U.S. Department of Homeland Security
United States Coast Guard

Commandant
United States Coast Guard

2100 Second Street, S.W
STOP 7355
Washington, DC 20593-7355
Staff Symbol: CG-5
Phone: (202) 372-2629

16000
MAR 18 2011

MEMORANDUM

From: R. J. Papp, Jr., ADM
Commandant

Reply to DWHAO
Attn of: 2-2629

To: Distribution

Subj: FINAL ACTION MEMORANDUM – INCIDENT SPECIFIC PREPAREDNESS REVIEW (ISPR) DEEPWATER HORIZON OIL SPILL

1. On April 20, 2010, the Macondo 252 well, 45 miles off the coast of Louisiana experienced a catastrophic blowout, causing a major explosion, fire and subsequent sinking of the Mobile Offshore Drilling Unit DEEPWATER HORIZON. The fire and explosion caused the deaths of 11 persons aboard the unit, and the blowout resulted in a catastrophic oil spill one mile below the surface of the ocean, leading to an unprecedented oil spill response – the most challenging and complex our nation has ever mobilized. The lack of human access and enormous pressures 5,000 feet below the ocean's surface complicated the response to the Macondo well disaster. Major technological challenges arose in the face of solutions to control the wellhead as they were developed. The continuous discharge of large quantities of oil from the well for almost three months severely tested our nation's capability and capacity to effectively remove oil from the water, beaches, and marshes. The Deepwater Horizon oil spill is the nation's first declared Spill of National Significance (SONS) and the first time in history where a National Incident Commander (NIC) was designated.

2. Following major oil spills, Coast Guard internal regulations call for an Incident Specific Preparedness Review (ISPR) to conduct a thorough examination of the Coast Guard preparedness process and to critically evaluate this process in conjunction with the implementation, integration, and effectiveness of national, regional, and local oil spill response plans. An ISPR provides an assessment of a major response along with recommendations for improvement. Over the years, ISPRs have provided one avenue, among several, for valuable assessments and recommendations that helped the Coast Guard and other oil spill response entities improve existing plans, response strategies, and coordination among government entities, responsible parties, and response organizations.

3. On June 14, 2010, I chartered the Deepwater Horizon ISPR. I directed the ISPR team to serve as a fact finding body to thoroughly review response and recovery operations, evaluate planning assumptions, and identify strengths and weaknesses of the overall preparedness system in effect at the time of the incident. In particular, I tasked them to critically examine:

6176893

- the integration of the National Contingency Plan (NCP) with other plans;
- the effectiveness of the response by the Federal On Scene Coordinator (FOSC) and the NIC;
- the communication with key federal, state, local, and industry entities;
- the effectiveness of the Coast Guard's overall performance with the states and other federal agencies after the explosion and the subsequent spill; and
- the actual response efforts taken, including the training, qualifications, and experience of responders.

4. The ISPR team was composed of representatives from federal and state agencies as well as advisors from industry and non-governmental organizations to ensure an independent and thorough examination. These team members and advisors were selected based on their oil spill response expertise and experience – it is important to note, however, that this team was not directly involved in the BP oil spill response.

5. On February 1, 2011, I received the ISPR team's final report. I received this report acknowledging that it reflects the desired independent observations of the ISPR team regarding the response and associated recommendations. While the report does not necessarily reflect the views of the Coast Guard, the ISPR's processes of critical analysis, review, and outside perspective will be a useful tool to me in helping the Coast Guard continuously improve coastal oil spill response for the American people. The report identifies a number of areas, ranging from spill response doctrine, to mobilizing assets in crisis, to engaging with key stakeholders and the public, where the Coast Guard could have done better over the course of this unprecedented event, and we will.

6. Along with the President's National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling's findings and several other Deepwater Horizon reports, the ISPR significantly adds to a body of important perspectives and opinions that the Coast Guard will take onboard and carefully evaluate to identify further opportunities for positive, effective preparedness improvements. I have already directed several actions to address areas where planning and preparedness will be improved, including directing Captains of the Port to review Oil Spill Response Plans for offshore facilities, requiring Area Committees to include Worst Case Discharge scenarios for offshore facilities in their respective Area Contingency Plans, working with the National Response Team to review large volume and novel dispersant use, reviewing response data management procedures and tools, and establishing a Coast Guard, FEMA, and EPA workgroup to develop recommendations to harmonize the NCP and National Response Framework governance constructs. These are just a few of the actions the Coast Guard is pursuing. There is much more work to be done and we will work diligently with our government partners and industry to implement meaningful improvements for future oil spill planning, preparedness, organization, and response.

7. I thank the ISPR leadership, team members, and advisors for their extraordinary effort and time. I also thank the parent organizations that detailed members to this important undertaking. This ISPR required tremendous dedication, commitment and sacrifice to collect, organize, and

analyze the vast body of information required to complete a thoughtful assessment of the Deepwater Horizon oil spill response.

#

Dist: CG-01, CG-DCO, DOG, CG-5, CG-53, CG-54, CG-8, CG-092, CG-094, CG-095
CG-LANTAREA, CG-PACAREA, District Offices (d)

BP DEEPWATER HORIZON OIL SPILL

Incident Specific Preparedness Review (ISPR)

FINAL REPORT

January 2011

ACKNOWLEDGEMENTS

The Coast Guard's Incident Specific Preparedness Review (ISPR) Team acknowledges all of the individuals who participated in the interviews and who provided their insight and perspective to assist in the course of the examination of the Deepwater Horizon incident.

We also thank the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling and their staff for their cooperative efforts, which contributed greatly to the development of this report.

In addition, we express our gratitude to the many Coast Guard photographers whose work helped document this disaster, and whose photos are interspersed throughout the report.

Finally, we acknowledge the participation of many people, too numerous to mention individually, whose actions in response to the Deepwater Horizon incident helped to bring about an end to this disaster.

Never, throughout the process of conducting research or writing this report, did we forget that this was a tragic event that involved the loss of life. We recognize the 11 men who perished on the Deepwater Horizon rig on April 20, 2010: Jason Anderson, Aaron Dale Burkeen, Donald Clark, Stephen Curtis, Gordon Jones, Roy Wyatt Kemp, Karl Dale Kleppinger, Jr., Blair Manuel, Dewey Revette, Shane Roshto, and Adam Weise.

TEAM MEMBER SIGNATURES

The undersigned individuals fully participated in the ISPR process, including the development and approval of this report:

VADM Roger Rufe, USCG (Ret)
ISPR Chairman

RADM Carlton Moore, USCGR (Ret)
ISPR Vice Chairman

David Behler
Department of the Interior

John Cunningham
Environmental Protection Agency

Larry Dietrick
Alaska Department of Environmental Conservation

Alexander Joves
Department of Homeland Security

David Moore
Bureau of Ocean Energy Management, Regulation, and Enforcement

Barbara Parker
Maine Department of Environmental Protection

Greg Pollock
Texas General Land Office

Randy Shaneyfelt
Alabama Department of Environmental Management

John Tarpley
National Oceanic and Atmospheric Administration

Advisors from the oil production industry, oil spill response organizations and the environmental non-governmental organization community participated fully in the ISPR process and made valuable contributions to the preparation of this report:

Jim Ayers, Conservation Community representative

Bruce Johnson, American Petroleum Institute representative

Brian House, Spill Control Association of America/Association of Petroleum Industry Cooperative Managers representative

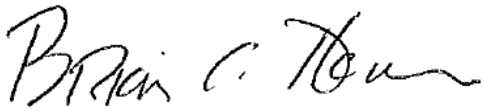


TABLE OF CONTENTS

ACKNOWLEDGEMENTS ..... **I**

TEAM MEMBER SIGNATURES ..... **II**

TABLE OF CONTENTS ..... **IV**

PREFACE **1**

EXECUTIVE SUMMARY **3**

GENERAL FINDINGS AND RECOMMENDATIONS **5**

FOCUS AREA PART I: PLANNING AND PLAN EXECUTION **11**

I.1 AREA COMMITTEE ORGANIZATION AND ACTIVITY 12
I.2 AREA CONTINGENCY PLAN POLICY AND IMPLEMENTATION 16
I.3 IDENTIFICATION AND PRIORITIZATION OF ENVIRONMENTALLY SENSITIVE AREAS 20
I.4 INTEGRATION OF OIL SPILL CONTINGENCY PLANS FOR A REGIONAL RESPONSE 23
I.5 WORST CASE DISCHARGE SCENARIO 26
I.6 QUANTIFICATION 32
I.7 USE OF DISPERSANTS 40
I.8 USE OF IN SITU BURNING 46
I.9 COMMON OPERATING PICTURE 52

FOCUS AREA PART II: ORGANIZATION **56**

II.1 CHARACTERISTICS AND QUALIFICATIONS OF AN EFFECTIVE CRISIS LEADER 57
II.2 ROLE OF THE SECRETARY OF HOMELAND SECURITY UNDER HSPD-5 62
II.3 EXTERNAL COMMUNICATIONS 65
II.4 INTERSECTION OF THE NATIONAL RESPONSE FRAMEWORK AND NATIONAL CONTINGENCY PLAN 71
II.5 POLITICAL DEMANDS 75
II.6 ROLE OF THE NATIONAL INCIDENT COMMANDER AND THE NATIONAL INCIDENT COMMAND (NIC) 79
II.7 ROLE OF THE NATIONAL RESPONSE TEAM AND REGIONAL RESPONSE TEAMS 85
II.8 UNIFIED AREA COMMAND (UAC) AND INCIDENT COMMAND POSTS (ICPS) 90

FOCUS AREA PART III: RESOURCES AND READINESS **100**

III.1 SUSTAINABILITY OF RESPONSE PERSONNEL 101
III.2 CONTAINMENT AND SUSTAINABILITY OF OIL RECOVERY OPERATIONS 109
III.3 CASCADING OF RESPONSE RESOURCES 118
III.4 USE OF VESSELS OF OPPORTUNITY 121
III.5 APPLICATION OF LESSONS LEARNED FROM PRIOR SPILL RESPONSES AND EXERCISES 126

APPENDIX I ACRONYM LIST **131**

APPENDIX II GLOSSARY OF KEY TERMS **136**

APPENDIX III ISPR CHARTER **143**

APPENDIX IV ISPR TEAM MEMBERS' AND ADVISORS' BIOGRAPHIES **148**

APPENDIX V RESPONSE STATISTICS BY THE NUMBERS 156
APPENDIX VI INDIVIDUALS INTERVIEWED BY THE ISPR TEAM 157

PREFACE

On the evening of April 20, 2010, an explosion aboard the Mobile Offshore Drilling Unit Deepwater Horizon set off a chain of events that led to the sinking of the drilling unit and subsequent oil spill. On April 29, 2010, the Secretary of Homeland Security declared the Deepwater Horizon incident a Spill of National Significance (SONS) under the authority of the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) (40 CFR 300.323).

Due to the severity of the spill, the complexity of response efforts, and the potential impact on public health and the environment, this incident required extraordinary coordination among Federal and State agencies, tribal organizations, local governments, and BP, the responsible party. The response was a coordinated effort to secure the well, and contain and clean up the oil. A day after the declaration of the incident as a SONS, Admiral Thad Allen, United States Coast Guard, was designated as the National Incident Commander.

After several attempts, BP was successful in securing the wellhead on July 15, 2010, and sealing the well on September 19, 2010. This incident tested, and in some cases exceeded, the limits of the Nation's oil spill response resources and capabilities developed after the 1989 Exxon Valdez oil spill in Alaska. The scope and duration of the Deepwater Horizon oil spill presented complex challenges to the response community. These challenges provided the catalyst to adapt proven technologies, employ new or innovative technologies, and apply ever-changing response tactics to address a dynamic response environment.

The event provided an excellent opportunity to evaluate the effectiveness of existing oil spill response doctrine, capabilities, and the Nation's state of preparedness in responding to a very large oil spill. It forced the formation of new partnerships, which proved to be essential in collectively responding to a continuing, uncontrolled event. It showed the importance of communication to garner the public's trust. There were many lessons learned from Deepwater Horizon response, which, if institutionalized in program and doctrine, will serve to enhance the Nation's ability to effectively respond to such incidents.

Periodically, the Coast Guard conducts comprehensive reviews to capture lessons learned from major spill response events. The Coast Guard Marine Safety Manual prescribes a process for such review, known as the Incident Specific Preparedness Review (ISPR).[1]

This is the Incident Specific Preparedness Review for the response to the BP Deepwater Horizon oil spill. This report was chartered by the Coast Guard Commandant on June 14, 2010.[2] The Charter provided direction for ISPR team membership, scope of the review, and reporting deadlines. The purpose of this report is to examine the implementation and effectiveness of the preparedness and response to the BP Deepwater Horizon incident as it related to the National Contingency Plan, Area Contingency Plans, and other oil spill response plans.

[1] U.S. Coast Guard Marine Safety Manual, COMDTINST M16000.14 (series), Section 4.c

[2] Appendix III: ISPR Charter signed June 14, 2010

The ISPR Team is comprised of Federal and State Government representatives. Representatives from the non-governmental organization community, oil exploration and production industry, and the professional oil spill response industry served as technical advisors. This report does not represent the views of any individual or entity other than the ISPR Team.[3]

This report addresses specific areas of the response to the Deepwater Horizon oil spill. It is divided into three main chapters: Planning and Plan Execution, Organization, and Resources and Readiness, with each chapter encompassing several focus areas. Each focus area provides a list of lessons learned and recommendations. This report does not address the causal factors leading up to the explosion and sinking of the Deepwater Horizon, nor does it include topics being addressed by other Federal investigations.

Members of the ISPR Team conducted joint interviews and independent research. Coupled with their professional experience and knowledge of response activities, this report draws upon the members' understanding of the information available to the ISPR Team during the research and fact-finding phase of the review. At times, the information available and relayed to the team was contradictory, unclear, or uncorroborated. The team did not seek to make credibility determinations in such cases, but used best judgment to reconcile those differences.

The ISPR Team, advisors, and support staff were also required to execute a confidentiality agreement. Neither the ISPR Team nor its support staff recorded or produced verbatim transcripts of any interviews, and no deliberations were made available to the U.S. Coast Guard or anyone outside the ISPR Team or support staff prior to the release of this report.

On May 22, 2010, the President, by Executive Order, established the National Commission on the BP Oil Spill and Offshore Drilling. The ISPR Charter required the Chairman to, "…align, facilitate and regularly brief ISPR efforts" to the National Commission. Throughout the ISPR process, National Commission staff participated in interviews and research consistent with this directive. However, National Commission representatives were not part of the ISPR deliberative process.

Finally, readers are cautioned not to use this report beyond the objectives set forth in the Marine Safety Manual.[4] Specifically, the ISPR is not intended to find fault or assign blame. The observations and discussions are meant to document a thorough assessment of the Coast Guard's preparedness process, while the lessons learned and recommendations should be used to initiate appropriate corrective actions.

[3] See Appendix IV: ISPR Team Biographies

[4] U.S. Coast Guard Marine Safety Manual, COMDTINST M16000.14 (series), Section 4.c

EXECUTIVE SUMMARY

For the nation, the Deepwater Horizon oil well blowout and release was unprecedented in scope, scale, and duration. While the response system established by the Oil Pollution Act of 1990 (OPA 90) has effectively dealt with approximately 1,500 oil spill incidents per year since its enactment, this incident exposed deficiencies in planning and preparedness for an uncontrolled release of oil from an offshore drilling operation. The incident also highlighted the differences between the system of response for oil spills and that provided for other emergencies such as natural disasters and terrorist incidents.

Over the past decade, both public and private sector investment in planning and preparedness for and response to oil spills has decreased. If the public and Congress expect significant improvements in this Nation's ability to respond to catastrophic oil spills, additional funding will be needed for improvements, which include research and development and increased governmental oversight of private sector preparedness and response capability. To be effective, such oversight should begin at the outset of the offshore drilling permit process. This report urges that planning and preparedness programs be reviewed, and that adequate funding be provided to enhance oil spill preparedness and response programs so they can effectively address an offshore Spill of National Significance.

Additionally, the report recommends a thorough review of the standards used to determine the adequacy of private sector oil spill response capability. Although the approved response plan for the Macondo well was in compliance with Government standards for response capability to address a worst case discharge (WCD), there is a critical need to ensure that oil and gas facility response plans (OSRPs) and existing Area Contingency Plans provide for sufficient trained personnel, equipment, and response resources to address the WCD from any offshore drilling operation.

Beyond the need for sufficient resources for on-water response and shoreline protection, it is evident that more resources need to be dedicated to improve technology and response protocols to adequately address source control and containment objectives arising from an uncontrolled well blowout.

The Deepwater Horizon incident severely tested the Nation's response capability to address an uncontrolled, sustained, deepwater oil spill in the Gulf of Mexico. This report identifies aspects of the response that failed, aspects that did not proceed as previously planned, and areas where new or different response protocols may have provided better results. Through identification of these areas, the Coast Guard, and the entire response community, will be better equipped to address and implement change to improve the Nation's oil spill response capability.

During the field research phase of this report process, the team observed many facets of the response that did work as planned, produced expected results, and were evidence of experience drawn from prior events and exercises.

There are three major areas of positive observations that merit mention:

Many of those interviewed specifically stated that the National Incident Management System/Incident Command System (ICS) worked as intended. Because NIMS/ICS is scalable, adaptive, and dynamic, responders were able to tailor the response organization according to need. The ICS organization experienced numerous challenges, such as external communications taking place outside of the ICS hierarchy, and political pressure applied to various levels of the respond organization. Nonetheless, the ICS organization worked well during this event. Recommendations provided in this report relating to NIMS/ICS serve to further enhance its use in future spills.

Media reports often left viewers with the impression that the Coast Guard and the responsible party (RP) were at odds periodically during the response. To the contrary, the team observed that personnel provided by the RP and Coast Guard personnel worked effectively together, and that there was “unity of effort” throughout the response organization. Moreover, BP has been openly cooperative in assisting the Incident Specific Preparedness Review (ISPR) Team in the research for this report.

Ironically, other media reports left the impression that there was collusion between the Coast Guard and BP, and that the Coast Guard was not fulfilling its responsibility to the public. During its research for this report, the ISPR Team found absolutely no evidence to support this impression.

Lastly, the response generally benefited from the ability of the Government and the private sector to rapidly assess and adapt to new or unusual contingencies and develop innovative solutions for problems not previously experienced. The knowledge acquired and capabilities learned from this experience are unprecedented, and should become a basis for significant improvements in planning, preparedness, and response for industry, Government, and the response community.

GENERAL FINDINGS AND RECOMMENDATIONS

The following are general observations from the findings and recommendations of the Incident Specific Preparedness Review (ISPR) Team. A more detailed discussion of these topics, as well as other topics of a specific nature, can be found in focus areas in the report.

Planning and Preparedness

It appears that the Coast Guard's marine environmental response (MER) preparedness and response programs have atrophied over the past decade, possibly as a result of competition with program development and resourcing challenges to meet the service's enhanced homeland security responsibilities. Additionally, the move to the Coast Guard's current Sector organization displaced the MER function from the legacy marine safety community into a new response community paired with law enforcement and search and rescue activities. This new construct created the unintended consequence of changing the existing MER community and placed many new people with little or no program experience into MER positions. These organizational shifts may have weakened Coast Guard's planning and preparedness in general, and diverted response capabilities away from MER in favor of other missions at all levels of the organization. The end result has had a negative impact on the MER program.

This erosion of organizational focus on the MER mission has been exacerbated, ironically, by the success of Oil Pollution Act of 1990 (OPA 90) driven prevention programs. Spill prevention initiatives for vessels and offshore facilities have been largely successful, resulting in fewer offshore spills and much less frequency between large spill events. This success has resulted in fewer Coast Guard personnel having large spill experience. This success has also resulted in the perception that fewer resources may accomplish spill prevention and response objectives.

As a result, from an enterprise standpoint, the Coast Guard's current spill response capability appears to be broad, but not deep. Many of the ISPR Team members are veterans of large spill events, and have a historical perspective of oil spill preparedness and response. They universally noted that, while there is intense interest programmatically (and politically) following a large spill event, interest quickly wanes as new challenges arise. The Deepwater Horizon incident has provided a lens to examine the Coast Guard's capabilities and has attested to the service's need to renew its emphasis on oil spill planning, preparedness, and response.

The ISPR report is intended to be part of a corrective process. The Coast Guard needs to reassess its readiness programmatically and reinvest to the extent that MER is, once again, firmly established as one of its core competencies.

Area Contingency Plans

This report devotes a significant amount of attention to the state of Area Contingency Plans (ACPs) in the Gulf of Mexico. Overall, the team found these plans to be inadequate for this incident, and possibly for smaller, more localized incidents. The Coast Guard needs to provide

service-wide direction to all Area Committees, develop minimum standards for contingency plans, and establish an oversight, review, and compliance program to ensure that minimum standards and consistency among plans are adequately addressed. It does not appear from research conducted by the team that this can be accomplished solely at the local (Sector) level, and may not be appropriate at the District level. The ACP development process has been ongoing for more than a decade. The team can find no reason to have critical gaps in any ACPs where some sections are noted as "To Be Developed."

In the Gulf of Mexico or anywhere offshore oil production occurs, there must be direct linkage between the Oil Spill Response Plan (OSRP) and local ACPs. The ISPR Team found that not including worst case discharge (WCD) scenarios from offshore oil exploration, development, and production activities in ACPs for areas in which such activities are occurring was unacceptable. Both the Coast Guard and the Bureau of Ocean Energy Management, Regulation and Enforcement must be able to verify that those engaged in such activities have the trained personnel, equipment, and other resources to meet WCD plan requirements.

There are very few programs within the Coast Guard that facilitate direct communication and dialogue with State and local officials. The ACP development process is one of them. As evidenced by the last two major spill events, Cosco Busan and Deepwater Horizon, much of the external political pressure exerted upon the response organization was the direct result of not engaging local officials prior to and during the spill response. In the Deepwater Horizon incident, this was further complicated by a misunderstanding, or lack of knowledge of agencies' responsibilities set forth in the National Contingency Plan (NCP). All of this could have been addressed, and possibly avoided, during the ACP development process. Until the Coast Guard takes proactive measures to bring State and local officials into this process, the Coast Guard should expect to have State and local politicians impacting response operations.

Environmentally Sensitive Areas

Although several hundred miles of shoreline were impacted, only a small percentage of the Gulf shoreline was heavily oiled. There were, however, numerous instances of oiled wildlife and habitat. Efforts to prevent shoreline impact were, in some instances, successful; other efforts totally failed. Attempts to protect environmentally sensitive areas (ESAs) were complicated by many factors. The NCP directs Area Committees to address ESAs and include booming and protection strategies to address a WCD. In some planning areas, the ESAs were simply not identified in any plan. In some plans where the areas were listed, they were not prioritized. In few instances, ESAs did have protection strategies for the areas that were most heavily impacted. The equipment, trained personnel, and other response resources needed to implement the protection strategies were not included in many plans. While many responders stated that impact to wildlife and habitat could have been much worse in the Deepwater Horizon incident, there is a consensus among team members that, had ESAs been given appropriate attention during the planning process, the adverse impacts could have been much less. ESAs have been given uneven, and in some cases, inadequate

attention in the ACP development process throughout the Gulf of Mexico. There must be a comprehensive national planning process that identifies ESAs and assures that there are trained personnel, equipment, and strategies adequate to protect these resources. The Coast Guard needs to work with Federal, State, local, tribal, and natural resource trustee stakeholders to select an exemplar among those ACPs that adequately addresses ESAs and make that a benchmark for future planning efforts.

Alternative Response Technologies

During Deepwater Horizon response operations, the use of two alternative response technologies, dispersants and in situ burning (ISB), proved critical to prevent wholesale impacts to ESAs because the characteristics of the spill were favorable to the use of both technologies. However, important concerns and questions remain about their impacts on the environment, and more research is necessary before bringing them into the mainstream of spill response options.

Dispersants were used extensively during the response in unprecedented volumes (1.84 million gallons). They were applied aerially, by surface vessels, and at the wellhead. Dispersants were also used to control hydrocarbon vapors at the surface above the release site to reduce exposure of responders to hazardous compounds. No dispersant applications were conducted in near shore areas. Although pre-authorization of dispersant use was approved by the Regional Response Team (RRT) and implemented by the Federal On-Scene Coordinator (FOSC), significant public concern was expressed over the volume being used and toxicity of the dispersants, causing EPA to develop protocols for dispersant application and monitoring. While the FOSC always has the authority to approve use of dispersants to protect human life, in this case, to control volatile organic compounds in the source area, EPA intervened to address the volume and toxicity issues, as well as subsea application at the source. This resulted in a temporary suspension of dispersant application, which may have resulted in more oil reaching the coastline. While the issue of subsea application may not have been reasonably foreseen, other issues such as toxicity and volumetric limitations should have been foreseen as part of the National Oceanic and Atmospheric Administration/Environmental Protection Agency preparedness programs, and should have been researched and addressed well before this event. The use of dispersants in the Deepwater Horizon incident identified a need for a thorough review of this response option, its efficacy in minimizing environmental impacts, its overall effect on the environment, and conditions under which they are most effective. Dispersant protocols and authorization procedures should be established and articulated in ACPs, and the degree to which dispersants may be used in ESAs should be addressed.

There were a total of 411 ISBs conducted during the Deepwater Horizon incident, of which 376 were determined to have burned a significant quantity of oil. The longest duration burn lasted for more than 11 hours, and there was some limited night burning. On June 18, a total of 16 ISB operations were conducted, accounting for the removal of approximately 2.5 million gallons. Under the right “windows of opportunity,” ISB proved to be an effective way to remove significant volumes of oil, and also to address the continual release of fresh oil from the well.

The National Response Team should require that all RRTs establish ISB guidelines as a viable response option in their area of responsibility, consistent with public health and safety issues. These guidelines should specify areas in which ISB cannot be used, where it can be used without further consultations (such as incidents occurring farther than a predetermined distance from the nearest land or other ESAs), and provide for expedited review and approval processes in other areas.

Effective Daily Recovery Capacity

Effective Daily Recovery Capacity (EDRC) is the planning standard used to determine the rate at which an amount of oil can be recovered by mechanical means, such as skimmers. It is based on the "Name Plate Recovery Rate" of the skimmer de-rated to 20 percent of the maximum. EDRC is discussed in several areas of this report. The EDRC on scene for this incident exceeded plan requirements, yet was seemingly ineffective in recovering the amount of oil anticipated by planners. Skimmers of all types were expected to provide the lion's share of oil recovery, yet mechanical recovery accounted for the removal of only 3 or 4 percent of the released oil. The team believes that EDRC requirements should be revised to include a reliable, dynamic efficiency measure. The simple mathematical EDRC formulas should be changed to accurately reflect the limitations of encountering significant oil volumes on the water (encounter rates), not liquid pumping ability. As is, the regulations and the manner in which they are applied do not necessarily encourage companies to include the most efficient oil spill recovery equipment in response plans. Revised EDRC requirements could serve to incentivize companies and oil spill removal organizations to invest in response research and development, with the goal of developing more efficient skimmers and other recovery equipment.

Funding

The ISPR Team did not focus specifically on funding during the spill response. However, several recommendations within the report have potentially significant funding implications for both preparedness and response. These include additional funding for research and development, particularly as it relates to enhancing the means of locating, measuring, and removing oil, and alternative response technologies; incentives for local official and non-governmental organization participation in the ACP process; and others. Team members, and many people interviewed as part of the ISPR process cited the need to increase appropriations from the Oil Spill Liability Trust Fund or other sources as a means to enhance these programs. There was general consensus that the system established under OPA 90, where the regulated community is principally responsible for the containment and removal of oil from the water, is sound, and that enhancements to that system need to be undertaken by industry with strong oversight by the Coast Guard. Regardless of the funding source, it is imperative to understand that many of the recommendations provided in this report require additional or new funding. The Deepwater Horizon incident showed the response community and the public that a "business as usual" approach will not carry the day in future spill events; neither will "funding as usual."

National Response Framework

The National Response Framework (NRF) creates the basis for preparedness for State and local officials in planning for Stafford Act disasters. The NRF does not address an oil spill as an initiating event. Environmental incidents, generally, fall outside the ambit of the National Planning Scenarios. As a result, there was extensive confusion between the NRF and the NCP during this incident at all levels of Government, which had a negative impact on the spill response. The emergency management community, comprised of State and local emergency management officials, was unfamiliar with the NCP generally, and oil spill response specifically. There was a natural inclination for local officials to carry out a Stafford Act response under the NRF because they are familiar with it (commonly used in hurricane events), and there is greater control at the local level. Oil spills are generally handled by a National Incident Management System/Incident Command System response organization where State involvement is accomplished through the designated State On-Scene Coordinator. Historically, there has been little local involvement in preparedness activities or familiarity with oil spill response processes. The Coast Guard developed policy in 2009 addressing "connectivity with the NRF," however there is little indication that the implementation of that policy has been effective.

The Coast Guard should fully implement its policy on connectivity with the NRF, including an expansive outreach program to State and local emergency managers through sector participation with Local Emergency Planning Committees, and District participation with Regional Interagency Steering Committees. There is a need to engage national associations of State and local governments in order to educate and inform them of the NCP and find ways to integrate them into oil spill preparedness efforts and the response organization. The Coast Guard should initiate a review of the NCP and NRF structures and revise as necessary to ensure connectivity during a catastrophic event. This includes better defining the roles of the Secretary of Homeland Security (or designated Principal Federal Official), the White House, and other officials within the Administration.

Crisis Leadership

The Deepwater Horizon incident provided a living laboratory for observing crisis leadership at all levels of the response organization, from elected officials and agency representatives to the CEO of a multinational corporation. Due largely to their respective positions, they were forced to address a significant and ongoing crisis. Crisis management experience or proven ability as a crisis leader is generally not a required qualification for elected or appointed political leaders, or even corporate executives. The Deepwater Horizon incident placed people into crisis management roles, and not all were able to demonstrate leadership in crisis as a core competency. The performance of crisis leaders during this incident was uneven at best. In some cases, the leadership exhibited undermined public confidence in Government as well as corporate officials.

The National Incident Commander concept worked very well in this incident, and provides a model for selecting individuals with the necessary crisis management skills to lead response efforts and to effectively manage future national incidents.

Lessons Learned

The ISPR Team decided to add a focus area to the report that discusses lessons learned categorically. While each focus area has its own Lessons Learned section, there were many on the team who felt a need to look back to prior spill events and exercises to see which lessons learned were, in fact, not really learned prior to the Deepwater Horizon incident. This was also done, to a degree, in Phase Two of the Cosco Busan ISPR report, citing lessons learned (but not institutionalized) from the Cape Mohican spill 11 years earlier. It is evident to the team that many critical lessons learned are not addressed programmatically or implemented effectively and, as such, had little role in enhancing the Coast Guard's planning, preparedness, and response programs. The preeminent objective of conducting reviews of large spill events, and the conduct of large spill exercises, is to provide the Coast Guard with road signs that enable the Coast Guard to alter direction and shorten the travel to the desired destination. The Coast Guard needs to formally address lessons learned, institutionalize them through programmatic changes, and in some cases, through cultural changes. The Coast Guard should draw from lessons learned in this report, and institute an autonomous program, not unlike a private sector quality control program to select, implement, and assess the outcome of lessons learned.

FOCUS AREA PART I: PLANNING AND PLAN EXECUTION

I.1 AREA COMMITTEE ORGANIZATION AND ACTIVITY

Observations:

- One of the lessons learned from the response to the Exxon Valdez oil spill was that there needed to be a mechanism for enhanced oil spill response planning that included all parties that would be involved in a response. To that end, Section 4202 of the Oil Pollution Act of 1990 (OPA 90) amended Subsection (j) of Section 311 of the Federal Water Pollution Control Act (FWPCA) (33 U.S.C. 1321 (j) to address the development of a National Planning and Response System. As part of this system, Area Committees were established for each area designated by the President. These Area Committees are comprised of qualified personnel from Federal, State, and local agencies and make up a spill preparedness and planning body. Area Committees should also have participation from non-governmental agencies (NGOs), industry representatives, academia, and oil spill removal organizations (OSROs).
- Each Area Committee, under the direction of the Federal On-Scene Coordinator (FOSC) for the area, is responsible for developing an Area Contingency Plan (ACP) which, when implemented in conjunction with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), shall be adequate to remove a worst case discharge of oil or a hazardous substance, and to mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operation in or near the geographic area.
- Each Area Committee is responsible for working with State and local officials to pre-plan for joint response efforts, including appropriate procedures for mechanical recovery, dispersant use, shoreline cleanup methodologies, identification and protection of environmentally sensitive areas (ESAs), and protection, rescue, and rehabilitation in relation to fisheries and wildlife. The Area Committee is required to work with State and local officials to expedite decisions for the use of dispersants, in situ burning, and other response options.
- The NCP describes the Regional Response Team (RRT) as having responsibility to provide guidance to Area Committees, as appropriate, to ensure inter-area consistency and consistency of individual ACPs with Regional Contingency Plans and the NCP.

Discussion:

Area Committees represent the core element of oil spill response planning and preparedness for a region. The individuals who attend an Area Committee meeting have the opportunity to meet in a non-emergency setting and learn how best to respond together in the event of a spill. Attendance at Area Committee meetings gives members and their respective organizations the opportunity to assist in the development of the ACP. They participate in the determination of ESAs, geographic response strategies (booming strategies), mitigation methods, and response priorities. Active participation of dedicated members from the entire spectrum of stakeholders is key to a successful Area Committee.

The Deepwater Horizon response mainly affected two Coast Guard Sectors—Sector New Orleans, which encompasses Louisiana and a portion of Mississippi, and Sector Mobile, which encompasses the eastern portion of Mississippi, Alabama, and Northwest Florida.

Prior to the Deepwater Horizon incident, the Sector New Orleans Area Committee was scheduled to meet annually. However, over the past 10 years the Committee only met seven times. The Captain of the Port (COTP) for Sector New Orleans chairs the Area Committee meeting. The charter membership, as listed in the ACP, includes: The Coast Guard, the Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Agency (NOAA), the Louisiana Department of Environmental Quality, the Louisiana Department of Wildlife and Fisheries, the Louisiana State Police's Environmental Safety Section, the Louisiana Oil Spill Coordinator's Office, Mississippi Office of Pollution Control, Mississippi Bureau of Marine Resources, and Mississippi Emergency Management Agency. The attendance records show that, in addition to the charter members, there was consistent attendance from the former U.S. Mineral Management Service (now the Bureau of Ocean Energy Management, Regulation and Enforcement [BOEMRE]), the petroleum industry, and the OSRO community. There is no indication that representatives from any local government or NGOs were ever present. The most recent version of the ACP for this region is dated August 2009. During the interview process for this report, when local NGOs and local government officials were asked if they were aware of the Area Committee and the ACP process, they stated that they were not aware of this planning body and had never been invited to attend or participate in any way. However, when State and Federal officials were asked the same question, they thought invitations had been sent to local government officials and that no one from the local governments had accepted the invitation and attended. One Sector relied on the State representative to provide local input, if any.

Meeting minutes from the Sector New Orleans Area Committee meetings indicate there were a wide variety of topics covered over time, including: Prioritization of ESAs; Geographic Response Plan (GRP) review; lessons learned from local spill events; environmental sensitivity index updates; review of the One Gulf Plan, and the revision of the NCP. There is no mention of any schedule or testing regime for deployment of resources specified in the ACP.

The COTP for Coast Guard Sector Mobile chairs the Sector Mobile Area Committee. The committee generally meets on an annual basis. The charter membership, as listed in the ACP, includes: Coast Guard Sector Mobile, EPA Region IV, NOAA, the Department of the Interior, National Marine Fisheries Service, USFWS, Mississippi Department of Environmental Quality, Alabama Department of Environmental Management, Florida Department of Environmental Protection, as well as 15 Emergency Management Agencies (EMAs) from Mississippi, Alabama and Florida coastal counties. Local OSROs do participate in Area Committee meetings; however, the county EMAs and local NGOs are not regular participants. This committee experienced different levels of activity during the years leading up to the Deepwater Horizon incident.

Prior to the spill, Sector Mobile's Area Committee was scheduled to meet biannually. When asked, Sector Mobile was unable to produce Area Committee meeting minutes or meeting attendance records. From 2006 to 2008, Coast Guard Sector Mobile, with support from EPA Region IV and the State of Florida, led an aggressive effort to develop a digital oil spill ACP. There were six meetings held in various States within the region, many of them convening over several days, to organize the digital ACP. The agendas for these meetings included discussions of Environmentally Sensitive Index data including: Shoreline habitat, sea grass and wetland data,

and sensitive biological resources including endangered and protected species. In addition, environmentally sensitive areas were identified, prioritized, and included in site-specific digital ACP maps. These meetings also included discussions regarding staging areas and boom deployment strategies.

During the Deepwater Horizon incident, there was clear indication from individuals in local government that they were not familiar with oil spill response. Participation in the Area Committee planning process would have allowed local agencies to be much better informed about the process, and their presence would have strengthened the planning and preparedness throughout the Gulf region.

Lessons Learned:

- Area Committees need to meet regularly and consistently to ensure that ACPs are up-to-date, complete, and reflect current policy and doctrine.
- The lack of local government participation in Area Committees had a negative effect on the Deepwater Horizon response due to limited understanding of the NCP, ACPs, and current response policy and doctrine on the part of representatives from the local government. Similarly, the establishment of an Area Committee outreach program would have enhanced preparedness in the Gulf region prior to the incident.
- The response organization needs to accommodate local government interests in order to maintain unity of effort and ensure a coordinated response.
- Formal minutes of Area Committees meetings will facilitate standardization of Area Committee deliberations and provide a record of Area Committee activities and discussions.

Recommendations:

1. The Coast Guard should ensure that guidance to Area Committees requires regular Area Committee meetings and that ACPs are reviewed at least annually or more frequently as determined by the Area Committee.
2. The Coast Guard should undertake an aggressive outreach program to engage State Governors, parish, county, and city officials, tribes, and emergency managers and local NGOs in the ACP planning process. This should be an ongoing process that recognizes changes in administrations and personnel turnover.
3. The Coast Guard should maintain minutes of Area Committee meetings and ensure that they are archived on Coast Guard's Homeport Web site.
4. The Coast Guard should ensure oversight of Area Committees by conducting standardization visits by Districts or other program managers.
5. The Coast Guard should review and evaluate ACPs and Area Committees around the country to determine best practices, including the establishment of subcommittees, executive steering committees, and State co-chairs. Based upon this review, the Coast Guard should develop guidelines and minimum standards for the scope, conduct, and composition of Area Committees nationwide.
6. The Coast Guard should identify innovative ways (such as grants, delegation of certain planning functions, State participation as co-chair, or alignment of State jurisdictional

boundaries with ACP boundaries to increase their participation in Area Committees) to include local government officials.

7. The Coast Guard should consider establishing linkages between Facility Response Plan (FRP) approval and OSRO classification (certification) with industry participation in Area Committees. Area Committee membership should include a representative of the plan holder and OSROs for each FRP in the ACP's area of responsibility.

I.2 AREA CONTINGENCY PLAN POLICY AND IMPLEMENTATION

Observations:

- The Oil Pollution Act of 1990 (OPA 90) and the National Contingency Plan (NCP) contain descriptions of the elements necessary for the development of ACPs. Coast Guard directives provide additional information necessary to implement those policies. However, the ACPs in the Gulf were inconsistent with regard to quality and content and did not necessarily reflect implementation of national policy.
- ACPs in the Gulf generally did not contain worst case discharge (WCD) scenarios involving offshore oil exploration activities, resulting in a lack of preparedness for such events.
- The lack of consistency resulted in deficiencies in many plans with regard to the identification and prioritization of environmentally sensitive areas (ESAs), the identification of economically important areas, and development of protective strategies for these areas.
- Oil spill removal organizations (OSROs), while having the expertise and knowledge to properly execute near-shore protection efforts, were not consistently active in the ACP planning process.
- Area Committees in the Gulf generally relied too heavily on Vessel Response Plans (VRPs) and Facility Response Plans (FRPs) to ensure adequate response resources for a WCD. Area Committees did not ensure that ACPs addressed the ability to implement protection measures appropriate for the planning area in response to a WCD.
- Contingency planning at some Coast Guard Sectors and other levels of the Coast Guard Districts has not been emphasized in recent years, resulting in inadequate preparedness for large-scale events.
- The lack of adequate funding for the development and implementation of ACPs has resulted in insufficient participation by stakeholders to ensure that plans provide for the highest level of preparedness.

Discussion:

A robust ACP development and review process with strong collaboration between industry, local, State, and Federal Government, as well as non-governmental organizations, is critical to the Area Planning process. ACPs require the identification of sensitive areas, protection strategies, and the equipment, trained personnel, and response resources needed to implement those strategies. ACPs should encompass contingencies, planned responses, and response resources found in Oil Spill Response Plans (OSRPs) and other industry response plans.

While OPA 90 establishes the requirement for ACPs, it is the NCP that contains detailed descriptions of Plan contents. This includes Federal, State, and Local official contact information, the availability of oil spill response equipment and personnel; dispersant/in-situ burn procedures and an annex including WCD protocol. Shoreline protection, booming strategies, and the identification of ESAs are also required. The NCP outlines essential, yet

minimum, guidance for a comprehensive and functional ACP. Area Committees, however, are left with the responsibility for determining protection strategies that are to be employed for identified ESAs as well as the means to acquire the response resources necessary to implement these protection strategies.

Vessel or facility response plan holders are held to minimum standards for providing response resources without regard to areas of importance that may be identified in an ACP. The lack of connectivity between ACPs and VRPs and FRPs, particularly oil spill response plans (OSRPs) required by the Bureau of Ocean Energy Management, Regulation and Enforcement for offshore drilling operations, was evident.

