

Summary of Joint Industry Oil Spill Preparedness and Response Task Force Activities

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Submitted on behalf of the American Petroleum Institute Oil Spill Preparedness and Response Subcommittee by:

**Greg DeMarco
ExxonMobil
3225 Gallows Road
Fairfax, VA 22037**

1. Introduction

The oil and gas industry (Industry) convened the Joint Industry Oil Spill Preparedness and Response (OSPR) Task Force (JITF) in June 2010 to evaluate procedures and lessons learned during the *Deepwater Horizon* (DWH) oil spill response. The initial focus of the JITF was to identify potential opportunities for improvement to the oil spill response system in the areas of planning and coordination, optimization of each response tool, research and development (R&D), technology advancement and training/education of all parties preparing for or responding to an oil spill. In September 2010, the JITF issued a draft report containing preliminary recommendations for improvements titled *Joint Industry Oil Spill Preparedness and Response Task Force Draft Industry Recommendations to Improve Oil Spill Preparedness and Response*. The preliminary ideas presented in that initial report were offered as a first step in the process of conducting a critical assessment of the current oil spill program. Since then Industry has worked in collaboration with stakeholders including representatives from the Federal and state governments to better define these ideas, organize a comprehensive work program, and initiate progress on a variety of specific projects that envision active participation

by various stakeholders. This document provides a progress report on the JITF's activities over the past year.

2. Oil Spill Preparedness and Response Joint Industry Task Force Organization

Following the September 3, 2010 OSPR JITF report, the American Petroleum Institute (API) Oil Spill Preparedness and Response Subcommittee (OSPRS) convened to address the recommendations made by the JITF. The OSPRS was tasked with leading Industry efforts to develop and implement plans that addressed the report recommendations while staying abreast of related initiatives. The subcommittee has maintained linkages to international organizations (e.g., Oil and Gas Producers-Global Industry Response Group (OGP-GIRG) and the Arctic Response Technology Joint Industry Project (JIP)), well containment companies, Oil Spill Removal Organizations (OSROs), and academic institutions. The subcommittee also reviewed and commented on emerging materials related to oil spill response, such as the Presidential Commission Findings, Incident Specific Preparedness Review, draft National Response Team (NRT) dispersant guidance, US Bureau of Ocean Energy, Management, and Enforcement (BOEMRE – now Bureau of Ocean Energy Management (BOEM) and Bureau of Safety and Environmental Enforcement (BSEE)) planning guidance, and a number of scientific reports (e.g., Operational Science Advisory Team Report). The OSPRS is supported in its efforts by the API Oil Spill Preparedness and Response Workgroup (OSPRW) made up of technical personnel from the various participating companies.

The OSPRS spent several months developing and prioritizing project plans to address each preliminary recommendation, and subsequently received approval and

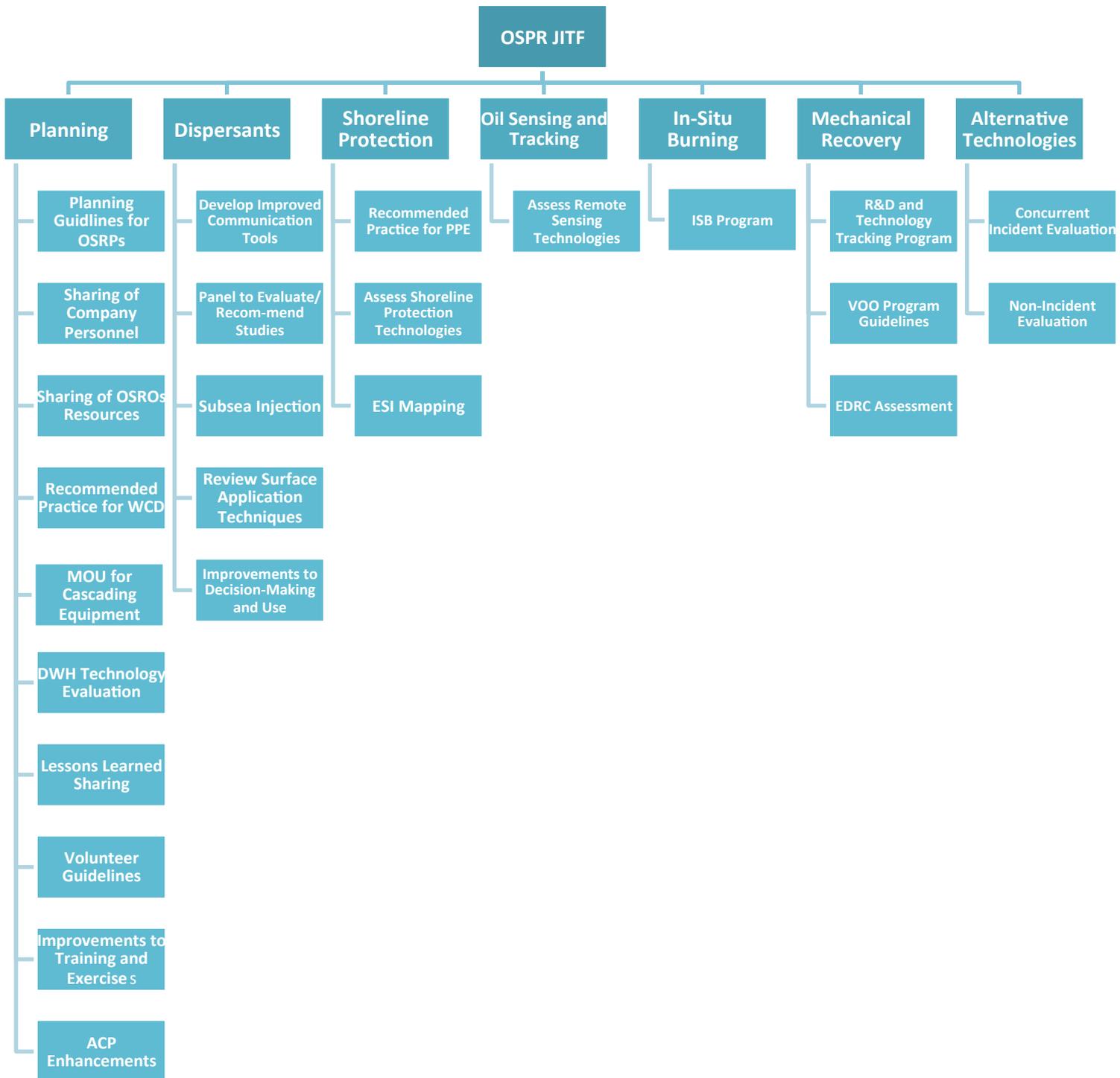
Industry funding commitment for a multi-year work program. The OSPRS divided the recommendations into seven categories, or work streams, as outlined in the original report, specifically:

