

CONCLUSIONS AND RECOMMENDATIONS

This paper examines whether improvements in response capabilities and performance over the past 20 years have been a myth or a reality. Specifically, is it a myth or reality that:

- Response capabilities to clean up large spills have improved over the last 20 years?
- Increased response capabilities have resulted in improved performance?
- Improved performance has had a positive effect on political, media, environmental, and public perceptions?

The approach used to achieve the paper's objectives was to integrate information from available literature on major oil spills with the practical experience and personal observations of the author and spill response professionals. The intent was to provide a well-reasoned basis for determining whether the critical issues are myths or realities.

It has been 21 years since the *Amoco Cadiz* spill polluted the Brittany Coast and 10 years since the *Exxon Valdez* spill in Prince William Sound, Alaska. In the aftermath of the *Amoco Cadiz*, the oil industry and governments around the world strove to improve spill response capabilities by greatly increasing response equipment availability. After the *Exxon Valdez* spill, there was renewed determination to improve spill response performance by focusing not only on equipment but also on co-operative planning and management as well. The goal in both cases was to improve response performance, especially the public's perception of effective performance. This paper presents evidence of changes in oil spill response since the 1970s and evaluates whether these changes achieved their intent — improvements in capabilities, performance, and perception.

5.1 CONCLUSIONS

IS IT A MYTH OR REALITY THAT RESPONSE CAPABILITIES TO CLEAN UP LARGE SPILLS HAVE IMPROVED OVER THE LAST 20 YEARS?

There has been a tremendous increase in the quantity of oil spill response equipment in many parts of the world. These increases are attributed directly to the actions of several nations and industry implementation of the tiered response concept worldwide. Improvements also have been made in contingency planning and spill management arrangements. A number of international and bi-lateral agreements have been

concluded concerning co-operation among countries in the event of oil spills (Appendix A). Neither planning and management advances nor increases in equipment stockpiles have been universal. So, is it a myth or a reality that response capabilities have improved over the past 20 years?



It is a reality for certain nations and regions of the world. Many nations, especially those that have experienced a major oil spill, have devoted much effort to developing a well-resourced and exercised

NCP. In general, the oil spill response plans and capabilities in those countries have improved.

It is a myth for certain nations and regions of the world. There are some areas of the world where there has been very little performance improvement over the past 20 years.



Either because of lack of national resolve or resources, the necessary planning has not occurred in many countries. In the absence of such planning, resource and infrastructure improvements are difficult, if not impossible, to achieve. If equipment alone has been procured, then this can lead to a false sense of preparedness.

IS IT A MYTH OR REALITY THAT INCREASED RESPONSE CAPABILITIES HAVE RESULTED IN IMPROVED PERFORMANCE?



There have been improvements throughout the world in international co-operation, contingency planning, spill management arrangements, dispersant efficiency and methods of aerial application, provision

of equipment, and training of personnel. For all these things to come together perfectly in one plan or during one spill is rare.

There have been performance improvements resulting from the adoption of international conventions and agreements. The development of the OPRC Convention signified international commitment to preparedness planning. The establishment of industry-owned national and regional equipment stockpiles is

a major improvement. Regional inter-governmental agreements such as the Bonn Agreement and the Helsinki Convention provide further evidence of international commitment to improvement.

In the US, OPA 90 has resulted in improved performance, most notably in preparedness because of the emphasis on contingency planning and exercises. In the US, OPA 90 has increased discussion on dispersant use as another response technique available to responders. Although dispersant use needs more promotion, OPA 90 can be credited with providing the first step toward acceptance of dispersant use throughout the US.

There have been major improvements in some areas of the world in accepting detailed contingency planning as the fundamental element in a successful response. Further improvements have been made in recognising that preparedness is an iterative process involving a series of specific steps: planning, exercise, response, and continuous evaluation.