The consistent lack of identifying ESAs and economically important areas by Area Committees and the general absence of protection strategies in ACPs for their areas of responsibility was also evident. The linkage between protection strategies and the availability of response equipment and personnel requires the use of a gap analysis that was not a part of the ACP process. Gap analysis would assist Area Committees in ensuring that response equipment and personnel are available to implement protection strategies, or to identify where such resources might be obtained in order to implement such strategies. This is particularly useful in areas with the potential for substantial WCDs as a result of offshore drilling operations.

As the agency responsible for overseeing the response to oil spills in the Coastal Zone, the Coast Guard has established policy and guidance for development of coastal ACPs. The basic Coast Guard ACP policy is contained in the Coast Guard's Marine Safety Manual (COMDTINST M16000.14) promulgated in 1997 and in COMDTINST 16471.3 promulgated in August 2000, with various updates thereafter. However, none of these instructions offer substantive guidance for development of ACPs or for the administration of Area Committees. For example, there is no nationally recognized, standardized process for the identification and prioritization of ESAs, for the development of protection or response strategies, or for the means to ensure sufficient resources to implement those protection strategies.

Following the M/V COSCO BUSAN incident in San Francisco Bay, Coast Guard Headquarters directed all Coast Guard Sector Commanders to update ACPs and reinforce Coast Guard response doctrine. This guidance emphasized strong partnerships among local, regional, and national response communities as well as Area Committee participation, incorporating local issues and concerns into ACPs and planning for WCD scenarios. In addition, it included the need for an "aggressive communications campaign to ensure that partner agencies, elected officials and the public are promptly and regularly informed of situation status and all significant developments." Although this guidance was issued prior to the Deepwater Horizon incident, there is little indication that the precepts of this guidance have been followed consistently in Gulf ACPs or taken into consideration by Area Committees. With few exceptions, ACPs have not undergone significant updates, Area Committee participation (especially from local officials) has not improved, and realistic WCD planning scenarios have not been developed.

In 2008, the Coast Guard promulgated COMDTINST 16465.41A designed to reinvigorate the concept of the District Response Group and District Response Advisory Team (DRAT). Of particular relevance to the issue of ACPs is the requirement that DRATs:

> …assist FOSCs and Area Committees in developing booming strategies and resource priorities. Additionally, DRATs will provide expertise to District and field unit contingency planning departments, as needed, to assist in Area

Contingency Plan (ACP) update development, and ensure the interoperability of each Sector's ACP with the Regional Response Plan.

Based on the Incident Specific Preparedness Review (ISPR) of the Gulf ACPs, it is apparent that this function of the Eighth District DRAT has not been a high priority.

Contingency planners at Sectors are responsible for ensuring that ACPs are updated and for coordinating Area Committee activities. However, in recent years, the Coast Guard has de-emphasized contingency planning, and planning staffs have been substantially reduced. Experienced contingency planners are rare, and a planning assignment is not considered an important career step for a Coast Guard officer. The ISPR Team heard anecdotally that assignment to planning positions is often avoided. As a result, the Coast Guard maintains a "reactive" approach to most crises, even those for which critical planning is necessary.

Trained and experienced planners are necessary to create plans that ensure essential response functions are performed, and ensure that critical assets are protected and sufficient resources and trained personnel are provided to perform required functions. Experienced planners can identify gaps and shortfalls and the means to overcome them. Trained and experienced planners are also necessary to maintain relationships with partners and stakeholders to ensure that the full range of concerns and expectations is identified prior to an incident, and that the collective knowledge and experience of potentially affected parties are leveraged in developing a comprehensive and effective contingency plan.

Lessons Learned:

- Although the NCP contains guidance for development of ACPs, additional policy guidance and protocol is necessary to assist Area Committees in developing comprehensive and functional ACPs.
- There is not a well-established and standardized process for the identification and prioritization of environmentally sensitive or economically important areas that might be impacted by a spill.
- Coast Guard Districts and Regional Response Teams should regularly participate in ACP review and approval in order to maintain consistency and effectiveness of plans for their particular geographic areas.
- ACPs should address critical elements of preparedness, including qualifications of personnel, training, exercises, and equipment; e.g., current inventory and availability of skimmers, boom, and other cleanup technologies.
- A more proactive approach to crisis management that emphasizes contingency planning as a core component is mandatory for improving the Coast Guard's preparedness program.

Recommendations:

1. The Coast Guard should update its existing ACP policy guidance and provide increased oversight to ensure Area Committees are developing comprehensive and functional ACPs nationwide.
2. The Coast Guard should ensure that critical ACP components required by the NCP and Coast Guard policy are incorporated into ACPs and clarified for Area Committees, including but not limited to WCD scenarios from OSRPs where appropriate; identification and

prioritization of environmentally sensitive and economically important areas; near-shore containment strategies; offshore control and removal strategies; the identification of equipment, trained personnel, and response resources to implement the tactics and strategies for a WCD.

3. The Coast Guard should request that the National Response Team review and revise the NCP as necessary to incorporate advances in response management and planning, including Incident Command System doctrine and prescribe mission assignments for a Spill of National Significance event.
4. The Coast Guard should ensure that ACP policy provides for improved State and local participation in ACP development, including participation by industry and OSROs, and that it provides for familiarization of ACPs with senior officials in State and local governments.
5. The Coast Guard should place more emphasis on contingency planning. It should be valued as a core component of successful crisis management and a means for maintaining a high level of preparedness.

I.3 IDENTIFICATION AND PRIORITIZATION OF ENVIRONMENTALLY SENSITIVE AREAS

Observations:

- The Oil Pollution Act of 1990 (OPA 90), the National Contingency Plan (NCP), and Coast Guard policy require Area Contingency Plans (ACPs) to identify "sensitive environmental areas" as well as general protection strategies.
- There is no nationally recognized, standardized process for the identification and prioritization of ESAs. There is no national guidance for the development of protection strategies for ESAs or compliance programs to ensure that there are sufficient resources to protect such areas.
- The Deepwater Horizon incident demonstrated a serious deficiency in planning and preparedness for an uncontrolled release of oil from an offshore drilling operation, which may have adversely affected ESAs in the region.
- There was substantial variability in the content and adequacy of ACPs with regard to the identification and prioritization of and protection strategies for ESAs across the Gulf. In some planning areas, the ESAs were simply not available in any plan. In others where the ESAs were listed, they were not prioritized. Many of the plans did not contain protection strategies or they were outdated.
- The size and duration of the Deepwater Horizon incident resulted in significant impact to the Gulf and to ESAs in particular. There is substantial evidence that existing ACPs for this area did not adequately address the potential for a spill of this size, even though a much larger spill was anticipated in the BP Oil Spill Response Plan (OSRP).
- There was not a consistent strategy to incorporate stakeholders in the identification and prioritization of ESAs or for the development of protection strategies prior to this incident. Some Area Committees routinely relied on consultation with stakeholders during a spill, but did not identify strategies for ESA protection as part of the ACP process.

Discussion:

The Gulf of Mexico is home to productive, diverse, and valuable living natural resources, with major environmentally sensitive features including barrier islands, coastal wetlands, beaches, and coral reefs. The combined coastline of these areas, including islands and inland areas, is more than 4,700 miles. Coastal wetlands and estuaries are nursery areas for many species, including those that support both commercial fisheries such as shrimp, oysters, and blue crab and recreational fishing for species such as snapper, grouper, and drum. Many of these areas are classified as Environmentally Sensitive due to their status under the Endangered Species Act, their designation as Essential Fish Habitat, their protected status under the National Historic Preservation Act, or for other socioeconomic or environmental reasons.

Another significant part of the Gulf's socioeconomic fabric is offshore oil exploration and production, with its attendant oil transportation system that supplies the critical energy needs of the Nation.

Protection of ESAs requires identifying those critical environmental resources that need to be provided special protection, prioritizing those areas most critical or sensitive, developing the protection strategies for those areas, and identifying the trained personnel, equipment, oil spill removal organizations, vessels, and response resources to implement the protection strategies. The process for conducting these functions requires consultation with the full range of stakeholders having responsibility for these areas, such as Natural Resource Trustees.

In the Deepwater Horizon incident, efforts to contain, control, and remove the oil at the well and offshore areas provided the first line of defense for protecting ESAs. While they did not prevent oiling and impact to shorelines and ESAs, the use of the full range of response tools, including mechanical removal, dispersants, and in situ burning, diminished immediate ESA impacts.

A notable shortcoming identified during this review, however, was the failure of the ACPs in the region to address the worst case discharge from an offshore drilling operation. The BP OSRP identified the potential for a spill substantially larger than that which actually occurred. (See the Worst Case Discharge Focus Area paper.)

Similarly, the lack of adequate identification and prioritization of ESAs in many ACPs and the failure of most ACPs to identify protection strategies impaired an effective response and provided the opportunity for elected officials and others to criticize the response. The lack of sufficient planning, partly a result of the lack of oversight to ensure the adequacy and consistency of plans for this region, was evident throughout this review.

OPA 90 requires ACPs to include the identification of "areas of economic and environmental importance that might be damaged by a discharge." The NCP further specifies that ACPs are to include an "annex that contains a Fish and Wildlife and Sensitive Environments Plan" developed in consultation with U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration and other interested natural resource management agencies and parties. However, the content of the ACPs in the Gulf region varied substantially from Area to Area, especially as it relates to ESAs. In some instances, that information simply was not provided and in others it was incomplete. None of the ACPs contained a comprehensive and executable Fish and Wildlife and Sensitive Environments Plan.

OPA 90 also specifies that the area planning process is the prescribed method in planning for, and responding to, oil spills. It is also the process specified for the identification and protection of ESAs. Area Committees are comprised of qualified representatives from Federal, State, and local agencies, under the direction of the appropriate Coast Guard or EPA official having responsibility for the area. The participation by these and other stakeholders is vital to the planning process. In the Gulf region, however, participation by local agencies in the ACP process is highly variable. Several of those interviewed indicated that a lack of funding hindered their ability to fully participate in the process.

Many of those interviewed as part of the Incident Specific Preparedness Review research process indicated that there has been inadequate funding to provide the level of planning and preparedness necessary to effectively respond to a large spill event generally, and to protect ESAs specifically. The inability of some States and local agencies to fully participate in the

process of identifying and prioritizing ESAs, as well as the lack of specific protection strategies, strongly suggest that more resources need to be devoted to the ACP development process.

Lessons Learned:

- Most Gulf ACPs are inadequate with regard to ESAs generally. Site-specific protection strategies and the prioritization of sensitive Fish and Wildlife areas were incomplete or missing from ACPs.
- The lack of oversight from Regional Response Teams (RRTs) and Coast Guard Districts contributed to significant variability among ACPs with regard to ESAs in the Gulf region.
- A process for ensuring stakeholder participation in identifying and prioritizing ESAs and the development of protection strategies for these areas should enhance response efforts, provide greater protection to ESAs, and serve to reduce political influence on response operations.
- Being adequately prepared requires the development of protection strategies for both ESAs and areas of economic importance as part of the planning process; developing protection strategies at the time of an incident will significantly degrade ESA protection efforts.

Recommendations:

1. The Coast Guard and each respective RRT should conduct a comprehensive review of all Gulf region ACPs to ensure that they include a fully developed Fish and Wildlife and Sensitive Environments Plan. This review should also include a process to ensure consistency among Gulf ACPs in the identification and protection of ESAs.
2. The Coast Guard should develop a program to ensure that the equipment, trained personnel, and other response resources to implement protection strategies are available and contained in ACPs.
3. The Coast Guard should develop procedures to ensure stakeholder participation in the identification and prioritization of ESAs. This may include funding.
4. The Coast Guard should look to ACPs that adequately address the identification, prioritization, and protection strategies for ESAs, and adopt the best practices as a benchmark for other planning areas. ACPs in Texas or California may be appropriate models for this purpose. An enhanced version of the Consensus Ecological Risk Assessment may also help in developing minimum standards for all ACPs covering coastal areas.
5. Once ESA protection strategies are developed, the Coast Guard should ensure that these strategies are periodically exercised in full deployment exercises.

I.4 INTEGRATION OF OIL SPILL CONTINGENCY PLANS FOR A REGIONAL RESPONSE

Observations:

- There are three levels of contingency plans under the National Response System—the National Contingency Plan (NCP), the Regional Contingency Plan (RCP), and the Area Contingency Plan (ACP). While there is ample guidance in the Code of Federal Regulations for the development of the NCP and ACP, there is little regarding the RCP.
- In the Gulf of Mexico, more specifically in the Eight Coast Guard District, RCP/ACP contingency planning is slightly different than in other areas of the country. With the approval of the District and the concurrence of the member States of the Gulf, the "One Gulf Plan" (which actually consists of two volumes) was developed and essentially serves as the RCP. The One Gulf Plan contains all regional planning guidance that is synonymous across all the Coast Guard's Sector Areas of Responsibility. The ACPs within Eight District are comprised of the One Gulf Plan and area-specific Geographic Response Plans (GRPs). Volume 1 is what is considered the "One Gulf Plan" and is maintained by the District and contains information common to all Captains of the Port Zones within the District. Volume 2 is the GRP maintained by each local Area Committee and contains information unique to each Captain of the Port Zone. The One Gulf Plan has been in existence since 2003.
- While the One Gulf Plan has been in existence for approximately 7 years and is updated on a regular basis, it was noted during the interview process that many are not aware of its existence. This lack of familiarity, and the missed opportunities to contribute to its development, may have complicated the execution of the response effort to the Deepwater Horizon incident since the One Gulf Plan is the fundamental response framework applicable to most of the Gulf. Additionally, the severity of the incident and extent of the response revealed weaknesses in the plan and presented opportunities for improvement.
- Despite the One Gulf Plan's role as the primary response plan, many other plans were brought into play during the Deepwater Horizon incident. Individual State plans, parish plans, county plans, and BP's own oil spill response plan were all utilized at some point during the response to guide or influence the effort. Again, familiarity with these plans (even among those responsible for them) varied greatly, and there was little common linkage between the plans.

Discussion:

The impetus for developing the One Gulf Plan was firmly rooted in the realities of the operating environment in the Gulf of Mexico. The broad reach of the oil and gas industry, the many deep draft ports that line the coastline, the expansive pipeline network, and the sheer number of petrochemical plants and refineries expose the region to a common set of threats. The One Gulf

Plan acknowledges the regionality of these threats and also serves to recognize the vast and shared spill response infrastructure that would respond to a significant event.

The breadth and magnitude of the Deepwater Horizon incident, however, exposed some weaknesses in the One Gulf Plan and the GRPs. Many interviewees (primarily at the parish/county level and local level) were not aware that the plan existed and therefore had no part in its development. This is a critical flaw in the system since participation in plan development captures stakeholder concerns and capabilities that might otherwise be missed. Additionally, without a greater sense of universal participation, difficult or contentious issues cannot be appropriately addressed, resulting in a weakened or flawed response plan. Although it adequately served its purpose for traditional single-source, single-event spills, the uncontrolled and continuing Deepwater Horizon incident raised significant issues that the One Gulf Plan did not address.

The Deepwater Horizon incident identified specific areas that should be considered and incorporated for any RCP:

- Although the Vessel of Opportunity (VOO) program experienced problems initially, it did perform a valuable service during the event. However, there was no pre-planning or guidance in any contingency plans for the VOO program.
- While the Oil Spill Removal Organization (OSRO) community regularly participates in the ACP planning process, their broad depth of knowledge of local conditions should be encouraged to participate in the regional planning process.
- A contentious issue throughout the response involved the prioritization and protection of economic resources. Many thought environmental protection efforts were drawing away limited resources that could be used to protect commercial interests. Regional planning efforts could better address these important priorities.
- As the response progressed, it became evident that there was no bridging or linkage between the many State and local contingency plans and the One Gulf Plan. This also applies to BP's oil spill response plan.
- The NCP provides extensive guidance on the development and content requirements for the ACPs; however, the document provides no similar guidance for RCPs.
- While the volunteer issue was not as significant in this event as in other major incidents, the One Gulf Plan could play a larger role in establishing some commonality of management strategies among the respective GRPs.

Lessons Learned:

- RCPs for the Coastal Zone may not be appropriate if developed for standard Federal regions.
- Regional level planning is necessary because response operations for significant oil spills (e.g., a VOO program, prioritization of areas of special economic or environmental importance, and so forth) transcend political and geographic boundaries.
- There was an apparent lack of oversight in the review of ACPs and lack of guidance in the development of RCPs that contributed to confusion on the part of responders as to which contingency plan should be the principal response execution document.

- There was no bridging or linkage between the many State and local contingency plans, industry response plans, and the One Gulf Plan.

Recommendations:

1. The Coast Guard should work with the Environmental Protection Agency (EPA) to amend the NCP so as to enhance the concept of RCPs and ensure that planning for coastal spills can encompass areas larger than standard Federal regions.
2. The Coast Guard should work with the EPA to amend the NCP in order to provide more detailed guidance on the development of RCPs.
3. To supplement suggested changes to the NCP, the Coast Guard should provide enhanced guidance for RCP development such as implementation guidance for the VOO program, economic/commercial priority protection strategies, and volunteer coordination, among others.
4. The Coast Guard should review the relationship of plans described in the NCP and ensure that it accurately reflects current doctrine.
5. The Coast Guard's Areas and Districts should be more involved in the contingency planning process to ensure high-quality regional plans that encompass coastal regions.

I.5 WORST CASE DISCHARGE SCENARIO

Observations:

- At the time of the Deepwater Horizon incident, BP had a Regional Oil Spill Response Plan (OSRP) that had been approved by the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE). The OSRP, developed in accordance with Federal regulations, contained a WCD scenario for an exploratory well. The plan contained information on the maximum flow rate of an uncontrolled blowout and the response assets that would be mobilized to clean up the oil spill. As part of an exploration plan (EP), BP had also prepared a WCD scenario for the well that the Deepwater Horizon Mobile Offshore Drilling Unit (MODU) was drilling when the loss of well control occurred. The Deepwater Horizon MODU also possessed a Coast Guard–approved spill response plan, called a Vessel Response Plan (VRP), which provided for response to spills of oil stored aboard the vessel.
- Reviews of the OSRP, EP, and VRP showed that, from a planning standpoint, the organizational structure, contracted response personnel and assets, and resource protection strategies that were in place were in conformance with existing Federal regulations and should have been adequate to contain oil discharged from the Macondo well and should have been adequate to prevent any significant environmental damage.
- During the incident, the estimated flow rate from the Macondo well was substantially less than the WCD scenario for the OSRP, EP, and VRP—over 100,000 barrels per day less than the planned WCD scenario in the BP EP, and almost 200,000 barrels per day less than that reflected in the BP OSRP. Nevertheless, the flow rate from the well still far exceeded the capabilities of not only the oil spill removal organizations (OSROs) that BP had under contract, but also the capabilities of the additional national and international spill containment and recovery resources that were mobilized as well. One factor that contributed significantly to poor offshore skimming productivity was the creation of a 5-mile safety zone around the Macondo well, which was an exclusion zone needed to ensure safety near the highly congested site. These shortcomings and operational conflicts demonstrated the difficulties and limitations of oil spill response in open ocean environments, the inadequacies of the current state of planning for catastrophic offshore oil spills, and the lack of advancement in spill response technologies in the United States.
- From the outset of the Deepwater Horizon incident the phrase “worst case discharge” was used routinely and repeatedly by the media, community leaders, and the public. It was the subject of a report to the President and the subject of daily conference calls with the National Response Team (NRT). However, there was a widespread misunderstanding of the term’s meaning and derivation by those not familiar with or involved in oil spill planning, preparedness, and response, including State and local officials. The misunderstanding also extended to members of spill management teams (SMTs), OSROs, spill response operating

teams, and even members of the Unified Command (UC), resulting in disjointed communication of what the true flow rate could have been.

Discussion:

Operators of oil exploration, development, and production facilities in the Outer Continental Shelf (OCS) must submit an OSRP to BOEMRE for review and approval under authority of the Oil Pollution Act of 1990. In accordance with BOEMRE implementing regulations, the OSRP must demonstrate that the operator "…can respond quickly and effectively whenever oil is discharged…" from one of their facilities. Operators partially meet this requirement by maintaining contracts with OSROs comprising for-profit firms and not-for-profit cooperatives that supply trained personnel, spill response equipment, and resources. These OSROs must be able to, independently or collectively, respond to the WCD scenario of the operator. Management of these organizations during a spill is the responsibility of a spill management team (SMT) provided by the operator, under the direction of the Federal On-Scene Coordinator (FOSC), all of whom operate under the Incident Command System (ICS). Each OSRP must be consistent with the National Contingency Plan (NCP) and appropriate Area Contingency Plans (ACPs) for the geographic region.

A critical component of each OSRP for offshore operators is the WCD scenario, which requires a plan regarding how the operator will respond to the most extreme hypothetical oil spill that could occur from one of their facilities. Beyond a discussion of how the spill volume was determined, the scenario must provide a description of the response equipment that would be used "…to contain and recover the discharge to the maximum extent practicable," which means "…within the limitations of available technology, as well as the physical limitations of personnel, when responding to a WCD in adverse weather conditions." For an exploratory drilling operation, which was the classification of the Deepwater Horizon at the Macondo well, the WCD is "the daily volume possible from an uncontrolled blowout" and a description of how responders will address the "…spill volume upon arrival at the scene and then support operations for a blowout lasting 30 days."

The OSRP that was used as the basis for the response to the Macondo well oil spill was prepared by a Houston-based consulting firm under contract with BP that specializes in emergency response planning. The WCD rate estimate included in the approved OSRP was developed independently by BP based upon BOEMRE regulations and supplied to the consultant. Before submittal to BOEMRE for review, the BP plan was routed through and reviewed by BP Gulf of Mexico reservoir engineers, the Exploration Production Technology Group Integrated Asset Modeling Team, and the Crisis Management and Emergency Response Work Group.

The latest revision of the BP OSRP was dated June 30, 2009. In order to be considered as an acceptable plan, all OSRPs must satisfy requirements set forth in 30 CFR Part 254–Oil Spill Response Requirements for Facilities Located Seaward of the Coastline. All OSRPs are also required to meet guidance contained in Notice to Lessees and Operators No. 2006-G21–Regional and Sub-regional Oil Spill Response Plans (Gulf of Mexico Region). The review process for the BP OSRP entailed a "completeness review" to determine if the plan contained all required components, and a more thorough review that focused on key components of the plan, including the WCD scenario.

While the Coast Guard is the designated FOSC for coastal waters and is responsible for oversight of oil spill response on these waters, it does not possess OSRP approval authority. Through a

Memoranda of Agreement with BOEMRE (OCS-03–Oil Discharge Planning, Preparedness, and Response–Effective May 23, 2007), the Coast Guard may, however, review and comment on any OSRP they so choose. Neither review nor comment on the OSRP by the Coast Guard occurred for either the BP OSRP or the BP Macondo EP. In fact, there is evidence that the Coast Guard in the Gulf of Mexico region has not reviewed or commented on any OSRP in the recent past. Many of the Coast Guard staff interviewed throughout the Incident Specific Preparedness Review process acknowledged that they were unfamiliar with OSRPs and had never seen the BP OSRP, even though they held prominent positions in the Unified Area Command or Incident Command posts during the Deepwater Horizon incident.

The WCD scenario contained in the approved BP OSRP was for an exploratory well in Mississippi Canyon (MC) Block 462. BOEMRE regulations allow for an operator to submit a "regional" OSRP that covers multiple facilities subject to the approval of the BOEMRE Regional Supervisor. The BP OSRP was a regional plan and MC Block 462 was determined to present the greatest threat considering all of the facilities included under the OSRP. The daily flow rate for the hypothetical well release, considering an unobstructed open hole, predicted reservoir parameters, and other factors, was 250,000 barrels of oil per day. None of the variables used in the calculation of the volume estimate were included in the OSRP, nor was the methodology by which the 250,000 barrel per day figure was derived.

The response strategy to cope with the BP OSRP WCD included the mobilization of response personnel and equipment through two contracted OSROs—the Marine Spill Response Corporation and the National Response Corporation. Assuming an oil evaporation of five percent, a reasonable figure appropriate for light crude oil such as that found in South Louisiana, the primary contracted OSROs needed to have response assets to respond to approximately 238,000 barrels of oil per day using various mechanical and alternative response techniques. The BP OSRP identified the OSROs as having various skimming systems that would be used in the hypothetical spill event with a cumulative "Effective Daily Recovery Capacity" (EDRC) of almost 492,000 barrels per day and a skimming vessel storage capacity of almost 62,000 barrels of liquid. Offshore on-water storage capacity was shown separately as 237,500 barrels of liquid. Additionally, the BP OSRP anticipated and provided for the surface application of dispersants and use of in situ burning, which added to the overall ability to respond to the WCD identified in the OSRP.

Before the Macondo well could be drilled, BP was additionally required to submit an EP to BOEMRE for review and approval. The EP provided details on the well casing and cementing programs and provided other engineering and technical details required by regulation. The EP also included a WCD scenario for the Macondo well. BP indicated that if the Macondo well experienced an uncontrolled blowout, it would have an estimated rate of 162,000 barrels of oil per day, less than the WCD scenario covered by the BP OSRP. As such, BP was not required to supplement or revise any part of their OSRP in relation to the response strategy. Like the WCD scenario in the BP OSRP, no additional information was provided that could support or establish the predicted outflow, and the EP was approved without any additional information being required.

The anticipated release rate for the Macondo well was 162,000 barrels of oil per day compared to an EDRC of contracted skimmers of 492,000 barrel of oil per day, while the estimated initial release from the Macondo well was approximately 60,000 barrels per day. On face value and

under optimal conditions, mechanical recovery systems alone should have been more than adequate to recover the oil both anticipated and actually released.

In addition to the mandated OSRP and EP from offshore operators, OPA 90 and the NCP require that ACPs provide for the response to, in the case of an offshore facility, the largest foreseeable discharge in adverse weather conditions. The ACP is the planning document that guides Government response activities for a specific geographic area. The Southeast Louisiana ACP is the applicable plan for the area covered by both the BP OSRP and the EP. This ACP includes a WCD scenario with a total volume of 1,000,000 barrels of oil. The scenario, however, is not based on a well blowout but on a collision between a laden tanker and a fixed offshore structure. The Southeast Louisiana ACP does include a blowout scenario with a release of between 10,000 and 20,000 barrels of oil per day, far less that well WCDs contained in many of the OSRPs in the ACP area of responsibility. The State of Louisiana also maintains a State Oil Spill Contingency Plan, but it does not include planning scenarios.

One of the first major initiatives at Coast Guard Headquarters was to provide the U.S. Department of Homeland Security and the White House with an assessment of the potential daily volume of oil being released from the Macondo well. BOEMRE provided the Coast Guard with the Macondo well estimated WCD scenario spill rate of 162,000 barrels of oil per day. The release rate was also made available by BOEMRE to the National Oceanic and Atmospheric Administration for modeling spill trajectories and to the UC to facilitate both tactical and strategic planning to the widely dispersed oil spill. That information was used for early planning during the response, since that amount appears in some of the earliest incident action plans approved by the UC. How this estimate was ultimately used in formulating response actions is unclear, as those interviewed generally stated that they were responding to “a worst case discharge event” from the outset, notwithstanding the publicly released flow rates ranging from 1,000 barrels per day to 5,000 barrels per day early in the incident.

Numerous factors played into the amount of oil that was released into the environment at the offshore Macondo well site and the amount that was ultimately removed or recovered.

Regulations for OSRPs are specific regarding WCD scenarios. The regulations do not, however, address subsea containment of oil, nor do they require discussions on spill abatement such as well intervention or drilling of relief wells. The U.S. Geological Survey estimated that approximately 17 percent of the oil that emanated from the blowout was recovered by devices that were designed, fabricated, and installed in the riser or on the blowout preventer after the release began. This was by far the most successful spill response method. Compare this to the estimated three percent of oil that was mechanically removed, five percent that was burned, and eight percent that was dispersed using chemicals injected at the spill source or sprayed on the water’s surface.

The final solution to the Macondo well blowout was the successful completion of the relief well on September 17, some 148 days after the disaster occurred. Even though the release rate was less than planned for, the duration of the event strained resources to a degree not contemplated by any of the plans designed to address an event of this type.

Lessons Learned:

- Estimated flow rates for WCD scenarios contained in OSRPs and EPs do not contain adequate data to assess their validity.
- Current regulations for offshore facilities do not address requirements for subsurface oil containment. Purpose-built subsea equipment, robust procedures, and skilled personnel are needed to effect successful oil containment in offshore locations.
- Current planning standards for offshore skimming systems relying on EDRC as the measure of skimmer effectiveness during a response proved to be highly inaccurate and unreliable as measures of potential performance.
- Relief wells are the last resort for source control (and final spill abatement) from an offshore blowout. Other measures of source control need to be in place.
- Response planning for the Macondo exploratory well did not adequately address the strategies, tactics, equipment, and resources needed to respond to an ongoing release of oil for a protracted period.
- ACPs do not incorporate appropriate OSRP WCD scenarios in their respective areas of responsibility.
- The Coast Guard does not routinely review OSRPs for offshore facilities under the jurisdiction of the BOEMRE.

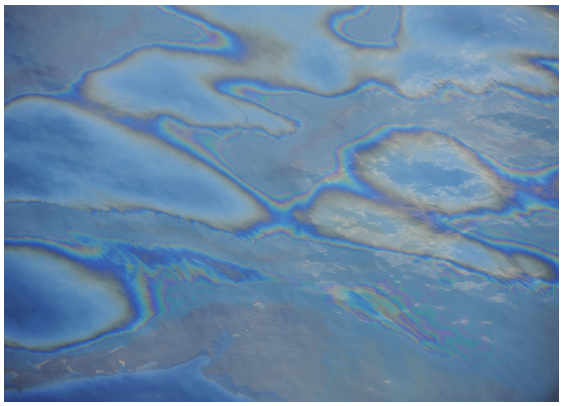
Recommendations:

1. The Coast Guard should request that BOEMRE establish guidelines and ensure that OSRPs and EPs contain sufficient reservoir and well design data to allow independent verification of the estimated flow rate. Part of the guidelines should be a requirement for two versions of the OSRP—one containing all confidential and proprietary data for Government use only, and one redacted copy that excludes confidential, proprietary, and personal identification data for public access.
2. The Coast Guard should request that BOEMRE ensures that operators of offshore oil exploration, development, and production facilities are required to maintain standing contracts with organizations with equipment, vessels, and personnel capable of installing and operating equipment to capture oil at the source in various water depths, and that this information is included in the OSRP and cross referenced in applicable ACPs.
3. The Coast Guard, with other appropriate agencies, should undertake a detailed review of EDRC, equipment caps, and other planning standards for oil spill response equipment and technologies to ensure that these planning standards accurately reflect equipment and best available technology capabilities in different operating environments. This review should ensure that adverse weather considerations are included as part of the planning standards.
4. The Coast Guard should request that BOEMRE, as appropriate, require that OSRPs include plans for spill abatement including the drilling of relief wells.
5. The Coast Guard should request that BOEMRE, through regulatory or other means, require response planning sufficient to address offshore, near-shore, and in-shore oil containment and recovery to address operations for the duration of relief well drilling or until other spill abatement efforts are successful.

6. The Coast Guard, in cooperation with BOEMRE, should revise the current BOEMRE/Coast Guard Memorandum of Agreement to provide for routine BOEMRE participation in Area Committees in regions where offshore drilling is undertaken or contemplated to help ensure integration of the OSRP and ACPs and the availability of equipment, trained personnel, OSROs, vessel programs, and other response resources to implement near-shore recovery and protection strategies.
7. The Coast Guard, in cooperation with BOEMRE, should establish requirements for review of OSRPs to assess the adequacy of planning and preparedness that ensures the availability of resources and response strategies to address the WCD scenarios for OSRPs.

I.6 QUANTIFICATION

Observations:



- Inaccurate, conflicting and continually escalating oil spill flow rates negatively impacted the perception of the public and the media regarding both responders and response efforts.
- Flow rate estimates were often presented with limiting explanations, some of which were ignored by the response organization and the media.
- Flow rates were often given in ranges that were, at times, either misunderstood or misinterpreted by responders providing flow rate estimates to the public.
- Early on in the response there was a lack of solid scientific data available to those trying to calculate the true oil spill flow rate and total volume of the oil spill.
- The worst case discharge (WCD) amount was known to responders, and was part of the analytical process used by scientists in the estimation of flow rates and spill trajectories. However, with the exception of the statement made by the National Incident Commander on May 2 about the total loss of the wellhead, the WCD was not released publicly by either the response organization or an administrative agency, apparently to avoid an adverse public reaction.

Discussion:

Quantifying the exact amount of oil being discharged into the environment from the Macondo well proved to be challenging throughout the entire response. The issue of quantification, its effect on oil spill response operations, the public's perception of response efforts, and source control intervention is very complex. Attempts to provide the public with accurate discharge information brought controversy from within the response organization, Government agencies, and other stakeholders having an interest in the Deepwater Horizon incident. To best understand this issue, the ISPR Team has provided a chronology of events, with some available detail surrounding each event.

April 20: The Deepwater Horizon experienced an explosion and fire. The fire continued, unabated, for approximately 2 days.

April 21: Initial estimates for oil pouring out of the rig (from the well) as a result of the explosion and fire are 13,000 gallons per hour. While this figure is released to the media, both Coast Guard and BP state that there is no evidence yet of an undersea oil leak.

April 22: The Deepwater Horizon sinks. The incident severs the underwater riser that was connected to the Macondo well. About 4,000 feet of the riser fall back to the sea floor. The riser loops around as it falls so that the broken end is approximately 2,000 feet from the wellhead.

April 23: At a press event and in response to questions from the media, the Federal On-Scene Coordinator (FOSC) states that there still is no evidence of a subsea leak but adds: “It is not a guarantee, but right now we continue to see no oil emanating from the well.”

April 24: Using unmanned robotic devices equipped with video cameras, responders discover oil leaking from two locations of the bent riser. In consultation with BP, the Coast Guard releases reports to the media that 1,000 barrels per day (BPD) are leaking from the well. The source of this estimate is in dispute, but the release of the figure by the FOSC provides the necessary imprimatur for use by the media.

April 24-28: Using satellite imagery, video data, and over flights to observe oil on the water, NOAA determines that the April 24 estimate is low. NOAA provides a range of 5,000 to 10,000 BPD to the response organization.

April 28: The Unified Area Command (UAC) calls an unscheduled news conference. The FOSC states that a third leak has been discovered, and that “NOAA experts believe that the output could be as much as 5000 BPD. There is no mention of the range provided by NOAA, nor is the 5,000 BPD figure stated as a “low end” or “at least” figure.

May 12: Videos showing the plume of hydrocarbons escaping from the damaged riser are released to the public. Many independent scientists question the 5,000 BPD flow rate, and provide estimates as high as 100,000 BPD.

May 14: The National Incident Commander asks the Interagency Solutions Group (IASG) to provide scientifically based information on the discharge rate from the well. In response to that request, the IASG charters the Flow Rate Technical Group (FRTG) comprised of experts from many scientific disciplines. The National Incident Commander directs the FRTG to provide recommendations on estimate protocols and a way to obtain peer review from the larger national-level scientific community to challenge or validate assumptions.

May 16: The Riser Insertion Tube Tool (RITT) is installed.

May 17: The FRTG convenes at Coast Guard Headquarters, led by the Coast Guard and NOAA, and includes technical experts from MMS/BOEMRE, DOE, EPA, and others.

May 22: The National Incident Commander names Dr. Marcia McNutt, Director of USGS, as the lead for the FRTG. She quickly organizes research efforts, and engages the Woods Hole Oceanographic Institute (WHOI), which proves to be a key development.

May 25: The data are made available to the FRTG about the Riser Insertion Tube yielding 8,000 BPD, noting that even with the insertion tube in place, oil is still escaping from the riser. This provides a lower bound estimate of 11,000 BPD, but the 5,000 BPD flow rate remains as the “official” number.

May 27: The FRTG is divided into teams, using different methodologies to arrive at best estimates with available information. The "Plume Modeling Team" estimates a "lower bound" range of 12,000 to 25,000 BPD. The Mass Balance Team uses data from the Airborne Visible Infra Red Imaging Spectrometer (AVIRIS) to analyze thickness of oil on the water. This team provides a range of 12,000 to 19,000 BPD in what is described as “average rate,” not lower bound.

Collectively, the overlap provides the range of 12,000 to 19,000 BPD, and that is the figure provided to the National Incident Commander, Congress, and the public. While it is the intent of

the FRTG to express their estimate in terms of "lower bounds," the email from the Department of the Interior expresses the range as "lower and upper bounds."

May 31: The WHOI uses acoustic analysis to generate a flow rate estimate of 59,000 BPD. During this process, WHOI follows procedures so as to not interfere with ongoing source control efforts.

June 10: The Plume Team component of the FRTG obtains access to higher quality video data to conduct a more comprehensive study using a technique called Particle Image Velocimetry. The estimate by the Plume Team is "between 25,000 to 30,000 barrels per day, but could be as low as 20,000 barrels per day or as high as 40,000 barrels per day." Note: Analysis of the video taken from the single flow point immediately after the riser was cut yields flow rates in the range of 25,000 to 50,000 BPD, with the best estimates between 35,000 and 45,000, but these figures are not made public.

June 13: National Incident Commander states that the best figure is somewhere between the extremes of the range released on June 10.

June 15: FRTG revises estimate to 35,000 to 60,000 BPD. This range is derived from a collaborative effort with Secretary Chu and his team, and members of the FRTG. The estimate of Dr. Chu's team accounts for the high end of the range, and the estimate of the FRTG account for the low end.

June 20: Congressman Markey releases an internal BP document stating that worst case flow rate from the Macondo well was 100,000 BPD.

June 21: Following further testing, WHOI releases a best estimate of oil to gas ration of 43.7 percent oil. Previous estimates were 29 percent.

July 12: A three-bore capping stack is installed on Macondo well.

July 15: The choke valve on the capping stack is closed, and oil stops flowing into the Gulf of Mexico. Various agencies and BP monitor well integrity.

August 2: Using pressure measurements as the capping stack is being closed, three different teams from Department of Energy laboratories are able to provide the "most precise and accurate measurement of flow" from the Macondo well. A press release states that the flow rate at the outset of the spill was 62,000 BPD (+/- 10 percent), but had decreased to 53,000 BPD (+/- 10 percent) just prior to the well being capped on July 15. FRTG estimates that the total amount of oil released was 4,928,100 barrels (+/- 10 percent), before accounting for containment. FRTG estimates the WCD based on reservoir modeling was 118,000 BPD, which would decline over time due to reservoir depletion.

The following is a comparison of the volumes from the Exxon Valdez incident and the Deepwater Horizon incident:

- Exxon Valdez spill volume estimate: 257,000 bbls
- Exxon Valdez tanker design capacity: 1.48 million bbls
- Deepwater Horizon estimated discharge before accounting for containment equivalent to 19.175 times Exxon Valdez spill.
- Deepwater Horizon estimated discharge before accounting for containment equivalent to 3.36 times Exxon Valdez total cargo capacity.

There are many factors that may account for different flow rate estimates announced as the spill response progressed. These included changing oil/gas ratios, reservoir depletion, removal of partial restrictions (i.e., cutting off the bent riser), and various collection methods. However, it appears to the ISPR Team that the most significant factor was the lack of solid scientific data available to those trying to calculate the true flowing volume due to the extreme challenges of data collection at 5,000 feet below the surface. They were hampered by the lack of critical pressure and temperature data, accurate reservoir and oil properties, and various size restrictions within the well bore, blowout preventer, and lower marine riser package. It should be noted that the initial lowest of the lower bound estimates by the FRTG missed the final flow rate by a factor of four. Also, the final range (35,000 BPD to 60,000 BPD) reflected extremes indicating a wide variance between the scientific teams.

Following the release of the National Commission's Staff Working Paper #3 on the Deepwater Horizon oil spill quantification, BP wrote to the Commission challenging the final discharge figures developed by the DOE/FRTG process. BP states that because "key pieces of information remain unavailable," a reliable estimate of oil discharged cannot be developed, and that the August 2nd DOE/FRTG estimates are likely overstated by a significant amount.

Throughout the research phase of this report, the ISPR Team attempted to identify the impact of varying flow rate estimates on response operations and on the perception by the media and the public.

Impact on Response

The ISPR Team interviewed key players in all aspects of the response. Without exception, the ISPR Team was told that there was no impact on response operations as a result of low and ever-changing flow rates. However, these response operations referred to traditional on-the-water activities, such as booming, skimming, burning, shoreline protection and cleaning, and the application of aerial dispersants. While perceived shortages of resources discussed in other sections may have occurred, the shortage of cleanup and protection resources does not appear to be a result of underestimating the amount of oil emanating from the well.

However, there are three response activities that may have been impacted by low flow rate estimates and affected the overall response—the application of sufficient subsea dispersants at the source, providing sufficient storage or production capacity at the well site, and attempting to conduct a source intervention commonly referred to as "top kill."

1. Subsea Dispersants

On May 14, the use of subsea dispersants was authorized by EPA and the authorization extended for the duration of spill response activities until the well was secured. Subsea dispersants were used continually, except for the period when the riser was cut. The desirable dispersant-to-oil ratio (DOR) was 1:20 based on the best flow rate information available at that time. The maximum rate of dispersant injection was 20 gallons per minute, on the assumption that the flow rate was 13,700 BPD. Typical dispersant injection amounts were only 8 to 10 gallons per minute, based on a flow rate of around 6,200 BPD. Since the ultimate "official" discharge rate was almost 10 times the original flow rate estimate, responders were unable to achieve the desired DOR for subsea application. The ISPR Team notes, however, that there was very close attention by EPA as to the volume of dispersants being used. It is not certain that higher volumes of

subsea dispersants would have been authorized, even if higher (more accurate) flow rate estimates were available to responders.

