



International Guide for the **Assessment of Oil Spill Response Planning and Preparedness**



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YEAR OF EDITION (2023)

Acknowledgements

This Guide is the outcome of years of practices and lessons learned from spill prevention and response. The work recognizes the many contributors to the field of oil spill response preparedness efforts, in formal and informal publications, regulations, and many associated tools of the trade. Continued developments, learnings, and best practices are certain to evolve; hence, these guidelines are offered as a reflection of current practices as of the date of publication.

The authors' opinions expressed in this Guide do not necessarily represent those of their institutions or companies.

Revision History

This publication represents an update to the Guidelines published as part of the International Oil Spill Conference (IOSC) in 2008 (*Assessment of Oil Spill Response Capabilities: A Proposed International Guide for Oil Spill Response Planning and Readiness Assessments*). That effort, spearheaded by the IOSC Sponsors in conjunction with ARPEL and the then Clean Caribbean Cooperative, is updated in the release through the collaborative efforts of Ipieca, (www.ipieca.org), IMO (www.imo.org), and ARPEL (www.arpel.org).

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Disclaimer

This *International Guide for the Assessment of Oil Spill Response Planning and Preparedness* is designed to provide accurate and authoritative information on the subject matter covered. Although efforts were made to ensure the accuracy of the information contained in this document, neither the International Maritime Organization (IMO), Ipieca, the Association of Oil, Gas and Renewable Energy Companies in Latin America and the Caribbean (ARPEL), nor the authors, nor any of the members of Task Force in charge of contributing to and reviewing the document, nor the companies and institutions they represent, assume any responsibility for any use made hereof. No references made to names or trademarks of equipment manufacturers and/or processes represent any endorsement by the authors or sponsoring organizations of this document. The views and opinions presented are those of the authors and do not represent the views, opinions or policies of IMO, Ipieca, or ARPEL. The collaborating sponsors are not engaged in rendering legal or other professional advice. If advice is required, the services of a professional should be sought.

Preface

Prior Guide

This *International Guide for the Assessment of Oil Spill Response Planning and Preparedness* (the “2023 International Guide”), represents an update to a prior report issued by the International Oil Spill Conference (IOSC) and its sponsors in 2008. IOSC contributes to and enables a “culture of preparedness” within the oil spill preparedness and response (OSPR) community and the broader field of incident management. It provides a forum for response professionals from the private sector, government and non-government organizations (NGOs) to highlight and discuss innovations and best practices across the spectrum of prevention, preparedness, response and restoration. In 2007, organizers of the 2008 IOSC agreed to support development of general guidance to assess oil spill response (OSR) readiness programs. As part of that development, the 2008 IOSC Specialty Workshop Subcommittee prepared a broad suite of planning and readiness assessment elements to encourage improved response capacity. That initial work set a framework to aid development and maintenance of response management systems to improve OSR readiness, documented in the 2008 IOSC Guidelines (Taylor et al., 2008a and 2008b).

ARPEL RETOS™ Tool and Manual

Subsequent feedback received from the international community recommended transforming the 2008 IOSC Guidelines into a more user-friendly management tool. ARPEL, with funding from the Canadian International Development Agency (CIDA), took the lead on this recommendation and developed the *ARPEL Oil Spill Response Planning and Readiness Assessment Manual* (the “Manual”) and its accompanying assessment tool, the Readiness Evaluation Tool for Oil Spills, or RETOS™, first released in 2010 (ARPEL, 2014). The RETOS™ application and Manual were upgraded in 2014 through funds provided by the 2014 IOSC Executive Committee and with the support of regional and international experts from industry and government, including associations such as Oil Spill Response (OSRL), the Regional Activity Centre / Regional Marine Pollution, Emergency, Information and Training Centre – Caribe (RAC/REMPEITC-Caribe), and the International Maritime Organization (IMO). ARPEL, IMO, and Ipieca sponsored these updates to the RETOS™ tool and its transition to a web-based application (available online: <https://arpel.org/library/publication/539/>).

The ARPEL Manual and RETOS™ are intended to be used in conjunction with this Guide. Together, these tools provide a comprehensive set of criteria for industry and governments to assess their level of oil spill preparedness and response planning and readiness. The assessment criteria, agreed upon by the participating companies and institutions, provide the foundation for a series of checklists whereby gaps can be identified in oil spill response planning and readiness programs. RETOS™ applies to oil spills at sea, shore and inland and can be considered for spills of hazardous and noxious substances (HNS), with some adaptations.

Users are requested to provide feedback to ARPEL on these guidelines to info@arpeel.org.uy, as to when and where the guidance was used for OSR readiness assessment, and to suggest improvements based on their experience.

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List of Acronyms

ACRONYM	EXPLANATION
AIS	Automated Identification System
API	American Petroleum Institute
ARPEL	Association of Oil, Gas and Renewable Energy Companies in Latin America and the Caribbean
ASTM	(International) Association for Standards and Testing of Materials
BAT	Best Available Technology
BSEE	Bureau of Safety and Environmental Enforcement (USA)
CIDA	Canadian International Development Agency
CLC	International Convention on Civil Liability for Oil Pollution Damage
COCATRAM	Comisión Centroamericana de Transporte Marítimo
CONCAWE	Conservation of Clean Air and Water in Europe
COP	Common Operating Picture
EMSA	European Maritime Safety Administration
ERA	Environmental Risk Analysis
ESG	Environmental, Social and Governance
ESI	Environmental Sensitivity Index
FLIR	Forward-Looking Infrared Radar
FPSO	Floating Production Storage & Offloading unit
FSO	Floating Storage & Offloading unit
GI	Global Initiative
GI SEA	Global Initiative for South East Asia
GI WACAF	Global Initiative for West, Central and Southern Africa
GIS	Geographic Information System
GPS	Geographic Positioning System
HNS	Hazardous and Noxious Substances
ICS	Incident Command System
IMO	International Maritime Organization
IMS	Incident Management System
IOGP	International Association of Oil & Gas Producers
IOPC	International Oil Pollution Compensation (Fund)
IOSC	International Oil Spill Conference
IR	Infrared
ISB	In Situ Burning
ISGOTT	International Safety Guide for Oil Tankers and Terminals
MARPOL	International Convention for the Prevention of Pollution from Ships
MOBEX	Mobilization Exercise (Clean Caribbean and Americas)
NEBA	Net Environmental Benefit Analysis
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration (USA)

ACRONYM	EXPLANATION
OCIMF	Oil Companies International Marine Forum
OSR	Oil Spill Response
OPRC	International Convention on Oil Pollution Preparedness, Response and Cooperation
OSPR	Oil Spill Preparedness and Response
OSPRI	Oil Spill Preparedness Regional Initiative in the Caspian Sea, Black Sea and Central Eurasia
OSRO	Oil Spill Response Organization
P&I	Protection and Indemnity (Club)
POLREP	Pollution Report
PPE	Personal Protective Equipment
QI	Qualified Individual
RAC/REMPEITC	Regional Activity Center / Regional Marine Pollution Emergency Information and Training Center (Wider Caribbean Region)
REMPEC	The Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea
RETOS	Readiness Evaluation Tool for Oil Spills
RP&RA	Response Planning and Readiness Assessment
ROV	Remotely Operated Vessel (submersibles)
SCAT	Shoreline Cleanup Assessment Technique
SDS	Safety Data Sheet
SIMA	Spill Impact Mitigation Assessment
SME	Subject Matter Expert
SMPEP	Shipboard Marine Pollution Emergency Plan
SOPEP	Shipboard Oil Pollution Emergency Plan
UAV	Unmanned Aerial Vehicle (drone)
UNEP	United Nations Environmental Program
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
USOSHA	United States Occupational Safety and Health Administration
VTS	Vessel Traffic System

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Introduction

An assessment of oil spill preparedness and response (OSPR) capability helps organizations identify technical, policy/legal, or administrative areas that are strongly developed, areas that may need additional attention, or those that are simply not developed. This 2023 International Guide provides a comprehensive summary of many components and elements in a Response Planning and Readiness Assessment System (RP&RA). Readiness for response entails a level of preparedness to effectively execute response plans. These guidelines provide a detailed compilation of over 500 aspects that contribute to a thorough and sound oil spill response program.

The concept of “best international practice” for OSPR for years was generally an informal compilation of recommendations and guidelines for some aspects of an oil spill response (OSR) management system. A concerted effort by industry over the past decade has led to a systematic approach to provide “good practice guides” for numerous aspects of oil spill response, leaning on experiences and innovations from major spills and preparedness programs (Ipieca, 2021).

In the mid-twentieth century, oil spill response plans were a rarity. As awareness of spill risks to both land and water habitats grew throughout the late twentieth century, and nations established legal requirements for spill prevention and response planning, the number of plans and their comprehensiveness also grew. The sophistication of OSPR plans increased as regulators and response planners gained experience. Until recently, most national and industry efforts focused on preparing and improving OSPR plans. Over the past 30 years the value of exercises and drills to test conceptual and/or actual preparedness has been more widely recognized. Efforts to design and prepare for such tests have increased markedly over the past two decades. As competency in a particular subject grows, there is time and energy to seek improvements elsewhere. For example, the focus for many response operations had solely been on the speed of spilled oil recovery. One adverse consequence was that waste handling could become an obstacle to smooth response operations when response teams did not make advance arrangements for waste treatment and disposal, including permitting, and/or foster waste segregation and minimization. With this improved awareness, far greater attention is given to waste handling in alignment with its importance to overall response.

Prior to the 2008 IOSC Guidelines and the subsequent development of the ARPEL Manual and RETOS™ tool (ARPEL 2017; Taylor et al. 2014), there was no formal, widely adopted framework designed to function as a checklist against which results from an assessment can be compared. No single set of guidelines had been developed for the entire range of preparedness activities: from plan development to the implementation of a contingency plan, commissioning of response equipment, training of management teams and spill responders, and the sustainability of response readiness. This -updated- Guide provides a broad compilation of elements for a more consistent and broad-based international guide for spill response planning and preparedness assessments.

The Introduction and Background briefly summarize past efforts on assessment guides. The core of this updated Guide comprises the elements of a proposed spill RP&RA system, reflected in the RETOS™ application and its Manual. Individual elements may pertain to government, industry, or both and are organized into ten RP&RA categories, ranging from legal foundations to long-term sustainability. The goal of this Guide and the ARPEL Manual and RETOS™ is to advance best international practice for OSR planning and readiness assessment. The guidelines in this document have been prepared for the international spill response community as a common reference point and best practice for improved OSPR planning and capability assessments. This tool is unlikely to fit all circumstances, but it presents a comprehensive framework.

A long-term objective of this effort is to continue to provide a current and consistent framework for the assessment of OSPR readiness that can be used by the response community worldwide. OSPR assessments that use the internationally agreed-upon criteria and concepts that form the foundation of this publication and the RETOS™ tool meet this objective. The elements presented here are intended to provide a base against which RP&RA results can be gauged. The use of the guidance provided in this publication, used in concert with the RETOS™ application and its Manual, jointly provide a robust set of tools for OSPR assessment. RETOS™, its Manual, and the precursor to this Guide (the 2008 IOSC Guide) have been used successfully as best practice guidelines at local to regional levels for assessing and setting baselines for preparedness (Canova et al. 2021; Donohue et al. 2017; Taylor et al. 2017). Regional workshops have used the outcomes of the analysis to identify national to regional priorities and mechanisms to address gaps. Regional priorities for oil spill preparedness become clear as work groups compare and collate individual results into a broader preparedness framework. Benchmarking results, whether for national or industry programs, can be used to find synergies between countries or companies, promote opportunities for addressing common gaps, and identify strengths within programs that can be used to assist or guide others (Nicoll and Charlebois 2021). Regionally applied, benchmarking activities can lead to a balance among spill preparedness programs, the identification of co-operation opportunities and comparisons from region to region.

Access to the response planning and readiness assessment system guidelines (this publication), provided through internet linkages with the primary sponsors of this update (ARPEL, IMO, Ipieca), is intended to encourage and allow for evolution of this tool in a capacity-building approach. Users are requested to provide feedback on these guidelines, as to when and where the guidance was used for OSPR readiness assessment, and to suggest improvements based on their experience. The goal of the open access to this 2023 International Guide is to provide the international oil spill response community with an evergreen tool that is improved with each use.

Background

The development and maintenance of OSPR capability is closely regulated in many nations. In such instances, the required content of oil spill response plans, training standards and a regular schedule of drills and/or exercises are typically well defined. Other nations may not have national oil spill contingency plans or a well-developed regulatory environment within which OSPR plans, response competency and readiness can be evaluated and enforced. Also, there may be limited availability of experienced regulators to conduct those evaluations. In these situations, the responsibility to develop and maintain an appropriate level of OSPR in line with best international practice becomes the responsibility of the company- or government-assigned OSPR program lead authority. Furthermore, in many nations, the focus of efforts to build response competency has predominantly been on the upstream oil industry even though spill risk lies with all those who handle and transport crude or petroleum products. Improvements in response capability within the oil industry do not necessarily address a nation's needs for response planning and preparedness, or establishment of regional response capability to provide broader response coverage (e.g., the European Maritime Safety Administration's (EMSA's) expansion of response capacity on the Atlantic coast of Europe following the Erika and Prestige spills). Potential discrepancies between oil industry, other oil handlers, national governments, and regions with respect to degree of OSPR capability are most likely due to the variety of possible spill sources and the differences in organizational responsibilities.

As interest in response capacity building and assessing performance has grown, a variety of intergovernmental and international groups have published guidelines. The International Standards Organization (ISO) published guidelines for offshore oil and gas production facilities (ISO 2000) on emergency response subjects ranging from risk assessment to communications (see also AS/NZS 2014; Ionita et al. 2014). In 2007, IMO published two companion guidelines that address environmental, health and safety issues for onshore and offshore oil and gas development. Those guidelines address more than emergency or spill response and are to be applied to projects funded by the World Bank.

IMO, with input from industry through Ipieca, prepared an "Oil Spill Risk Evaluation and Assessment of Response Preparedness" manual (IMO 2010) to improve understanding of how to determine the risk of spills, how to address those risks and guidance for assessing OSPR plan adequacy. IMO updated the guidance on oil spill contingency plans (IMO 2018) and issued guidance on Incident Management Systems (IMO 2012) and *Guidelines on Implementation of the OPRC Convention and OPRC HNS Protocol* (IMO 2020; Taylor et al. 2021).

Representing the petroleum industry, Ipieca, the American Petroleum Institute (API), and the International Association of Oil and Gas Producers (IOGP) have prepared numerous educational reports and guidance documents, addressing many aspects of oil spill response, particularly environmental concerns. Many of these reports and guides were published following the 2010 Deepwater Horizon spill in the Gulf of Mexico, representing lessons learned and a concerted effort to engage response professionals to issue good practice guides (Ipieca 2021 Overview Guide; Nicholl and Charlebois 2021).

There have been other multinational efforts addressing OSR readiness needs beyond those for individual OSPR plans. In 2005, seven Central American countries (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama), with the support of RAC/REMPEITC-Caribe, COCATRAM (Comisión Centroamericana de Transporte Marítimo) and ARPEL discussed regional preparedness and response issues. For mutual benefit, they

- agreed to a "Proposal for a Regional Cooperation Framework for Oil Spill Preparedness and Response in Central America – A Road Map" (ARPEL 2005a);
- prioritized the necessary elements of a national level contingency plan (ARPEL 2005b); and
- prioritized components of their regional framework proposal and next steps to ensure continued regional progress on preparedness and response in Central America (ARPEL 2005c).

The "road map" noted above is a detailed summation of response issues, obstacles, action items, and funding plans. Similar regional planning and preparedness activities have ensued around the world, with notable examples from the Baltic (HELCOM), Mediterranean (REMPEC), and IMO-Ipieca Global Initiatives (Caspian Sea, Black Sea and Central Eurasia; West, Central and Southern Africa; and South East Asia), most of which have entailed use of the ARPEL RETOS™ tools and the 2008 IOSC Guidelines to assess opportunities for improvement to national and regional OSPR programs (Donohue et al. 2017; Pålsson 2016; REMPEC 2019, 2021; REMPEITC 2014, 2016).

Latin American nations also observed that their initial expectations of easy cross-border movement of response personnel and equipment requested to support spill response were not frequently met. Consequently, they developed guidelines to improve trans-boundary movement of equipment and personnel during an emergency, with the view towards implementing and optimizing mutual cooperation agreements (ARPEL 2007).

For many cases, the instigation for and maintenance of an appropriate level of OSR readiness (whether in line with best international practice or not) has been the responsibility of a facility operator or project owner. Their internal experience level drives efforts to acquire and sustain readiness in conjunction with pertinent regulatory requirements. In such cases, facility or project OSPR competency and effectiveness can be evaluated for three operational phases (Figure 1) (Owens and Taylor 2007):

- 1 Planning phase, during which objectives and strategies are developed and response resources are identified;
- 2 Implementation phase, in which the various management and operational components are acquired, assembled, trained, and exercised; and
- 3 Sustained Readiness phase, that continues through the life of the project as standards are maintained, monitored and improvements are introduced.

