Shoreline response programme guidance

A technical support document to accompany the IPIECA-IOGP guidance on oiled shoreline assessment and shoreline clean-up techniques

Oil spill preparedness

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IOGP Report 635

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Preface

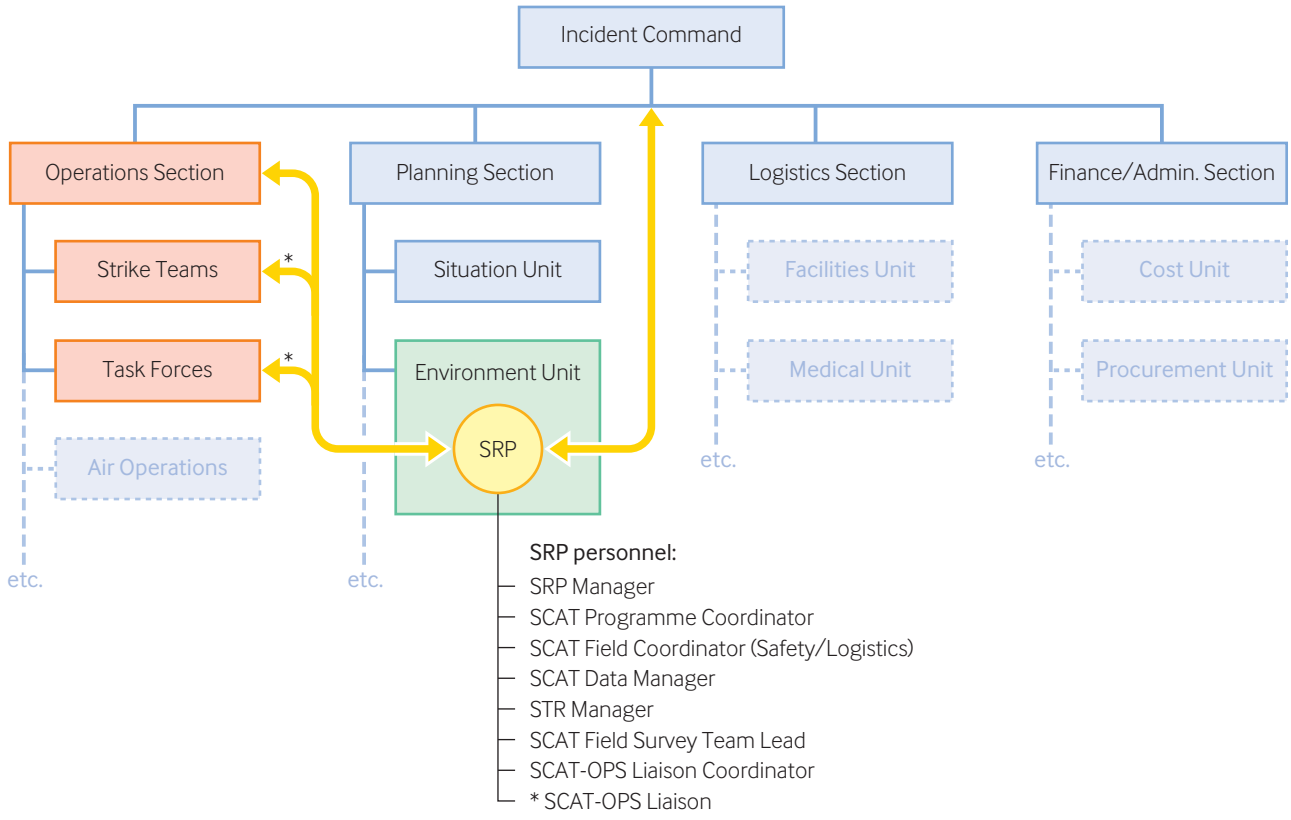
This publication is an extension of the IPIECA-IOGP Good Practice Guide Series which summarizes current views on good practice for a range of oil spill preparedness and response topics. The series aims to align industry practices and activities, inform stakeholders, and serve as a communication tool to promote awareness and education.

This publication builds on the good practice guide entitled *A guide to oiled shoreline assessment (SCAT) surveys* (IOGP-IPIECA 2014a) which sets out the broad principles regarding the processes of conducting surveys of oiled or potentially oiled shorelines using a systematic and objective approach.

This technical support document goes further, to describe how this approach is incorporated into a comprehensive shoreline response programme (SRP) that is fully integrated into the incident management system (IMS). The document is designed as an enabling tool to help oil companies and other stakeholders implement an SRP, and uses the latest experience and knowledge gained from actual oil spills and exercises to demonstrate how to embed the SRP within the IMS. This approach formally establishes the SRP function under the Planning Section and within the Environment Unit, and is founded upon strong liaison connections with the Operations Section and Incident Command (see Figure 1).

Further information on the IMS in the context of oil spill preparedness and response can be found in the good practice guide entitled *Incident management system for the oil and gas industry* (IOGP-IPIECA 2014b).

Figure 1 Simplified organizational structure of a typical IMS, showing the integration of an SRP which incorporates the SCAT programme and serves as the single point of contact for all shoreline-related issues and activities



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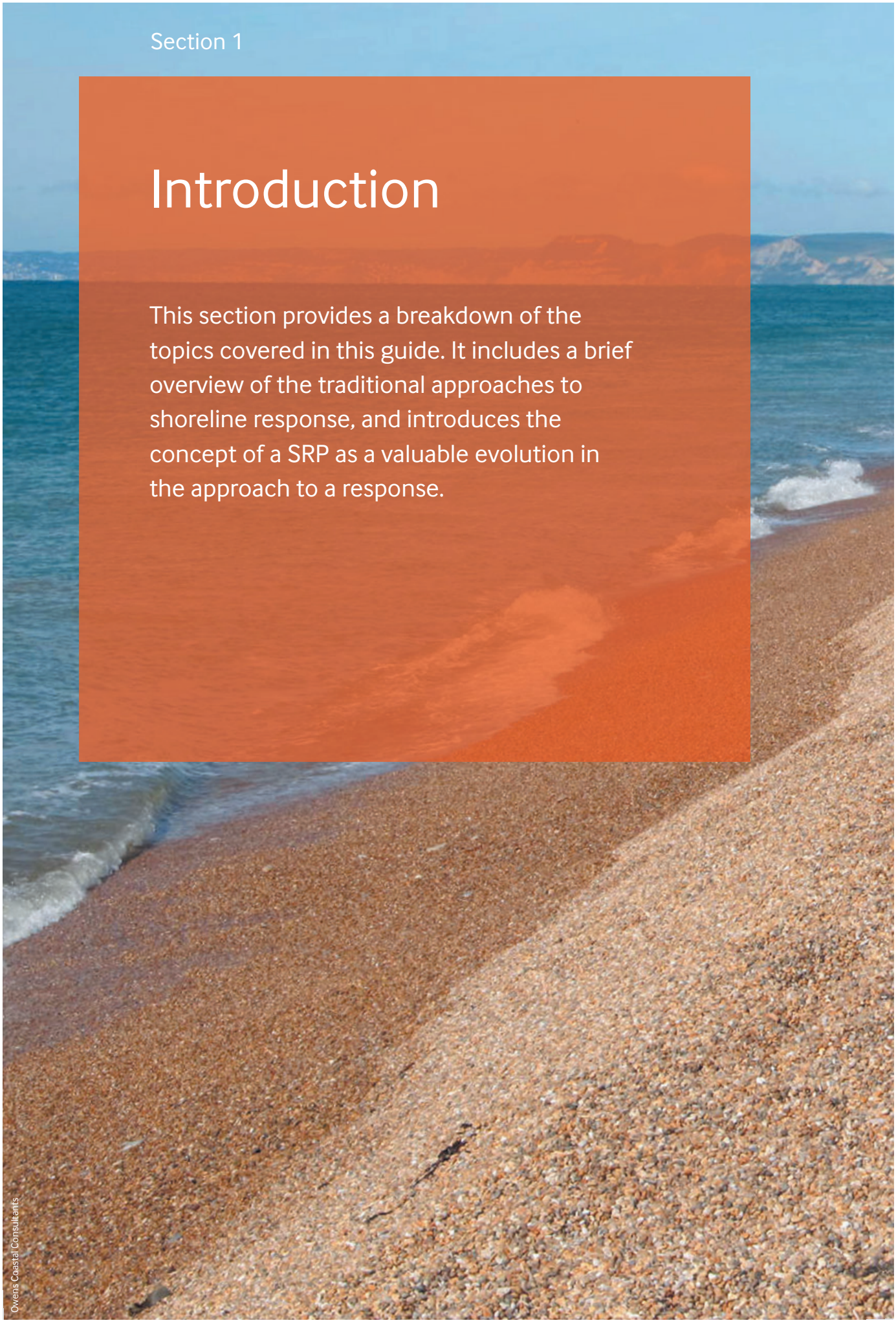
Section 1

Introduction

This section provides a breakdown of the topics covered in this guide. It includes a brief overview of the traditional approaches to shoreline response, and introduces the concept of a SRP as a valuable evolution in the approach to a response.



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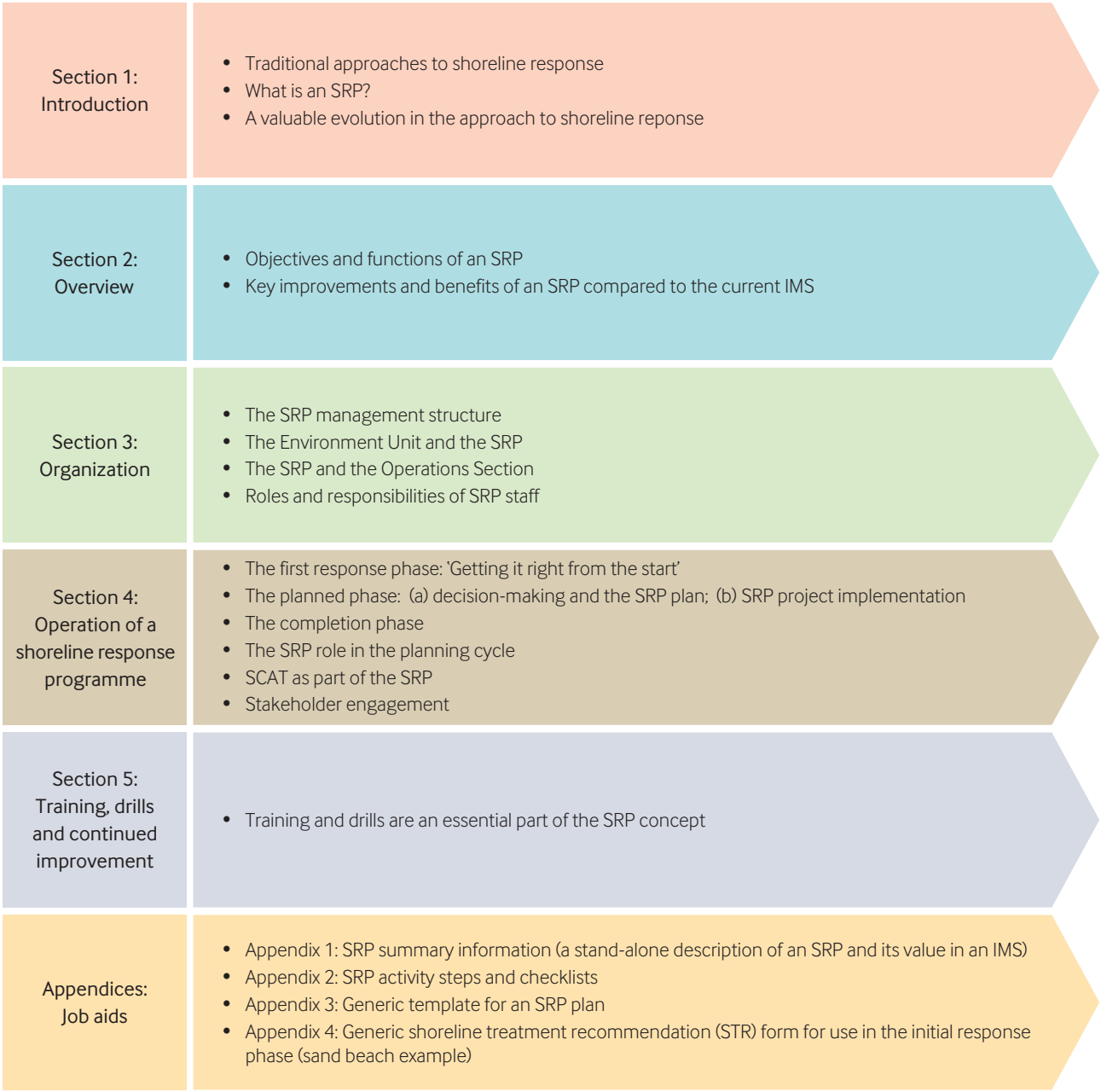
Introduction

HOW THIS GUIDE IS ORGANIZED

This structure of this guide is shown in Figure 2.

Figure 2 Structure of the guide



TRADITIONAL APPROACHES TO SHORELINE RESPONSE

The shoreline component of an oil spill response involves the greatest resource commitment, effort, time and cost elements of most oil spill responses, large or small, and continues far longer than the higher-profile on-water phase of a response. The initial response to most marine spills has, appropriately, been focused on controlling the source and containing and/or removing floating oil. Typically, attention does not begin to shift to the shoreline response until after a shoreline has become oiled. This shift often involves creating and staffing a Shoreline Response Branch within the Operations Section, mobilizing shoreline clean-up resources, establishing the necessary infrastructure to support shoreline operations, developing an oiled shoreline assessment programme—also known as a shoreline clean-up assessment technique (SCAT) programme—within the Environment Unit, along with various other activities, during which time oil continues to impact the shorelines.

Once a SCAT programme is operational, the traditional onshore response process involves shoreline assessment surveys to detect and document the degree of oiling, and the development of recommendations for the most appropriate and effective technique(s) for treating or cleaning each segment of oiled shoreline (i.e. segment/shoreline treatment recommendations or STRs — see Section 4). The STRs are processed by the Environment Unit, and may or may not include stakeholder input; these are then submitted to the Incident Command for approval or modification. Once approved, the STRs are incorporated into the incident action plan (IAP) which is provided to the Operations Section for implementation.

TERMINOLOGY

The terms 'shoreline treatment' and 'shoreline clean-up' are essentially synonymous and both are used in the guide. The term 'treatment' is usually more accurate because 'clean-up' implies that all of the oil is removed from the shoreline. In most response operations, the reality is that some surface or subsurface oil residues may be left intentionally to weather and attenuate naturally.

Once operational, a traditional shoreline clean-up programme can be effective in removing stranded oil, reducing environmental, socio-economic and cultural impacts, and accelerating natural recovery. However, the length of time it usually takes for such a clean-up programme to become fully operational often results in greater initial and sustained shoreline impacts, as well as more costly shoreline response operations taking place over a longer duration. Another drawback with the traditional approach is that, typically, there is no direct communication between the SCAT teams/programme responsible for creating the STRs and the field operations clean-up crews responsible for their implementation. Consequently, operations supervisors and clean-up crews may not have fully understood how, or even exactly where, to conduct the recommended shoreline clean-up activities. This lack of communication has led to reduced efficiency and, in some cases, collateral environmental impacts from the clean-up operations.

WHAT IS AN SRP?

The SRP model addresses planning, preparation, training and response management for the shoreline component of an Incident Management Team (IMT). This guide describes why and how an SRP is created when a shoreline is threatened by oil or has been oiled. The document supports the IPIECA-IOGP good practice guides entitled *A guide to oiled shoreline assessment (SCAT) surveys*[1] and *A guide to oiled shoreline clean-up techniques*[2] which were published in 2014 and 2015, respectively, to provide guidance on managing the response to an oil spill incident. The SCAT good practice guide provides a greater level of detail on the planning and implementation of field survey missions than this guide.

An SRP provides a robust and focused framework to manage, coordinate, integrate and streamline strategic shoreline response planning and recommendations for shoreline treatment and clean-up, from the initiation of the response to the completion of treatment operations.

[1] IPIECA-IOGP, 2014a.

[2] IPIECA-IOGP, 2015a.

More specifically, an SRP provides a single source for information and data related to shoreline impacts, treatment recommendations, tracking the progress of operations, etc. as well as creating direct communication links between the SCAT programme, the Environment Unit, Incident Command and, most importantly, the field operations supervisors and crews conducting the response activities. Additionally, an SRP can facilitate stakeholder input into the STRs through the formal incorporation of this process into the SRP within the Environment Unit.

The SRP is a paradigm shift that creates a management culture, and a planning and preparation structure, to elevate shoreline response to a higher priority and level of support within the current organization of an IMT. An SRP focuses on strategic and tactical planning that integrates streamlined decision and operational implementation processes in order to minimize short- and long-term shoreline impacts and the costs of shoreline clean-up. The concept harnesses the recognized strengths of a SCAT programme within an integrated and focused approach in a manner that constitutes an adjustment to, rather than a change of, the IMT structure.

IN SUMMARY:
What is an SRP?

- The SRP is an arrangement within the IMS that focuses on strategic and tactical planning to minimize the short- and long-term impacts of oil on shorelines and the costs of the shoreline response.
- An SRP builds on the recognized strengths of an IMS-based organization (known as an Incident Management Team or IMT) and a SCAT programme, and utilizes an integrated and focused approach that streamlines and better coordinates the decision and planning processes and the operational implementation activities.

A VALUABLE EVOLUTION IN THE APPROACH TO SHORELINE RESPONSE

Creating an SRP as soon as a shoreline threat is identified is critical to 'getting it right from the start' when responding to an oil spill. The creation of an SRP establishes a shoreline response with an appropriate level of management and operational support during a period when there is competition for these resources, and when a higher priority is typically placed on the on-water activities. Lessons learned from oil spills over the past 20 years have shown that when a shoreline response has been assigned a much lower priority, the initiation of shoreline clean-up is delayed significantly, resulting in:

- missed opportunities to recover the stranded oil when it is most concentrated and before it remobilizes to other areas;
- increased impacts of the stranded oil (environmental, economic and social) due to longer oil exposure times;
- increased waste generation and waste management; and
- increased duration and costs of shoreline clean-up efforts.

These missed opportunities result, at least in part, from the lack of understanding of the SRP concept and its inclusion in drills, exercises and preparedness training. As a consequence, the concept and benefits of 'getting it right from the start' for the shoreline component of a response to a spill incident are often not fully appreciated or understood by planners, trainers or senior decision makers.

Many shoreline response actions, such as sourcing equipment and resources or locating potential staging areas, can be completed before oil reaches a shoreline. The momentum gained by these types of planning activities can save a considerable amount of time during the initial response, and enable clean-up operations to start within a shorter time frame.

After the initial response phase, shoreline operations require a long-term (weeks to months) strategy that does not fit easily into the short-term (days) focus of the typical initial IMS process.

Traditionally, shoreline response planning has been assigned to the Environment Unit, and the implementation of strategies and tactics to the Operations Section. On occasion, this has resulted in accountability and communications issues. The Environment Unit is one of the more complex components of an IMT, as this is the point of convergence of many operational and decisional elements that support the strategies and tactics which drive the direction and pace of a response. The Environment Unit is the primary source of all information for the decision-making processes, and the demands placed upon it are always high at the onset of a response.

During the initial response phase, the focus and efforts of the Environment Unit are typically concentrated on supporting on-water operations, and an SRP should work in parallel with these activities. For example, initial or pre-planned generic STRs for bulk oil removal can be prepared by the SRP Manager to facilitate the immediate progress of shoreline response objectives (see Section 4). These initial STRs for high-value and low-impact locations are developed in accordance with standard accepted practices, such as manual removal or low pressure flushing, and contain recommended good management practices (GMPs) with appropriate concerns or constraints relating to ecological, cultural/human resources and safety issues. The STRs are reviewed by the Environment Unit Leader (ENVL), approved by the Incident Command and passed to the Operations Section to facilitate an immediate shoreline response.

The SRP resides in the Environment Unit and can streamline planning and implementation by providing focused support and an integrated perspective on shoreline issues for the decision-making and planning processes that take place throughout the response. This redefinition of the manner in which data and information are generated and processed, and how shoreline response treatment decisions are implemented, is a significant process shift, yet it does not involve any restructuring or reorganizing of the traditional SCAT field programme or the IMS/IMT.

A communications innovation in the SRP concept is the SCAT-Operations Liaison (SCAT-OPS Liaison) function that is based within the Environment Unit but liaises directly with, and supports, the Operations Section.

This is discrete from the SCAT data collection or inspection functions and is carried out either by the SCAT Field Survey Team or by an assigned individual, depending on the scale of the response. The SCAT-OPS Liaison function facilitates a solid working relationship and builds trust with the Operations Section and their field teams, as well as ensuring that the STRs are appropriately followed.

IN SUMMARY:
A valuable evolution in shoreline response

The response to oil threatening a shoreline, or already on the shoreline, has typically had a much lower priority, and been assigned fewer management and response resources than on-water operations. This has led to the following results:

- Shoreline clean-up has not been effective at a time when the best gain can be obtained.
- Sensitive and vulnerable coastal resources have been exposed for longer periods of time.
- The shoreline clean-up programme has taken longer to complete.