2. Sufficient Production or Storage Capacity

To best understand the issue of storage capacity and production on scene, it is necessary to review the correspondence between RADM James Watson, FOSC, and Mr. Doug Suttles, Chief Operating Officer, BP America, Inc. At the time of this exchange, the "official" flow rate was still 12,000 to 19,000 BPD, although there was ongoing work by the FRTG using higher quality video data. A new flow rate estimate was released by the FRTG during the course of this series of letters.

June 8, 2010: Letter from RADM Watson to Mr. Suttles:

"…it is imperative that you put equipment, systems and processes in place to ensure that the remaining oil and gas flowing can be recovered… ."

"Based upon the foregoing, and in my capacity as the Federal On-Scene Coordinator, I am instructing BP to establish systems capable of safely collecting the oil and gas from the Macondo well."

June 9, 2010: Reply to RADM Watson's letter from Mr. Suttles setting a plan for building additional capacity for containment of oil from the Deepwater Horizon incident. The plan is described in two phases:

"In summary:

- The combination of Elements 1 and 2 by Mid June results in a capacity of 20-28,000 barrels of oil per day;
- The combination of Elements 1, 2, and 3 by mid July results in a capacity of 25-38,000 barrels of oil per day."

Mr. Suttles finishes the letter: "The systems outlined here are designed based on the current best independent assessment of flow from the Flow Rate Technical Group. We will continue to adapt our plans as more is learned about the flow rate from the well."

June 11, 2010: From RADM Watson to Mr. Suttles:

"You have provided information indicating that the Enterprise/top hat system is capable of collecting an amount consistent with previous flow rate estimates. Because those estimates have now been revised and estimate a substantially higher flow of oil from the Macado (sic) 252 well, it is clear that additional capacity is needed."

June 13, 2010: From Mr. Suttles to RADM Watson:

"In response to your letter received on 11 June, as well as the updated flow rate estimates provided by the Flow Rate Technical Group, the following sets out the plans for building additional capacity and redundancy for the containment of oil from the Deepwater Horizon oil spill."

Mr. Suttles finishes his letter with a cautionary note: "In summary, we believe this plan is responsive to your order. However, a number of challenges are present, and we cannot assure compliance with your instruction that "complete collection rates" be achieved throughout."

He provides five points in support of this statement. One of them was: "Third, whether the system has appropriate redundancies to maintain complete collection will also depend on the actual flow rate. The systems outlined here are designed based on the current best independent assessment from the FRTG. We will continue to adapt our plans as more is learned about the flow rate from the well."

3. Top Kill

The Top Kill effort began on May 26 and ended on May 28. The "official" flow rate throughout the Top Kill preparation and at the beginning of the Top Kill operation was 5,000 BPD. Information gained through the Coast Guard's Preparedness Review process indicated that engineers involved in the Top Kill attempt felt that the effort would fail if the flow rate were above 13,000 BPD. One can only speculate at this time whether or not the Top Kill attempt would have been undertaken had more accurate flow rate information been available to those working on the source control issue.

Perception by the Media and the Public

The issue of flow rate from the Macondo well received constant press coverage, and saturated both print and electronic media for several months. Some traditional media outlets suggested that the flow rates were intentionally "low-balled," while others suggested that the responders really did not know what the actual flow rate was, and as a result, were not effectively responding to the Nation's largest environmental disaster. While the ISPR Team found no evidence that anyone was intentionally trying to underestimate the flow rate, there is no doubt that the ever-changing flow rate estimates had an impact on the public's perception of the response. While thousands of articles appeared in the print media nationwide, the blogosphere was energized with comments by those disapproving of the Government's actions in response to the Deepwater Horizon incident. The following excerpts from two representative articles best capture the media's view of the ever-changing flow rates:

- *The Washington Post, June 15, 2010:*

  > "The official estimate of the flow rate from the leaking gulf oil well has surged again, with government officials announcing Tuesday that 35,000 to 60,000 barrels (1.47 million to 2.52 million gallons) of oil a day are now gushing from the reservoir deep beneath the gulf."
  >
  > "The dramatic increase in the estimated flow rate raises the question of whether BP and the government were fully prepared to cope with the hydrocarbons spewing up from the gulf floor."
  >
  > "The rising estimate has become a central feature of the oil spill narrative. Originally the government pegged the spill at 1,000 barrels a day, then soon raised that to 5,000 barrels, then 12,000 to 19,000 barrels, and then, just last week to 20,000 to 40,000 barrels (840,000 to 1.68 million gallons)."

- *The Los Angeles Times, October 7, 2010:*

  > "The Obama administration consistently low-balled its estimates of how much oil was spilling into the Gulf of Mexico after a rig explosion and offered rosy assessments of its impact after BP's well was finally capped, independent investigators said in a bluntly critical report Wednesday."

The repeated underestimation of what became the biggest offshore oil spill in U.S. history contributed to public skepticism about the Administration's response, the Government-commissioned report said.

> "By initially underestimating the amount of oil flow and then, at the end of the summer, appearing to underestimate the amount of oil remaining in the gulf, the federal government created the impression that it was either not fully competent to handle the spill or not fully candid with the American people about the scope of the problem… ."

Lessons Learned:

- Where response activities are scaled to the amount of oil discharged, accurate oil estimates are critical in the very first phases of response operations.
- The ability to quantify the flow rate was critical to response and containment decisions. The establishment of the FRTG was critical to providing a scientifically based estimate of the quantity; however the FRTG's early estimates ultimately proved to be low, even after various methods were used to quantify flow rates.
- The failure to use the WCD flow rate contained in BP's regional oil spill response plan to make initial response decisions, including choice of well containment options, and the failure to consider the WCD flow rate in the ACP adversely affected decisionmaking.
- The upper and lower estimates of flow rate provided by the FRTG were not well understood by the response organization or articulated properly to the public.
- Failure to acknowledge potential WCD volumes and flow rates eroded public confidence in the response.

Recommendations:

1. The Coast Guard should amend its Incident Management Handbook to provide for a "Flow Rate Technical Group" or its equivalent comprised of appropriate members of the scientific or technical community to be established as quickly as possible following an uncontrolled source event, or other event as appropriate. Depending on the size and complexity of the event, this group should be established at the ICP, UAC, or National Incident Command level as appropriate.
2. The Coast Guard should empanel an outside scientific group (such as the National Science Foundation) to develop protocols and identify necessary technology to aid quantification during an oil spill response. These protocols must be able to address improved subsea detection capability, and express the response quantification capability and limitations.
3. The Coast Guard should ensure that publicly released flow rate estimates contain the potential WCD spill volume associated with the event.
4. The Coast Guard should ensure that public affairs policy dictates that information provided to the media on flow rate is based only on fact and not conjecture. In the absence of factual information, public affairs policy should ensure that information providers acknowledge the uncertainty and efforts to obtain reliable information.

5. Initial response to future uncontrolled spill events should be based on the predetermined WCD estimate used in the oil spill response plan until an accurate and verifiable flow rate is determined.

I.7 USE OF DISPERSANTS

Observations:

- Prior to the Deepwater Horizon incident, Regional Response Team (RRT) VI had pre-authorized the use of dispersants for oil spill response operations for its area of responsibility. This pre-authorization covers the use of any dispersant on the National Product Schedule and may be used in waters greater than 10 meters deep and at least 3 miles from shore. RRT IV has the same general pre-authorization for dispersant use, but excludes certain geographic areas from dispersant use.
- The pre-authorizations for both RRTs did not address any limit on the volume of dispersants that might be used nor did they consider the potential use of subsea injection of dispersants.
- Prior to the incident, the Environmental Protection Agency (EPA), Department of the Interior (DOI), Department of Commerce (DOC) and the affected States concurred with the pre-authorizations established by the RRTs.
- A considerable amount of science, research, and documentation has been conducted on dispersants over the last 30 years. However, this information was not provided to Senior Federal officials or the public during the response to the Deepwater Horizon incident. This information, mostly presented in scientific terms, is not easily available from a single source.
- Dispersants listed on the National Products Schedule were used extensively to enhance the natural biodegradation of the oil during the response and to control hydrocarbon vapors at the surface above the release site.
- Dispersants were effective on surface oil to reduce shoreline impacts and provide safety for response workers on the surface fleet.
- The use of dispersants for this incident was conducted in accordance with the RRT VI Federal On-Scene Coordinator (FOSC) Dispersant Pre-Approval Guidelines and Checklist.
- A monitoring program for the effectiveness of surface-applied dispersants began in tandem with their application. Special Monitoring of Applied Response Technologies (SMART) protocols were implemented in accordance with prescribed procedures. Three tiers of monitoring occurred—visual, direct detection with fluorometry, and analytical confirmation.
- A subsea dispersed oil monitoring program was developed during the incident because existing monitoring protocols were not designed for subsurface dispersant application. A Subsea Monitoring Unit was established at the Unified Area Command (UAC) to implement this program.
- Even though pre-authorization of dispersant use was provided by RRT VI and implemented by the FOSC, public perception was that this response tool was merely adding another toxic substance to the environment. This perception, expressed by both the media and elected

officials, as well as the unprecedented volume of dispersants used, appear to have caused the Federal Government to intervene and impose control protocols for the use of dispersants for the remainder of the response.

- Subpart J of the National Contingency Plan (NCP), which provides the testing regime for dispersants, was criticized because test protocols did not include chronic testing, testing of indigenous species, or take into account specific oil types in combination with specific dispersant types and specific water bodies.
- Sampling indicated high dispersant efficacy and low dispersant and dispersed oil toxicity. However, the long-term environmental effects of dispersed oil in the deep sea are unknown.
- Re-evaluation and testing directed by EPA in consultation with the National Incident Commander created delays in oil dispersion operations that may have allowed more oil to impact inshore areas. However, the volume of dispersants being used, the unique application of dispersants at the well head, concerns over monitoring programs and the adequacy of the testing regime under the NCP Product Schedule, justified additional testing which served to ameliorate these concerns.
- The FOSC appropriately retained the authority to approve dispersants as a safety tool for controlling volatile organic compounds (VOCs) at the surface above the release site.
- Initially senior Federal officials and others attempting to address media inquiries had little or no knowledge or experience about the use of dispersants as a key response tool and were only partially educated on the benefits, risks, and efficiencies of dispersants.
- The volume of dispersants and the novel application at the wellhead, neither of which were anticipated in the RRT VI pre-authorization, caused confusion among decision makers as to authorities, and chain of command regarding decisions that fall outside established doctrine.

Discussion:

Dispersants are a response tool that uses chemical action to diffuse oil into the water column. Dispersants are used to reduce the impact of oil on shorelines, to reduce the impact on birds and mammals on the water surface, and to promote the biodegradation of oil in the water column.

The NCP outlines the process and procedures for use of dispersants and other chemical response agents. Use of dispersants and other chemical agents for oil spill response is based on meeting certain testing requirements for toxicity, efficacy, and effectiveness. Dispersants and other chemical agents successfully meeting the standards are listed in accordance with Subpart J of the NCP. A dispersant may not be used if it is not listed on the NCP Product Schedule.

There is currently no single comprehensive national policy for dispersant use. Each RRT is allowed to make the determination as to whether dispersants should be “pre-authorized,” including the locations and conditions under which dispersants may be used. Some RRTs have established robust pre-authorization protocols for dispersants, while others do not pre-authorize dispersant use, leaving dispersant use decisions to be made at the time of an incident.

If a pre-authorization protocol is established by an RRT, the FOSC is vested with the authority to approve the use of the dispersants, subject to the conditions established by the pre-authorization. If a pre-authorization is not in place, the FOSC must gain approval from the EPA and the affected State and consult with the DOC and the DOI prior to the use of dispersants.

The decision to use dispersants is based on the concept of "net environmental benefit." Dispersant application rates, meteorology, sea states, environmentally sensitive areas, efficacy, fisheries, water quality, and numerous other factors are considered in determining if a net environmental benefit exists. Ideally, these determinations are made during planning for oil spill response. In the past, the Coast Guard has used a Consensus Ecological Risk Assessment (CERA) to determine net environmental benefit.

A recent change to Federal regulations requires that vessel response plan holders provide for the use of dispersants when they are operating in areas where dispersant use has been pre-authorized.

When the decision is made to use dispersants, an Oil Spill Removal Organization (OSRO) or other specialized contractor carries out application. Dispersant effectiveness is monitored by Federal agencies using SMART protocols, including visual observation with on-water teams conducting real-time, water column monitoring.

Prior to the Deepwater Horizon incident, RRT VI had pre-authorized use of dispersants for oil spill response. This pre-authorization covers the use of any dispersant on the NCP Product Schedule and its use in waters deeper than 10 meters and at least 3 miles from shore.

Under the terms of the RRT VI dispersant pre-authorization protocols, the FOSC is required to notify the RRT of an intent to initiate dispersant operations as soon as practicable and to conduct a test application. If the test application is successful and operational results are positive, no further RRT approval is required for operational use during the incident. The procedures required for dispersant use decisions were followed during this incident.

The RRT VI dispersant pre-authorization includes both aerial and vessel application, but does not address the potential for use in a subsea application. The pre-approval protocols do not establish a limit on the volume of dispersants that may be used. An expedited approval process for use of dispersants that may fall outside the parameters of pre-authorization is also provided by RRT VI.

Even though pre-authorization of dispersant use was approved by RRT VI and implemented by the FOSC, over time, several concerns developed. These concerns involved the increasing volume of dispersants being used, the extended duration of dispersant application, the novel use of subsea injection of dispersants at the wellhead, and the potential toxicity of both the dispersants and the dispersed oil. These concerns caused the EPA to question the continued use of dispersants. Ultimately, the EPA issued Directives establishing limitations for surface and subsurface applications, and additional toxicity testing was conducted. A dispersant use plan was required from BP that required them to develop a means of determining subsea dispersant effectiveness, a robust sampling and monitoring program to track dispersed oil in the water column, a method to assess toxicity, and operational procedures for subsea injection. This did not affect the existing authority of the FOSC to use dispersants when deemed necessary to protect response workers from VOCs in the vicinity of the release.

Approximately 1 million gallons of dispersants were used on the surface and 770,000 gallons were used at the wellhead during this incident. This represented an unprecedented amount of dispersants used in an oil spill response.

Aerial application of dispersants required specialized aircraft and trained observers, and challenged both logistics and communications systems. Fixed wing aircraft were most appropriate due to the distances offshore. Specialized aircraft equipped with GPS tracking capabilities and calibrated spray systems were employed. Extensive coordination was required between field units and the Operations Section in the Houma Incident Command Post to eliminate overlap among surface skimming operations, in situ burning, or well site/source control efforts. Because of the coordinated operation and aircraft monitoring, the response organization was able to refute reports of people, boats, and homes being sprayed with dispersants.

Despite the successful application of subsea dispersants in this incident, neither the Government nor industry was fully prepared to address critical issues of the fate and effect of dispersants introduced at great ocean depths. There were no operational protocols or scientific information available to assist decision makers in using this response option.

Despite many years of experience in the use of dispersants, the lack of current science regarding the fate and effect of dispersed oil and its toxicity hindered the ability of responders and agency officials to adequately address these public concerns. Notwithstanding these concerns, the use of dispersants in this incident was largely successful in limiting the amount of oil that reached sensitive shoreline environments and promoting worker safety near the well site.

However, the total impact of dispersed oil from this incident remains unclear. For several reasons, the Deepwater Horizon incident will serve as a catalyst to drive further toxicity testing and updating of test protocols. It will also encourage further evaluation of the effectiveness of subsea dispersant use, promote the expanded use of ecological risk assessments for determining net environmental benefits of dispersant use, and trigger more periodic reviews of the pre-authorization of the use of dispersants as a viable oil spill response option.

Lessons Learned:

- The volume of dispersants used and their novel application at the wellhead needs to be addressed in RRT pre-authorizations, when appropriate, to assist in avoiding controversy in the future.
- Pre-authorization of dispersant use is critical to rapid deployment of this spill countermeasure. Rapid deployment of dispersant resources is, in turn, critical to the successful use of dispersants.
- Training, field exercises, and field experience are necessary to maintain proficiency of spotters, logistical and operational coordinators, pilots, and SMART teams.
- SMART monitoring is a suitable protocol to evaluate dispersant effectiveness. However, its application in an offshore environment, including coordination with spray aircraft, remains a challenge. The new fluorometer was successful.
- Aircraft are superior to vessels as platforms to locate suitable patches of oil for dispersant application aircraft.

- The mix of aircraft (e.g., BT-67, DC-3, King Air, C-130) used during the Deepwater Horizon incident provided a good complement of capabilities to cover various sizes of slicks at various distances from shore.
- Many promising technologies to determine oil spill thickness are available, but all have issues of timeliness, coverage area, or sufficient detail to adequately support dispersant operations.
- Recent upgrades and investments by industry in dispersant application equipment and training enhanced the effectiveness of dispersants for the Deepwater Horizon incident.
- Complex, large-scale dispersant operations require a cooperative partnership among industry, OSROs, and Government; e.g., United States Air Force, Coast Guard.
- Subsea dispersant application proved to be effective; however, the conditions under which it can be used and the volume of dispersants required need to be further studied.
- In areas where subsea dispersant application may be considered, pre-authorizations by RRTs need to specify the method and volumes that may be used.
- In the absence of pre-authorization subsea applications, EPA Directives provided controls, but also posed problems for meeting daily operational objectives.
- The environmental and economic tradeoffs between offshore and inshore and shoreline impacts need to be understood and considered when developing pre-authorization plans.
- There needs to be a rigorous sampling and monitoring program if dispersants are applied in subsea environments.
- The lack of current toxicity data, outdated test protocols, and ineffective risk messaging on dispersants prevented the response organization from conveying to the public the risks associated with dispersant use and its effectiveness in an offshore environment.
- RRTs need to continually review and update dispersant policies for their area of responsibility (AOR) to ensure they can make informed decisions regarding the pre-authorized use of dispersants.

Recommendations:

1. The Coast Guard should request that the National Academy of Sciences update their 2005 study “Oil Spill Dispersants: Efficacy and Effects” on the application of dispersants in light of lessons learned from the Deepwater Horizon incident, including a determination of the effectiveness and net environmental benefits of subsea dispersant application.
2. The Coast Guard should request that the EPA update Subpart J of the NCP to address chronic testing, testing of indigenous species, and testing of specific oil types in combination with specific dispersant types with specific water bodies and set appropriate temporal, spatial, and volumetric standards.
3. The Coast Guard should request that the National Response Team (NRT) provide national guidance on pre-authorizations for dispersant use, including the potential for subsea dispersant use, application methods, volume limitations, and an expedited approval process within the Incident Command System
4. The Coast Guard and EPA should clarify NCP provisions regarding Federal Agency roles and responsibilities in using dispersants as a response option.

5. In areas where dispersants are pre-authorized, the Coast Guard should require plan holders to include use of dispersants as a response option, and include the necessary resources to detect oil and conduct dispersant operations using personnel trained and qualified in the application of dispersants.
6. The Coast Guard should engage EPA and the National Oceanic and Atmospheric Administration (NOAA) to continue to enhance SMART monitoring technologies and protocols in offshore environments.
7. The Coast Guard should engage EPA and NOAA to undertake more research and development to better determine oil slick thickness.
8. The Coast Guard should seek ways to encourage additional investments in dispersant application equipment and training by industry.
9. The Coast Guard should engage NOAA, and other agencies as appropriate, to develop programs to monitor and track large dispersed oil plumes.
10. The Coast Guard should fully fund and use the CERA process to inform RRTs of the environmental and economic tradeoffs of dispersant use.
11. The Coast Guard should request that the NRT develop a comprehensive system for educating the public and senior officials on dispersants as a response tool, and act as a clearinghouse for new or updated dispersant science and technology.
12. The Coast Guard should ensure that response training course curricula include the use of dispersants as a response tool, including the potential net environmental benefits and the current state of science regarding dispersants.
13. The Coast Guard should ensure that training and exercise programs include key potential participants (e.g., OSROs, industry, Coast Guard, EPA, and Department of Defense components) in dispersant operations including monitoring in the offshore environment to improve performance of spotters, pilots, aircraft spray systems, logistics, communication, and coordination.
14. The Coast Guard should request that the NRT perform an intensive analysis of all aspects of dispersant use during the Deepwater Horizon incident. This analysis would be used to develop national standards and guidelines that can be used by RRTs to update the dispersant guidelines in their AOR.

I.8 USE OF IN SITU BURNING

Observations:

- In Situ Burning (ISB) was carried out as part of the Deepwater Horizon incident response operations in accordance with pre-arranged plans, policies, and guidance.
- ISB equipment locations for the area were identified in Area Contingency Plans (ACPs) but were somewhat inconsistent.
- The amount of ISB equipment located in the Gulf was insufficient for this incident and additional equipment was required to be manufactured at the time of the incident or brought in from other areas.
- Specialized Monitoring of Applied Research Technology protocols were employed in accordance with procedures established in ACPs and the Region VI Regional Integrated Contingency Plan.
- The Environmental Protection Agency (EPA) provided additional air quality monitoring in accordance with their prescribed procedures.
- ISB proved to be an effective tool for removing large volumes of oil from the water's surface, preventing impact to environmentally and economically sensitive areas.

Discussion:

ISB has been recognized for many years as a potentially effective way to eliminate large quantities of spilled oil under appropriate conditions. ISB has been tested and used during spills since 1967. The technology for using ISB, including containing, igniting, and controlling spilled oil, is well established. The scale and success of ISB operations during the Deepwater Horizon incident demonstrated the capability of this important response tool.

The Federal On-Scene Coordinator (FOSC) saw an immediate need to use ISB for this incident, but recognized that this would be the first time that large-scale burning would be used operationally for an oil spill in the United States. The FOSC quickly approved the request from BP to conduct ISB, which led to the resourcing of personnel and vessels within 48 hours. The ACP and Region VI ISB Plan were consulted for procedures and locations of ISB equipment as well as for the names of specialists who could advise the Unified Command (UC) on the operational procedures for ISB use. (Region IV Regional Response Team (RRT) also has an ISB Plan that is similar to that of Region VI, but since burning was conducted only in Region VI, this paper focuses on the Region VI Plan.) The Region VI RRT was consulted as provided for in the relevant ACPs, the Region VI ISB Plan, and the Eighth Coast Guard District protocol. An ISB Branch was established within the Operations Section of the Houma ICP to monitor the effectiveness of burning operations, and ISB was aggressively used when conditions were safe and conducive to its effective implementation.

The RRT VI ISB Plan is robust and allows the FOSC to approve ISB seaward of three nautical miles of the coasts of Louisiana and Texas without further consultation or approval, with the

exception of certain excluded offshore areas that are identified in the Plan. The Plan also allows ISB to be employed inshore of three nautical miles, but specific approval is required from the State agency having jurisdiction over air quality under the Clean Air Act. No burns were reported to have been conducted inside three nautical miles of the coast.

The RRT VI ISB Plan provides pre-approval in accordance with the National Contingency Plan (NCP). The Plan provides for ISB to be used as a first response option for spills occurring greater than three nautical miles offshore, however, the plan does note that ISB is intended to augment, not replace, other spill response methods. The Plan specifies air monitoring for particulates that are less than 10 microns (PM-10) in size, with a concentration of 150 ug/m3 or more of these particulates as the upper limit of allowable airborne concentration to ensure adequate protection of public health. ISB conducted within three nautical miles of populations must be monitored and meet this concentration standard to protect human health. Worker safety and health in terms of particulate or heat exposure are also addressed as a part of the RRT VI ISB Plan.

Burn agents are sometimes used to facilitate and enhance the effectiveness of ISB. They are defined by the NCP as those additives that, through physical or chemical means, improve the combustibility of the materials to which they are applied. Their acceptability is determined by the National Products Schedule, which is maintained by EPA. Neither the RRT VI ISB Plan nor the BP Oil Spill Response Plan (OSRP) identifies burning agents for use in ISB applications.

Under the NCP, pre-authorization for burning is only required if burning agents are employed; however, other statutes, such as the Clean Air Act, apply as well. As a result, many RRTs have undertaken to establish pre-authorization protocols to assist FOSCs in determining if ISB is a viable oil spill response tool for their area of responsibility (AOR) and under what conditions. Further, burning agents cannot be used unless they are listed on the National Product Schedule. However, none are currently listed on the National Product Schedule or are known to be commercially available.

The RRT VI ISB Plan lists quantities of fire booms available from the Texas General Land Office as well as fire booms located in Alaska. The BP OSRP catalogs quantities of fire booms in Louisiana and in Florida, in addition to fire booms available from the Marine Spill Response Corporation (MSRC) “for purchase” from unspecified locations. Additionally, the Region IV ISB Plan lists slightly different quantities of fire booms from similar locations as those in the Region VI ISB Plan. Fortunately, the diversity of ISB equipment inventory did not appear to affect the effectiveness of the ISB operations for this incident. More than 23,000 feet of fire boom were ultimately used during this response, involving five different boom types, far in excess of that which was in stock in the Gulf, but made available by cascading the equipment to the incident.

The use of ISB for this incident, coupled with dispersant applications, significantly reduced the amount of oil that might otherwise have impacted near-shore habitats and environmentally sensitive areas (ESAs). Of the estimated 206 million gallons reportedly released, approximately 5 percent (10 million gallons) was reported to have been removed by ISB operations. In comparison, mechanical recovery removed approximately 3 percent (6 million gallons) and approximately 8 percent (16 million gallons) was dispersed. Some residual oil remained following burn operations and efforts to recover it were unsuccessful. The amount of residual oil is unknown.

There were a total of 411 burns initiated during the Deepwater Horizon incident, of which 376 were determined to have burned a significant quantity of oil. The longest duration burn lasted for more than 11 hours, and there was some limited night burning. Sixteen ISB operations were conducted on June 18 alone, accounting for the removal of approximately 2.5 million gallons of oil. The typical "window of opportunity" for the use of ISB was significantly expanded in this response due to the continual renewal of fresh oil from the well.

Two ISB Task Forces were established for the operation, consisting of a command and control vessel, a fire boom supply vessel, safety and ignition teams, and aerial spotters. Hand-held igniters were used for ignition; no "burn agents" (surface collecting agents or demulsifiers) were used for these burns. Site safety plans were developed for each unit and air quality was monitored with portable gas detectors to ensure worker safety. Additionally, EPA monitored air quality in accordance with their prescribed procedures. A protocol was developed to standardize estimates of oil burned.

Spotter aircraft were used to direct ISB operations to the heaviest concentrations of oil. Wildlife monitoring, including the use of qualified turtle observers, was conducted.

Vessels of Opportunity (VOOs) were provided for in the Region VI ISB Plan and were utilized extensively during the Deepwater Horizon incident. Additional training was required for crews of VOOs conducting ISB, and it was judged that use of such trained crews enhanced operations.

The ISB Application for the Deepwater Horizon incident indicates that ISB was to be conducted 40 miles offshore. Visual reports indicated that black smoke from burning operations dissipated less than three miles from the source of the burn. No impacts or visual opacity were reported in shoreline areas. Monitoring of air emissions exceeded what was necessary to establish safe air quality levels for exposed shoreline populations, which increased the complexity of the response by increasing the risks posed by additional response operations.

It was noted that some of the policy for ISB in various plans dates to as early as 1994 and, at least, needs to be revalidated or updated to include current doctrine regarding ISB. Additionally, equipment inventories need to be re-examined in light of the intensive and highly successful use and subsequent depletion of ISB equipment; most ISB equipment is designed for multiple use, but will not last indefinitely.

In March 2003, the Coast Guard Research and Development Center published a report titled "Oil Spill Response Offshore: In Situ Burn Operations Manual" intended to become the operational manual for ISB and the model for use by RRTs and Area Committees in developing ISB plans. The Coast Guard additionally published a Final Rule in August 2009 amending 33 CFR 154 and 155 regarding oil spill removal equipment requirements and alternative technologies for spill response, including ISB (74 FR 167). ISB was removed from the Final Rule following consideration of allowing credit for ISB equipment against mechanical recovery equipment. It was determined that ISB is operationally limited and the cost of the equipment is too high to require the capability nationally so the ISB offset was eliminated. The rule stated, however, that ISB pre-authorizations are sufficiently in place to provide incentives to Vessel and Facility

Response Plan holders to stockpile ISB equipment through oil spill removal organizations (OSROs), if it may be anticipated that such equipment will be useful. The rule also stated that ISB may be useful in continuous discharge situations such as an incident at "an oil production facility," but those facilities are not covered by the Final Rule. The Deepwater Horizon incident appears to have validated the anticipated effectiveness of ISB for continuous discharge situations.

This was the largest scale use of ISB in an oil spill and the extended operations provided the opportunity to establish detailed operational and tactical information for use in future spills.

Lessons Learned:

- ISB operations during the Deepwater Horizon incident demonstrated the capability of this important response tool.
- ISB can be very effective in an oil spill response when the conditions are supportive of the technology. ISB effectiveness generally decreases with the oil's weathering and/or emulsification, although ISB has been successfully used on a wide range of weathered oils. There was never an issue for the ISB Team to find fresh, burnable oil during this response.
- Incentives or regulatory requirements to increase the amount of ISB equipment need to be considered in order to make ISB a viable response tool.
- ISB guidelines are important for effective and timely use of ISB as a response tool, specifically when conditions are defined where the decision to use ISB is left to the FOSC. ISB guidelines also allow a transparent evaluation of the conditions and locations under which ISB may be used that includes not only consideration of the NCP but other regulations and statutes as well.
- ISB procedures and protocols need to be exercised by plan holders and OSROs to improve proficiency in its use. If VOOs are anticipated to be used, exercises need to include these resources as well.
- Monitoring for potential health effects of air pollutants from burning oil is necessary for the workers in the immediate area of ISB operations as well as for ISB operations within three nautical miles of shore. Offshore ISB operations may only require visual monitoring at locations away from burn sites to ensure that there is no long-range transport of particulate material.
- ISB effectiveness can currently only be determined by volume estimates based on experience. Additional means of quantifying effectiveness would assist future use of this response tool.
- Unburned oil or other residue from ISB operations should be recovered and accounted for when evaluating the effectiveness of ISB.
- The crews of VOOs can be effectively used for the ISB process after proper training on safety, oil properties, hazards/products of burning, and ISB booming operations.
- Offshore ISB operations require substantial support that needs to be factored into ISB planning in ACPs and OSRPs.
- Visually locating oil from a vessel is extremely difficult, requiring the use of spotter aircraft to direct vessels to the thickest oil.

- Required personal protective equipment levels were initially very restrictive, but were allowed to ease as experience with ISB and weather conditions allowed.

Recommendations:

1. Through the National Response Team, the Coast Guard should provide guidance to all RRTs indicating that they review and update ISB Guidelines in their AOR consistent with the lessons learned from the Deepwater Horizon incident. These guidelines should specify areas in which ISB cannot be used, where it can be used without further consultations (such as incidents occurring farther than a predetermined distance from the nearest land or other ESAs), and provide for expedited review and approval processes in other areas. For example, decisions on the use of ISB conducted without burning agents during incidents offshore or away from ESAs should be delegated to the FOSC without further consultation.
2. The Coast Guard should develop standardized applications for ISB used by plan holders and ensure that these applications are incorporated in Vessel or Facility Response Plans. In addition, check lists for FOSC approval of ISB applications should be developed and made available to RRTs and FOSCs for incorporation into Regional Contingency Plans and ACPs.
3. The Coast Guard should ensure that ISB equipment inventory, locations, and availability in the United States is made a part of the Response Resources Inventory (RRI) to ensure consistent reporting and recording of ISB equipment for use by Area Committees. Consideration should be given to expanding the inventory to include international capability as well.
4. The Coast Guard should require that all ACPs include ISB guidelines and plan for the utilization of ISB procedures when and where appropriate.
5. The Coast Guard should require that all Vessel Response Plans and Facility Response Plans identify ISB equipment, using the RRI, as well as personnel and resources needed to conduct ISB operations. These resources should include aviation assets for oil spotting and direction, wildlife control and monitoring, safety, air monitoring, and so forth. Plans should also include location and deployment times to deliver ISB equipment, removal capability of the identified ISB equipment, and the means to scale up the resources required to be able to quantify the contribution of this tool to meet a worst case scenario.
6. The Coast Guard should engage EPA and Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) to consider additional incentives to encourage the stockpiling of ISB equipment where ISB can be used and would be effective.
7. The Coast Guard should ensure that ISB equipment is regularly checked as part of the National Strike Force Coordination Center's Preparedness Assessment Visit or other inspection procedure or protocol.
8. The Coast Guard should ensure that deployment drills and exercises of ISB equipment are conducted as part of an OSRO drill and exercise program in areas where ISB is considered a significant tool for response.
9. The Coast Guard should adopt the final report by the Research and Development Center regarding ISB as an ISB Operations Manual and further develop a program to capture operational information and key lessons learned from the Deepwater Horizon incident and other tests and incidents involving ISB.

10. The Coast Guard should engage BOEMRE to initiate a study to determine an appropriate level of ISB equipment for responding to worst case spills and to determine the means of enhancing equipment stockpiles of ISB equipment.
11. The Coast Guard should engage EPA regarding the air-monitoring protocols for ISB. As necessary, these protocols should be re-evaluated based on the empirical evidence from the Deepwater Horizon incident and additional air quality studies conducted to ensure the level of monitoring is consistent with the risk posed by ISB, particularly in offshore areas.
12. The Coast Guard should work with the RRTs to ensure that their ISB decisionmaking process is based on current standards for particulate matter and that monitoring protocols accommodate predictive modeling and are based on current standards.
13. The Coast Guard should work to enhance research and development programs on ISB to develop more robust booming systems with greater oil encounter rates as well as to expand the weather/sea state of opportunity in which ISB can effectively be used and investigate the potential for enhancing burn operations with the use of herding agents and demulsifiers.
14. The Coast Guard should evaluate the performance of various fire boom designs capable of being used for ISB and look to improve technologies for water-cooled and reusable boom types.
15. The Coast Guard should support a research and development program to enhance aerial detection sensor capability to locate concentrations of oil necessary for ISB operations.

I.9 COMMON OPERATING PICTURE

Observation:

- Having accurate, timely, and relevant information is vital to operational and strategic decisionmaking. The Deepwater Horizon incident created an unprecedented need for information on a real-time basis.
- Barriers to synchronized, total domain awareness during the Deepwater Horizon incident included the:
  - Lack of agreement on what data needed to be tracked and transmitted;
  - Vast geography of the response area of operations;
  - Lack of availability of appropriate interoperable communications technology;
  - Limited ability to push real-time data, both vertically and laterally, throughout the response organization; and
  - Different computing standards.
- These barriers and others were eliminated or overcome using both organizational changes and the application of the latest in communications technology.
- The evolution of Deepwater Horizon knowledge management eventually provided for a strong COP, more effective communications throughout the response organization, and an efficient information flow that met the needs of both the response organization and senior officials.
- The Geographic Information System (GIS)-based Environmental Response Management Application (ERMA) was the platform ultimately chosen and used as the COP. It integrated and overlaid data (e.g., the oil spill's trajectory, fishery area closures, wildlife data, locations of oiled shoreline, and so forth) from the Coast Guard, Department of Homeland Security, the U.S. Fish and Wildlife Service, the Environmental Protection Agency, the National Aeronautics and Space Administration, U.S. Geological Survey, and the Gulf States into one, easily customized, interactive map. It also allowed near real-time tracking of requested, staged, deployed, and demobilized critical resources for air, water-borne, shore-based assets.
- The oil spill response organization established imbedded enterprise information collection teams that identified gaps in needed information. They built unified data collection solutions that supported a common field organization, and business processes to improve situational awareness and assist in daily operational decisionmaking. This data was geospatially enabled, so Incident Commanders (ICs) could geographically compare the need for critical resources like booms and skimmers with the quantity in use and in staging areas for potential deployment.
- The Homeland Security Information Network (HSIN) was critical for information management. HSIN was used by the National Incident Command (NIC) organization, Unified Area Command (UAC), and Incident Command Posts (ICPs) to post unclassified, yet

"For Official Use Only" and sensitive information, to facilitate information-sharing across the broad spectrum of response operations.

Discussion:

In the first few days and weeks of the Deepwater Horizon incident, twice daily conference calls between the UAC and ICPs and the Houma ICPs daily situation report were the best sources of information about response organization activities. During these initial stages of the Deepwater Horizon incident, the COP existed only in the form of fragmented bits of data spread across many incompatible systems. At one point, there were approximately 10 different GIS databases being used to track spill response information. Complicating the creation of a unified COP was the lack of bandwidth at the UAC. The UAC struggled to simply send emails and circulate notifications because of overwhelmed computer hardware. Eventually, a new server was installed that improved the IT backbone upon which a COP could be built.

Because of the pressure to provide information in real-time, several versions of a COP were developed independently at each ICP. In addition, private sector responders (e.g., BP, O'Brien's Response Management, and so forth) had their own COPs to track their internal resources. For more than a month, there was no single COP available. As a result, various agency leads for the COP worked together to create one COP for the entire Deepwater Horizon incident. The COP platform selected was NOAA's ERMA, also known by its public Web site, Geoplatform.gov. Other products were considered (e.g., HSIN's Integrated Common Analytical Viewer [iCAV], the Coast Guard's Enterprise GIS, National Geospatial-Intelligence Agency's [NGA's] Google Earth) prior to the selection of ERMA as the COP. These platforms were not selected because of their inability to share information with the public, primarily due to individual agency firewalls.

The NOAA ERMA application utilized user authentication to protect datasets deemed sensitive, while the GeoPlatform.gov site was a fully open public Web site. ERMA allowed the rapid dissemination of new data to the public, which helped improve the transparency of the response organization.

Once ERMA came online, the Unified Area Command (UAC) began to use it as a part of their daily briefings. It could show the current location of response assets and assist the ICs in making decisions on moving resources. The response organization also was able to use it to show elected officials where critical resources were deployed. The inclusion of NGA provided high-resolution imagery (unclassified), and enhanced tactical decisionmaking of critical resource movements on a real-time basis. Additionally, when ERMA was posted to a .gov Web site it became the go-to location for the general public to get information about the Deepwater Horizon incident (over two million hits in the first 2 days). ERMA was a breakthrough in how the entire response was coordinated and communicated.

The incompatibility of proprietary databases and software used by the private sector appeared to be a hindrance to developing a universal COP for the response organization. Integrating data from multiple, restricted sources slowed the development of a complete and an accurate COP.

Knowledge management includes tracking resources, maintaining a real-time COP, and responding to requests for information (RFIs) using near real-time reports created from authoritative repositories that contain the actual data entered about the plans, activities, and outcomes by field level response organizations. On May 23, 2010, the National Incident Commander, NIC organization, UAC, and local ICPs started using the HSIN NIC portal for posting briefings, agendas, situation updates, operational guides/Incident Action Plans, and logs. Anyone with authorization could log into HSIN and review the data. HSIN also contained an archival and organizational capability that worked well for the response organizations. Further, HSIN support teams were deployed to train and support on-scene personnel. Minimal training was required for new users to effectively navigate the HSIN NIC portal. Initially, there was a competing question about whether the NIC organization should use WebEOC® rather than HSIN, but the NIC organization found that HSIN worked best for their needs. Although WebEOC® was good for chats between counties and States, HSIN gave the NIC/UAC a broad capability of information management, archival information, and knowledge portals.

Lessons Learned:

- A fully operational COP tool, such as ERMA, that can be exercised and tested during the preparedness phase and fully brought to bear during an incident is needed prior to an incident. The lack of a COP for the first 2 weeks of the Deepwater Horizon incident quickly became both a tactical issue for the response organization and a strategic issue at the national level. ERMA was eventually successful as the COP. However, the lack of a COP for information sharing and response messaging at the beginning of the Deepwater Horizon incident negatively impacted overall situational awareness and led to repeated questions about the transparency of the response organization.
- There were deficiencies in all of the knowledge management systems used during the Deepwater Horizon incident, which contributed to the lack of overall situational awareness (both inside and outside the response organization) and the perceived lack of transparency of the response organization. Two main electronic systems were used (i.e., HSIN and WebEOC®) and both had significant limitations.
- A straightforward, clear report that captures all oil spill essential elements of information is needed in anticipation of an incident that can be used during an incident. The eventual UAC report (Response at a Glance) provided what was needed, but took too long to develop.
- The incompatibility of proprietary databases and software used by the private sector was a hindrance to the response organization. Integrating data from multiple, restricted sources slowed down the response organization's ability to have a complete and accurate COP.

Recommendations:

1. The Coast Guard should develop a report template that captures the oil spill response essential elements of information and other key metrics (based on best practices identified from the Response at a Glance, COP, and ICS 209 forms used during the Deepwater Horizon incident) to meet the information needs of key stakeholders during future responses.
2. The Coast Guard should revise its Incident Management Handbook to include appropriately sized information management and knowledge management structures

(similar to the RFI Unit used during the Deepwater Horizon incident) that would be implemented for a significant oil spill.

3. The Coast Guard should work to resolve compatibility problems between software programs and information technology systems that are used by the public and private sectors during oil spill response operations. The Coast Guard should require developers of these tools to ensure that their products are compatible.
4. The Coast Guard should build upon the successes achieved through the development of the COP systems used during the Deepwater Horizon incident. The Coast Guard should have a fully operational COP tool that will be available during drills, exercises, and actual events.
5. The Coast Guard should determine how the knowledge management systems used during the Deepwater Horizon incident (e.g., HSIN) can be improved to better meet the needs of an oil spill response organization during a future significant oil spill.