- Planning
- Dispersants
- Shoreline Protection and Cleanup
- Oil Sensing and Tracking
- In-Situ Burning
- Mechanical Recovery
- Alternative Technologies

Within each category there are a number of projects being worked by individual project teams, as shown in Figure 1. These individual project teams are led by a member of the OSPRS or OSPRW. The teams have developed scoping documents and project plans complete with milestones. In some cases projects have endorsed budgets for one or more years to allow access to contractors/consultants or other support services to complete studies, research, workshops, etc.

These projects envision collaboration among Industry, government, and academia. Some project teams will carry out large-scale research studies while other teams will assume a monitoring and engagement role if similar initiatives are being conducted by other entities (such as the Federal government).

Figure 1: OSPR Project Organization



3. Oil Spill Preparedness and Response Joint Industry Task Force Work Program

3.1 Planning

3.1.1 Planning Guidelines for Oil Spill Response Plans

To address several of the recommendations, a project team was formed to develop a guidance document on Oil Spill Response Plans (OSRPs). The guidance will focus on plans primarily for offshore facilities, but may, if appropriate, be applicable to other marine facilities as well. Key elements of the document will include:

- Various discharge scenarios including worst case discharge (WCD).
- Initial and supplemental response actions and strategies including spill and hazard assessment (health and safety), notification, trajectories, response team activation, source control, containment and recovery, sensitive area protection, cleanup, waste management, and others.
- Response resources including sources and associated inventories of personnel and equipment, as well as support services and supplies, for Tier 1, 2 and 3 events. A description of how the combination of mechanical recovery, dispersants and in-situ burning (ISB) could be used to comply with the WCD planning requirements will also be included.
- Response organizations for Tier 1, 2 and 3 level events including roles and responsibilities for each position, processes for transitioning and ramping up to the next tier, incorporating a robust Source Control Branch, working within a Unified Command Structure (UCS), etc.

- Facility description.
- Reference material including risk analysis, training and drills, communications, documentation, and other information that may be required during a response.

The team held several meetings and work sessions to develop the scope, assign tasks, and prepare an annotated outline for the guidance document. They have solicited support from an independent consulting firm to assist with this project. Industry is requesting government participation in this effort and will share a draft of the guidelines for review and comment by relevant Federal agencies in early 2012. Industry understands that BSEE is developing an Advanced Notice of Proposed Rulemaking (ANPRM) related to offshore oil spill response and believes these planning guidelines will provide a basis for Industry's initial input into that rulemaking process.

3.1.2 Sharing of Company Personnel

A project team formed to identify key issues that must be considered in lending company personnel to support an Industry incident command post or field response operation. Identified key issues include liability, compensation, safety, compliance, and human resources policies. The team also evaluated the range of legal approaches and instruments that could be employed to address these issues. The team will produce:

- An assessment of the key issues raised in lending of personnel to a third party response.
- Recommendations for appropriate legal instruments.
- If value added, model agreements and guidance on how they can be accessed and used by Industry.

The team, comprised of Industry members, has held several meetings and is drafting a model agreement that could be used for lending key personnel during an incident. A draft has been completed and is under review. The final assessment, recommendations, and model agreements are expected to be complete by early 2012.

3.1.3 Sharing of Oil Spill Removal Organizations' Resources

The OSPRS held initial discussions with OSROs and the Federal government on this subject. There are commercial and legal barriers to OSROs sharing resources with non-members. Moreover, the Federal On-Scene Coordinator (FOSC) retains the right to direct the obtainment of additional OSRO resources either through the Responsible Party or directly. Under the Oil Pollution Act of 1990 (33 US Code 2701 et seq., commonly referred to as "OPA 90"), the FOSC has clear authority to coordinate all Federal, state and private actions; order specific action and impose specific requirements; directly supervise implementation; and even assume control over all response actions, including the contracting of private resources (and seeking reimbursement later). In fact, the Federal government has a Basic Ordering Agreement in place with at least one major OSRO to facilitate Federal access to response resources. Both Industry and government view this as an important subject, and will continue to stay engaged to identify new opportunities for greater resource sharing. Section 3.1.5 addresses the related issue of cascading resources across geographies.

3.1.4 Recommended Practice for Worst Case Discharge

In response to the DWH incident, BOEMRE (now BOEM) issued a Notice to Lessees (NTL), NTL 2010-N06, which required information on estimated WCD be

submitted to BOEM as part of an application for a permit to drill (APD). Initially, little direction on how to calculate the WCD was provided by BOEM, so the Offshore Operators Committee (OOC) asked the Society of Petroleum Engineers (SPE) to form a task force to develop consensus best-practice guidelines for calculating WCD. The SPE Gulf of Mexico Incident Response Task Force worked with the OOC and the Offshore Technology Research Center to bring together industry, academic, and government experts to develop consensus guidelines on how to calculate WCD in compliance with the NTL. This Task Force developed and published in the public domain a guidance document¹, “Guidance for Complying with BOEM NTL No. 2010-N-06 on Worst Case Discharge for Offshore Wells” on September 8, 2010 to address this requirement.

The guidance document stated that it was not an endorsement of the methodology put forth by the NTL for WCD calculation, but it did provide clarity and consistency on what BOEM wanted to see in the WCD submittal. This clarity allowed operators to prepare WCD calculations that satisfied BOEM’s requirements, and allowed BOEM to accept APD applications and start the review and approval process.