An SRP is a single point of contact within the Environment Unit for all shoreline activities and issues, and provides the following advantages:

- A more rapid and effective response capability at the start of a response.
- A long-term focus for an operation that often continues for several months, or longer, at a time when the management is typically focused on short-term issues related primarily to the on-water response.
- A sustainable and consistent shoreline response through to completion of operations while maintaining effective span of control.
- A communications protocol that bridges the previously separate responsibilities of the Environment Unit (shoreline decision-making and planning processes, including stakeholder engagement) and the Operations Section (implementation of shoreline clean-up activities).
- A streamlining of activities in the Environment Unit which is the point of convergence of the many decision and planning elements that drive the direction and pace of a response.

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Section 2

Overview

This section provides an overview of the objectives and functions of an SRP, and highlights the key improvements and benefits of an SRP compared to the current IMS.

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Overview

OBJECTIVES AND FUNCTIONS OF AN SRP

The objectives and primary functions of the SRP are to:

- focus an appropriate level of management and response resources on the shoreline treatment components at the start of the response before a shoreline is oiled or as soon as it is oiled;
- maintain span of control through to completion of the SRP; the key functions of an SRP may all be filled by one person on a small-scale response, or by multiple people as the scale of the response expands and contracts;
- recommend a feasible and effective SRP and strategy with the appropriate priority level;
- recommend a shoreline oil removal strategy during the initial response phase before the oil reaches the shoreline or while oil is still concentrated, so that the greatest gain can be obtained before the oil is reworked, buried or remobilized by natural processes;
- develop a long-term shoreline treatment strategy in coordination with the IMT decision makers—Planning Section Chief (PSC), Environment Unit Leader (ENVL) and Operations Section Chief (OSC)—to generate, implement and manage an SRP plan;
- implement and manage a SCAT programme, with the SCAT plan being embedded within the SRP plan;
- provide systematic survey data, and processed information and interpretations (maps and tables) to the IMT decisions makers;
- provide products such as shoreline oiling maps, STR tracking maps and associated statistics to enhance situational awareness as well as external communications;
- participate in stakeholder engagement, initiated by the ENVL, to build a consensus on treatment priorities and methods, and on clean-up criteria, based on a net environmental benefit analysis (NEBA)[3]/spill impact mitigation assessment (SIMA);[4]
- incorporate STRs into the IAP (the STRs are derived from the SCAT database, prepared by the SRP team, reviewed by the Environment Unit and approved by the Incident Command);
- liaise with the Operations Section, both in the Command Post and in the field, through the SCAT-OPS Liaison process to ensure that the SRP plan and the STRs in the IAP are understood and implemented appropriately;
- develop and test new or improvised shoreline treatment tactics, and track and monitor STRs and operational progress; and
- manage the inspection of completed STRs (with stakeholder participation) and removal of approved shoreline segments from the response.

OSRL

Shoreline sensitivity assessment exercise in the UK as part of an effort to develop a shoreline response strategy

[3] See IPIECA-IOGP, 2015c

[4] See IPIECA-API-IOGP, 2017

KEY IMPROVEMENTS AND BENEFITS OF AN SRP COMPARED TO THE CURRENT IMS

The following five areas identified for improvement over the current IMS process are addressed by the creation of an SRP:

1. **Separation of responsibility:** The current IMS concept is a proven and effective system but can be prone to communication and accountability issues. In this system the responsibility for a shoreline programme is shared between the Planning and Operations Sections, with the decision processes lodged in the Environment Unit and implementation of those decisions managed by the Operations Section. An SRP acts as a bridge between these two key components of an IMS, and is assigned the overall responsibility for the strategic planning and appropriate implementation of shoreline treatment strategies. Accountability for the SRP is maintained within the Environment Unit through the STR approval process.
2. **Streamlining:** The Environment Unit is the point of convergence of many operational and decisional elements that support the strategies and tactics which drive the direction and pace of a response. An SRP, under the direction of the SRP Manager, can streamline the planning and decision-making processes within the Environment Unit, and enable more effective span of control by providing focused support and an integrated perspective on all shoreline treatment issues, including the collection of shoreline oiling assessment data (SCAT) and STR implementation (see *The Environment Unit and the SRP* on page 18).
3. **Communications:** An SRP offers a single point of contact for the wide range of management and operational issues and activities that relate to a shoreline response; it provides a direct bridge between the Environment Unit and the Operations Section to better coordinate and streamline the decision-making and implementation activities (see *SCAT-OPS Liaison* on page 31).
4. **Operations support:** In the current IMT structure there is no mechanism in place for the Environment Unit to provide direct support for the Operations Section's shoreline clean-up task forces or strike teams in the field; this support is provided by the SRP through the SCAT-OPS Liaison function (see *The SRP and the Operations Section* on page 23 and *SCAT-OPS Liaison* on page 31).
5. **Preparedness and training:** Missed opportunities at the outset of a response—the time when shoreline treatment is typically able to provide the best potential gain—largely result from the lack of inclusion of an SRP concept in drills, exercises and preparedness training. As a consequence, the concept and benefits of setting up an SRP prior to shoreline oiling, or as soon as the shoreline is oiled, by 'getting it right from the start' are typically not fully appreciated or understood by planners or senior decision makers (see Section 5).

An SRP provides numerous benefits and advantages associated with these and other improvements, as described below:

- An SRP elevates shoreline response activities to a higher level of recognition within the IMT prior to shoreline oiling, and during the initial assessment and response phase, so that SRP efforts are initiated immediately and receive an appropriate level of management and operational support.
- Following the initial impacts of an oil spill, an SRP enables a more rapid shoreline response to recover bulk or mobile oil before it is reworked, buried or remobilized through natural processes.
- A more rapid shoreline response minimizes long-term impacts on shorelines and reduces the generation of waste and restoration efforts.
- An SRP provides a single point of contact on all shoreline-related issues, improving communication, decision-making, consistency and accountability.
- An SRP develops objectives and criteria for the initial response when shoreline response actions can be most effective, and maintains a sustained shoreline response effort with span of control as the effort expands and contracts through to completion of operations.
- Time and effort are saved by streamlining the span of control within the Environment Unit, as this is the point of convergence of many operational and decisional elements that support the strategies and tactics which drive the direction and pace of a response.
- An SRP creates a vehicle for long-range strategic planning from the beginning of a response when the focus and decision-making processes are typically concentrated only on the short-term on-water response.

IN SUMMARY:
Overview of an SRP

The key objectives and functions of an SRP are to:

- focus an appropriate level of management and response resources on the shoreline treatment components at the start of the response and, if possible, before oil reaches a threatened shoreline, and maintain span of control through to completion of the SRP;
- manage a SCAT programme as an integral part of the SRP, and liaise with the Operations Section through the SCAT-OPS Liaison process to ensure that STRs are understood and appropriately implemented; and
- manage the inspection of treated shoreline segments, preferably with stakeholder involvement, and manage the removal of approved segments from the response.

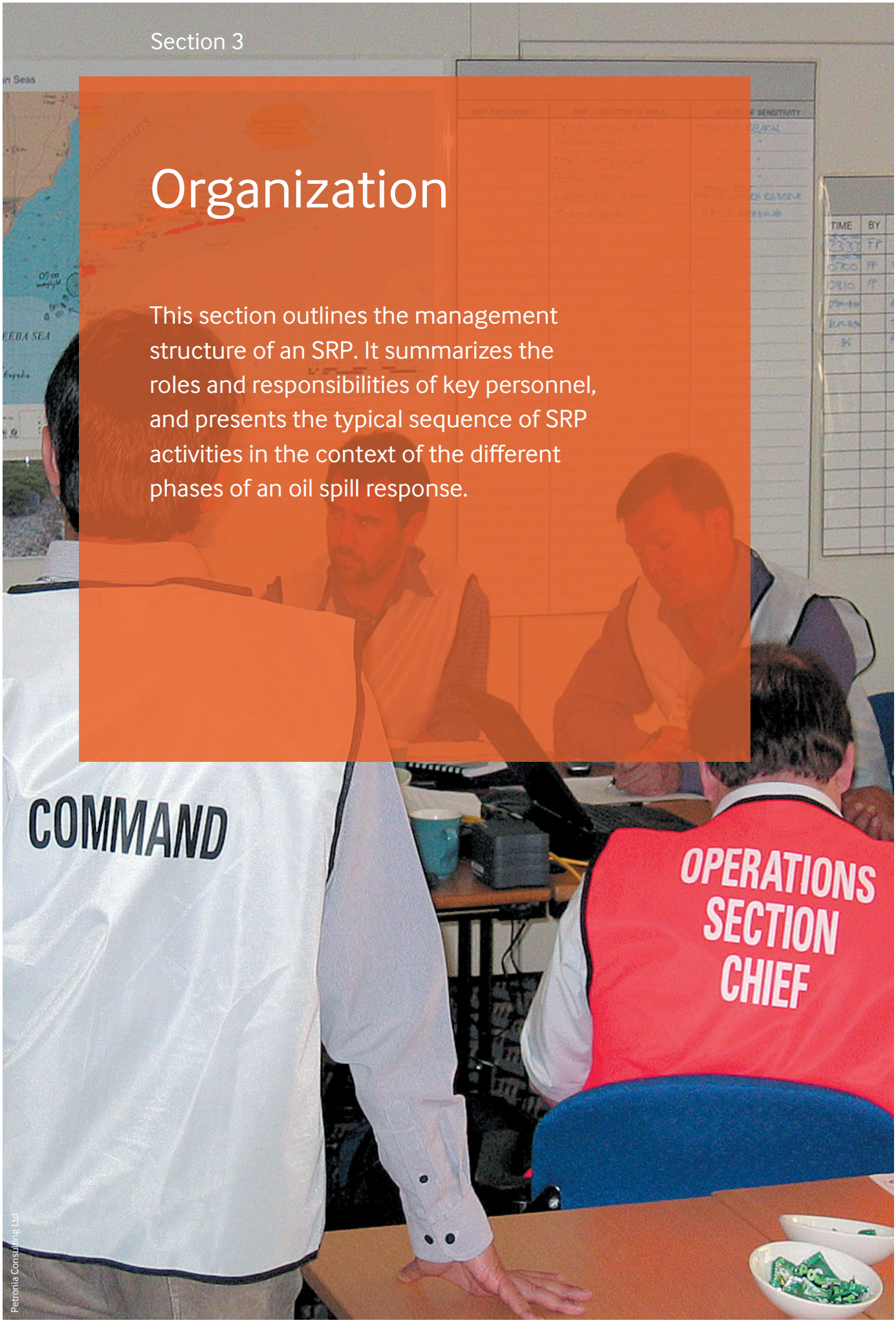
The SRP addresses the following four areas identified for improvement in the current IMS process:

1. The current separation of responsibility and accountability for the planning and decision-making processes lodged in the Environment Unit, and the implementation of those decisions managed by the Operations Section, is bridged by the SRP which serves as the single point of contact for all shoreline issues.
2. Planning and decision-making processes are streamlined within the Environment Unit—which is responsible for a wide range of diverse technical and decision-making activities—by providing focused short-term (daily) support and a long-term strategic integrated perspective on all shoreline treatment issues that drive the direction and pace of a response.
3. This single point of contact provided by an SRP enables better coordination and communication between the Planning Section/Environment Unit and the Operations Section.
4. Currently there is no mechanism in place for the Environment Unit and SCAT teams/programme to provide direct support for the Operations Section's shoreline clean-up task forces or strike teams in the field; this is provided by the SRP team through the SCAT-OPS Liaison function.

Section 3

Organization

This section outlines the management structure of an SRP. It summarizes the roles and responsibilities of key personnel, and presents the typical sequence of SRP activities in the context of the different phases of an oil spill response.



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Organization

THE SRP MANAGEMENT STRUCTURE

The SRP is an innovation to improve the functionality and effectiveness of an IMS. Traditionally, the responsibility for shoreline response planning has been assigned to the ENVL and/or a shoreline clean-up assessment technical specialist (SCA-TS) in the Environment Unit, whereas the implementation and management of strategies and tactics have been assigned to the Operations Section. The Environment Unit is, typically, a large multifunctional group with as many as a dozen or more technical specialists. An SRP that includes the SCAT programme may be a large component of the Environment Unit effort, and typically requires individual leadership for effective span of control. The management structure for an SRP still resides within the Environment Unit; however, it is the SRP Manager rather than the ENVL who functions as the single point of contact for the Incident Command on all shoreline-related issues.

While the Environment Unit continues to focus on environmental issues, and on achieving consensus within the IMT and with stakeholders regarding decisions that define the shoreline response objectives, priorities, constraints and treatment end-point criteria, the SRP team consolidates SCAT and other relevant shoreline oiling data with those decisions to create, implement and manage an SRP through an SRP plan.

The SRP team and the Operations Section work together to confirm that the STRs presented in the IAP are practical and are understood and implemented correctly, and to determine the effectiveness of clean-up treatments.

The role of the SRP Manager is structured around three key areas:

- working with members of the IMT;
- managing the systematic SCAT process; and
- recommending strategic plans for the shoreline response.

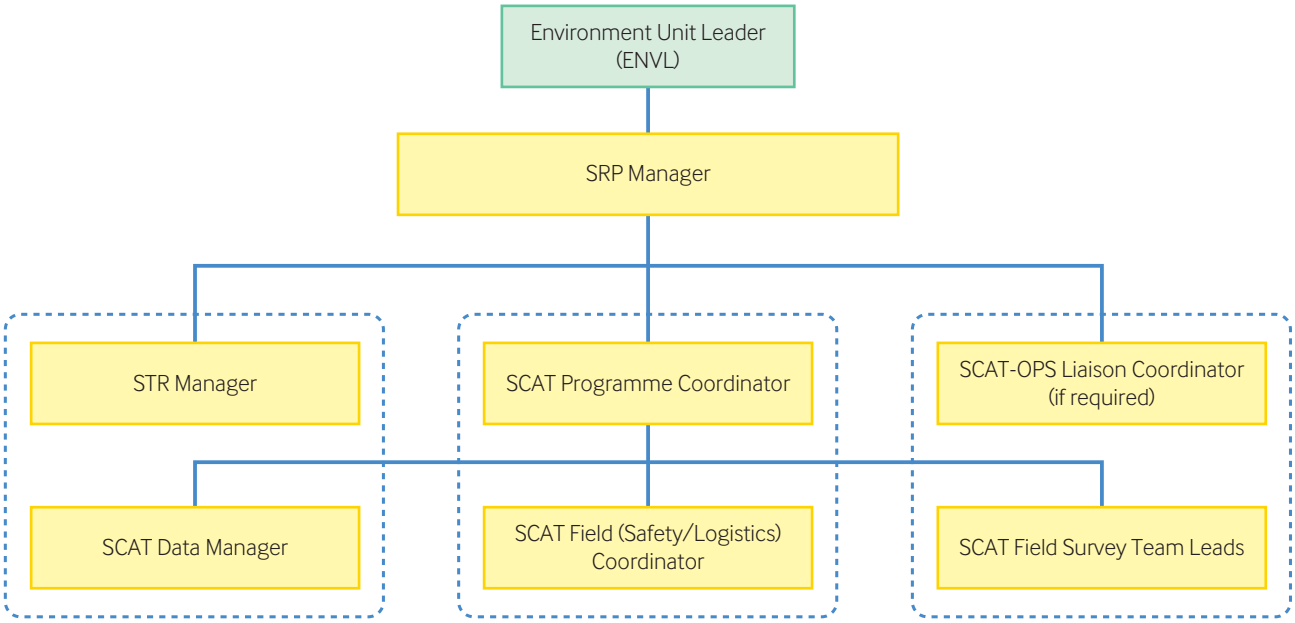
The key functions of an SRP may all be filled by one person on a small-scale response or by multiple people (Figure 3) as the scale of the response and the appropriate span of control expands and contracts.

The SRP is embedded in the Environment Unit, and the SRP Manager reports directly to the ENVL. At a minimum, the SRP would involve the SRP Manager working with the IMT and a SCAT Field Survey Team Lead to conduct the field assessment survey. When a response involves the deployment of two or more SCAT teams it is important that a SCAT Data Manager is mobilized immediately to ensure rapid processing and turnaround of the field data and the generation of STRs. The SCAT Data Manager should ensure that quality assurance (QA) and quality control (QC) of the data are maintained. Data management can quickly become a bottleneck at the outset of a response. The SCAT Data Manager would work with the SCAT Field Survey Team Lead to generate and monitor the STRs.

At the next response level, for a short-term response (days to weeks), the SRP Manager may be supported by a:

- SCAT Programme Coordinator (page 27) who would provide field safety and logistics support for the SCAT Field Survey Teams;
- SCAT Data Manager/STR Manager (pages 29 and 30);
- SCAT Field Survey Team Lead (page 30); and
- in a response with multiple concurrent STRs, a SCAT-OPS Liaison Coordinator (page 32).

Figure 3 Vertical integration for a medium- or large-scale response operation



Initially the SCAT Data Manager could be responsible for the STRs, but for a medium- or large-scale, long-term response with increasing span of control issues (IPIECA, 2015b), there will typically be a need for an STR Manager to coordinate the preparation and approval of STRs, and to track the progress of the individual STRs through to completion (Figure 3). At this level, the SCAT Programme Coordinator would be responsible for:

- the delegation of field activities to a SCAT Field (Safety and Logistics) Coordinator who would work directly with the Team Leads;
- data QA/QC, data management, storage and dissemination (through the SCAT Data Manager); and
- maintaining strong links and communications with the Operations Section through the STR Manager.

Initially the SCAT Field Survey Teams provide support to the Operations teams in the field to interpret and explain the STRs and other Environment Unit decisions, guidelines or constraints (see *The SRP and the Operations Section* on page 23). As the scale of a response and the number of STRs increases, the SCAT Field Survey Team Lead may not have sufficient time or spatial capability to maintain this support, and separate dedicated field SCAT-OPS Liaisons may be deployed as the SRP representatives under the direction of a SCAT-OPS Liaison Coordinator (Figure 3).

IN SUMMARY:
The SRP Management structure

- An SRP is easily integrated into the IMS with a few adjustments at the Unit level, as the SRP Manager would report directly to the Environment Unit Leader (ENVL).
- Span of control within the Environment Unit can be improved by separation of the two primary functions:
  1. SCAT data collection, interpretation and recommendations, and SCAT-OPS Liaison, led by the SRP Manager; and
  2. the decision-making process, supported by a range of technical specialists, stakeholders and Technical Working Groups (TWGs), led by the ENVL or a Deputy or Assistant ENVL.
- As the scale of a response increases, the SRP Manager could become a Deputy or Assistant ENVL.
- To maintain span of control at the medium to large scale, the SRP Manager may be supported by a SCAT Programme Coordinator, a SCAT Field (Safety and Logistics) Coordinator, a SCAT Data Manager, an STR Manager and a SCAT-OPS Liaison Coordinator.

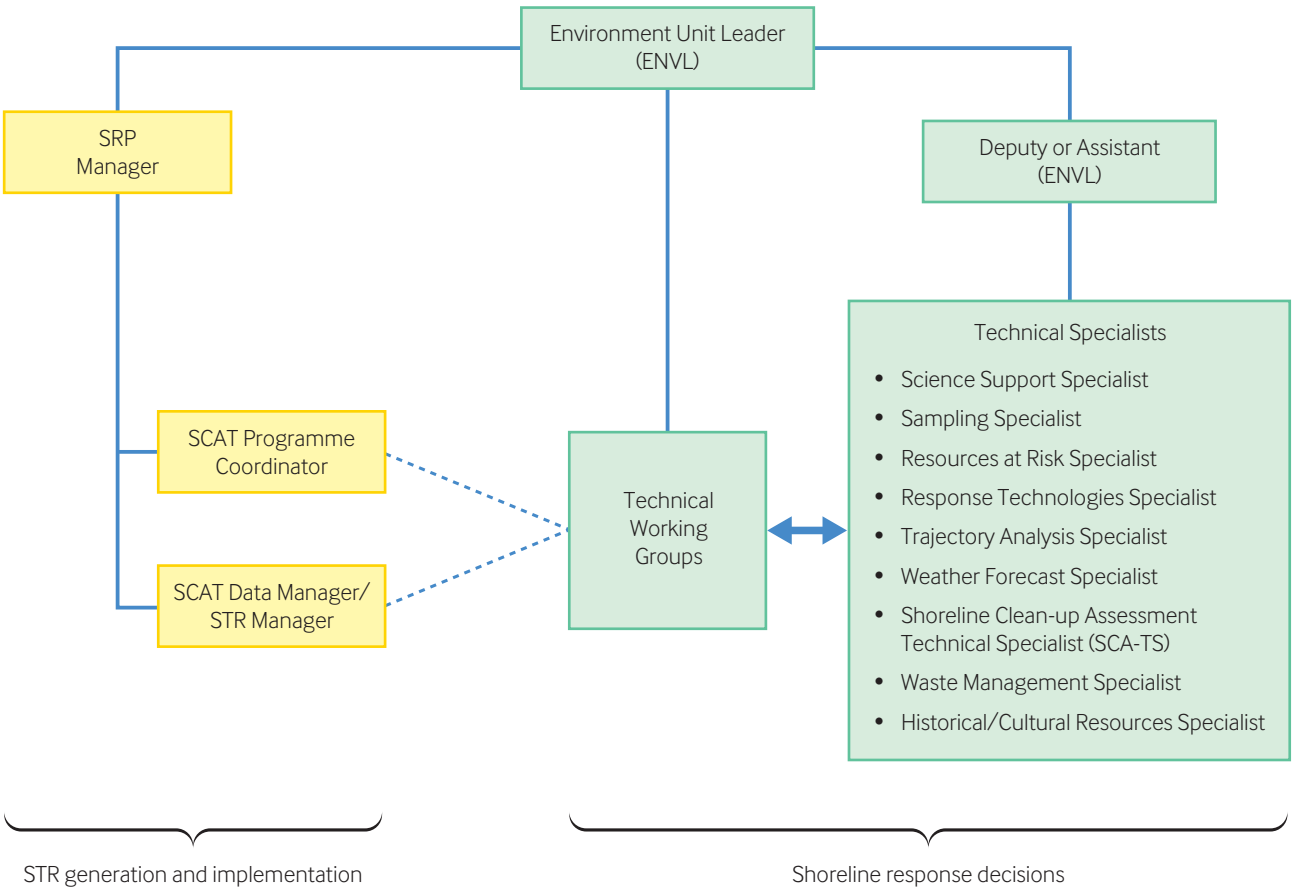
THE ENVIRONMENT UNIT AND THE SRP

The SRP operates within the Environment Unit to help develop the decisions that define the strategy and pace of a shoreline response. Recommendations from the SRP team are provided to the ENVL, who typically consults with Technical Working Groups (TWGs) or Technical Advisory Groups (TAGs) (see Figure 4), and then upward through the Planning Section Chief (PSC) for Incident Command approval of treatment objectives, priorities, clean-up options, constraints (GMPs) and treatment end-point criteria.