FOCUS AREA PART II: ORGANIZATION

II.1 CHARACTERISTICS AND QUALIFICATIONS OF AN EFFECTIVE CRISIS LEADER

Observations:

- The Deepwater Horizon incident provided a living laboratory for observing crisis leadership at all levels of the response organization, from elected officials and Agency representatives to the CEO of a multinational corporation.
- Crisis management experience or proven ability as a crisis leader is generally not a required qualification for elected or appointed political leaders, career Government officials, or corporate executives.
- The Deepwater Horizon incident placed people in crisis management roles; however, not all were able to demonstrate leadership in crisis as a core competency. The performance of crisis leaders during this incident was uneven at best. In some cases, perceived ineffective leadership led to loss of public confidence in the ability of Government and industry to manage the response to the spill.
- The National Incident Commander concept worked very well in this incident, and provides a model for pre-identifying individuals with the necessary crisis management skills to lead response efforts and effectively manage future national incidents.

Discussion:

Many Government Agencies and private corporations "grow" leaders from within. They also often bring in proven leaders from outside to provide new leadership and direction for the organization; however, the skills of organization and the ability to manage and lead are only baseline competencies when a crisis arises. The outcome of a crisis or the success of a response to the crisis is directly related to effective crisis leadership.

Some leaders are naturally suited for such a role, but often are not the ones who find themselves confronting a crisis or are not the ones placed in the position of leadership when the crisis occurs.

Leaders involved in crisis management may find themselves on national television, with little or no media training or experience for their leadership position. Crisis managers are required to make critical and binding decisions without the benefit of lengthy study or peer-reviewed advice. The crisis dictates the pace, tempo, and duration that drives the decisionmaking process. Leaders not trained and prepared to function effectively in a crisis can create an image of incompetence, chaos, or disorganization, even if the incident is being managed competently and effectively. In most cases, the leader in a crisis is the "face" of the organization he or she represents; in some cases it may be virtually the only time the public is aware of the organization. The reputation of that organization will largely be determined by the performance of the crisis leader.

The Deepwater Horizon incident provided opportunities to observe crisis leadership at all levels of the response organization. These observations and information gathered during the Coast

Guard's Preparedness Review revealed characteristics of good crisis leadership displayed during the Deepwater Horizon incident. These include:

- **Command Presence:** The ability to project an image of being in charge and able to effectively address the crisis. Individuals chosen to represent the whole of Government, the Coast Guard, or the responsible party (RP) must project command presence to the public and the media. This elusive but necessary quality will have a dramatic effect on the public's confidence in the entire response.
- **Authoritativeness:** The ability to speak with authority. This is best accomplished with sufficient command of detail to assure national leadership, the media, and the public that the leader is knowledgeable in all facets of the response.
- **Integrity:** The ability to be both transparent and truthful in all actions. There are many occasions in which information released may not show the organization in a favorable light, and the temptation is to withhold or script information to avoid criticism. Once a leader's integrity is attacked, that person's value to the organization is severely diminished, and the leader should be removed from the response effort. The organization will find itself doing damage control, and any information released in the future will be suspect.
- **Stamina:** The Deepwater Horizon incident became a protracted disaster response lasting months. Crisis leaders representing the RP remained in place throughout the response, with little or no rotation. Crisis leaders for the Coast Guard at the Federal On-Scene Coordinator (FOSC) level and below engaged in pre-planned rotation; the National Incident Commander did not. Rotation of crisis leaders at the highest levels is problematic for continuity of operations, and for the public's expectation of seeing one face and hearing one voice. For most of the response, the National Incident Commander filled that expectation. Crisis leaders at the highest levels should be prepared to manage from mobilization through demobilization phases of the response.
- **Strategic Thinking and Command of Detail:** The ability to think strategically and have command of detail. These traits complement each other, and allow the leader to speak authoritatively. The inability of a leader to project the image that he/she has command of "the big picture" erodes public confidence, and impacts subordinates in the response organization.
- **Stress Management:** The ability to function during periods of extreme stress. A crisis will most certainly bring high levels of stress during critical periods of the response. The Deepwater Horizon incident may be a benchmark for stress on the response organization from political and media pressure. At every level, the Coast Guard's Incident Specific Preparedness Review found extreme stress during this response. Those unable to function well under stress did not provide the best of their efforts to the response.
- **Decisiveness:** A willingness to act decisively even when provided with incomplete information. A crisis leader cannot be averse to risk. That is not to imply that decisions should be made without the best available information and advice; however, a crisis leader needs to make timely decisions, and the inability to do so will adversely impact the response. For example, other oil spills have shown that waiting even 1 day to apply dispersants may greatly change the outcome of the entire response. Crisis leaders are selected for their ability to assess risk, minimize that risk where possible, and decide among alternatives to achieve a

desired outcome. Crisis leaders continually monitor the effectiveness of their prior decisions in preparation of future direction.

- **Responsibility, Accountability, and Authority:** In prior Coast Guard oil spill responses, there are examples of FOSCs going to higher authority (usually a District Commander) before making critical decisions. While this may make for a good working relationship between superior and subordinate in a non-crisis mode, it is not the decisionmaking process set forth in the National Incident Management System (NIMS)/Incident Command System organization. In the selection of a crisis leader, there is implied trust that the person possesses the requisite skills to make rational decisions. If the crisis leader is given responsibility and is held accountable, he/she must have commensurate authority for decisionmaking and exercise that authority.
- **Enhanced Leadership Skills:** The crisis leader must possess leadership traits that allow him or her to transcend the pressures of a crisis and use those traits through the duration of the event. Skills such as multitasking, organizational development, analytical and communications skills (which include listening), the ability to delegate and leverage organizational flexibility is vital. At the higher levels, it is important to understand and be able to function within the political environment.
- **Ability to Inspire:** A skilled crisis leader is calm in the midst of chaos. A crisis leader has position power but is most effective leading through "personal power." Effective leaders inspire rather than intimidate subordinates and have the interpersonal skills to build a cohesive team able to work under stress toward achieving a mutual goal.

The review of the response to the Deepwater Horizon incident found that very few leaders at any level had all of these characteristics. Many had some but most did not have the training or experience necessary to develop these characteristics. Some should not have occupied crisis leadership positions.

Coast Guard District Commanders and Sector Commanders have many significant and ongoing responsibilities, including crisis management related to search and rescue, security, law enforcement, natural disasters, and oil spills. However, officers assigned to these positions are seldom selected for their crisis management skills. Further, the opportunities to train in crisis management or to hone leadership skills are limited. Experience in crisis management is largely a matter of geographic and temporal happenstance and not necessarily a planned progression to achieve competence in the discipline.

In this incident, due to its size and complexity, Sector Commanders and the District Commander were expected to temporarily "detach" from their respective commands to lead the response organization. This expectation is embedded in the National Contingency Plan but there is no empirical evidence that the District Commander and the Sector Commander are necessarily the best individuals within the Coast Guard to respond to large events such as the Deepwater Horizon incident. The Environmental Protection Agency and some in the oil industry have trained spill professionals who take over spill management responsibilities. The Coast Guard has the National Strike Force and the Public Information Assist Team, but does not have a cadre of trained FOSCs prepared to take over leadership responsibilities for a significant spill.

NIMS created an organizational element that was used during the Deepwater Horizon incident that could be utilized for catastrophic incidents other than catastrophic oil spills to enhance the management of those incidents. The NIMS concept of the Area Command, or Unified Area

Command establishes the means to relieve an on-scene incident commander (e.g., the FOSC for an oil pollution incident) of certain functions to allow the on-scene incident commander to focus on tactical operations and coordination. Using the Area Command concept for complex incidents that might not reach the level of a major national incident or a Spill of National Significance would allow the Coast Guard to pre-designate highly qualified and trained Area Commanders or Area On-Scene Coordinators to specific geographic areas. These Area Commanders (not to be confused with Coast Guard Area Commanders) could be directed by a District Commander to an incident and ensure that the public face of the Coast Guard early in the incident is an individual that exemplifies all the attributes of a crisis leader. In addition to the pre-designation of these Area Commanders, Area Command support staff, consistent with NIMS doctrine, could be pre-identified and trained as a team in a crisis management "watch, quarter, and station bill." Specialized training would be required, as would coordination with elected and appointed officials at the regional, State, and local levels. DHS could apply a similar concept at the national level for a cadre of National Incident Commanders and support staff.

During the response to the Deepwater Horizon disaster, the question was frequently raised by the public and media, "Who's in charge?" This incident was not the first time that question has been raised, and it provides insight into the public's expectation of the role of the Government in crises of this nature. Due to the size, complexity, and public impact of some events, there is a demand for a single authoritative figure who can, through his or her performance, best represent the interests of the response organization and effectively project the message of being in charge.

Lessons Learned:

Note: These lessons learned will focus on Coast Guard–related issues, but they are equally applicable to DHS and to other organizations in dealing with all significant hazards and domestic incidents.

- During crises similar to the size and scope of the Deepwater Horizon incident, the public expects there to be one authoritative figure who is "in charge" of the response to the incident.
- There is a need to have fully qualified leaders in place who are well trained and experienced in crisis management and who are ready to effectively and forcefully answer the "who's in charge" question when a significant national incident occurs.
- The National Incident Commander concept proved to be successful in dealing with the national-level concerns of the response, including presenting the public with the "face" of the response.
- Superb crisis leadership is essential for effective response to a major national domestic incident.
- The characteristics necessary for crisis leadership are well documented and identifiable.
- Leaders who are expected to perform as crisis managers need to be trained and experienced in crisis management, and should not be placed into such positions without applicable training.
- Many Federal, State, and local officials and industry executives do not have crisis leadership experience and training or are not temperamentally suited to the role of crisis manager during a significant oil spill incident.

- Early identification and training of potential crisis leaders will benefit the Coast Guard and the country.

Recommendations:

1. The Coast Guard should ensure that crisis management and communications training and skills are factors used to select Sector Commanders.
2. The Coast Guard should document and track crisis management training and experience for officers at all levels.
3. The Coast Guard should ensure that prospective Sector Commanders are required to attend the OSC Crisis Management Course at Training Center Yorktown prior to assignment.
4. The Coast Guard should develop an enhanced Crisis Management Training program at Training Center Yorktown separate from the current FOSC Crisis Management Course, which builds on the current course, but that focuses on crisis leadership, crisis decisionmaking, large-scale organizational development, intergovernmental relations, and crisis communications. Successful completion of this course should be a prerequisite to assignment to any position of responsibility that may entail managing a crisis.
5. The Coast Guard should develop a graduate program for crisis management utilizing existing programs, such as the National Preparedness Leadership Initiative at Harvard University and the Institute for Crisis, Disaster and Risk Management at The George Washington University, to enhance knowledge of all facets of crisis management at the junior officer level and create a new cadre of crisis management experts.
6. The Coast Guard should fully and aggressively adopt the application of the "Area Command" concept, articulated in NIMS, for all major incidents that pose a substantial threat to public health and welfare, not just oil spills.
7. The Coast Guard should select and train qualified crisis managers to act as Area Command or Area OSCs as needed due to an incident's size, complexity, or scope.
8. The Coast Guard should institutionalize the National Incident Commander concept through the pre-identification and selection of prospective National Incident Commanders based on their potential to perform the functions of a National Incident Commander during a national-level oil spill or other significant domestic incident.

II.2 ROLE OF THE SECRETARY OF HOMELAND SECURITY UNDER HSPD-5

Observation:

The DHS Secretary actively performed her role as the HSPD-5 Principal Federal Official (PFO) for domestic incident management during the Deepwater Horizon incident. She maintained overall responsibility for coordinating the Federal Government's resources in response to, and recovery from, this Spill of National Significance (SONS). Her role as the PFO was communicated and generally accepted throughout the Federal Agency response community, but created confusion among the public and the media, raising the question: "Who was in charge?" This was compounded somewhat by heavy involvement of the White House, Cabinet Secretaries, and Agency heads, and media appearances by the National Incident Commander, and senior members of the National Contingency Plan (NCP) response organization, including the responsible party (RP).

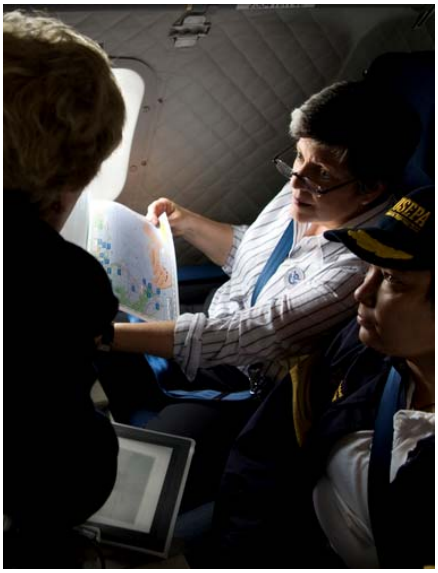
Discussion:

For oil spills in the coastal zone, the President of the United States delegates removal authority without abdication in Executive Order 12777, Section 3, FWPCA 311(c) to the DHS Secretary. HSPD-5, paragraph 4, establishes the DHS Secretary as the PFO and focal point regarding natural and man-made crises and emergency planning. Pursuant to HSPD-5, the DHS Secretary is always the PFO for domestic incidents. The amount of governance the DHS Secretary chooses to exercise is scalable to the scope of the event. From the first day of the Deepwater Horizon incident, the DHS Secretary exercised governance, without delegation, in coordination with the National Response Team (NRT) and U.S. Coast Guard Commandant (later, the National Incident Commander).

The NCP provides the response framework for an oil spill incident, and HSPD-5 provides the overarching guidance and leadership approach for all domestic incident management. The NCP, codified at 40 CFR 300, establishes a comprehensive, flexible, and proven national response capability that promotes coordination among Federal, State, tribal, and local governments, RPs, and other stakeholders. The prescribed response organization set forth in the NCP must work in concert with the DHS Secretary/PFO for domestic incident management to ensure unity of effort and an effective response.

During initial deliberations regarding the response to the Deepwater Horizon incident, DHS leadership believed that the oil spill, declared a SONS event, was an incident governed by the DHS Secretary's HSPD-5/PFO role. Specifically, Secretary Napolitano and Deputy Secretary Lute used the HSPD-5/PFO to focus on the "National Response," while they relied on the National Incident Commander and FOSC to run the NCP/oil spill response; i.e., source control, oil recovery, oil removal. The "National Response" refers to the major consequences of the Deepwater Horizon incident not generally covered under the NCP, including economic impacts that caused cascading economic effects across the region. The "National Response" also included recovery issues such as the setting up of Integrated Service Centers (ISCs) so there was

a single point of entry for assistance with regard to the claims process. As an example, ISCs were derived from Federal assistance authorities that are discretionary to the President and not required by the NCP.



In addition, the "National Response" included the daily White House Principals Committee and Deputies Committee meetings/conference calls with the Assistant to the President for Homeland Security and senior White House staff to coordinate national policy issues larger than the NCP, intergovernmental issues with Gulf State Governors and Parish/County officials, and to share situational awareness/coordinate activities among the myriad of Cabinet-level Agencies involved in this response.

After the National Incident Commander was designated, there was a lingering question regarding "who" was running the incident response—the DHS Secretary/PFO or the National Incident Commander? This confusion existed at all levels of Government (i.e., local, State, and Federal), and also included the media and the public. However, DHS officials believed that the overlap between HSPD-5/PFO and NRT roles/responsibilities was the proper exercise of each authority, and that the National Incident Commander did not usurp the DHS Secretary's role. They believed that the DHS Secretary's HSPD-5 PFO role dovetailed well with the National Incident Commander role, and there was no hesitation to name a National Incident Commander when the NCP authorities were understood. The separate yet distinct roles between the White House, DHS Secretary/PFO, National Incident Commander, National Incident Command (NIC) organization, and Unified Area Command (UAC)/Incident Command Posts (ICPs) could be visualized using a corporate model:

- The White House/Principals Committee/Deputies Committee as the Board of Directors;
- The DHS Secretary/PFO as the Chief Executive Officer;
- The National Incident Commander as the Chief Operating Officer; and,
- The UAC/ICPs as the corporate Senior Vice Presidents in the field running the response.

As a result, the DHS Secretary was able to maintain overall strategic control over all homeland security–related threats such counterterrorism, transportation security, borders, immigration, and natural disasters, while the National Incident Commander was able to answer the specific, daily incident needs regarding the oil spill for the White House, senior Federal officials, local government officials, and the media. During the height of the Deepwater Horizon incident, there was an attempted terrorist attack in Times Square, several natural disasters including major flooding and hurricanes affecting the country, immigration law debates, and continued Southwest border violence. The designation of a National Incident Commander allowed the DHS Secretary to maintain her focus on the entire spectrum of events as those events occurred, making delegation of her PFO authority unnecessary for the Deepwater Horizon response.

Lessons Learned:

- During the early stages of the Deepwater Horizon incident, it was unclear how the National Incident Commander's role would differ from the DHS Secretary's PFO role under HSPD-5. Over the course of the Deepwater Horizon incident, the PFO and the National Incident Commander appeared to have developed a complementary and mutually supportive relationship.
- White House and senior DHS staff were initially unfamiliar with the NCP response processes and their application to the Deepwater Horizon incident, which caused some confusion among senior leadership during the first few days of the response.
- Because of numerous other responsibilities, the DHS Secretary/PFO should have a designee (e.g., the National Incident Commander) whose sole focus is strategic level coordination during a major incident.
- The Secretary's HSPD-5 PFO role was recognized, accepted, and appreciated by the White House. However, the HSPD-5 role does not diminish the need for White House staff to participate in the decisionmaking process.

Recommendations:

1. The Coast Guard should work with DHS to formally reconcile the role of the DHS Secretary (under HSPD-5 authorities) and the National Incident Commander (under NCP authorities) during a SONS event. This includes:
    a. Articulating the option of delegating the DHS Secretary authority to an alternate for events of extended duration.
    b. Clarifying the roles and responsibilities of the PFO (e.g., food safety, public health, economic impacts, and critical infrastructure) and addressing areas of potential overlap with the National Incident Commander.
    c. Incorporating HSPD-5/PFO roles and responsibilities into the NCP.
    d. Clarifying the role of the DHS Secretary/PFO with regard to the NRT.
2. The Coast Guard should continue to provide clarification and instruction to senior officials and DHS staff regarding the NCP/National Response System processes.
3. The Coast Guard should recommend to DHS that future SONS exercises be elevated to National Level Exercise status in order to require participation by senior Federal officials. These exercises should include the participation of the PFO, a National Incident Commander, and the NIC organization.
4. DHS should consider the National Incident Commander concept as a model for pre-designating experienced crisis leaders for managing other large, protracted domestic incidents.

II.3 EXTERNAL COMMUNICATIONS

Observations:

- Prior to the Deepwater Horizon incident, the Coast Guard successfully employed the National Response Team (NRT) Joint Information Center (JIC) model as its crisis communications structure for hundreds of incidents, including Hurricane Katrina, the Haiti earthquake, and the Tintomara collision/oil spill on the Mississippi River.
- The Unified Area Command (UAC) JIC, and its subordinate JICs, were prohibited from releasing information or imagery without prior approval by the Department of Homeland Security (DHS) Office of Public Affairs (OPA).
- The decision by the White House and DHS to create a centralized National Response Framework (NRF) crisis communications construct negatively impacted the Coast Guard's establishment of a more decentralized JIC within the response organization.
- Several layers of review and approval by the White House and DHS prevented timely and effective crisis communications and hindered the Coast Guard's ability to meet National Contingency Plan requirements for keeping stakeholders informed about the status of the response.
- The National Incident Commander served as an effective spokesman for the response organization and "whole of government" effort during the incident. The National Incident Commander and the National Incident Command (NIC) organization assisted the UAC by responding to many of the information needs of elected officials and senior level Government officials.
- The Federal Government did not carry out an effective "whole of government" crisis communications plan for this incident, nor was it able to reconcile the differences in external affairs doctrine between the NRF and the NCP.
- The Coast Guard's public affairs program was understaffed during this incident, requiring the use of personnel in external communications positions who were untrained or under-trained in public affairs.

Discussion:

At the most intense phases of the response, public and media interest in the Deepwater Horizon incident often overwhelmed the response organization. Within the first couple days of the incident, the Federal On-Scene Coordinator (FOSC) requested the deployment of additional Coast Guard crisis communications specialists, including the Public Information Assist Team (PIAT) from the National Strike Force Coordination Center. JICs were established at Incident Command Post (ICP) Houma and ICP Mobile in accordance with procedures set forth in the NCP, the Coast Guard's Incident Management Handbook (IMH), and the NRT's JIC model. When the UAC was established, a UAC JIC was also established using NCP, IMH, and NRT JIC procedures. For a few days, the JICs worked well as a cohesive group and supported the FOSC

through coordination of press briefings, preparation of press releases, responses to media inquiries, and other releases of information from the response organization. However, a couple of major factors adversely impacted the ability of the Coast Guard to manage a proactive and effective public affairs campaign.

First, the Coast Guard did not have enough senior personnel with the requisite crisis communications training and/or experience to effectively manage the public affairs campaign for an incident of this magnitude. The Coast Guard PIAT was activated early on during the incident. However, because of their limited size and limited seniority, their effectiveness was also limited for an incident of such size. The trained and qualified public affairs specialists deployed were quickly overwhelmed by the tremendous demand for information, inefficient communications, as well as external political influence on the response organization.

Over the past decade, the Coast Guard has reduced its number of career public affairs specialists, in both the officer and enlisted ranks. In addition, there are only a handful of senior officers with significant public affairs expertise. Flag officers and operational commanders receive minimal public affairs training disproportionate to the amount of time they could potentially spend conducting media interviews, press briefings, or other public relations activities during their tours of duty. In recent years, several incidents involving the Coast Guard as a lead agency have received national media attention, including Hurricane Katrina, the Potomac River security exercise, and the Haiti earthquake. In all these situations, the Coast Guard has required public affairs expertise among those in command positions to effectively communicate the Coast Guard's role in the response effort. Although the Coast Guard managed its crisis communications incredibly well during these events, the scope and intensity of the Deepwater Horizon incident stretched its finite public affairs component well beyond its capacity.

Secondly, as the scope of the incident expanded, the NIC organization, UAC, and ICPs grew in size, and crisis communications became increasingly complex and burdensome. After the declaration of a Spill of National Significance (SONS) event, the White House and DHS sought to control messaging and retain final approval authority for the Federal Government's crisis communications efforts. The persistent demand for real-time, accurate information proved to be a contentious issue for the Coast Guard. This was due primarily to senior leadership from the highest levels of Government rejecting the NRT JIC model and imposing a NRF construct similar to Emergency Support Function #15 (ESF-15). External and public affairs functions, including message development, became highly centralized and quickly moved to higher levels of the response organization. The JICs operating at the Houma and Mobile ICPs were effectively muted. JIC functions at the ICPs were transferred to the UAC, which served as the response organization's centralized hub for media relations during the incident. After the lower levels of the response organization were restricted from interacting with local and national media, there was confusion and frustration among media outlets, especially as requests for information and media inquiries continued to pour into the ICPs. Many senior staff at ICPs, including Incident Commanders (ICs), did not know the exact limitations of their interaction with the media.

The NIC organization included a small team of public affairs personnel, but it did not have the ability to insulate the UAC from the external pressures from the highest levels of the Federal Government. Information regarding the incident was channeled up to the UAC where it was packaged and released after review and approval from DHS OPA. Coast Guard FOSCs who operated at the UAC were not authorized to conduct media interviews, hold press conferences, or send press releases without prior approval from DHS. The additional handling and approval process for releases of information often prevented the response organization from providing real-time information. Because the Coast Guard was severely restricted in its ability to distribute timely, accurate information, it was perceived by some that the Federal Government was purposely withholding information pertaining to the incident from the American public. The departure from NRT JIC model also excluded BP from many media opportunities, contrary to established National Incident Management System (NIMS)/Incident Command System (ICS) doctrine. The isolation of the responsible party led to a dysfunctional JIC where message development and information coordination was not accomplished in a "joint" or "unified" manner.

The National Incident Commander was a credible spokesman for the "whole of government" response that proved to be an effective means of communicating a unified message to the public. Early on, the role of the National Incident Commander was not well communicated to the media, and to the public. Eventually, however, the press briefings and national media interviews provided opportunities to explain his role and his authority, and he quickly became accepted as the face of the Federal Government.

The NRT JIC model was designed by the Coast Guard to support the ICs during oil spill response operations following the Exxon Valdez incident in 1989. Over the past 20 years, it has been used successfully in hundreds of responses by the Coast Guard and other agencies. The latest version of the JIC model is dated October 2009. The model is a means for establishing a public affairs organization and maintaining effective crisis communications across the response organization. Under the NCP JIC model, all the media relations staff (Federal, State, local, and industry) sit in the same room at the ICPs and craft the public affairs message. State and local emergency responders around the country also successfully employ the NRT JIC model for incidents within their jurisdictions.

The NRT JIC model was intentionally developed as a message creation and delivery system that aligns with NIMS/ICS principles. This requires JIC to be imbedded internally with the response organization. It effectively addresses critical issues such as span of control, and functions well as part of a localized incident response. The same is true for larger events that cross local or State jurisdictional boundaries. It empowers all levels of a response organization to participate in messaging efforts (one message, many voices), in support of an IC and response objectives. The NRT JIC model, however, does not effectively address influences on messaging from outside the response organization.

The NRF ESF-15 construct is a highly centralized public affairs model for the Federal Government, in which the Federal Emergency Management Agency (FEMA) serves as the lead agency during incidents such as hurricanes or earthquakes. The ESF-15 construct compartmentalizes external affairs functions at Joint Field Offices (JFOs) and is resource intensive to setup and manage during an incident. NRF ESF-15 doctrine presumes that messaging for the Federal response will be shaped by the highest levels of Government, and dictates that JFOs will incorporate this information in their crisis communications efforts.

However, it does not mandate that the Federal Government controls all releases of information pertaining to the incident. In fact, FEMA, DHS, or any other agency with ESF-15 command and control authority at the JFO during a Stafford Act incident will never be able to control the messaging from State and local authorities who serve as the operational commanders and responders for the incident.

The NRF ESF-15 model may work well for a Federal Agency like FEMA that operates externally to the response (at JFOs), but it is not effective for incidents when a Federal Agency, such as the Coast Guard, takes a lead role in a response. A NRF ESF-15 construct is never established by first responders; rather, it is set up by the Federal Government at JFOs in support of local response efforts. The NRF ESF-15 model also does not align well with NIMS/ICS principles, including span of control, scalability based on size of incident, and use of ICS forms for documentation. These departures from the NIMS process create different reporting cycles that do not mirror the cycles of the ICPs. This often leads to the delivery of outdated information both horizontally and vertically throughout the response organizations.

The NRT JIC model and NRF ESF-15 construct can certainly coexist. However, the Federal Government, using a "whole of Government" approach, must develop a functional, inclusive public affairs organization for major spill responses that incorporate the best practices of the NCP and NRF models. This new crisis communications structure must be able to accommodate the need for the response organization to conduct its own external communications activities and be able to incorporate messaging from the highest levels of government. A decentralization of messaging, as found in the NRT JIC, which aligns with the principals of NIMS/ICS, is necessary for conveying timely, accurate information to the public. Proper training and vigilance is required in decentralized messaging so that the entire organization is synchronized with the same message (one message, many voices). If any level of the response organization is restricted from interacting with the media and the public in any way, it has the potential to damage the credibility of the Federal Government and erode public trust.

Lessons Learned:

- The failure to execute a comprehensive "whole of Government" crisis communications plan for an incident of this magnitude negatively impacted the ability to manage information, direct messaging and conduct effective crisis communications throughout the response organization.
- Well-defined and unambiguous roles and responsibilities for the PIAT, JICs, LNOs, and other groups that have public affairs duties are critical to ensure their activities are coordinated successfully, and the response organization's messaging needs are addressed.
- Inefficient and disorganized communications between multiple parts of the response organization (e.g., NIC organization, UAC, ICP), along with restrictions on message releasing authority, can result in a delay and loss of credibility with the public.
- Large-scale incidents require sufficient crisis communications and public affairs training, especially for senior leaders, prior to the incident.
- The PIAT and JICs are important considerations for oil spill responses. However, they need to be of sufficient size and seniority in order for them to have relevance and to function capably during large-scale incidents.

- The National Incident Commander eventually emerged as a credible spokesperson for the Federal Government.
- The NRT JIC model is highly effective during most oil spill incidents with minimal political and external influences on the response organization. However, it does not have a means of incorporating external demands on communications that arise during large-scale incidents.
- The establishment of fully staffed JIC within the NIC organization may have further insulated the response organization from the political influence on crisis communications.
- The use of the NRF ESF-15 model of external communications by DHS caused inefficient crisis communications due to the response organization relying on the NRT JIC model.

Recommendations:

1. The Coast Guard should work with DHS to reconcile the NRF model of external communications with the NRT JIC model.
2. The Coast Guard should work with DHS to develop a singular "whole of Government" crisis communications construct in preparation for future events of this magnitude. This construct should provide doctrine to:
    a. Incorporate external influences on messaging and external communications from outside the response organization;
    b. Identify the qualifications, roles, and responsibilities of DHS and Coast Guard officials who will develop, oversee, and administer the crisis communications program throughout the incident;
    c. Encompass the full range of public information mediums (including social media) used during the Deepwater Horizon incident;
    d. Define the roles and responsibilities of the PIAT, JIC (including national level), and LNO and develop protocols to coordinate their involvement in crisis communications; and
    e. Establish protocols for efficient internal communications within the response organization (e.g., NIC, UAC, ICPs) that allow for coordinated messaging (one message, many voices).
3. The Coast Guard should establish a comprehensive crisis communications training program for all personnel who could be involved in future incidents (see the chapter on Crisis leadership).
4. The Coast Guard should establish a comprehensive, executive level Public Affairs Training Program for its flag officers and operational commanders as a mandatory prerequisite before assuming their duties (see Cosco Busan ISPR).
5. The Coast Guard should increase the size and capability (including adding more senior Coast Guard staff) of its PIAT, and more depth to its Public Affairs Program for the purposes of implementing a unified, proactive, and aggressive crisis communications and messaging program during future incidents.
6. During large incidents, the National Incident Commander should be employed early on as the primary spokesperson for the Federal Government.

7. In major incidents having national attention, the Coast Guard should establish a national level JIC. For planning purposes, the Coast Guard should develop policy guidance that defines staffing needs, roles, and responsibilities for personnel operating at the national level JIC.
8. The Coast Guard should work with DHS and re-evaluate the application of standard Coast Guard public affairs policy guidance for large-scale incidents that generate national public and media interest.
9. The Coast Guard should develop pre-approved briefing materials on a wide range of topics (e.g., dispersants, SONS declaration, and so forth) for press conferences, media interviews, and press releases to release in a timely manner.

II.4 INTERSECTION OF THE NATIONAL RESPONSE FRAMEWORK AND NATIONAL CONTINGENCY PLAN

Observations:

- During this incident, there was extensive confusion between doctrines set forth in the NRF and the NCP. The "emergency management" community, comprising State and local emergency management officials, was unfamiliar with the NCP and the "oil spill response" community did not see the applicability of the NRF to an oil spill.
- Organizational structures were not in place prior to the incident to accommodate the use of both the NCP and the NRF.
- The NCP is codified in statute and regulation; the NRF is not. Both the NCP and NRF are based on NIMS/ICS.
- The ESF-10 Annex to the NRF describes the NCP as "an operational supplement to the NRF" and states "response to oil and hazardous materials incidents is generally carried out under the NCP."
- The NRF created the basis for preparedness for State and local officials in planning for Stafford Act responses. The NRF does not contemplate an oil spill as an initiating event under the NRF. Environmental incidents, generally, fall outside the ambit of the National Planning Scenarios, which inform preparedness activities under the NRF.
- The NRF is predicated on a "bottom up" approach to crisis management, placing the responsibility for incident management at the local level, with support from the State and Federal governments only when the incident exceeds local capabilities. The NCP is a "top down" approach to crisis management, in which the Federal Government manages the response with participation by States and limited participation by local governments.
- There is a natural inclination for local officials to veer towards a Stafford Act response under the NRF because they are familiar with it and have greater control.
- Most affected States during this incident declared disasters in their States to allow internal disaster funding and to authorize State resources to be marshaled for response activities.
- The fact that Louisiana is a "home rule" State may have contributed to perceived need by local officials to have greater control over response activities than that provided for in the NCP.
- NIMS/ICS is well understood, accepted and utilized by most State and local emergency managers and the oil spill response community.
- Because oil spills are generally handled by the "oil spill response" community under the existing NCP model, State involvement is typically handled by the designated State On Scene Coordinator's office and there is often little local involvement in preparedness activities or familiarity with oil spill response.

- The principle of the "polluter pays" is effective for oil spills and other environmental incidents, but the presence of a "Responsible Party" in an oil spill response is at variance with most NRF responses.
- The Coast Guard developed policy in 2009 addressing "connectivity with the NRF;" however there is little indication that the implementation of that policy has been effective.

Discussion:

During the Deepwater Horizon incident, the NCP was described by the National Incident Commander as being "politically nullified." Many of its 40 year old (and previously proven, successful processes and procedures) were not followed, in some respects due to the size, complexity, and duration of the incident, but mostly because the NCP was not well understood by political or senior appointed officials from national through local levels nor does it address involvement by local governments in a way that satisfied elected local officials. Further, notwithstanding a Coast Guard directive for an aggressive outreach program to provide greater connection between the NRF and the NCP, there is little indication that such outreach was undertaken or, if it was, that it had been effective.

The NCP was last amended in 1994 and included ICS as a response organization. It has remained unchanged since that time. On the other hand, the National Response Plan was created in 2004 to provide the basis for organizing responses to terrorist events and natural disasters. In 2008, the National Response Plan, following lessons learned during Hurricane Katrina, became the NRF. FEMA has effectively enhanced emergency management systems at the State and local level using the NRF model. As a result, many State and local officials expected the response to the Deepwater Horizon incident to be not only consistent with the NRF, but undertaken using that same response model. When the NRF model was not used, or was used sparingly but still lacking a specific role for local governments, the reaction by many elected officials was confusion and anger.

The NCP is a regulation mandated by OPA 90 with legal requirements imposed on the party responsible for the incident (the Responsible Party) and on the Federal Government. The NRF is a response guide derived from Presidential directive. However, the enhancement and funding of emergency management systems at the State and local levels through NRF advocacy and support has resulted in far more widespread familiarity with the NRF than the NCP.

Post-Katrina, the general public and the media look to a single person in charge; in the case of the Deepwater Horizon incident, the National Incident Commander fulfilled this role. However, neither the NCP nor the NRF fully embrace the concept of a single person in charge and, in fact, seek to limit the role of the senior Federal official to one of coordination and communication. It appears that this lack of consistency between public expectations and government policy, contributed to confusion as to the role of the Federal Government under the NCP model of response.

Both the NRF and the NCP have strong proponents. The NRF is strongly supported by State and local governments as well as elected officials and some appointed officials in the Federal Government. The NCP is strongly supported by the oil spill response community, including State oil spill response program administrators and the oil industry, who point to the success of the NCP in dealing with the vast majority of spill incidents. Understanding the entrenched nature of both response systems is critical to resolving differences that exist between them.

Lessons Learned:

- Familiarizing senior officials at the Federal, State, and local levels with the NCP is required if the NCP is to remain a viable plan for catastrophic oil spill response.
- Local involvement in oil spill response planning and in the oil spill response organization is essential.
- Some NRF practices should be adopted in NCP response doctrine; e.g., EMAC, DOD pre-scripted mission assignments and DCO embedded in the UAC.
- The "polluter pays" principle and the role of the RP is the right construct for oil spills but needs to be better communicated to political officials at all levels, to the media and to the public.
- Coast Guard's IMH needs to be updated for a SONS to include implementation of LNO programs, linkage to State EMAs, and involvement of Cabinet-level principals.
- There is a need for integrated doctrine across DHS components and the Federal interagency community for all significant incidents including oil spills.
- The high-level political influence that will always be at play in a catastrophic oil spill needs to be incorporated into both plans and exercises.

Recommendations:

1. The Coast Guard should fully implement its policy on connectivity with the NRF, including an expansive outreach program to State and local emergency managers through Sector participation with Local Emergency Planning Committees (LEPCs) and District participation with Regional Interagency Steering Committees (RISCs).
2. The Coast Guard should engage national associations of State and local governments in order to socialize the NCP and find commonalities for working with the other levels of government.
3. The Coast Guard should engage with the Emergency Support Function Leaders Group (ESFLG) at the senior level to ensure visibility of NCP processes with that coordinating body.
4. The Coast Guard should determine ways that it may fully utilize organizational components created by the NRF in oil spill response plans, including State and county Emergency Operations Centers.
5. The Coast Guard should coordinate with FEMA and the EPA on a review of the NCP and NRF structures and propose methods to revise as necessary to ensure clarity during a catastrophic event; e.g., is an Operations section needed in the UAC; how would a UAC and JFO interact if a major hurricane/earthquake affected a SONS scenario.
6. The Coast Guard should engage EPA and NRT to validate and/or update the NCP in light of Deepwater Horizon incident, including SONS, the National Incident Commander, and its relationship to HSPD-5 and the PFO role of DHS Secretary. The roles of the White House, PFO, National Incident Commander, NIC organization, NRT, and UAC should be clarified and roles for the elected State and local elected officials established.

7. The Coast Guard should ensure that it has the ability to respond to a significant oil event that is beyond the ability of the RP or OSLTF to fund and/or that extends beyond national boundaries into international jurisdictions (i.e., the Caribbean basin), and/or impacts multiple States.
8. For the next SONS exercise, the Coast Guard should inject a significant natural disaster, such as a Category 4 hurricane, to the exercise scenario to examine the interplay of the National Incident Commander /FOSC with a Stafford Act FCO.
9. The Coast Guard should actively seek participation and provide adequate funding for State and local political and emergency management officials in NCP training and exercise programs.
10. The Coast Guard should fully support the existing State oil spill response programs and engage in outreach to ensure that State governors understand the role of the SOSC during an oil spill.
11. The Coast Guard should work with FEMA to promote NIMS/ICS training for all Federal, State, and local officials who may be involved in oil spill response.
12. Although NIMS/ICS generally worked well for this incident, SONS doctrine should be adapted to ensure more effective inclusion of State/local and tribal governments in the response organization.

II.5 POLITICAL DEMANDS

Observations:

- During the Deepwater Horizon incident, the response organization experienced an unprecedented level of involvement from all levels of Government.
- Senior Federal officials were directed by the White House to make the Deepwater Horizon incident their highest priority.
- Senior Federal official involvement may have also resulted from the lack of understanding of National Contingency Plan (NCP) responses or conflicting information received about response operations.
- Senior officials in the Executive Branch required significant amounts of information to respond to constituent and local and State government inquiries and concerns.
- Much of the information requested by senior Federal officials was not readily available, requiring additional staff to accommodate this need. In some cases, it forced response personnel to divert from other response functions to support information gathering and dissemination.
- State and local elected officials used their offices to influence the decisionmaking processes of the response organization.
- As a result of external political pressure, many strategic and operational objectives were modified or developed to address political concerns.
- Initially, the response organization did not have either a component or protocols in place to effectively accommodate the concerns of State and local officials. This caused some elected officials to feel disenfranchised, and they chose to use the national media and the higher levels of the Federal Government to express their concerns.

Discussion:

The Deepwater Horizon incident generated unprecedented and protracted media coverage. Coupled with genuine concern over the ability to contain the oil and control the Macondo well and the potential long-term impacts, every level of Government, from the Office of the President to elected local officials, was heavily involved with the incident. The size, complexity, and duration of the incident contributed to the continued involvement of senior leadership throughout its duration.

Within the first few days of this incident, significant issues, originating primarily at the parish and county level, began to impact the response organization. Several developments caused local agencies and elected officials to feel disenfranchised. These include the unfamiliarity with oil spill response doctrine as set forth in the NCP, the desire by local government to participate as they would in a Stafford Act response, the dynamics of home rule government and the power of local elected officials, and a genuine feeling that local resources might not be protected without their involvement. Because these issues were not successfully addressed in the early stages of the

response, several local officials elevated their concerns to high levels within the Executive Branch, and routinely appeared on national media voicing their frustration.

Almost immediately, the White House initiated daily Governors' calls, which provided a means for Governors, Parish presidents, and county officials to voice any incident-related concerns. These daily conversations provided communication channels outside of the response organization and often resulted in Federal officials within the Administration providing direction to the National Incident Commander or other levels of the response organization. Some of this direction resulted in tactical decisions that, when carried out, proved to be improper, wrong, or ineffective in adding protection to local resources.

After commercial fishing grounds were temporarily closed, there was tremendous pressure to hire thousands of out-of-work local fishermen for the Vessels of Opportunity Program. Although BP had trained and experienced oil spill removal organizations (OSROs) to manage oil spill response operations, much of the contractor workforce was brought in from out-of-State. The demand to use local resources was quickly elevated to the highest levels of Government and outside of the response organization. Ultimately, thousands of local fishermen were hired for this incident.

Elected officials recognized the potential economic impact to their States, parishes, and counties if oil reached their shorelines, especially along popular tourist beaches. As a result, the response organization was forced to develop protection strategies for areas that were not considered a high environmental priority for protection, but that held more economic significance. There was competition for resources to protect areas of economic importance and areas of environmental importance, and allocation of critical resources such as boom and skimmers across the region developed as a contentious issue between the response organization and elected officials.