The OSPRS felt that this guidance document fulfilled the immediate objective of enabling operators to comply with BOEM regulatory requirements for WCD calculation, and therefore decided to forego developing additional guidelines/recommended practice at this time. In the future, this issue may need to be revisited, as the SPE Task Force indicated they did not necessarily agree with the BOEM methodology. Any future efforts to change this methodology would need to be considered in the context of promoting changes/enhancements to existing

¹ www.spe.org/notes/wp-content/uploads/2010/09/spe_wcd_final.doc

regulations. Due to the technical nature of these calculations, and the potential global application of such a recommended practice, this effort may be better handled by an international advisory body, like SPE, as opposed to a US-based body like API.

3.1.5 Memorandum of Understanding for Cascading Equipment

Shortly after the September 3, 2010 report was finalized, Industry contacted the United States Coast Guard (USCG) about the prospect of developing a Memorandum of Understanding (MOU) between government and Industry to address cascading of resources in the event of an incident. This MOU would lay out general policies, procedures and responsibilities for public and private sector acquisition of resources from other geographic regions, including international regions, to respond to an incident.

While an approach to spill response based on cascading of resources is favored by Industry as most effective and realistic, there are substantial legal liability concerns as well as a need for relief/waiver from regulations at the Federal and state level that exist as potential barriers to promoting cascading of resources. The USCG has expressed reluctance to seek limitation of liability or grant formal waivers from regulatory requirements on behalf of Responsible Parties and other responders in the event that resources need to be transferred from other geographic areas immediately to respond to a spill.

Industry understands that the Ocean Energy Safety Advisory Committee –established by BOEMRE– plans to recommend a review of legal and regulatory barriers to cascading of equipment. Industry remains committed to exploring options

with the government to promote enhanced cascading of equipment both domestically and across international borders.

3.1.6 *Deepwater Horizon* Technology Evaluation

A team was formed to develop a process for evaluating new, or new applications of, mechanical recovery technologies or systems used in the DWH response. The scope of work includes the following:

- Identify the types of mechanical recovery equipment and systems that were used during the DWH response and determine which were new or relatively new technologies or applications of those technologies.
- Develop a questionnaire on various aspects of mechanical recovery effectiveness to be submitted to representatives of several OSROs, regulatory agencies, and consultants who were intimately involved in the DWH mechanical recovery operations.
- Conduct interviews with selected representatives of appropriate organizations to obtain additional information on DWH mechanical recovery operations and effectiveness.
- Compile the data from the questionnaires and interviews and prepare a report on the assessment process and results.

The objective is to identify technologies or systems that were most effective in mechanically recovering oil as well as identifying the range of conditions where they were most effective. Opportunities to further improve these technologies or systems with additional research and development will also be identified where possible.

An independent consulting firm has been selected to conduct the assessment and is expected to begin their work in late 2011. The final report should be completed by the end of the first quarter of 2012. Industry will share this report with relevant Federal agencies as a basis for continued discussions regarding application/adoption of these technologies. The Interagency Coordinating Committee on Oil Pollution Research (ICCOPR) may serve as an appropriate forum for coordination in this area.

3.1.7 Lessons Learned Sharing

In its effort to establish a protocol for systematic gathering and archiving of lessons learned, the OSPRS has identified the Federal Lessons Learned Information Sharing (LLIS) website² as a suitable vehicle to collect and house this information. A quick guide and a Frequently Asked Questions document on how to register for the website as well as guidance for Industry on how to search for oil spill lessons learned has been developed and made available for use.

3.1.8 Volunteer Guidelines

Industry is aware that the NRT established a Volunteer Work Group to develop a Technical Assistance Document (TAD) for the use of volunteers during oil spills. The TAD will be for public use. The OSPRS intends to request to review the draft and will continue to monitor the NRT volunteer efforts and government's progress.

3.1.9 Improvements to Training and Exercises

The JITF report contained a number of suggestions for improvements that could be made to training and drills/exercises. A project team recently formed to

² <https://www.llis.dhs.gov/index.do>

further investigate these improvements. With respect to large scale exercises involving government, the team has already established contact with the USCG and plans to do so in the near term with BSEE and other regulatory agencies (e.g., US Environmental Protection Agency (EPA), US Department of Transportation (DOT)).

Industry also understands that the National Schedule Coordinating Committee (NSCC) has already initiated the process to revise the National Preparedness for Response Exercise Program (PREP) Guidelines and envisions initiating a pre-draft comment period in early December so Industry can provide input prior to the NSCC completing the draft revisions and posting them for final comment. The government also anticipates holding a public meeting next year prior to the end of the final comment period. The project team plans to participate fully with the Federal government on this effort.

3.1.10 Area Contingency Plan Enhancements

Industry understands that the government intends to review all Area Contingency Plans (ACPs) in the wake of the DWH incident and make changes as appropriate. The OSPRW formed a team to monitor government progress on revisions to ACPs and offer assistance/input to the review/update process. The team has established contact with USCG and BSEE personnel that are overseeing government efforts in this area. Industry plans to assess key ACPs to determine the need for and level of participation. Where needed, the team will develop and implement a plan for Industry to actively engage in dialogue in those Areas that need input as their plans mature. In addition to providing input on the specifics of each ACP, Industry involvement will also highlight the need for consistency between ACPs so there is a common operating practice throughout the nation.

Industry will continue active dialogue with contacts at USCG and BSEE to stay abreast of developments and plans to engage individual Area Committees (ACs) at the appropriate time.

3.2 Dispersants

3.2.1 Develop Improved Communication Tools

A project team formed to develop and implement a series of risk-based communication tools aimed at a variety of audiences. As other dispersant-related oil spill response activities gear up around the globe, the team is working to coordinate their efforts with the International Petroleum Industry Environmental Conservation Association (IPIECA) and OGP-GIRG. The team has established a communications plan for the project which lays out how they will develop a set of 12 proposed two-page fact sheets on dispersant topics, preparedness recommendations for external communications on dispersants, and a response plan for internal and external communications on dispersants.

