in Sabah and Sarawak.

The Petroleum Industry of Malaysia Mutual Aid Group has been established as a Malaysian company limited by guarantee whose members include the national oil company and the oil majors operating inn Malaysia.

In this case the mutual aid group is establishing stockpiles of equipment at strategic locations in Malaysia managed by a technical team, secretariat and a team of contractors.

Equipment already owned or money will be donated by the members to establish the stockpile. Each of the members will also pay an annual charge for administrative and operating costs.

Because there are a number of outside agencies involved in a Tier Two plan as mentioned before it is important that all of these agencies are brought into the planning process and roles and responsibilities are clearly defined within the plan. Clear paths of communication must be established between all the parties concerned and agreement reached on the method of reimbursement.

Where equipment has not been stockpiled under a mutual aid agreement then liability issues need to be settled prior to donation of the equipment to a Tier Two coordinated response effort.

The line drawn between Tier Two and Tier Three is never clear therefore it is important to ensure that a Tier Two plan can be simply escalated into a Tier Three plan. Always remember that one man's Tier Two incident is another man's Tier Three.

For instance a company may well consider an incident within the Tier Two response capability but the media and environmental lobby may push the event into the Tier Three category by raising the profile and speculating on the consequences. The Braer incident in Shetland was a prime example of speculation by the media on the possible consequences of the spill on the local environment.

Tier Three Contingency Plan

The Tier Three plan is the ultimate plan to respond to a spill of catastrophic proportions.

Normally this will consist of a plan drawn up by a government to protect the national interest. Reason being since only governments can draw upon massive resources like the military who would be required in the event of a catastrophic spill. Governments can also commandeer resources from the public and private sectors as well as legislating for emergency powers.

Examples of the types of incidents covered by such a plan would be catastrophic failure of a tanker's hull integrity causing a major if not total release of the oil cargo or bunkers. This is normally due to a collision and subsequent foundering of the vessel or a grounding.

However one should bear in mind that such catastrophic failures may not lead to a Tier Three situation. The Braer incident off Shetland in 1993 where the whole cargo was lost, resulted in no response other than some dispersant spraying and close monitoring being required. The very weather that drove the tanker ashore greatly assisted in the natural breakup and degradation of the oil.

As can be imagined when a Tier Three situation does cause problems they can be on a tremendous scale as most of us remember in the Exxon Valdez incident.

Planning for this type of incident is no small feat as you not only have to source

massive amounts of resources but you also have to effectively manage those resources and in what may be an inhospitable and isolated location.
Most governments plan for this type of worst case scenario and it is extremely important that industry, whilst operating in or near to a particular country, works with the national government to produce an integrated Tier Three contingency plan. This cooperation is called for in the IMO's International Convention on Oil Pollution Preparedness Response 1990 (OPRC 1990).

The national contingency plan most certainly will clearly define the designated lead authority to manage the incident and define roles and responsibilities. It should also include the organisational relationship of the various bodies involved whether public or private.

Resources for a Tier Three incident will not only be sourced nationally but also internationally and that is where the role of international oil spill cooperatives like EARL are so important.

Preparing a Contingency Plan

Keeper of the Plan

One of the most important aspects of a contingency plan is ensuring that it is kept upto date. There is nothing more frustrating than trying to use a plan when the information in the plan is out of date.

Someone needs to be clearly identified who will have responsibility for the plan and ensure that the information contained within the plan is kept updated.

Plan Structure

In general the plan should be comprise of three main parts:

Strategy Section.

- Authorities and responsibilities: which should indicate the various authorities encompassed by the plan and their responsibilities. It should also outline any statutory requirements that the plan may be required to adhere to, particularly if the plan interfaces with a national contingency

plan or local authority regulations.

- Dimensions of plan: which will indicate the area the plan covers and it's geographical limits. For instance it may cover a refineries operations plus the sea approaches to the marine terminal at the refinery.

- Risks: the part will describe the types of risks involved from the chance of a hose burst or pipeline failure to the possible grounding or collision of an approaching tanker. From these scenarios plus a knowledge of the types of oils being handled at the facility an indication of the fate and effect of an incident can be predicted. By being able to predict the fate and effect shoreline resources can be prioritised for protection

- Response strategy: will define the philosophy and objectives of response. It will indicate the problems due to local limiting and adverse conditions as well as setting out the strategies for sea and coastal zones. Arrangements for dealing with waste storage and disposal will be outlined.

- Equipment: what equipment is available and how it can be effectively used in the strategies previously outlined.

- Organisation and manpower: this sub-section will clearly outline the management organisation from the on scene commander to the cleanup workers in the field. It will also show the relationship with the relevant government authorities and how they fit into the incident management system.