The Governor of Louisiana declared a State of Emergency during the Deepwater Horizon incident, which created an additional organizational structure at the State Emergency Operations Center to address State and local issues related to the spill response. This parallel organization made decisions and acted independently of the Unified Command (UC). Although the State did not receive any Stafford Act funding, BP made the decision to give millions of dollars to the State of Louisiana and Parishes to assist their local, but independent, oil spill response operations. BP also gave money to the States of Mississippi, Alabama, and Florida. These grants allowed the local agencies to continue shoreline protection operations outside of the response organization.

Even with examples of failed booming operations carried out to meet local demands, there was intense pressure to appease local officials. The Department of Homeland Security and the National Incident Commander gave direction to the Unified Area Command to "do whatever it takes to make the Parishes happy." This directive placed tremendous pressure on the UC to reexamine their operational objectives in order to more effectively address the demands of the Governors and Parishes.

In most cases, it appears that the State On-Scene Coordinator (SOSC) was not effective in representing local interests. However, the response organization's reliance on the SOSC to perform an agency role for local government was not justified either. It was not until the response organization established an active Liaison Officer (LNO) Program consisting of over 70 mid-grade or senior Coast Guard officers that local officials felt that they had a means to participate in the response effort with the response organization.

The primary goal of the LNOs, as defined by National Incident Management System (NIMS)/Incident Command System (ICS), was to serve as a direct representative of the response organization to local governments. The Federal On-Scene Coordinators (FOSCs) and Incident Commanders ensured that every LNO understood the operational commander's intent and that it was communicated to elected officials. The LNO Program was also an ideal way for the UC to identify information requests early and provide timely responses to elected officials. LNOs also held daily briefings and helped set up media events for local officials and the public. This program proved to be a tremendously well-organized and well-managed outreach effort by the response organization.

Ultimately, however, there were still some elected officials who chose to continue dialogue with senior administration officials or use the media as a vehicle to distribute their message.

Lessons Learned:

- Political pressure and the desire by elected officials to influence decisionmaking during an incident of this magnitude are inevitable.
- Outdated plans, the lack of effective outreach to local officials, the unanticipated level of concern by elected officials, and the ad hoc efforts to accommodate those officials compromised the concept of Unity of Effort and encouraged some local officials and States to act outside the response organization.
- The NCP does not include sufficient guidance for addressing senior officials' participation in the National Response System, and their role in response decisionmaking.
- It is necessary to incorporate the concerns of senior officials, those directly affected by the spill, and the general public as a response priority. While this may lead to perceptions that these groups are inappropriately involved in decisionmaking, it is critical to communicate that the response organization is responsive to their concerns.
- Many senior officials at the Federal, State, and local level were more aware of the National Response Framework than the NCP, which led to confusion within some Departments and agencies.
- The establishment of local Branches and LNOs and their empowerment provided a means for States and local governments to participate meaningfully in the response.
- When established, the LNO Program proved to be largely successful in addressing local concerns. The LNOs were effective in establishing better communications between the response organization, elected officials, and the public.
- A significant part of the FOSC's responsibility is the need to address external political influence on response operations, and address political concerns of merit as part of the organization's operational objectives.

- Political demands can be a tremendous distraction or impediment to a response organization if they are not anticipated and considered early in the response.
- The Coast Guard did not have pre-established measures of success, nor did it effectively communicate any measures to elected officials and the public.
- The response organization must have personnel and protocols in place to address concerns of elected officials. If a means is not available, elected officials may seek other outlets, such as national media or higher levels of the Federal Government to express their concerns.
- The offices of State and local elected officials must be actively engaged in the planning, development, and updating of the Area Contingency Plans. Full participation provides a means for officials to have input into the development of protection strategies, identification of sensitive areas, use of local resources, and an avenue to understand the tactics and equipment that would be deployed during a response. (See the chapter on Area Committee Organization and Activity.)
- A well-designed and well-executed public information program that ensures accurate and timely messaging from the response organization improves transparency with the public and has the potential to reduce involvement from elected officials.

Recommendations:

1. The Coast Guard should conduct education and outreach programs with State and local governments, familiarizing officials on the NCP preparedness and response construct.
2. The Coast Guard should actively seek to execute cooperative agreements on oil spill planning and response with all Gulf States. Formal agreements have proven successful in Texas, California, Washington, and elsewhere.
3. The Coast Guard should leverage existing relationships with SOSCs, Local Emergency Preparedness Committees, and State and Local emergency management agencies as a way to facilitate communications between the Federal Government and elected officials at the State, parish, and county level. Encouraging active participation by Governors, parish, and county representatives in the Area Committee planning process is an excellent avenue to establish these lines of communication.
4. The Coast Guard should encourage all States to serve as a co-chair on their respective Area Committees.
5. The Coast Guard should reevaluate the ICS structure to ensure that State and local representatives are appropriately incorporated in this organization. This structure should be scalable to allow representation according to the geopolitical subdivisions of a particular region.
6. The Coast Guard should institutionalize the LNO Program into NIMS/ICS doctrine and revise the Incident Management Handbook to reflect the roles, responsibilities, and reporting chain for the LNOs.

II.6 ROLE OF THE NATIONAL INCIDENT COMMANDER AND THE NATIONAL INCIDENT COMMAND (NIC)

Observations:

- An overarching organization was needed to address the intense and rapidly growing demand for information from Federal Government leaders, State/local officials, media, and the public.
- Although the NIC organization had been included conceptually in draft policy and instruction, the Deepwater Horizon incident was the first practicable application of the concept.
- The Deepwater Horizon incident was declared a Spill of National Significance (SONS) event in accordance with provisions of the National Contingency Plan (NCP): "a spill which due to its severity, size, location, actual or potential impact on the public health and welfare or the environment, or the necessary response effort, is so complex that it requires extraordinary coordination of federal, state, local, and responsible party resources to contain and cleanup the discharge."
- The desired purpose of the NIC was to support the Federal On-Scene Coordinator (FOSC) and others below and provide the executive level oversight.
- The NIC organization was initially envisioned to be a "thin client" with a small footprint, but agile forward leaning, proactive, and not just reactive.
- The NIC would address strategic issues beyond immediate response.
- The NIC would help the FOSC/Unified Area Command (UAC) work with a better span of control, and broker critical resources at the macro level.
- The NIC would deal with external concerns including taking political pressure off the FOSC/UAC.
- The National Incident Commander would be the national spokesman to convey that the Federal Government is in charge and accountable, and be the public face of the Federal response.
- The NIC would provide the bridge between the National Contingency Plan (NCP) response organization and designated agents within the National Response Framework (NRF).

Discussion:

On April 21, following the explosion and sinking of the Deepwater Horizon, the Incident Command Post (ICP) in Houma, LA was established, and the Regional Response Team (RRT) was activated. The next day, the National Response Team (NRT) was activated, realizing that the spill had a potential of being catastrophic, and that action or attention was needed at Federal Agency level. Two days later, the ICP in Mobile, AL and the UAC in Robert, LA were established. On April 28, the Deepwater Horizon incident was declared to be a SONS event. Following the release of flow rate information (5,000 barrels per day), several Cabinet Secretaries met with the Coast Guard, and Admiral Thad Allen was designated the National Incident Commander. On May 2, the NIC organization was established. The immediate effect

helped to streamline information flow, giving the UAC a direct line to the NIC and removing the District, Sector, and Commandant from vertical lines of communication. It helped to establish an effective "battle rhythm," and establish a single source to answer questions from the media, Federal officials, including the White House, and the public.

By taking some of the political pressure off the UAC/FOSC, it allowed responders to do their job more effectively. The National Incident Commander interfaced with senior officials, especially at the Department of Homeland Security (DHS) (e.g., the Secretary of Homeland Security [S1] and the Deputy Secretary of Homeland Security [S2]), as well as select Cabinet-level officials in agencies having jurisdiction or interest in the event.

The NIC served as a broker for critical resources, and addressed issues of foreign vessels or response equipment offered or used in the Deepwater Horizon response.

There were other major events happening nationally during the period of the oil spill response. These included floods in Nashville and planning for the looming hurricane season. The attempted terrorist attack on Times Square required attention by DHS, particularly S1 and S2. The National Incident Commander was able to provide sustained command and control of the Deepwater Horizon response during these periods, allowing S1 to address these other pressing concerns.

The NCP establishes the position of a National Incident Commander for a SONS event. The functions of the National Incident Commander specified in the NCP are to assume the role of FOSC in communicating with affected parties and the public and coordinating Federal, State, local, and international resources at the national level.

A draft "NIC Instruction" had been developed and was circulated within Coast Guard Headquarters and both a SONS exercise and a "Senior Leadership Seminar" had been conducted prior to this incident. However, there was no formal doctrine or established policy describing how the functions of the NIC were to be organized or executed. The Coast Guard's Incident Management Handbook (IMH) provides for a skeletal NIC support organization in the context of the National Incident Management System (NIMS)/Incident Command System (ICS), but it does not provide direction as to its essential components, their function, or their depth.

The urgent demand for real-time information, the lack of connectivity between the NCP and the NRF, and the lack of understanding among executive-level officials of the NCP response organization, required the National Incident Commander to build the NIC organization in response to perceived needs, not necessarily in accordance with pre-established doctrine. Through adaptive management, the National Incident Commander created the Interagency Solutions Group (IASG) that he termed, "an incident-specific NRT". This group had the role of:

- Coordinating and resolving interagency issues (at the appropriate level);
- Brokering interagency resources and expertise;
- Establishing lines of communication to interagency officials, for reach back support;

- Providing input to National Incident Commander from other agencies; and
- Acting as a "think tank."

One of the first efforts by the NIC organization was to estimate a worst case discharge. Once this was accomplished, the NIC could develop an appropriate response strategy. Due to the confusion over the amount of oil flowing, uncontrolled, from the well, the National Incident Commander prohibited the public release of any new flow rate estimates until such time that estimates could be scientifically based. He directed the IASG to establish the Flow Rate Technical Group for this purpose (see the chapter on Quantification).

Although the NRT was activated early in the response, the establishment of the NIC precluded NRT participation per se. Initially, the NRT functioned as a means of disseminating information regarding the incident to the participating agencies. It was chaired early on by S1, effectively making it comparable to a Principals Committee. With the establishment of a Principals Committee, and the use of various coordinating bodies within the White House, the NRT quickly became redundant. However, the IASG included many NRT members, and as the response progressed, interagency staffing and participation increased significantly.

The NIC was able to address significant issues appropriate for response decision makers above the FOSC level. These issues included the need to engage Cuba or the Bahamian government if oil impacted their shorelines, the State of Louisiana Berm proposal, offers of international assistance, flow rate determinations, the interagency alternative technology assessment program, health issues, and closure of fisheries.

The NIC Situation Unit was established to collect, distill, and filter all of the requests for information (RFIs) initially directed to the FOSC, but on occasion reaching down to the ICPs or Branches. During interviews of key responders at the Branch, ICP, and FOSC levels, it became apparent that, while well intended, the NIC organization, in its need to provide timely and accurate information to senior officials, became a significant distraction to spill response operations. The demand for information generated by a 24/7 news cycle, the White House, and other Federal officials, dictated a growth of the NIC organization that was not initially envisioned by the National Incident Commander. What was initially established as a "thin client" rapidly expanded to an organization with a staff of 130. By the first month, the NIC Situation Unit had tripled in size, mainly to address the insatiable appetite for information both vertically and horizontally. The National Incident Commander's direction of "Many voices, one message" required staffing beyond initial expectations.

The NIC organization eventually grew to 138. About 60 were active duty and reserve Coast Guard and the balance were from other Federal agencies including:

- National Oceanic and Atmospheric Administration (NOAA)
- Department of the Interior (DOI)—To assist in natural and cultural resource protection, including protection of National Wildlife Refuges and National Parks.
- Department of Energy (DOE)—Called in by the President to oversee source control efforts on the sea floor, eventually helping with quantification.
- Department of State (DOS)—To address international offers of assistance.

- Department of Defense (DoD)—Although there was no daily presence of DoD personnel in the NIC, NORTHCOM provided action officers/planners for coordination/logistics issues, and personnel for planning in the UAC and in the NIC for coordination.
- National Geospatial-Intelligence Agency (NGA) and National Reconnaissance Office (NRO)—To help with real-time imagery and integrating satellite imagery into Environmental Response Management Application (ERMA) to help with creating a common operating picture.

Initial reports from the FOSC and ICPs varied widely due to delayed reporting, different reporting times, misunderstanding of report fields (deployed and operational versus available, and equipment available but not suitable for a particular operating environment) resulting in the perception that some of the reports were in error. The NIC support organization expended a significant amount of time and effort to develop standardized daily reports (i.e., "At a Glance" reports) for the daily Governor's call and for providing quality information to senior leadership. These reports listed, among other things, the amount of deployed resources such as boom and skimmers that were capable of being deployed and appropriately utilized. The NIC imposed reporting requirements, which significantly improved daily reports.

While the designated National Incident Commander clearly had the requisite skills, experience, and demeanor to successfully carry out the "whole of government" messaging objective, few others within the response organization shared this ability. While the designation of a National Incident Commander may be a critical step during a SONS event, it is equally important to select the right person with the requisite skills and experience to fill this critically important role.

Lessons Learned:

- The organizational relationship of the National Incident Commander to S1 as the Principal Federal Official for domestic incident management needs to be defined prior to an incident and is critical to the successful execution of national-level plans.
- The relationship between the NRF, the NCP, the National Incident Commander and the NIC organization needs to be defined prior to an incident and doing so is critical to the successful execution of national-level plans.
- The ICS organization promotes a scalable approach to building the proper level and size of the response organization, but it needs to provide more detailed guidance for necessary components of a NIC organization.
- The National Incident Commander and the NIC organization are effective in addressing incredible demands for information and the 24/7 involvement of senior Government officials, the public, and the media.
- The National Incident Commander and the NIC organization are an effective way to address brokering of critical resources.
- The National Incident Commander is effective in addressing concerns of, and seeking assistance from, Cabinet-level officials.
- The NIC organization provides operational command and control for the "whole of government" response.
- The NIC organization acted as a central clearinghouse for vetted information.

- The NIC organization was initially unprepared to address the information gap that developed early in the spill response, did not anticipate information demand, and was playing "catch up" early in the response.
- The NIC organization was largely successful in invoking unity of messaging as the spill progressed.
- The skills, experience, and "command presence" of the National Incident Commander are vital to an effective response.

Recommendations:

1. The Coast Guard should revise the IMH and other spill response doctrine to define the role of the National Incident Commander and the NIC organization.
2. The Coast Guard, through the NRT, should amend the NCP to incorporate the NIC as providing connectivity between elements within the NRF and the roles and responsibilities of the NIC.
3. The Coast Guard should model the NIC Situation Unit for information management on the basis of the information management implemented at the peak of the Deepwater Horizon incident, and provide for it to be scaled back as appropriate.
4. The Coast Guard should provide for systems and processes to ensure that the NIC can immediately attain "information dominance" and maintain it throughout the response.
5. The Coast Guard should develop information management systems that ensure that information requests are triaged so that frivolous or unnecessary RFIs do not get in the way of important information requests. Information chains need to be observed as diligently as reporting chains, and tactical units need to be allowed to carry out tactical operations without direct requests from the NIC.
6. The Coast Guard should ensure that select personnel are trained to fulfill the role of the National Incident Commander, Deputy, and other key NIC organization positions in a SONS event. These personnel need to be pre-identified and trained in future SONS exercises, and billeted to a notional NIC organization that could be activated immediately.
7. The Coast Guard should identify the personal and leadership traits of a National Incident Commander (see the chapter on Crisis Leadership).
8. The Coast Guard should undertake a program to educate senior Government officials at the Federal, State, and local levels on the role of the NIC and oil spill response under the NCP.
9. The Coast Guard should ensure that a system is in place during an incident to gather feedback from ICPs and the FOSC as to the effectiveness of the NIC, areas of assistance, and areas of interference. There should be push-pull communications between NIC and FOSC.
10. The Coast Guard should ensure that NIC doctrine prohibits or discourages the NIC from making tactical decisions. While some decisions are necessarily politically driven (see the chapter on Political Demands), the NIC should strive to assist the UAC and ICPs in dealing with and minimizing the political influence on operational decisionmaking.
11. The Coast Guard should work with the NRT to ensure that NIC doctrine addresses the role of the NRT during a SONS event, even if an IASG is established.

12. If the NIC is required to handle national media or ensure unity of messaging, the Coast Guard should ensure that NIC doctrine provides for an information center within the NIC organization.

II.7 ROLE OF THE NATIONAL RESPONSE TEAM AND REGIONAL RESPONSE TEAMS

Observations:

- Within 24 hours of the initial explosion on the Deepwater Horizon, the NRT was activated and held regular meetings (primarily conference calls) throughout the duration of the incident.
- The perceived magnitude, geographic scale, severity, and complexity of the Deepwater Horizon incident spurred the extensive involvement of the White House and senior Administration officials. During the early weeks of the Deepwater Horizon incident, many Cabinet-level individuals and their deputies participated in daily NRT conference calls. The Department of Homeland Security (DHS) Secretary quickly assumed leadership as the Principal Federal Official (PFO) and led the initial NRT conference calls. Later, conference calls were led by the DHS Deputy Secretary.
- The NRT is the appropriate organization to offer policy guidance, resolve interagency issues, and provide technical assistance to the National Incident Commander and the Federal On-Scene Coordinator (FOSC) during a Spill of National Significance (SONS) event. It was not designed to provide situational status updates between and among Federal Agencies and senior Federal officials.
- The National Incident Commander, as a part of the National Incident Command (NIC) support organization, created an Interagency Solutions Group (IASG) to work on national policy issues raised by the response organization, garner interagency support for key oil spill response operations, and resolve interagency issues. This group was staffed, in part, by representatives from NRT agencies and functioned in a manner similar to the NRT's envisioned role during a major incident.
- Area Plans that contain pre-authorizations by the RRT for the use of dispersants were the subject of intense scrutiny.

Discussion:

NRT

Under provisions of the National Contingency Plan (NCP), the NRT is a multi-agency, interdisciplinary body that has the authority and is responsible for national oil spill response planning and coordination. The NRT also provides policy and program direction to the RRTs and considers issues that have been referred to it by an RRT for advice or resolution.

In the Deepwater Horizon incident, the NRT held its first meeting (via conference call) on April 22, 2010. The NRT held twice-daily conference calls for the first 2 weeks of the response and daily calls for approximately 6 weeks thereafter. Over time, NRT conference calls became less frequent and eventually ended in August.

Most often, NRT meetings or conference calls involve representatives of various Federal Agencies at a fairly high level (O-6 level for the Coast Guard and GS-15/SES for civilian agencies), but not at the Secretary or Deputy Secretary level. Monthly NRT meetings are usually led by an EPA representative, who is designated the Chair of the NRT. Because the Deepwater Horizon incident involved the Coastal Zone, the Coast Guard, whose representative is normally

the Vice Chair of the NRT, led the meetings for this event. However, once the White House assessed the seriousness of this event, the President directed the Secretaries to make the Deepwater Horizon incident a national priority, which resulted in a higher level of participation in NRT activities. The initial meetings were led by the Secretary of Homeland Security, who saw this as an appropriate way to implement her role as the PFO pursuant to Homeland Security Presidential Directive-5 (HSPD-5).

Intensive work began immediately to collect, manage, and disseminate critical information on the spill. It soon became apparent that many senior Government officials participating in the initial NRT conference calls were not familiar with either the NRT or the NCP. The first few weeks of the Deepwater Horizon incident required a large degree of education for some participants to fully understand authorities, responsibilities, policies, procedures, and organization set forth in the NCP and the true role of the NRT during a spill response.

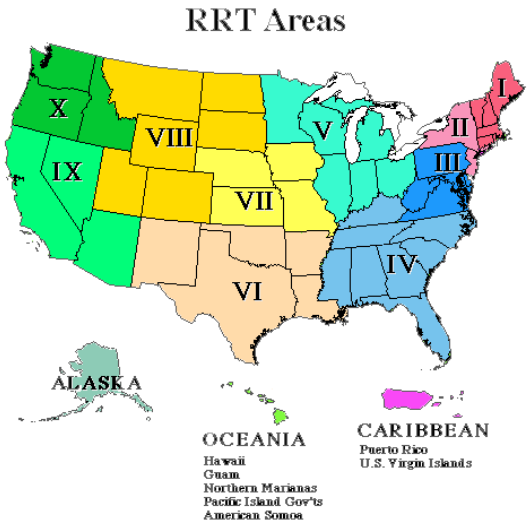
U.S. National Response Team NRT
Working Together to Protect Against Threats to Our Land, Air and Water

The role of the NRT during a response is to be a forum for advice and technical coordination to support the needs of the response organization at the national level. Because the Secretary of Homeland Security exercised her PFO responsibilities and used the NRT meetings as a forum for exercising those authorities, the NRT meetings took on a different format. During the Deepwater Horizon incident, NRT meetings served the purpose of accommodating information-sharing needs generated in response to intense interest by the White House. NRT meetings became short, interagency conference calls where situational status updates were briefed. Items of concern were relayed from senior Federal officials to the Unified Area Command (UAC), and there was little discussion or problem resolution. The NRT conference calls were usually dominated by reports by the UAC, BP (before BP was removed from the call), and numerous DHS offices; e.g., legal affairs, public affairs, intergovernmental affairs, and legislative affairs. For information-sharing purposes, these meetings were very useful because of the demand for real time information. However, many individuals both inside and outside the NRT thought that the NRT was not used for its intended purpose during the Deepwater Horizon incident. The extensive involvement of the White House and top Administration officials resulted in what many have termed the “political nullification” of the NRT in the Deepwater Horizon incident, feeling that the NRT was essentially bypassed as the central policymaking body for oil spill response.

Some involved in the response expressed the opinion that a NIC may not have been needed if the NRT had both been used as envisioned in the NCP, and if there was Agency head or Cabinet-level representation on the NRT. There are many examples in prior incidents where the NRT has served a vital role, following the regulatory authorities and direction found in the NCP. Some of the responders interviewed felt that the NRT structure and processes that were in place were not effectively utilized or harnessed as intended.

Later in the response, the NRT began to function in a more traditional role, resolving issues being raised by the response organization, such as air quality monitoring and waste management protocols.

RRTs



The NCP makes RRTs responsible for regional planning and coordination of preparedness and response actions, and the RRTs have varying levels of representation. The RRTs are co-chaired by the EPA and Coast Guard and are charged with policymaking and planning responsibilities within their respective areas of responsibility. The RRT membership includes representatives of the 15 NRT agencies plus the affected States, and may include representatives of American Indian tribal governments or local governments.

The EPA, affected States, and natural resource trustees on the RRT have decisionmaking authority for both pre-authorization plans and incident-specific decisions involving the use of dispersants and other response technologies. Generally, the NCP requires RRTs and Area Committees to address the use of dispersants in advance of oil spills, consider the tradeoff of environmental impacts to the water column versus impact to the surface and the shoreline, specify appropriate application protocols, and prescribe area limitations geographically. However, application of dispersants in a subsea environment was not foreseen as a possible response option by any RRT in the Gulf region prior to this incident.

The Deepwater Horizon incident involved two RRTs—RRT IV, which includes the States of Mississippi, Alabama, and Florida, and RRT VI, which includes the States of Louisiana and Texas. RRT VI held its first meeting via conference call on April 23. RRT IV convened its first meeting (via joint conference call with RRT VI) on April 27 to discuss in situ burning (ISB). RRT VI held several dozen meetings (conference calls) throughout the Deepwater Horizon incident; RRT IV did not.

The FOSC worked with the RRT, NRT, and the EPA Administrator regarding the subsea application of dispersants. Similarly, the FOSC worked through the RRT, NRT, and the EPA Administrator to address concerns with the unprecedented amount of dispersants being applied. While the basic decisionmaking authority of RRT VI was retained, some dispersant use decisions were elevated to the EPA Administrator and other NRT agency principals. Ultimately, Dispersant Directives were signed by the EPA Administrator and co-signed by the FOSC. Once this occurred, the traditional roles of the RRT and NRT were effectively bypassed.

Interagency Solutions Group

The role of the NIC was to oversee and manage strategic national policy issues pertaining to the oil spill response and provide support and resources to the FOSC leading the response effort. One of the first decisions made by the National Incident Commander to garner interagency support for the oil spill response was to create an IASG. At first, this proposed structure was met with some uneasiness by NRT members, who may have viewed it as a way for the NIC or DHS to co-opt the authority of the NRT. This perception quickly disappeared once NRT agencies provided staff to work in the IASG, some of whom were regular NRT members or their alternates.

Once implemented, the IASG served like an incident-specific workgroup of the NRT to coordinate the whole of Government policy and procedural recommendations for the NIC, UAC, and applicable incident command posts (ICPs). The IASG was comprised of seven subgroups including:

- Countermeasures and Alternative Technology
- Community and State Engagement
- Flow Rate and Subsea Analysis
- Economic Solutions Team
- Ecosystem
- Archeological, Cultural Impact
- Integrated Services Team
- Public Health and Safety

The role of the IASG was to support the mobilization and deployment of resources and trained personnel, maintain situational awareness at senior levels, identify and address interagency policy issues, develop a strategic perspective, and assist the National Incident Commander on matters as assigned.

Lessons Learned:

- The absence of a well-defined support role for the NRT during this response and the fact that the NRT was not used in accordance with NCP doctrine undermined its effectiveness. However, the establishment of the IASG showed the value of a coordinating group to support the National Incident Commander, a role for which the NRT may be well suited.
- Because SONS events occur infrequently, senior leadership had little prior exposure to or experience with the NCP and the National Response System (NRS); i.e., the NRT and RRTs, and immediately needed to be educated on the NCP/NRS authorities, policies, structure, and procedures.
- The program and policy experience of NRT and RRT members are important resources that should be fully integrated with the incident's response organization, and used during a major oil spill response.
- Neither the NRT nor the RRTs involved anticipated the need to address issues of national importance such as volumetric limitations on the use of dispersants or air issues associated with ISB, and were not prepared to effectively respond to decisionmakers outside of the NCP organization on these issues.

Recommendations:

1. The Coast Guard and EPA should direct the NRT and RRTs to improve their outreach and educational efforts to better explain the NRS and the NCP to senior policymakers, Congress, State and local government officials, and other stakeholders. These efforts should be ongoing to ensure that people new to oil spill preparedness and response are familiar with the roles and responsibilities of both Response Teams.

2. The Coast Guard and EPA should ensure that the NRT and the RRTs have representation from participating agencies of the appropriate type and at the appropriate level to perform their respective functions.
3. The Coast Guard and EPA should work together to explore regulatory reforms and/or policy guidance to refine and enhance NCP authorities and the NRT's and RRTs' role during a response to a SONS event.
4. Prior to establishing an IASG, the Coast Guard and EPA should look to the NRT first to determine if there is a need for two separate entities, or if the NRT can serve the NIC functionally as an IASG.
5. The Coast Guard and EPA should review the authorities of both the NRT and RRT with regard to their respective roles in alternative response technologies and ensure that guidance and doctrine pertaining to their use is current.
6. The Coast Guard should request that the NRT convene an appropriate panel of experts to advise the NRT in developing national level guidance on alternative response technologies to ensure that such guidance represents the best and most current scientific knowledge available.

II.8 UNIFIED AREA COMMAND (UAC) AND INCIDENT COMMAND POSTS (ICPS)

This paper discusses five areas affecting both the Unified Area Command, and the Incident Command Posts (field). These areas include responder competency in the National Incident Management System (NIMS)/Incident Command System (ICS), adherence to NIMS/ICS doctrine organizationally, adherence to the NIMS/ICS doctrine operationally, and communication and information management both within the ICS response organization and external to the ICS response organization.

Responder Competency in the NIMS/ICS

Observations:

- The UAC and Houma ICP were established quickly and with well-trained personnel. However, as the response to the Deepwater Horizon incident progressed, it was clear that both public and private sectors lacked sufficient numbers of trained and experienced responders for a sustained effort. Not enough personnel were trained to perform in specific positions, such as section chiefs, to maintain consistent support throughout the response. This problem became more apparent with every planned staff rotation. Due to the sheer number of response personnel and the lack of pre-incident training or oil spill response experience among the majority of responders, the overall NIMS/ICS competency for the Deepwater Horizon response was poor.
- The roles of people assigned to the UAC and National Incident Command are unique, and different than prescribed NIMS/ICS positions within an ICP. The lack of a signed Spill of National Significance (SONS) instruction and policy guidance, a lack of UAC exercises and training, and the lack of previous SONS magnitude incidents, has resulted in the lack of trained and experienced personnel able to adequately fill the available UAC and NIC positions. For more details, see the "Unified Area Command and Incident Command Posts" chapter and the "Sustainability of Response Personnel" chapter in this report.
- Just-in-time (JIT) training was beneficial to cover basic responder knowledge and needs, but could not provide the same benefits as pre-incident training, participation in exercises, and previous oil spill response experience.

Discussion:

The National Incident Management System (NIMS) is based on a set of core principles that provides a consistent nationwide approach for Federal, State, local, and tribal governments to work effectively and efficiently together to prepare for, and respond to, domestic incidents, natural disasters, and emergencies regardless of cause, size, or complexity. NIMS/ICS is the national standard by which all response organizations plan for and respond to emergencies. By applying common NIMS/ICS principles and response doctrine, personnel at all levels can respond more effectively to incidents because they speak the same response "language."

The Coast Guard and the Environmental Protection Agency (EPA) adopted NIMS/ICS as the standard response structure over 15 years ago. The Coast Guard's Incident Management Handbook (IMH), which is based on NIMS/ICS principles, is considered the single authoritative reference used by oil spill responders. Both the public and private sectors develop policy, doctrine, and requisite NIMS/ICS training based on this document. NIMS/ICS is practiced extensively in drills and exercises from tabletops to full-scale SONS exercises.

To be most effective, responders at all levels of Government and industry must be trained in NIMS/ICS to appropriate levels. Pre-incident training paired with quality drills and exercises is critical to building the workforce depth required for sustained responses to major incidents.

When responders having little or no knowledge of the NIMS/ICS concept are integrated into a response organization, the efficiency of the organization is degraded. Inexperienced and insufficiently trained personnel may not understand the limitations of their position, their role in a larger response effort, or possess the knowledge to meet objectives set by decisionmakers. Merely adding more people to the response effort may have a negative effect or unintended outcome. The White House's mandate to triple personnel resources did not appear to improve the effectiveness of the response because many of the people assigned were not trained in NIMS/ICS doctrine.

JIT training was used extensively throughout the spill for many positions and functions; e.g., basic NIMS/ICS, Hazardous Waste Operations and Emergency Response (HAZWOPER), Shoreline Cleanup and Assessment Team (SCAT), Federal On-Scene Coordinator's Representative (FOSC)-R, aerial observer, vessels of opportunity (VOO) skimming, wildlife operations recovery and cleaning, and so forth. The Coast Guard put active duty personnel and reservists unfamiliar with oil spill response operations through a 1-week indoctrination course covering NIMS/ICS, HAZWOPER, and some position-specific training. BP established a basic course for all ICP personnel that included NIMS/ICS and safety principles.

JIT training educated incoming novice responders with basic oil spill response concepts. It was not sufficient, nor was it intended to be, to work with complex issues in a large ICP. Although it took time, and may have been a drain on the ICP resources, most people overcame their lack of pre-incident training, rose to the challenge, and provided contributions to the overall response effort.

Adherence to NIMS/ICS Doctrine and Organization

Observations:

- General NIMS/ICS principles as put forth in the Coast Guard's IMH worked fairly well. The fundamental construct of NIMS/ICS is sound: "An organization that uses a formal process to develop a plan to meet objectives." NIMS/ICS is flexible and scalable, even for a catastrophic SONS event.
- Initially, responders at the UAC worked side-by-side, collaboratively and cooperatively, as has been the accepted model in spill response over the past two decades. Later, however, Incident Commanders (ICs) in the UAC moved to separate spaces, coming together only for meetings or briefings. It appears that working in separate spaces instead of being in the same room together hindered the "Unity of Effort" of the response organization. Similarly, the directive prohibiting the Coast Guard from participating in press events along with a

representative of the responsible party (RP) strained the principles of the UC and appeared to diminish the "Unity of Effort" that had developed during the early phase of the response.

- Lack of training and exercising of the UAC concept led to many inconsistencies, misunderstandings, overstepping of responsibilities, and inefficiencies at the UAC level, and often resulted in that organization becoming more tactical than strategic in posture.
- Many of the basic tenets of NIMS/ICS were not followed, especially those related to the staffing of the response organization.
- The designation of one FOSC at UAC level and multiple FOSC-Rs (one at each ICP) was not a concept that had been previously practiced or trained. This lead to confusion and likely contributed to the UAC and ICPs straying from accepted NIMS/ICS practices.

Discussion:

ICS, as described in the 2006 edition of the Coast Guard's IMH, is a collaborative and cooperative response process with a system of checks and balances built in to develop response plans designed to achieve the objectives agreed to by representatives of all the affected stakeholders. It is a true Management by Objectives system that brings the public and private sectors together, working with a "Unity of Effort" to achieve a response that benefits all stakeholders.

A successful oil spill response organization begins with a fully functioning ICS organization. A successful ICS organization requires the ICs within the UC to work together in a collaborative, consensus-driven environment. When implemented and functioning in accordance with the IMH, all of the responders collectively contribute to the success of the response. During this event, however, there was a deliberate decision to distance the FOSC from the BP IC during press events. This appeared to create extra hurdles that required special accommodations and somewhat reduced the efficiency of the UC.

A UC can have an FOSC from one Federal agency (i.e., the Coast Guard or EPA), one IC from each affected State, one IC from each affected tribal nation, one IC from the affected local community, and an IC from the RP. Other Federal Agencies can serve as advisors to the UC or can be incorporated as full members of the UC; i.e., having signature authority. The UC at the Mobile ICP included two other Federal Agencies (in addition to the Coast Guard) as full-fledged ICs rather than advisors. This not only slowed down the UC's decisionmaking process, but it also caused confusion among the assigned agency personnel on the team. The agency members who had signature authority in the Mobile ICP had counterparts in the Houma ICP who were only advisors. The inclusion of the Department of the Interior and EPA in the Mobile ICP with full signatory authority added complexity that was not needed, and the same benefits of including these agencies in the UC could have been realized by having them serve as advisors.

Specific delineation of authorities and responsibilities allows the best response activities to occur in the command post and in the field. The Coast Guard's IMH specifies what the responsibilities and tasks are for each of the positions within the organization. During the Deepwater Horizon incident, several basic NIMS/ICS tenets were not followed. For example, positions were created that were not needed. More than one person was assigned to positions such as Section Chief to provide representation from the RP, the Coast Guard, and the State. NIMS/ICS response doctrine states that key positions should be filled by the "most qualified" individual (based on NIMS/ICS

training, experience, and capability). As a result, if the RP occupies the Section Chief position, then a Federal or State representative should perform the Deputy Section Chief role.

The IMH construct takes into account the possibility of multiple simultaneous spill events or a significantly large event that covers multiple Captains of the Port Zones. In this case, multiple ICPs can be set up and the primary FOSC would be moved to a UAC. The role of the UAC is to be a broker of critical response assets that are in short supply and to serve as the interface between the NIC and the ICPs. The UAC addresses strategic policy and response issues and acts as a resource provider to operational field commands. It appears that the lack of training and exercising of the UAC concept led to many inconsistencies and inefficiencies at the UAC level. This resulted in the UAC exercising some tactical control over various field operations, and issuing Area Command Operating Guides (ACOGs) that appeared to have only limited value to the ICPs.

The Deepwater Horizon incident was the first declared SONS event. As a result, it was a learning process for all responders to scale an appropriately sized ICS organization. The ICs used contractors who served as NIMS/ICS technical advisors to help them build a suitable response organization. These individuals played a valuable role assisting the ICs in following ICS doctrine.

Adherence to NIMS/ICS Doctrine in Operations

Observations:

- IAPs were too large (commonly over 100 pages) and practically unusable as a tactical plan in the field.
- Tactical communications between the ICPs and Branches were initially very poor. Combined with practically unusable IAPs, some Branches formed their own command structure and instituted their own tactical plans. It took months before these issues were resolved.
- An oil spill response ICS organization must address the needs of the States and local governments. Branches established at the local level and given the authority to make their own decisions were viewed as successful by all parties involved in the response.
- Political pressure and intense media scrutiny negatively affected adherence to the Oil Pollution Act of 1990 (OPA-90), the National Contingency Plan (NCP), NIMS/ICS principles and the performance of the response organization. Because of political pressure, NIMS/ICS principles were sometimes ignored to accommodate operations that were conducted outside normal ICS chain of command.
- Under the UC construct laid out in the NCP and the Coast Guard's IMH, it is expected that local issues arising within a State will be addressed by the State On-Scene Coordinator (SOSC) and their staff in the ICP. During the Deepwater Horizon incident, the SOSCs were unable to adequately support local needs or resolve their issues.
- The creation of a separate liaison (LNO) program to better serve the State, parish, and county levels with external lines of communication subverted the standard ICS chain of command.
- The large scale and magnitude of this response created complexity as the response organization expanded. Several of the response positions established at the State and local levels had no precedent within Coast Guard's IMH. In most cases, the individuals who were assigned to fill these roles were called Liaison Officers or LNOs. This led to confusion and

miscommunication since there were multiple active LNO programs within the overall response structure.

Discussion:

The Planning Sections in the Houma and Mobile ICPs were producing IAPs exceeding a hundred pages in length on a daily basis. The sheer size of the IAPs limited their utility. In the field, the forward operating bases (FOBs) (which later became Branches) were responsible for implementing the field tactics that the ICP developed and set forth in the IAP. However, communications between the ICP and the Branches often was not constructive. A combination of inexperienced responders, distance, poor cell phone and email contact, command structure complexity (e.g., confusion over who to talk to, multiple deputies, duplicate Branch Directors, frequent rotations and unclear expectations), competing priorities and political pressures contributed to the problems between the ICPs and the FOBs/Branches.

Early on, several Branch Directors established their own plans and unilaterally conducted their own clean up and response operations. By the end of June, however, these differences were being corrected and operational directives flowed according to NIMS/ICS doctrine. Operational personnel are very action oriented by nature, and it appears they took matters into their own hands when there was not specific guidance from the ICP. Although admirable, the downside to the Branches doing their own planning for shoreline cleanup (even if it maintained general adherence to the overall command objectives) was the disconnect between the beach cleaners and the expert guidance given by the Environmental Unit in terms of SCAT and Shoreline Treatment Recommendations (STR).

Initially, the response organization created the perception that partiality was given to States that had ICPs. States that did not have ICPs may have felt underrepresented. The ICS response organization acknowledges the role of the State, and provides for State representation within the UC. In most instances the IC relies on the State representative to provide input from local governments, allowing the UC to address the concerns of local government during the response. As stated elsewhere, the NCP response (vice NRF – Stafford Act) caused great confusion to local governments and was a huge source of frustration and concern. To address these concerns, FOBs were designated as Branches. As the spill spread, ICPs became larger and dealt with more complex issues, it was appropriate, according to NIMS/ICS doctrine, to increase the number of Branches. In Louisiana, one Branch was established in each coastal parish; in Florida, Alabama, and Mississippi, Branches were in each county. The Branch structure was adapted to work in concert with the priorities and goals of each State. Branch Directors were given more authority to make operational decisions in order to respond more quickly. Prior to empowering the Branches to make operational decisions, it took 24 to 48 hours to pass issues up the chain of command and receive direction. The Branches shortened the time needed to address immediate needs and allowed the organization to be more responsive to local issues.

After the Branches were established, there was a contrast between the Branches under the Mobile and Houma ICPs. In the Mobile ICP's AOR, Branches were operational entities with extended control from the ICP. Each Branch section reported through their section's chain of command (i.e., Branch operations section to ICP Operations section) and the Branch sections were not under purview of the Branch Director. Branches under the Houma ICP's AOR functioned more independently, and all section leads reported through and were supervised by the Branch Director.

LNOs placed in the local county and parish Emergency Operation Centers (EOCs) were a positive step in coordinating local concerns. Local governments wanted direct access to information, but were not able to provide staff to the ICPs full time. DHS, through the Office of the Deputy Secretary (S2), established the local government liaison program. LNOs became the go-to person for local officials. The LNOs reported outside of the response organization's chain of command, usually directly to S2 during a nightly phone conference. Although this LNO program solved some of the local communications issues as well as provided local entities a greater voice and insight into the response organization, it also led to the ICPs receiving critical information outside of the ICS chain of command. Although the ICs at the ICP and UAC participated in these calls, there were instances where information normally submitted through the ICS reporting system was first heard from these nightly calls. While the LNO program caused communication and coordination challenges, in the end it met the needs of the local governments, which in turn helped the UC to meet its objectives.

The UAC worked hard to develop strategic plans. Often, however, when they were passed to ICP Mobile or Houma, they were difficult to translate at the tactical level. These plans were separate from the ACOG. Late in the response, Strategic Plans did serve a purpose for command transitions and demobilization; however, these plans, especially during demobilization, raised even more concerns with States, counties, and parishes.