Phases

Aspects



Figure 1 - Response Plan Readiness Basics (Source: adapted from Owens and Taylor 2007)

Three response readiness aspects common to the three project phases are (i) management, (ii) operation, and (iii) evaluation. Each of these aspects is equally important and a deficiency in one affects the overall adequacy of a response system.

In the planning phase, various elements and components of an OSPR program are constructed. For smaller organizations or single sites,

- information is assembled and broad OSPR objectives or operating conditions are defined,
- spill hazards and probabilities are identified,
- a management structure and an operational organization appropriate to meet these objectives is established,
- regional and local strategies are developed, and
- OSPR plans and other supporting documents (environmental sensitivity maps, tactics manuals, etc.) are prepared.

For regional or national-level efforts, these tasks can be daunting.

Legal and regulatory foundations across the breadth of potential OSPR considerations should be established and vetted. Compliance with international treaties and/or international conventions may help drive development of response capacity. Many types of organizations (private industry and/or governmental) have OSPR requirements or needs for response capability at multiple locations and may need to address transboundary issues for rapid immigration and customs processing of personnel and equipment.

Once planning phase components are in place the implementation phase begins with acquisition and commissioning of equipment plus establishing means for logistical support. Equipment and supplies are most useful when located advantageously to transport routes and access points. Management staff and site response

teams need to be trained. Local service providers need to be identified and placed under contract. As part of the implementation phase, personnel responsible for OSPR implementation should be officially recognized and empowered, and the OSPR plan should be tested through exercises (and actual response, as applicable) and evaluated independently as a whole. The aim is to ensure that an intended response capability can meet OSPR plan objectives and that it remains in compliance with applicable regulations, conventions and agreements.

When regulatory agencies or industry management are satisfied with the attained state of readiness, then the third phase, sustained readiness begins. This entails provision of financial resources and management structure to support continued readiness. A periodic (e.g., annual) evaluation is performed to ensure standards are maintained, objectives are met, and improvements are made. For example:

- Equipment is subject to wear and tear and needs maintenance, repair, or replacement.
- Staff rotations introduce new personnel to a response team, so training needs to be provided.
- At both operational and management levels, technology enhancements may improve response effectiveness or efficiency, so adjustments should be appropriate to response strategies and tactics.
- Changes in facility or project operations and spill hazards and probabilities (risks) may pose new or eliminate old response challenges.
- There is periodic monitoring, evaluation and feedback of response readiness and capacity that identifies areas for improvements.

The way readiness is checked depends on the competency of regulatory agencies, audit personnel, and supporting regulations. In the absence of experienced regulators and supporting regulations, agencies and

facilities may not expend financial or response resources sufficient to provide a quality response, although exceptions exist. In contrast, individual organizations or sites may be expected to develop procedures, personnel and equipment to ensure independent and sustained readiness. Such expectations may be misaligned with long-term spill risks and be economically unsustainable. Sharing risks and costs between organizations with the responsibility to respond to spills may then be a good choice.

The initiatives and publications mentioned above clearly serve to advance preparedness and readiness for oil spill response; nevertheless, they do not constitute measures or guidance for a comprehensive list of elements that may form part of planning or readiness assessment. As a document alone does not respond to spills, OSR readiness is more than simply having compiled all the elements of a spill plan. The human and operational components of readiness must also be in place. OSR plans are essentially internal guidance and reference documents to be practiced and tested against, plus improved over time as circumstances or conditions change. When properly developed and supported by appropriate equipment and personnel, OSR plans are a key component for readiness. These OSR Assessment Guidelines aim to contribute to recommended guidance for implementing oil spill response programs and to provide a synopsis of every part of readiness for reference by the international oil spill response community.

Components of Response Planning and Readiness Assessment System

A key product of OSR planning and/or readiness assessment is identification of actions to address deficiencies or response components which are absent, incomplete or inadequate. Further, the content of these guidelines can assist with development of comprehensive OSR contingency plans. Response Planning and Readiness Assessments (RP&RAs) are conducted at fixed points in time, yet response capability is typically desired as long as there are spill risks; hence actions may be needed to address economically sustainable readiness. Actions may also be required to comply with government regulations, partner/financial agreements, or be necessary for a response system to function correctly in terms of managerial or operational issues. Reaction to any points raised by an RP&RA review should be addressed in a manner that identifies how and when the corrective actions will be taken and provides a means by which that process will be monitored.

A RP&RA review also can identify procedures for improving spill response. For example, a management system and response capability may be in compliance with regulations and agreements but may not use Best Available Technology (BAT) or best practices. One best practice is the use of Net Environmental Benefit Analysis (NEBA) and/or Spill Impact Mitigation Analysis (SIMA) to improve response decision-making (IPIECA 2016, 2018). NEBA and SIMA help focus and speed decision-making by balancing the vulnerabilities and sensitivities of natural (NEBA) and natural plus socio-economic resources (SIMA) to select preferred response strategies for certain habitats or to follow recognized wildlife rehabilitation procedures. These types of improvements may not be required by regulations yet are undertaken to improve response quality.

The OSR elements listed here encompass many diverse aspects of spill readiness. Components range from plan development, plan implementation, commissioning of response equipment, training of management teams and spill responders and sustainability of response readiness. These elements address aspects from multinational planning and preparedness to national, local and facility level. The components presented are compiled from international and national guidelines, regulatory requirements at international to local levels and from experience in spill response.

The focus of this compilation as a guide for the assessment of OSR planning and preparedness is towards the emergency and ensuing phases of spill response. Long-range activities, such as remediation and monitoring of recovery are not included in this Guide although they are clearly linked to spill response. Remediation and monitoring typically are an important part of planning processes in agreement with local and national environmental and regulatory agencies. Activities undertaken during the first stages of response may often affect long-term site clean-up requirements and activities. These longer-term activities may be part of response termination in parts of the world.

A total of 29 elements are considered fundamental for comprehensive oil spill response planning and readiness (Table 1). Each element contains sub-elements and further details for consideration. The elements are grouped into ten RP&RA system categories, aligned with the RETOS™ web application. Information is provided to describe each element and sub-elements, plus present issues and recommendations. In places, questions are posed to prompt further consideration.

Table 1 - Spill Response Planning and Assessment Categories and Elements

A:	Legislation, Regulations, Agreements
1.	Legislation and Regulation
2.	International Agreements
B:	Oil Spill Contingency Planning
3.	Resources at Risk
4.	Spill Risk Analysis
5.	Risk Minimization
6.	Evaluation of Response Options, Equipment and Personnel
7.	Net Environmental Benefit and Spill Impact Mitigation Analyses
8.	Expert Information Sources
9.	Plan Development
C:	Response Coordination
10.	Response Management Systems
11.	Notification Systems
12.	External Communications
D:	Health, Safety & Security
13.	Safety for Responders and Public
14.	Security
E:	Operational Response
15.	Source Control, Salvage and Firefighting
16.	Response Strategies
17.	Waste Management
18.	Wildlife Hazing, Recovery, Care and Rehabilitation
F:	Tracking, Assessment and Information Management
19.	Spill Monitoring, Tracking and Sampling
20.	Cleanup Assessment
21.	Data Management and Access
G:	Logistics
22.	Logistics
23.	Communications
24.	Demobilization
H:	Financial and Administrative Considerations
25.	Finance, Administration and Procurement
26.	Claims
I:	Training & Exercises
27.	Exercises
28.	Training
J:	Sustainability & Improvement
29.	Sustainability and Improvement

OSPR is not achieved through a single set of tasks. Instead, readiness evolves from recognizing the need for preparedness, to allocating resources to address

the issue and gaining participation. Readiness is an ongoing process that requires continued effort, testing, evaluation and improvement (Figure 2).

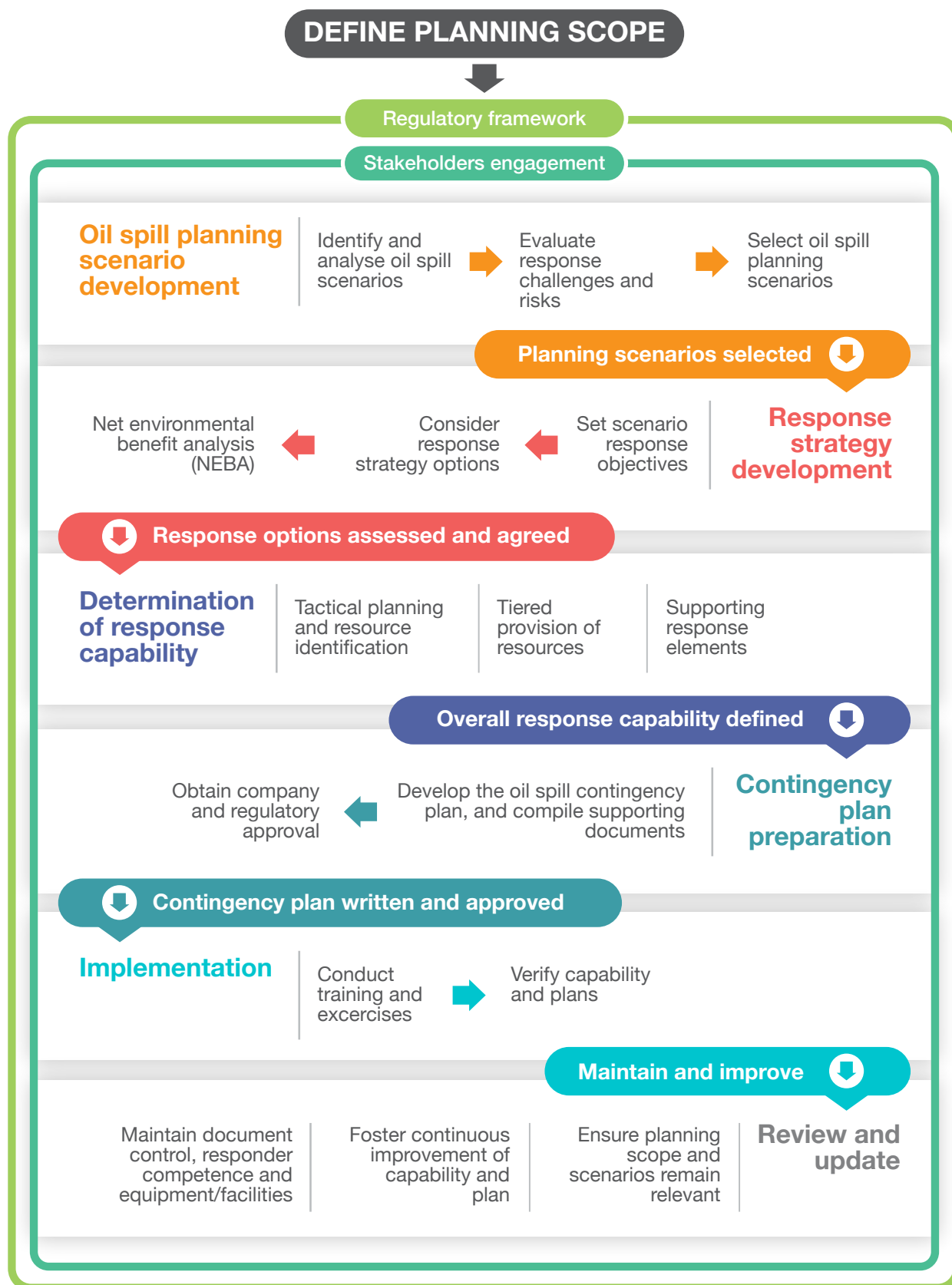


Figure 2 - Plan development, implementation and improvement are cornerstones of the RP&RA program (adapted from Ipieca, 2016)

The development of a comprehensive spill response capacity includes all elements including private industry to government. Response capability should encompass operations ranging from small vessels to onshore transporters, pipelines, storage facilities, and tankers. Legislation may define these requirements, but it also must be enforced if planning is to succeed. Too often history has taught us the hard lesson of complacency for emergency preparedness. Spill response planning, preparedness, honest evaluation and improvement are steps needed to ensure attention remains focused on readiness. Of course, a financial commitment must also be made to fund the efforts, equipment, training and exercising to maintain a state of readiness.

A starting point for OSR readiness is in adopted legislation, regulation and conventions. Alternatively, or in conjunction with the preceding, response programs also can be tied to a license to operate obligations; a company's environmental, social and governance (ESG) commitments; and to movements on a state by state or global basis for increased ESG awareness and obligations. Each of these aspects sets the stage, to various degrees of detail, for spill planning and preparedness. In some developing countries, OSR readiness may be limited to general legislated guidelines and no enforcement, leaving the task of OSR preparedness in the hands of inexperienced personnel with knowledge of only one aspect of response. In other situations, plans are drafted and rarely revisited – much less tested and audited by experienced personnel. Equipment may be purchased with little understanding of its operation, how the equipment will work under local environmental conditions or with oils typically handled in the area.

Given the numerous components involved in OSR readiness, many stakeholders may participate in some part of the process (e.g., sensitivity mapping, vessel traffic, facility inspections) but may not have the full picture of OSR readiness. Personnel involved in operational aspects of response readiness, such as equipment and warehousing, likewise rarely appreciate the gamut of activities associated with a significant response. Therefore, a comprehensive OSPR program will typically involve participation from a wide range of backgrounds and expertise (e.g., lawyers and legislators, emergency responders, resource managers, scientists, government, industry, non-governmental organizations (NGOs), etc.).

Background information needed to trigger planning includes identifying spill risks; consequences of spills such as environmental, social, and economic impacts; impacts on sites of cultural significance and strategies to minimize both the spill risk itself as well as to mitigate the consequences of the spill. Expertise in oil handling operations, knowledge of historical spills, and risk assessment and management programs are critical to properly define the scope of the OSPR effort. It is quite different to plan for spills from a tank farm or terminal relative to planning response for vessel operations, or to developing plans and preparedness at national, bilateral or regional levels.

Once the spill and consequence risks are understood, response strategies are considered for various scenarios.

Response strategies can involve a range of different techniques. The benefits, drawbacks and limitations of response technologies need to be evaluated in terms of the overall ability to mitigate the spill impacts. This type of evaluation helps define circumstances in which a technology such as dispersant use may offer a net benefit compared to monitoring or mechanical response options. As risks, sensitivities and response strategies are compiled, these elements are captured as essential components of spill contingency plans. Contingency planning should be systematic and integrated, from local to regional levels. Consistency between different plans allows the response community to support a response regardless of the area or level of effort needed.

A core component of planning and implementation is to have a clearly defined response management organization with well-understood roles and responsibilities for emergency response. The organization must be flexible and expandable, in such that it can be adapted to a facility-level response up to national response. For the latter, national organizations have to be particularly flexible to adapt to any type of spill that can occur within, or threaten, their territory, have a system that can be interfaced/integrated with other national disaster management organizations and should be consistent with the administrative/territorial organization. Clear lines of communication within the incident management organization, as well as with external parties such as the public and media, and provision of proper communications tools will help with coordination, safety and transparency in response. The *Good Practice Guide on Incident Management Systems for the Oil & Gas Industry* (Ipieca 2014) provides more detail on this essential planning component.

Operational response to spill includes source control and related activities; conventional response technologies such as mechanical skimmers, boom, pumps and manual cleanup; and alternative technologies such as use of chemical agents. Effective OSPR requires that technique applicability, procedures and limitations be defined and that resources (equipment and competent personnel (to safely operate the equipment), and the logistical support (for timely transport and deployment)) be in place for each optional response technology. Each response technology has its benefits and drawbacks and implies different potential waste streams. Managing the waste stream during spill response can be one of the biggest bottlenecks in spill response operations. Wildlife care and rehabilitation must also be considered as an activity to be coordinated with spill response. International good practices are broadly provided through the global Oil Wildlife Network and should be considered in OSPR programs.

OSR readiness in planning and implementation requires support from assessment, monitoring and sampling to cleanup decision-making, data management, sharing of information and logistical and financial services through demobilization. Setting response priorities and objectives requires field observations and input during response. The tools and procedures that are used for assessment and the information conveyed to spill management, and maintained in databases, are the basis for management decisions.

Sustained readiness and effectiveness involve maintaining the quality of the equipment, resources, and competencies of personnel as well as a continuing effort to improve response capabilities. Key aspects of sustained readiness are training, exercises, evaluation, and implementation of recommendations as well as the support of management or authorities and adequate funds. In countries with a well-developed regulatory environment, response competency and readiness typically are monitored on a regular basis by performance evaluations during regularly scheduled exercises. Internally an organization should be aware of the adequacy of response readiness and competency, even in the absence of an external monitoring agency. An OSPR readiness program should include a monitoring or audit process by which all operational and management levels are continually evaluated through a planned series of activities with clearly defined schedules and timelines.

Using this Guide

For each major OSPR element listed here, there may be sources of available information already elaborated in plans, which can be assessed for completeness, or information may need to be gathered for plan development or OSPR readiness. Suggested sources of information are listed for most components as Who to Approach.