At the intermediate scale, during a tiered response (IPIECA, 2015b), span of control for the ENVL may involve the creation of one or more Deputy or Assistant ENVLs. Logically, one or more Deputy or Assistant ENVLs could be assigned to manage the numerous technical specialists within the Environment Unit as, collectively, these provide specific individual technical and scientific functions and subject matter expertise. A separate Deputy or Assistant ENVL could also be assigned to manage the SRP. This arrangement separates and streamlines two distinctly different functions of the Environment Unit (Figure 4), i.e.:

- the decision process that evaluates the data collected by the SCAT team and other field teams, along with data generated by technical specialists, to reach consensus within the TWGs on response (treatment) priorities, strategies and tactics, and completion criteria; and
- the SRP which collects and processes the SCAT field data, generates STRs based on the treatment end-point criteria established by the Environment Unit/TWGs, and works with the Operations Section to implement the STRs and GMPs.

Figure 4 Example of the potential horizontal integration of the Environment Unit and an SRP for intermediate- and large-scale responses



The following activities are undertaken to establish shoreline response priorities, clean-up options, constraints and treatment end-point criteria:

- The SRP team collects and interprets shoreline oiling data and other relevant shoreline information, and presents this to the Environment Unit with recommendations on priorities, objectives, clean-up options, constraints and treatment end-point criteria. The SRP team engages with the Environment Unit's TWGs on matters relating to shoreline issues.
- Once treatment end-point criteria have been agreed, the SRP generates STRs for sections of shoreline that do not meet those criteria, and liaises with the Operations Section on the practicality, implementation and execution of the STRs in the IAP.
- The ENVL is responsible for stakeholder engagement, and for gaining consensus within the IMT and with external stakeholders on decisions that define priorities, clean-up options, constraints, treatment end-point criteria and inspection/closure protocols (see Section 4).
- The Environment Unit works with stakeholders, typically through the TWG process, to:
  - define constraints or GMPs for shoreline treatments;
  - develop treatment end-point criteria;
  - obtain necessary approvals and permits;
  - monitor and protect threatened and endangered species and other wildlife, or historical and cultural resources; and
  - reach consensus on individual or generic STRs.

The SRP function in the Environment Unit is directed by the SRP Manager, with a focus on:

- collection, interpretation and presentation of SCAT shoreline information;
- generation of SRP recommendations for the Environment Unit technical specialists/stakeholder group;
- development and implementation of an SRP/SCAT plan;
- generation of STRs for shoreline segments or zones that do not meet the treatment end-point criteria;
- implementation of the SRP objectives and decisions approved by the Incident Command; and
- liaison with the Operations Section.

The Environment Unit function to support the SRP may be assigned or delegated to a SCA-TS—an existing defined position in most IMTs. Under the guidance of the ENVL, the Environment Unit SCA-TS would focus on:

- synthesis of available shoreline data and information, including SCAT and shoreline operations data, and communicating these summaries internally within the IMT to other specialists in the Environment Unit, the Planning Section and Incident Command, or externally;
- engagement of a range of internal and external technical specialists and subject matter experts;
- establishment and coordination of TWGs or TAGs, such as a Shoreline Treatment Advisory Group (STAG); and
- engagement of stakeholders.

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Shoreline assessment teams collecting oiling data and other relevant shoreline information

Box 1 The three phases of a response to an oil spill

Initial response phase

The initial response phase is the period when oil first threatens a shoreline, begins to wash ashore, or is already on the shoreline as the response operation commences. At first, larger quantities of oil typically accumulate within limited areas where they can be recovered before being reworked, buried or remobilized by natural processes. SCAT teams may not have sufficient time to undertake detailed shoreline surveys during this phase due to the fast-moving pace of the response; the timely development of initial treatment end-point criteria and tactics may therefore need to be based on reconnaissance information to enable immediate gross oil removal by non-intrusive techniques. During this phase the ENVL may have limited involvement with shoreline issues due to numerous other initial response demands, and may rely on the SRP Manager for leadership of the SRP and the identification of high-value, low-impact options.

Planned phase

The planned phase of a response is a proactive, sequenced long-term project strategy developed by the Environment Unit and the SRP team based on data from a detailed SCAT ground survey. A key function of the SRP Manager is to facilitate the transition of the shoreline response from the initial response phase to the planned phase as early as possible. The planned phase typically has two components: the decision-making stage that provides the basis for the SRP/SCAT plan and the STRs, and the project implementation stage during which the STRs are implemented. Decisions made during the planned phase may result in more than one set of treatment targets. Typically, the first operational priority is to target locations with the heaviest (bulk oil) concentrations with an interim set of treatment end-point criteria. Once this treatment is completed, the Operations teams may return to some of these locations to apply further treatment to meet more stringent end-point criteria, or the SRP may allow for natural weathering and attenuation to remove the residual oil.

Completion phase

The completion phase begins once the implementation of STRs has begun, hence there is a degree of overlap with the planned phase. Each of the treated areas are inspected to ensure that the treatment has met the recommended end-point criteria. New STRs may be generated while existing STRs are being implemented or have been signed off. This evolving process is coordinated by the SRP Manager and/or the STR Manager, depending on the scale of the response and the number of STRs (see Figures 3 and 6, and Figure 8 in IPIECA-IOGP, 2014a).

The sequence of activities that is typical of most response operations is presented in Figure 5 on page 21 and Table 1 on page 22. These illustrate the separate, but complementary, roles of the SRP team, which include both SCAT programme and Environment Unit activities (SRP and SCAT activities are shown in yellow, and Environment Unit activities in green).

This sequence involves an initial SCAT reconnaissance (initial response phase) to determine the scale and degree of shoreline oiling. This enables the Environment Unit to decide where to quickly mobilize the Operations clean-up crews to attend to first priority, high-value and low-impact shoreline locations to undertake oil recovery. The SCAT reconnaissance is followed by detailed ground shoreline assessments undertaken by the SCAT teams.

A decision-making stage then follows, in which the SRP uses the data collected by the SCAT teams to develop guidance, criteria and a strategy to define the shoreline response, and enable the SRP to prepare STRs and an SRP plan.

Step E5 in Table 1 (page 22) is one of the critical drivers of a shoreline response, as it involves the engagement of the Environment Unit with the IMT and stakeholders, to reach a consensus on the shoreline response objectives, priorities, treatment end-point criteria and operational end points recommended by the SRP. At some point, this decision process may involve approvals by regulatory bodies for the use of non-standard treatment techniques. The process culminates in approval of these decisions by the Incident Command.

These decisions enable the SRP's SCAT Data Manager to develop a procedure by which the SCAT database automatically determines which shoreline segments or oiled zones do not meet the treatment end-point criteria, and are therefore actionable and require an STR. The proposed STRs for segments or zones to be actioned are prepared by the SCAT teams and the STR Coordinator, reviewed by the Environment Unit and approved by the Incident Command for inclusion in the IAP. The STRs then effectively become the work orders for implementation by the Operations field teams.

Figure 5 Typical sequence of activities for an SRP

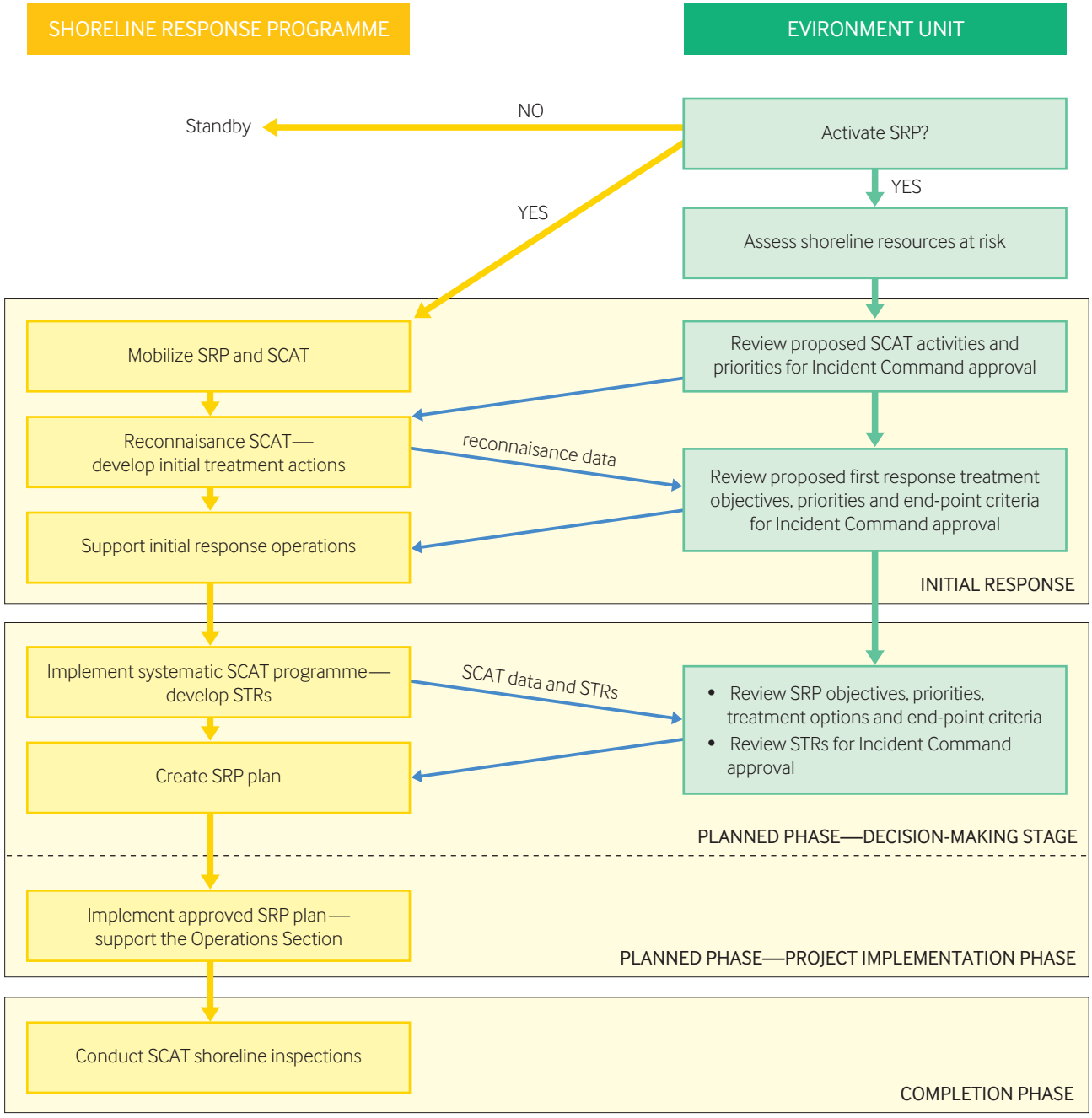


Table 1 Step-wise sequence of shoreline-related SRP activities and Environment Unit responsibilities

SHORELINE RESPONSE PROGRAMME ACTIVITIES	ENVIRONMENT UNIT RESPONSIBILITIES
	STEP E1 Activate the SRP team, if possible prior to shoreline oiling.
STEP S1 Mobilize the SRP and SCAT to the appropriate scale.	**STEP E2** Assess shoreline resources at risk (factors include oil presence, volumes, transport, weathering, etc.).
	STEP E3 Develop initial response SCAT activities, priorities and recommendations, and communicate the decisions to the SRP Manager.
STEP S2 • Undertake initial response SCAT shoreline reconnaissance missions. • Provide initial shoreline oiling data, along with proposed objectives, priorities and STRs, to the Environment Unit based on the field observations.	
	STEP E4 • Process SCAT reconnaissance data. • Review and approve initial response SRP objectives, priorities and recommendations. • Provide decisions approved by the Incident Command to the SRP Manager.
STEP S3 • Provide support for initial response shoreline treatment activities via the SCAT-OPS Liaison function. • Prepare the SRP plan, which includes proposed shoreline treatment objectives, priorities, options, end-point criteria and the SCAT plan. • Prepare draft STRs, in consultation with the Operations Section, based on the decisions approved in STEP E5.	**STEP E5** • Review and obtain acceptance (TWGs with stakeholders) and Incident Command approval of planned phase shoreline treatment objectives, priorities, options and end-point criteria proposed by the SRP Manager. • Provide decisions approved by the Incident Command to the SRP Manager.
STEP S4 • Undertake planned phase (decision-making stage) SCAT data collection surveys and other missions including SCAT-OPS Liaison. • Conduct testing, experimentation, effectiveness, etc. of treatment options.	**STEP E6** • TWGs and Safety Coordinator review draft STRs with regard to constraints and good practices. • Include completed STRs in the IAP for approval by the Incident Command and implementation by the Operations Section.
STEP S5 • Carry out the SRP plan (planned phase—project implementation stage) • Conduct SCAT-OPS Liaison activities at the Command Post and in the field to support the STRs. • Conduct monitoring of treatment and recovery.	
STEP S6 • SCAT teams conduct STR inspections, and the SRP implements a progressive closure process (completion phase).	

IN SUMMARY:
The Environment Unit and the SRP

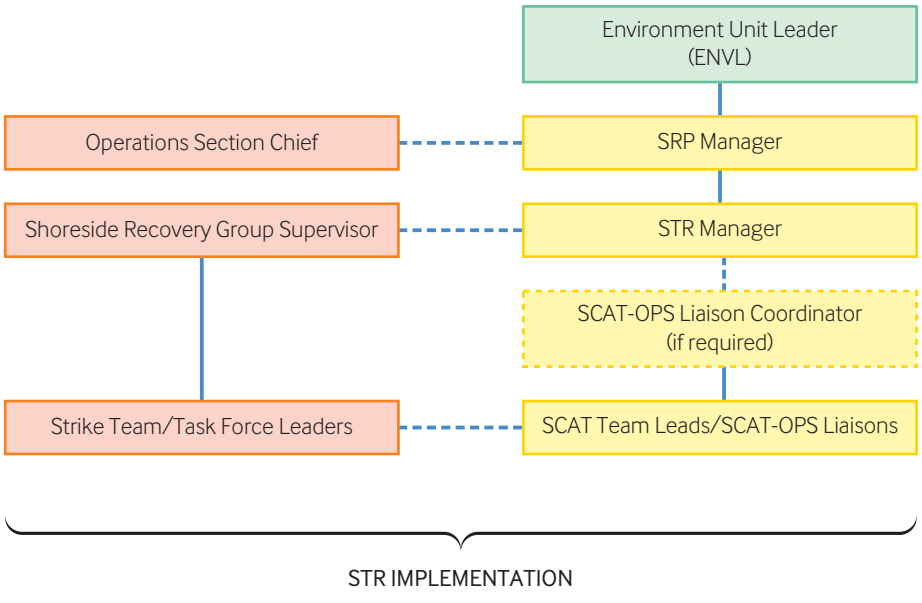
- The Environment Unit reviews shoreline treatment objectives, priorities, clean-up options, constraints (GMPs) and treatment end-point criteria recommended by the SRP Manager based on data collected by the SCAT survey and other field programmes.
- Decisions are developed, typically in TWGs or TAGs, by consultation with technical specialists, subject matter experts and stakeholders.
- The SRP prepares STRs for sections of shoreline that require treatment actions based on these decisions; the Environment Unit reviews and obtains approval of the STRs, and the SRP or STR Manager oversees the implementation and completion of the STRs.

THE SRP AND THE OPERATIONS SECTION

For medium- and large-scale responses, the SRP team works closely with the Operations Section, both in the Command Post and in the field (Figure 6).

The SCAT Field Survey Team Leads that initiate the STRs are well suited to explain the various aspects and nuances of the STRs to the clean-up crews. However, as the scale of the response increases, the SCAT Field Survey Team Leads often do not have the time available, or the spatial capability, to serve in this role of SCAT-OPS Liaison. In such cases, technical specialists in shoreline clean-up can be brought in to fill the liaison role. The SCAT-OPS Liaisons represent the SRP, and may be embedded full- or part-time in the Operations Section at the Command Post, or in field shoreline clean-up task forces or strike teams (see *SCAT-OPS Liaison* on page 31). The SCAT-OPS Liaisons provide field support to the Operations teams, interpreting and explaining the STRs and other Environment Unit decisions, constraints or guidelines (GMPs). SCAT-OPS Liaison field representatives should have a single full- or part-time point of contact in the Operations task forces or strike teams, to ensure and maintain effective communication. It may be appropriate to appoint a SCAT-OPS Liaison Coordinator to provide span of control for medium- or large-scale incidents with multiple concurrent STRs and field operations, and with multiple SCAT-OPS Liaison personnel (Figure 6).

Figure 6 Example of the potential horizontal integration of the Operations Section and an SRP on intermediate- and large-scale responses



The SRP team and the Operations teams will view implementation of the shoreline treatment decisions from different perspectives, and will look to each other to ensure alignment between the intent of the STRs and the outcomes from their implementation (see *SCAT-OPS Liaison* on page 31). The Operations side recognizes that the SCAT-OPS Liaison provides an explanation and interpretation of the intent of the STRs, and acts as a communication bridge between the decision-makers, planners and stakeholders in the Command Post and the Operations teams in the field. The SRP side relies on the Operations teams to provide a reality check on the clean-up activities recommended in the STRs, and to implement them appropriately. The Operations teams continuously monitor the effectiveness of the treatment activities and any operational concerns or challenges that may arise during the implementation of the STRs; they advise and recommend, through the SCAT-OPS Liaison, appropriate adjustments or reassessments to ensure that the treatment end-point criteria can be met in accordance with GMPs. This consultation between the Operations Section and SCAT provides the mechanism by which modifications to an STR can be recommended to the Environment Unit.

SRP/SCAT activities and deliverables may not follow the same pace or time schedule as Operations activities or other field components assigned in the work orders in an IAP. Frequently, SCAT field information collected on a particular day may not be not available, or necessary, for planning Operations activities for the following day. SCAT surveys quickly outpace the ability of the Operations teams to complete the assigned STRs so that the SRP/SCAT rhythm may appear to be out of synchronization with the IAP, when in fact the SRP/SCAT Programme is following a carefully designed longer-term process.

IN SUMMARY:
The SRP and the Operations Section

- The SRP team consults with the Operations Section on the preparation of STRs to ensure that the proposed activities are safe, reasonable/feasible and can achieve the intended objectives.
- The SCAT Field Survey Team Leads or SCAT-OPS Liaison support the Operations Section to ensure that supervisors at the Command Post and in the field understand the intent of treatment end-point criteria and the constraints and GMPs described in the STRs during STR implementation.
- Operations supervisors in the field communicate with the Command Post through the SCAT team leaders or SCAT-OPS Liaisons, regarding progress, concerns or challenges, and treatment effectiveness.
- As treatment progresses, the SCAT-OPS Liaisons and Operations supervisors assess the effectiveness of the treatment activities and decide on an appropriate timing for a SCAT inspection on part or all of the shoreline covered by an STR.

ROLES AND RESPONSIBILITIES OF SRP STAFF

The various roles involved in the staffing of an SRP are described below. Only the primary responsibilities of each assignment are included, and it should be borne in mind that, in practice, many additional responsibilities would be involved in managing and running an SRP. The roles and functions described are likely to change depending on the specific situation, and therefore need to be flexible and adaptable.

SRP Manager

The SRP Manager reports to the Environment Unit Leader and is responsible for the SRP. Primary responsibilities of the SRP Manager include the following:

- Providing input to the Planning and Operations Section Chiefs, and ensuring that the IMT understands the role of the SRP (to minimize shoreline impacts) and SCAT programme (to assess shoreline oiling and support the Operations Section) in the high-level objectives from the outset.
- Communicating SRP objectives and strategies to the SRP team.
- Creating the SRP plan, and acting as the single point of contact for the IMT on all shoreline-related issues.
- Establishing and monitoring the SCAT programme.
- Ensuring that accurate information is communicated on all shoreline response issues.
- Working with the Environment Unit SCA-TS to develop the SCAT and SRP plans and strategies, tracking STRs, and determining the need for, and managing, any shoreline treatment trials or equipment field tests.
- Working with the SCAT Programme Coordinator to set up the SCAT Programme and, with the ENVL and Environment Unit SCA-TS, coordinating the decision-making process that helps define the shoreline response.
- Ensuring that the intent of shoreline treatments, constraints and GMPs are understood and implemented by the Operations Section, and overseeing field treatment trials or tests (through the SCAT-OPS Liaison process).
- Providing information to the ENVL to support the PSC at planning and tactics meetings.
- Working with the Environment Unit SCA-TS to manage the expectations of the Environment Unit, TWGs and external stakeholders regarding practicable treatment methods for different oiled shore types, treatment rates, and the consequences of different treatment end-point criteria.
- Mobilizing resources, and reorganizing/demobilizing as shoreline targets are achieved and the SRP moves towards closure.