There is a need to maintain an awareness of the critical role that salvage plays in large spill responses and to closely coordinate the actions of salvors and spill responders, which should contribute to improved performance. There have been improvements in the use and development of mechanical containment and recovery equipment, particularly in coastal protection, and there have been significant improvements in its regional availability. There is a growing awareness of the limitations of mechanical recovery at sea and a resultant increased acceptance of dispersant use as an at-sea response option and *in situ* burning for on-shore and heavy ice response situations. There is a greater acceptance of the need to use shoreline cleanup techniques that have a minimum impact on the environment. Management of spill response has improved when responders have planned and exercised together.

While some aspects of international conventions and agreements have been implemented, not all provisions of these agreements are yet in place. Further initiatives to implement them have not yet spread throughout the world.

Contingency planning has not been conducted in a comprehensive way in many countries. More work must be done in those countries to develop comprehensive contingency plans that include risk analysis, forecasts of oil movement and fate, identification and prioritisation of resources at risk, and commensurate selection of response techniques. This is an essential pre-requisite for equipment purchase.

There continues to be an over-reliance on mechanical containment and recovery for offshore spills in many regions of the world as the technique of choice, with a reluctance to consider dispersant use as a primary or complementary response technique for offshore spills. OPA 90 continues to place reliance on mechanical containment and recovery as the primary means of response in the US. This reliance has resulted in false performance expectations on the part of the public

and response community. In some countries, there is a misguided assumption that *in situ* burning will become a major at-sea response technique, forgetting that it suffers from all the well-known problems of mechanical containment. Finally, proper cost management has deteriorated in some parts of the world because of external pressures generating long-term over-reaction, and the lack of an effective mechanism to ensure the technical reasonableness of decisions that contribute to excessive costs.

IS IT A MYTH OR REALITY THAT IMPROVED PERFORMANCE HAS HAD A POSITIVE EFFECT ON POLITICAL, MEDIA, ENVIRONMENTAL, AND PUBLIC PERCEPTIONS?

Despite the efforts of the oil industry and governments around the world, there is little evidence that the media, environmental interest groups, and the public perceive any improvements in response performance. This may be attributed to the majority of these stakeholders disinterest in response until a major incident occurs.

Generally, the factors that are considered important in an effective response do not seem to match those of the public's perception of a successful response. Increased capabilities have not had any significant impact on perceptions of the media, environmental interest groups, or the public.



Media response is unpredictable. Occasionally, the technical success of a response is reported positively. At other times, there is wild speculation on potential "ecological disasters" being faced. Although reducing their presence and visibility at major spills in Europe, environmental interest groups remain ready to be extremely critical of oil companies, any of their activities, oil spills, spill response, and certain response techniques in particular. In many areas of the world, some progress has been made in political arenas to create the necessary climate of trust and co-operation. Politicians, however, always will remain responsive to their constituents, and, if the public is upset, political support for response operations may well evaporate.

5.2 RECOMMENDATIONS

THE PROBLEMS THAT REMAIN

The problems that remain are not ones that massive additional stockpiles of equipment will fix. As one co-op manager observed "the world is awash with equipment." Some problems, such as those caused by the laws of physics, are insoluble with present-day technology. Organisational problems — such as inadequate or non-existent response planning, lack of training and exercising, and lack of national resolve to make

pollution response a priority — must be overcome to improve response performance. In this regard, the following recommendations are presented:

- Strengthen spill response infrastructure rather than provide additional equipment.
- Review NCPs to identify shortcomings and implement those factors that are considered essential to response success.
- Develop government-industry co-operation more fully in many parts of the world. This will help remove the antagonism that arises during a spill response by having both parties contribute jointly to the success of the response.
- Improve contingency planning. The contingency planning process must be supported by a programme of training and exercises to ensure that staff skill levels are developed and maintained and to validate the plan, enabling any necessary improvements to be made. This also will identify any equipment or logistic deficiencies.
- Co-operate internationally, particularly through the OPRC Convention, Global Initiative, and industry Tier 3 response bases, to assist in providing additional scarce, expensive resources and developing NCPs for countries that do not have the expertise themselves.
- Advance the acceptability of dispersant use as a primary response technique by presenting all available scientific and operational data.
- Research to provide and refine the best methods of shoreline cleanup. Disseminate results widely to responders, politicians, and environmental interest groups.