The elements list is intended to be flexible such that it can be used by government, industry, facilities and/or operators and can be applied from local to international levels. They should not be viewed as prescriptive, but rather as a reference tool. The more sophisticated the

OSPR program, the greater the number of elements that would have been addressed and consequently could be assessed. For cases where the process of capacity building is in its infancy, fewer elements would be addressed. The detail and content under review during OSPR assessment may shift context or perspective depending on the needs of the user (e.g., government review of industry, company review of facilities or operations). Some components may or may not be applicable for a particular OSPR assessment; however, the list here is intended to provide the breadth and depth of topics intended to global applicability.

This Guide includes bibliographic references listed after each of the RP&RA categories, in Toolbox sections, most of which have hyperlinks to publicly available reference documents verified during the preparation of this publication. These links are provided to help those using the tool or seeking additional information. Appendix A provides a “Checklist for Contents of Oil Spill Response Contingency Plans” based on ARPEL (2005b) and IMO (2018), with other considerations.

The information presented in this Guide focuses on what subjects should be addressed during OSPR planning and capability assessment, whether internally or externally conducted. How such assessments are conducted is a different matter. There are different possible definitions of readiness and there is subjectivity inherent in the eyes of an evaluator. The evolving aspect of oil spill risks and response readiness through time (e.g., from either change in personnel, industrial operations, treaties and international conventions, legislation and regulations and/or political will) needs to be recognized.

A: Legislation, Regulations, Agreements

Element 1. Legislation and Regulation

Evaluation of existing legislation and regulations is necessary to define stipulated requirements for planning, readiness and sustained response. In some cases, legislation or regulations can be quite specific and result in explicit requirements for the content and/or format of contingency plans, updates, training, exercises, etc. This element should assess legislation and regulations in place, their thoroughness, and whether there are mechanisms to implement and enforce the same.

Who to approach: Legislators, regulatory agencies, national plans.

Sub-elements include:

1.1 National Legislation

National legislation should be in place that stipulates requirements for OSPR and assigns responsibilities. Concerns with passing tankers, innocent passage (authorized passage of foreign ships in the territorial sea of a country), and non-petroleum-specific activities (e.g., non-tank vessels, power utilities, transportation) should be dealt with in national legislation.

- 1.1.1** National authorities for action for spill response at sea, on shore and for overall emergency management
- 1.1.2** National authorities responsible for a national contingency plan, response preparedness, and for requesting or providing assistance
- 1.1.3** National requirements for response capabilities and resources
- 1.1.4** National liability regimes

1.2 National and Sub-National Regulation

Regulations should be in place to support legislation. Regulations should encompass all relevant sectors. There should be defined timeframes and specific requirements for compliance. There should be enforcement measures or penalties for non-compliance.

- 1.2.1** National authorities for response action and plan activation
- 1.2.2** National authorities for planning, review and approvals of contingency plans and response mechanisms, tactics and products
- 1.2.3** Prescribed planning requirements
- 1.2.4** Defined performance criteria or guidelines
- 1.2.5** Broad overview of national risks and vulnerabilities
- 1.2.6** Operating and licensing agreements and requirements
- 1.2.7** Protected area and species regulations and enforcement
- 1.2.8** Vetting, monitoring and reporting requirements for operators, vessels and response organizations
- 1.2.9** Response substances and circumstances covered
- 1.2.10** Process for review and change of contingency plans
- 1.2.11** Integration of national with sub-national and local regulations
- 1.2.12** Definition of responsibilities for response, clean-up and restoration
- 1.2.13** Definition of tiered or escalating response
- 1.2.14** Organization charts for tiered or escalating response
- 1.2.15** Decontamination
- 1.2.16** Environmental fines, fees and permits
- 1.2.17** Torts and liabilities
- 1.2.18** Infrastructure support (e.g., landing permits, use of roads, access to public and private land, security passage)
- 1.2.19** Reimbursement for response services
- 1.2.20** Compensation for damages
- 1.2.21** Common contingency planning
- 1.2.22** Common notification systems
- 1.2.23** Common risk analysis
- 1.2.24** Joint information management
- 1.2.25** Requirements for restoration of impacted areas

Element 2. International Agreements

Planning and preparedness often encompass issues broader than a single country. This element should assess what agreements have been adopted in a regional context between various countries, and what conventions have been adopted at a national level. The response framework that is being evaluated should fit within the context of adopted conventions. Information for this element requires revision and updates to be made as new agreements or conventions are adopted or ratified.

Who to approach: Legislators, national plans, international organizations (e.g., IMO), neighboring countries, inter-governmental coordinating committees.

Sub-elements include:

2.1 International Conventions

International agreements or conventions, especially those such as OPRC Convention, HNS Protocol, and MARPOL have associated requirements for planning and readiness. If a country is a signatory to these agreements, then there should be mechanisms in place to require and enforce planning and readiness.

2.1.1 OPRC 1990 Convention

2.1.2 OPRC-HNS Protocol 2000

2.1.3 MARPOL 73/78 Convention

2.1.4 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention)

2.1.5 Protocol relating to Intervention on the High Seas in Cases of Pollution by Substances other than Oil, 1973

2.1.6 Other International Compensation Conventions (e.g., 1992 Protocol to the International Convention on Civil Liability for Oil Pollution Damage CLC, 1992 Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage Fund, 2000 International Convention on Civil Liability for Bunker Oil Pollution Damage Bunker, etc.)

2.2 Regional Conventions

Regional conventions should have been adopted that specify how countries will participate jointly in response to spills (e.g., Bonn Agreement, [Baltic Marine Environment Protection Commission \(HELCOM\)](#), Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region ([Cartagena Convention](#)), Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean ([Barcelona Convention](#)), etc.). Regional, national and area contingency plans should also reflect the conditions of these agreements.

2.2.1 UNEP Regional Seas Program – Currently 146 countries participate in 18 Regional Seas programs established under the auspices of UNEP: the Black Sea, the Caspian, the Wider Caribbean, East Africa, Southeast Asia, ROPME Sea Area (Kuwait Action Plan Region), Mediterranean, North-East Pacific, North-West Pacific, Red Sea and Gulf of Aden, South Asia, South-East Pacific, Pacific, and West and Central Africa. The Regional Seas programs function through an action plan. In most cases the action plan is underpinned with a strong legal framework in the form of a regional Convention and associated Protocols on specific problems. The work of Regional Seas programs is coordinated by UNEP's Regional Seas Branch based at the Nairobi Headquarters. Regional Coordination Units (RCUs), often aided by Regional Activity Centers (RACs) oversee the implementation of the programs and aspects of the regional action plans such as marine emergencies, information management and pollution monitoring.

2.3 International Agreements

International agreements may define how countries can cooperate and support one another in spill preparedness efforts and for response. As such, existing response capabilities should reflect these agreements and their limitations.

2.3.1 Response agreements, spill notification and plan activation

2.3.2 Joint planning initiatives

2.3.3 Accepted response technologies

2.3.4 Customs clearance process

2.3.5 Immigration and cross-border health issues for responders

2.3.6 Civil aviation permits (overflight, landing, low-level flights)

2.3.7 Work permits

2.3.8 Spill responder indemnity and liabilities

2.3.9 Security permits

2.3.10 Transport of recovered oil, HNS, oily debris or other spill waste (e.g., Basel Convention for oil and hazardous materials transport - <http://www.basel.int/convention/about.html>)

2.3.11 Transport of contaminated equipment

2.3.12 Disposal permits or agreements and recycling capabilities

Toolbox for A: Legislation, Regulations, Agreements

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B: Oil Spill Contingency Planning

Element 3. Resources at Risk¹

A fundamental part of OSPR planning is identification of resources at risk (those potentially exposed to the effects of a spill and that would be affected), which is often done as part of natural resources sensitivity mapping. This effort generally requires participation from multiple levels of government (national, regional and local) and potential affected stakeholders; however, rarely are all relevant parties involved in the process. Ideally, identifying resources at risk is a joint effort between private and public sectors that encompasses different participants at appropriate points.

Who to approach: Regulatory agencies, experts, natural resources managers, OSPR Plans, facilities (baseline assessments)

Sub-elements include:

3.1 Natural Resources

Natural resources include subjects such as habitat, parks, flora and fauna, and whether these are established and defined at either the international level (e.g., Particularly Sensitive Sea Areas (PSSAs - IMO designation, Natural World Heritage sites – United Nations designation, or Ramsar sites, wetlands of international significance), regional or local levels. In addition to identifying such resources, there should be a judgement as to their vulnerability to oil spills (i.e., are they exposed to spills? How much could they be affected? Will they recover?). Information on seasonal changes and human use should be considered. Data readily available to responders frequently have database custodians who are responsible for updates. It is clearly preferable to use standardized mapping and presentation guidelines (e.g., ARPEL 1997; Ipieca 2013; NOAA 2019) that facilitate sharing the information among countries and regions.

3.1.1 Particularly Sensitive Sea Areas ([PSSAs - UN Designation](#))

3.1.2 Valued or endangered and threatened species

3.1.3 National parks

3.1.4 Sanctuaries

3.1.5 Mapping of distribution, abundance and seasonality

3.1.6 Designation of priority habitats for flora and fauna

3.1.7 Identification and prioritization of sensitive areas for protection/prevention

- Stakeholder participation
- Methodological approach

3.1.8 Designation of responsible agencies by resource

3.1.9 Designation of available scientific information

3.1.10 Shoreline characterization and mapping, e.g., Environmental Sensitivity Indices (ESIs) or similar; shoreline segmentation (for surveying)

3.2 Human-Social Resources

Important human and social use areas within a spill risk zone should also be considered. Examples to be considered for sensitive areas or resources at risk include:

3.2.1 Subsistence and harvest areas

3.2.2 Sites or areas identified by designated authorities

3.2.3 Commercial species

3.2.4 Historical, cultural and archaeological sites

3.2.5 Human populations and vulnerability

3.2.6 Water intakes

- Drinking water (including wells)
- Agricultural water
- Industrial

3.2.7 Aquifers

3.2.8 Industries (e.g., ports, docks, transportation)

3.2.9 Tourism and other commercial activities

3.2.10 Agricultural areas

3.3 Information Presentation

Information should be available for contingency plan development and available for use in an adequate format (paper and electronic) in emergency situations. This information should be clearly presented and maintained. These resources can also include the mapping of features relevant for spill response (potential waste storage area, equipment stockpiles, incident command posts, medical facilities, access to the shore, etc.)

¹ Link to DATA MANAGEMENT AND ACCESS, element 21 and EXPERT INFORMATION SOURCES, element 8.

- 3.3.1** Sensitivity or vulnerability maps
- 3.3.2** GIS systems
- 3.3.3** Standardized approaches for presentation of information and data on maps
- 3.3.4** Information custodians
- 3.3.5** Availability of information for use and reference during emergencies (e.g., is it available on Internet? Publicly available? Proprietary? Only digital? Only hard copy?)
- 3.3.6** Updating (e.g., is information up to date? When was the last revision? What organization is responsible for keeping information up to date?)

Element 4. Spill Risk Analysis

A natural step in planning is to identify spill risks and then match those risks against resources at risk (see RESOURCES AT RISK, element 3). Spill risk analysis (probability of a spill and level of spill consequences) is an essential step to clearly define appropriate response planning levels or response tiers. When set at appropriate levels, scenarios for spill risk analysis can be used for developing protection strategies and tactics, plus for setting response priorities according to the magnitude of the spill.

Who to approach: Regulatory agencies, oil industry, shipping industry, national plans, users/importers of oil products (e.g., power plants)

Sub-elements include:

4.1 Spill Source

There should be definition of the frequency or likelihood of spills by source. There should be information available to categorize the spills, e.g., in three levels or tiers: most probable (Tier 1), maximum likely (Tier 2), and credible worst-case spills (Tier 3). These should be reflected in planning and preparedness documents. Spill sources and scenarios should reflect appropriate oil types, anticipated slick behavior, and spill volumes.

- 4.1.1** Oil types
- 4.1.2** Oil volumes
- 4.1.3** Oil transport and storage
- 4.1.4** Oil refining
- 4.1.5** Oil exploration and production
- 4.1.6** Loading and unloading (e.g., ship to/from shore, between vessels (FPSO, FSO, bunkering), offshore moorings, railcars, etc.)
- 4.1.7** Transportation systems and vulnerabilities
 - Vessel traffic control and/or monitoring systems (e.g., VTS)
 - Infrastructure (aging)
 - Vessels in innocent passage
 - Airports and railroads
- 4.1.8** Waste handling and disposal activities and sites
 - Improper storage and handling can be a secondary cause of spills
- 4.1.9** Terrorism or intentional release threats
- 4.1.10** Probability and potential analysis
- 4.1.11** Statistical databases
 - There should be a source of local-regional data on spills, sources, causes and related information to define applicable planning standards.
 - There should be national or international statistical data used to scope or define planning tiers or concepts. (e.g., CONCAWE and API Pipeline Spill Statistics, ITOPF Oil Tanker Spill Statistics, government and commercial spill release data, U.S. Coast Guard).

4.2 Operating Conditions

The identified spill risks should consider prevailing and extreme operating conditions for critical scenarios, including environmental, weather, and natural hazards. The spill risks should also consider extreme incident scenarios (e.g., terrorist intervention and infrastructure damage).

- 4.2.1** Typical operating conditions (including ships)
- 4.2.2** Hurricanes/storms/severe weather
- 4.2.3** Ice/snow
- 4.2.4** Earthquakes and faults
- 4.2.5** Landslides

- 4.2.6** Navigational hazards (shoals, reefs, vessel traffic convergence areas or innocent passage concerns)
- 4.2.7** Natural hazards (tsunami, volcanoes, flood zones, etc.) and human-origin hazards
- 4.2.8** Limits to routine operations

4.3 Areas of Potential Spill Coverage

The geographic extent of potential spill scenarios should be defined in context of seasonal environmental conditions (e.g., winds, currents, ice, etc.). Potential locations of oil spill extension and influence should be defined for scenarios identified in a risk analysis. The degree of planning and preparedness effort should be commensurate with the locations of potential spill sources, areas within trajectories for given response times, and resources that may be at risk. Much of the information needed for this component requires oil fate, trajectory and effects modelling capability and/or analysis, especially for spills on water. Inland or on land spills typically have a smaller geographic spread than coastal/marine spills.

- 4.3.1** Spill scenarios (planning tiers)
- 4.3.2** Surface trajectories (Are potential areas of oil spill influence defined for the scenarios identified from risk analysis?)
- 4.3.3** Subsurface trajectories (for subsea releases, blow-outs or leaks, and/or submerged or sunken oil)
- 4.3.4** Stochastic modelling (i.e., probability studies based considering many spill scenarios)
- 4.3.5** Real-time forecasting
- 4.3.6** Hindcasting to find locations of mystery spills or for other purposes
- 4.3.7** Oil characterization
 - The properties of the oil(s) should be well defined such that fate of the spilled oil under different environmental conditions can be assessed (e.g., oil may float, sink, evaporate in 24 hours, etc.)
- 4.3.8** Oil fate and effects modelling
 - Oil weathering under normal and/or adverse environmental conditions
 - Modelling incorporates potential spill impact on resources (results can be combined with RESOURCES AT RISK, element 3).

Element 5. Risk Minimization

Many possible steps can be taken to reduce spill hazards and risks. This element addresses how spills may be prevented, spill risks minimized, as well as minimizing potential impact through pre-planned response. Some or all of these mitigating steps may already be taken into consideration during risk analysis.

Who to approach: Regulatory agencies, oil industry (or technical resources particular to the oil handling industry (e.g., CONCAWE, API, etc.)), international organizations (e.g., IMO, OCIMF), national plans.

Sub-elements include:

5.1 Prevention Approaches

Legal requirements, including legislation, regulations and licensing policies should exist to reduce the hazard and/or consequences of a spill.

- 5.1.1** Regulations and legislation
- 5.1.2** State/Flag control and classification
- 5.1.3** Licensing
- 5.1.4** Inspections
- 5.1.5** International Safety Guide for Oil Tankers and Terminals (ISGOTT) procedures
- 5.1.6** ISO standards
- 5.1.7** Vessel requirements
- 5.1.8** Tug escorts
- 5.1.9** Requirements for facility/asset types (e.g., pipeline, refinery, oil rigs (on land and offshore), vessel types, storage facilities, vehicle types, marine terminals, etc.)

5.2 Adopted Prevention Procedures

Procedures should be clearly defined and enforced to reduce incident size and frequency. Facility design and operational procedures can also assist in reducing or eliminating incidents.

- 5.2.1** Internal policies and procedures
- 5.2.2** Adopted best practices (e.g., flag-State controls on vessels and from ship class societies)
- 5.2.3** Vessel traffic separation and security zones
- 5.2.4** Bottom clearance and port entry procedures
- 5.2.5** Port State control
- 5.2.6** Facility design reviews, maintenance & inspections

- 5.2.7 Adopted best practices (design, construction and maintenance)
- 5.2.8 Pre-booming installation at oil load/unload points at facilities, ports, and other transfer locations
- 5.2.9 Secondary and tertiary containment
- 5.2.10 Pre-contract vessel inspections (vetting)

5.3 Training

Requirements or policies should exist to ensure assigned response personnel are trained and competent. Requirements and/or policies should exist to help maintain competency for spill prevention measures. Such training would be in addition to OSPR training (see EXERCISES, element 27).