The Demand for Information

Observations:

- Early in the response, information flow between various levels of the response organization was slow. Because of frustration in getting desired information, the reporting chain was often circumvented.
- Some of the most difficult challenges of the response organization were addressing the continual requests for information or data involving response operations.
- The ICPs created Situation Units to handle the heavy demand for, and high volume of, information, but it took several weeks to get the Units fully operational.
- The establishment of the National Incident Command both helped and hindered the reporting burden placed on the UAC and ICPs.
- Meeting demands for information consumed a significant amount of time and energy, diverting attention from the response effort.
- Despite the huge amount of data moving through the UAC, there was consistent pressure to improve information reliability (accuracy and currency), and a great deal of staff time was expended to ensure that even the most minute details were correct.
- The ICS-209 Incident Status Summary Form has been the main document used for information dissemination in previous events. However, during the Deepwater Horizon incident, this information was neither adequate nor timely enough to meet senior level briefing requirements.

Discussion:

The 24/7 news cycle, proliferation of news reporting organizations, advances in information technology and telecommunications, and social networking opportunities all serve to create a constant demand for real-time information. During the Deepwater Horizon incident, responders experienced a huge demand for information from within the response organization, from all levels of Government, and from the news media. (For more details, see the "External Communications" chapter) Responders struggled to collect pertinent information and manage the multiple access points to meet those demands. The fear and uncertainty surrounding the spill and its adverse impacts heightened public apprehension, and increased the demand for information, which, in turn, helped to fuel the need of elected officials to have accurate and comprehensive information.

Many responders described the problem as the seemingly insatiable demand for more and more granular information. The phrase "feeding the beast" was used to describe the process by which officials tried to meet that demand. Attempting to meet the continuing demand for information competed with the response organization's staffing resources. When asked about information management, every person interviewed during this review stated that "feeding the beast" affected the entire response in a negative manner.

Early on, the absence of a streamlined reporting process within the response organization led to the daily release of multiple reports with similar yet often contradictory information. Responders knew what information was needed to help meet the needs of external stakeholders, but had difficulty capturing and then disseminating that information.

Responders struggled to create a single information format to meet their needs. Eventually, the UAC was able to combine requirements and define key reporting terms so that a single report could be generated that was responsive to most requests. After some major changes to the reporting process, the NIC and UAC simplified reporting requirements and relieved many of the reporting requirements placed on the ICPs. Until these steps were taken, information management was a major obstacle to the response organization.

<u>Communication Flow</u>

Observations:

- Due to the size and complexity of the Deepwater Horizon incident and the high level of interest within the Federal Government, the desire for immediate and accurate information was so overwhelming that it challenged the spill response structure; it forced key response personnel to respond to information requests from up the chain of command and distracted them from completing other priority tasks such as supporting field operations.
- IAPs were developed in the ICPs, but in many cases they did not make it to the front-line responders in the field in time to be of value to their daily activity planning.

- Most of the communications between the ICP and the FOBs, which later became Branches, were focused on the ICP seeking data to respond to the information requests of the UAC rather than supporting their operations in the field.
- Confusion on the part of responders in the field was exacerbated by multiple reporting lines back to the ICPs, duplicate personnel in ICP oversight positions (e.g., "Branch Director"), and frequent personnel rotations in the ICPs.

Discussion:

Comprehensive, accurate, and timely information is the most desired commodity in response. Without it, decisionmakers are hampered in making critical decisions, or are forced to make decisions based on partial information. In this incident, there were many occasions where the ICPs did not deliver clear messages to the Branches and field operators in support of tactical operations. On some occasions, messages and reports were delivered across the response organization that were unclear, had missing information, or did not undergo a final review prior to release.

Since OPA 90 was enacted, industry and agencies practiced and responded together using the standard protocols of NIMS/ICS as prescribed in the IMH and supporting documents. For the most part, this approach has worked well. However, the sheer magnitude of this incident, as well as the public and political demand for information, exceeded the ICPs' and UAC's capabilities to efficiently and effectively manage all of the data associated with the response.

The use of personal cell phones and personal email accounts were contributors to success early in the response, before common communications systems were established. However, as personnel began rotating out, communication was negatively impacted. Data would be lost, and incoming personnel struggled to find important communications and data they needed for performing their duties, and for continuity of operations.

Many innovative approaches were developed to meet information demands. New ICS positions, such as the Request for Information (RFI) Unit in the UAC and the Parish Liaison Officers, were key to improving information gathering and dissemination. Different information technology platforms and internal firewalls that hindered the set-up of common reporting systems were recognized and remedied. Eventually a common operating picture (COP) was established that greatly improved the ability to gather, store, retrieve, and disseminate information.

Lessons Learned:

- An effective response is dependent upon trained, qualified, and experienced responders. The need to rely on unqualified and inexperienced responders can have an adverse impact on the operation.
- Developing a functional organization of people adequately trained for key positions is the core element of NIMS/ICS doctrine.
- Merely adding personnel to the response organization can negatively impact span of control and does not necessarily improve its effectiveness or aid in accomplishing response objectives.

- It is critical that all responders, regardless of agency or organizational affiliation, have at least a minimum level of NIMS/ICS training and competency to support the response organization.
- While not preferred, JIT training was necessary to provide a minimum level of knowledge and job performance expectations to inexperienced responders and command post personnel.
- NIMS/ICS technical advisors improved organizational efficiency and facilitated decisionmaking processes at the UAC and ICPs.
- The addition of Federal Agencies (beyond the Coast Guard) as full members of the UC can potentially delay decisionmaking process and impede the response organization's progress.
- During large incidents, IAPs can quickly develop into large and cumbersome documents that may have limited utility for tactical field operations.
- The creation of a Branch structure in the NIMS/ICS organization was an effective means of delegating FOSC-R authority and tactical decisionmaking to the local level.
- The locations and numbers of ICPs must be carefully chosen to assure impartiality, accommodate stakeholder interests, and maximize representation across jurisdictional boundaries.
- Once fully implemented at the State and local levels, the LNO program was a critical element of the response organization; LNOs effectively established lines of communication between elected officials and the response organization.
- If the response organization does not implement a structured and streamlined reporting process that meets the needs of its stakeholders, it can quickly get overwhelmed by requests for information.
- The development of a COP and a single situation report that consolidated daily information reports satisfied the information needs of most stakeholders and served to reduce the number of information requests.
- The UAC RFI Unit performed a critical function and successfully managed much of the information request burden placed on the response organization.
- Inadequate and ambiguous communications between ICPs and Branches or field responders can result in confusion, inefficiencies, and delays in the accomplishment of strategic and tactical objectives.
- A clear understanding and adherence to communications and messaging protocol within the response organization is fundamental for a successful operation.

Recommendations:

1. The Coast Guard should review the NIMS/ICS training and competency requirements necessary for effective crisis management, pre-identify a core cadre of individuals throughout the organization who can be activated during an event of this magnitude, and ensure they are given adequate and specialized NIMS/ICS training.
2. The Coast Guard should review the UAC organizational structure necessary for a large-scale incident. The Coast Guard should review UAC doctrine and clearly define UAC positions, roles, and responsibilities, as well as recommended staffing standards.

3. The Coast Guard should clearly define the requisite training and experience necessary for the UAC and ICP organizations and ensure that it has sufficient numbers of trained personnel available to staff those positions during a large-scale incident.
4. The Coast Guard should encourage all participating agencies and organizations involved in an oil spill response to maintain a commitment to NIMS/ICS training and competency.
5. The Coast Guard should establish, or have access to, a standardized, deployable JIT training program as part of its oil spill preparedness program.
6. The Coast Guard should formally establish an NIMS/ICS technical advisor position into its NIMS/ICS doctrine and IMH.
7. The Coast Guard should review NIMS/ICS doctrine and determine appropriate protocol for Federal Agencies to provide input and advice at the UC level. The Coast Guard should consider having other Federal Agency representatives, as needed, function as advisors rather than as members of the UC (similar to the NOAA Scientific Support Coordinator).
8. The Coast Guard should consider the use of alternative formats or reducing overall size to improve functionality and tactical application of large incident IAPs.
9. The Coast Guard should develop more comprehensive guidance for location, function, and effectiveness of Branches during a major incident. Branch locations should be carefully selected based on geographic, jurisdictional, and/or political considerations.
10. During future incidents, the Coast Guard should carefully select the location of ICPs based on proximity to the spill, but also consider geographic, jurisdictional, and/or political ramifications.
11. The Coast Guard should capture the best practices from the Deepwater Horizon LNO Program and use them to update LNO policy guidance. Mid-level and senior officers should receive LNO training on how to implement an effective LNO program.
12. The Coast Guard should consider developing a standardized set of oil spill reporting metrics and a streamlined reporting process that are NIMS/ICS compliant and that accommodate the anticipated information requests from stakeholders and agency officials during major oil spills.
13. The Coast Guard should ensure that NIC and UAC doctrine includes standard protocol for receiving, processing, and responding to information requests and streamlining reporting requirements during a major incident.
14. The Coast Guard should consider including the RFI Unit as a component of the Situation Unit at appropriate levels within the response organization as part of its NIMS/ICS doctrine and IMH.
15. The Coast Guard should ensure, as part of its NIMS/ICS doctrine, that communications from ICPs to Branches (or field responders) include clear guidance, direction, and objectives as well as any specific requests for information.
16. The Coast Guard should review its procedures for effective communications during a major incident and ensure that responders continually review outgoing messages and reports for clarity, accuracy, brevity, specificity, and mission appropriateness.

FOCUS AREA PART III: RESOURCES AND READINESS

III.1 SUSTAINABILITY OF RESPONSE PERSONNEL

This paper addresses three areas of personnel and human resources involved in the Deepwater Horizon incident response: Personnel within the Incident Command Post (ICP) organization, personnel within the oil spill response community and those brought on to support that community, and personnel from agencies or organizations outside of the Gulf region such as personnel from other States or local government responders.

Unified Command

Observations:

- The Unified Area Command (UAC) and Houma Incident Command Post (ICP) were established quickly and were staffed with competent personnel.
- As the Mobile ICP and Forward Operating Bases (later Branches) were established and staff rotations started, there was a significant lack of trained and experienced personnel from BP, the Coast Guard, and the States to fill key roles in the response organization; e.g., Section Chiefs, Branch Directors, Division/Group Supervisors, Task Force Leads, and so forth.
- The combination of a lack of experienced leaders at lower levels of the response organization and BP's proactive and unlimited initial support led to an almost uncontrolled and inefficient growth in ICP structure and personnel.
- Sustaining Incident Command System (ICS) positions with qualified personnel for several months was a significant challenge for the response organization. In some cases, it took two or three inexperienced, but dedicated people to complete the same role.
- The sheer numbers of staff in the ICPs led to other logistical issues regarding training, housing, transportation, and communications support.
- The structure and growth of the response organization was significantly influenced by political pressure that forced unnecessary staffing and equipment stockpiles in regions with little oiling or potential for oiling.
- There were instances where personnel and equipment were often underutilized or not resourced because of a complicated organizational structure that grew too rapidly.
- The directive from the White House requiring the "tripling of Coast Guard forces" led to significant logistical, training, and assignment issues.
- In all cases, Incident Commanders (ICs) from BP, the Coast Guard, and the States praised the workforce that was present and were impressed with the talent and effort individuals invested to develop a network of quality personnel.

Discussion:

The Federal Government, BP, the oil spill removal organizations (OSROs), and the States had sufficient qualified personnel for the initial response. They ramped up early and with strong numbers. However, as additional ICPs and Branches were established and staff rotation began, the ICPs became stressed and bloated due to increasing numbers of untrained, inexperienced, but well-intended staff. The use of Coast Guard Reserves and other Coast Guard personnel not having prior experience or training in pollution response proved to be a significant issue in this event. Additionally, the limitations on number of days Coast Guard Reserves were placed on active duty limited long-term assignments and required constant "just-in-time" training for replacements.

Growth of personnel numbers in the ICPs by all parties was unprecedented. While it is important to "front load" a response with sufficient qualified personnel and resources, it is also important to re-evaluate the functions and number of personnel needed once the objectives and tasking are better known. However, it is unclear if the ICPs were ever "right sized" once the response organization's objectives were known. BP was very proactive and placed no limits on what was needed to make this response successful. This resulted in the inclusion of many response personnel and equipment that may not have been necessary. For example, in the initial stages of establishing Mobile ICP, there were approximately nine different groups providing some type of Geographic Information System support. There were duplicate Branch Directors, sometimes resulting in a three-headed entity (i.e., BP, Coast Guard, and OSRO representatives), as well as many other duplicate positions.

The organization grew primarily due to a lack of proficiency in ICS positions. In most cases, people were not properly trained for the position and therefore required a deputy or assistant. The re-evaluation, demobilization, and "right sizing" of the ICPs were very difficult. With properly trained people, the organization could have been leaner and more efficient. Good tactical plans were developed and supported, but the size of groups supporting the tactical effort and developing the plans could have been a lot smaller at all levels had qualified and experienced personnel been placed in the positions.

Resourcing, mobilizing, training, and sustaining qualified personnel in the ICPs was an enormous logistical effort. Within a few weeks, the ICPs were overpopulated. There were even shortages in transportation and nearby lodging. Effective rotations of personnel for this long-term response were processed by each part of the response organization (e.g., ICPs, UAC, NIC support organization) separately.

When the White House called for the Coast Guard to triple their forces, there was a negative impact on the response. The order was implemented so quickly that planners and logisticians were not prepared to handle the onslaught of new Coast Guard personnel. Initially, the response organization was not prepared to train or assign thousands more responders, all within a 2-week period. Eventually, personnel were processed and assigned, providing a stronger, more visible Federal Government presence.

Response Community Personnel

Observations:

- The unprecedented size and scope of the Deepwater Horizon incident placed enormous strain on the number of response personnel required and their utilization.
- OSROs initially cascaded sufficient personnel and supervisory staff to meet the requirements set forth by the response plans.
- As the incident grew, OSROs were requested to hire, train, and utilize a large contingent of local resources for shoreline cleanup and other response operations.
- Political and public pressure for utilization of local resources caused significant challenges to the response organization, and served to displace some experienced spill clean-up personnel.
- Employee turnover was extremely high among new hires for this incident.
- Balancing safety requirements imposed by BP's spill management team with productivity and public perception was a challenge.

Discussion:

In the early hours of the Deepwater Horizon incident, the Marine Spill Response Corporation (MSRC) activated its Spill Team Area Responders Network of OSROs. Over the coming days, contractors mobilized large numbers of qualified and experienced spill personnel from within the Gulf region, supplemented by OSRO resources from across the country; however, as the magnitude of the disaster continued to grow, and the situation became more politically charged, it became apparent that personnel resources beyond what the private OSRO contractors had provided were going to be required.

In May, for example, Mobile ICP asked the OSROs assigned to that area of responsibility (AOR) to provide 9,000 personnel for the purposes of beach cleaning. The projected oil trajectories showed probable impact to the AOR within a 10-day period, so it was critical to get as many personnel trained and prepared as possible. Because of the extraordinary amount of people needed within a short timeframe, unemployed persons throughout the area became the primary staffing pool. As such, there were some significant risk factors for the OSRO community to consider in this effort, such as sourcing of personnel, training requirements, and the potential workers' compensation liability for the hiring companies.

To meet this objective, many of the OSROs immediately set up robust Human Resources (HR) Departments in the field for the purposes of pre-screening and hiring candidates. In addition to BP requirements for the project, many of the companies had their own internal risk management procedures that needed to be adhered to; e.g., background checks, pre-employment physicals, and drug screens. A tremendous effort was put forth by these companies to meet the challenges of processing the requested personnel. In many aspects, the "HR challenge" was reported to be more complex and difficult to achieve than the actual clean-up work.

Once hired, the individuals were "badged" as a BP contractor (certain States and counties had additional security requirements) and required to attend a 4-hour training program. Individuals slated to work in a capacity beyond "tar ball removal" within an OSRO organization would receive additional training, up to and including a full 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) course. Existing OSRO employees with current 40-hour

HAZWOPER training were required to take the 4-hour course, which amounted to a considerable cost and time commitment.

Ongoing political and public pressure related to using local resources created several challenges for the clean-up contractors. As the incident progressed, there were a number of directives given by the oil spill response organization to meet specific "percentage goals" for use of local resources. In many areas, the goal of using local resources was 100 percent, with the only exception being a limited number of non-local OSRO personnel used in supervisory roles. Companies were cautioned that they would be demobilized if they were unable to meet these requirements. Although these goals were predominantly focused on the land-based operations, they also impacted the in-shore marine operations, and required the hiring of local boat captains and deckhands outside of the formal Vessels of Opportunity (VOO) Program. OSROs were required to submit a daily report itemizing the number of local versus non-local resources that were being utilized, which was a difficult task. The emphasis on using local resources displaced hundreds of experienced oil spill clean-up personnel and prevented companies within the OSRO community from bringing trained personnel to the Gulf from other regions.

Sustainability of the hired workforce was a major issue. Most OSROs have pre-established plans and rotations for their full-time employees during these types of events. This assures that responders will be properly rested, as well as provides a smooth transition between personnel changes. However, because so many of these individuals on this incident had no previous experience in oil spill cleanup, a large number of them were surprised by the difficult conditions they encountered, including long hours and often extremely dangerous heat indices. As a result, there was significant turnover in the ranks of the new hires, especially in the ranks of beach cleaning personnel. To counteract this issue, BP initiated a split-shift program for beach workers that broke all workers into an A Team and a B Team, each with a staggered workweek. The concept was put in place to address two main issues. First, the ongoing work schedule (i.e., 12 hours per day, 7 days per week) and extremely dangerous heat index conditions were proving too much for many workers to safely handle. Second, it allowed BP to "right-size" the clean-up operations without the formality of a lay-off event. Under the new program, beach cleaners would work an average of 44 hours per week. A somewhat ironic result of the planned reduction in hours for beach workers was the resignation of many workers who felt that they were not getting enough hours to make it worthwhile for them to work.

Safety of the crews was a major issue addressed by BP's management team. The extremely dangerous heat indices and the potential for heat stress or stroke was an area of primary concern. Great care was taken to assure worker safety, including re-evaluation of personal protective equipment requirements, as well as the work-to-rest ratio. Because of the established work-to-rest ratios, extra resources were required to assure that loss of productivity was minimized. This was an area in which public opinion, fueled by press coverage, was at odds with BP and its contractors. To many, the appearance of workers under a tent or taking seemingly endless breaks while the well continued to discharge oil was a source of frustration.

Government Personnel (EMAC and Coast Guard)

Observations:

- An Emergency Management Assistance Compact (EMAC) offers State-to-State assistance during Governor-declared states of emergency. EMAC provides for reimbursement to the sending State by the requesting State, and personnel are protected under workers compensation and liability provisions.
- All of the Gulf States reported that they were overwhelmed with the size of the Deepwater Horizon incident and noted that they simply did not have enough trained and experienced personnel as required during the response to simultaneously maintain regular spill response coverage within their respective States.
- In many cases, States brought in additional staff from other State agencies (e.g., emergency management agencies) that did not have oil spill response training or experience to assist them.
- States that were unaffected by the Deepwater Horizon incident offered personnel (through EMAC) who were specifically trained and experienced in oil spill response and specialized oil spill response equipment. Almost none of these assets were utilized by the affected Gulf States.
- During the Deepwater Horizon incident the Coast Guard relied heavily upon Coast Guard reservists [Title 14 (14 USC 712)].
- Selected reservists involuntarily recalled under Title 14 (14 USC 712) for the Deepwater Horizon incident could serve for an initial 60-day period. At the end of the 60 days, reservists must be given 60 days of "dwell" time back home before being eligible to be recalled again under Title 14.
- Reservists may not be recalled under Title 14 to serve for more than 60 days within a four-month period or for more than 120 days within a two-year period.
- As reservists neared the end of their Title 14 recall, some of them who possessed critical skills and a desire to continue their active duty service were invited to accept voluntary (ADOS) orders made based on consideration of specific mission needs.
- The majority of the reservists sent to respond to the Deepwater Horizon incident had little to no NIMS/ICS training nor oil spill response training or experience.
- There were also other restrictions placed on active duty personnel such as not allowing sector commanders from unaffected areas to report to the response, even if their area of expertise was vital to the response effort.

Discussion:

On April 30, 2010, the State of Louisiana broadcast an announcement on the EMAC system looking for trained oil spill response personnel and oil spill clean-up equipment. Shortly thereafter, Florida broadcast a similar announcement on EMAC. Many States, including Maine, New Hampshire, Massachusetts, Connecticut, Rhode Island, Alaska, Washington, California, and Hawaii quickly consolidated trained personnel and equipment lists and submitted them into the EMAC system. They then waited for a reply or notification of need. Some States were more assertive in their approach and called the National EMAC coordinating State, Minnesota, to find out why their assets were not called upon. Similarly, some States began directly calling the Gulf

States' EMAC coordinators to find out what they needed to do in order to assist in the response efforts. Neither of these approaches met with success.

Some of the EMAC coordinators for the affected States were unable to acquire the personnel and assets from the offering States because they were not given permission to do so. The States were accustomed to working under the parameters of the Stafford Act Declaration process where the Federal Government would ensure reimbursement to the State, but the States were uncertain about how payment would work during this kind of emergency. Highly detailed and time consuming paperwork requirements involved with any EMAC procurement were also a barrier to using EMAC.

When the Coast Guard staff was asked why they had not looked to the unaffected States for trained personnel and equipment for the response, some replied that they simply had not thought about the unaffected States having the ability to assist. Many responded that if personnel from unaffected States were a known and available resource, they would have taken steps to ask for their participation, but were unsure of the process necessary to allow for such participation. The Coast Guard uses the Mobilization Readiness Tracking Tool (MRTT) database to assist in the identification of trained Coast Guard personnel. However, there currently is no nationwide database that includes the training and experience of State personnel. The MRTT is only as good as the quality of the data entered. Information was entered in various ways without standardization, which made it difficult to identify specific types of trained personnel.

Some of the Gulf States focused on using their own, untrained State residents and were not interested in receiving personnel from other States, even if the personnel from out of State had a great deal of training and oil spill response experience.

EMAC was eventually used by some of the Gulf States to a minor extent, and included the use of National Guard troops, where cost reimbursement is provided by the Federal Government.

At the time of the Deepwater Horizon incident, active duty Coast Guard personnel were in the beginning of the "transfer season" which added an additional layer of difficulty in scheduling active duty personnel to the Deepwater Horizon incident. About a month into the response, the decision to eliminate some of the restrictions was reversed because it was recognized that additional senior-level staff were needed at the response.

As of November 2010 there have been 4,100 active duty and 2,500 reservists working on the Deepwater Horizon incident. The reservists generally lacked training in oil spill response. To try to compensate for this lack of training, the ICPs instituted Just In Time (JIT) training. JIT included general ICS training and training for specific positions such as operations and planning section chief positions as well as positions in the field. This system was used for all untrained personnel that were reporting to the response, including personnel from the Coast Guard, EPA, BP, the States and contractors. At one point in the response one of the ICPs' Operations Section Chief was an inexperienced junior officer, who was responsible for 1,000 people.

The National Strike Force (NSF) members were very experienced in NIMS/ICS, its usage in the command post, and had training knowledge and experience in oil spill response in the field. Unfortunately, there were not enough of them to cover all of the critical leadership roles in the response organization.

Lessons Learned:

- A Spill of National Significance (SONS) or large, prolonged response requires a sufficient number of personnel with relevant experience and knowledge of the ICS response organization to serve in various capacities at multiple levels throughout the response organization.
- The UC needs to "right-size" the response organization for efficiency as soon as the size, scope, and duration of the incident are known and response objectives and tactics are determined.
- A pre-established sustainability plan is necessary during significant oil spills to assure safe, efficient, and effective operations. Clear rotation schedules and seamless transitions are essential to the success of a response of long duration.
- The political and public pressure to hire and blend large numbers of local personnel and resources into the response organization was an unanticipated challenge for OSROs.
- HR issues associated with hiring and managing temporary clean-up personnel are significant challenges during a response that need to be addressed in advance of an incident; these factors include pre-screening and workers compensation liability issues.
- Extreme weather or work environments need to be considered in determining personnel requirements for sustained response operations.
- The lack of depth in the Coast Guard's preparedness and response program was a significant challenge that hampered the Coast Guard's ability to sustain response operations over several months.
- Incidents of long duration requiring large numbers of Coast Guard reservists may be adversely impacted by limitations in the law governing involuntary recall.
- For large-scale spill response operations involving a variety of organizations, staff rotation schedules need to be coordinated to ensure effective continuity of operations.
- The Coast Guard's current training and qualification database is not adequate to find personnel with specific training qualifications or experience.
- Unaffected States may have capabilities and resources that may be useful in a response; however, there is currently limited capability for identifying and procuring those resources; e.g., EMAC.

Recommendations:

1. The Coast Guard should ensure that its personnel mobilization, management, and tracking system allow the identification of individuals' ICS qualifications. This information should specify incident management skills, including incident experience, to allow sustainability of operations during a significant oil spill.
2. The Coast Guard should review its training policy and programs to ensure that they have an adequate number of NIMS/ICS trained and qualified active duty and reserve personnel to respond to a SONS event.
3. The Coast Guard should ensure that unit operational plans contain pre-established and complementary rotation schedules and encourage other response partners to follow suit.

4. The Coast Guard should ensure that Area Contingency Plans (ACPs) contain sufficient direction related to appropriate sizing of spill response organizations.
5. The Coast Guard should consider providing guidance on the need to use local temporary clean-up personnel and to ensure that ACPs address this issue.
6. The Coast Guard should ensure that ACPs, Vessel Response Plans and Facility Response Plans address conducting response operations in extreme weather conditions or work environments.
7. The Coast Guard should re-invest in preparedness and response programs and cultivate oil spill response experience as an important function for assignment and promotions.
8. The Coast Guard should review statutory basis for reserve activation to ensure that it is adequate for sustaining operational requirements during long-duration incidents.
9. The Coast Guard should become familiar with the EMAC process and develop a process for identifying and contracting for qualified State personnel and equipment that is suitable for oil spill responses.
10. The Coast Guard should renew their efforts to promote NIMS/ICS training to a variety of organizations that could potentially be involved in a large response, including non-governmental organizations.

III.2 CONTAINMENT AND SUSTAINABILITY OF OIL RECOVERY OPERATIONS

This paper discusses three important areas of sustainability: Subsea containment, recovery, and storage; offshore response; and near-shore response.

Subsea Containment, Recovery and Storage

Observations:

- Of all oil spill response techniques used in the Deepwater Horizon incident, containment of the oil escaping at different spill sources on the seafloor proved to be one of the most successful methods in recovering large amounts of oil being discharged from the Macondo well. It was estimated by the Flow Rate Technical Group that subsea containment accounted for the collection of almost 17 percent of the estimated 4.9 million barrels of oil that were released from this event, preventing large volumes from reaching the environment. However, these successes were realized through the use of specialized containment systems created in response to the emergency rather than the mobilization of an existing, fully integrated and tested system with the necessary equipment, resources, procedures, and skilled personnel in place.
- The Federal Government has neither the skilled personnel nor the appropriate equipment to respond independently to an oil blowout in deep water and must rely wholly on the responsible party to contain oil spills occurring from one of their facilities.

Discussion:

In June of 1979, an exploratory well being drilled in 160 feet of water in the Bay of Campeche, Mexico experienced a blowout that would release oil into the ocean for 10 months until a relief well stopped the flow. The methods to control and contain the Macondo well—e.g., top kill, junk shot, and relief well—all bear striking similarities to those used 31 years ago on the Ixtoc well. One of the most notable similarities was the design, construction, and deployment of the "sombrero," a device similar in concept to the BP cofferdam, in which the device would be lowered over and encapsulate the oil plume originating from the source. The sombrero was eventually able to capture a little over 20 percent of the estimated daily release rate of 30,000 barrels per day gushing from the Ixtoc well. While deployment and operation of the sombrero was not without difficulty, the concept had been proven and a new tool had been added to the arsenal of those available to responders—one that could be analyzed and enhanced before another blowout occurred.

Just as the sombrero was built in response to the Ixtoc well blowout, BP did not embark on construction of most containment devices—e.g., riser insertion tube tool, top hats, top caps, and capping stack—until after the Macondo well blowout occurred. There appeared to exist a long-standing belief by BP and the industry at large that, through safety system redundancy and the multiple layers of mitigation measures designed to reduce the operational risk during exploratory well drilling operations, the ultimate risk of a deepwater well blowout was

essentially zero. The fact that a deepwater blowout would be a "high consequence" event that could have driven response planning prioritization and funding also did not appear to have significant impact on decisions to provide adequate plans and equipment should such a low probability event ever occur. The mentality associated with mitigation layers and attendant risk reduction is well rooted and widespread throughout the exploration and development community within the United States, and has had the effect of creating a void in any type of substantive research to advance response equipment technology such as the sombrero or other innovations.

Following the loss of the Deepwater Horizon, oil was being discharged from three different locations on the seafloor—a drill pipe, the end of the riser, and a kink in the riser at the top of the lower marine riser package (LMRP). With the exception of the cofferdam, which had been constructed and used offshore after hurricanes, subsea equipment to contain the oil at the release points at such extreme water depths did not exist. As a result, equipment required expedited design and fabrication as the response progressed. Detailed procedures needed to be developed to ensure safety of the responders and to prevent any further damage or create a situation that would increase oil flow. Remotely operated vehicles (ROVs) had to be equipped with newly fabricated tools to make modifications to the LMRP and the blowout preventer. At the same time, vessels capable of processing the three-phase flow were needed to process, store, or transfer collected oil. Collectively, the containment devices, riser systems, support and storage vessels, processing methods, and logistics practices that evolved proved that subsea capture of oil is a viable response methodology. Subsea capture technology should be required of, or available to, all operators engaged in offshore drilling and production activities where well blowouts could occur.

Offshore Oil Spill Response

Observations:

- Immediately following the explosion and ensuing fire on the Deepwater Horizon, BP activated its two contracted oil spill removal organizations (OSROs). Each began mobilizing their considerable Gulf of Mexico assets to respond to the developing spill. These systems represented the best available mechanical offshore skimming response technology in the United States and the best hope for successfully corralling and removing the oil spewing from the Macondo well before it could impact sensitive shorelines.
- In the ensuing days of the deepwater blowout, as the slick size grew and more oil slipped past the offshore skimming fleet and began to impact the shoreline, the effectiveness of mechanical recovery systems in use began to be questioned.
- Offshore recovery efficiencies were much less than predicted. Mechanical recovery operations were being negatively impacted by moderate sea states, poor encounter rates, oil compositions that were incompatible with offshore skimming systems, and an inability of skimmers to stay within the confines of the largest and thickest patches of fresh crude oil close to the site of the well.
- When state-of-the-art skimming systems finally were imported from Europe and worked alongside similar U.S. equipment, the European equipment was reported to be superior in ability to operate in rough weather and recover higher volumes of oil.
- Alternative response methods such as in situ burning (ISB) and dispersants took on an unexpected expanded role in the offshore response.

- ISB was effective in removing large amounts of oil but the efficiency of the activity was somewhat hampered by the lack of a ready supply of special boom to control the burns.
- Surface application of dispersants became secondary to the untested application of dispersants directly to oil coming from the source; however, the subsea dispersant application was hampered by the lack of scientific knowledge about the effects of large volumes of dispersants in the water column.

Discussion:

The Oil Spill Response Plan (OSRP) for BP listed the Marine Spill Response Corporation and the National Response Corporation as their primary oil spill responders. Through these contracts, BP also had access to Airborne Support, Inc., which provides fixed wing aircraft for dispersant application, and American Pollution Control Corporation, which can support oil spill response operations. Cumulatively, the firms listed 69 separate skimming systems that were warehoused in Texas, Louisiana, Mississippi, Alabama, and Florida. Many of the systems, however, were only rated for near-shore operating environments and could not be used to skim oil offshore, near the source of the spill.

Within days of the fire and explosion, however, additional assets were being mobilized to complement the growing fleet of vessels. Assignment lists from the Incident Action Plan (IAP) prepared by the Unified Command (UC) showed an ever-increasing mobilization of equipment. Clean Gulf Associates, a major response cooperative, had already been called in to provide access to their fast response units, fast response vessels, and one of the largest skimmers in the United States, the High-Volume Open Sea Skimmer barge. Dispersant application and spotter aircraft belonging to the Marine Spill Response Corporation were being deployed. Vessels owned by the American Pollution Control Corp. and Edison Chouest Offshore were being made available to support the response, and all manner of supply boats, tugs, and storage barges were placed under contract and were either en route, sourced, or already assigned to specific areas of operation.

On April 21, a Coast Guard Situation Report detailed an offshore slick two miles long by one-half mile wide that had an estimated volume of 30 gallons of oil on the water. An early report from the Coast Guard stated there was “No anticipated major economic impact for the energy sector or the company.” By April 25th, the size of the slick was reported to be 48 miles long by 39 miles wide, covering an area of almost 2,000 square miles. Seventeen response vessels were now on route to skim oil and the first sortie for the aerial application of dispersants took place. Three days later, the first of hundreds of ISBs would be conducted.

Within 1 week of the sinking of the Deepwater Horizon, IAP Assignment Lists depicted a structured, refined Offshore Branch that was comprised of 26 vessels capable of working in deep water, seven dedicated tug boats, and three offshore oil storage barges, which collectively could support and sustain long-term skimming operations near the source. Operations, however, were limited by several factors. Because of safety concerns, skimming could not take place within a five-mile radius of the spill location, allowing oil that had reached the water’s surface to thin to a point where collection of any substantial amounts of oil, due to low encounter rates, was almost impossible. Skimming operations were also limited by sea state. Many of the skimmers could not be used in seas greater than 3 feet. Ocean boom used to corral oil had the same limitation.

The efficiency of offshore skimmers in actual operation during the Deepwater Horizon incident is difficult to measure. Throughout the spill, reports of offshore skimming never provided the amount of pure oil recovered but rather talked about the volume of the oil-water mixture that had been captured. When the storage tanks of skimming vessels were full of this oil-water mixture, it was pumped into waiting barges for transport to shore for processing. Many of the skimming vessels did have the ability to decant collected water back into the ocean, but heavily emulsified oil does not easily break down to its constituent oil and water components. Because of this, the percentage of oil that was actually recovered can only be estimated. For purposes of this review, it is assumed that 50 percent of the mixture was oil.

Efficiencies of all skimmers are not the same; however, without hard data to differentiate between the different types of belt and weir systems, only a gross cumulative assessment can be made. Soon after skimming began, a total of 20,237 barrels of the mixture was recovered by a total of 15 skimmers in 1 day. Some of the vessels in operation had effective daily recovery capacities (EDRCs) of over 10,000 barrels of liquid per day and thus were operating well below their design capacity. This was due, in part, to poor encounter rate, excessive sea states, the exclusion zone at the spill location, and other factors.

Reports from the Unified Area Command in July indicated that there were as many as 76 offshore skimmers engaged in operations, with equipment being brought in from foreign sources. Reports from the field indicated that skimmers brought in from Norway could operate in higher sea states than those from the United States and were collecting much higher percentages of oil. Ultimately, it was reported that all skimming operations accounted for the collection and removal of only three percent of the total oil released from the Macondo well.

Alternative response technologies that, for the most part, were untested prior to the Deepwater Horizon incident, proved more successful than mechanical means in removing oil. ISB, which had never been done in the open ocean of the United States, was proven to be a viable response method given the right combination of weather, oil thickness, and oil composition. Estimates calculate that five percent of the oil from the Macondo well was removed by ISB operations. This accomplishment was not without difficulty. Limited quantities of special fire boom was available and supplies brought in from foreign sources were found to be inferior, lasting only 5 minutes before beginning to disintegrate from the heat and thereby allowing the oil to thin and self-extinguish.

Oil that was chemically dispersed was estimated to be eight percent of the oil that escaped during the Deepwater Horizon incident. Normally, dispersants are applied to the oil on the water's surface and, through natural mixing action, the crude oil breaks down into micro-droplets that drift deep into the water column and naturally degrade into harmless components. During Deepwater Horizon response operations, aircraft from Airborne Support Incorporated and Marine Spill Response Corporation performed the task of dispersant application. For the first time ever, however, dispersants were applied using ROVs directly to the spill source. This had the effect of treating the oil in a highly turbulent flow regime that promoted oil dispersion. A secondary and equally important function also resulted from the new method. By dispersing the oil at the source, volatile organic compounds that would surface near vessels above the spill site were minimized, reducing safety hazards to the thousands of responders working to drill relief wells or install containment devices over leak points.

The scale of dispersant application was unprecedented. Throughout the event, use of the chemicals received national attention and caused concern. Unanswered questions on the fate and effects of the dispersed oil, and the lack of current research on dispersant toxicity added to these concerns. There were questions related to the safety of the dispersants being used, Corexit 9500 and 9527, which sparked efforts to identify adequate supplies of dispersants deemed less harmful. Eventually, the volume of dispersants and even the operation itself required daily review and approval.

One of the most significant impediments to offshore oil spill response operations was the inability to provide real-time information on spill body location. Vessels on the water were not equipped with radar that can image oil on the water's surface. During the Deepwater Horizon incident, spotter aircraft served this purpose. This surveillance was supplemented by images from satellites and oil thickness sensors installed on fixed wing aircraft that were transmitted to responders. The use of this type of information met with mixed success. In some cases the information was too old, and by the time responders reached the area where oil had been reported, it had been dissipated by wind and current. Rather than skimming the large patches of thick oil, operations took place in less concentrated sections of oil where recovery was minimal. Spotter aircraft could provide real-time direction to skimming flotillas or ISB crews. However, this was impeded by the inability of aircraft to communicate directly with skimming vessels by radio. This gap in communications often resulted in vessels skimming only sheens.

Near-Shore/Inshore Response

Observations:

- The initial quantity of critical resources (e.g., boom, near-shore skimmers) available and provided by the existing OSRO community exceeded plan requirements.
- There needed to be better communication among all responders concerning available resources.
- The Response Resource Inventory (RRI) was not designed to provide real-time information with regard to critical OSRO resource availability.
- Certain critical resources were not mobilized to the incident as a result of regulatory requirements and plan holder demands.
- A focus on achieving numeric goals for skimming equipment overran the consideration of their applicability. In many cases the equipment was not designed for the conditions encountered, was not used effectively, or was not suitable for the operating environments.

Discussion:

In the early stages of the Deepwater Horizon incident, near-shore and inland OSROs mobilized extensive resources. Initial requests for resources were reported to include such instructions as "bring everything you can" and were based upon the potential significance of the event. A robust OSRO network already in the Gulf region was supplemented by resources cascaded into the region from all areas of the country. As the demand for more resources escalated, the issue of properly identifying, tracking, and deploying such resources became a significant challenge. There was an insatiable demand for information, and a drive to achieve unrealistic numeric goals related to the amount of equipment without regard for equipment capabilities. The lack of a comprehensive, real-time database that encompasses all industry assets was a limiting factor.

Furthermore, a misconception on resource capabilities, specifically regarding near-shore and inland skimmers, created an expectation and performance gap.

The National Strike Force Coordination Center (NSFCC) maintains the RRI, a system for the tracking of national oil spill response resources. The Oil Pollution Act of 1990mandated the creation of this database, which was subsequently expanded to assist in the OSRO classification process. For many years the RRI functioned on a DOS-based platform, which made it very cumbersome for users. A single point of contact for the Coast Guard maintained the system, and assisted users with troubleshooting a variety of issues. Due to this capacity constraint, it was commonly reported that resource level changes requested by specific OSROs would take an extraordinary amount of time to be validated. The system became a burden for many OSROs, and overall accuracy or currency of the data became suspect. As such, interest in the program waned. In January 2009, the RRI was converted to a Web-based application. This change has produced significant improvement in the program.

One limitation of the RRI is that it does not capture all response resources that are actually available. The program itself is voluntary. Although it is mandatory for OSROs seeking classification to enter their resource information, the same is not required for resources owned by contractors who do not formally participate in the OSRO program. In addition, response resources owned by public entities (e.g., States, local fire departments, and so forth) are not universally captured. A database of a real-time inventory that includes all public and private sector resources is needed to respond to such large events.

A second limitation is that the RRI was not designed to be a “real-time” tracking system, a fact that caused a heightened level of confusion and anxiety during the Deepwater Horizon incident. Although OSROs that participate in the voluntary classification system are required to enter their resource information, there is no mandatory requirement to notify of changes. If an OSRO either purchases a new piece of equipment (i.e., adds a resource) or relocates an existing piece of equipment to another Sector (i.e., removes a resource), there is no requirement to provide notice of that change. Notice may be provided, but it is done so on a voluntary basis. As such, the RRI’s accuracy is limited. In the early stages of the spill, the NSFCC was directed to provide daily input on what resources were available and report back through the UC. The NSFCC struggled with this request, as the information that the RRI was producing each day did not match the information that OSROs were reporting outside of the system. As OSROs began cascading core resources into the Gulf, the information in the RRI was not universally being updated. The result was an information gap, which caused significant frustration and created additional work for the Coast Guard. Non-impacted Sectors began a campaign of reaching out to individual OSROs for the purpose of inquiring about resources on hand. This appeared to be an attempt at manually reconciling the data in the RRI with reality.

During the month of June, 2010, there was an intensive search for all available skimmers across the country. Several OSROs reported that they “were being contacted on a daily basis by their local Coast Guard’s Sector representatives,” who were inquiring on the availability of skimmers at their locations. At the same time, local Sector representatives were also active, assuring that

the OSRO had not removed resources from their location that would impact their ability to provide Average Most Probable Discharge (AMPD) response capability to their clients. A necessary and important balancing act between the regulatory requirements for OSROs to keep adequate resources in a particular Sector versus those mobilized to the Gulf was a highly publicized and debated topic. Later, the Coast Guard issued an emergency rulemaking notice that relaxed the regulation for plan holders to have in place assets to respond to either a Tier II (maximum most probable discharge [MMPD]) or Tier III (worst case discharge [WCD]) event, but required that AMPD capabilities remain in place. In reality, this guidance did little to alleviate or free up near-shore or inland response equipment. The relaxation of MMPD and WCD requirements has the most direct impact on the large, offshore assets owned by a small number of OSROs and cooperatives. Most OSROs had previously mobilized all assets within their inventory not specifically required to meet the regulatory requirements. Therefore, an inventory of remaining near-shore and inland assets owned by OSROs and used to meet AMPD requirements needed to be retained, regardless of the rulemaking change. Also, it is important to note that the Coast Guard is but one stakeholder in the process. Private plan holders and other agencies have input on what resources are contractually available and therefore nullified many aspects of the guidance issued by the Coast Guard.