After the response transitions from the initial phase to the planned phase (decision-making stage), a high proportion of the SRP Manager's time and effort is focused initially on planning and decision-making activities. This involves communicating and working with the IMT to establish the systematic SCAT survey programme and generate the SRP plan, and ensuring that the STR process is understood, both internally within the IMT and by external stakeholders (see Figure 7 on page 26).

After the next transition, into the project implementation stage of the planned phase, the emphasis of the SRP Manager's role changes to include greater engagement with the ENVL and stakeholders, to maintain confidence in the programme and help them to understand how completion and closure will be achieved. The SRP Manager monitors the evolving response to ensure that the SRP is aligned with the objectives of the Incident Command, and provides input as necessary to maintain that alignment.

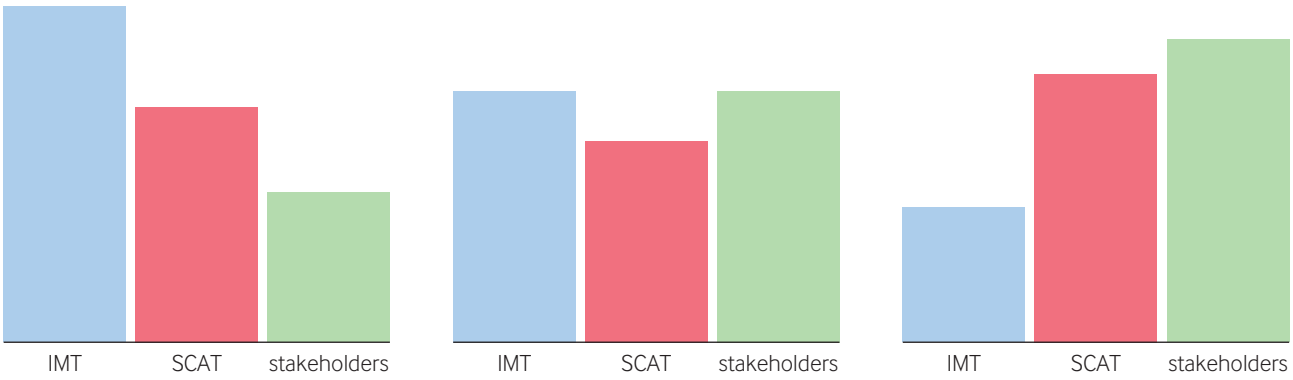
The level of engagement with stakeholders typically increases with the transition to the completion phase, as STR inspection reports (SIRs) often recommend that oil is left for natural attenuation, either where concentrations are below those required by the treatment end-point criteria or for SIMA/NEBA reasons.

The typical daily activities of an SRP Manager following the initial response phase are described and summarized in Appendix 1.

A Deputy or Assistant SRP Manager is an optional role which may be established to maintain span of control within an SRP team. The Deputy/Assistant SRP Manager would report to the SRP Manager and focus on establishing and maintaining good communication and cooperation between the SRP/SCAT programme and the Operations Section, while the SRP Manager focuses on interactions with the ENVL and the Planning and Operations Sections' Chiefs.

A Deputy SRP Manager could be responsible for directing the SCAT programme through the SCAT Programme Coordinator. In addition, the Deputy SRP Manager could be responsible for tracking the generation, review and approval of STRs during the planning stage, and the operational status of STRs during the operational stage. In the case of larger incidents with multiple concurrent active STRs in the IAP, this duty may be delegated to an STR Manager.

Figure 7 The relative time and effort spent by the SRP Manager on different elements of the IMT (colour blocks indicate changes over time after the initial response)



PLANNED PHASE—DECISION PROCESS

- Engage with the IMT— this is critical for ensuring that the SRP process is working properly.
- Oversee the SCAT process to ensure that it settles into a steady rhythm.
- Encourage stakeholders to recognize that a systematic process is emerging; it is understandable that stakeholders may be concerned, hence it is important to provide reassurance about committing to the STRs and how future activities will unfold.

PLANNED PHASE—IMPLEMENTATION

- Manage pressure from the IMT to 'go faster' and get things done more quickly.
- Once the systematic SCAT process is in place and running well, it requires little attention other than dealing with unexpected events.
- As stakeholders become more confident and start to see results, engage with them and look ahead to the next phase.

COMPLETION PHASE

- Work with the IMT to reorganize and downsize as shoreline targets are achieved and the programme moves towards closure.
- Ensure that the SCAT process remains focused on the treatment end-point criteria, and recognize when sufficient treatment has been completed for each STR.
- Stakeholders may become concerned as some segments are not fully clean; work with them to understand the principles of NEBA/SIMA and to accept that natural recovery may be the best option.

SCAT Programme Coordinator

The SCAT Programme Coordinator is the primary point of contact, through the SRP Manager, within the IMT for all SCAT activities. Primary responsibilities of the SCAT Programme Coordinator include:

- acting as the project manager for the SCAT programme, and working with the SRP Manager to develop the SCAT programme objectives and plan, and to address the requirements or concerns of relevant stakeholders;
- designing and directing the SCAT programme and coordinating the SCAT Field Survey Teams;
- working with the SCAT Data Manager to ensure that the planned SCAT field survey data and terminology are aligned with the treatment or end-point criteria so that the appropriate types of information and levels of detail are generated;
- implementing and managing the SCAT programme plan and day-to-day activities, including:
  - ensuring that field teams are properly trained, remain calibrated, and are familiar with current good practices;
  - establishing GMPs and safety protocols for the field teams;
  - chairing SCAT Field Survey Team briefings and debriefings; and
  - producing daily and weekly summaries of field reports;
- managing the SCAT Field (Safety/Logistics) Coordinator and SCAT Data Manager, as well as the SCAT Field Survey Teams; and
- medium-term planning, with the STR Manager, regarding priorities and staffing, and working with the Environment Unit to coordinate with agencies and other organizations (land managers, land owners, etc.) that may not be directly involved through the IMT.

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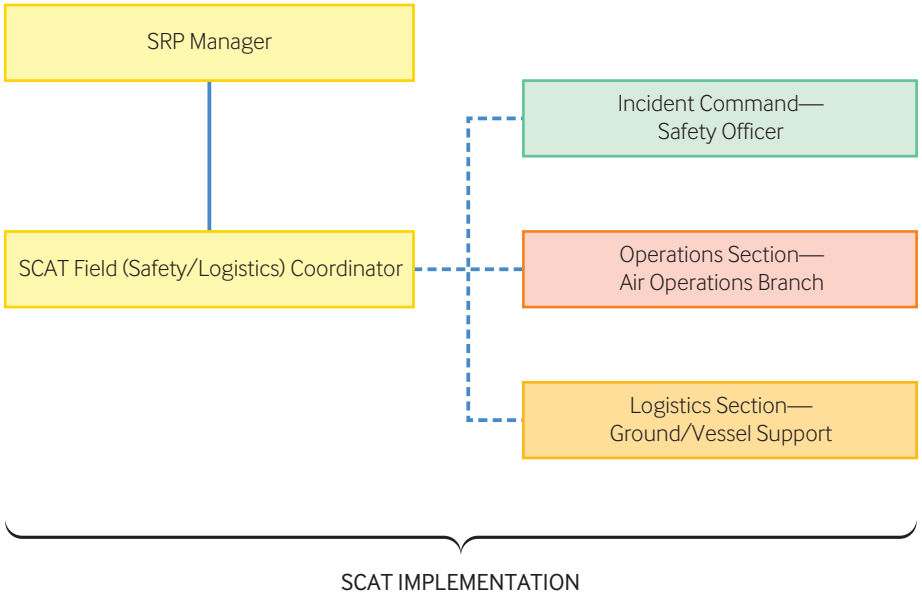
A shoreline response team inspects an oiled shoreline for subsurface oil.

SCAT Field (Safety and Logistics) Coordinator

The SCAT Field Coordinator works with the SCAT Programme Coordinator to develop daily missions and a rolling strategy for the field teams, and to provide the necessary logistics support and equipment that they require. Primary responsibilities of the SCAT Field Coordinator include the following:

- Producing the SCAT Safety Plan and Job Safety Analysis (JSA) and submitting these for review and approval by the Safety Officer.
- Planning logistics for future missions and working with the SCAT Programme Coordinator and other members of the Environment Unit to generate short- and long-term mission plans.
- Submitting requests for personnel, equipment, field supplies and transportation.
- Providing information to the Resources Unit for the next operating period on the positions and number of personnel in the SCAT programme, and on the number of active field teams, their assigned missions and geographic locations.
- Ensuring that the Operations Section is aware of the current and future missions and assignments of the SCAT Field Survey Teams whenever they are engaged in areas of active operations and, if applicable, the intended locations of SCAT-OPS Liaison personnel.
- Coordinating with the Logistics Section, Air Operations and Safety Officer on transportation, equipment and safety issues, respectively (see Figure 8).
- Tracking and maintaining communications with the field teams throughout the day.

Figure 8 Example of horizontal integration between the SCAT Field Coordinator and Safety and Logistics in an IMT



SCAT Data Manager

The SCAT Data Manager reports to the SCAT Programme Coordinator and is responsible for processing field data, quality assurance, data storage and dissemination within the IMT, and for providing the SCAT Field Survey Teams with the maps and data required to conduct their missions. Primary responsibilities of the SCAT Data Manager include the following:

- Working with the SCAT Programme Coordinator to ensure that the planned SCAT field survey data and terminology are aligned with the treatment or end-point criteria so that the appropriate types of information and levels of detail are generated.
- Overseeing the production of reports, maps and data summaries, both for the Planning Section and Incident Command staff, as well as for the supporting field teams (in the case of a small response, the Data Manager could input data and produce the reports).
- Responsibility for the following three distinct QA/QC steps involved in processing the field data and generating any data products:
  1. SCAT Field Survey Team Lead review of the content of the Shoreline Oiling Summary (SOS) form and any other field data (e.g. SIR form) for correctness, accuracy and consistency (for example, with regard to field notes or photographs);
  2. SCAT Data Manager or data technician review of the field data and information required for completeness at the time of entry of the SOS form and any other information into the database; and
  3. SCAT Programme Coordinator review of daily SCAT data reports as well as any oiling category summary maps and tables generated from the database to ensure that the field mission objectives are accomplished and that the data/information are consistent with the survey protocols and SCAT programme objectives.
- Ensuring that all three QA/QC components are completed before any products are delivered to the Situation Unit for distribution, or to the Documentation Unit for archiving or sharing with other internal IMT staff, and with external users as might be defined in a data-sharing agreement. (If this process is not followed, data may have to be revised at a later time, which reduces the credibility and confidence in the data if SCAT maps and tables have to be changed.)
- Responsibility for incorporating digital methods for data collection that are compatible with the technology platform established by the Situation Unit.
- Responsibility for initiating STRs from the SCAT database when oiling conditions documented by the shoreline assessment surveys do not meet the treatment end-point criteria, and for communicating to the SRP Manager or SCAT Programme Coordinator that an STR is required for a shoreline segment if the SCAT Field Survey Team Lead has not already made this determination in the field.
- Responsibility for data products, such as maps and associated statistics on shoreline oiling conditions, and for the status of STRs for situational awareness as well as external communications.
- Responsibility for the archiving of all SCAT data and documentation.
- Ensuring that legal protocols are followed to preserve the original SOS forms — SCAT forms are a factual legal document that may be used for claims, liabilities or damage assessment.

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The SCAT Data Manager is responsible for a range of data quality, processing and dissemination duties, which include providing SCAT Field Survey Teams with maps and data required to conduct their missions.

STR Manager

The Shoreline Treatment Recommendations (STR) Manager is responsible for the preparation of STRs, on the basis of the SCAT oiling data, in consultation with the SCAT Field Survey Team Leads, the Environment Unit (SCA-TS and TWGs) and Operations Section for shoreline segments or zones that do not meet the treatment end-point criteria. Additional primary responsibilities of the STR Manager include the following:

- Working with the Environment Unit's Technical Specialists, subject matter experts and stakeholders to ensure that their requirements and constraints are incorporated in the recommendations.
- Working with the Environment Unit to:
  - obtain reconnaissance information to assess priority areas for initial SCAT surveys, and gain approval for land access where appropriate; and
  - obtain approvals as required by local or regional regulations (e.g. concerning endangered species, cultural and historical resources, etc.) prior to undertaking shoreline activities.
- Working with the Operations Section in the Command Post to:
  - obtain advice and guidance on the feasibility, practicality and effectiveness of potential treatment strategies and tactics;
  - ensure that the methods and priorities proposed in the STRs, which are effectively the work orders for Operations Section activities, can be implemented safely and appropriately; and
  - ensure that the intent of the constraints, GMPs and treatment end-point criteria described in the STRs incorporated in the IAP are understood.
- Tracking the progress of recommended STRs through the decision and approval process, and providing any necessary support, such as clarifications or additional field data/observations.
- Tracking the status of approved STRs and providing information to the SCAT Data Manager to generate and continuously update progress reports (including maps and/or tables).

SCAT Field Survey Team Lead

A SCAT Field Survey Team Lead is responsible for the activities and safety of a SCAT team once they depart to the field. The primary responsibilities of the SCAT Field Survey Team Lead include the following:

- Before deployment, ensuring that the team has all of the appropriate clothing, equipment and data packages (maps, STRs, SCAT field activity GMPs, etc.) required for the mission.
- Conducting 'tailgate' safety briefings at the site prior to the mission, with an emphasis on the mitigation of potential risks specific to a location.
- Conducting shoreline clean-up assessment (SCA) surveys to observe and systematically collect data on shoreline oiling conditions from aerial reconnaissance and ground surveys, or completing other survey mission objectives (e.g. post-treatment assessments (PTAs), STR inspections, beach profiling, or photographic monitoring).
- Monitoring and documenting any changes in oiling conditions and the effectiveness of treatments, and comparing these with the treatment objectives and treatment end-point criteria.
- Ensuring consensus within the survey team so that products such as the SOS report or SIR forms reflect an agreed characterization or documentation of the field observations.
- Working with field team members to develop initial STR recommendations where appropriate.
- Maintaining communications with Operations team supervisors in the field if a SCAT-OPS Liaison role has been assigned.
- Identifying possible locations for long-term monitoring.

The SCAT Field Survey Team Lead plays a critical role in the engagement and education of stakeholders who participate in the field surveys. Agency or stakeholder representatives may have little or no experience or knowledge regarding the shoreline character, coastal processes, the behaviour of oil on shorelines, treatment methods or field safety protocols. Representatives typically participate on rotation or for a single deployment, so that the composition of a team changes constantly, sometimes daily.

The Team Lead is responsible for ensuring continuity and consistency of the survey programme while providing information on shoreline oiling and treatment activities that can be communicated and shared with the agency or stakeholder group that is represented. This process is vital to gaining confidence in the SCAT programme itself as well as in the SRP process as a whole.

SCAT-OPS Liaison

SCAT-OPS Liaison is a separate function from the SCAT field surveys missions, and is carried out either by SCAT Field Survey Team Leads or by an assigned individual, depending on the size and scale of the response. The SCAT-OPS Liaison supports the Operations teams in the field to ensure that Operations supervisors understand the treatment end-point criteria, constraints and GMPs described in the STRs. In effect, the SCAT-OPS Liaison function wears two hats to ensure alignment between the intent of an STR and the actual implementation of the STR by the Operations teams in the field. In Figure 9, a red 'operations hat' and a blue 'SRP/SCAT hat' represent the bridge between the Operations and SRP perspectives (see also Table 2).

Figure 9 The SCAT-OPS Liaison function (see also Table 2)
(adapted from BP, 2019)

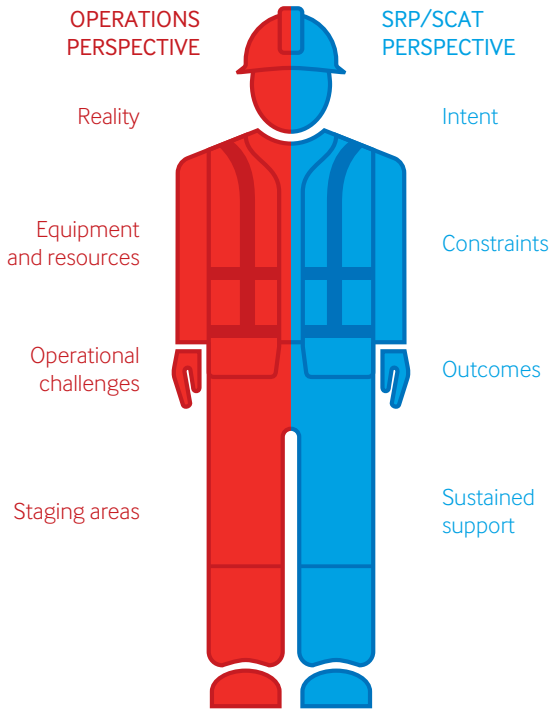

Table 2 The SCAT-OPS Liaison function seen from the Operations and SRP/SCAT perspectives

THE OPERATIONS PERSPECTIVE	THE SRP/SCAT PERSPECTIVE
• Evaluates the reality of the activities that are taking place to achieve the requirements of the STRs. • Provides advice on the equipment and resources required for the job. • Helps to address any concerns and overcome any operational challenges on-site. • Ensures that staging areas are properly set up and operating correctly in accordance with GMPs.	• Ensures that the intent behind the STR is understood. • Ensures that any constraints and GMPs are understood and respected. • Ensures that the outcomes of what needs to be achieved in the STR (treatment completion criteria) are understood. • Provides sustained support to the Operations teams as they work at different sites.

The SCAT-OPS Liaison function is a fundamental component of the SRP process to support the implementation of STRs and assess the effectiveness of treatment activities. Five key questions may help to guide an assessment by the SCAT-OPS Liaison when considering intent versus reality in relation to an STR:

- Is the Operations team doing what is set out in the STR?
- Is the treatment programme going well?
- Are the treatment techniques working as expected or is there need for adjustment?
- Is the Operations team respecting any constraints or GMPs outlined in the STR?
- When will the end-point criteria/transition criteria be reached?

The answers to these questions can provide a useful overview of how the clean-up is progressing, and constitute a template for preparing progress reports on an STR.

The appointment of a SCAT-OPS Liaison Coordinator may be appropriate to provide span of control for responses that involve multiple concurrent STRs and field operations, and which therefore require several SCAT-OPS Liaison field personnel to support these activities (see Figure 6 on page 23).

IN SUMMARY:
Roles and responsibilities of SRP staff

The staffing of an SRP is a function of the scale of a response. Responsibilities include, and assignments can be based on, as many as seven key functions, including:

- SRP Manager;
- SCAT Programme Coordinator;
- SCAT Field Coordinator (Safety/Logistics);
- SCAT Data Manager;
- STR Manager;
- SCAT Field Survey Team Lead; and
- SCAT-OPS Liaison Coordinator.

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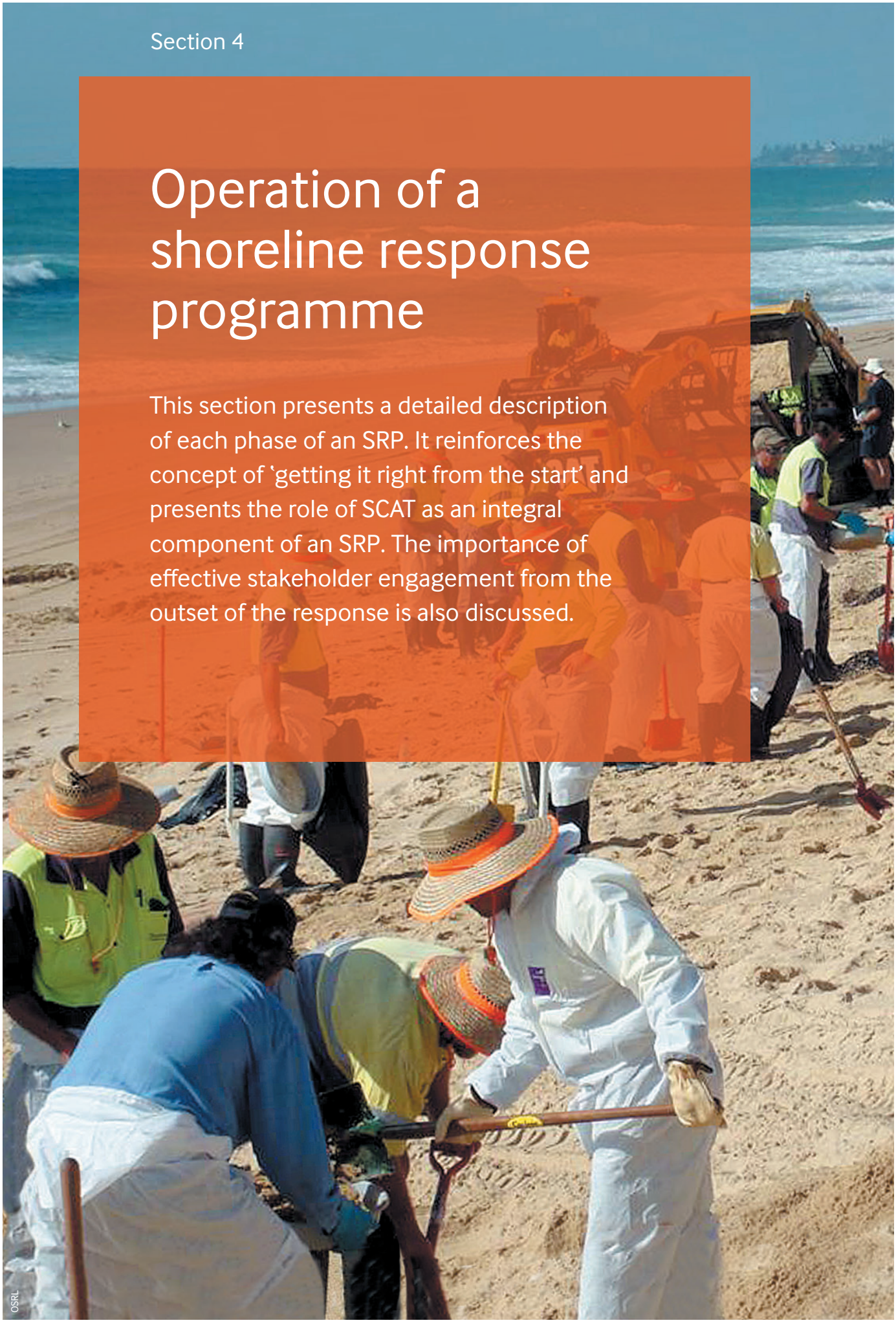
Shoreline clean-up operations in progress

Section 4

Operation of a shoreline response programme

This section presents a detailed description of each phase of an SRP. It reinforces the concept of 'getting it right from the start' and presents the role of SCAT as an integral component of an SRP. The importance of effective stakeholder engagement from the outset of the response is also discussed.