- 5.3.1 Defined prevention training elements
- 5.3.2 Defined training and drills frequency
- 5.3.3 Audits and checks

5.4 Pre-Planned Response

Emergency measures, such as first strike response plans, should be pre-defined to reduce the number and type of potential effects from a spill. Equipment should be pre-staged. Contingency plans should be pre-developed, covering all types of spills up to high-risk spills. Potential places of refuge should be identified, and procedures put in place for their implementation.

- 5.4.1 Equipment pre-staged and/or plans pre-developed for defined high-risk spill locations
- 5.4.2 Potential places of refuge

In November 2003, the IMO Assembly adopted two resolutions addressing the issue of places of refuge for ships in distress:

- A.949(23), Guidelines on places of refuge for ships in need of Assistance – intended for use when a ship is in need of assistance but the safety of life is not involved. Where the safety of life is involved, the provisions of the SAR Convention should continue to be followed.
- A.950(23), Maritime Assistance Services (MAS) – recommends that all coastal States should establish a maritime assistance service (MAS). The principal purposes would be to receive the various reports, consultations and notifications for monitoring a ship's situation.

- 5.4.3 Initial spill controls
 - Source control
 - Shut-in procedures
 - Emergency lightering and transfers

Element 6. Evaluation of Response Options, Equipment and Personnel

This element addresses whether processes and procedures exist to ascertain which response options may require governmental authorization before use. In most countries, mechanical or manual response needs no such authorization, whereas dispersant use, in situ burning, or the use of other treating/cleaning agents does. The key is to discover what requirements may exist and what process is to be used for evaluation.

Who to approach: Regulatory agencies, national plans, environmental scientists and policymakers, technologies specialists.

Sub-elements include:

6.1 Regulatory/Legislative requirements

An Environmental Risk Assessment (ERA), Net Environmental Benefit Analysis, or a Spill Impact Mitigation Assessment (NEBA/SIMA) process should be performed to decide if a specific response technology is preferred or better suited for particular conditions and locations. Any constraints for technology usage (e.g., time of spill, type of oil, weather, water, temperature) should be identified and defined. Conditions in which the potential environmental impacts of a given technology must be predicted should be defined (e.g., possible impacts to fauna and flora, seasonal use of habitats). There should be a process for pre-approval during contingency planning stages and for quick approval during an incident.

- 6.1.1 Designation of deciding authority
- 6.1.2 ERA/NEBA/SIMA system for determination
- 6.1.3 Conditions for response technology usage (e.g., time of spill, type of oil, weather, water, temperature) (decision-guide or flow diagram)
- 6.1.4 Conditions for environmental impacts of response technology (e.g., fauna and flora impacts, seasonal use of water and shoreline)
- 6.1.5 Process for pre-approval and quick approval at planning stage (e.g., designated pre-approved and/or not-approved areas for application of dispersants subsea or on surface slicks, or controlled burning on water, in marshes and on land)

- 6.1.6** Process for emergency approval during spill (e.g., template in place to request authorization)
- 6.1.7** Monitoring protocols for effects and efficiency during spill
- 6.1.8** Development of algorithm to assess degree to which alternative response technologies programs is meeting requirements

6.2 Technologies Needing Evaluation

The primary spill response options are Mechanical, Chemical (dispersants and other treating agents), Burning, Monitor and Observe and Bioremediation.² Monitor and Observe, which entails active tracking and possible sampling, should be distinguished from natural recovery, the latter being considered a treatment option.

There should be approved products and technologies to treat spills. The regulatory requirements for evaluating these products and technologies should be well defined. They should have been tested and approved (in country or elsewhere). Qualified agencies and technical authorities should have been identified for participation in the approval process. Approval protocols should be defined, agreed upon, and tested. Organizations should also consider when a more passive response is warranted due to safety or environmental concerns. Criteria for spill monitoring and observation should be agreed upon. There should be an Approved Products List and it should include instructions for submission and evaluation of new techniques or products.

6.2.1 Methodology for technology assessment

Examples of technologies for which these types of evaluations may be made are:

- Dispersants
- Synthetic and or loose sorbents
- Bioremediation agents
- Shoreline and riverbank cleaners
- Herders
- De-emulsifiers
- Elastifiers-Gellers
- Solidifiers
- Burning agents
- Ignition products

6.2.2 Existing research and development programs

6.2.3 Designation of agencies and technical authorities for participation

6.2.4 Documentation system for determination

6.2.5 Products

6.2.6 Approved Products Schedule published and available to commercial interests

6.2.7 Techniques

- Mechanical containment and recovery
- Dispersants (surface and subsea)
- Controlled in situ burning
- Bioremediation
- Chemical treatment

Element 7. Net Environmental Benefit and Spill Impact Mitigation Analyses

A fundamental aspect of spill planning and response is a clear understanding of the benefits and drawbacks of different response strategies and techniques (see the guidelines in IPIECA (2016, 2018) for a synopsis). Work under this element should ascertain if NEBA or SIMA has been conducted in planning phases and whether NEBA/SIMA can be used at the time of a spill.

Who to approach: Environmental specialists, technology specialists, regulatory agencies, stakeholders.

Sub-elements include:

7.1 Regulatory Requirements

Regulations should state when NEBA/SIMA is required. They should specify procedures, participants, technologies and situations to be analyzed.

7.1.1 Minimal methodology requirements

7.1.2 Applicability

7.1.3 Designated authorities

² In many cases, bioremediation efforts are separated from spill response. The reason for this is that response options are typically viewed as useful during an emergency, while bioremediation efforts are conducted over longer time periods of months to years, during the restoration phase.

7.2 Pre-Spill NEBA/SIMA

If the NEBA/SIMA approach is pursued, it should be used as part of the planning process to evaluate scenarios and potential applicable strategies and technologies (e.g., to define under what conditions or settings dispersant use may be a preferred technique, or possibly one to avoid, or to use in a preferred location). Response strategies in OSPR planning should reflect NEBA/SIMA results. The NEBA/SIMA process and its findings should facilitate timely decision-making during response such that selected techniques and tactics can be implemented in a timely manner and within the window of opportunity.

7.2.1 Defined methodology for gathering data (e.g., databases available, expert panels, etc.)

7.2.2 Modelling fate, response, trajectories, predictive impacts

7.2.3 Scenarios defined from risk analysis (links to SPILL RISK ANALYSIS, element 4)

- Environmental data
- Resources at risk

7.2.4 Defined methodology for comparative analysis

- There should be a defined and accepted approach for conducting NEBA or SIMA (e.g., NOAA-USCG Environmental Risk Analysis – ERA - system).

7.2.5 Comparison of relative impacts for different response options and technologies

7.2.6 Planning strategies should be adopted to reflect NEBA/SIMA results.

7.3 NEBA/SIMA at Time of Spill

In some instances, a scenario may not have been evaluated during the planning phase. Alternatively, a decision on applicable techniques may have been deferred to the time of a spill to assess specific conditions. There should be a process in place to assess the trade-offs of response options at the time of a spill. For example, use of in situ burns near populated areas or dispersants in the nearshore.

7.3.1 Applicability (if and when NEBA or SIMA is preferred)

7.3.2 Designated authorities and participants

7.3.3 Defined methodology for comparative analysis (e.g., NOAA-USCG ERA system)

Element 8. Expert Information Sources

Access to specialized information for either planning a response or consultation during an incident is important and may be constrained by time. One aspect of planning is to identify sources of expert information and subject matter experts (SMEs).

Who to approach: Experts may include individuals, companies, non-governmental organizations (NGOs), oil spill response organizations (OSROs), or government organizations.

Sub-elements include:

8.1 Planning Support³

Expert information typically has been collected, analyzed, and incorporated into the previous elements as steps in the OSPR plan development phase. Local, regional, and international sources of expertise should be identified. They should be used during contingency planning and may be called upon during spill emergency response, in which case they typically will assist as Technical Experts within the Planning Section of an Incident Management System (IMS). Procedures should be in place to expedite their participation.

8.1.1 Method for identification of science support

8.1.2 Method for use of science support

8.1.3 Designated international and national science sources

8.1.4 Roles for science support

- R&D
- Flora and fauna
- Engineering operations
- Dispersants
- In situ burning
- Remediation, modelling
- Trajectories
- Monitoring
- Sampling, testing

³ Links to many elements: RESOURCES AT RISK, element 3; SPILL RISK ANALYSIS, element 4; EVALUATION OF RESPONSE OPTIONS, EQUIPMENT AND PERSONNEL, element 6; CLEANUP ASSESSMENT, element 20; DATA MANAGEMENT AND ACCESS, element 21, etc.

8.1.5 Method for review of science support sources

8.1.6 Testing and integration of science support

8.2 Expert Subject Matter Areas⁴

Experts and information sources for specific subject matters often are needed at the time of a spill. OSPR plans and tools (e.g., field guides, wallet cards and placards) for responders should include contact information and possibly even contracts for SMEs.

8.2.1 Services

- Salvage
- Industrial hygiene
- Public health
- Meteorology
- Scientific support
- Oceanography and hydrology
- Engineering
- Soils
- Environmental support
- Unique safety concerns
- Pre-qualified laboratories
- Incident management
- Spill response

8.2.2 Database of subject matter experts

- Database for experts and for specialized services
- Baseline conditions databases
- Methods for database updates and maintenance

Element 9. Plan Development

Spill response planning should be addressed at appropriate planning levels ranging from local to multinational. Contingency plans should describe inter-relationships between such levels. Response and supporting equipment should be identified. Responsibilities and roles should be defined. Options for progressive mobilization of resources (or cascading) additional response support should be available.

The content of oil spill contingency, or response, plans encompass many of the elements discussed here. Appendix A to this Guide provides a matrix of contingency planning elements compiled from numerous sources, including IMO (2018), Ipieca (2016a), ISO (2000), and USCG/EPA/DOT/MMS/OSHA (1996). It is set in the context of the Azure Seas program (ARPEL (2005); RAC-REMPEITC 2006) national planning matrix. That matrix also indicates subjects likely to be part of either national, regional, or local-level contingency plans.

In addition to facility or organization specific OSPR plans, there may be other published sources of response planning information in the form of manuals, guidelines, and related documents that are not necessarily a formal part of an OSPR plan. A typical supporting document is an emergency response action guide or checklist to provide a quick reference to response action options for use during an actual incident and should reflect policies and procedures adopted in relevant contingency plans.

Topics List for Initial Response Guides

- Initial spill evaluation
 - Safety
 - Gauge appropriate degree of response
- Checklists for first response decisions or action diagrams
- Notifications and response activation
- Initiate procedures for likely spill sources
- Initial response team organization and assignments
- Response priorities
- Tactical control / Protection Sites
 - Containment strategies
 - Protection strategies
 - Clean-up strategies

⁴ Links to DATA MANAGEMENT AND ACCESS, element 21.

Who to approach: Legislators, regulatory agencies, national plans, oil industry, ports, regional initiatives.

Sub-elements include:

9.1 Types of Plans

In general, contingency plans should have periodic reviews and updates to ensure information is current. Sub-elements include OSPR plan contents and suggested topics at various planning levels (see Appendix A):

- National plans: Typically, national plans encompass a broad base and address policy and roles more than implemented response. National plans may also identify required planning at finer scales.
- Regional or multinational plans
- Area (or provincial, State, county) contingency plans
- Geographically-broad plans (e.g. pipelines, vessel routes)
- Port and/or city plans
- Facility and vessel plans
- Offshore/onshore facility plans
- Corporate and/or country operations contingency plans
- Shipboard oil, or marine, pollution emergency plans (SOPEP/SMPEP)

Toolbox for B: Contingency Planning

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C: Response Coordination

Element 10. Response Management Systems

The success or failure of a response can often be attributed to how effective its response management system was and how well it was implemented. Clear assignment of roles and responsibilities of personnel and organizations is important for all planning levels whether at a site or nationally. Alignment of emergency management organization and roles across planning levels (Tiers 1 through 3 or Local–Area–National) is recommended. Interfaces and coordination mechanisms between response management systems of authorities, ports and private sector should be pre-identified (at site and national levels). Consistency of expectations, terminology and familiarity across response levels facilitates response activities between organizations. An example of a spill response management organization that has been implemented on a worldwide basis is based on the Incident Command System (ICS) or Incident Management System (IMS).

Who to approach: OSPR plan holders, oil handling industry, designated response authority, regulatory agencies, interagency agreements, emergency response organizations.

Sub-elements include:

10.1 Organization

Organizational structures should be defined for each planning level or tier. A spill response organizational structure should allow easy expansion and contraction of designated management team personnel across planning levels or tiers. The organization should align with required emergency spill response functions. The response management organization should define a response structure that addresses the needs for coordination between government, industry, other participants, and the public.

10.1.1 Multinational or Regional

10.1.2 National

10.1.3 Sub-national or area

10.1.4 Site, facility or operation

10.1.5 Transfer of command

10.1.6 Delegation of authority

10.2 Roles and Responsibilities

Roles and responsibilities should be clearly defined for each functional aspect identified in a spill response management structure, at each hierarchical level. There should be duty checklists and training programs for functional aspects of assignments. There should be clear definition of the roles and responsibilities between governmental agencies, industry, and other participants. The role of a Unified Command (i.e., an incident command function including the Authority(ies) and the Responsible Party) should be clearly defined when applicable. Table-top and field deployment exercises should be conducted to practice and test response management.

10.2.1 Organizational designations (including cases in which two, or more, countries may be involved in a response)

10.2.2 Command structure

10.2.3 Authorities (national, provincial, departments regions, municipal, local)

10.2.4 Spiller

10.2.5 Insurers

10.2.6 Stakeholders and assistance providers

10.2.7 National resource managers

10.3 Management System Implementation

The management system should have defined procedures and guidelines. Minimum qualifications should be defined, and met, procedures and guidelines for roles and assignments.

10.3.1 Defined system with procedures and guidelines

10.3.2 Procedures of expansion and contraction

10.3.3 Procedures to establish work and personnel shifts

10.3.4 Communications procedures

10.3.5 Qualifications for roles

10.3.6 Procedures for developing Response Action Plans

10.3.7 Procedures for approving, implementing and assessing Response Action Plans

10.3.8 Response termination

10.3.9 Training and exercises (links to EXERCISE and TRAINING, elements 27 and 28)

10.3.10 Designation of trained personnel assigned to roles (links to DATA MANAGEMENT AND ACCESS, element 21)

10.4 Tools

Best practices that aid in implementing an effective emergency management system include:

- 10.4.1** Standard lexicon or terminology
- 10.4.2** Standard printed forms
- 10.4.3** Specialized software for incident management/ spill response
- 10.4.4** Checklists or field guides for assignments

10.5 Volunteers

There should be a procedure or process to handle incorporation of volunteers into a response management structure.

- 10.5.1** Designated Authority(ies)
- 10.5.2** Management
- 10.5.3** Training
- 10.5.4** Safety and supervision
- 10.5.5** Scope of operational involvement

Element 11. Notification Systems

Immediate notification that activates a response is a key contributor to rapid mobilization. This element includes notification emergency contact point(s), procedures, processes and tools. Notification procedures benefit from consistency across different planning levels. The element includes extended notifications for public safety, to communities, and formal reporting requirements as well as testing of a notification system and its redundant capabilities.

Who to approach: National (centralized) notification point, OSPR plan holders, designated response authority, emergency management.

Sub-elements include:

11.1 Required Notifications

There should be a clearly identified requirement of whom to notify (both internally and externally). The conditions and time requirements for notification should be defined. There should be a centralized, or limited number of, point(s) of contact through which notifications are made.

- 11.1.1** Authority for notification (ensure that the list of authorities to be notified is updated with names, numbers, etc. and that there is a means for communication 24 hours of the day; see 11.3.5, Contact listing or database)
- 11.1.2** Person responsible for making notifications
- 11.1.3** Advertisement of notification number
- 11.1.4** Centralized notification number for all spill events
- 11.1.5** Secondary, or backup, system
- 11.1.6** Required information for initial notification (e.g., see SOPEP requirements for vessels (IMO MSC-MEPC.6 / Annex 2 for SOPEP) or POLREPs for countries)
- 11.1.7** Time requirements for notification
- 11.1.8** Public safety
- 11.1.9** Civil-community notification system

11.2 Required Reporting⁵

There should be a clear procedure on what information to report, when to report, and who should receive initial and follow-up reports. For example, IMO specifies what information should be provided by a ship's captain in the event of oil pollution (see SOPEPs as an example). Personnel responsible for preparing and submitting reports should be clearly identified. Reports should be used to create and update spills database.