- Communications: the communications network will also be described in this sub-section, listing the communications equipment fitted into the command center and a description of the field communications equipment. Examples of reports and incident logs etc.

Action and Operations Section

- Initial procedures: Which set out the arrangements for notifying the relevant authorities of an incident.

- Emergency activation procedures for calling out response team members and setting up the command centre. Emergency activation and mobilisation procedures that will allow rapid sourcing and deployment of resources particularly from contractors and third parties.

- Planning: What requires to be done in the form of planning in the short medium and long term.

- Guidance on specific cleanup operations and the critical factors when deciding the final and optimum levels of shoreline cleanup.

And finally a:

Data Directory which should contain all the relevant maps, (particularly sensitivity maps) lists and local wind, weather and environmental data sheets to assist in the assessment of the situation and the development of a strategy for dealing with the situation.
Such a list would contain:

- Primary oil spill equipment (manufacturer type, size, location and cost of hire where applicable.)

- Support equipment needed to deploy the equipment ie workboats tugs tractor and trailors etc.

- Sources of manpower, contractors local authorities etc.

- Source of experts and advisors ie salvors, environmental safety etc.

- Local, national and international contacts who required to be notified of the incident and who may be able to offer assistance

For more detail on what should be contained within each of the main sections I recommend referring to the IPIECA Report Series Volume 2 entitled 'A Guide to Contingency Planning for Oil Spills On Water."

Another important general point about the plan is that it must be practicable and achievable in it's objectives.

It certainly must not raise levels of expectations above what it can realistically achieve. For instance response times for equipment and personnel must reflect the worst case scenario rather than unrealistic best case.

Training and Exercises

People sometimes ask me why an oil spill response can go wrong if a comprehensive contingency plan has been put in place. The trouble is a large number of contingency plans are gathering dust on a shelf somewhere or propping open a door.

Any contingency plan should be seen as a living document which requires periodic nourishment in the form of updating. To be effective it requires training of it's resources, and to remain healthy it requires exercising.

Within the consider the wide ranging elements contained within an oil spill cleanup operation from the frenetic activity of the short term tactical response to the more measured considerations of the long term strategic response it is easy to see the depth and breadth of training required.

Figure 5. shows a typical management structure associated with a tier 3 type incident. From the diagram you can see that managing an incident is not dissimilar to managing a factory. Where the similarity ends is that oil spill management is carried out under intense public scrutiny with unusually heavy political implications. (how many political and industrial careers do you think have been made or lost in the aftermath of a major oil spill? I should know!!).