A contracting firm specializing in risk communications has been retained to develop the series of fact sheets as the initial phase of the project. The following topics have been proposed and endorsed by the project team:

- Dispersants 101
- Dispersant Approvals
- Toxicity
- Effectiveness Testing and Monitoring of Surface Dispersants
- Dispersants – Overview of Key Concepts of Fate, Transport and Effects
- Safety and Health Considerations of Dispersant Use
- Aerial Dispersant Operations

- Subsurface Dispersant Operations
- Dispersants in Tropical, Temperate, Arctic Environments
- Dispersant Research
- Previous Use of Dispersants on Vessel or Pipeline Incidents
- Previous Use of Dispersants on Blowouts

Development of these materials is underway.

In addition to the preparation of communications materials, the project team and contractor are developing plans for two key meetings in the first half of 2012. The first of these will consist of a workshop with participants from Industry and government. It will provide a structured opportunity for representatives responsible for developing or implementing policies and procedures related to response communications during oil spill incidents to focus on and discuss effective dispersant communications with such stakeholders as media/general public, elected/appointed officials, local communities, fishermen and assisting agencies (e.g., EPA regarding the dispersant listing process and the US Food and Drug Administration (FDA) for seafood safety).

The primary objectives of the workshop will be to:

- Explore opportunities associated with dispersant communications strategies for various stakeholder groups.
- Discuss internal and external communications needs.
- Review the project team's draft communications materials for internal and external communications about dispersants.

The second workshop is proposed to facilitate communication with local stakeholders (e.g., Non-Government Organizations (NGOs), elected officials,

fishermen, academics, journalists, health leaders, etc.) about dispersant use for oil spill response in a specific sensitive, coastal environment, i.e., the eastern shore area of Virginia/Maryland. These stakeholders typically operate outside of traditional spill preparedness activities, and there is generally little interaction with ACs and Regional Response Teams (RRTs), because their missions are different than those associated with an oil spill response. It is expected that this workshop may serve as a model for increasing engagement with stakeholders in other areas and could serve to enhance future oil spill preparedness and response.

The contractor has already met with Federal officials to obtain their input on the project and solicit further involvement. Industry is requesting continued government participation in this effort.

3.2.2 Panel to Evaluate/Recommend Studies

A project team formed to evaluate emerging studies from DWH and to suggest and evaluate additional research where appropriate. Two distinct R&D needs and assessment activities have been identified by the project team: 1) Interaction with research entities; and 2) Published research evaluation.

There is an immediate need to interact with R&D consortia and other oil spill response-related research groups to provide input and guidance regarding current and ongoing research. Since the DWH oil spill, a number of dispersant-related research meetings have occurred or are planned, including:

- National Science Foundation sponsored workshop on the Science and Technology of Dispersants Relevant to Deep Sea Floor Oil Releases, September 22, 2010, Arlington, VA

- National Oceanic and Atmospheric Administration (NOAA) sponsored workshop on Oil Spill Response R&D Coordination, March 22-24, 2011, Baton Rouge, LA
- NOAA sponsored workshop on The Future of Dispersant Use in Spill Response, September 20-22, 2011, Mobile, AL
- National Science and Technology Council Subcommittee on Ocean Science and Technology (NSTC SOST) sponsored Deepwater Horizon Oil Spill Principal Investigator Conference, October 25-26, 2011, St. Pete Beach, FL
- Society of Environmental Toxicology and Chemistry (SETAC) North American Annual Meeting – Gulf of Mexico DWH Macondo 252 Well Incident Special Symposium, November 14-17, 2011, Boston, MA
- American Chemical Society National Meeting – Symposium on the Environmental Fate of Dispersants Used in Oil Spills, March 25-29, 2012, San Diego, CA

In most of these, members of the project team engaged in either the planning or execution of the meeting, the goal being to provide input and balance and to make broader contact with the wider R&D community.

In addition to these focused meetings, the Gulf of Mexico Research Initiative (GRI) Research Board announced that eight academic Research Consortia will be funded for the next three years for a total of \$112.5 million. Several of the research focus areas include dispersants and will represent a significant percentage of all published dispersant-related research for years to come. Because of this, the project team recognizes the need to interact at some level with all of these efforts and is working to develop a means to enhance coordination of research efforts overall. For example:

- Team members are engaged with specific GRI consortia as external advisory board members.
- The project team is working to create a database of dispersant-related R&D meetings.
- A project team led, API-sponsored meeting between Industry, government and GRI consortia researchers is in development in conjunction with Coastal Response Research Center (CRRC) to be held on January 10-11, 2012. This workshop will serve as the first stage of an ongoing dialog aimed at providing input to new oil spill response research and development. The objectives include:
 - Review previous and on-going R&D being conducted by academic, governmental agencies and Industry.
 - Present newly funded projects so that there is awareness of what types of research are being conducted.
 - Evaluate mechanisms for scientific exchange and coordination of oil spill response R&D efforts going forward.

All of these efforts are seen as opportunities to solidify a working relationship with Federal government, Industry, and academia that will be involved in Gulf of Mexico (GOM) oil spill-related research in the foreseeable future. It is expected that there will be at least annual meetings of the key research community members coordinated by the project team.

In addition to direct interaction of researchers and the resultant exchange of ideas, there is a need to review, evaluate, and possibly address published research results in a timely manner. Toward this end, the creation of a review panel is

considered to be an important step. The project team defined the following components as key elements of an ongoing process:

- Define key review panel members:
 - Industry
 - Government Agency
 - R&D Organization (e.g., National Laboratory, Academia)
- Use a contractor to facilitate collection and dissemination of materials for review.
- Meet quarterly via teleconference to assess recent publications.
- Evaluate publications and make recommendations regarding response if warranted.

The mechanics of such a process will be explored further over the coming months. Industry is requesting continued participation by the Federal government (e.g., EPA, NOAA, USCG, BSEE, etc.) in this effort.