- 11.2.1** Minimum reporting information and format
- 11.2.2** Type and level of events that trigger required reports
- 11.2.3** Person responsible for submitting reports
- 11.2.4** Frequency of reports to be submitted and to whom
- 11.2.5** After-action follow-up reporting

11.3 Callout Procedure

- 11.3.1** National, provincial, municipal and local notification relays
- 11.3.2** Internal notifications
- 11.3.3** External notifications
- 11.3.4** Private organizations (e.g., fishermen, vessel traffic lanes, harbors or ports)
- 11.3.5** Contacts listing or database

⁵ Links to SPILL RISK ANALYSIS, element 4.

11.4 System Audit or Testing

11.4.1 Exercises and frequency of callouts

11.4.1 Depth of callout (e.g., operational responders, management, full or partial response hierarchy)

11.4.1 Normal and non-working hours

Element 12. External Communications

Clear communications with the public through direct outreach, the media and/or liaison personnel contribute greatly to judgements on response quality regardless of actual effectiveness of spilled oil removal. Social media feeds and monitoring are critical in emergency response. This element addresses the roles, responsibilities and procedures to maintain lines of public communication prior to and during spill response. This includes external coordination with natural resource and public health agencies, other industries and natural resource users. It also includes internal communications, joint information sharing, information centers, protocols for authorized release of communications and creation/maintenance of special websites, as well as providing information to and monitoring of social media exchanges. Communication should also be consistent and coordinated between the responsible party and authorities.

Who to approach: Public information assist team, points of contact with media

Sub-elements include:

12.1 Public Information Team

The team's role is information coordination – to provide reliable, consistent and coordinated status updates and to address significant questions about a spill for public consumption.

12.1.1 Assigned responsibilities

12.1.2 Roles

12.2 Media Types

12.2.1 Media sources (print, radio, TV, website, press release) (e.g. domestic and/or international)

12.2.2 Social media

12.2.3 Briefings

12.2.4 Press releases

12.3 Liaison Role

12.3.1 Emergency communication

12.3.2 Community meetings (and assistance with claims - see CLAIMS, element 26)

12.3.3 Communications with NGOs

12.3.4 VIP visits and escorts

12.4 Communication Process

12.4.1 Coordination with natural resource, public health, industry and resource users

12.4.2 Joint information sharing

12.4.3 Information centers and timing for media

12.4.4 Protocols for authorized release of communications

12.4.5 Websites

Toolbox for C: Response Coordination

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D: Health, Safety and Security

Element 13. Safety for Responders and Public

The safety of emergency responders and the public is paramount during an incident. Contingency planning and readiness assessments should address what safeguards and policies exist or are needed to minimize safety hazards. Conditions under which response may be limited to just monitoring and logistical preparations should be defined. There should be someone responsible for identifying safety hazards (related to the spill and planned operations) during an incident and recommending health & safety safeguarding measures. Tools or techniques should be available to evaluate hazards and ensure a safe response. Site safety plan requirements should be defined. The person responsible for developing that plan and the safety training required for different response team personnel should be defined.

Who to approach: Regulatory agencies, emergency response organizations, oil handling industry/organization, community safety organizations

Sub-elements include:

13.1 Regulatory/Legislated Requirements

The safety policies and regulations pertaining to protecting the public from spills and for spill responders should be defined. The agency that enforces them should be defined.

13.1.1 Designated authorities

13.1.2 Planned requirements

13.2 Responder⁶

Roles, responsibilities and procedures should be defined and practiced ensuring responders are within safe limits.

13.2.1 Personnel assigned to safety issues

13.2.2 Initial assessment

13.2.3 Access controls

13.2.4 Monitoring (air, dermatologic, water)

13.2.5 Safety data sheets (SDS)

13.2.6 Site safety plan and procedure for briefings

13.2.7 Medical surveillance and monitoring

13.2.8 Worker rotational schedules

13.2.9 Volunteers

- Training needs
- Health/medical pre-screening

13.3 Public⁷

Roles, responsibilities and procedures should be defined and practiced to ensure the public is notified, monitored and/or evacuated when placed at risk from an oil spill.

13.3.1 Designated authorities

13.3.2 Initial assessment

13.3.3 Evacuation procedures

13.3.4 Designated places of refuge (muster areas) for evacuation

13.3.5 Access controls

13.3.6 Monitoring (air, dermatologic, water)

13.3.7 Public health monitoring

13.4 Medical

13.4.1 Medical treatment agreements

13.4.2 Monitoring (responders and public)

13.4.3 Medical evacuation

13.4.4 Immunizations

13.4.5 Hygiene

13.5 Safety Resources

Personal protection equipment (PPE) requirements for specific spill circumstances and oil types should be identified and the conditions for their use should be specified. Such equipment should be available, tested and maintained. Responders should be trained in their use.

⁶ Links to DEMOBILIZATION, element 24 and to LOGISTICS, element 22.

⁷ Links to SECURITY, element 14.

- 13.5.1** Designated PPE requirements for scenarios and oil types
 - Levels A, B, C and D (increasing levels of protection, US OSHA/EPA);
 - For mechanical operations, dispersants application, etc.
- 13.5.2** Confined spaces
- 13.5.3** Inventories (type, quantity and location) of PPE
- 13.5.4** Inventories (type, quantity and location) of air/environment monitoring and pollutant/hazard detection equipment
- 13.5.5** Inspection and maintenance of PPE (repair, replacement, mask fit testing)
- 13.5.6** Medical services
 - Doctors, paramedics, nurses
 - Emergency medical evacuation (air/sea/land)
 - Ambulance services
 - Hospitals
- 13.6 Training⁸**
 - 13.6.1** Requirements and qualifications
 - 13.6.2** Hazardous materials and communications
 - 13.6.3** Evacuation (e.g., helicopter underwater egress) training
 - 13.6.4** Vessel operations
 - 13.6.5** Heavy equipment
 - 13.6.6** Confined spaces
 - 13.6.7** PPE use and requirements for spill response operations
 - 13.6.8** Hazards communications for volunteers
 - 13.6.9** Use and care of gas detectors and atmospheric monitoring equipment

Element 14. Security

Site security and physical safety for response personnel and the public is a priority. This element includes preparedness for security measures at a site for standard (i.e., non-criminal and non-terrorism-related) response and for response under conditions of security threat (due to piracy, terrorism, etc.). Security concerns can conflict with response action plans. As best as possible, such conflicts should be identified in advance during contingency planning and procedures identified to clearly resolve authorities, jurisdiction and priorities.

Who to approach: Security forces (national, industry or private).

Sub-elements include:

- 14.1 Standard (Non-Terrorism)**
 - 14.1.1** Designated authorities
 - 14.1.2** Law enforcement
 - 14.1.3** Roles and responsibilities
 - 14.1.4** Crowd control
 - 14.1.5** Evacuation procedures
 - 14.1.6** Security during response
 - Site control and security hazard identification
 - Security of responders
 - Security of deployed equipment
 - Command center
- 14.2 Criminal and Terrorism (including Piracy)**
 - 14.2.1** Designated authorities
 - 14.2.2** Law enforcement
 - 14.2.3** Roles and responsibilities
 - 14.2.4** Investigation protocols
 - 14.2.5** Security during response
 - Site control
 - Security of responders
 - Security of deployed equipment
 - Command center

⁸ Links to TRAINING, element 28.

14.3 Security Resources

14.3.1 Trained personnel

- Public
- Private

14.2.2 Equipment

Toolbox for D: Health, Safety and Security

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E: Operational Response

Element 15. Source Control, Salvage and Firefighting

Spill source control, vessel salvage and firefighting are all activities that may have significant bearing on a spill response. Inclusion of this element is to ensure there is a link between these specialized, emergency response capabilities during a spill response. Examples include:

- Emergency towing and lightering plans (vessels)
- Emergency repair plans (vessels–facilities–pipelines)
- Capping stacks and remotely operated vessels for deep-water operations
- Any specialized teams, plus their equipment
- Logistical support

This element is to address the joint needs of both sets of emergency capabilities. A critical step to reduce crude or product loss is source control and, as such, mechanisms and responsibilities should be in place to quickly reach and intervene at a spill site to stabilize the situation, gain control of the spill source, and reduce further releases. Emergency repairs, salvage, transfers and firefighting may not be identified as specific spill response actions; however, coordination with spill response managers can be critical to minimize the potential adverse effects of a spill and for safety of both operations.

In some countries, national emergency plans include response actions and preparedness for other emergencies besides oil spills (e.g., Miranda et al. 2003). Those plans include strategies for fires, explosions and even infrastructure damages.

Who to approach: Oil handling industry or organization, OSPR and emergency plan holders, maritime authorities, firefighters, etc.

Sub-elements include:

15.1 Source Control

15.1.1 Roles and responsibilities

15.1.2 Emergency towing and lightering plan (vessels)

15.1.3 Emergency repair plan (vessels–facilities–assets) (patching, divers, pipeline excavation and repair teams, etc.)

15.1.4 Shallow water dive capability (e.g., less than 10m - SCUBA)

15.1.5 Deep water dive capability (e.g., long-term dives, Remotely Operated Vehicles (ROVs))

15.1.6 Shallow and deep-water capping stacks and recovery systems

15.1.7 Sunken vessels

- Locating oil in tanks
- Drilling and tapping
- Viscous oil pumping
- Surfactants and mixing
- Collection and pumping

15.1.8 Equipment inventories (type, capacity, quantity, location)

15.1.9 Contractors and experts (links to EXPERT INFORMATION SOURCES, element 8)

15.1.10 Training and qualifications (see EXERCISE and TRAINING, elements 27 and 28)

15.2 Salvage

15.2.1 Salvage authority

15.2.2 Roles and responsibilities

15.2.3 Initial stability assessment capabilities (e.g., marine inspection, structural integrity, righting, floating, towing)

15.2.4 Stand-off capability (towing and righting)

15.2.5 Towing

15.2.6 Heavy lift capability

15.2.7 Vessel cutting and removal

15.2.8 Decontamination

15.2.9 Disposal

15.2.10 Equipment inventories (type, capacity, quantity, location)

15.2.11 Contractors and experts (links to EXPERT INFORMATION SOURCES, element 8)

15.2.12 Training and qualifications (see EXERCISE and TRAINING, elements 27 and 28)

15.3 Fire Fighting

15.3.1 Designated authorities

15.3.2 Roles and responsibilities

15.3.3 Emergency fire-fighting plan

15.3.4 Assessment and monitoring

15.3.5 Decontamination

15.3.6 Disposal (e.g., wastewater, debris)

15.3.7 Equipment inventories (type, capacity, quantity, location)

15.3.8 Contractors and experts (links to EXPERT INFORMATION SOURCES, element 8)

15.3.9 Training and qualifications (see EXERCISE and TRAINING, elements 27 and 28)

Element 16. Response Strategies

This element addresses the tools and techniques identified in OSPR plans (refer to PLAN DEVELOPMENT, element 9). For each technique identified in OSPR plans, there should be a clear understanding of any policy, technical requirements and limitations, available resources (equipment, competent personnel and adequate logistical support) as well as strategic and tactical use. Strategies can be translated in tactical plans that take into consideration on oil fate and behavior projections and probable trajectories (i.e., for a spill scenario: what type of response to plan for: where, when, and with what resources for one or more strategies). In most cases, it is best to have multiple options which could be used either concurrently or individually under appropriate conditions. Response options are most often grouped into three classes:

- 1) mechanical and/or manual response as per whether a spill is on land or on water,
- 2) dispersant application (surface and/or subsurface) for spills to marine waters, and
- 3) in situ burning, which can be used almost anywhere but is most frequently used on land.

For each option, assessment considerations can be lengthy (Table 2).

Table 2 - Considerations for Evaluation of Response Options, Equipment and Personnel

Regulation (as applicable) <ul style="list-style-type: none">• Enabling• Restricting Techniques and Applicability <ul style="list-style-type: none">• Constraints (defined at the incident and environmental conditions)• Accessibility, habitat and terrain consideration• Oil types and compatibility Equipment <ul style="list-style-type: none">• Identification of equipment types for scenarios• Equipment classification system (e.g., ready, available, in-use, inoperable, out-of-service)• Equipment environmental limitations (e.g., wave height, water depth, currents, etc.)• Operational parameters• Operational platforms (aircraft, vessels, tracked equipment, etc.)• Local inventories (type, specification, quantity, location)• Regional or national equipment sources and inventories• Complete systems	Tiered Response / Mobilization & Logistics <ul style="list-style-type: none">• Pre-positioning• Mobilization• Rigging and preparation• Delivery systems (e.g., aircraft, vessel, land, reels, forklifts)• Delivery times Equipment Readiness <ul style="list-style-type: none">• Equipment inspections and tagging• Maintenance and repair schedules/tracking• Equipment inter-compatibility analysis (e.g., boom connectors, skimmer parts, hoses, power generation)• Long-term storage and test schedule Responder Readiness <ul style="list-style-type: none">• Training and frequency• Equipment deployment exercises and evaluation• List of competent personnel Monitoring and follow up (as applicable) <ul style="list-style-type: none">• Monitoring procedures• Required equipment and availability of laboratories• Time limitations• Applicability of results
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Selection of response option depends on the type of oil spilled and the circumstances of the spill itself. A preliminary step is to ascertain if the environmental benefit and trade-offs for the techniques been considered (see NET ENVIRONMENTAL BENEFIT AND SPILL IMPACT MITIGATION ANALYSES, element 7). Non-floating oils require quite different response tactics than floating oils for spills on water. The use of sorbents, typically considered under mechanical or manual response, add significantly to the volume of oily waste material which should be recovered and properly disposed.

Who to approach: Regulatory agencies, national plans, environmental scientists and policymakers, technologies specialists, OSROs and SMEs.

Sub-elements include:

16.1 Mechanical/Manual

16.1.1 Techniques and applicability

- Constraints
- Accessibility, habitat and terrain considerations
- Oil types and compatibility

16.1.2 Equipment types

- Manual tools (spades, rakes, shovels, scrapers, etc.)
- Skimmers
- Pumps
- Boom (for water conditions) (sweep, shoreline, rivers, fixed, etc.)
- Rinsing/flushing / high- or low-pressure cleaning (pumps, hoses, etc.)
- Floating storage (bladders, barges, internal tanks)
- Portable storage
- Fixed storage
- Earthmoving equipment
- Oil-water separators

16.1.3 Equipment

- Identification of equipment types for scenarios
- Equipment classification system (e.g., ready, available, in-use, inoperable, out-of-service)
- Inventories (type, specifications, quantity, location) (national equipment inventory)
- Operational parameters (e.g., discounting maximum unit capacity during planning to adjust for operational limit expectations in the field)
- Standardized equipment
- Local, regional, international sources
- Equipment environmental limitations (wave height, water depth, currents, etc.)
- Initial evaluation to identify equipment which may be pre-positioned and preferred locations

16.1.4 Tiered response

- Pre-positioning
- Mobilization
- Rigging and preparation
- Delivery times for cascading equipment to arrive
- Delivery systems for equipment deployment (e.g., aircraft, vessel, land, reels, forklifts)

16.1.5 Equipment readiness

- Packaged systems (integrated systems)
- Equipment inspections and tagging
- Maintenance and repair schedules/tracking
- Equipment inter-compatibility analysis (e.g., boom connectors, skimmer parts, hoses, power generation)
- Periodic reviews of equipment suitability, quantity and location
- Plans for equipment replacement to sustain readiness

16.1.6 Responder readiness

- Training and frequency
- Equipment deployment exercises and evaluation
- Skills in equipment repair
- Advance arrangements for replacements during an incident

16.2 Dispersants

16.2.1 Regulation (see EVALUATION OF RESPONSE OPTIONS, EQUIPMENT AND PERSONNEL, element 6)

- Policy (local, regional, transboundary)
- Approved products
- Pre-approvals for surface, subsea, and deep-sea use
- Linkages with fire-fighting authorities
- Linkages with air quality monitoring authorities

- 16.2.2** Technique and applicability
 - Constraints
 - Sensitive habitat considerations (e.g., mangrove, coral, marsh, wetlands, etc.)
 - Compatibility for oil types
 - Human health considerations (e.g., seafood tainting potential after use of dispersants) and potential for fishery closures
 - Monitoring protocols (e.g., for effectiveness, ecological impact, public health impact, etc.)
- 16.2.3** Equipment
 - Available spraying systems (e.g., portable systems for aircraft, spray monitors, vessel mounted spray arms, portable spray units, etc.)
 - Equipment classification system (e.g., ready, available, in-use, inoperable, out of service)
 - Inventories (type, specifications, quantity, location; e.g., nozzle systems for delivery)
 - Spray system capabilities (neat/diluted, flow rate, coverage)
 - Local, regional, international sources
 - Equipment environmental limitations (wave height, water depth, currents, etc.)
- 16.2.4** Tiered response
 - Pre-positioning
 - Mobilization mechanisms and timeline
 - Rigging and preparation
 - Delivery times
 - Delivery systems (e.g., large fixed-wing aircraft, smaller fixed-wing agricultural aircraft, vessel, helicopter)
- 16.2.5** Equipment readiness
 - Equipment inspections and tagging
 - Maintenance and repair schedules/tracking
 - Equipment inter-compatibility analysis (e.g., portability to different delivery platforms)
 - Long-term storage systems with testing and replacement schedule for ignition delivery systems
- 16.2.6** Responder readiness
 - PPE and safety plan
 - Training and frequency (e.g., vessel crews, flight crews)
 - Equipment deployment exercises and evaluation
- 16.2.7** Monitoring and follow up
 - Monitoring procedures
 - Required equipment and labs availability
 - Time limitations
 - Applicability of results
- 16.3** **Controlled In Situ Burning (ISB)**
- 16.3.1** Regulation (see EVALUATION OF RESPONSE OPTIONS, EQUIPMENT AND PERSONNEL, element 6)
 - Policy (local, regional, transboundary)
 - Pre-approvals
- 16.3.2** Technique and applicability
 - Constraints (setbacks from populated areas) and aids (sea ice)
 - Offshore habitat considerations (e.g., coral, nearshore,)
 - Inland habitat considerations (e.g., marshes, riverbanks, deltas, highlands, tundra, etc.)
 - Explosive (source control) incineration (e.g., New Carissa)
 - Compatibility for oil types
 - Monitoring protocols (e.g., for effectiveness, ecological impact, public health impact, etc.)
 - Linkages with fire-fighting authorities
- 16.3.3** Equipment
 - Fire-resistant boom
 - Remote ignition
 - Equipment classification system (e.g., ready, available, in-use, inoperable, out of service)
 - Inventories (type, specifications, quantity, location)
 - Local, regional, international sources
 - Equipment environmental limitations (wave height, water depth, currents, etc.)