Operation of a shoreline response programme

An oil spill response evolves and changes, from the initial response to operational completion, as it moves through a sequence of phases (see Table 3 below and Box 1 on page 20).

The effectiveness of a response often depends on the ability to intercept the oil before it reaches a shoreline, or the speed with which the majority of the oil can be quickly removed once it has washed ashore.

The inclusion of an SRP concept in drills, exercises and preparedness training can directly improve the ability to respond quickly and effectively during the initial response phase, and can help to reduce the potential for long-term environmental and operational consequences.

Table 3 Characteristics of the different phases of an oil spill response

PHASE OF THE RESPONSE	CHARACTERISTICS
Initial response phase	• Requires a rapid assessment of the situation. • Requires quick decisions on the best uses of management and operational resources as they become available.
Planned phase—decision-making stage	• The transition begins as early as is practicable in the initial response phase. • Generates the long-range objectives, priorities, strategies and completion criteria. • Results in the creation of an SRP/SCAT plan.
Planned phase—project implementation stage	• The SRP/SCAT plan is implemented, with adjustments as appropriate.
Completion phase	• Involves an inspection of the treatment activities. • Closes out and demobilizes the operation.

ITOPF

THE INITIAL RESPONSE PHASE: 'GETTING IT RIGHT FROM THE START'

The driving forces behind an SRP

Competition for management and resources is always greatest during the initial phase of a spill response, when the objectives are often focused solely on the on-water source control and on floating oil containment and removal activities. Shoreline response generally has a much lower priority, particularly if the oil has not yet impacted the shoreline (Figure 10). Securing the necessary management, logistical support and resources early in the process to respond quickly and effectively (in most cases before oil even reaches the shoreline) is one of the key challenges facing an SRP team. Raising the profile of the shoreline response by including shoreline objectives from the very beginning is essential, and enables an SRP to be initiated to run in parallel with the on-water operations.

The critical value of 'getting it right from the start' is achieved through the establishment of an SRP that includes the appropriate level of management and infrastructure support and the prepositioning of response resources with the highest potential for effectiveness, so that on-shore response activities can begin before, or immediately following, shoreline oiling. This is the period of greatest gain, as bulk oil concentrations can be quickly removed from the shoreline prior to burial, reworking or remobilization which, in turn, minimizes:

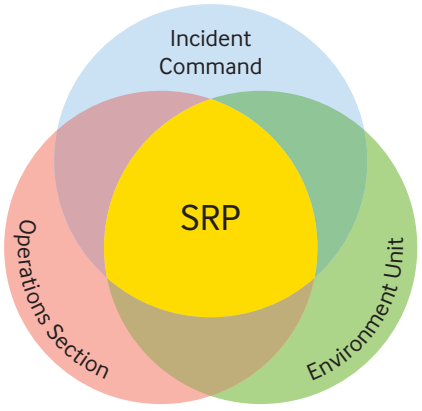
- the oiled shoreline area;
- the potential environmental, social or economic effects; and
- the overall duration of the response operation time.

In many incidents, an SRP has been initiated only after the on-water and shoreline protection response activities are well under way or have been completed, and after oil has impacted the shoreline. This often delays the shoreline response until after the period of greatest gain. An SRP should therefore be activated as soon as the Incident Command determines that shoreline impacts are probable or imminent, and should be implemented in parallel with other initial response activities. Many activities, such as sourcing shoreline response equipment and resources, or the identification of staging areas, can be completed before oil reaches a shoreline. These actions can save a considerable amount of time at the outset of an operation, and can enable the clean-up to start earlier in the response time frame. If the shoreline is not oiled, the SRP can be placed on standby, so that momentum is achieved in anticipation of the situation changing.

The greatest effort (time and money) put into an oil spill response is always associated with shoreline treatment and clean-up rather than on-water operations (Figure 11).

Figure 10 The relative level of effort associated with an SRP during the initial response phase

Figure 11 The relative level of effort associated with an SRP during the long-term, planned phase of a response

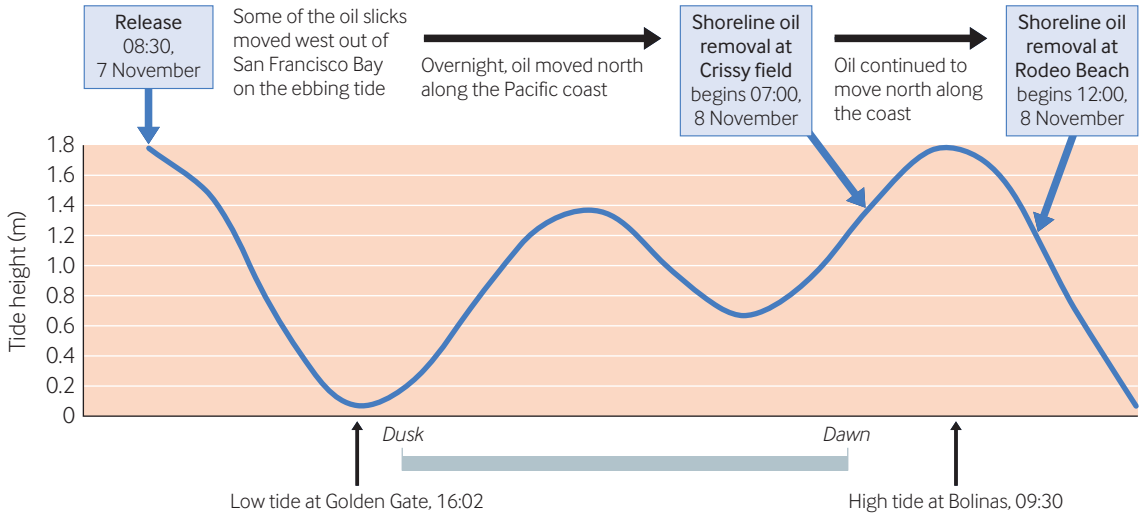


Box 2 Case study:
The shoreline initial response to the motor vessel (M/V) *Cosco Busan* oil spill in San Francisco Bay, November 2007

The vessel spilled 54,000 gallons of IFO-380 oil onto San Francisco Bay, California, at 08:30 during a high tide on 7 November 2007 during foggy conditions. The response was rapid due to the presence of several local on-call response organizations in the area. By 21:30 an IAP was developed for the operational period 07:00 on 8 November to 07:00 on 9 November (USCG, 2008). Currents in the area where the spill occurred initially ebbed westwards and out of the Golden Gate into the Pacific Ocean. Aerial observations and slick tracking were constrained by heavy fog and, subsequently, night-time conditions, for the first 24 hours of the response. This constraint meant that little information was available on the first day (7 November) with respect to the locations of oil on the water or on shorelines. Although the locations of stranded oil were not known at the time, the IAP included the deployment of shoreline clean-up crews to accessible shorelines in San Francisco between Fisherman's Wharf and the Golden Gate Bridge, for example along the heavily used shorelines in the San Francisco Maritime National Historic Park and at Crissy Field Beach, and at National Park beaches near and outside of the Golden Gate Bridge on the Pacific Coast. Clean-up crews were actively removing oil from northern San Francisco beaches shortly after dawn on the morning of 8 November less than 24 hours after the spill. On the same day, oil was tracked from the air and high ground observation locations, moving north along the Pacific Coast, and was observed as it washed ashore in a National Park on Rodeo Beach on the falling tide of the morning of 8 November. By midday, during the low tide period, clean-up crews began to manually remove oil that had stranded before it could be reworked, buried or remobilized during the next high tide.

continued on page 37 ...

Schematic timeline of tidal water levels and events during the initial shoreline response, 7–8 November 2007



Box 2 (continued): The shoreline initial response to the M/V Cosco Busan *oil spill*

The response involved four SCAT Field Survey Team Leads, each of whom was assigned to one of the four Operation Divisions to serve as SCAT-OPS Liaison, as well as the interagency shoreline assessment survey Team Lead. An interagency report on the initial response phase (USCG, 2008) noted that 'SCAT was deployed quickly and to effect, initially, working with Operations to recover gross oil from the beaches.' Subsequent multiple shoreline surveys which included pits and mechanically dug trenches on the outer coast beaches did not detect any subsurface oil.

The majority of the 176 STRs were completed by June 2008 as part of the shoreline clean-up programme for this relatively small spill. By this time only 'spot check' clean-up crews remained active for seven of the segments that had not met the treatment end-point criteria due to the presence of buried oil, ongoing leaching from rip rap, or safety constraints.

The initial rapid response and deployment of shoreline clean-up teams, even before aerial observations or SCAT reconnaissance information became available, enabled oil removal to commence within the first low tide window after the oil became stranded, concurrently and without detracting from the on-water recovery and protection operations; an example of an SRP running in parallel with on-water operations right from the start.

Owens Coastal Consultants

Above and below: manual removal of surface oil in the upper intertidal zone on Rodeo Beach, 15:30 on 8 November 2008.

Owens Coastal Consultants

'Getting it right from the start' involves having management commitment and the necessary resources in place from the outset, based on scope, scale and complexity. In addition, having an SRP already in place means that the shoreline response components are much easier to manage as the management and operations transition into the more systematic planned (project implementation) phase of the response. Initial guidance for shoreline treatment operations may be provided through generic STRs that do not require detailed assessments and recommendations by SCAT teams. Generic STRs describe treatment methods and bulk oil removal criteria that apply to a specific shore type, such as a sand beach or a salt marsh. The treatment methods are typically non-intrusive with minimal or no collateral environmental impacts.

'Getting it right from the start' also involves deciding when to transition out of the initial response phase. The Environment Unit, SRP team and Operations Section cooperate and agree on the level of effort required for the removal of bulk oil during the initial response phase, and on whether to leave minor or lesser concentrations for a later phase of clean-up or for natural attenuation. The SCAT-OPS Liaison provides support to the Operations field teams to interpret this initial level of effort and determine the treatment end-point criteria for the initial phase of the response. In many cases, shoreline segments that meet the end-point criteria following treatment during the initial response phase (bulk oil removal) may not meet subsequent, more definitive treatment end-point criteria, and may therefore require additional clean-up during the planned phase of the response.

Implementation of an SRP at the start of a response

'Getting it right from the start' involves asking some simple but critical questions:

- When and where is the oil predicted to impact the shorelines and what are the probabilities?
- What is the quickest way to find out where oil has stranded on the shorelines?
- What is the quickest way to find out which locations have vulnerable and sensitive resources that may be affected by the oil or be at risk?
- How can available resources be best used to mitigate the existing or potential effects of the oil?
- Who needs to be involved, and who is available, to decide and agree on the initial response actions?
- What are the consequences of using the majority of available resources for on-water recovery and shoreline protection, which may have a low impact on the volume of oil that reaches the shoreline, versus recovering the bulk or mobile oil that reaches the shoreline while it is concentrated and before it is reworked, buried or remobilized onto the coastal waters?
- Can the Operations teams be mobilized in time to recover the bulk or mobile oil?
- What resources are available, and where are the staging areas located, that are necessary to enable shoreline clean-up to be mobilized should it be deemed necessary?
- What are the treatment end-point criteria for bulk oil removal? When is the right time to move on, and how much oil can/should be left for later clean-up or natural attenuation?
- What happens to the recovered oiled material? Can it be removed quickly from the site?

Key activities involved in the initial response phase are listed in Box 3 (further details can be found in the checklists presented in Appendix 2).

Box 3 Key activities involved in the initial response phase

The objective of the initial response phase is to define the overall scale of the shoreline oiling or potential oiling, and the overall characteristics of the oiling conditions. This information is obtained quickly and is used to develop the initial response recommendations for bulk oil clean-up priorities and to direct the operation's activities during this phase. This is the period of greatest gain for shoreline clean-up, and is also the time when the competition for management and response resources is greatest. The key activities involved in the initial response phase are summarized below:

- Setting up the SRP and SCAT programmes:
  - Engage with the IMT to understand the situation.
  - Evaluate the potential for shoreline impacts.
  - Mobilize SRP resources that relate to the span of control required for the scope, scale and complexity of the response for shoreline treatment operations.
  - Create a list of personnel to be sourced to fill the required positions including, in particular, the SCAT Field Survey Team Lead(s) and SCAT-OPS Liaison(s).
  - Determine where, when and how the mobilized resources are to be deployed.
- Conducting initial aerial reconnaissance to identify affected shoreline locations and relative levels of oil concentration.
- Setting/recommending SCAT survey priorities and shoreline treatment operations priorities, and identify any background oiling issues.
- Developing the outline for a long-range strategic programme for the transition to a planned/project phase, and develop a picture of what that phase would look like after the transition (for Incident Command planning).
- Setting initial (bulk or mobile oil) removal criteria.
- Setting up a SCAT data management system and develop an interim SCAT plan.
- Establishing a working relationship and a continued liaison process with the Operations Section.
- Engaging with stakeholders through the Environment Unit and any TWGs on SRP-related activities.
- Engaging with the Environment Unit concerning any permitting or access issues for SCAT surveys and missions.

IN SUMMARY:
'Getting it right from the start'

- Shoreline response objectives should be stated at the start of a response to enable and provide for the appropriate level of support.
- Creation of an SRP plan at the outset of a response enables the IMT to plan and prepare for a shoreline response with the same level of commitment that is typically applied to on-water responses.
- The initial response phase is the period of greatest gain for shoreline clean-up, and is also the time when the competition for management and response resources is greatest.
- 'Getting it right from the start' reduces the effects of the oil, the size of the affected area, and the level of effort required to clean up oiled shorelines.
- The initial shoreline treatment objectives may be to remove only the bulk oil and leave minor or lesser concentrations for a later phase of clean-up or for natural attenuation.
- The SCAT-OPS Liaison provides support to the Operation Section's field team to interpret this level of effort and the phased treatment end-point criteria.

THE PLANNED PHASE—DECISION-MAKING AND THE SRP PLAN

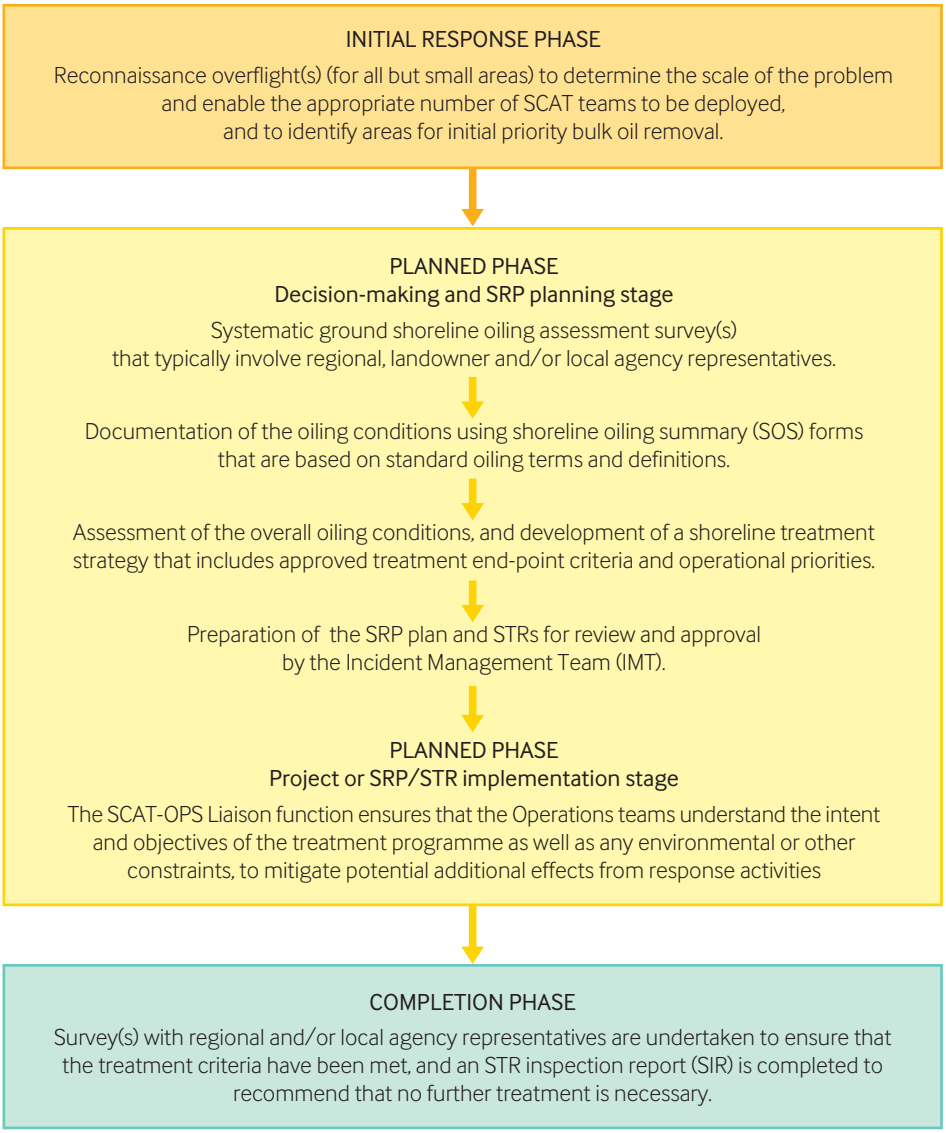
The SRP plan is developed based on the decisions and directions that relate to the objectives of the response, and on the character of the response proposed by the Environment Unit and approved at the Incident Command level. In general, the SRP plan is developed using the following process:

- The ENVL establishes TWGs to develop treatment objectives, priorities, clean-up options, constraints (GMPs) and treatment end-point criteria.
- The SRP team provides recommendations on these issues to the TWGs through the ENVL.
- Once the development of these issues is completed by the TWGs, the ENVL submits them to the Incident Command for approval.
- Following Incident Command approval, an SRP plan, which includes the SCAT plan, is generated by the SRP team.

The SRP/SCAT plan focuses on medium-term (weeks) and long-term (months) strategic planning in terms of the collection of SCAT field survey data and other SCAT support missions, and on the generation and implementation of the STRs. The STR programme effectively drives the operational programme (see Figure 12 on page 40).

Development of the SRP plan begins as early as is practicable in the initial response phase, and can be initiated once the Incident Command provides details of the objectives, long-term strategy and character of the response. A generic template or 'table of contents' for an SRP plan is provided in Appendix 3.

Figure 12 A progressive SRP from the initial reconnaissance to the completion of treatment



Adapted from IPIECA-IOGP, 2014a

The long-term strategy may involve a phased approach to achieve the treatment end-point criteria. This concept may be more acceptable to stakeholders that are not familiar with shoreline treatment and natural attenuation, and can help to ensure that any concerns are addressed based on different shoreline types, levels of usage and specific environmental sensitivities.

Managers and stakeholder representatives involved in the development of criteria that define treatment completion may be reluctant to finalize these criteria at the beginning of a response. In addition, there may be a desire to review, and possibly revise, the treatment end-point criteria part-way through a response.

To address this issue, the SRP team can recommend a process of phased treatment end-point criteria, rather than the development of 'final' treatment end points at the outset. This flexible approach was used by the SRP developed during the response to the Macondo incident (Gulf of Mexico, 2010) during which 'no further treatment' (NFT) criteria were developed for different phases of the response (2010 NFTs, 2011 NFTs, etc.) (Owens *et al.*, 2011; Santner *et al.* 2011). With a phased approach, there is no immediate need to define the 'final' treatment end-point criteria at the start of the response. This provides an opportunity for subsequent further discussion in the TWGs, so that a better understanding of treatment actions and natural attenuation can evolve compared to the level of understanding that was present during the initial response. The downside of this approach may be that some segments may have to be treated again at a later time if the subsequently-agreed end-point criteria are more stringent than the original or interim criteria.