The relentless desire to cascade skimmers into the Gulf for the response efforts also created a false expectation of their effectiveness. Similar to containment boom, the need for a specific number of skimmers overcame consideration of their effectiveness or applicability. The majority of skimming assets owned by the OSRO community are designed for near-shore and inland environments. They are small, easily deployable units designed to recover oil in relatively quiet environments. Although highly effective when used in the right application, like all pieces of response equipment they have limitations when not used properly. They are also limited by the physical characteristics of the oil that is being recovered. In the Deepwater Horizon incident, much of the oil that reached the near-shore and inland environments was co-mingled with large amounts of debris, and was tar-like and essentially “non-skimmable.” As such, many of the skimmers that had been mobilized to the sites remained inactive. It was found that “manual” methods (e.g., nets, pool skimmers, absorbents) were more effective for work in this environment. Similarly, near-shore and inland skimming systems must take into account total storage capacity capabilities. A near-shore skimming system without storage or transfer capability is ineffective.

Lessons Learned:

- Purpose-built equipment can be designed to successfully capture oil being discharged from damaged subsea equipment. The amount of oil captured will be predicated on many variables unique to the damaged equipment and the containment system.
- The Federal Government has neither the skilled personnel nor the appropriate equipment to respond independently to an oil blowout in deep water and must rely wholly on the responsible party to contain oil spills occurring from one of their facilities.
- Oil spill response plans (OSRPs) for operators in the Outer Continental Shelf do not address recovery of oil at discharge points and rely primarily on methods to capture or treat the oil only after it has reached the surface of the water or shoreline.
- Importing equipment from Europe and adopting new and innovative response technologies, coupled with questions about the fate of the dispersed oil and effects of deepwater dispersant

application, demonstrate that there are gaps in U.S. oil spill response technology research and indicate that there is a need to enhance response capability.

- Chemical and physical properties of the oil released from the Macondo well behaved in ways that are not fully understood. The release of oil at such a water depth resulted in wide aerial distribution of the slick, which made cleanup difficult and impacted the types of skimmers used and the collection strategies that were implemented.
- At the time of the Deepwater Horizon incident, the initial stockpiles of boom for ISB and dispersants for surface and sub-surface application were inadequate to meet actual demand.
- Various methods to determine locations and thicknesses of oil slicks to effectively direct skimming operations or other alternative response technologies need refinement.
- The unprecedented demand for resource identification, tracking, and mobilization on the Deepwater Horizon incident overwhelmed existing system capabilities for real-time monitoring.
- The RRI has improved dramatically since its transition to a Web-based system in 2009, but has several limiting factors that made it an ineffective tool during the Deepwater Horizon incident.
- Regulatory constraints, removed in part by the Coast Guard during the Deepwater Horizon incident, had limited impact on the quantity of near-shore and inshore skimming equipment that OSROs mobilized and/or utilized during the Deepwater Horizon incident.
- The unprecedented number of near-shore and inland skimmers mobilized to the Deepwater Horizon incident did not necessarily translate into efficiency, due in large part to physical characteristics and encounter rate of oil, and applicability of these assets to specific operating environments.

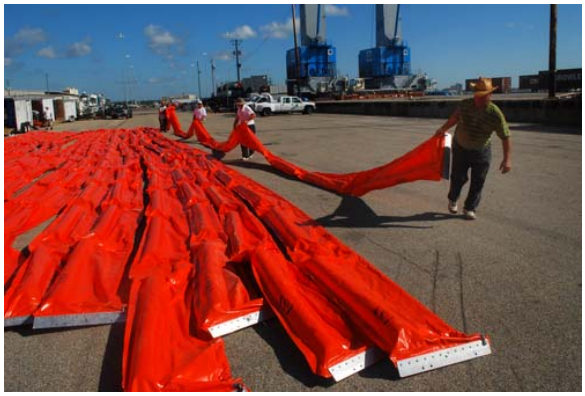
Recommendations:

1. The Coast Guard should request that the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) investigate the potential for the modification and standardization of exploration and production equipment; e.g., blowout preventers, risers, well heads, to incorporate a variety of options for emergency disconnects and installation of subsea containment devices.
2. The Coast Guard should request that the BOEMRE verify the availability of appropriate private sector subsea containment equipment, vessels, personnel, and capabilities for collecting flow from pipelines, risers, blowout preventers, flanges, and other subsea equipment at any water depth at which exploration and development activities are taking place.
3. The Coast Guard should request that BOEMRE verify that OSRPs for operators of offshore oil exploration, development, and production facilities have valid contracts with organizations with equipment, vessels, and personnel capable of installing and operating equipment to capture oil at the source in various water depths.
4. The Coast Guard should request that the BOEMRE require operators to include plans for subsea containment in their OSRPs.

5. The Coast Guard should seek to increase the level of funding for the Interagency Coordinating Committee on Oil Pollution Research from the Oil Spill Liability Trust Fund to develop national oil spill response research priorities.
6. The Coast Guard should develop a working team to review and propose recommendations to revise existing laws, regulations, and policies that effectively prevent the discharge of crude oil in U.S. offshore waters for the purpose of testing oil spill response technologies, and severely limit offshore decanting capabilities.
7. The Coast Guard should work with BOEMRE to require increased stockpiles of burn boom and dispersants sufficient to address a worst case oil well blowout.
8. The Coast Guard should support research to develop standards and processes for the expedited collection, processing, correlation, analysis, and distribution of satellite imagery and oil thickness sensors to provide for real-time direction of spill response operations.
9. The Coast Guard should monitor and enforce the participation and timely maintenance of the RRI database by the OSRO community as part of the classification program.
10. The Coast Guard should consider the need for a comprehensive database that includes response resources nationwide from all entities. This database must be considered a “real-time” tool for maximum effectiveness.
11. The Coast Guard should evaluate and revise guidance regarding acceptable resource movements outside a Sector during a major incident.
12. Through the Area Contingency Plan planning process, the Coast Guard should educate responders at all levels regarding the proper use and effectiveness of near-shore skimming devices and their limitations when applied to other operating environments.

III.3 CASCADING OF RESPONSE RESOURCES

Observations:



- Public and political pressure to show response activity during the Deepwater Horizon incident caused undue and inappropriate emphasis on boom and skimmer resources. Local officials measured success by the amount of boom in their jurisdiction, despite the fact that it may be the incorrect or inappropriate response resource for the operating environment.
- Orders and requests for all boom and skimmers in the United States to meet this perceived need did not take into account the effects on continuing operations in the donor areas, and impact on existing contracts between plan holders and spill response organizations.
- The attempts to relax the mandated response equipment requirements under the Oil Pollution Act of 1990 (OPA 90) did not reduce or eliminate plan holder liability issues under OPA 90, requirements under State laws, or the public relations impacts of operating without sufficient response equipment in the donor area.
- The magnitude of a Spill of National Significance (SONS) requires equipment resources to be activated both nationally and internationally. However, in many cases, international equipment was not activated for many different reasons, including long delivery times or a perception that regulatory or Customs issues would restrict their availability.

Discussion:

Regulations under OPA 90 require vessel and facility response plan holders to have oil spill response equipment (OSRE) on-scene within specified times from discovery of an incident. Additionally, the amount of equipment required is based on the worst case discharge (WCD) volume contained in the plan.

The OSRE for Tier I and Tier II incidents are staged at strategic locations around the coastal and inland areas of the United States based on operational risk profiles and logistics issues. The OSRE for Tier III WCD incidents is generally made up of the initial local Tier I and II resources, supplemented by “cascading in” of additional resources from adjacent stockpiles and/or staging areas.

Plan holders have partnered to form Oil Spill Cooperatives designed to stockpile and cascade Tier III response resources as needed. Therefore, multiple stockpiles of equipment that are strategically located in various parts of the country meet all members’ response plan equipment requirements for Tier III incidents. This business model provides for the sharing of equipment stockpile expenses as well as concentrating and maximizing spill response capability. However, it can limit the amount of stockpiled equipment that is required to maintain regulatory compliance in particular areas when resources are needed to move to a large spill, such as the Deepwater Horizon incident.

OSRE, in general, has some limitations, such as the right boom for the particular operating environment.

The public, media, and political attention garnered by the Deepwater Horizon incident, coupled with an incomplete understanding of the different types and efficiencies of the various types of OSRE, caused competing interests by neighboring counties and parishes to demand more resources without regard to the effectiveness in preventing oil from reaching local shorelines. This created the so-called “Boom Wars” and “Skimmer Wars” where the feet of boom that was on hand or deployed and the number of skimmers were counted and compared to other areas. The only thing that mattered to some jurisdictions was the number of skimmers or the amount of boom, even if it was not designed for use in the local environment. This led to directives from the National Incident Commander and Unified Area Command (UAC) to cascade all available boom and skimmers into the Gulf region.

The intent to cascade in all the recovery equipment in the United States to the incident area prevailed at the UAC, National Incident Command (NIC), and Administrative levels of the response. Thus, the orders were issued to activate all of the boom, skimmers, and other OSRE that could be found. This cascading in of assets for the response in the Gulf of Mexico without question improved the ability to contain and recover spilled oil and limit environmental damage. However, this reallocation of contracted resources did not take into account the effects it would have on the donor areas when equipment was removed from their inventory and not available in the event of a spill at their location.

Cascading of equipment from a donor area typically does not affect response capability in that donor area. There is generally enough extra capacity in stockpiles to accommodate this process. However, when most or all of the equipment in a donor area is cascaded for a SONS incident in a particular location, many issues and/or problems can arise:

- Existing operations in the donor area have little to no response equipment left to respond to a spill if one occurs in another location;
- Vessel and facility plan holders are no longer in regulatory compliance with their response plans;
- A plan holder’s reputation is at stake if they have an incident in a donor area and significant environmental damage is done because their contracted equipment has been moved out of the area to a SONS incident; and
- The reduction for a plan holder of the regulatory equipment requirements (mandated in OPA 90) that was attempted by the Environmental Protection Agency and the Coast Guard was viewed as a great step forward, but it did not reduce the plan holders’ liabilities or State-mandated equipment requirements.

The magnitude of a SONS event will almost always require the activation of response resources nationally, and potentially internationally as well. There was the perception during the Deepwater Horizon incident that international equipment was not formally activated due to long

delivery times or Customs issues or regulatory issues. It was also perceived that some international equipment was never ordered because the requestor may have assumed that the Jones Act requirements or other laws affecting United States versus foreign flag vessels would not be permitted and cause equipment to be turned away. However, during the Deepwater Horizon incident, these laws and regulations did not impact the use of foreign assets. International equipment was requested, but in several cases, it may have been turned down primarily due to long delivery times. Unless the equipment is easily air transportable, bringing in of vessels and large equipment by water can take weeks to more than a month. This wait time would be increased unless processes were in place for expedited Customs inspections and approvals or Jones Act waivers where necessary. It should be noted that as a result of the response to the Deepwater Horizon incident, key international stockpiles of equipment and technology have been identified.

Lessons Learned:

- During the Deepwater Horizon incident, there was a need to request response equipment from other regions of the country. This request put Federal On-Scene Coordinators, State On-Scene Coordinators, Vessel and Facility Plan Holders, and Oil Spill Removal Organizations (OSROs) in a situation where response capabilities in the donor area might have been adversely affected.
- Equipment cascaded in from other regions of the country was often delayed because it was not able to be transported by air.
- The transport and delivery of international resources was often difficult because of logistical delays as well as perceived issues with Customs or regulatory requirements.
- Some of the equipment sent to the Gulf of Mexico as a result of blanket equipment requests could not be used in the area because of operational limitations of the equipment given the anticipated operating environment.

Recommendations:

1. The Coast Guard should consider establishing national policy guidelines and protocol for Vessel and Facility Plan holders and OSROs for cascading response equipment to and from areas impacted by major spills. These protocols should include creation of an accurate, up-to-date equipment inventory, realistic arrival times, and alternatives for response plan holders in the event of another significant oil spill.
2. The Coast Guard should work with the OSRO community to determine types of response equipment that are more easily transported by aircraft.
3. The Coast Guard should request that the International Maritime Organization establish an international inventory (similar to the Response Resources Inventory [RRI]) with locations and owners/operators of OSRE and technology that could potentially be available during a major event. The Coast Guard should consider entering into agreements with countries and/or international firms to facilitate a quick response time for resource requests.
4. The Coast Guard should modernize the RRI so it contains accurate, up-to-date response equipment data, including location, type, application, and operating environment. It should be kept current to account for equipment movement or relocation.

III.4 USE OF VESSELS OF OPPORTUNITY

Observations:

- VOOs played a significant role in the response to the Deepwater Horizon incident.
- No VOO Program was described in any of the impacted Area Contingency Plans (ACPs). The VOO Program that was created during the Deepwater Horizon incident was modeled after similar programs in other States, mainly Alaska.
- The VOO Program was initiated because the oil spill response organization recognized the extraordinary amount of resources required, the intrinsic value of local knowledge, the huge economic impacts to commercial fisheries, and the political and public pressure to use local resources.
- VOOs were segregated into offshore, near shore, and inshore groups, and further broken down by task forces and strike teams. The overall success of these groups was mixed. In general, the effectiveness of these groups was directly related to strong tactical oversight, effective communications, and close coordination with spotters.
- In the early stages of the response, there was no direct connection between the number of VOOs recruited and the number needed, and there was more interest in the VOO Program than the oil spill response organization could handle. There was widespread frustration and some abuse on the part of some members of the VOO Program.
- Real-time communication between the VOOs and between VOOs and the forward operating bases (FOBs)/Branches was an ongoing challenge throughout the response.
- Compensation for participating in the VOO Program likely impacted enrollment and participation in the program, but had some negative impacts once the Macondo well was secured and the VOO Program was disbanded.

Discussion:

The use of VOOs was an important and critical element of the response to the Deepwater Horizon incident. The VOO Program met several key response objectives:

- It leveraged local knowledge of the coastal waters, which helped assure safe and efficient execution of the response strategies.
- It put commercial fishermen and other “for hire” captains impacted by the spill (and without a source of income) to work.
- It reduced political pressure from local governments to utilize local assets.
- It supplemented privately contracted oil spill removal organization (OSRO) resources already on scene, as well as those being cascaded in from other areas.

No formal VOO Program existed in any of the local ACPs prior to the Deepwater Horizon incident. Proven success of similar programs in several States, but most notably Alaska, was

used as a basis for activation of the program. Because no VOO Program existed in any of the areas prior to the spill, the oil spill response organization was challenged by having to develop and implement a program during the response effort. As such, an aggressive campaign to identify, hire, and train a VOO fleet was initiated early in the response, but suffered from multiple growing pains.

The Logistics Sections of the Houma and Mobile Incident Command Posts (ICPs) were tasked with the recruitment for the VOO program. A series of local community meetings were held in which BP representatives outlined the program, contract terms, and the compensation to interested parties. The sheer magnitude of people interested in participating in the VOO Program was simply not anticipated, and it overwhelmed the ICPs' ability to effectively organize and deploy them in the early stages of the program. Compounding this issue was the fact that there was no specific linkage between the number of VOOs that were being placed under contract and the tasking orders required for the response. Nearly 6,000 VOOs were placed under contract during the course of the incident, far more than the number of assets required for an effective response at any one time.

Once a VOO was recruited and under contract, control was transferred from the Logistics Section to the Operations Section. VOOs were assigned to one of three groups—offshore, near shore or inland—based predominantly upon vessel type. Due to the overwhelming number of VOOs signing up for the program, there were numerous and highly publicized accounts of VOO frustration early in the process. To qualify for the program, VOOs had to pass a Coast Guard dockside inspection, have an adequate and qualified crew, and be willing to participate in a 4-hour training class. Recruiters tried to identify local fishermen for hire, but this was not always possible and became a cause of considerable tension. Additionally, there was a fundamental disconnect in expectations of the program. Initial frustrations were due in large part to their inability to be "activated" or a general lack of communication and direction. In many areas, VOOs were being signed up well in advance of local oil impact, so tasking orders other than sentinel duty were very limited, and frustration from not being called to work ensued. Compounding this issue was the fact that the ICPs and FOBs/Branches themselves were undergoing rapid growth and development during this period. All of these issues led to confusion and frustration in the early stages of the program.

A second but just as significant issue in the developing stages of the VOO recruitment program was the increasing pressure from local authorities to have more control over the recruitment of commercial vessel owners. Local authorities had become frustrated with "outsiders" showing up to work the VOO Program with non-local boat registrations and/or newly obtained commercial licenses. As a result, the ICPs turned over control of the inland VOO Program to local authorities.

Participants in the VOO Program were paid on a tier system, which was based on vessel size and number of crew provided. Rates paid for vessels ranged between $1,200/day and $3,000/day, depending on the size of the vessel. Additionally, captain and crew were paid an additional $200 per day. Many within the oil spill response organization felt that the rate being paid to the VOO participants was problematic, due to the fact that it was higher than their normal income, encouraged both opportunistic and fraudulent interest in the program, and resulted in higher overall response costs. Several States reported an enormous increase in commercial license applications after April 20, and there were numerous reports of pleasure vessels being put into the program. Another concern was the potential impact on the seafood market, as many

oysterman and other fishermen were finding the VOO Program to be more lucrative than their normal occupation.

The issue of overall cost of the VOO Program raised questions as to its cost effectiveness. Given the sheer number of participants in the program, and the daily rates being charged, it was suggested by some that the use of the VOO Program was cost prohibitive. The opposing argument, however, suggested that the rate paid to VOOs, which was a "fully burdened" vessel rate, was not only competitive with, but in some cases better than the rates charged by OSROs.

Once VOOs were under contract, they were assigned to the Operations Section. The offshore VOOs were coordinated from the Houma ICP, and were primarily tasked with towing boom used for in-situ burning (ISB) operations. Overall feedback for the performance and effectiveness of this group was very good. The near shore group was mostly composed of task forces called Fishing Vessel Skimming Branches. These task forces were coordinated out of both the Houma and Mobile ICPs. They were outfitted with oil recovery assets and were used to tow portable storage bladders. They also were used to perform a variety of support functions. Of particular note, several areas reported excellent results with VOOs towing NOFI Current Buster™ systems.

One topic that was consistently mentioned as an area for improvement in this group was the need for better communications between vessels. Although VOOs were required to have marine radio (VHF-FM) capability, there was constant confusion and delays in deployment of assets due to inaccessibility. A similar issue, although not limited to VOOs, was the inability to have solid air-to-vessel communication for placing skimming assets where they needed to be on a real-time basis.

Inland VOOs were used in a similar manner as the near-shore groups, and were ultimately coordinated by the FOBs/Branches. Initially, the inland VOOs were being directed by a VOO Coordinator at each ICP. This led to ineffective deployment strategies and time delays, given the great distances between them and lack of real-time communication. Often, inland assets would be directed to an area of reported oil by the ICP, only to find it gone by the time they had arrived. As a result, the Coast Guard forward deployed VOO Coordinators to many of the FOBs/Branches who could more effectively direct the assets. In addition to sentinel duties, many inland VOOs were effective in collection of emulsified oil and contaminated debris using a variety of sorbent materials or nets. The performance feedback and effectiveness of the inland VOOs seemed to be the most inconsistent, and was highly dependent on the two things:

- The inland VOOs had the greatest infiltration of "opportunistic" participation, including pleasure craft and inexperienced operators trying to capitalize on the financial benefits of the program.
- The sheer number of VOO vessels, often intermixed with OSRO assets, created confusion and a general lack of coordination. It is important to note that, in most areas, the VOO inland fleet and the OSRO inland assets were being directed by different sections of the oil spill response organization, and thus were often not in sync with each other's tactics or strategies.

All VOOs were required to take a 4-hour course entitled “Marine Spilled Oil Response” in order to participate in the program. VOOs that had completed this training were allowed to perform support tasks, such as sentinel duties, safety support, and shuttling of supplies. VOOs involved in active oil collection, skimming, or oiled debris handling were required to take an additional 4-hour class titled “Marine Health and Safety Class.” A trained 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) technician was also required on board each VOO. The Parsons Corporation was hired by BP to provide the training, oversight, and placement of HAZWOPER technicians within the VOO Program.

After flow from the well was stopped, a resizing of the operation rapidly began to take shape. Local authorities continued to push for local VOO involvement over OSRO resources, and the VOO compensation structure created fierce competition among participants.

Lessons Learned:

- The passion, commitment, and readiness to participate of VOOs cannot be underestimated and should be leveraged in future responses.
- The unanticipated level of interest in VOO participation created tremendous stress on the oil spill response organization, and led to a period of confusion and frustration in the early stages of the incident that was difficult to overcome.
- The recruitment and hiring of VOOs were not linked to specific response objectives, and the lack of pre-designated and pre-trained assets within the VOO Program limited its ultimate effectiveness.
- The compensation of VOOs was problematic during the Deepwater Horizon incident; it impacted participation in the program and influenced the behavior of participants.
- Overall “Command and Control” of the VOO Program is paramount to its ultimate success. When properly organized and directed, VOOs are an effective part of a response strategy.
- The response community must recognize that VOOs will play a role in future responses where there is economic impact to the marine economy.
- There is an inherent conflict between the functions performed by VOOs and OSROs (skimming, transporting equipment and personnel, and so forth) during oil spill response operations that must be addressed.

Recommendations:

1. The Coast Guard should consider developing national policy guidelines for incorporating VOO policy and procedures into Regional Contingency Plans and/or ACPs.
2. Potential VOO Program participants should be pre-identified and pre-trained whenever possible.
3. The Coast Guard should evaluate similar VOO Program models (e.g., Alaska) for compatibility and pertinence during development of national VOO policy and implementation of VOO programs. The proper application and effectiveness of VOOs (i.e., skimming, logistics, and local knowledge), the cost of implementation, and sustainability during a long-term response are all critical components of an evaluation.

4. The Coast Guard should perform a financial analysis of the Deepwater Horizon VOO Program. This analysis would be helpful in understanding future compensation structures that most closely align clean-up objectives and levels of participation.

III.5 APPLICATION OF LESSONS LEARNED FROM PRIOR SPILL RESPONSES AND EXERCISES

Observations:

- During the Deepwater Horizon incident, the Coast Guard repeated past mistakes and did not implement key lessons learned that were previously identified in other incidents and exercises.
- Lessons learned from previous exercises and oil spill events were not reviewed formally during the incident response, although several individuals referred back to their own past experiences or read lessons learned reports independently during the response.
- Contact was made with several individuals who were involved in the Exxon Valdez spill in Alaska in 1989, and lessons learned from that incident were discussed with them. However, there is no evidence that these conversations were relayed to the majority of Coast Guard responders within the Unified Area Command (UAC) or the Incident Command Posts (ICPs).
- There is a lack of Cabinet-level interest and participation in Spill of National Significance (SONS) exercises, which was demonstrated by many Cabinet-level individuals that became intimately involved in the incident demonstrating a lack of familiarity with marine oil spill management during the Deepwater Horizon incident.

Discussion:

The SONS 2002 After Action Report (AAR) is one of several post-exercise assessments that identified lessons learned for implementation in improving oil spill response. The AAR aptly describes the value of lessons learned and their appropriate implementation:

> "Proper planning and preparedness includes the implementation of Lessons Learned from actual events and exercises into the policy, plans and procedures employed by spill responders. It is not enough to capture and record a Lesson Learned. Rather, an action plan must be developed in order to consider and implement its recommendations. Once implemented, the 'new' plan, policy or procedure must then be tested and evaluated to ensure it was the right fix to the problem. In the Coast Guard SONS exercise program, this means certain issues must be carried over from one exercise to the next in order to close the quality loop."

There was the perception that during the Deepwater Horizon incident that many lessons learned identified in the past had not been implemented, and not doing so proved to be detrimental to the response. Over the course of previous exercises and incidents, lessons learned were not integrated into Coast Guard preparedness and response doctrine. Although some effort may have been put into addressing past deficiencies, it was clear that in some cases, mistakes from the past were repeated.

The review of lessons learned during the incident was ad hoc and sporadic. Some individuals relied on their previous knowledge or took the initiative to consult reports from previous exercises and oil spill events. The Coast Guard does not have a formal organizational process to review past lessons learned during an active response.

One example of a lesson that was left "unlearned" hearkened back to the situation during Hurricane Katrina when personnel arrived to participate in the response, including many who were not formally ordered, such as reservists, civilians, and auxiliary. The Coast Guard was overwhelmed with personnel. This initially hampered the ability to conduct an efficient and effective response effort. One major lesson learned from this experience was that personnel needed to be ordered as specific resources with specific skills. Initially, when the Coast Guard was surging for the Deepwater Horizon incident, there were no specific criteria for the personnel resources ordered to assist with the response. This repeated the same mistake that was identified during Hurricane Katrina. It was only after operations began to stabilize that requests were for personnel with specific training and experience were considered.

In 1996 after the military reserve vessel the SS Cape Mohican discharged approximately 40,000 gallons of intermediate fuel oil into San Francisco Bay, an Incident Specific Preparedness Review (ISPR) was formed and a full report of the incident was published, including lessons learned and recommendations for addressing areas of improvement. As another example of mistakes that were repeated, of the 35 recommendations that came out of the Cape Mohican ISPR, the following 6 recommendations, if implemented, may have resulted in a positive impact for the Deepwater Horizon incident:

- Deeper National Incident Management System (NIMS)/Incident Command System (ICS) training for Coast Guard responders.
- Develop a decisionmaking process regarding the protection of sensitive areas that should be clearly delineated in the Area Contingency Plans (ACPs).
- Sensitive area rankings should be as specific as possible in order to better identify a realistic priority.
- Overreact and stand up a Joint Information Center at the first indication that a spill is generating moderated media interest.
- Local area entities should participate more within Area Committees and in exercises and gain a better understanding of the NIMS/ICS through training and face-to-face meetings with the oil spill response community.
- Area Committees need to engage these local area entities, encourage their participation in planning meetings, and exercise with them.

In November 2007, the container vessel Cosco Busan collided with the San Francisco-Oakland Bay Bridge and discharged approximately 53,569 gallons of heavy fuel oil into San Francisco Bay. An ISPR was conducted for this spill, and a detailed report was written. The ISPR report detailed specific lessons learned from this experience and also made recommendations for how to work toward solving these issues. However, many of these recommendations have not been followed through to resolution, which has resulted in these same issues being areas of difficulty for the Coast Guard during the Deepwater Horizon incident. The full Cosco Busan ISPR includes 190 recommendations. A small sampling of repeat issues that negatively affected the Deepwater Horizon incident response includes the following areas for improvement:

- Invite local government personnel to participate in spill response exercises.
- Include non-governmental organizations (NGOs) in drills and planning.
- Need for all responders to have oil spill quantification training.
- Ensure the Federal On-Scene Coordinator (FOSC) is aware of most current oil spill quantification information and its variability/reliability.
- The Coast Guard should establish minimum requirements for public affairs training for senior personnel and all personnel expected to interact with the media.
- The Coast Guard should adopt a policy of not giving spill release estimates until they are relatively certain of the scale and potential of the spill.

In addition to the Cosco Busan ISPR report, the Coast Guard wrote an ALCOAST message to all Coast Guard commands on November 19, 2007. The subject of this message was Coast Guard Environmental Incident Response Doctrine. The memo directs FOSCs and Incident Commanders (ICs) to focus their attention on a number of specific areas. In particular the "FOSC's/ICs should make every effort to include local governments and non-government organizations (NGOs) in Area Committee meetings and incorporate their concerns into Area Contingency Plans (ACP)."

The lack of local government and NGO participation in the Area Committee planning process has been a significant concern for many, and turned out to have serious consequences for the Deepwater Horizon incident response.

The Coast Guard operates the congressionally mandated National Response System (NRS) exercise series throughout the country. This program includes the SONS exercise program. The first SONS exercise took place in Philadelphia in 1997; thereafter, SONS exercises have taken place in Alaska in 1998, the Gulf of Mexico in 2002, California in 2004, the New Madrid Seismic Zone in 2007, and Northern New England in March 2010. AARs for these exercises provide a wealth of information to assist the response community generally, and planners specifically, in increasing the level of preparedness in responding to large-scale events. There are instances, however, where recommendations developed from these exercises have not been adopted.

For example, the SONS 2002 AAR highlights areas that were lacking in the Deepwater Horizon incident response. These included:

- During a SONS, VIPs (e.g., elected officials, senior agency/industry executives) require onsite briefings and first observations of the response. If not properly managed these VIP visits can have a negative impact on the response. Proper VIP management requires that a single source have responsibility; however, a SONS response may include several command centers (FOSCs, NIC).

  Lesson Learned: A clear plan must be in place for coordinating the movement of and meeting the needs of VIPs visiting the response site.

  Recommendation: The National Incident Commander Standard Operating Procedures (SOP) should include a plan for managing VIP visits.

- During responses, the FOSC is often bombarded with vendors and elected officials seeking to have new, unknown technologies used in the response.

  Discussion: Before a new technology or product can be used for a response, it must be on the National Product Schedule as a precaution against further harming the environment. The National Response Team (NRT) Alternative Response Tool Evaluation System (ARTES) protocol requires technology innovators to complete an application process, which is reviewed by the NRT, who makes recommendations on the technology's potential use and effectiveness as a reference for the FOSC. Neither of these processes offers a robust test and evaluation of the technology's effectiveness or a firm requirement that a FOSC can use to turn away vendors with unknown products.

  Lesson Learned: FOSCs need a mandatory protocol for evaluating and approving response technologies to determine what is best for a particular response and to turn away vendors with technologies not approved by the protocol.

  Recommendation: The NRT should work with the American Society of Testing and Materials (ASTM) and/or similarly recognized professional organizations to develop a mandatory protocol for a thorough independent test and evaluation of response technologies using national/international test standards before allowing their use on a discharge or release. Products tested would either be disapproved, approved for use or for further field-testing during responses.

All levels of the response (i.e., Federal, State, industry, local, and oil spill response organizations) noted that having an extensive exercise program that involves as many stakeholders as possible is extremely important. All aspects of exercising (e.g., full scale, tabletop and deployment exercises) have a high value in the preparedness of a community.

One notable concern is that there has historically been a lack of interest and participation in such response exercises at the highest levels of the Department of Homeland Security (DHS). During the March 2010 SONS exercise in Northern New England, the only senior DHS official to participate was the Assistant Secretary for Intergovernmental Affairs. She indicated that this experience was invaluable during her involvement in the Deepwater Horizon response. Participation in the SONS exercise by other high-level DHS officials would have familiarized them with National Contingency Plan (NCP) response doctrine and the various roles they were required to perform during the Deepwater Horizon incident.

Exercises are extremely important in practicing prior to the spill. However, there is difficulty in making exercises truly realistic. Due to the nature of exercises, artificialities are unavoidable. In some cases it is difficult to re-create the drama and high-intensity stress that occurs during a real response (e.g., political pressures, time constraints, unusual requests, media overload, personality differences, staff burnout, and so forth) and that may affect how personnel interact and coordinate the response efforts. Continuing to emphasize the value of exercises, bringing in as many stakeholders as possible, and minimizing the artificialities can greatly contribute to enhancing the preparedness of the response community.

Lessons Learned:

- The Coast Guard has not demonstrated consistency in the implementation of lessons learned from major oil spill exercises or incidents.
- During the Deepwater Horizon incident, there was no formal organizational process established at the UAC level to review and implement previous lessons learned.
- The Deepwater Horizon response demonstrated that the Coast Guard must have an aggressive corrective action program that ensures that lessons learned are not only captured and reviewed, but are widely distributed and acted upon.
- The fact that SONS exercises are not National Level Exercises (NLEs) may have partially contributed to the lack of knowledge of the NRS and NCP by senior officials.
- The Deepwater Horizon incident highlights the critical need for affected agencies to participate in the SONS exercise program.
- Past exercises have not successfully duplicated the complexities of actual events, specifically the intense political demands placed on the response organization.
- The lack of an autonomous Lessons Learned Program or Corrective Action Program (CAP) within the Coast Guard for past events may have resulted in missteps during the Deepwater Horizon response.

Recommendations:

1. The Coast Guard should emphasize the importance of lessons learned in all initial as well as advanced Coast Guard spill response training courses and exercises.
2. The Coast Guard's CAP should be reviewed to ensure that it captures lessons learned from all incidents and exercises and communicates them throughout the Coast Guard and the response community.
3. The Coast Guard should ensure that the lessons learned process and CAP facilitates a regular and frequent review by all involved in spill management and oil spill response.
4. The Coast Guard should recommend to DHS that SONS exercises be made part of the program.
5. The Coast Guard should consider the means to document lessons learned during a response, including development of a specific Incident Command System form that allows for adjustment in the response organization as the incident evolves.
6. The Coast Guard should create a system whereby exercise planners are challenged to create more realistic exercise scenarios, particularly at the senior level, to accurately reflect the demands and pressures placed upon the spill response organization.

APPENDIX I ACRONYM LIST

ACOG	Area Command Operating Guide
ACP	Area Contingency Plan
AOR	area of responsibility
AAR	After-Action Report
AMPD	average most probable discharge
API	American Petroleum Institute
ARTES	Alternative Response Tool Evaluation System
ASTM	American Society of Testing and Materials
AVIRIS	Airborne Visible Infra Red Imaging Spectrometer
Bbl	barrel (42 gallons)
BLM	Bureau of Land Management
BOEMRE	Bureau of Ocean Energy Management, Regulation and Enforcement
BOP	blowout preventer
BPD	barrels per day
CAP	Corrective Action Program
CEO	Chief Executive Officer
CERA	Consensus Ecological Risk Assessment
CFR	Code of Federal Regulations
COP	common operating picture
COTP	Captain Of The Port (USCG)
DHS	Department of Homeland Security
DRAT	District Response Advisory Team
DOC	Department of Commerce
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
DOR	dispersant-to-oil ratio
DOS	Department of State
DUP	Dispersant Use Plan
EDRC	effective daily recovery capacity
EMA	Emergency Management Agency

EMAC	Emergency Management Assistance Compact
EOC	Emergency Operations Center
EP	exploration plan
EPA	Environmental Protection Agency
ERMA	Environmental Response Management Application
ESA	environmentally sensitive areas
ESF	Emergency Support Function
ESFLG	Emergency Support Function Leaders Group
ESI	Environmental Sensitivity Index
FEMA	Federal Emergency Management Agency
FOB	Forward Operating Base
FOSC	Federal On-Scene Coordinator
FOSCR	Federal On-Scene Coordinator Representative
FRP	Facility Response Plan
FRTG	Flow Rate Technical Group
FVSBs	Fishing Vessel Skimming Branches
FWPCA	Federal Water Pollution Control Act
FWS	U.S. Fish and Wildlife Service
GIS	Geographic Information System
GOSHEP	Governor's Office of Homeland Security and Emergency Preparedness
GPS	Geographic Positioning System
GRP	Geographic Response Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HOSS	High-volume Open Sea Skimmer
HR	human resources
HSPD-5	Homeland Security Presidential Directive-5
HSIN	Homeland Security Information Network
IAP	Incident Action Plan
IASG	Interagency Solutions Group
IC	Incident Command; also Incident Commander
iCAV	Integrated Common Analytical Viewer
ICP	Incident Command Post
ICS	Incident Command System

IMH	Incident Management Handbook
IMO	International Maritime Organization
ISB	In situ burning
ISCs	Integrated Service Centers
ISPR	Incident Specific Preparedness Review (USCG)
JFO	Joint Field Office
JIC	Joint Information Center
JIT	just-in-time (in reference to training)
LEPC	Local Emergency Planning Committee
LMRP	lower marine riser package
LNO	Liaison Officer
MC	Mississippi Canyon
MER	Marine Environmental Response
MMPD	maximum most probably discharge
MMS	U.S. Mineral Management Service (now BOEMRE)
MODU	mobile offshore drilling unit
MRC	Media Relations Course (USCG)
MRTT	Mobilization Readiness Tracking Tool
MSRC	Marine Spill Response Corporation
M/V	motor/vessel
NCP	National Contingency Plan
NERR	National Estuarine Research Reserve
NGA	National Geospatial-Intelligence Agency
NGO	non-governmental organization
NIC	National Incident Command
NIMS	National Incident Management System
NLE	National Level Exercise
NOAA	National Oceanic and Atmospheric Administration
NRC	National Response Center
NRF	National Response Framework
NRS	National Response System
NRT	National Response Team
NSFCC	National Strike Force Coordination Center (USCG)

NTVRP	Non-tank Vessel Response Plan
OCS	Outer Continental Shelf
OPA	Office of Public Affairs (DHS)
OPA 90	Oil Pollution Act of 1990
OSRE	oil spill response equipment
OSLTF	Oil Spill Liability Trust Fund (USCG)
OSRO	Oil Spill Removal Organization
OSRP	oil spill response plan
OSWER	Office of Solid Waste and Emergency Response
PAV	Preparedness Assessment Visit
PFO	Principal Federal Official
PIAT	Public Information Assist Team
PIO	Public Information Officer
PPE	personal protective equipment
QI	Qualified Individual
RCP	Regional Contingency Plan
RFI	request for information
RICP	Regional Integrated Contingency Plan
RISC	Regional Interagency Steering Committee
RITT	riser insertion tube tool
ROV	remotely operated vehicle
RP	Responsible Party
RRI	Response Resources Inventory
RRT	Regional Response Team
S1	Secretary of Homeland Security
S2	Deputy Secretary of Homeland Security
SCAA	Spill Control Association of America
SCAT	Shoreline Cleanup and Assessment Team
SMART	Specialized Monitoring of Applied Research Technology
SMT	Spill Management Team
SONS	Spill of National Significance
SOP	Standard Operating Procedures
SOSC	State On-Scene Coordinator

SSC	Scientific Support Coordinator (NOAA)
STARs	Spill Team Area Responders
STR	Shoreline Treatment Recommendations
TSC	total storage capacity
UAC	Unified Area Command
UC	Unified Command
USFWS	U.S. Fish and Wildlife Service
VHF	very high frequency
VOO	vessels of opportunity
VOC	volatile organic compound
VRP	vessel response plan
WCD	Worst Case Discharge
WHOI	Woods Hole Oceanographic Institute

APPENDIX II GLOSSARY OF KEY TERMS

Area Committee (AC)	As provided for by Clean Water Act (CWA) sections 311(a)(18) and (j)(4), the term refers to the entity appointed by the President consisting of members from the qualified personnel of Federal, State, and local agencies with responsibilities that include preparing an Area Contingency Plan (ACP) for an area designated by the President.
Area Contingency Plans (ACP)	As provide for by Clean Water Act (CWA) sections 311 (a) (19) and (j)(4), means the plan prepared by an area committee that is developed to be implemented in conjunction with the National Contingency Plan (NCP) and Regional Contingency Plan (RCP), in part to address removal of a worst case discharge and to mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operating in or near an area designated by the President.
Captain of the Port (COTP) Zone	A zone specified in 33 CFR Part 3 and, for coastal ports, the seaward extension of that zone to the outer boundary of the exclusive economic zone (EEZ).
Clean Water Act (CWA)	The Federal Water Pollution Control Act, popularly known as the Clean Water Act, is a comprehensive statute aimed at restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters. U.S. policy, as stated in the Act, is that there should be no discharges of oil or hazardous substances into or upon the navigable waters of the United States, on adjoining shorelines, or into or upon the waters of the contiguous zone, or which may affect natural resources belonging to, appertaining to, or under the exclusive management or authority of the United States. The President, by regulation, shall determine the quantities of oil and hazardous substances the discharge of which may be harmful to the public health or welfare or to the environment, including but not limited to fish, shellfish, wildlife, public and private property, shorelines, and beaches. The Act imposes liability for the costs of the removal of oil and hazardous substances that have been discharged, as well as for natural resource damages. It also imposes administrative and civil penalties for unlawful discharges and for failure to carry out orders issued under the Act. The word "removal" refers to the containment and removal of oil or hazardous substances from the water and shorelines or the taking of other actions necessary to minimize or mitigate damage to the public health or welfare, including but not limited to fish, shellfish, wildlife, and public and private property, shorelines, and beaches. The Act also establishes a national response system and requires the preparation of a National Contingency Plan by the President to provide for efficient and coordinated action to minimize damage from oil discharges, including containment, dispersal and removal. The Oil Spill Liability Trust Fund established under 26 U.S.C. § 9509 is made available for purposes of the Act.