- 16.3.4** Tiered response
 - Pre-positioning
 - Mobilization mechanisms and timeline
 - Rigging and preparation
 - Delivery times
 - Delivery systems (e.g., aircraft, vessel, ground)
- 16.3.5** Equipment readiness
 - Equipment inspections and tagging
 - Maintenance and repair schedules/tracking
 - Equipment inter-compatibility analysis (e.g., portability to different delivery platforms)
- 16.3.6** Responder readiness
 - PPE and safety plan
 - Security
 - Training and frequency (e.g., vessel crews, flight crews)
 - Equipment deployment exercises and evaluation
- 16.3.7** Monitoring and follow up
 - Monitoring procedures
 - Required equipment and labs availability
 - Time limitations
 - Applicability of results
- 16.4 Other Technologies & Products**
- 16.4.1** Regulation (see EVALUATION OF RESPONSE OPTIONS, EQUIPMENT AND PERSONNEL, element 6)
 - Policy (local, regional, transboundary)
 - Approved products
 - Pre-approvals
 - Linkages with authorities
- 16.4.2** Technique and applicability
 - Operational constraints
 - Habitat considerations
 - Compatibility for oil types
 - Monitoring protocols (e.g., for effectiveness, ecological impact, public health impact, etc.)
- 16.4.3** Technologies
 - Cleaners and washing agents
 - Gelling agents
 - Herding agents
 - Solidifiers
 - De-emulsifiers
- 16.4.4** Equipment
 - Inventories (type, specifications, quantity, location)
 - Local, regional, international sources
 - Equipment environmental limitations (wave height, water depth, currents, etc.)
- 16.4.5** Responder readiness
 - PPE and safety
 - Training on technology use and limitations (e.g., vessel crews, flight crews)
- 16.4.6** Monitoring and follow up
 - Monitoring procedures
 - Required equipment and labs availability
 - Time limitations
 - Applicability of results

16.5 Non-Floating Oils

This sub-element only addresses oils that may sink (accumulate on bottom sediments of a waterbody) or be submerged (and floating within a water column) after being spilled on water. Most oils have specific gravity that is nearly equivalent or greater than water (or seawater) specific gravity. However, some heavy vessel fuels are already denser than the receiving waters (fresh, brackish or seawater) and weathering of medium density oils, or absorption of particulates, can result in non-floating oils.

- 16.5.1** Detection and tracking⁹
- Sorbent mops
 - Drag lines
 - Divers - visual
 - Tap holes (ice)
 - Fluorometry
 - Acoustic camera
 - Sonar (side-scan, multi-beam, sub-bottom profilers)

- 16.5.2** Containment & recovery of sunken oil
- Bottom weirs, dams
 - Suction hoses
 - Oleophilic sorbents
 - Dredging
 - ROVs
 - Divers

- 16.5.3** Containment & recovery of submerged oil
- Net pens
 - Deep-skirt boom or curtains
 - Oleophilic sorbents
 - Nets and sorbents
 - Suction pumps and filtration

- 16.5.4** Equipment
- Inventories (type, specifications, quantity, location)
 - Local, regional, international sources
 - Equipment environmental limitations (wave height, water depth, currents, etc.)

16.6 Bioremediation

Although bioremediation is often used as a polishing or treatment agent for long-term remediation, it is included here as it is a technology that often requires assessment, approval and monitoring of the practice. Bioremediation may also be linked to cleanup endpoints, waste management and disposal procedures.

- 16.6.1** Regulation (see EVALUATION OF RESPONSE OPTIONS, EQUIPMENT AND PERSONNEL, element 6)
- Policy
 - Process for product registration
 - Process for approval to use
 - Consider potential need to transport oily wastes ex situ for treatment, and concomitant hazards
 - Linkages with authorities

- 16.6.2** Technique and applicability
- Constraints
 - Habitat considerations
 - Compatibility for oil types
 - Monitoring protocols (e.g., for effectiveness, ecological impact, public health impact, etc.)

- 16.6.3** Technologies
- Natural cultures
 - Engineered cultures
 - Fertilizers
 - Enhancers
 - In situ
 - Ex situ

⁹ Links to the SPILL MONITORING, TRACKING AND SAMPLING, element 19.

- 16.6.4** Equipment
 - Inventories (type, specifications, quantity, location)
 - Local, regional, international sources
 - Delivery systems
- 16.6.5** Responder readiness
 - PPE and safety
 - Training on technology use and limitations
 - Monitoring and follow up
- 16.6.6** Monitoring procedures
 - Required equipment and labs availability
 - Time limitations
 - Applicability of results

Element 17. Waste Management

Waste management very often is a challenge and can become an obstacle in spill response operations. Sorting and segregation, adequate storage before treatment, appropriate handling and waste minimization should be addressed at the planning phase. Options for final disposal should be identified and pursued in advance, when possible. Options may even include the potential for cross-border shipment of oily waste materials. Wastes can include recovered oil, oily debris, food and sanitary wastes, discarded oily equipment, spent sorbents, decontamination waste waters, etc.

Who to approach: Environmental regulatory authorities, OSPR plan holders, waste management industry.

Sub-elements include:

17.1 Regulatory Controls

Regulations should define waste categories and handling requirements. It is beneficial to maintain a listing of approved waste handling and disposal companies, and their licenses and sites for various types of wastes.

- 17.1.1** Regulatory definitions and restrictions on oily waste transport, storage and handling
- 17.1.2** HNS Certification and warning requirements (for transportation, storage and disposal)
- 17.1.3** Designated authorities
- 17.1.4** Public notice requirements
- 17.1.5** Licensing requirements (e.g., for transporters) and possible derogations
- 17.1.6** Shipping, export and related regulations/conventions (e.g., Basel Convention)

17.2 Waste Management Procedures

Procedures should be defined to identify and minimize the potential waste streams, temporarily handle and store waste, and ultimately reuse or dispose of waste materials. There should be provisions for a specific cleanup site waste management plan (sorting, minimization, storage, transportation and evacuation). Transport options should be available. Interim waste storage and final disposal should be defined in advance. Possible sites for their capability in waste handling and operating licenses should be evaluated. Special procedures, permits or licenses should be defined.

- 17.2.1** Minimization (e.g., protocol for decanting, procedures to reduce waste on site such as controlled incineration, optimum response technologies, etc.)
- 17.2.2** Classification (e.g., oily liquids, oiled soils and inorganic natural materials, oiled manmade materials, oiled wildlife, etc.)
- 17.2.3** Testing and characterization (e.g., toxics, leaching, etc.)
- 17.2.4** Segregation
- 17.2.5** Packaging
- 17.2.6** Storage (short-term, intermediate and long-term)
- 17.2.7** Securing stored waste and monitoring (leachate, effects)
- 17.2.8** Transportation
- 17.2.9** Tracking and manifests
- 17.2.10** Decontamination
- 17.2.11** Development of algorithm to assess degree to which waste disposal program is meeting requirements

17.3 Waste Handling Equipment

17.3.1 On site and at temporary storage facilities

- Dustbin bags, bins, bags, super-sacks, etc.
- Dumpsters
- Fast tanks
- Pillow tanks
- Fixed storage
- Frac-tanks
- Vacuum and tank trucks
- Equipment for temporary lined pits

17.3.2 Mobile incinerators

17.3.3 Specialized waste collection and treating equipment

17.4 Disposal

Preferences should be defined in advance for interim waste storage and sorting locations, and for final disposal. There should be predetermined sites for waste storage (sorting, if needed), handling and disposal. They should have proper operating licenses. Monitoring procedures should be in place for tracking materials from collection through to final disposal.

17.4.1 Permits

17.4.2 Reception facilities

17.4.3 Disposal options

- Recycling
- Incinerators
- Resale
- Dumping (in landfills, bottom of the sea, sunken vessel)

17.4.4 Monitoring protocols and methods (e.g., leachates in landfills, air monitoring, burning monitoring)

Element 18. Wildlife Hazing, Recovery, Care and Rehabilitation

Although wildlife hazing, recovery, care and rehabilitation do not directly address spill response, these activities can minimize the potential loss of wildlife due to contact with oil. In the case of large mammals that can endanger responders, hazing may be needed for responder safety.

Who to approach: Wildlife regulatory agencies, wildlife care specialists (worldwide), industry, wildlife veterinarians, environmental NGOs, and OSROs.

Sub-elements include equipment, resources, training, exercises, and the following:

18.1 Planning¹⁰

Applicable regulations and legislation should be identified. The designated authorities for various types of fauna should be identified. Permits needed should be identified. Hazing protocols should be in place. Pre-emptive capture protocols and procedures should be known. A wildlife rehabilitation organization should be identified and/or contracted.

18.1.1 Regulations and legislation

18.1.2 Designated authorities

18.1.3 Agency coordination

18.1.4 Roles and responsibilities

18.1.5 Key living resources at risk

18.1.6 Permits

18.1.7 Hazing protocols

18.1.8 Pre-emptive capture protocols

18.1.9 Documentation and tracking

18.2 Response

Roles and responsibilities should be defined for internal teams plus external specialized contractors and resources. Procedures for capture, stabilization, cleaning, rehabilitation and release should be defined. Plans for use of volunteers and NGOs should be defined.

¹⁰ Links to several elements: EXPERT INFORMATION SOURCES, element 8; DATA MANAGEMENT AND ACCESS, element 21 and RESOURCES AT RISK, element 3

- 18.2.1 Roles and Responsibilities
- 18.2.2 Plans for use of volunteers and NGOs¹¹
- 18.2.3 Methods for tracking
- 18.2.4 Methods for retrieval
- 18.2.5 Triage protocols
- 18.2.6 Strategies for recovery systems
- 18.2.7 Hazing protocols
- 18.2.8 Monitors
- 18.2.9 Collection and disposal of dead animals
- 18.2.10 Reporting
- 18.3 **Specialized Personnel, Equipment and Resources**
 - 18.3.1 Experts
 - Veterinaries
 - Aquarium
 - Wildlife rescue centers
 - International organizations (e.g., Global Wildlife Network)
 - 18.3.2 Trained personnel
 - 18.3.3 Mobile wildlife units
 - 18.3.4 PPE
 - 18.3.5 Inventories (types and amounts by location)
 - 18.3.6 Transportation
 - 18.3.7 Facilities
 - Receiving centers
 - Rehabilitation centers
- 18.4 **Training and Exercises**
 - 18.4.1 Requirements
 - 18.4.2 Standards
 - 18.4.3 Frequency
 - 18.4.4 Qualification and competency

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¹¹ Links to RESPONSE MANAGEMENT SYSTEMS, element 10.

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F: Tracking, Assessment and Information Management

Element 19. Spill Monitoring, Tracking and Sampling

Tools and procedures are needed to detect and evaluate spills and then to monitor fate and transport of the spilled oil thereby providing information to responders, authorities, and communities. This is more important and generally more difficult for spills on surface waters where wind and currents can rapidly transport a slick than for spills on land. Data from monitoring environmental conditions and forecast changes to slick location and behavior are used to make operational decisions. It is valuable to coordinate overflights across organizations participating in a response to avoid duplication of efforts, reduce aviation safety issues with multiple aircraft on a similar mission, and to improve cost control. This element also includes the degree to which assets and procedures are identified, tested and re-evaluated.

Who to approach: Oil industry, technical specialists, search and rescue agencies, OSROs.

Sub-elements include:

19.1 Legislated/Regulatory Issues

19.1.1 Requirements

19.1.2 Limitations

19.2 Detection

Procedures, tools or mechanisms should be in place to detect a spill, such as visual observation and sensor technologies.

19.2.1 Visual

19.2.2 Alarms

19.2.3 Sensor technologies

- Buoys
- Sniffer systems

19.2.4 Evaluation of systems

- Systems in use
- New technologies
- Sensors for specific environments (e.g., rivers, cloud cover, ice, night, etc.)

19.2.5 Lessons learned

19.2.6 Sensor maintenance and repair

19.3 Tracking

Once a spill occurs, there should be procedures and tools to aid in tracking movement of spilled oil during daylight, night and low-visibility conditions and for monitoring of its behavior. Personnel and protocols should be in place for tracking, reporting and providing timely feedback to operational resources, such as oil recovery vessels on water.

19.3.1 Overflights (helicopters, airplanes – specialized or of opportunity, drones, etc.)

- Visual
- Infrared (IR) and Forward-Looking Infrared Radar (FLIR)
- Other technologies

19.3.2 Satellite

- Radar
- Multispectral (visible, IR)

19.3.3 Drifting buoys with Geographic Positioning System (GPS)/Automated Identification System (AIS) location systems

19.3.4 Remotely Operated Vehicles (ROVs), gliders and other subsea systems

19.3.5 Fate and transport models

19.3.6 Evaluation of systems

- Systems in use
- New technologies
- Sensors for specific environments or conditions (e.g., under ice, groundwater, non-floating oil)

19.4 Sampling

Equipment has been designed and used for spill detection, but also includes specialized needs for certain response technologies (e.g., dispersants application, ISB plume monitoring) or for forensic hydrocarbon analyses such as are used for oil source identification and legal purposes. Cooperation of sampling programs between a responsible party and government authority is preferred. Correct sampling protocols should be defined. Analytical procedures, chain-of-custody procedures, and qualified laboratories should be identified. These procedures should be tested frequently. Inter-calibration programs for laboratories should exist to help ensure quality of analytical results.

- 19.4.1** Designated authorities
- 19.4.2** Regulatory requirements
- 19.4.3** Trained personnel
- 19.4.4** Sampling protocols
 - Surface
 - Subsurface
 - Water
 - Sediments/soils
 - Source
 - Flora/fauna
 - Tissue
- 19.4.5** Qualified laboratories
- 19.4.6** Analytical procedures
- 19.4.7** Chain-of-custody procedures
- 19.4.8** Hydrocarbon fingerprinting

19.5 Monitoring and Forecasting Environmental Conditions

In addition to tracking an oil slick, forecasting its movement and changing behavior as oil weathers can be important considerations, especially for on-water response operations. Forecasting capabilities should be in place to provide timely input such that response operations can be adjusted or modified to suit field conditions.

- 19.5.1** Weather (wind, air/water temperature, visibility, precipitation, etc.)
- 19.5.2** Tides
- 19.5.3** Currents
- 19.5.4** Water levels
- 19.5.5** Ice/snow conditions
- 19.5.6** Remote Sensing (links to LOGISTICS, element 22)

19.6 Resources - Equipment

Responsible parties typically maintain their own equipment inventories on a site-by-site basis. For broader geographic area response planning, it is important to know where equipment inventories are located and who controls them. This is done in some cases, when industry and/or government authorities have partnered to provide regional or multinational response coverage. Programs to maintain, repair, and replace equipment should be established for the time frame of the spill risk.

- 19.6.1** Inventories (type, quantity, location)
- 19.6.2** Competent users
- 19.6.3** Contracts
- 19.6.4** Sharing agreements

Element 20. Cleanup Assessment

During response it is important to obtain information as early as possible to understand the character and location of spilled oil from field observations. These observations are used to select recommended response strategies. A shoreline cleanup assessment technology (SCAT) team¹² is often the source of such observations (i.e. the team in charge of surveying the oiled site, characterizing the level of spill and nature of oil and recommending clean-up strategies and tactics). Furthermore, these teams are often requested to define the endpoints to help determine “how clean is clean” on an incident-specific basis. Procedures should be in place to form and activate these teams. There should be a mechanism to communicate their advice to those undertaking cleanup. Example guidelines and standards for assessment are provided in ASTM (2003a, 2003b), ECCC (2018), Ipieca (2016), MCA (2007), NOAA (2013), and Owens and Santner (2021).