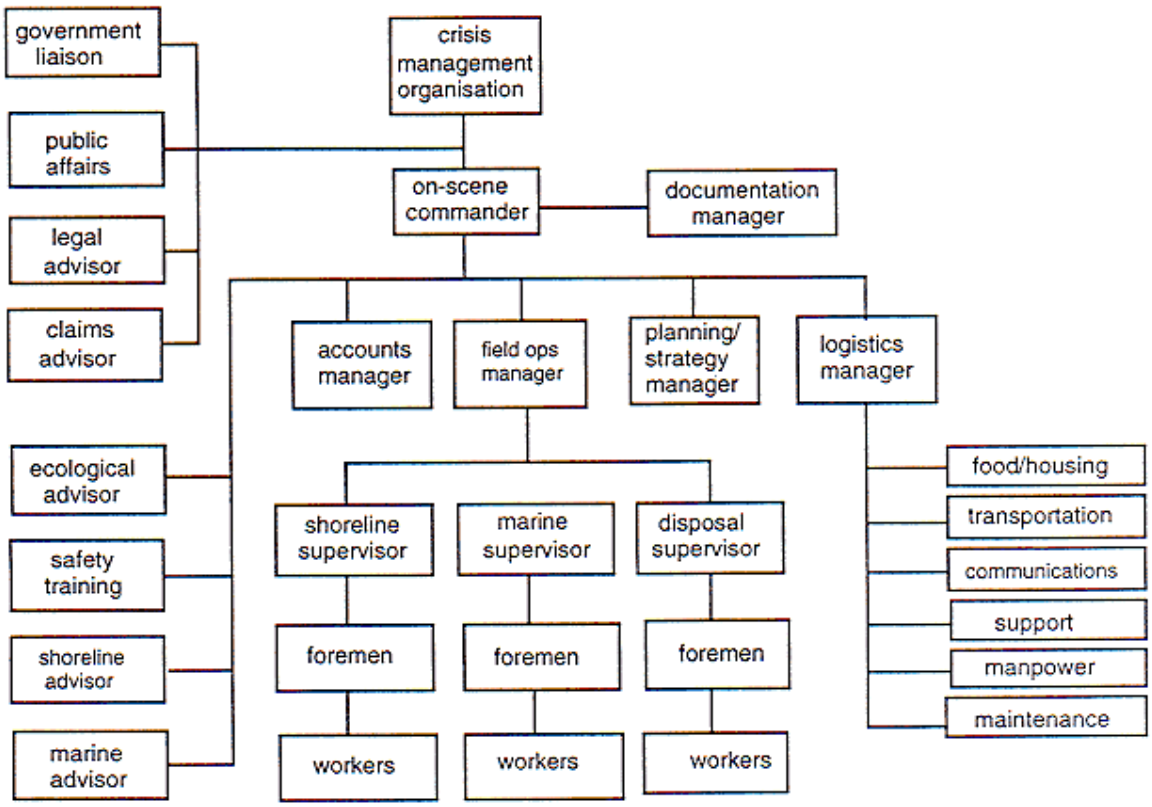

Fig 5

Therefore a thorough understanding by the team on the response options and the environmental effects of an oil spill coupled with an ability to solve problems effectively whilst communicating your thinking and strategy to a hostile audience is critical in managing a spill successfully.

Only training and regular exercising under simulated pressure will ensure that your team has at least a fighting chance to effectively deal with a real life incedent.

The End

East Asia Response Private Ltd (EARL)

The company East Asia Response Private Limited was established in Singapore on May 18 1992 as a non-profit making company by the founding shareholders BP Singapore, Caltex Services Ltd., Esso Eastern, Mobil Spill Response Inc. and Shell Response Ltd. In 1994 BHP Petroleum a wholly owned subsidiary of Australia's biggest company became a shareholder.

EARL's prima role is as a Tier Three Response Centre or in other words a major international resource for responding to catastrophic oil spills in the Asia Pacific region in support of the oil spill response operations of the companies participating in EARL.

At its Regional Centre in Jurong it stores and maintains to a very high level a wide range of oil spill response equipment capable of responding to a major incident.

In addition to the equipment the Centre is staffed with 18 specialist technicians who have had extensive training in the maintenance and operation of the oil spill equipment. They also act as the crew for the 20m fast response vessels.

In the event of an incident the technicians would supervise teams of labour, using the Centre's and other equipment in the clean up operation.

To enable the equipment to be quickly airlifted to the scene of the incident EARL has a Lockheed C-130 transport aircraft on a "wet lease" continuously on standby at Sclctar Airport. To offset the lease costs the aircraft is sub chartered for flights not exceeding four hours from Singapore which is the maximum time it would take to activate EARL and mobilise the team and equipment to Changi Airport where the equipment would be loaded.

In addition to its Tier Three regional role EARL also provides a waterborne response to incidents in the Port of Singapore, Singapore Straits and the Straits of Malacca. It has recently responded to a number of minor incidents in the Malacca Straits.

Plans are at present being developed to establish a quick response marine base in Port Dickson Malaysia. Earl is presently discussing joint occupation of the old Shell Distribution Depot at Port Headland P.D. with the Petroleum Industry of Malaysia Mutual Aid Group who wish to set up Tier Two facility on the West Coast

of the Malaysian Peninsular.

A Tier Two response facility is to cover spills which are outside the capability of an oil terminal's Tier One but has not rcached the stage of a Tier Three. A rapid response vessel fitted with quick deployment equipment will be stationed at the base at Port Dickson. Combined with the two rapid response vessels in Singapore the vessel at Port Dickson will provide a fast initaial response to incidents occuring in the Singapore Straits and the Straits of Malacca.

Training.

During 1993 EARL was involved in over twenty training course and seminars across the region. some of the training was held at the Regional centre where there is a suite of rooms especially designed for training and syndicate work.

The main training room located on the 2nd level of the administration block can cater for upto thirty students and is fitted out with the latest audio visual aids.

Consultancy

EARL has provided a consultant for a number of projects in Hong Kong, China, Vietnam, Guam and Bahrain. The work in Hong Kong and Guam consisted of developing a Tier Two response facility at these places. The work in Vietnam is at grass roots level of developing a national contingency plan. In Bahrain EARL has been assisting the national oil company to develop their contingency plan and to encourage industry and government cooperation in the planning process.

EARL has also provided an expert for the expert's panel on the IMO/Industry Regional Seminar Programme on Joint Oil Spill Contingency Planning. The seminars have been held in Jakarta, Cairo, Libreville, Caracus, Bahrain, Curacao and Hong Kong.

EARL is a good example of the industry's contribution to the OPRC Convention in providing equipment and expertise to the region and compliments the activity of the Petroleum Association of japan in protecting the marine environment in the region.