3.2.3 Subsea Injection

Subsea dispersant injection is a novel technique that was used during the DWH response. Industry plans to incorporate this tool in response plans for deep water wells. To support its use, Industry has developed a large-scale, multiple-year Subsea Dispersant Project to address all subsea dispersant JITF recommendations. The objectives for the overall project are to:

- Evaluate field monitoring criteria and provide a recommended monitoring plan.

- Evaluate the biodegradation, bioaccumulation and toxicity of dispersed oil on deepwater communities.
- Communications: Conduct Net Environmental Benefit Analysis (NEBA) and perform regulatory outreach.
- Enhance existing numerical tools to track dispersed oil plumes resulting from subsea injection.
- Develop subsea injection methods and equipment and evaluate effectiveness (laboratory and field experiments, if necessary).

The project has completed the planning stage and research will initiate in early 2012. The core team has developed a work plan as well as secured consultants with oil spill response expertise. The team has initiated coordination with well containment companies regarding subsea injection capabilities and will work closely with the OGP-GIRG dispersant project team which is also investigating subsea injection from an international perspective. Industry has committed substantial resources to support subsea dispersant research. An early task of the project is to summarize the utilization of subsea injection during the DWH response, and a report is expected to be drafted by the end of 2011. The full project effort will last through 2014. The following paragraphs provide more details on the five tasks outlined above:

Monitoring

The goal of this task is to develop tools to monitor the effectiveness and near-term fate of subsea dispersant injection. The primary deliverable for this task will be a recommended monitoring plan that can be used for response planning.

Under this task, the team will produce a report summarizing how near, middle, and far field monitoring was accomplished during the DWH response. The team will then review and evaluate other monitoring techniques that could be used for deep water plume monitoring. Promising monitoring techniques will be studied during basin and field testing (as applicable). An interim report on a recommended monitoring plan is scheduled for 2012 and a final report is slated for 2014.

Fate and Effects

Prior to the DWH response, dispersants had never been applied at depth, and as such, there is limited data on the environmental fate and effects of dispersants and dispersed oil to deep water ecosystems. The goal of this task is to generate information on the biodegradability, bioaccumulation potential, and toxicity of dispersants and dispersed oil in deep water environments.

The first step for this task is to evaluate previous dispersant fate and effects research. To achieve this, a workshop with appropriate experts will be held in early 2012 to discuss findings from previous efforts and define suitable deepwater test organisms (or surrogates) and protocols appropriate for understanding the fate and effects of dispersants and dispersed oil in deepwater environments. The identified test protocols will address toxicity and biodegradation testing. Bioaccumulation tests will also be completed if deemed necessary during the workshop. Findings and conclusions from the fate and effects testing will be made available through peer reviewed papers and conference presentations (expected 2015).

Communications

In an effort to keep the Oil Spill Response (OSR) community, regulators, other stakeholders, and interested parties updated with these efforts, the team has

developed a communications plan. This plan includes developing technical advisory committees staffed by appropriate experts for each project task, conducting a preliminary gap analysis workshop with stakeholder and experts in 2012, developing summary reports and sending to regulators / stakeholders as needed, and conducting a NEBA workshop in 2014 after other project tasks are completed.

Modeling

Prior to the DWH response, existing deep water blowout models were not equipped to model the change in plume dynamics that occur when dispersants are injected. Under this effort, the team intends to upgrade existing deep water blowout models. The team will first identify suitable external models and meet with modelers to identify needs. From there the team will develop an upgrade plan and perform scaled/field testing to verify the upgrade. The upgraded models will then be validated, at which point peer reviewed papers and conference presentations will be initiated.

Effectiveness

The goal of this task will be to evaluate the effectiveness of subsea dispersant injection for a range of potential well control event scenarios and injection methods. The initial task of this project will be to summarize and evaluate the effectiveness of subsea dispersant injection during the DWH response. The primary effort in this task will be the completion of scaled and field testing (as applicable). The need for field testing will be determined after completion of the scaled testing. The deliverables will be peer reviewed papers and conference presentations (expected in 2014 and beyond).

Industry has maintained an active dialogue with the Federal government at the Headquarters and Regional level. The leader of the project team recently joined the RRT VI dispersant committee which is actively considering the role of subsea injection in response to offshore well incidents. Industry is requesting continued participation by the Federal government in this project.

3.2.4 Review Surface Application Techniques

Lessons learned from operational teams of the DWH response incident regarding targeting and application capabilities suggest that there were many complications to dispersant use that surrounded application. While aerial application technology was adequate and effective, protocols for targeting were evolving and cumbersome and delays often resulted in a less than optimal use of dispersant assets. Finally, vessel spray systems were not utilized, except by “Source Control” to suppress Volatile Organic Compounds (VOCs), and for limited test applications of different dispersants for effectiveness and research purposes.

A project team formed to address improvements in this area. The team is in the process of reviewing dispersant surface application techniques and processes to validate safety margins and promote the use of as little dispersant as necessary to disperse the oil. Existing Lessons Learned documents from the many participants of the DWH response have been gathered and a preliminary analysis was conducted. When complete, the document will contain a prioritized list of areas of improvements on this issue. These items, along with the document as a whole, will be used as the foundation for Industry-government dialogue on a path forward.

3.2.5 Improvements to Decision-Making and Use

Industry remains actively involved in efforts to improve dispersant decision-making and use. In addition to progress and planned work on the four dispersant projects described above, Industry has maintained regular dialogue with Federal agencies (i.e., USCG, EPA, NOAA, and BSEE) on the topic of pre-authorization for subsea dispersant use. Industry met with EPA officials in February 2011 and provided input and data related to early guidance the NRT issued to RRTs. Industry met with the Office of Management and Budget (OMB) in April 2011 to discuss the input provided to the EPA/NRT. Industry provided additional input to EPA in July of 2011. As directed by BOEM, Industry continues to develop capabilities to apply dispersants subsea (through Industry funded well containment companies) and to reflect those capabilities (as directed by BOEM) in OSRPs for offshore wells.