Key features of the planned (decision-making) phase that generates the SRP plan are listed in Box 4 (further details can be found in the checklists presented in Appendix 2).

Box 4 Key features of the planned phase (decision-making stage)

The objective of the decision-making stage of the planned phase is to systematically survey affected shorelines to enable long-term objectives, priorities, strategies and treatment end-point criteria to be defined for the shoreline response. In addition, based on the treatment end-point criteria, STRs are prepared for individual segments; these are reviewed by the Environment Unit and TWGs, and submitted to the Incident Command for approval.

- Priorities:
  - Engage with the ENVL, Environment Unit SCA-TS and TWGs to ensure that there is agreement on the SRP plan objectives, strategies, tactics, GMPs and timing.
  - Engage with the Operations Section to ensure that they understand the SRP programme objectives, strategies, tactics and timing, and agree that these are practical and achievable.
- Establish appropriate operations phases, each of which should include defined objectives, methods and phased treatment end-point criteria, and determine transition points between the phases, for example:
  - Initial response bulk/mobile oil removal by strike teams, with partial oil removal.
  - Long-term geographic task force deployments based on STRs.
  - Completion and closure phase with demobilization plan, and establishment of potential long-term monitoring programme to observe the natural attenuation of oil at locations where not all of the oil has been removed.
- Define the pace or rhythm of the SCAT survey programme strategy to collect timely and relevant data:
  - Having too many teams can potentially generate data at a time when it is not required (see next bullet point) and can make consistency difficult.
  - Data and STRs in the IAP may become outdated and may not be applicable if the SCAT surveys are conducted too far ahead with respect to the timing of STR activities.
- Engage with the IMT to make sure that the SRP processes are properly in place, for example to ensure that:
  - the Situation Unit receives timely data updates;
  - the Safety Officer is consulted and approves the SCAT safety plan;
  - SCAT field missions are aligned with the Logistics Section processes; and
  - liaison and public information officers are engaged, communication lines are established, and timely information is provided through the Situation Unit, following the QA/QC process.

IN SUMMARY:
The planned phase—decision-making and the SRP plan

- Shoreline response objectives, priorities, clean-up options, constraints (GMPs) and treatment end-point criteria are generally developed by the Environment Unit TWG process.
  - Based on these factors, the SRP team develops a medium-term (weeks) and long-term (months) strategic plan to generate and implement the STRs, which in effect drives the operational programme.
- The STR Manager tracks and supports the progress of the STRs though the decision process.
- The SRP plan defines:
  - the SRP management structure and staffing, with roles and responsibilities;
  - coordination within the Environment Unit and with the Operations Section;
  - the SCAT field survey and SCAT-Operations Section support programme;
  - how the treatment end-point criteria are used to initiate and generate STRs;
  - operational phases based on 'initial' and 'final' treatment end-point criteria;
  - monitoring and evaluation of treatment effectiveness; and
  - the inspection and STR completion process.

Cheryl Casey/Shutterstock.com

Beach clean-up team at Pensacola following the Macondo spill in the Gulf of Mexico, 2010

THE PLANNED PHASE—SRP PROJECT IMPLEMENTATION

The SRP plan organizes all of the many components of a response operation, including SRP/SCAT staffing (rotations; upsizing and downsizing), the strategy for different SCAT missions, the operational strategy and timing for STR activities, daily and weekly SCAT and STR progress reporting and the agreed protocol for STR completion inspections.

The SRP/SCAT plan is flexible to allow for adjustments over time. No real-world environment is static, and SCAT reassessments or resurveys are typically necessary if there is a change in shoreline oiling conditions after an STR has been approved, or during a treatment activity.

Shoreline processes, such as the impact of storm waves, may bury surface oil or expose previously-spilt subsurface oil on beaches. The timing of activities may also change as seasonal constraints, such as breeding and nesting activities, begin or end, or when a treatment method that was effective is no longer appropriate as the remaining oil weathers through time. Each adjustment involves gathering and interpreting SCAT information and providing recommendations to the TWGs for consideration. The SRP concept provides a single point of contact for all of the shoreline issues and adjustments as the decision-making and planning processes evolve.

Key features of the planned phase (project implementation stage) are listed in Box 5 (further details can be found in the checklists presented in Appendix 2).

Box 5 Key features of the planned phase (SRP project implementation stage)

The objective of the project implementation stage of the planned phase is to carry out the SRP plan and commence STR activities.

- The SRP supports the Operations Section in the Command Post.
- The SCAT Field Survey Teams and the SCAT-OPS Liaison support the Operations field teams in the treatment of individual shoreline segments.
- The effectiveness and progress of treatment activities are monitored through the SCAT-OPS Liaison process.
- The IMT is kept informed of STR progress and constraints or challenges.
- The SRP/SCAT teams work with the Environment Unit to engage stakeholders if STRs are not effective and need to be reassessed, or if oiling conditions have changed.

IN SUMMARY:
The planned phase—SRP project implementation

- The SRP Manager:
  - monitors treatment activities and provides regular progress reports to the PSC, the ENVL and Incident Command; and
  - recommends adjustments to treatment activities or schedules based on the effectiveness of the treatment actions and the rate of progress to meet the treatment end-point criteria.
- The SCAT Field Survey Teams and SCAT-OPS Liaison support the Operations teams treating individual segments to assess the effectiveness of the activities.
- The STR Manager tracks the progress of STR implementation through to completion.

THE COMPLETION PHASE

The STR Manager tracks the progress of STR activities and provides routine updates. As treatment progresses, the Operations teams and SCAT-OPS Liaison decide on the appropriate timing for a SCAT inspection on part or all of the shoreline covered by a particular STR. They may decide that an internal SCAT PTA mission, involving the appropriate agency and landowner/land manager representatives, could be appropriate prior to undertaking the formal completion inspection process and approval of SIRs. When a PTA or an interagency inspection results in additional effort, the SCAT-OPS Liaison works with the Operations teams to ensure that the requirement(s) for completion are understood and achievable. If the expectations or treatment end-point criteria are not achievable for reasons of safety, logistics or net environmental benefit, or are not operationally practicable, the SCAT team and SCAT-OPS Liaison communicate with the ENVL and TWGs to assess the situation for that location and agree on a course of action.

Key activities involved in the inspection and completion phase of the SRP are listed in Box 6 (further details can be found in the checklists presented in Appendix 2).

Box 6 Key activities involved in the completion phase

The objective of the completion phase is for all parties to agree that segment treatment end-point criteria have been achieved, and to identify locations for potential long-term monitoring where the treatment end-point criteria do not require removal of all of the oil.

- If additional effort is required to meet the designated treatment end-point criteria, the SCAT-OPS Liaison works with the Operations Section and the ENVL/TWGs to agree on a course of action.
- As the response needs diminish, the SRP team is demobilized and reorganized, and the organization contracts.

IN SUMMARY:
The completion phase

- The SCAT Programme Coordinator, SCAT-OPS Liaison and ENVL evaluate the need for internal SCAT PTA missions prior to undertaking the interagency STR completion inspections and the approval of SIRs.
- Inspection surveys typically include the appropriate agency and landowner/manager representatives.
- Where an inspection determines that a segment meets the treatment end-point criteria, treatment operations on that segment are demobilized and the resources are deployed elsewhere.

THE SRP ROLE IN THE PLANNING CYCLE

A key function of an SRP is to collect and interpret shoreline oiling data and information through a SCAT programme, and to use that data to generate recommendations for the Environment Unit and Planning Section decision makers. Interpretation of the data involves both real-time scales and projections to estimate oil retention and persistence on shorelines with different substrate materials and different wave energy levels. The projections are used to develop the long-term treatment strategy and tactics plan to guide the STR process.

Similarly, the SRP Manager is directly involved in the short-term planning cycle that sets objectives, tactics, work assignments and schedules for the IAP, which may be issued on a daily basis in the first weeks of a response. The SRP Manager is also directly involved in recommending and updating the long-range strategy.

IN SUMMARY:
The SRP role in the planning cycle

- The SRP supports the PSC and ENVL in the daily cycle of preparation and participation in the tactics and planning meetings. Assignments are generated at these meetings in relation to the STRs, and are presented for inclusion in the IAP for the next operational period.
- The SRP team develops a medium-term (weeks) and long-term (months) strategic plan to generate and implement the STRs, which in effect drives the overall operational programme, and makes recommendations for any adjustments to the plan that may be required as the programme evolves.
- The SRP Manager monitors the response objectives to ensure that they support the SRP strategies.

SCAT AS PART OF THE SRP

SCAT is an integral component of an SRP. The SRP generates an SRP plan that focuses on strategic planning, within which a tactical SCAT programme is embedded. SCAT is a generally-accepted technique, with regional or national variations, for collecting data and information, developing treatment recommendations, and supporting the Operations Section. A SCAT programme is not intended to provide strategic planning nor to make decisions, but to support that process by data collection and input through the Environment Unit TWGs (IPIECA-IOGP, 2014a).

While a SCAT team may be involved in a wide range of activities, the key basic functions of a SCAT programme are to:

- collect and deliver information on initial and subsequent shoreline oiling conditions;
- generate shoreline response recommendations for Environment Unit and Planning Section decision makers;
- support the Operations teams through the SCAT-OPS Liaison process; and
- facilitate the completion of STR activities through an inspection process.

A SCAT programme is managed within the Environment Unit/SRP organization and involves cooperation and consensus between the ENVL, Environment Unit, SCA-TS, SCAT Programme Coordinator, STR Manager and the decision makers in the Environment Unit TWGs or TAGs, to:

- evaluate SCAT data to develop treatment objectives, priorities and treatment end-point criteria;
- review STRs and reach a consensus on appropriate inputs or constraints (e.g. NEBA/SIMA, GMPs, etc.) in relation to environmental or social/cultural resources; and
- evaluate treatment monitoring information, treatment adjustments and SIRs.

This relationship is a critical component of a successful decision-making and implementation process. The SRP Manager and the ENVL work closely together to ensure that good communication is maintained within that team and with the Operations teams through the SCAT-OPS Liaison process.

The list of field missions or types of surveys that might be conducted during a SCAT programme includes:

- reconnaissance surveys of oiled shorelines (air, ground or on-water);
- systematic SCA surveys that generate SOS forms;
- liaising with, and supporting, the Operations teams via the SCAT-OPS Liaison function;
- monitoring of shoreline treatment operations;
- PTA surveys;
- STR completion inspection surveys that provide the basis for SIRs;
- photographic monitoring; and
- beach profiling.

Completion of the SIRs is a specific responsibility of the Environment Unit/SCAT team, and involves consensus agreements with agency and stakeholder representatives in the field, as well as approval at the Command Post.

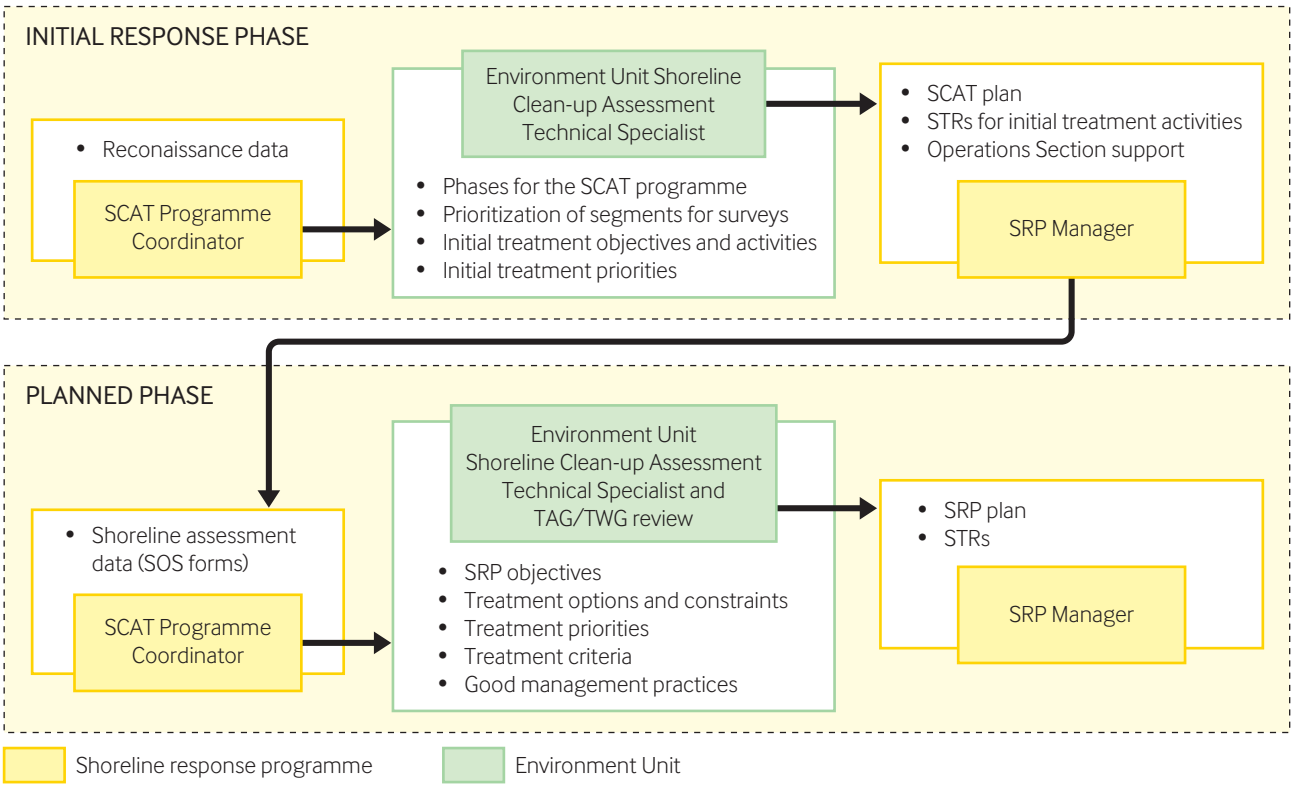
The role of SCAT in an SRP is illustrated schematically in Figures 5 (page 21) and 13 (below) which describe the flow of activities and data in the initial response and planned phases. The reconnaissance data in the initial response phase are used to:

- generate STRs, which may be generic, in order to initiate treatment as quickly as possible following guidelines set by the Environment Unit;
- develop a SCAT survey plan; and
- initiate the medium- and long-term strategy for the SRP/SCAT Plan.

The systematic ground SCA survey data collected in the planned phase are documented on the SOS forms. These data determine one of three results:

- no observed oil;
- oil is present but no further treatment is required because the segment or zone meets the treatment end-point criteria; or
- an STR is generated to describe the actions necessary to achieve the treatment end-point criteria.

Figure 13 Typical process flow from collection of data via SCAT reconnaissance surveys through to development of the SRP plan and STRs



Phased treatment end-point criteria are important and, in the initial response, the SCAT Field Survey Team Leads or SCAT-OPS Liaison support the Operations Section to ensure that the teams do not 'over-clean' oiled areas. It is expected that some cleaned segments may meet the initial response treatment end-point criteria but not subsequent later-phase treatment end-point criteria (see discussion on pages 40–41).

SCAT OPS-Liaison support is a separate function in a SCAT programme that is needed when SCAT teams and Operations personnel are not working in the same geographic area, or if SCAT teams do not have sufficient capacity to support all divisions of the Operations Section at the same time. In addition, it may be more efficient to have a single SCAT-OPS Liaison person support a task force or strike team rather than a full SCAT Survey Team. SCAT Field Survey Teams may not necessarily work in the same area(s) as Operations personnel on a day-to-day basis, particularly when the oiling is extensive. In this case, separate logistics and safety support from the Logistics Section and Air Operations Branch will be required.

IN SUMMARY:
SCAT as part of the SRP

- The SCAT programme is implemented and managed within the SRP.
- Data collected by SCAT is used by the SRP team to develop recommendations on treatment issues for the ENVL and the TWGs.
- The SCAT Team Leads or SCAT-OPS Liaison(s) support the field operations teams in the interpretation of STRs, and monitor the effectiveness and progress of STR activities.

STAKEHOLDER ENGAGEMENT

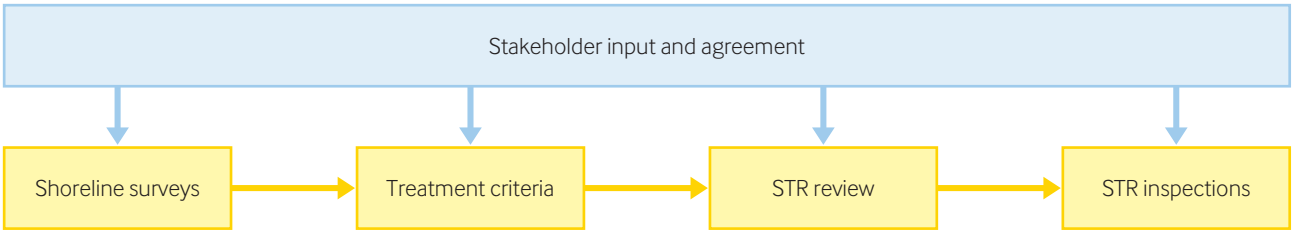
The ENVL is responsible for stakeholder engagement in the SRP process, primarily by participation in TWG meetings led by the Environment Unit (see Figure 4 on page 18). Stakeholders include national, regional and local government agencies or organizations with a regulatory mandate, as well as landowners, land managers, and other interested or concerned parties. The SRP team is involved in the decision process for defining the SRP plan and, based on those decisions and on SCAT data, makes recommendations, via the STRs, to the Environment Unit and TWGs for their agreement and approval.

Stakeholder involvement in the SRP process (see Figure 14 on page 48) can include:

- representation on SCAT missions, including aerial reconnaissance surveys and systematic ground survey field teams;
- involvement with the design of constraints or GMPs for shoreline tactics and support activities which provide for the monitoring and protection of threatened and endangered species and other wildlife (e.g. nesting birds, turtles, spawning areas, etc.);
- participation in TWGs and TAGs formed within the Environment Unit to develop and agree on the treatment end-point criteria, and to review the content of STRs recommended by the SRP/SCAT programme; and
- participation in SCAT inspection missions, and in the process by which agreement is reached that sufficient treatment has been completed and that the treatment end-point criteria have been achieved.

Participation of stakeholders in initial aerial reconnaissance surveys and in the systematic ground shoreline oiling assessment surveys is an important element in establishing an agreed understanding of the distribution and character of the stranded oil. A fundamental SCAT concept is that a field survey team agrees on the documented oiling conditions so that only one data set is created. This involvement is critical to building consensus during the decision process that develops shoreline treatment objectives, priorities, options, constraints and treatment end-point criteria. Prospective field team members should have some level of SCAT training, together with relevant safety training, prior to deployment. If necessary, an appropriate level of training can be provided on an emergency basis.

Figure 14 Stakeholder engagement in the SRP



A direct benefit of the participation of stakeholders in SCAT survey missions is that representatives with minimal or no oil spill experience or knowledge can learn about shoreline characteristics, coastal processes, the behaviour of oil on shorelines, and treatment methods from the SCAT Field Survey Team Lead. This knowledge of shoreline oiling and treatment can then be communicated and shared with the agency or stakeholder group that is represented. One limitation is that opportunities for stakeholder participation in field missions may be limited by logistical constraints, in most cases to one or two positions in each SCAT Field Survey Team, so that one person may represent multiple stakeholders.