Who to approach: Environmental regulatory agencies, technical specialists, oil industry, OSROs

Sub-elements include environmental impact assessment data collection, cleanup termination guidelines for response termination, and the following:

20.1 Area Response Priorities

General priorities should be set in advance during OSPR contingency planning and procedures should be in place for confirming and/or adjusting priorities at time of spill. The most important areas geographically, politically, culturally, etc., should be defined.

¹² Note: The term “shoreline” is used generically. SCAT procedures apply to spills within inland areas (rivers, lakes, land) as well as to marine spills.

20.1.1 Designation of deciding authority

20.1.2 Pre-defined priorities in planning

20.2 Cleanup Guidelines

Field team members should include appropriate representatives of stakeholders (e.g., at national, provincial, or local levels). There should be a shoreline cleanup methodology to identify applicable and suitable response for the applicable for different working climates and environments (e.g., tropical, ice/snow, mangroves, river deltas, rocky shorelines, etc.). Standard forms should be identified or used for field data collection. Cleanup assessment teams should be periodically trained to ensure they can accurately gather and process field information to inform and orient the cleanup program.

20.2.1 Shoreline cleanup assessment technique (SCAT) team members. Team members should provide representation of appropriate stakeholders (e.g., national, provincial, local authorities, responsible party, responders)

20.2.2 SCAT methodology

- Methods for different/appropriate working climates and environments: tropics, ice/snow, mangroves, deltas, rocky shorelines, etc.
- Identification of accesses, operational constraints, waste storage and evacuation, etc.
- Standard assessment forms identified or used for field data collection

20.2.3 Management of shoreline assessment findings (e.g., SCAT and photo databases, common operating picture (COPs)) (links to DATA MANAGEMENT AND ACCESS, element 21)

20.2.4 Implementation of shoreline cleanup assessment recommendations in response operations and use of SCAT-Ops liaison personnel

20.2.5 Definition and identification of scientific/technical expertise for shoreline cleanup assessment

20.3 Impact Assessment Data Collection

20.2.1 Impact assessment team members

20.2.2 Impact assessment team methodology

20.2.3 Monitoring protocols

20.2.4 Database integration of assessment findings

20.4 Cleanup Conclusion Guidelines¹³

20.4.1 Regulatory definitions of acceptance levels for contaminants

20.4.2 Spill response targets or endpoints vs. treatment potential

20.4.3 SCAT team contributions to process

20.4.4 NEBA/SIMA as decision tools

Element 21. Data Management and Access

Information and data management supports many aspects of spill response planning and readiness. Spill resource inventories, sensitive natural areas, listings of logistical support materials, and trained personnel are samples of data records that may be needed during an incident. A tremendous amount of information and data can be generated during a spill, in addition to all pre-existing information (plans, maps, lists, directories, inventories, etc.). For example, managing the many photographs taken during a response can be challenging. Effective management, control and consolidation of a wide variety of data is needed to maintain an up-to-date and shared “big picture” (COP) of the incident situation, to support decision-making and accurate communications and incident recordkeeping. This element should address the procedures and policies in place to manage all incident-related information, access external databases and to manage databases (or information management systems) developed specifically for spill response or developed at the time of a spill.

Who to approach: Legal staff, regulatory agencies, information technology experts.

Sub-elements are:

21.1 Response Data and Information Management

It is important to clearly define which organization(s) are responsible for general and specific information management task(s). It is also important that records and documents are saved and archived for historical purposes and for possible legal proceedings. A data management policy should be defined and put in force. Roles and responsibilities should be defined for whom and how data will be entered into databases, what information is required and procedures to ensure data accuracy. Some level of confidentiality for sensitive information will have to be enforced.

21.1.1 Documentation repository

21.1.2 Computer storage

21.1.3 Data collection

21.1.4 Data standards and quality (metadata)

¹³ Links to DEMOBILIZATION, element 24.

21.1.5 Data access controls, limitations and confidentiality

21.1.6 Data and file back-ups

21.1.7 Data sharing protocols

21.2 External Databases and Access

Data sources and databases and external information that can support planning and response, generally maintained externally to spill response. External relevant information/databases should be defined. There should be appropriate procedures in place to access these external resources.

21.2.1 Agencies or organizations responsible for relevant information and databases

21.2.2 Data access (agreements, technology) and quality/usability

21.2.3 Available databases

- Satellite information (optical, radar, others)
- Weather and Met-Ocean observations and models
- Vessel tracking (AIS), vessel or floating unit stability
- Resources at Risk (see Resources at Risk topic; flora, fauna, vessel traffic, human activities - tourism, etc.)
- Economic indicators
- Logistics, land traffic tracking, air traffic tracking
- Security

Toolbox for F: Tracking, Assessment and Information Management

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G: Logistics

Element 22. Logistics

Spill response is supported through a wide range of logistical functions, including communications, transportation, command posts, bases and camps, staging areas, expendable supplies, meals, housing and sanitation, etc. Logistics is not a theoretical exercise because without logistical support, response stops. This element should identify roles and responsibilities of those who provide logistical support for OSPR at national, area/provincial/State, or local levels or tiers of response. Many sources of logistical support are commercially available and may be incorporated into OSPR plans by reference, or via lists and/or databases linked to the plan; however, response is generally quicker and more economical if these suppliers and service providers have existing agreements or contracts for potential spill mobilization. For completeness, material stockpiles and contracts for services should also be addressed.

Who to approach: Oil spill response organizations, disaster management.

Sub-elements include roles and responsibilities of those assigned to logistical support and services, maintenance of response equipment, and the following.

22.1 Roles and Responsibilities

22.1.1 National and Multinational Coordination

22.1.2 Area/provincial coordination

22.1.3 Local coordination

22.2 Response Equipment

22.2.1 Equipment providers (spill response and non-specialized: manual, work-site setup, support, etc.)

22.2.2 Inventories, sourcing and dispatch to sites

22.2.3 Supplies and expendables (fuel, PPE, etc.)

22.2.4 Communications systems and support

22.2.5 Resource tracking

22.2.6 Equipment maintenance and repairs

22.3 Response Support

Sub-elements include transportation and tracking systems, equipment staging areas, facilities such as command posts, bases, camps and shelters, security and personnel support.

22.3.1 Transportation and tracking systems

- Air
- Ground
- Vessels

22.3.2 Equipment staging areas, with maintenance and repairs facilities

22.3.3 Facilities, with power and communications systems

- Command Posts
- Bases and shelters

22.3.4 Security (Links to SECURITY, element 14) (e.g., site, badges)

22.3.5 Personnel support - This topic includes general personnel support, plus work assignments, work periods, and crew or shift changes. Spill circumstances may influence these.

- Meals and potable water
- Housing, toilets, air conditioning or heating
- Medical support on site and medical evacuation procedures
- Sanitation

22.4 Mutual Aid and Resource Sharing

Depending on the degree of spill risk, this sub-element needs to address regional (neighboring countries) and international logistical support, including transboundary movement of personnel and equipment.

22.4.1 Regional logistical support

22.4.2 International logistical support

22.4.3 Transboundary movement of equipment, supplies, and personnel

- Customs
- Immigration

Element 23. Communications

Communications support can include lines of communication, such as defined in a management structure (see RESPONSE MANAGEMENT SYSTEMS, element 10) or equipment and procedures which enable those participating in a response to exchange information.

Who to approach: Government communications agency, plan holders, industry, emergency response community (fire-fighters, civil defense, etc.)

Sub-elements include:

23.1 Regulatory Controls

Regulatory constraints on the types of communications equipment, frequencies, etc., that may be used in emergencies should be defined.

23.2 Communications Systems

Systems for response team communication, plus broader information exchange between teams and impacted organizations or governments, need to be identified and defined. System compatibility (e.g., between countries, industry to government and vice versa, or for air-marine/marine-shore radios) should be verified in advance.

23.2.1 Common systems (including all parties involved: government agencies, industry, etc.)

23.2.2 Pre-identified communication network and pre-designated frequencies (e.g., consider use of distress channel for initial contact; however, other designated channels should be pre-identified for use during emergency response)

23.2.3 Communications plan to stipulate which organizations (plus who and when) are responsible for what types of communications and equipment and when

23.2.4 Range and limitations of selected equipment and backup systems

23.2.5 Communications protocols and tracking

23.3 Communications Equipment

Stockpiles of communications equipment should be identified and inventoried. Stockpiles should be protected. Equipment types can include:

- Radio (Ultra High Frequency (UHF), Very High Frequency (VHF), Single Side Band (SSB)),
- Cell phone, Satellite phone
- Landlines (voice-fax),
- Telex
- Microwave truck systems
- Repeaters

Equipment should have been tested and maintained. The selected means of communications should be compatible between countries, industry-government, and/or air–water–ground, as needed.

23.3.1 Requirements

23.3.2 Inventories

23.3.3 Assigned resources

23.3.4 Maintenance procedures

23.4 Computer Systems

Affected organizations and governments should be integrated into a computer network system during response so information can be transferred to and shared with appropriate authorities. Systems should be secure from interruption and with active anti-virus/malware capabilities.

23.4.1 Intranet

23.4.2 Internet and Websites

23.4.3 Documentation

Element 24. Demobilization

Termination of response activities necessitates demobilization of personnel, response equipment, and logistical support. Response management structures should include a group whose assignment is to organize and implement demobilization. Demobilization removes personnel and equipment which are no longer needed such that they can be used elsewhere or returned to normal duty. It can improve site safety, reduce expenses, and reduce the response management load to match response complexity.

Who to approach: OSROs, regulatory agencies.

Sub-elements are:

- Roles and Responsibilities
- Authority to demobilize
- Release priorities
- Decontamination plan for equipment and personnel
- Demobilization procedure – equipment
- Demobilization procedure – personnel

Toolbox for G: Logistics

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H: Financial and Administrative Considerations

Element 25. Finance, Administration and Procurement

Any OSPR planning, actual response, or readiness effort entails financial and administrative support. Tracking expenses, personnel, and response costs are time consuming tasks with implications for insurance coverage and compensation (Ipieca 2016; ITOFF/IG/IOPC 2021). Mechanisms for establishing contracts prior to, and at the time of, a spill are part of this subject.

Who to approach: Protection & Indemnity Clubs, administrative and legal staff.

Sub-elements include:

25.1 Response Funding

Funding mechanisms should be in place (e.g., bonds, retainers) to finance response activities and respond to damage claims, with some emergency funding mechanisms in case of large operations. Roles and procedures should be identified for communication and coordination with insurers, including Protection & Indemnity (P&I) Clubs. Non-vessel insurers and national funds should be identified. The status of Compensation and Liability Convention accession to support vessel response should be determined.

25.1.1 Emergency response funds

25.1.2 Compensation and Liability Convention accession

25.1.3 Regulatory requirements

25.1.4 Other funding mechanisms (e.g., bonds, retainers) besides P&I Clubs

25.1.5 Defined limits of liability

25.2 Designated authorities and personnel

25.2.1 Roles and responsibilities

25.3 Expenses

Procedures for documentation, expense tracking and forecasting, payment protocols and audit and review should be defined.

25.3.1 Cost documentation and consolidation

25.3.2 Expense tracking and forecasting (time, quantity, service)

25.3.3 Payment protocols (e.g., from large service providing company to short-term local workers)

25.3.4 Audit and review procedures

25.4 Contracts and Contracting

25.4.1 Contracting procedures

25.4.2 Contracting authorities

25.4.3 Basic ordering and contracting agreements; emergency contracting procedures

25.4.4 Pre-established pricing for supplies, equipment, and services (e.g., equipment, transportation, PPE, waste handling, management)

- Standby
- Mobilization, and
- In-use

Element 26. Claims

A well-developed OSPR program includes mechanisms and procedures to communicate to stakeholders on the claims process and establishes mechanisms for careful documentation, tracking and verification of claims. This may include the development of a claims template to facilitate a more efficient claims process for all stakeholders in the event of a spill. Claims following an oil spill generally fit into one of four categories: preventative measures (response measures), property damage, economic loss, and environmental damage (IOPC 2019).

Who to approach: P&I Clubs, International Oil Pollution Compensation (IOPC) Fund, Insurers and administrative and legal staff.

Sub-elements include:

26.1 Insurance and Claims

The applicable liability convention applicable should be determined and contacts made with the relevant party to approach for compensation.

26.1.1 Identification of paying party

26.1.2 Information on claims submission procedures

26.1.3 Identification of admissible claims

26.1.4 Claims management (government, industry, private parties, etc.)

26.2 Types of claims

Claims may be filed on behalf on multiple sources and for very different purposes. The claims management process must identify likely sources and if/how the various sources of claims should be documented and researched.

26.2.1 Spill prevention/mitigation measures

26.2.2 Spill response and cleanup

26.2.3 Monitoring, sampling and restoration

26.2.4 Environmental impacts

26.2.5 Fisheries

26.2.6 Socio-economic losses (public beaches, tourism, recreation, properties, etc.)

26.3 Submission of claims

Procedures should be put in place to identify a department/individual in charge of keeping track of all the expenses and costs incurred during response, and to maintain a record of the actions taken, which will facilitate a smooth submission process.

Depending on the size and complexity of a response, it may be beneficial to establish a special telephone line / information office for use by claimants.

26.3.1 Identification of entity in charge of record-keeping

26.3.2 Cost tracking

26.3.3 Compilation of supporting documentation

26.3.4 Claims investigation and assessment procedures

Toolbox for H: Financial and Administrative Considerations

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I: Training and Exercises

Element 27. Exercises

Exercises provide opportunities to practice and test what is planned. Exercises also provide an occasion to bring together OSPR teams from other organizations, supporting expertise, and external participation in response to simulated situations. A robust exercise program that provides for practice and testing of OSPR system components is essential in implementing, sustaining, and improving readiness. Exercise evaluation and follow-up actions are designed to be opportunities for improvement. Example guidelines for exercise types, frequency and design are provided in Ipieca (2016), ISO (2013), and USCG-EPA-RSPA-MMS (2016).

Who to approach: Regulatory agencies, oil industry, national plans, OSROs.

Exercise sub-elements include:

27.1 Requirements

A specific exercise schedule with defined objectives, scopes of exercise and expected levels of engagement should be developed. A designated authority that participates in exercises and that monitors and enforces compliance should be identified.

27.1.1 Transboundary or regional exercise commitments

27.1.2 National contingency plan exercise requirements

27.1.3 National and local legislatively defined requirements (for government and industry)

27.1.4 Company mandated

27.2 Adopted Standards

A plan holder should have adopted exercise policies and procedures that at least meet required exercise programs and preferably extend beyond those required under national policy.

27.2.1 International and national requirements, commitments and relevant competent authorities to plan and/or monitor exercise execution

27.2.2 Policy development (e.g., determination of exercise type, level and frequency requirements by risk element, vessels, platforms, ports, pipelines, facilities, etc.)

27.3 Recommended Types of Exercises and Frequency

Exercises help practice what is planned. Exercise objectives and goals should be defined as the initial part of an exercise plan. Exercises should be scaled according to what aspects are being practiced and appropriate support should be available. Exercises can be organized differently depending on the maturity of the system. These can range from a semi-guided exercise, with a focus on training and information beforehand, up to a no-notification stress test of the response system without prior warning. Participation in exercises can range from only site personnel to exercises involving people from government and industries, up to transboundary or regional exercises. Participants should be identified depending on the scope and objectives of the exercise.

Examples of types of exercises and methods of delivery include:

27.3.1 Discussion-based exercises

- Seminar
- Workshop
- Tabletop

27.3.2 Operations-based exercises

- Drill
- Functional exercises (focused on specific aspects of spill management)
- Full-scale exercises (spill management with field deployment; multiple levels of plan activated)

27.3.3 Notification (or call-out) exercises

27.3.4 Specialized team exercises

- Firefighting
- Diving
- Chemical detection
- Evacuation
- Medical emergency
- Search and Rescue (SAR)

27.3.5 Information coordination (e.g., desktop and COPs) exercises

27.3.6 Announced and/or Unannounced (the latter still requires that key players be pre-informed for safety purposes)

- 27.3.7** Geographic/logistical exercises
- Local
 - Area/provincial
 - National
 - Transboundary/regional
 - Response scaling and support

27.3.8 Equipment deployment exercises

- 27.3.9** Spill management team exercises
- Tabletops
 - Command post

27.3.10 Special problem exercises (e.g., spill drift/trajectory; logistics, mobilization and transport; etc.)

For each exercise it is important for the planners and team to understand the purpose of the exercise. The appropriate members and organizations should be involved. The frequency of the above exercises should also be considered and preferably noted in OSPR plans.

27.4 Exercise Process

Procedures or guidelines used for exercise design, identification of participants, exercise control and evaluation should be defined. The requirements for certification and continued operations should be defined. Procedures to ensure that lessons learned are included in feedback to a response organization and responsible party should be defined. Lessons should be integrated into future exercises or contingency plans.