In October 2011, the NRT issued draft Subsea Dispersant Monitoring and Assessment Interim Guidance. The guidance failed to address a number of key Industry concerns; in particular the need for pre-authorization to allow use of subsea dispersants during the critical initial stages of the response in order to promote: the safety/efficacy of response operations and minimization of overall environmental impacts based on the principles of NEBA. At a high level, Industry believes that:

- Subsea dispersant injection is an important tool not only to limit environmental impacts but also to reduce VOCs over the site of an uncontrolled subsea release. Reducing VOCs will assist in the protection of the health and safety of well-control responders and improve well control operations by limiting or eliminating the need for cumbersome personal protective equipment. Therefore, to provide the greatest benefit to worker safety and well control operations, subsea injection must be implemented as soon as possible after

an event, and to facilitate this, pre-authorization for predefined scenarios is needed.

- In addition, again for protection of the environment and worker safety, the requirements of the monitoring plan should not significantly delay implementation of subsea dispersant injection. For the GOM, well containment companies plan to place a capping stack over a well as soon as practical after an event. Once the capping stack is in place, valves on the stack can shut in the well. This means that subsea injection is needed for the period immediately after the start of the well control event until the capping stack is installed and shut in. Any delay in the start of subsea dispersant injection caused by the complexity of implementing a monitoring plan could reduce the speed of well control due to the presence of VOCs and may increase overall environmental harm by allowing the potential for greater shoreline impacts.
- Subsea dispersant injection monitoring should be implemented in a way that is consistent with how it is done for surface application. For surface application of dispersant in the GOM, NEBAs (or Ecological Risk Assessments) were conducted pre-spill with the Special Monitoring of Applied Response Technologies (SMART) process used to measure dispersant efficacy and not dispersed oil fate and effects. The novelty of subsea injection did not allow a pre-spill NEBA to happen for the Macondo event. It is possible, however, to conduct a NEBA for defined well-control scenarios today. Thus, for an uncontrolled subsea release scenario where the NEBA consensus supports subsea dispersant use, the goal of operational monitoring to support decision-making should be to determine efficacy and not effects. Effects

monitoring and sampling to support post-spill damage assessment should be done outside of the operational monitoring protocol for these scenarios. Industry and academia have initiated a significant amount of research on subsea injection of dispersants. As this research is completed, there will be more and more evidence to support NEBAs for a variety of scenarios.

- For spill scenarios that weren't evaluated in a pre-spill NEBA (or if the pre-spill NEBA wasn't conclusive), fate and effects monitoring in support of operational decision-making regarding subsea injection should be pursued in a tiered manner. Such an approach should allow scaling to more complex monitoring that includes fate and effects monitoring based on: 1) time to implement additional monitoring and 2) the degree to which the spill scenario departs from scenarios where a pre-spill NEBA recommended subsea dispersants. Any decisions to allow or stop subsea dispersant injection based on fate and effects monitoring recommended by the draft NRT guidance document should be based on a consensus NEBA that includes multiple stakeholders and evaluation of the environmental and human health implications of alternative response approaches.

Industry is in the process of developing detailed comments on the interim guidelines and will engage with the NRT and RRTs in enabling use of this important tool.

3.3 Shoreline Protection and Cleanup

3.3.1 Recommended Practice for Personal Protective Equipment

A team formed to develop a Recommended Practice document on Personal Protective Equipment (PPE). The team includes representatives from both Industry and Federal government (Occupational Safety and Health Administration (OSHA),

National Institute for Occupational Safety and Health (NIOSH), and USCG). The team held several working meetings to organize an outline of the document. A first draft has been developed which addresses:

- Hazard Analysis and Risk Assessment
- Required Training
- Recommended PPE and mitigation related to identified hazards for oil spill responders:

responders:

- Severe Weather
- Fire Hazards
- Respiratory Protection
- Skin Contact and Absorption
- Slips, Trips and Falls
- Noise Hazards
- Wildlife and Vector-Borne Diseases
- Fatigue and Stress
- Traffic, Heavy Equipment and All-Terrain Vehicles

The first draft is under review and the document is expected to be finalized in early 2012.

3.3.2 Assess Shoreline Protection Technologies

A project team formed to evaluate various technologies for shoreline protection and cleanup. This is a large scale, multiple-year project whose team includes members from Industry, Federal and state government, and academia. The team is currently developing and making final adjustments to its research approach,

which includes nine separate research projects, and expects to begin work on these projects in early 2012. Key elements for the overall project include:

- Evaluate enhancement of nutrient enrichment knowledge and explore microbe usage in bioremediation.
- Develop tidal flow baselines and strategies.
- Develop guidance document on coastal wetlands/salt marsh cleanup.
- Document best practices and technologies to improve sandy beach cleanup.
- Document best practices and technologies to detect subsurface buried oil.
- Document technologies that detect and recover submerged tar mats.
- Develop shoreline best practices documents for Endangered Species Act Section 7 and National Historic Preservation Act Section 106.
- Research and document best practices for berms and tidal barrier strategies.

Short term projects are expected to be complete mid-2012, while long term projects may continue into 2015.

3.3.3 Environmental Sensitivity Index Mapping

Industry is tracking revisions to Gulf Coast Environmental Sensitivity Index (ESI) Mapping, and is aware that in the Gulf, NOAA has: completed Mississippi map revisions in 2010; completed Alabama map revisions in 2008; and initiated revisions of Louisiana maps. Industry is also aware of two ESI projects that still require funding:

- West Peninsula to Florida: from Sarasota to the beginning of Florida Bay (45 maps at 1:24,000), last updated in 1996.

- Central Texas: from Matagorda to just below Corpus Christi (60 maps at 1:24,000), last updated in 1997.

Industry has plans to commit funding that could be directed toward the completion of each of these products. Industry understands that NOAA has retained a contractor to complete the updates to the various ESI maps throughout the Gulf Coast, and that once sufficient funds to complete this work have been acquired, work will begin on these projects. At this time, no completion date has been proposed.