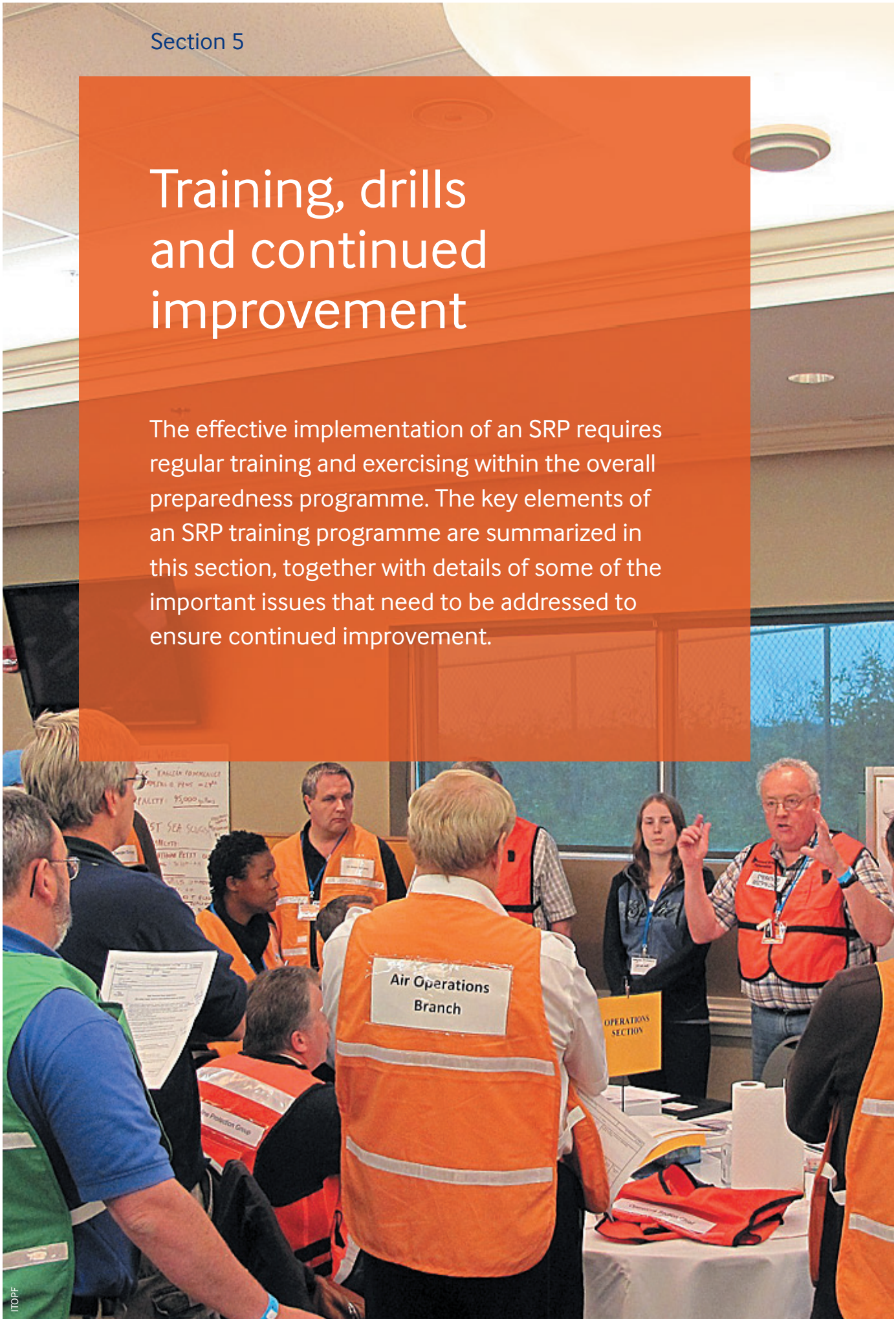
IN SUMMARY:
Stakeholder engagement

- The ENVL ensures that stakeholders are engaged in the planning and decision-making processes.
- Participation begins during the initial response reconnaissance survey(s), and continues through the SRP to the inspection and completion process.

Section 5

Training, drills and continued improvement

The effective implementation of an SRP requires regular training and exercising within the overall preparedness programme. The key elements of an SRP training programme are summarized in this section, together with details of some of the important issues that need to be addressed to ensure continued improvement.



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Training, drills and continued improvement

TRAINING AND DRILLS ARE AN ESSENTIAL PART OF THE SRP CONCEPT

With a few exceptions, exercises and drills rarely have a realistic shoreline response component, often due to the emphasis in the design which typically focuses on the initial organizational setup of an IMT and the on-water activities. An SRP is usually not considered when establishing the initial set of objectives for any spill or drill, and is typically only referred to in general statements that relate to minimizing the effects of the release. As a consequence, an SRP is often not part of a preparedness training programme, and is little understood by response managers and senior decision makers; hence the concept of an SRP is not always sufficiently engrained to enable the 'getting it right from the start' approach to an oil spill response. This lack of preparedness may have significant long-term consequences regarding the effects of the spilled oil on shorelines, as well as on the time and level of effort required for a shoreline treatment programme (see also *A valuable evolution in the approach to shoreline response* on pages 8–9).

A paradigm shift in the approach to oil spill preparedness and response is therefore necessary to create a planning and preparation culture which elevates the SRP to a higher level of priority and acceptance so that it can be integrated into an IMT system more successfully. Once the benefits and value of an SRP are recognized and accepted, the effective implementation of the concept will require regular training and exercising within the overall preparedness programme.

Design options for drills and exercises should include imminent and actual shoreline oiling scenarios to ensure that IMTs can practice carrying out the SRP function to reinforce the strategic importance of establishing an SRP prior to, or immediately following, oil impacting a shoreline.

The development of an SRP training programme could address different levels of staff for learning and development:

- For IMT Commanders, Planning and Operations Sections Chiefs, and shoreline activity-related unit leaders, training should focus on:
  - the importance and benefits of an SRP in terms of 'getting it right from the start';
  - an overview of SRP organization and management;
  - relationships, information flow, and responsibilities within an SRP team and the IMT;
  - the role of SCAT and SCAT-OPS Liaison; and
  - the decision process.
- For SRP Leaders, SCAT Programme Coordinators, SCAT Data Managers and SCAT-OPS Liaison Coordinators, training should focus on:
  - the objectives and purpose of an SRP in a response;
  - roles and responsibilities within an SRP team and in the IMT;
  - relationships within the SRP team and with the IMT in the planning cycle and the decision process;
  - shoreline treatment methods;
  - SCAT management, field missions and surveys, and data generation/management; and
  - STRs, PTAs and SIRs.
  - Training could also include a tabletop exercise and use of the checklists provided in Appendix 2.

Lessons learned from exercises and drills during training, as well as during response operations, provide the basis for continued development and improvement of the training programme, as well as the development of a sustained and effective shoreline response capability.

The primary purpose of the review process should be to identify what worked well and where improvement is required. The checklists of SRP activities presented in Appendix 2 could provide the basis for a post-exercise or post-response review of an SRP. Some important issues that could be reviewed as topics, rather than the specific individual action items in the checklists, are summarized below.

- Review the initial response decision process in setting initial objectives and priorities to ensure that:
  - the initial Incident Command objectives include strategic objectives for an SRP;
  - the organization of the Operations Section and Environment Unit support an SRP; and
  - initial response STRs are included in the IAP.
- Review the effectiveness of the initial shoreline treatment actions, and evaluate whether and how the initial response actions:
  - decreased the immediate effects of the oil on the environment;
  - reduced the exposure time of resources at risk;
  - accelerated ecological and socio-economic recovery; and
  - reduced the subsequent long-term level of effort required for the response.
- Review the STR process.
- Evaluate the effectiveness of liaison activities between the Environment Unit, Operations Section and Logistics Section on shoreline response issues and activities.
- Evaluate how shoreline processes and oceanographic conditions were monitored and understood in the context of the fate and behaviour of shoreline oil deposits.
- Evaluate how changes in shoreline oiling characteristics were monitored over time.
- Evaluate how testing and demonstrations of accepted treatment tactics were conducted to verify their applicability for use under the prevailing spill conditions, and evaluate how the lessons learned can be applied.
- Evaluate how any promising new oil detection and clean-up technologies were tested.
- Review the application of field performance indicators (key performance indicators—KPIs) to monitor treatment effectiveness and to adjust treatment tactics.
- Evaluate the procedures by which completion inspections were undertaken to recommend treatment completion and when treatment end points were achieved.
- Recommend modifications in the SRP process or documents to improve planning, preparation, evaluation, training and implementation.

IN SUMMARY:
Training, drills and continued improvement

- Currently, an SRP as an integrated activity is not part of the IMS culture; an SRP is typically not a point of focus in an exercise or drill, and is rarely part of a preparedness training programme. Although SCAT training is a common practice, this is only one element of an SRP.
- Exercising the SRP component of an IMS is essential in order for senior managers to understand and embrace the concept of 'getting it right from the start' for a shoreline programme, either before the shoreline is oiled or as soon as it has been oiled.
- The inclusion of an SRP concept in drills, exercises and preparedness training can directly improve the ability to respond quickly and effectively during the initial response phase, which can have long-term environmental and operational consequences.
- To develop a better appreciation for an SRP, the Operations Section Shoreside Recovery Group should, at a minimum, be activated for drills and exercises.
- A training programme should provide for different levels of learning and development, as well as providing a process to capture lessons learned from drills, exercises and spill incidents.

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Appendices: Job aids

Appendix 1: SRP summary information

The treatment of oiled shorelines is typically the largest component, in terms of time and effort, of most oil spill response projects, and it is recommended that an SRP is established at the outset of an oil spill incident when a shoreline is oiled or threatened by oil. The SRP described in this guide supports the IPIECA-IOGP good practice guides entitled *A guide to oiled shoreline assessment (SCAT) surveys* (IPIECA-IOGP, 2014a) and *A guide to shoreline clean-up techniques* (IPIECA-IOGP, 2015a).

'GETTING IT RIGHT FROM THE START'

Establishing a shoreline strategy with an appropriate level of management and operational support is critical during the initial response. At the start of a response, a shoreline assessment survey and a shoreline treatment or clean-up programme requires the coordination and management of a wide range of Command Post and field activities that are currently shared between the Planning and Operations Sections. Typically, at the start of a response when there is competition for these resources, the Incident Command and Planning Section teams place a higher priority on the on-water activities, with the result that:

- shoreline clean-up is not as effective as it could be in many instances when the stranded oil is most concentrated and mobile;
- the environmental, economic and social effects of stranded oil are not minimized as much as they could be, due to longer oil exposure times; and
- shoreline clean-up efforts take much longer, and waste generation and costs can be considerably greater than they would have been if action had been taken more promptly at the start of the response.

ROOM FOR IMPROVEMENT

1. **Separation of responsibility:** The current IMS concept is a proven and effective system but can be prone to communication and accountability issues. In this system the responsibility for a shoreline programme is shared between the Planning and Operations Sections, with the decision processes lodged in the Environment Unit and implementation of those decisions managed by the Operations Section. An SRP acts as a bridge between these two key components of an IMS, and is assigned the overall responsibility for the strategic planning and appropriate implementation of shoreline treatment strategies. Accountability for the SRP is maintained within the Environment Unit through the STR approval process.
2. **Streamlining:** The Environment Unit is the point of convergence of many operational and decisional elements that support the strategies and tactics which drive the direction and pace of a response. An SRP, under the direction of the SRP Manager, can streamline the planning and decision-making processes within the Environment Unit, and enable more effective span of control by providing focused support and an integrated perspective on all shoreline treatment issues, including the collection of shoreline oiling assessment data (SCAT) and STR implementation.
3. **Communications:** An SRP offers a single point of contact for the wide range of management and operational issues and activities that relate to a shoreline response; it provides a direct bridge between the Environment Unit and the Operations Section to better coordinate and streamline the decision-making and implementation activities.
4. **Operations support:** In the current IMT structure there is no mechanism in place for the Environment Unit to provide direct support for the Operations Section's shoreline clean-up task forces or strike teams in the field; this support is provided by the SRP through the SCAT-OPS Liaison function.

5. **Preparedness and training:** Missed opportunities at the outset of a response—the time when shoreline treatment is typically able to provide the best potential gain—largely result from the lack of inclusion of an SRP concept in drills, exercises and preparedness training. As a consequence, the concept and benefits of setting up an SRP prior to shoreline oiling, or as soon as the shoreline is oiled, by 'getting it right from the start' are typically not fully appreciated or understood by planners or senior decision makers.

HOW AN SRP IMPROVES THE IMS

The Environment Unit is a critical function in the decision-making process relating to the response, and the ENVL is faced with the challenge of organizing and managing a wide range of technical and scientific specialists as well as agency and/or stakeholder representatives. The Environment Unit is the primary source of all information for the decision processes, and the demands placed upon it are always high at the onset of a response. An SRP integrates, within a single team in the Environment Unit, all issues related to shoreline data (SCAT), decisions regarding shoreline treatment options and priorities, monitoring the implementation of those decisions, and post-treatment inspections, without restructuring or reorganizing the traditional IMS or SCAT field programme (see Figure 3 on page 17). This concept addresses each of the potential areas for improvement in an IMS, and offers a streamlined, natural separation of functions for span of control as the scale of a response increases (IPIECA, 2015b).

The primary benefits of an SRP are that it provides:

- an understanding, for response managers and senior decision makers, of the benefits of the shoreline initial response activities and the ramifications of delaying shoreline clean-up;
- a rapid response capability at the time when oil at the shoreline is most mobile, and when clean-up can be more efficient and effective in helping to reduce short- and long-term impacts on shorelines and in reducing waste generation;
- a single point of contact for all shoreline issues, which improves communication, decision-making and accountability;
- a long-term (from weeks to months) strategic focus on the shoreline response for the Incident Command and Planning Section during the initial response when the decision-making process is typically focused on short-term (days) issues, and primarily on-water activities;
- a streamlined assessment and response process so that treatments and approved STRs can be modified as oiling conditions change or as treatment methods become less effective;
- a sustained shoreline response through to completion of operations, while maintaining span of control with a robust framework for shoreline response operations that improves operational and geographical consistency; and
- the opportunity to manage expectations through medium- and long-term strategic planning.

KEY COMPONENTS OF AN SRP

The SRP resides within the Environment Unit, and the SRP Manager reports directly to the ENVL (Figure 3, page 17). For a large-scale response, or when the response moves to the project implementation stage and the SRP becomes the dominant operational component in an IMT (Figure 11, page 35), the SRP Manager may be elevated to a Deputy or Assistant ENVL (Figure 4, page 18).

In order to maintain span of control, as the scale of a response increases, the SRP Manager may be supported by a SCAT Programme Coordinator and a SCAT Data Manager/STR Programme Manager. In turn, with a further increase in scale, the SCAT Programme Coordinator may be supported by a SCAT Field Coordinator (responsible for SCAT team safety and logistics), and separate roles could be assigned for the SCAT Data Manager, the STR Manager and the SCAT-OPS Liaison Coordinator.

Currently, a SCAT programme generates data on shoreline information that is fed to the Environment Unit, prepares STRs for actionable oiled shorelines, and facilitates inspections and treatment closure reports under the management of a SCAT Programme Coordinator. This component would be unchanged and fully integrated within an SRP with the addition of the SCAT-OPS Liaison function.

TYPICAL DAILY ROUTINE FOR AN SRP MANAGER FOLLOWING THE INITIAL RESPONSE

Briefing and information exchange

- Daily **SCAT Field Survey Team briefings** (safety, missions objectives and logistics) are held with the SCAT Programme Coordinator and/or the SCAT Field Coordinator; SCAT 'packages' are created by the SCAT Data Manager and provided to the SCAT Field Survey Team Leads with the maps and data required to conduct the missions; SCAT teams deploy to the field.
- The SRP Manager discusses the previous day's activities and decisions with the ENVL and the **Operations Section's shoreline programme representative(s)** and, collectively, they agree on SRP priorities, activities and upcoming assignments and deliverables.
- An **internal SRP team meeting** is held to share information on the previous day's activities and decisions, and to brief on upcoming assignments and expectations. For example, data technicians typically work on an off-cycle schedule, and may report in during the day and then remain at work in the evening until all data entry has been completed in accordance with appropriate QA/QC.

Daytime activities

- The **SRP Manager** takes time each day to assess the long-range (weeks and months) SRP picture, and look ahead for potential issues, concerns or challenges that may arise, or for adjustments that may be appropriate. In addition, he or she considers how to strategize for any upcoming transitions or changes of pace in the SRP.
- The **SRP Manager** participates in tactics and planning meetings to support the ENVL and PSC, and attends any shoreline-related TWG meetings. The SRP Manager also coordinates with the SCAT Programme Coordinator and SCAT Field Coordinator on upcoming (i.e. the following day and longer-term) field missions and strategies, reviews the SRP/SCAT plan to ensure that activities are meeting the Incident Command's objectives, and that those activities are on target and on schedule.
- Together with the **SCAT Field Coordinator**, the SRP Manager ensures that regularly scheduled prearranged contacts with the SCAT Field Survey Teams and SCAT-OPS Liaison are maintained (for safety), discusses the mission plan for the following day as well as the short-term rolling 7- or 10-day mission plan, and discusses the rotation schedule for the SRP office and field staff based on the rolling long-term (one month or longer) mission plan.
- Together with the **STR Manager**, the SRP Manager prepares STRs and their associated GMPs, and liaises with technical specialists and other representatives to move STRs through the review and approval process.
- Together with the **SCAT Data Manager**, the STR Manager ensures that the SCAT 'packages' are prepared for the following day's missions.

Debrief and data management

The **daily debrief** involves the full SRP team, and is usually attended by the ENVL and representatives from the Environment Unit SCA-TS and the Operations Section.

A typical daily debrief may include the following:

- A safety moment to provide an opportunity to share issues or concerns from the day.
- SCAT Field Survey Team Leads summarize activities, results and key observations.
- SCAT-OPS Liaison field teams summarize activities and observations.
- The SCAT Field Coordinator outlines the field plan and logistics for the following day.
- The SRP Manager shares information regarding what is happening outside the SRP group, and describes upcoming assignments and expectations.

Before the team leads leave, the SRP Manager and the **SCAT Data Manager** ensure that QA/QC have been conducted on the SCAT data and information, so that any necessary revisions or additions can be captured and the data entry completed. The data are then distributed to the Situation Unit and Documentation Unit.

Appendix 2: SRP activity steps and checklists

CONTENTS OF THIS APPENDIX

The summary of activities and the checklists presented in this Appendix identify some of the major activities and actions that characterize a typical SRP. The information is presented in the context of the sequence of steps that is typically followed as a response is initiated and implemented through to completion (see also Figure 12 on page 40). It is intended as a guideline only, and some activities may be concurrent and overlapping, for example when there is a phased approach to shoreline treatment. This is only a partial summary of the activities and actions involved, and the exact scope and character of an SRP should be flexible and should adapt to the scale, size and location of the response operation. More detailed checklists for the SCAT component of an SRP are provided by a Job Aid in the ECCC SCAT Manual (ECCC, 2018).

continued ...

THE TYPICAL SEQUENCE OF ACTIVITIES IN AN SRP

1. Initial response — activation

If the shoreline is oiled, and the Incident Command determines that there should be a shoreline response, the PSC or ENVL activates the SRP and SCAT programmes.	If the shoreline is NOT expected to be oiled, the PSC or ENVL would place the SRP and SCAT programmes on standby.

2. Initial response — mobilization

Estimate the 'scale of the problem' and mobilize the SRP/SCAT programmes to an appropriate level of staffing.	Monitor mobilization of the SRP and SCAT programmes.	Engage with the PSC, ENVL and Environment Unit SCA-TS on SRP/SCAT objectives, roles, responsibilities and expectations.

3. Initial response phase — implementation of SCAT reconnaissance missions

Provide reconnaissance shoreline oiling data to the Environment Unit.	Recommend generic STRs for initial shoreline treatment objectives, priorities, and treatment end-point criteria for the removal of oil while it is concentrated and before it is reworked, buried or remobilized. *	Define the initial SCAT survey strategy and develop a short-term (rolling 7-day) mission plan. *

4. Initial response phase — implementation of the SRP and initial response treatment activities

Monitor and decide how to bring closure to the initial response bulk oil removal activities. *	Manage SCAT field activities (safety and logistics support).	Define long-range strategy and begin preparation of the SRP and SCAT plans *

5. Planned phase (decision-making stage) — preparation of the SRP and SCAT plans

Define treatment options by shore type and oiling conditions in consultation with the Operations Section. *	Define SRP objectives, strategy and treatment end-point criteria (by phase and by shore type). *	Develop GMPs for SCAT field activities and STRs. *	Define the monitoring and inspection process for STR closure. *

* *indicates a joint activity with the SCA-TS based in the Environment Unit*

continued ...

The typical sequence of activities in an SRP (continued)

6. Planned phase (project implementation stage) — implementation of SCAT programme surveys and field missions

Manage SCAT field activities, safety plan and support.	Provide processed (post QA/QC) field data to the Environment Unit, Documentation Unit and Situation Unit.	SRP team prepares STRs for review by the Environment Unit, engaging with stakeholders as necessary.	Conduct and report on equipment field tests and treatment trials as required. *

7. Planned phase (project implementation stage) — shoreline treatment and delivery of the SRP/SCAT plan

Monitor engagement by SCAT or SCAT-OPS Liaison with the Operations teams in the field.	Monitor short- and long-range strategies (to closure), and adjust as appropriate. *	Provide input to daily meetings or IAP-related activities. *

8. Completion phase — inspection and completion of the SRP/SCAT plan

Engage with the Operations Section to arrange for internal post-treatment assessments (PTAs) and, subsequently, for interagency inspections.	Work with the Environment Unit to engage stakeholders in the inspection process following STR completion.	Submit signed SIR forms for segments that meet the treatment end-point criteria. *

* *indicates a joint activity with the SCA-TS based in the Environment Unit*

CHECKLIST: THE INITIAL RESPONSE

1. Activation of an SRP

- ☐ The **PSC** and **ENVL** determine whether a shoreline impact has occurred, or has the potential to occur, using overflight information and trajectory models.
- ☐ If no shoreline impact has occurred, or has the potential to occur, the **SRP Manager** and **Environment Unit SCA-TS** are placed on standby.
- ☐ If a shoreline impact has occurred, or is deemed to have the potential to occur, the **PSC** or **ENVL** activates the SRP, which includes a SCAT programme. For all but small incidents, the initial SRP team includes the **SRP Manager**, the **SCAT Programme Coordinator**, the **SCAT Data Manager** and the **Environment Unit SCA-TS**.
- ☐ The **SRP Manager** coordinates with the **ENVL** to provide **Incident Command** with high-level strategic objectives for the SRP and SCAT programmes, and develop specific short-term objectives for the initial SRP/SCAT response.