27.4.1 Exercise roles and responsibilities

- Objectives, scope and design (simulated field vs real-time or partials)
- Participants
- Control and injects
- Evaluators

27.4.2 Determination of government and private organizations for different exercises and their level of engagement

27.4.3 Resources and budgets

27.4.4 Interagency exercise program administration

27.4.5 Designation of level of personnel and equipment mobilization

27.4.6 Formal certification of exercise objectives met (when properly completed)

27.4.7 Exercise certification requirements for continued operations (e.g., OSROs)

27.4.8 Exercise record-keeping

27.4.9 Exercise audit program

27.4.10 System to record lessons learned for all exercise results

27.4.11 Feedback system to ensure lessons learned are integrated into future exercises (e.g., in exercise design) and used to improve the response system when relevant

27.4.12 Development of training programs to address “gaps” identified during the exercise (e.g., Response Management System if command and control is absent, dispersant NEBA/SIMA if exercise reveals inability to arrive a decision to use or not, etc.)

Element 28. Training

Training provides responders with skills required to effectively respond. It encompasses the spill management team, policymakers and operational personnel. Training should address a variety of skills related to incident management (from clarifying roles and responsibilities to decision-making processes and communications procedures) and to spill response (monitoring, response strategies and tactics, impact assessment, etc.). Training also provides experience for field personnel on how to use equipment under different conditions and settings. Evaluations of spill exercises and actual spill response help to define areas for additional training.

Training programs should encompass initial training needs for an OSPR team as well as long-term, refresher training. Records and qualifications should be maintained to ensure appropriate numbers of personnel are available for each level of response. Training should be tailored to the organization and local risks and settings. Competencies of the trained personnel should be evaluated (after training, during exercises and on real spills). Example training requirements and guidelines for training elements and considerations are provided in ASTM Standard Guide F1644 (2001a), ASTM Standard Guide F1656 (2001b), Ipieca (2016), and in the IMO-OPRC Model Courses.

Who to approach: Regulatory agencies, oil companies, NGOs, OSROs.

Sub-elements include:

28.1 Regulation / Legislation

28.1.1 Designation of training authority

28.1.2 National training capability

28.1.3 Coordinated training schedule (encompassing all relevant agencies)

28.1.4 National minimum training requirements and certification process

28.1.5 Tracking of trainings and competencies

28.2 Training Subjects and Frequency

Minimum training requirements should be defined. Training subjects should address multiple functions and responsibilities for response teams, and they should address most probable (Tier 1), intermediate to large (Tier 2), and very large to worst-case (Tier 3) scenarios. The refresher requirements and frequency should be defined.

28.2.1 Adopted minimum training requirements

28.2.2 Training for roles in management system

- Individual (e.g., response command on an annual basis for field training)
- Units (e.g., Environmental Unit, Situations Unit)

28.2.3 Health & Safety training

28.2.4 Equipment use, deployment strategies and limitations

28.2.5 Training for specific spill response technologies (e.g., mechanical, dispersants, in situ burning, bioremediation, chemical treatment)

28.2.6 Volunteers (including contractors)

28.3 Training Process

The organizations or authorities in charge of the training program should be identified. The skills for each response position or role/responsibility should be clearly identified. Training needs should be based on necessary skills to be developed for each response position or role. Sources for training should be identified. Instructors should be competent. Specialized subjects should be considered (e.g., dispersants, NEBA/SIMA, submerged oil, snow-ice, monitoring).

28.3.1 Determination of skills needed for each response position (e.g., Logistics, beach cleanup supervisors, finance, public relations, etc.)

28.3.2 Designation of training budget and method for distribution

28.3.3 Development of training curriculum for each response position

28.3.4 Development of training curriculum for specialized topics, such as:

- Dispersants
- Vessel operations
- Aerial surveillance and spotting
- Shoreline cleanup assessment team
- In situ burning
- Security
- Wildlife

28.3.5 Sources for training

- International standard courses (e.g., IMO-OPRC Levels 1, 2 and 3 models)
- Industry
- Government
- Institutions, private

28.3.6 Format for training

- Classroom
- Field
- Internet
- On-job training

28.3.7 Coordination of training with lessons learned

28.4 Qualification or Competency

There should be an accreditation or certification process for training organizations or trainers. The process through which training programs and instructors are evaluated should be defined, including a “train-the-trainers” certification process. The procedures for re-certification of personnel and re-training standards development also should be defined.

28.4.1 Certification or accreditation of training organizations (or trainers)

- Identified authority to certify
- Minimum qualifications defined
- National and international accreditation schemes (e.g., [Nautical Institute](#))

28.4.2 Evaluation of training programs

- Course evaluations
- Instructor evaluations

28.4.3 Competency achievement

28.4.4 Methodology for assessing training qualifications requirements (e.g., risk analysis, functional position responsibilities, types of oils)

28.4.5 Train-the-trainers certification and promulgation

28.4.6 Re-certification and re-training standards development

28.5 Documentation

Records should be kept. The responsible person for maintaining the documents should be identified and the duration for maintaining the documents should be determined.

28.5.1 Record-keeping requirements

28.5.2 Database of personnel by qualification (centralized; position that can be filled; expertise)

28.5.3 Triggers for refreshers

Toolbox for I: Training and Exercises

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J: Sustainability and Improvement

Element 29. Sustainability and Improvement

This element should address means to ensure OSPR readiness is an ongoing process for sustainability and improvement. In some cases, externally requested audits or analyses can provide evaluations of response capability (e.g., RAC/REMPEITC program on planning initiatives, ARPEL National Plans matrix and IMO missions). Too often OSPR plans are developed but not fully implemented nor seriously practiced or tested. Sustained readiness necessitates active scrutiny of changes in response policies, capabilities, new technologies, and methodologies over time. Training and exercises with evaluation and feedback provide one means to sustain and or reach higher levels of readiness.

Who to approach: Regulatory agencies, oil spill response organizations.

Sub-elements include:

29.1 Legislative/Regulatory Requirements

There should be requirements for testing contingency plans through audits, drills or exercises, and regularly updating the response systems. There should be a designated authority that verifies level of competence. There should be minimum standards that define if plans are suitable to particular conditions.

29.1.1 Designated Authority

29.1.2 OSPR audit/testing requirements

29.2 Commitment

An authority or internal mechanism should be put into place to fund audits, exercises or other means of assessment of OSPR readiness.

29.2.1 Funding

29.2.2 Designated Authorities

29.2.3 Roles and responsibilities

29.3 Audits

Procedures should be in place to conduct audits of planning and readiness. The assessment expertise should be internal, external, national or international.

29.3.1 Internal

29.3.2 External

29.4 Reviews

Procedures should be in place to undertake reviews of exercises or actual response. Involved parties should be identified. Records of external and internal assessments and actions should be completed. There should be standards for scoring and documenting (or certifying) the level of OSPR competence, some of which may be obtainable through ISO certification.

29.4.1 Annual

29.4.2 Post-spill or exercise assessment

29.4.3 Gap analysis

29.4.4 Actions required and priorities

29.4.5 Assigned responsibility for actions

29.4.6 Action tracking and completion

29.5 Management of Change Process

It is important that response systems (and associated plans/tools) are updated whenever needed. Revisions and alterations to contingency plans or other written documents, policies, and tools that inform emergency response must be communicated to those personnel and organizations that are affected by the changes. A formal process (e.g., management of change) may be necessary for some documents. Procedures should be in place to monitor and record the changes that take place in OSPR readiness.

29.5.1 Designated Authorities

29.5.2 Monitor process

29.5.3 Recording procedures

29.5.4 Actions taken based on indicators and/or results

Toolbox for J: Sustainability and Improvement

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Conclusions

An assessment of response preparedness helps organizations identify the technical, policy/legal or administrative areas that are either already well developed, areas that may need additional attention or those that are simply not developed. How organizations prioritize their efforts to improve response capacity will depend on their circumstances.

This Guide and the RETOS™ Tool and Manual are designed to function as a checklist or benchmark against which results from a readiness assessment can be compared. This Guide and the RETOS™ tool have been developed for the wide range of OSPR management activities; however, there are operational aspects of OSPR that fall outside these guidance materials (e.g., identifying recommended skimmers for specific oil types). This Guide, in conjunction with the RETOS™ tool, offers a compilation of elements for a more consistent and broad-based international guide for spill response planning and readiness assessments. All elements will not apply to all locations.

A total of 29 principal elements are presented as part of this comprehensive oil spill response planning and readiness assessment Guide. The elements list is intended to be flexible such that it can be used by government, industry, facilities or operators and can be applied from local to international and multinational levels. The focus of an OSPR assessment may shift context or perspective depending on the needs of the user. This Guide is intended as a resource to be modified by users for global applicability. It should not be viewed as prescriptive, but rather as a reference tool. The more sophisticated the OSPR program, the greater the number of elements that would have been addressed and consequently could be assessed. For cases where the process of capacity building is in its infancy, fewer of the elements would be addressed, as reflected in the Level A assessment provided in RETOS™.

A long-term objective of this Guide and the associated RETOS™ tool is to provide a consistent framework for the assessment of OSPR preparedness that can be used by the response community worldwide.

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Appendix A

Checklist For Contents In Oil Spill Response Contingency Plans

Table A-1 is based on the National Plans Element List (from ARPEL 2005). This list was used as the basis for an assessment of OSPR planning in Central America and subsequently was modified and used for a similar assessment of the Caribbean nations OSPR plans (AZURE SEAS, Gap Analysis of Nation Island OPRC Plans 2006). The list does not connote a required or necessarily a recommended plan order or sequence. Additional topics have also been added to the original lists and a preliminary indication of those aspects considered most relevant to local, national and multilateral (international) plans is provided in **BOLD** (subheadings provide more detail). Example contents of contingency plans from the IMO (2018) Contingency Planning Guidelines (Appendices 2, 3 and 4) are highlighted in yellow in the following table. Content recommended for plans is indicated with a 'Y'. A yellow highlighted item (IMO guidance) may also coincide with a recommended content from other guidance, in which case it also includes a 'Y'.

Table A-1 - Example of Information Content for Oil Spill Response Contingency Plans

Possible Contents	PLANS		
	Local	National	Multilateral
1. Introduction/Preface	Y	Y	Y
Table of Contents	Y	Y	Y
Distribution	Y	Y	Y
Lead agency	Y	Y	Y
Support agencies	Y	Y	Y
Other organizations	Y	Y	Y
Plan Custodian	Y	Y	Y
Updating & revisions	Y	Y	Y
Purpose & Scope	Y	Y	Y
Statement of authority	Y	Y	Y
Geographical area covered, regions	Y	Y	Y
Glossary/Definitions/Abbreviations/Units	Y	Y	Y
2. Response Organization	Y	Y	Y
Lead Agency	Y	Y	Y
Team members	Y	Y	Y
Roles (including National OSC)	Y	Y	Y
Responsibilities	Y	Y	Y
Support Agencies		Y	Y
Technical, advisory and other roles defined		Y	Y
Areas of jurisdiction (e.g., vessels, ports, platforms, SPMs)		Y	Y
Organizational Charts and Links		Y	Y
Other Participating Agencies/Companies		Y	Y
Roles		Y	Y
Responsibilities		Y	Y
Relation to private industry		Y	Y
Interagency agreements		Y	Y
National Regulations' Administration		Y	Y
Supporting legislation, laws, agreements & guidelines		Y	Y

Possible Contents	PLANS		
	Local	National	Multilateral
International Convention & Agreements Ratified		Y	
OPRC 90		Y	
OPRC-HNS Protocol 2000		Y	
CLC 69 92 Fund 92		Y	
MARPOL 73/78 III IV V IV		Y	
Linkage to Other Plans	Y	Y	Y
Regional (e.g., Cartagena) Convention(s)		Y	Y
Exchanging expertise & information		Y	Y
3. Preparedness & Policies			
National Response Resources		Y	
Local and Area Plan Requirements		Y	
Use of Scenarios	Y	Y	Y
Risk Assessment	Y	Y	Y
Trends, sources, causes of spills	Y	Y	Y
Areas of high risk	Y	Y	Y
Environmental data	Y	Y	Y
Oils of concern	Y	Y	Y
Prevention programs	Y	Y	Y
Definition of planning tiers (1-local, 2-area, 3-worst case)	Y	Y	
Sensitivity Mapping / Trajectory Modelling	Y	Y	Y
Training / Exercises	Y	Policy	
Joint programs		Y	
Training requirements & minimums	Y		
Training frequency	Y		
Exercises	Y	Y	Y
Notification	Y	Y	Y
Deployment	Y	Y	Y
Tabletop	Y	Y	Y
Worst-case discharge	Y	Y	Y
Evaluation process	Y	Y	Y
Record-keeping	Y	Y	Y
International Policies		Y	Y
Receiving spill response assistance		Y	Y
Giving spill response assistance		Y	Y

Possible Contents	PLANS		
	Local	National	Multilateral
4. Response			
Response Management	Y	Y	Y
Tiered concept with escalation of incident (1 to 3)	Y	Y	Y
Regional responsibilities	Y	Y	Y
Organization of Lead Agency	Y	Y	
Interagency roles (ICS, Unified Command)	Y	Y	
Specialist/contractor assistance	Y	Y	Y
Health & safety	Y	Y	Y
Net environmental benefit analysis	Y	Y	Y
Logistics, administration	Y	Y	Y
Response Centre	Y	Y	Y
Communications	Y	Y	Y
Meeting rooms	Y		
Library/references	Y	Y	Y
Computer links	Y	Y	Y
Logistics Support	Y	Y	Y
Transportation (air, land, water)	Y	Y	
Personnel support (e.g., meals, housing, equipment)	Y	Y	
Transboundary movement of equipment and personnel		Y	Y
Response Operations	Y	Y	Y
Spill assessment (slicks and impacts)	Y	Y	
Response strategies (mechanical, dispersants, burning)		Y	
Actions to mitigate & control spills (including mobilization)		Y	
Shoreline protection and cleanup		Y	
Spill Surveillance and Monitoring	Y	Y	
Salvage (vessels, salver)	Y	Y	
Ongoing monitoring of cleanup	Y	Y	
Dispersants Policy	Y	Y	Y
List of approved dispersants		Y	
Pre-approved locations	Y	Y	
Conditions of use		Y	Y
Streamline decision process (within 24hr)		Y	Y
Application form	Y	Y	
In situ Burning Policy	Y	Y	Y
Applicable situations		Y	
Monitoring		Y	
Streamline decision process (within 24hr)		Y	Y
Application form	Y	Y	

Possible Contents	PLANS		
	Local	National	Multilateral
Policy for Other Chemicals (Bioremediation, Cleaners, Herders, etc.)	Y	Y	Y
Applicable situations		Y	
Monitoring		Y	
Transportation	Y	Y	Y
Waste Management	Y	Y	Y
Sites for interim storage, final disposal and decontamination	Y		
Wildlife	Y	Y	Y
Strategies	Y		
Permits & agency coordination	Y	Y	
Contractors, specialists, volunteers	Y		
Restoration & post-spill monitoring	Y	Y	Y
5. Reporting, Communication, Legal & Financial Matters			
Reporting & Alerting Systems	Y	Y	Y
Notification & reporting requirements	Y	Y	Y
Report form (spill details, environment, reporting – POLREPs)	Y	Y	Y
Notification charts and system	Y	Y	Y
Means of communication	Y	Y	Y
Post-incident review	Y	Y	
Communications			
Systems between response center & vessels, aircraft			
Repeater stations, frequencies, radios, telephones, fax, e-mail, web			
Public Information	Y	Y	Y
Designated public affairs/media advisor	Y		
Community liaison	Y		
Financial Commitment / Claims / Record-Keeping	Y	Y	Y
Insurance/compensation system	Y		
Sample worksheets	Y		
Reimbursement to fishermen, property owners, etc.	Y		
Commitment to regional center or secretariat		Y	
Legal Matters	Y	Y	Y
Samples/evidence	Y		
Taking standards	Y		
Mechanisms for settling disputes and claims	Y		

Possible Contents	PLANS		
	Local	National	Multilateral
ANNEXES			
Graphics (maps-tactics)	Y		
Facilities and infrastructure	Y		
Sensitive areas - vulnerability atlas or maps	Y	Y	Y
Tactical control points/strategies	Y		
Contacts	Y	Y	Y
Internal	Y	Y	Y
External	Y	Y	Y
Contractors - mutual aid	Y	Y	Y
Logistics	Y	Y	Y
Public information	Y	Y	Y
Equipment inventories	Y	Y	Y
Locations-types-capacities	Y	Y	Y
Vessels / systems of opportunity	Y	Y	Y
Forms	Y	Y	Y
Notification (initial report)	Y	Y	Y
Incident Management System (ex. ICS)	Y	Y	Y
Initial response assessment	Y	Y	Y
Safety	Y	Y	Y
Permits	Y	Y	Y
Reports	Y	Y	Y



RETOS™

Readiness Evaluation Tool for Oil Spills



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performance
across the energy transition

International Guide for the **Assessment of Oil Spill Response Planning and Preparedness**