3.4 Oil Sensing and Tracking

3.4.1 Assess Remote Sensing Technologies

A project team, consisting of members from Industry, as well as members from the Federal and state governments, formed to assess remote sensing technology. An initial planning workshop held in early 2011 identified the following key elements for this project:

- Hold workshops to identify and develop a matrix of all current and emerging remote oil sensing technologies for surface and sub-surface interface.
- Research detection capabilities to determine reliability and performance.
- Identify technologies most reliable for indicating greatest concentrations of oil on the water's surface to direct response operations and maximize collection.
- Develop a guidance document that provides an evaluation of sensing and tracking recommendations as well as science and technology recommendations. Once complete, the project team will determine whether a formal recommended practice is needed for inclusion into emergency response plans.

- Recommend a guidance protocol for determining the presence of hydrocarbons in the water column as in the case of dispersed oil.

The project team has held monthly working conferences via telephone to share research findings and progress the project. Another workshop is planned to help finalize a draft of the guidance document, which is slated for technical review at the beginning of the 2012 calendar year.

3.5 In-Situ Burning

3.5.1 In-Situ Burn Program

The OSPRS created the ISB program to encompass all OSPR JITF recommendations made regarding ISB. This is a large scale, multiple-year program whose team members include participants from Industry and Federal government. The ISB program has seven separate projects:

Revision of two 2005 API Publications: *In-Situ Burning: A Decision Maker's Guide to In-Situ Burning* (#4740) and *In-Situ Burning: The Fate of Burned Oil* (#4735)

The breadth and depth of the scope of both API publications was examined to identify content preferences and set the desired expectations for revising 1) the level of detail against user preferences and 2) the content on marine offshore burns versus inland/upland burns. Operations information in #4740 is to be excluded in the revision and addressed in the Improvement of ISB Pre-Authorization Processes, described below. A contractor has been selected and the contract executed. Work will begin in the fourth quarter of 2011. Final revisions are expected in 2012.

Guideline Development for Safety Officers and Industrial Hygienists

A preliminary scope of work for this task is currently under review. The work is envisioned to be conducted over several years and is intended to result in:

- Identification of burn scenarios which have the greatest safety and industrial hygiene concerns;
- Preparation of a safety guide for open water burns including air monitoring from vessels; and
- Identification of experience/knowledge for a safety officer.

Findings from this project will inform the conduct of both the Guideline Development for Selection and Training of Key In-Situ Burning Personnel and Improvement of ISB Pre-Authorization Process projects (described below).

Aerial Ignition Enhancement Evaluation

The potential distances to surface slick sites, difficulty of access, and/or sensitivity of habitats make the use of aerial platforms and igniters valuable for ISB. Currently, the number and type of platforms and igniter options have limitations and have had limited use in spill response, so enhancement of aerial igniters and aerial platforms for offshore or inland/upland burns will be investigated. Two advisory groups will be established for project scoping and conduct and will include: Burn experts from Industry and US Fire Services and aviation experts from Industry and US Fire Services. The first proposed meeting is slated to take place by the end of 2011.

This OSPRS project will be conducted in coordination with two related international R&D efforts under the OGP. The scope is currently intended to address the use of fixed-wing and helicopter platforms; potential development of new or modified igniters, meso-scale trials of igniters; and possibly, field-scale testing. The final reports are estimated to be completed by 2015.

Develop Guidelines for Selection and Training of Key In-Situ Burning Personnel

This task is slated to begin in 2012 and expected to span four years. The scope is currently anticipated to address:

- Development of 'job guides' for key response positions;
- Identification of training and qualification expectations; and
- Identification/Development of responder training opportunities.

Improvement of In-Situ Burning Pre-Authorization Processes

This task is slated to begin in 2012 and expected to span four years. The scope is currently anticipated to address:

- Collaboration with the NRT and RRTs to update their pre-authorization processes.
- Support for updates to the 2006 SMART protocol³ for in-situ burning (USCG, NOAA, EPA, CDC, and BSEE).
- Development of burn scenarios and materials for use in spill response exercises to improve readiness.

Revision of other API Publications

The team recognizes there are other API publications which could benefit from technical and policy updates. At present, there is an identified need for: Concise operational guidance for offshore marine and inland/upland ISB. A scope of work for each has been developed, and the project team is actively pursuing a contractor. Development of the guidance manuals is slated to begin in 2012.

Soil Heating from Inland/Upland Burns

³ http://response.restoration.noaa.gov/book_shelf/648_SMART.pdf

Burning surface slicks transmits a portion of the heat from combustion downwards. The intensity of a burn and its elapsed time influence the amount of heat transmitted and the potential for habitat impact from a burn. Burn plans should consider NEBA, the type of oil, habitat at a spill site, presence and type of vegetative fuels, and ignition planning to lessen any adverse impacts from a burn. API intends to work with the Fire, Fuel, and Smoke Science Program (FFS) to measure the soil heating using a variety of soils and petroleum products. Testing is expected to be conducted in 2012 and findings will be used to improve burn and ignition planning and conduct.

3.6 Mechanical Recovery

3.6.1 Research & Development and Technology Tracking Program

A R&D tracking team formed to track R&D activities related to oil spill response. The team will develop a knowledge management system for tracking national and international R&D projects related to, but not necessarily limited to, the following oil spill response areas:

- Mechanical recovery
- Dispersants
- In-situ burning
- Alternative response technologies
- Shoreline protection
- Oil sensing and tracking
- Oil spill response planning.

Sources of information where reports and/or activities can be mined and used to build the knowledge management system include, but are not limited to:

- Public, private, academic, Industry, consultant reports, and other sources (as applicable), related to oil spill research and development in the areas listed above and in other areas, as identified throughout the knowledge management system building process.
- Environmental Impact Statements (EISs) specific to Industry activities and where oil handling and transport data are being used to document or express concern for potential oil spill impacts.
- Oil-spill related reports from the five Gulf of Mexico States, the eight Arctic Nations, multi-national government organizations, academia, Industry, and environmental NGOs.
- Pending projects which are likely to be funded or conducted in the next five years and when completed, are anticipated to add productively to the state-of-knowledge on impacts from spills or response actions.
- Long-term regional monitoring programs with scopes that cover information of specific value for OSR planning and assessments, their funding and scope, types of analyses, contractors, and reporting schedules.
- Foundation reports that are highly referenced and regarded as a data source.
- Experts who could identify specific cases of research efforts underway that cannot be tracked by methods above, or who could identify projects producing documents in the “grey literature.”