There are several programme areas where specific initiatives may contribute to both the perception and reality of response performance improvements.

Educational programmes. A sustained campaign is needed to educate the media, public, governments, and environmental interest groups about the fundamental limitations of oil spill response techniques.

International contingency plan. A “supra-national” world contingency plan would consider hazard on a global basis and ensure that adequate Tier 2 equipment resources, with their attendant logistics, are in place to cover the areas of highest risk. The globalisation of the world economy also may lead to the further globalisation of international oil spill response.

The IMO-IPIECA Global Initiative could be used as the basis for such a world contingency plan, building on the provisions of Article 7 of the OPRC Convention. Care would be needed not to infringe national sovereignty; therefore, the plan would have to build on current NCPs. It could draw on additional spill risk analyses, such as those conducted by ITOPF and IPIECA for the Global Initiative. A “supra-national” planning strategy could examine the adequacy of the current locations of Tier 2 and Tier 3 response bases. Specific recom-

mendations on the allocation of those resources could then be based on a global risk assessment. As the number of Tier 2 bases increases in response to an international plan, the role of Tier 3 bases may well change from providing large amounts of equipment to providing certain specialised, high-value equipment and experienced personnel to support Tier 2 bases during oil spills. The planning strategy also should consider whether all response bases are stocked with appropriate equipment, review the adequacy of staffing arrangements, and consider whether logistics arrangements are available to move equipment to a spill site in a rapid and efficient manner.

Spill management. Governments normally lead an oil spill response despite the Global Initiative, but many countries have no more than skeletal spill management teams. There might, therefore, be a need for one or two independent, international spill management teams to assist and support such countries on request. The teams could be centred around ITOPF technical advisers, with support from Tier 3 bases and experienced response professionals. One important function of the team would be technology transfer, to teach national response organisations the necessary skills so that those organisations could mount a self-sufficient response. The team concept should be considered for inclusion into the Global Initiative. Funding for these teams at a spill could come from compensation conventions, and funding for the necessary exercises could be sought from the oil and shipping industries, P&I clubs, or government and international aid programmes.

Oil spill research and development. At the 1995 IMO Conference on Oil Spill Research and Development in London, there was a clear sense from responders that researchers were investigating and researching avenues that had little relevance to spill response. As a result, spill research attracted much adverse comment. Clearly, there is a need for pure scientific research to advance knowledge and turn developing work into more effective response techniques (Fingas, 1998).

Research is needed to continue to improve dispersant formulations that increase the viscosity range of oil that can be dispersed and improve performance against emulsion. This research could further promote dispersant use. In addition, there is a need for research on shoreline cleanup. The process of oil and fine particle interaction or clay oil flocculation is not yet fully understood, and, until it is, its relevance to shoreline cleanup cannot be judged.

FACTORS THAT CONTRIBUTE TO THE SOLUTION

This paper argues that, although equipment plays an important role in an effective response, equipment is by no means the only, or even the most important, element in an effective spill response. In a well-managed response, well-trained personnel have used obsolete or improvised equipment successfully. In a poorly managed response with badly trained or inexperienced personnel, even the most modern and capable equipment has failed to produce a successful response. This paper outlines the policies, programmes, and infrastructure needed for a successful response now and in the future.

Factors essential for a successful response include:

- commitment of government and industry to spill response;
 - an effective regulatory regime;
 - implementation of international conventions, such as the CLC, Fund Convention, and OPRC Convention;
 - a tested NCP with comprehensive, supporting sub-national contingency plans;
 - good management arrangements;
 - close co-operation among regulatory, operational, and environmental personnel;
 - suitably trained, experienced response managers, supervisors, and equipment operators;
 - a comprehensive, well-maintained inventory of suitable equipment;
- a successful salvage operation with transfer of unspilled cargo;
 - use of the most successful, cost-effective response techniques;
 - a well-managed and -conducted shoreline cleanup;
 - comprehensive logistic support;
 - a comprehensive training and exercise programme; and
 - a well-managed media, political, and public information response.

It is suggested that, if these factors are implemented and maintained by government and industry planners consistently, they will serve to advance response performance worldwide.