2. Mobilization of an SRP/SCAT programme

- ☐ The **ENVL** provides the **SRP Manager** with overflight information, trajectory maps, sensitivity maps and information on shoreline resources at risk.
- ☐ The **SRP Manager** uses the overflight information, trajectory maps and other available information to assess the geographic extent of the response, and estimate the potential time scale of the incident response and therefore the required size of the SRP/SCAT programme.
- ☐ The **SRP Manager** and **SCAT Programme Coordinator** mobilize personnel to the appropriate level of staffing and provide an organizational chart to the **ENVL**.
- ☐ The **SRP Manager** and **SCAT Programme Coordinator** prepare assignment sheets for each SCAT team, that include the resources needed by each team.
- ☐ The **SRP Manager** monitors the mobilization of the SRP/SCAT programme, ensuring that the staffing remains at a level appropriate to the response and that appropriate support equipment is sourced (including accommodation, vehicles/drivers, boats, aircraft, etc.).
- ☐ The **SRP Manager** and **SCAT Programme Coordinator** develop separate tactics sheets for the IAP for each type of SCAT mission (reconnaissance, shoreline assessment, SCAT-OPS Liaison, etc.).
- ☐ The **SRP Manager** establishes communications and engages with the **PSC**, **ENVL**, **SCAT-TS** and the **Operations Section Chief** on objectives, roles, responsibilities, expectations and stakeholder engagement.

continued ...

Checklist: The initial response *(continued)*

3. SCAT reconnaissance missions
☐ Key SRP and SCAT personnel conduct an aerial or ground-based orientation of the impacted or potentially affected shoreline area; this field orientation could include one or more of the **SCAT Programme Coordinator**, **SCAT Field Coordinator**, **SCAT Data Manager**, **Environment Unit SCA-TS**, **SCAT Field Survey Team Leads** and potentially agency/stakeholder representatives.
☐ The **SCAT Data Manager** segments the shoreline, in consultation with the **Environment Unit SCA-TS** and **SCAT Field Survey Team Leads** or, if the shoreline is pre-segmented, verifies the segmentation using current data.
☐ The **SCAT Data Manager** communicates the segmentation, as maps or GIS files, to the **Situation Unit Leader**, **Operations Section Chief**, **PSC**, **ENVL** and **Logistics Section Chief**.
☐ The **SRP Manager** consults with the **SCAT Programme Coordinator** and **Environment Unit SCA-TS** to define the initial SCAT shoreline reconnaissance survey strategy and priorities.
☐ The **SRP Manager** and **Environment Unit SCA-TS** determine the agency or other stakeholder representation that would be appropriate or required for the SCAT field and support teams, and communicate this information to the **SCAT Programme Coordinator** and the **ENVL**.
☐ The **SCAT Programme Coordinator** and **SCAT Field Coordinator** deploy **SCAT Field Survey Teams** to conduct aerial reconnaissance and/or rapid ground/vessel assessments to gain a complete picture of the extent, locations and character of shoreline oiling.
☐ **SCAT Field Survey Teams** assess the shoreline for access, logistics and safety, and document this information on SOS forms.
☐ The **SCAT Data Manager** determines the required scope of the SCAT database, establishes the physical database, and arranges for GIS support to generate maps and other graphic materials.
☐ The **SCAT Data Manager** enters reconnaissance and SOS data into the SCAT database.
☐ The **SCAT Programme Coordinator** or **SCAT Data Manager** provides initial reconnaissance and rapid assessment data to the **SRP Manager**, **ENVL**, **Environment Unit SCA-TS**, **PSC**, **Situation Unit Leader**, and **Operations Section Chief**.
☐ The **SCAT Programme Coordinator** provides initial access, logistics and safety assessments (from SOS forms) to the **Operations Section Chief**, **Safety Officer** (in the Incident Command general staff) and **SRP Manager**.
☐ The **SRP Manager** and the **SCAT Programme Coordinator** develop a shoreline clean-up 'initial response' plan, including generic STRs as appropriate, that provides recommendations to the **ENVL**, **Environment Unit SCA-TS**, **PSC** and **Operations Section Chief** for shoreline clean-up priorities to remove as much oil as quickly as is safe and practical when the stranded oil is most concentrated and mobile before it is reworked, buried or remobilized.

continued ...

Checklist: The initial response *(continued)*

4. Implementation of the SRP and initial response treatment activities
☐ The **Environment Unit SCA-TS** assesses the initial shoreline reconnaissance information and treatment activities and priorities in the 'initial response plan', in coordination with the **SRP Manager**, **SCAT Field Survey Teams**, **SCAT Programme Coordinator** and the **Shoreline Treatment Assessment** (or **Technical Advisory**) **Group (STAG)**, if one has been created.
☐ The **ENVL** coordinates the with the **SRP Manager** and with external stakeholders and agencies, and has the option of establishing **Technical Working Groups (TWGs)** or **Technical Advisory Groups (TAGs)**, such as a **STAG**.
☐ The **SRP Manager** coordinates with the **PSC**, **ENVL**, **Environment Unit SCA-TS**, **STAG** and the **Operations Section Chief** to obtain approval by **Incident Command** of the recommended: (1) objectives; (2) initial phase treatment end-point criteria; and (3) geographic priorities for the initial treatment of the shoreline.
☐ The **SRP Manager** coordinates with the **Environment Unit SCA-TS** and **SCAT Programme Coordinator** to use initial SCAT field data and recommendations to: (1) monitor and decide how to bring closure to the initial response shoreline treatment operations; (2) determine ongoing shoreline survey objectives, strategies and phases; and (3) plan and prioritize SCAT field missions and surveys.
☐ The **SRP Manager** coordinates with the **PSC**, **ENVL**, **Environment Unit SCA-TS**, **STAG** and the **Operations Section Chief** to develop the long-range response strategy and begin preparation of the SRP and SCAT plans (these may constitute a single document with the SCAT plan embedded within the SRP plan).

CHECKLIST: THE PLANNED PHASE (DECISION-MAKING STAGE)

5. Preparation of the SRP and SCAT plans	
☐	The **Environment Unit SCA-TS** uses SCAT data and recommendations to develop proposals for the selection of end-point criteria for long-term or phased treatment, and ensures that relevant internal and external stakeholders are involved in the decision-making process, along with the **STAG** or other TAGs/TWGs if they have been established.
☐	The **Environment Unit SCA-TS** coordinates with the **SRP Manager** and **SCAT Programme Coordinator** to use SCAT data and recommendations to develop proposed SCAT and shoreline operations objectives, strategies, priorities, options, constraints and treatment end-point criteria, as well as (KPIs); these are submitted to the **ENVL** and **PSC** for approval, ensuring that all relevant internal and external stakeholders are involved in the decision-making process, including the **STAG**, if one is established.
☐	The **Environment Unit SCA-TS** assesses shoreline treatment options and tactics by shoreline type and oiling conditions, in coordination with the **SCAT Programme Coordinator**, **SCAT Team Leads** and **STAG**. This may include field trials and equipment demonstrations, which are directed by the **SRP Manager** and coordinated with **shoreline operations**.
☐	The **SRP Manager** determines the need for, and manages, any field treatment trials or demonstrations for specific treatment options or operational equipment field tests.
☐	The **SRP Manager** and **SCAT Programme Coordinator** coordinate with the **Environment Unit SCA-TS** to use SCAT data and recommendations as the basis for developing STRs; this may involve a phased approach to the treatment operation.
☐	The **Environment Unit SCA-TS** coordinates with the **SRP Manager**, **SCAT Programme Coordinator**, **STAG**, **Wildlife Specialist** and **Historical/Cultural Resources Technical Specialist or Advisor** to develop GMPs for the SCAT field activities and the STRs.
☐	The **SRP Manager** coordinates with the **Environment Unit SCA-TS** and **SCAT Programme Coordinator** to: (1) determine the monitoring, inspection and approval process/procedures for STR treatment completion; and (2) produce the SRP/SCAT plan that carries the treatment programme through to completion.
☐	The **SRP Manager** coordinates with the **Operations Section** to ensure that they understand the proposed treatment objectives, priorities, strategies and tactics, and to understand any concerns or issues that the Operations Section may have with regard to the SRP plan.
☐	The **SRP Manager** seeks **Incident Command** approval of the SRP/SCAT plan, through the **ENVL** and **PSC**.
☐	The **SRP Manager** ensures that the **SCAT Data Manager** understands the data and reporting requirements of the SRP and other key stakeholders, including the **Planning Section** (in particular the **Situation Unit**), **Operations Section** and **Incident Command**.
☐	The **SRP Manager** provides STRs to the **ENVL** for review and GMP consultation that includes the **Wildlife Technical Specialist** and **Historical/Cultural Resources Technical Specialist or Advisor**.
☐	The **SRP Manager** coordinates with the **Operations Section** to ensure that they understand the STRs, constraints (GMPs) and the treatment end-point criteria.
☐	The **SRP Manager** seeks **Incident Command** approval of STRs via the **ENVL** and **PSC**.
☐	The **SRP Manager** (or **STR Manager**) tracks the generation, review and approval of STRs and ensures that approved STRs are included in the IAP.
☐	After the QA/QC process, the **SCAT Programme Coordinator** or **SCAT Data Manager** provide SCAT summary data, maps and reports to the **SRP Manager**, **ENVL**, **Environment Unit SCA-TS**, **Situation Unit Leader** and **Operations Section Chief**, as required.
☐	The **SRP Manager** ensures that data and reports reach the appropriate Sections/Units/Branches and personnel, including the **ENVL**, **PSC**, **Situation Unit Leader**, **Operations Section Chief**, **Logistics Section Chief** and **Incident Command**.

CHECKLIST: THE PLANNED PHASE (PROJECT IMPLEMENTATION STAGE)

6. Implementation of SCAT programme surveys and field missions	
☐	The **SCAT Programme Coordinator** and **SCAT Field Coordinator** schedule and deploy SCAT field missions and surveys in accordance with the priorities set out in the approved SCAT plan.
☐	The **SCAT Data Manager** ensures that the planned SCAT field survey data are aligned with the treatment or end-point criteria so that the appropriate types of information and levels of detail are generated.
☐	The **SCAT Field Survey Teams** conduct systematic SCA surveys and complete SOS forms.
☐	The **SCAT Data Manager** ensures that SCAT field data are uploaded to the database and that QA/QC reviews are performed.
☐	The **SCAT Data Manager** initiates STRs from the SCAT database for segments that do not meet the treatment end-point criteria.
☐	The **SCAT Field Survey Team Leads** and the **SCAT Programme Coordinator** (or **STR Manager**) prepare recommendations for treatment using STR forms based on the SRP treatment objectives, priorities, options, constraints, GMPs and treatment end-point criteria approved by the Incident Command.
☐	The **SCAT Programme Coordinator** or **STR Manager** provides field data and STRs to the **SRP Manager** and the **Environment Unit SCA-TS** for review.
☐	The **SCAT Field Survey Teams** coordinate with the **SRP Manager**, **SCAT Programme Coordinator**, **Environment Unit SCA-TS**, and **STAG** to conduct and report on equipment field tests and treatment trials, if these are required or recommended.
☐	The **SCAT Programme Coordinator** and **SCAT Field Coordinator** conduct daily SCAT briefs and debriefs with the **SCAT Field Survey Teams** and support team (**SCAT Programme Coordinator**, **SCAT Data Manager**, **agency representatives**).
☐	The **SCAT Data Manager** provides SCAT summary data, maps and reports to the **SRP Manager**, **ENVL**, **Environment Unit SCA-TS**, **PSC**, **Situation Unit Leader** and **Operations Section Chief**, as required.

continued ...

Checklist: The planned phase (project implementation stage) *(continued)*

7. SRP/SCAT plan delivery	
☐	The **SRP Manager** and **SCAT Programme Coordinator** implement and monitor the operational implementation of the SRP/SCAT plan.
☐	The **Environment Unit SCA-TS** works with the **SRP Manager** and **SCAT Programme Coordinator** to establish a treatment review process, allowing modification of guidelines and STRs as oiling conditions change, treatment becomes ineffective or no longer presents a net environmental benefit, or where any residual risk presented by the remaining oil is considered to be 'as low as reasonably practicable' (ALARP).
☐	The **Environment Unit SCA-TS** coordinates with the **SCAT Programme Coordinator** to determine the areas to be monitored by the SCAT Field Survey Teams, and prioritizes segments.
☐	The **SCAT Programme Coordinator** and **SCAT Field Coordinator** deploy **SCAT Field Survey Teams** to monitor the recovery of shoreline segments defined by the STRs in the IAP, and to monitor the effectiveness of treatment operations to establish whether the treatment end-point criteria are being met.
☐	The **SCAT Data Manager**, **SRP Manager** and **STR Manager** track the progress of treatment operations and the operational status of active STRs.
☐	The **SCAT Field Survey Teams** or **SCAT-OPS Liaison** liaise with **shoreline operations** to ensure that they understand all elements of the SRP plan and the STRs in the IAP, and to address any concerns or issues raised by the Operations teams with regard to the shoreline clean-up.
☐	The **SRP Manager** coordinates with the **Environment Unit SCA-TS** to review and revise (if necessary) treatment strategies and STRs, and communicates the effectiveness, and areas for improvement, of shoreline operations to the **Operations Section Chief**.
☐	The **SRP Manager**, in coordination with the **Environment Unit SCA-TS** and **ENVL**, provides input to daily or IAP-related activities, such as briefings and meetings.

CHECKLIST: COMPLETION PHASE

8. Inspection and completion of the SRP/SCAT plan	
☐	The **SRP Manager** coordinates with the **ENVL** and **SCAT Programme Coordinator** to determine the membership of the STR completion inspection teams, based on the SRP/SCAT plan and on which team members have signatory authority and are therefore able to provide comments .
☐	The **SCAT Programme Coordinator** or **SCAT-OPS Liaison** establishes a system for the **Operations Section Chief** to communicate to the **SRP Manager** and **SCAT Programme Coordinator** that treatment is considered to have been completed for a particular STR.
☐	The **Operations Section** communicates via the **SCAT-OPS Liaison** to the **SRP Manager** and **SCAT Programme Coordinator** to advise when STR segments or partial segments are considered ready for completion inspection.
☐	The **SCAT Programme Coordinator**, **SCAT-OPS Liaison** and **ENVL** evaluate the need for SCAT PTA missions (prior to undertaking the STR completion inspections), which would include the appropriate agency and landowner/land manager representatives.
☐	The **SCAT Programme Coordinator** and **SCAT Field Coordinator** deploy **SCAT Field Survey Teams** to conduct PTA missions as necessary.
☐	The **SCAT Programme Coordinator** liaises with the **Environment Unit SCA-TS** to deploy **SCAT Field Survey Teams** to conduct STR completion missions and, if the treatment end-point criteria are not met, the inspection teams make recommendations (via SIRs) for achieving the STR 'no further treatment' (NFT) criteria as appropriate.
☐	The **SRP Manager** seeks **Incident Command** approval, through the **ENVL** and **PSC**, of SIR recommendations for STR completion on a particular segment (or segments) if further actions are required, or approval of an SIR if no further treatment is required.
☐	The **SRP Manager** ensures that, when further treatment is required, the **Operations Section Chief** understands why this is the case and what needs to be done to meet the treatment end-point criteria; and the **SCAT Team Leads** or **SCAT-OPS Liaison** ensure that, when further treatment is required, the **shoreline operations field supervisors** also understand why this is the case and what needs to be done to meet the treatment end-point criteria.
☐	The **SRP Manager** ensures that SCAT inspection completion data and reports (SIRs) reach the appropriate sections/units/branches and personnel, including the **ENVL**, **PSC**, **Situation Unit Leader**, **Operations Section Chief**, **Logistics Section Chief** and **Incident Command**.
☐	The **SRP Manager** and **SCAT Programme Coordinator** ensure that SRP and SCAT personnel are demobilized as the appropriate level of effort is reduced during the response.
☐	The **Operations Section Chief** ensures that operations personnel are demobilized as the requirements for shoreline operations reduce.

Appendix 3: Generic template for an SRP plan

At the outset of a response, the SRP Manager, with input from the ENVL and the Environment Unit SCA-TS, develops an SRP plan for shoreline treatment that defines the objectives, management structure, scope and scale of response necessary to implement comprehensive shoreline response activities. Each plan is unique to the incident in question as the requirements depend on a variety of incident-specific factors. Oiling and/or environmental conditions typically change during a response so that the specifics of the plan, including the scale of the response, require appropriate and continuous review and revision to ensure applicability and appropriateness. The SCAT survey programme is embedded within the SRP plan, although it may be used as a standalone document for that component of the SRP.

The following 'table of contents' presents the typical elements of an SRP plan:

SECTION 1: SRP PLAN OVERVIEW

- Shoreline response objectives (linked to Incident Command objectives).
- Incident description (shore types, oiling conditions, key resource sensitivity and vulnerability of the shorelines in the affected area).
- Safety issues (wildlife, weather, access, communications, unexploded ordinance, etc.).
- Shoreline treatment priorities.
- Operational and logistical constraints.
- Regulatory requirements (permits/permission requirements).
- Transboundary issues (if any exist), and resolutions (including import of equipment/services).
- Translator/translation requirements.

SECTION 2: SRP MANAGEMENT PLAN

- Organization and structure.
- Manpower/support (internal within the SRP and IMT, and external support resources):
  - Roles and responsibilities of key SRP team members.
  - Staffing schedule and rotation plan.
  - Scale-up/scale-down procedures.
- Support services (office and field).
- Coordination with other components of the IMT:
  - Safety.
  - Environment Unit.
  - Situation Unit.
  - Operations Section.
  - Logistics Section.
- Stakeholder engagement:
  - Coordination with the Environment Unit Leader (ENVL) and identification of stakeholders.
  - Engagement plan.
  - Participation in Technical Working Groups (TWGs) or Technical Advisory Groups (TAGs).

continued ...

SECTION 3: SRP IMPLEMENTATION PLAN

Planned operations (description and checklists)

- SRP plan phases:
  - Phase 1 (initial response).
  - Phases 2 and 3 (planned and completion phases):
    - Treatment monitoring and effectiveness assessment activities.
    - Post-treatment assessment (PTA) surveys.
    - Shoreline treatment recommendation (STR) completion surveys (STR inspection report (SIR) protocols).
- Shoreline assessment (SCAT) surveys plan:
  - Mission planning, schedule and priorities.
  - Shoreline segmentation and oiling categorization.
  - SCAT Field Survey Team safety plan, including JSAs.
  - Survey forms, training, orientation, calibration and oiling job aids.
  - SCAT-OPS Liaison support for Operations Section activities:
    - Task forces, strike teams and embedded 'complete as you go' (CAYG).
  - SCAT data management, quality assurance (QA)/ quality control (QC) procedures, geographic information system (GIS) and other data products.
- SRP briefings/meetings/reporting.
- Shoreline treatment evaluation plan:
  - Prospective treatment options.
  - Effectiveness monitoring (key performance indicators—KPIs).
  - Bench-scale, field trials and demonstrations.
  - Third-party screening procedures.
- Clean-up and treatment (end-point) criteria:
  - 'No further treatment' definitions.
- Demobilization plan.

Appendix 4: Generic STR form for use in the initial response phase (sand beach example)

Shoreline or Segment Treatment Recommendation **STR # 1**
Operational Permit to Work

Segment Number/ID: Survey Date:

Start Latitude: **End Lat:**
Start Longitude: **End Long:** **Length (m):** _____
Shoreline Type: *Primary* *Sand Beach* *Secondary*_____

Oiled Areas for Treatment:

GENERIC SAND BEACH STR
Heavy and Moderate oiling conditions during the Initial Response Phase

Clean-up Recommendations:

Bulk oil removal of Wide/Medium width (>3 m) AND Continuous (91–100%) or Broken (51–90%) Distribution by mechanical removal where access/trafficability suitable.

Small areas of HEAVY— Manual removal with rakes and shovels into plastic bags

Staging and/or Logistics Constraints/Waste Issues:

TBD[1] in consultation with the **Operations Section Shoreside Recovery Group Supervisor**

Ecological – Wildlife Concerns/Constraints:

TBD[1] in consultation with the **Environment Unit Resources-at-Risk Specialist**

Cultural – Historical – Human Use Concerns/Constraints:

TBD[1] in consultation with the **Environment Unit Leader**

Safety Concerns/Constraints:

TBD[1] in consultation with the **Safety Officer**

Attachments: ☐ Segment Map ☐ Photo/Sketch ☐ SCAT Form ☐ Fact Sheet ☐ Other

STR prepared by: _____ Date STR prepared: _____

Reviewed by:				
SRP Manager	Environment Unit Leader	Operations Section	Safety Section	

Final approvals (as required): _____ _____ _____
Incident Commander

**** When treatment is completed, send a Segment Completion Report to SCAT ****

[1] TBD = To Be Determined

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List of acronyms

List of acronyms

ALARP	As low as reasonably practicable
API	American Petroleum Institute
CAYG	Complete (or clean)-as-you-go
ENVL	Environment Unit Leader
GIS	Geographic information system
GMP	Good management practice
IAP	Incident action plan
IMS	Incident management system
IMT	Incident Management Team
JSA	Job safety analysis
KPI	Key performance indicator
NEBA	Net environmental benefit analysis
NFT	No further treatment
OPS	Operations (Section)
PSC	Planning Section Chief
PTA	Post-treatment assessment (survey)
QA/QC	Quality assurance/quality control
SCA	Shoreline clean-up assessment (survey)
SCA-TS	Shoreline Clean-up Assessment Technical Specialist (in the Environment Unit)
SCAT	Shoreline clean-up assessment technique
SIMA	Spill impact mitigation assessment
SIR	STR (or segment or shoreline) inspection report
SOS	Shoreline oiling summary
SRP	Shoreline response programme
STAG	Shoreline Treatment Assessment (or Technical Advisory) Group
STR	Shoreline treatment recommendation
TAG	Technical Advisory Group
TWG	Technical Working Group

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