For the sources above, the team will assemble information and enter it into an accessible, regularly maintained tracking document that can be easily populated and sorted. It is Industry’s intent to share this tracking document with interested stakeholders. The ICCOPR may serve as an appropriate forum for sharing such information.

3.6.2 Vessels of Opportunity Program

A Vessels of Opportunity (VOO) project team has been formed to review current VOO guidelines developed and used during the DWH response. The team will also review the VOO section in the recently published USCG “On-Scene Coordinator Report *Deepwater Horizon* Oil Spill⁴” as well as other relevant materials. Following these reviews, the team plans to develop an Industry guideline for establishing and implementing a VOO program, which is expected to be drafted in early 2012. Once complete, the guidance document will be shared with relevant government agencies and used to initiate dialogue, and where appropriate, solicit feedback. Eventually guidance on VOO programs could be incorporated into ACPs.

3.6.3 Effective Daily Recovery Capacity Assessment

An Effective Daily Recovery Capacity (EDRC) project team formed shortly after the September 3, 2010 JITF report was issued. The project team reviewed the existing EDRC formula and engaged in several discussions with the Federal government (e.g., USCG and BOEMRE) regarding changes to the formula. The Federal government has suggested that the EDRC formula may need to be adjusted to more accurately reflect mechanical recovery capabilities in the field. Industry believes that there is not a simple solution to the perceived problem with EDRC.

In the inland response environment, there does not appear to be a problem with the formula because oil can be contained and skimmers can quickly recover the oil. Also, beyond the inland environment, several skimmers have been tested and their actual performance is greater than the EDRC formula for the systems. Ultimately, when considering mechanical recovery of oil as a whole in the offshore environment,

⁴ U.S. Coast Guard. (2011). *On Scene Coordinator Report Deepwater Horizon Oil Spill*. Washington, DC: Retrieved from www.uscg.mil/foia/docs/DWH/FOSC_DWH_Report.pdf

success is predicated less on EDRC and more on the encounter rate. In short, the higher the encounter rate, the more effective the mechanical recovery. Therefore, the formula could be changed to more accurately reflect the recovery capability of mechanical systems offshore; however, this would still not accurately reflect Industry's actual response capability in the offshore environment because all three response tools (dispersants, ISB, and mechanical) would not be included in the evaluation. API's position is that changing the EDRC formula is only part of a solution and may have significant impact on plan holders if they are not allowed to use all response tools in demonstrating their capabilities for responding to offshore spills.

The USCG and BSEE have initiated a one-year project with an independent contractor to study the EDRC assessment process and provide recommendations. Members of the project team have met with the contractor to discuss a process for Industry to provide input and feedback as appropriate. The team will continue to engage with the USCG, BSEE, and the independent contractor on the topic of EDRC.

3.7 Alternative Technologies

3.7.1 Concurrent Incident Evaluation

The OSPRS formed a project team with members from Industry and Federal government to optimize the process developed during DWH to evaluate alternative technologies that are offered at the time of a spill. The team held its first meeting on November 2, 2011, and is currently developing its scope of work.

3.7.2 Non-Incident Evaluation

The same project team which is reviewing concurrent incident evaluations also intends to engage in discussions for new technology incentives as well as mapping a way for information sharing across the different OSR entities.

4. Conclusion

Industry continues its efforts to identify and drive improvements in prevention, well control, and (as described in this report) oil spill preparedness and response, not only through JITF efforts, but across a wide variety of areas, such as:

- The Center for Offshore Safety, which was recently created by Industry to serve as the focal point for deepwater operators to work together to enhance offshore operations. The Center will initially focus on the Safety and Environmental Management Systems (SEMS) of companies operating in the offshore, and will include audits and certifications of SEMS programs of the members of the Center by independent third party auditors. The Center's primary objectives will be enhancing and continuously improving Industry's safety and environmental performance, and providing a platform for Industry collaboration and engagement with third party stakeholders including federal agencies. The Center is located in Houston and has a governing board representing a diverse cross-section of the Industry.
- Well containment companies who house the equipment and technology needed to quickly and effectively respond to events involving loss of containment at the well head.
- OSROs have dedicated substantial time and resources to improving OSR capabilities through expanding and optimizing the various tools in the toolbox.

- OGP initiatives such as the internationally affiliated JIPs for OSR and Arctic Spill Response Technology. The former JIP builds off the work described in this report with broader applicability to international concerns. The latter JIP brings together Industry experts to evaluate and improve, when applicable, oil spill preparedness and response in icy waters.
- Co-sponsoring the Wendy Schmidt Oil Cleanup X Challenge; an X-Prize competition for innovators to surface new ideas for oil spill response.
- Sponsoring the International Oil Spill Conference, which provides an opportunity to promote knowledge and allow manufacturers to show their wares, etc. from across the globe.

Moving forward, the oil spill website⁵ maintained by API will be redesigned to (1) more clearly present basic oil spill response information and (2) present appropriate materials that are developed by the various JITF work teams. With regard to the latter, these materials may include workshop/conference presentations, final reports, recommended practices, and any other documents that can be used to further communicate industry's progress in these efforts. This redesign is expected to be completed in the second quarter of 2012.

Active participation from and coordination with the public sector, academia, and other stakeholders has been fundamental to turning initial recommendations into genuine plans of action. Industry remains committed to making continued progress in executing the projects described in this report in collaboration with a wide range of stakeholders and will provide periodic progress reports on its activities. The API OSPRS looks forward to proactively working these issues to further advance

⁵ www.oilspillinfo.org

Industry's preparedness and response capabilities and to working closely with the Federal and state agencies to achieve our common objectives.