Containment Boom	Boom that is used to collect and hold oil on the surface of the water for recovery by skimmers or similar collection devices. The regulations require containment booms to be equal to 1,000 feet or twice the length of the largest vessel served, plus sufficient for the efficient operation of recovery devices.
Department of Homeland Security (DHS)	DHS is a Cabinet Department of the United States Federal Government with the primary responsibilities of protecting the territory of the United States from terrorist attacks and responding to natural disasters.
Effective Daily Application Capacity	The estimated amount of dispersant that can be applied to a discharge by an application system, given the availability of supporting dispersant stockpiles.
Federal On-Scene Coordinator (FOSC)	The Federal Water Protection Control Act (FWPCA) Section 311(c) authority for coastal zone spill response has been delegated to the Department of Homeland Security (DHS) and the United States Coast Guard (USCG) is operating by Executive Order. USCG FOSCs that implement this authority are pre-designated by 33 CFR 1.01-80 and Regional Contingency Plans and are typically USCG Sector Commanders. Per 40 CFR 300.135, the FOSC shall direct response efforts and coordinate all other efforts at the scene of an oil spill. FOSCs have access to the Oil Spill Liability Trust Fund (OSLTF). Under 40 CFR 300.140(b), there shall be only one FOSC at any time during the course of a response operation. Additionally, under 40 CFR 300.322 (NCP) requires the FOSC to direct all Federal, State, tribal, or private action as to remove a discharge in the case of substantial threat to public health and welfare.
Federal On-Scene Coordinator Representatives (FOSCR)	Pursuant to 40 CFR 300.120(h) and 135(d) FOSCs may designate, to the extent practicable, a person to act as their on-scene representative who is adequately trained and prepared to carry out actions under the NCP.
Federal Water Protection Control Act (FWPCA)	See Clean Water Act (CWA).
Homeland Security Presidential Directive–5 (HSPD-5)	Entitled “Management of Domestic Incidents,” the directive enhances the ability of the United States to manage domestic incidents by establishing a single, comprehensive National Incident Management System.
Incident Action Plan (IAP)	The IAP, which is initially prepared at the first meeting of the Unified Command, contains general control objectives reflecting the overall incident strategy and specific action plans for the next operations period.

Incident Command Post (ICP)	The field location at which the primary tactical level, on-scene incident command functions are performed. The ICP may be collocated with the incident base or other incident facilities.
Incident Command System (ICS)	A standardized on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demand of single or multiple incidents, without being hindered by jurisdictional boundaries.
In Situ Burning (ISB)	In situ burning, or ISB, is a technique that can be used to respond to an oil spill. ISB involves the controlled burning of oil that has spilled from a vessel or a facility, at the location of the spill. When conducted properly, ISB significantly reduces the amount of oil on the water and minimizes the adverse effect of the oil on the environment.
Interagency Solution Group (IASG)	Established to fully support the response to the Deepwater Horizon incident; serves as an incident-specific workgroup for the National Response Team (NRT) to coordinate "whole of Government" policy and procedural recommendations for the National Incident Command, Unified Area Command (UAC), and applicable Unified Incident Commands (UICs).
Joint Information Center (JIC)	A facility established within or near the ICP where the public information officer (PIO) and staff can coordinate and provide information on the incident to the public, media, and other agencies.
Memorandum of Understanding (MOU)	A document concluded between components of two or more agencies or departments recognizing or outlining responsibilities, authorities, or agreements on specified issues. MOU are often used when the lines of responsibility for two or more agencies or departments overlap to better coordinate the efforts of each and avoid duplication.
National Oil and Hazardous Substance Pollution Contingency Plan (NCP)	Provides that organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.
National Pollution Fund Center (NPFC)	The entity established by the Secretary of Transportation whose function is the administration of the Oil Spill Liability Trust Fund (OSLTF). Among the NPFC's duties are: Providing appropriate access to the OSLTF for Federal agencies and States for removal actions and for Federal trustees to initiate the assessment of natural resource damages; providing appropriate access to the OSLTF for claims; and coordinating cost recovery efforts.

National Response Framework (NRF)	The NRF presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies—from the smallest incident to the largest catastrophe. The NRF establishes a comprehensive, national, all-hazards approach to domestic incident response.
National Response Team (NRT)	The U.S. National Response Team (NRT) is an organization of 15 Federal Departments and Agencies responsible for coordinating emergency preparedness and response to oil and hazardous substance pollution incidents. The Environmental Protection Agency (EPA) and the U.S. Coast Guard (USCG) serve as Chair and Vice Chair respectively. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and the Code of Federal Regulations (40 CFR part 300) outline the role of the NRT and Regional Response Teams (RRTs). The 15 Federal Agencies that make up the NRT include EPA, USCG, U.S. Department of State (DOS), U.S. Department of Defense (DoD), U.S. Department of the Interior (DOI), U.S. Department of Justice (DOJ), U.S. Department of Transportation (DOT), U.S. Department of Energy (DOE), General Services Administration (GSA), Federal Emergency Management Agency (FEMA–DHS), U.S. Department of Agriculture (USDA), Department of Labor (DOL), Department of Health and Human Services (HHS), Nuclear Regulatory Commission (NRC), and Department of Commerce/National Oceanic and Atmospheric Administration (NOAA).
National Strike Force (NSF)	The National Strike Force (NSF) provides highly trained, experienced personnel and specialized equipment to Coast Guard and other Federal agencies to facilitate preparedness for and response to oil and hazardous substance pollution incidents in order to protect public health and the environment. The NSF's area of responsibility covers all Coast Guard Districts and Federal Response Regions. The NSF totals over 200 active duty, civilian, reserve, and auxiliary personnel and includes the National Strike Force Coordination Center (NSFCC), the Atlantic Strike Team, the Gulf Strike Team, the Pacific Strike Team, and the Public Information Assist Team (PIAT).
National Strike Force Coordination Center (NFSCC)	The NSFCC provides oversight and strategic direction to the Strike Teams, ensuring enhanced interoperability through a program of standardized operating procedures for response, equipment, training, and qualifications. The NSFCC maintains a national logistics network using the Response Resource Inventory (RRI), coordinates the Coast Guard Oil Spill Removal Organization (OSRO) classification program, administers the National Maintenance Contract (NMC) for the Coast Guard's 30-million-dollar inventory of pre-positioned spill response equipment, and coordinates NIMS/ICS programs for the NSF and other Federal agencies.

Oil Pollution Act of 1990 (OPA 90)	The Oil Pollution Act imposes liability for removal costs and damages resulting from an incident in which oil is discharged into navigable waters or adjoining shorelines or the exclusive economic zone. The Act is one of the main Federal statutes establishing liability for damages or injuries to, or loss of natural resources. It also provides limits on liability for removal costs and damages under certain circumstances.
Oil Spill Liability Trust Fund (OSLTF)	The OSLTF has two major components: (1) The Emergency Fund, which is available for Federal On-Scene Coordinators (FOSCs) to respond to discharges and for Federal trustees to initiate natural resource damage assessments. The Emergency Fund is a recurring $50 million available to the President annually and; (2) Principal Fund balance, which is used to pay claims and to fund appropriations by Congress to Federal agencies to administer the provisions of OPA and support research and development.
Oil Spill Removal Organization (OSRO)	Any person or persons who own or otherwise control oil spill removal resources that are designed for, or are capable of, removing oil from the water or shorelines. Control of such resources through means other than ownership includes leasing or subcontracting of equipment or, in the case of trained personnel, by having contracts, evidence of employment, or consulting agreements. OSROs provide response equipment and services, individually or in combination with subcontractors or associated contractors, under contract or other means approved by the President, directly to an owner or operator of a facility or tank vessel required to have a response plan under 33 USC 1321(j)(5). OSROs must be able to mobilize and deploy equipment or trained personnel and remove, store, and transfer recovered oil. Persons such as sales and marketing organizations (e.g., distributorships and manufacturer's representatives) that warehouse or store equipment for sale are not OSROs.
Protective Boom	Boom used for deflecting/diverting or otherwise influencing oil on the water surface away from sensitive environments, often, but not always, toward containment sites.
Public Information Assist Team (PIAT)	The Public Information Assist Team provides unique, interagency crisis communication experience and technical expertise to help Incident Commanders and Federal On-Scene Coordinators meet their objectives of truth and transparency of operations for the public.
Regional Response Team (RRT)	There are 13 Regional Response Teams (RRTs), 1 for each of 10 Federal regions plus 1 for Alaska, 1 for the Caribbean, and 1 for the Pacific Basin. Each RRT maintains a Regional Contingency Plan (RCP) and has State as well as Federal Government representation. EPA and the Coast Guard co-chair the RRTs. Like the NRT, the standing RRTs are planning, policy, and coordinating bodies and do not respond directly to the scene. The RRT provides assistance as requested by the On-Scene Coordinator during an incident.

Response Resource Inventory (RRI)	The Oil Pollution Act of 1990 mandated the creation of a national database of response resources that would be maintained by the Coast Guard National Strike Force Coordination Center (NSFCC). The RRI includes data received from companies that want to have their equipment listed in a publicly accessible system, as well as data generated from the OSRO classification program. Participation by private industry is voluntary except for classified OSROs, whose participation becomes mandatory when they apply for a classification. The RRI has three modules: Data Collection, OSRO Classification, and Inventory.
Responsible Party (RP)	Pursuant to section 1002 of OPA 90 and other Federal laws, the RP is liable for costs of Federal removal and damages. In accordance with 40 CFR 300.105, the RP is included in the basic framework for the response management structure that brings together the Federal Government and State governments.
Size Classification of Oil Discharge	Provided as guidance to the FOSC, the measures are not meant to imply associated degree of hazard to public health or welfare, nor are they a measure of environmental injury. Any oil discharge that poses a substantial threat to public health or welfare or to the environment, or results in significant public concern shall be classified as major regardless of the following measures: Minor Discharge: A discharge of less than 1,000 gallons of oil in inland waters or a discharge of less than 10,000 gallons in coastal waters. Medium Discharge: A discharge or 1,000 to 10,000 gallons of oil in inland waters or a discharge of 10,000 to 100,000 gallons of oil in coastal waters. Major Discharge: A discharge of more than 10,000 gallons of oil in inland waters or more than 100,000 gallons of oil in coastal waters.
Special Monitoring of Applied Response Technologies (SMART)	A monitoring program to rapidly gather information on alternative response technologies such as dispersants and *in situ* burning to be provided to the Unified Command (UC) in a timely manner.
Spill of National Significance (SONS)	A spill that, due to its severity, size, location, actual or potential impact on the public health and welfare or on the environment, or the necessary response effort, is so complex that it requires extraordinary coordination of Federal, State, local, and responsible party resources to contain and clean up the discharge.
Unified Area Command (UAC)	A unified area command is established when incidents under an area command are multi-jurisdictional.

Worst case discharge (WCD)	In the case of a vessel, a discharge in adverse weather conditions of its entire cargo, and, in the case of an offshore facility or onshore facility, the largest foreseeable discharge in adverse weather conditions.

APPENDIX III ISPR CHARTER

U.S. Department of Homeland Security
United States Coast Guard

Commandant
United States Coast Guard

2100 Second St S.W. Stop 7363
Washington DC 20593-7363
Staff Symbol: COMDT
Phone: (202) 372-1710
Fax: (202) 372-1933

16465
JUN 14 2010

MEMORANDUM

From: R. J. Papp, Jr., ADM
Commandant

To: R. T. Rufe, VADM (Ret), Chairman
C. D. Moore, RADM (Ret), Vice Chairman/ISPR Team Leader

Thru: (1) DCO
(2) CG-5

Subj: CHARTER OF THE INCIDENT SPECIFIC PREPAREDNESS REVIEW (ISPR) TEAM RELATED TO THE BP OIL SPILL RESPONSE—GULF OF MEXICO MISSISSIPPI CANYON BLOCK 252 ON APRIL 20, 2010

Ref: (a) Marine Safety Manual Volume IX, Chapter 4, COMDTINST M160000.14
(b) Administrative Investigations Manual, COMDTINST M5830.1A

1. This memorandum establishes an Incident Specific Preparedness Review (ISPR) of the response to the Spill of National Significance (SONS) following the Mobile Offshore Drilling Unit (MODU) DEEPWATER HORIZON explosion that occurred at Mississippi Canyon Block 252 on April 20, 2010. I am designating R. T. Rufe, VADM(Ret) as Chairman and C. D. Moore, RADM(Ret) as Vice Chairman of the ISPR team.

2. As described in reference (a), the purpose of this review is to examine the implementation and effectiveness of the response to this spill within the confines of the National Contingency Plan (NCP) as effected through the Regional Contingency Plans (RCPs), Area Contingency Plans (ACPs), Regional Response Plan or Oil Spill Response Plan (OSRP), and Vessel Response Plans (VRP). The team shall also identify key issues they believe are most important to assessing preparedness and evaluating the oil spill response, as mandated by the NCP and its intersection with the National Response Framework (NRF) and Homeland Security Presidential Directive - 5 (HSPD5). This ISPR will serve as a fact finding body to review response and recovery operations in connection with this incident. It will identify strengths and weaknesses of the overall preparedness system in effect at the time of the incident. It may be used to inform actions by the Coast Guard and others to produce positive, effective preparedness improvements that will benefit the Gulf of Mexico and other regions of the country. You should also critically examine:

a. The integration of the NCP and its affiliated plans with other applicable contingency plans at the federal, state, and local levels.

b. The effectiveness of the response to the oil spill by the Federal On Scene Coordinator (FOSC) for the coastal zone and National Incident Commander and communication with key federal, state, local and industry partners concerning the response.

c. The effectiveness of the Coast Guard's overall oil spill response, communications, and coordination efforts with the states and other federal agencies after the explosion of the MODU DEEPWATER HORIZON and subsequent leak of crude oil into the Gulf of Mexico.

d. The actual response efforts taken, including the training, qualifications, and experience of responders.

3. As the Chairman, you are responsible for the following:

a. Ensure that you align, facilitate, and regularly brief ISPR efforts to the National Commission on the Deepwater Horizon Oil Spill and Offshore Drilling (the Commission) established by the President on May 22, 2010.

b. Make certain that the information you develop is shared with the Commission so as to inform them on the response, keeping in mind that their report may be due prior to the completion of the ISPR.

c. Pursuant to the external conditions surrounding the DEEPWATER HORIZON incident, the ISPR shall not interfere with nor seek to duplicate ongoing investigations by the Coast Guard, Minerals Management Service (MMS), or any other investigative bodies as they relate to the investigation of the explosion.

4. The Vice Chairman/ISPR Team Leader is responsible for the following:

a. Establish a comprehensive list of priorities for the ISPR Team to investigate during the review.

b. Be present for ISPR interviews with senior federal, state, and industry officials.

c. Maintain the integrity of the ISPR team and process by ensuring that no deliberations by the team are conducted in public.

d. Ensure the ISPR Team is adhering to its schedule and timeline for completion of each phase of the ISPR report.

5. In addition to your primary duties as Chairman and Vice Chairman, the following individuals or organizations have agreed to provide their individual views and expertise through participation on the team:

    a. Mr. Bob Stevens, Department of Homeland Security (DHS)

    b. CDR Dan Norton, U. S. Coast Guard (USCG)

    c. Mr. John Cunningham, Environmental Protection Agency (EPA)

    d. Mr. David Behler, Department of the Interior (DOI)

    e. Mr. David Moore, Minerals Management Service (MMS)

    f. Mr. John Tarpley, National Oceanic and Atmospheric Administration (NOAA)

    g. Ms. Barbara Parker, Maine Department of Environmental Protection (DEP)

    h. Mr. Bruce Johnson, Shell Oil Company

    i. Mr. Brian House, Spill Control Association of America / Association of Petroleum Industry Cooperative Managers (SCAA/APICOM)

    j. A member of the Florida Department of Environmental Protection (FL DEP)

    k. Mr. Randy Shaneyfelt, Alabama Department of Environmental Management (ADEM)

    l. Mr. Jerry Cain, Mississippi Department of Environmental Quality (MDEQ)

    m. A member of the Louisiana Oil Spill Coordinator's Office (LOSCO)

    n. Mr. Larry Dietrich, Alaska Department of Environmental Conservation (ADEC) / Pacific States–British Columbia Oil Spill Task Force

    o. Mr. Greg Pollock, a member of the Texas General Land Office (TGLO)

Should you determine that the addition of other individuals from federal, state, local, industry or stakeholder agencies or organizations are needed in order to fulfill the objectives of the ISPR, you should consult with Coast Guard Headquarters Deputy Commandant for Operations (CG-DCO), who is authorized to approve appointment of additional members.

6. Mr. William (Biff) Holt will serve as a senior executive advisor to the ISPR Team. LCDR Drew Casey, CG-533, shall serve as recorder and LT Shannon Frobel, CG-533, shall serve as the deputy recorder, and will assist with funding, logistics, and other administrative needs. Mr. Alex Weller, CG-0941, shall serve as legal advisor.

7. In addition to publicly available information as provided for in reference (a), members of the team may use all information available consistent with existing authority and policy, whether publicly available or not, but do not have subpoena authority. The ISPR should aggressively gather information related to the oil spill response efforts and contingency planning implementation consistent with existing authority. If you encounter persons or entities unwilling to provide information necessary for the ISPR's efforts, you will receive support from the Judge Advocate General (CG-094) through your legal advisor.

8. The ISPR shall not investigate the cause of the explosion, nor identify fault, blame, or violation of federal or state laws. During the course of the review, should the ISPR identify misconduct, potential violations of law, or other relevant matters outside the scope of this Charter that should be further investigated; the Chairman shall refer such matters to CG-DCO.

9. The activities of the ISPR team, as well as information obtained during the review, are part of the U.S. Government's deliberative process and should not be disclosed outside the team, except as necessary to carry out official duties of the members imposed by their parent organizations. Non-government team members will be required to agree to this term of confidentiality as a condition of their participation. After appropriate review, the ISPR report will be publicly released consistent with all applicable laws and regulations. All external communications (i.e., public outreach) in response to inquiries about the ISPR should be directed to and handled by Coast Guard Public Affairs.

10. ISPR activities are normally initiated after the "emergency response" phase of the incident is complete or after the source of the spill is secured. Unfortunately, the Mississippi Canyon Block 252 well remains unsecured. To minimize the impact on the continuing efforts at the field level, this ISPR will have two phases to promote the delivery of timely information after a deliberate review process. The first phase of the ISPR shall focus on the preparedness efforts of the National Response Team and the National Incident Commander. This phase will focus on the strategic "whole of government" issues to include:

    a. Information management between the NIC, DHS and the President

    b. SONS designation utility and potential support mechanisms

    c. NIC, NRT and RRT employment, interaction and effectiveness

    d. HSPD5 overlay on the NCP

e. Integration of the NCP into the NRF

f. ACPs accurately representing oil well WCDs

After the well is secured and in consultation with the FOSC and the Eighth District Commander, ISPR efforts may then shift to the second phase, i.e., regional and local response efforts. The team should meet with and consider the views of representatives from local communities as it conducts its review, ensuring the broadest perspectives are captured for consideration. Phase II should address regional and local planning prior to the incident and all tactical response efforts within the construct of the National Response System. It will include an assessment of longer term issues and provide clarification as needed on any issues included in Phase I.

11. Upon further deliberation and alignment with the Commission, the Team may decide to review additional national level issues. CG-DCO, in consultation with appropriate interagency partners, will approve the inclusion of any of these additional issues into your tasking.

12. The Phase I report is due in four months, on or about October 1, 2010. The Phase II report is due in six months.

13. While these reviews and reports are not an Administrative Investigation, the ISPR may consult and utilize the relevant processes and procedures found in reference (b) for the execution of this charter and preparation of its reports. At a minimum, both reports shall consist of a narrative description of the team's review process, identification of areas of focus, comments relating to the areas of focus, observations, and lessons learned. If the reporting deadlines cannot be met, the Chairman shall submit a request in writing to me detailing the circumstances that require an extension of time. If you have questions on the content of the report or process the ISPR team should follow, please contact the Chief, Office of Incident Management and Preparedness (CG-533) at (202) 372-2231.

14. The ISPR does not, and shall not be relied upon to create any rights, privileges, duties or benefits, either substantive or procedural, enforceable by law by any person or entity in any administrative, civil, criminal, or other matter.

#

Copy: CG-0941
LANTAREA (l)
CGD Eight

APPENDIX IV ISPR TEAM MEMBERS' AND ADVISORS' BIOGRAPHIES

ISPR Chairman
Vice Admiral Roger Rufe, USCG (Ret)

Vice Admiral Roger Rufe is president of the National War College Alumni Association Board of Directors and a member of the Center for Naval Analyses Military Advisory Board. He is a 34-year veteran of the United States Coast Guard. During his career, he served as captain of five Coast Guard cutters and, as a flag officer, held the Pacific and Atlantic Area commands, as well as commands with responsibility for Coast Guard operations in Alaska and the Southeastern United States and the Caribbean. He was Vice Chairman of the interagency National Response Team, Chief of the Coast Guard Congressional Affairs Office, representative to the North Pacific and Mid-Atlantic Fisheries Management Councils, and delegate to Marine Environment Protection Committee of the International Maritime Organization.

After retirement from the Coast Guard, he served for 7 years as president and CEO of Ocean Conservancy, a national nonprofit environmental advocacy organization that promotes science-based ocean conservation and protection of marine wildlife. While at Ocean Conservancy, he held leadership positions on several nonprofit boards and commissions involved in ocean policy. In July 2009, Rufe completed a 3-year Secretarial term appointment as the Director of the Department of Homeland Security (DHS) Office of Operations Coordination and Planning. As Director, he was responsible for integrating operations across the Department's component agencies and coordinating with other Federal departments, and with State, local, and tribal authorities who have a role in preventing, preparing for, and responding to acts of terrorism, natural disasters, and other emergencies. He was also responsible for interagency disaster and emergency management planning and operation of the National Operations Center. Vice Admiral Rufe is a graduate of the U.S. Coast Guard Academy, holds a master's degree in public administration from New York University, and is a graduate of the National War College and the Naval War College.

ISPR Vice Chairman / Team Leader
Rear Admiral Carlton Moore, USCGR (Ret)

Rear Admiral Carlton Moore's Coast Guard career included primary emphasis in port security and expeditionary warfare, which involved three overseas deployments, three unit commands, and two Group commands. During the recall to active duty in response to events of September 11, 2001, Rear Admiral Moore assumed the position of Deputy Commander, Coast Guard Atlantic Area, one of two operational commands in the Coast Guard. Awards include the Legion of Merit, Coast Guard Distinguished Service, among others. In civilian employment, Governor Schwarzenegger appointed him as Administrator, California Office of Spill Prevention and Response, responsible for a comprehensive environmental protection and response organization, 188 employees, $22.5 million operating budget, 4 operational programs (enforcement, scientific, planning, and

administration). He administered various maritime programs at the State level, including Harbor Safety Committees in all California major ports, cooperative programs with the Coast Guard and other Federal counterparts, safety/compliance programs for the shipping industry, maritime towing companies and port authorities, and responded to oil spills or other hazardous materials on coastal and inland waters. He retired from his position with the State of California in 2005. Following the collision of the M/V COSCO BUSAN with the San Francisco Bay Bridge in November of 2007, the Coast Guard brought him back in a civilian capacity to chair the Incident Specific Preparedness Review, exploring all aspects of the response to the oil spill in the San Francisco Bay. The first report was delivered to the Coast Guard and members of Congress in January of 2008, and the final report was delivered in May of 2008. He is also a member of the California State Bar.

Team Member
David Behler, Department of the Interior (DOI)

David D. Behler works for the Department of the Interior's Office of Environmental Policy and Compliance where he leads the Resource Protection, Preparedness and Response Team and serves as Interior's alternate member to the National Response Team, and its Response and Preparedness Committees. His work at Interior focuses on emergency preparedness and response to all hazards; oil spill and hazardous substances preparedness and response policy, program, and administration; strategic planning and budget; and spill response coordination with Interior's Natural Resource Damage Assessment and Restoration Program. While working for the Office of the Secretary of the Interior, he was staff director for the Federal Fire Management Policy Review Team following the Yellowstone fires of 1988; coauthored the Greater Yellowstone Area "Vision" ecosystem management report with the Greater Yellowstone Coordinating Committee; authored the Secretary's Concessions Management Reform Task Force report and the Secretary's speech for the 75th Anniversary Symposium on the future of the National Park Service, and helped develop the Bush Administration's proposed National Endowment for the Environment (to augment the Land and Water Conservation Fund). Mr. Behler has also worked for the National Park Service at Golden Gate National Recreation Area where he produced detailed economic/energy analyses for the Presidio Transition Team, and managed park partnership programs with numerous nonprofit organizations to provide park programs utilizing over 500,000 square feet of park structures and making over $5 million in capital improvements. While serving as Special Assistant to the Director-Bureau of Land Management (BLM), he worked with the White House Ecosystem Management Working Group and Interior's Ecosystem Management Task Force; he was BLM's coordinator for the California Desert Protection Act of 1994 and its subsequent implementation, led special investigations and analyzed Utah wilderness issues, and was executive coordinator for Interior's National Invasive Weeds initiative. Mr. Behler holds two Master's degrees from the University of Wisconsin-Madison where he was a University fellow in public policy and administration from the LaFollette Institute of Public Affairs and in energy analysis and policy from the Gaylord Nelson Institute for Environmental Studies; he has a B.S. in resource economics from Cornell University.

Team Member
John Cunningham, Environmental Protection Agency (EPA)

As part of the Information Management and Data Quality Staff in the Office of Solid Waste and Emergency Response (OSWER), Mr. Cunningham is leading OSWER's conversion to an electronic records management system. He also is leading OSWER's participation in EPA's design of an overall electronic content management system and represents OSWER in the Agency's review of States' applications to submit electronically environmental monitoring data under signature. Previously, Mr. Cunningham was in EPA's Oil and Hazardous Materials Division as lead staff during the development of the initial National Contingency Plan (NCP) Product Schedule listing the chemical and biological oil spill response agents that may be used consistent with the NCP and the first Spill Prevention, Control and Countermeasures (SPCC) regulation, EPA's basic oil spill prevention regulation. During the period following the Exxon Valdez oil spill, Mr. Cunningham was Chief of the Oil Pollution Response and Abatement Branch when the revisions to the NCP Product Schedule framework, the SPCC regulation, and the NCP were made to incorporate lessons learned from the Exxon Valdez and requirements of the Oil Pollution Act of 1990. He participated on the task forces that developed two reports to the President analyzing preparedness in Prince William Sound for the Exxon Valdez spill and national preparedness in other parts of the country for spills of national significance, such as the Exxon Valdez spill. Mr. Cunningham also served in the Superfund Program as Director, Region 4/10 Accelerated Response Center, where he successfully led an initiative to expand the pace of Superfund cleanups in EPA's Regions 4 and 10, was leader of the Superfund Removal Program, and organized a team that developed OSWER's program to encourage the development of Superfund sites for innovative purposes, such as sports fields, shopping areas, etc. In EPA's Effluent Guidelines Division, he was the project officer for developing toxic chemicals wastewater standards for the Petroleum Refining and Offshore and Onshore Oil and Gas Extraction industries. As project manager at Science Applications International Corporation, he supported the development of wastewater discharge standards for the organic chemicals, plastics, and synthetic fibers industries. Mr. Cunningham was educated at the University of Texas (B.S. in chemical engineering), the Catholic University of America (M.ChE), and Catholic University's Columbus School of Law (J.D.). He has authored or coauthored numerous papers on innovative oil spill and Superfund cleanup techniques.

Team Member
Larry Dietrick, Alaska Department of Environmental Conservation (ADEC)

Larry Dietrick is the director of the Division of Spill Prevention and Response for the Alaska Department of Environmental Conservation. The Division was created in response to the 1989 Exxon Valdez oil spill and is responsible for coordinating and implementing oil and hazardous substance spill prevention, preparedness, and response in Alaska. The Division has been instrumental in implementing the recommendations made by the Alaska Oil Spill Commission in followup to the catastrophic spill in Prince William Sound and major legislative initiatives passed by the Alaska State Legislature in cooperation with other State and Federal response agencies, response action contractors, citizens' oversight committees, industry, and the public. The Division has developed and

pioneered many of the response tools that enable Alaska to have one of the most advanced oil spill safety nets in the nation. Mr. Dietrick has worked for the Department since 1976 and has served in numerous capacities related to oil spill planning, preparedness, and response. In addition, he served with the Ohio Environmental Protection Agency prior to his work in Alaska. Mr. Dietrick has extensive experience in environmental programs and a strong foundation in the technical requirements, procedural aspects, and legal framework of oil spill response. He has a good working knowledge of oil and gas exploration in Alaska including the Trans-Alaska Pipeline System and North Slope oil and gas development. His prior experience also includes participation in the application and design review of the Alaska Natural Gas Transportation System from 1978 to 1982, which produced a complete design package and right of way alignment for a large diameter, chilled gas pipeline from the North Slope to the Canadian border. He has also participated in development of the initial requirements for offshore oil and gas exploration in Alaska's Arctic. Mr. Dietrick has completed graduate studies at the University of Cincinnati, Ohio State University, and received an M.S. in environmental quality science from the University of Alaska in 1975.

Team Member
Alexander Joves, Department of Homeland Security (DHS)

Alex Joves currently serves as Deputy Chief of Staff for the DHS Office of Operations Coordination and Planning (OPS). In this role, he leads day-to-day operations of the OPS Front Office in the areas of policy coordination, business processes, strategic planning / implementation, and the Executive Secretariat. Previously, he served within DHS OPS as Chief of the Principal Federal Official (PFO) Section and deployed in the field as Executive Officer of PFO/Federal Coordinator Support Teams for the 2009 Presidential Inauguration, 2008 Republican National Convention, 2008 G-20 Summit, Super Bowl XLIII, and national-level exercises.

Immediately prior to rejoining DHS, Mr. Joves was an attorney with the Washington, DC office of Perkins Coie, LLP. Mr. Joves previously served on active duty for 8 years with the U.S. Coast Guard (USCG) in both seagoing, maritime law enforcement, and staff officer assignments to include: USCGC Midgett (WHEC-726); USCGC Ocracoke (WPB-1307); USCG Headquarters; White House Situation Room / National Security Council; White House Military Social Aide; and the Office of the Military Advisor to the Secretary of Homeland Security. Mr. Joves also played a key role in establishing both the Office of the Military Advisor to the Secretary and the DoD Homeland Defense Coordination Office at DHS Headquarters, and was the lead project officer for the first integrated DHS contingency plan, Operation Vigilant Sentry.

Mr. Joves is a graduate of the U.S. Coast Guard Academy and the George Washington University Law School, and is a member of the bar in Maryland and the District of Columbia.

Team Member
David Moore, Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE)

David M. Moore serves as the National Coordinator of the Outer Continental Shelf (OCS) Oil Spill Program for the Bureau of Ocean Energy Management, Regulation, and Enforcement (formerly the Minerals Management Service) and is also the agency Liaison to the U.S. Coast Guard. He has worked for this bureau of the U.S. Department of the Interior for 13 years.

Team Member
Barbara Parker, Maine Department of Environmental Protection (DEP)

Barbara Parker is the director of the 32-member Division of Response Services (also known as the State HazMat Team) at the Maine DEP. ME DEP is the lead agency for the assessment and removal of all petroleum discharges in Maine and in cooperation with the public safety agency, is in charge of the assessment and removal of discharges of hazardous matter. ME DEP receives between 2,500 to 3,000 reports of oil and hazmat discharges annually. Ms. Parker is the designated State On-Scene Coordinator, serves as a co-chair of the Maine-New Hampshire Area Committee, and is a member of the Maine-New Hampshire Port Safety Forum. She is the Maine representative to the Region 1 Regional Response Team and the U.S.-Canadian Joint Response Team. She is a member of the State Emergency Response Commission, State Emergency Response Team, and the State Hazardous Materials Team Chiefs. She has a B.S. in microbiology from the University of Maine. She has been with ME DEP for 28 years, starting her career there as a chemist analyzing samples for petroleum hydrocarbons. She was promoted to an Oil and Hazardous Materials Specialist I (OHMS I) and worked as a front line emergency responder for oil and hazmat incidents; this included hundreds of responses to everything from gasoline tank truck roll-overs, buried hazardous waste, and oil spills from vessels, storage tanks, and vehicles. She was advanced into an OHMS II position in the Enforcement Division at ME DEP. While in this position, she performed detailed inspections of facilities that generate hazardous waste, oil terminals, and oil storage facilities, and investigated oil and hazardous waste complaints. She then returned to the Response Division and was selected to lead the Contingency Planning and Training Unit. From this position she was promoted to her current position as director. In March of 2010, Ms. Parker was a member of Unified Command as the SOSC for the Spill of National Significance Exercise in Portland ME.

Team Member
Greg Pollock, Texas General Land Office (TGLO)

Since January of 1999, Greg Pollock has served as the Deputy Commissioner of the Oil Spill Prevention and Response Program at the General Land Office, providing comprehensive management services for a staff of 56 in 6 office locations and overseeing a $6.5 million annual operating budget. Before his appointment as Deputy by then Texas Land Commissioner David Dewhurst, Greg

served for 7 years as the Associate Deputy of the Division. Prior to the creation of the oil spill program in 1991, Greg was a policy analyst in the Research Division at the Land Office, specializing in legislative and environmental issues. He has previous State service with the Public Utility Commission, Secretary of State's Office and the Texas Senate. Greg received his undergraduate degree from Texas Tech University in 1980, and has done graduate level work at Texas State University.

Team Member
Randy Shaneyfelt, Alabama Department of Environmental Management (ADEM)

Mr. Shaneyfelt has been with the Alabama Department of Environmental Management for the past twelve years, at ADEM's Field Office in Mobile, Alabama, as a program planner for the Coastal Programs Section. In his job as an Environmental Scientist, he works as a Program Coordinator for the Alabama Coastal NPS Program (ACNPCP) by developing and establishing needed projects and training that protect and improve management of critical coastal resources.

Mr. Shaneyfelt has participated in and held various long term committee posts for many organizations with similar public goals, including the *Coastal Alabama Clean Water Partnership*, the *ADPH-State OSDS Steering Committee, Weeks Bay NERR Advisory Committee, MS-AL Clean Marina Program Committee*, the *Mobile Bay NEP*, also the *Pascagoula River Basin and MS-Coastal Rivers Committee(s)*. He has participated as an ADEM technical advisor for the local Soil and Water Conservation District Boards, and as an active member of the *Mitigation Bank Interagency Review Team (MBIRT)* for the USACE-Mobile District, since 1999. He also participated as an A-Team field member in the USACE-ERDC development of both the Northern Gulf HGM guidebooks for *Tidal Fringe Marsh and Headwater Slope (Bayhead) Wetland* assessment modules for MS-DMR and USACE, including the ongoing development of Wetland and Stream Mitigation Guidelines, and technical review of USACE-Mobile District Wetland and Stream Mitigation SOPs.

Since 2004, Mr. Shaneyfelt has developed, contracted, and successfully implemented over 24 major Projects for the Coastal Alabama NPS Program: these include updated Coastal NPS Handbooks, science-based BMPs Surveys, Targeted Water Quality Studies, and critical Resource Studies (e.g., the *Alabama Coastal Riparian Reference Reach and Regional Curve Study*). These were developed as important tools that can guide future restoration, management, and preservation efforts for coastal Alabama resources.

Team Member
John Tarpley, National Oceanic and Atmospheric Administration (NOAA)

John Tarpley is the Chief of the Regional Operations Branch for NOAA's Office of Response and Restoration, Emergency Response Division in Seattle, WA. He supervises NOAA's nine scientific support coordinators (SSCs) and three assistants who are located with U.S. Coast Guard districts across the nation. He also manages the Response Operations Program for the Division, which provides scientific

support to the USCG for oil and hazardous materials spills in the coastal zone. He serves as the Department of Commerce/NOAA representative on the National Response Team Preparedness Committee. Mr. Tarpley has been with NOAA for 5 years. Prior to NOAA, he was an environmental specialist and supervisor with California's Office of Spill Prevention and Response for 13 years. He has 18 years of oil spill response, contingency planning, natural resource damage assessment, and habitat restoration experience. He has worked on a wide variety of notable spills such as the 1989 Exxon Valdez, 1996 Cape Mohican, 2002 Jacob Luckenbach, 2005 Hurricane Katrina, 2008 DM932, and currently the MC252. John has a Master's degree in marine ecology and has also performed a variety of research in the kelp forests and intertidal communities of California.

Team Advisor
Jim Ayers, Conservation Community representative

Jim Ayers is founder and president of Alaska Strategies, a Conservation consulting firm providing advice to private companies, national conservation organizations and Government entities. He served as Vice President of Oceana for the past 7 years and managed all aspects of Oceana's Arctic and Pacific programs. Prior to his work with Oceana, he served as chief of staff to Alaska Governor Tony Knowles for 7 years. Mr. Ayers currently serves as senior advisor and consultant to the Ocean Conservancy, as well as an advisor to the Regional Marine Conservation Program and the Pew Environmental Group among others.

Mr. Ayers also served as executive director for the Exxon Valdez Oil Spill Trustee Council where he led development and implementation of the comprehensive restoration plan for the recovery of the area impacted by the Exxon Valdez spill. He led negotiations, purchase, and designation of thousands acres of protected habitat as enhancement to injured species, and establishment of a long-term research and monitoring fund to enhance recovery and restoration. Mr. Ayers's extensive experience in the public and private sectors includes consultant and mediation for resource corporations; Deputy Commissioner of the Alaska Department of Fish and Game and Coordinator of the Alaska Coastal Management Program. Mr. Ayers holds a Masters of Science degree from University of Oregon and Bachelor of Science degree from Purdue.

Team Advisor
Bruce Johnson, American Petroleum Institute (API)

Mr. Johnson serves as API's advisor to the ISPR Team. API is the only national trade association that represents all aspects of America's oil and natural gas industry. Mr. Johnson graduated from Virginia Tech with a B.S. in Civil Engineering in 1975. From 1975 until 1992 he worked in various engineering and operations positions within Shell Pipeline and Shell Products Distribution Departments. In 1992 he transferred into Emergency Response within Shell's Marine Department. Currently Mr. Johnson is a regional response manager within Shell's emergency management group. His roles include incident commander on Shell's National

Response Team; alternate qualified individual for Shell International Trading and Shipping Company Limited (STASCO's) vessels in U.S. Waters; and designing, conducting and participating in local Tier I and large Tier III National Response Team oil spill drills. He has also served on API Spills Task Force committees and on the board of directors of two oil spill cooperatives, Maritime Incident Response Group (MIRG) and Clean Caribbean and Americas (CCA).

Team Advisor

Brian House, Spill Control Association of America / Association of Petroleum Industry Cooperative Managers (SCAA/APICOM)

Mr. House is a director and outgoing president of the Spill Control Association of America (SCAA), an industry trade group representing the interests of the spill response community since 1973, after serving in that capacity for the past two years. SCAA membership includes oil spill removal organizations (OSRO), manufacturers, and consultants working within the industry. As the SCAA president, he has been an active participant in the Partnership Action Team (PAT), which is comprised of representatives of SCAA, the Association of Petroleum Cooperative Managers, and the Coast Guard's Office of Incident Management and Preparedness (CG-533).

Mr. House is also president and CEO of Moran Environmental Recovery, a nationally recognized OSRO. He holds a B.S. degree from Bates College. In addition to his daily duties as MER's Chief Executive Officer, Mr. House has been specifically involved in the response and management of oil spill activities for over 27 years. His recent direct experience includes: Deepwater Horizon MC-252, 2010; M/V Liberty Savannah, GA, 2010; DM-932 Barge, New Orleans, 2008; Charleston Bunker Spill, 2009; Calcasieu Refinery, LA, 2006; Exxon Mobil, Chelsea, MA, 2006; Murphy Oil, Chalmette, LA, 2005-2006; Conoco-Phillips, Linden, NJ, 2005; and Chevron, Perth Amboy, NJ, 2006.

APPENDIX V RESPONSE STATISTICS BY THE NUMBERS[5]

Total estimated amount spilled	4,928,100 barrels
Total amount oil recovered directly from wellhead	689,934 barrels or 17%
Total amount oil burned	246,405 barrels or 5%
Total amount oil skimmed	147,843 barrels or 3%
Total amount oil chemically dispersed	394,248 barrels or 8%
Total amount of oil naturally dispersed	788,496 barrels or 16%
Total amount of oil evaporated or dissolved	1,232,025 barrels or 25%
Total amount of oil residual	1,281,306 barrels or 26%
Total number of response vessels	345 vessels
Total number of responders	48,200 personnel
Total number of Coast Guard personnel	7,000 active duty and reserve personnel
Total number of Coast Guard assets	60 vessels and 22 aircraft
Total number of vessels of opportunity	3,200 vessels
Total amount of hard boom deployed	3.8 million feet
Total amount of soft boom deployed	9.7 million feet
Total amount of dispersants used	1.8 million gallons
Total number of in-situ burns conducted	411 burns
Total number of surveillance aircraft used	127 aircraft
Total number of incident command posts	4 command posts (TX, LA, AL, and FL)
Total number of subordinate branches	17 branches
Total number of equipment staging areas	32 staging areas
Total number of aviation coordination centers	1 aviation coordination center (Tyndall AFB)
Total amount of liquid waste collected	1.4 million barrels of liquid waste
Total amount of solid waste collected	92 tons of solid waste
Total number of international offers of assistance[6]	47 offers of assistance

[5] Oil Budget

[6] Governments providing assistance included; Canada, Mexico, Norway, Japan, France, UK, Tunisia, Belgium, Qatar, Kenya, China, Russia, Netherlands, Sweden, and the European Union

APPENDIX VI INDIVIDUALS INTERVIEWED BY THE ISPR TEAM

Mr. Al Allen, Spiltec

ADM Thad Allen, USCG

Bill Atchison, EMAC coordinator for the state of Alabama

Ms. Heidi Avery, White House

Mr. Henry Barnet, Florida DEP

CAPT Scott Beeson, USCG

Mr. Dwight Bradshaw, LA DEQ

Bill Brown, EMAC coordinators for the state of Mississippi

Mr. Ben Bryant

Ms. Casi Calloway, Mobile Baykeeper

Mr. Ron Cantin, EMSI

Victoria Carpentar, EMAC coordinator for the state of Louisiana

Ms. Lora Ann Chaisson, United Houma Tribal Nation

Mr. Michel Claudet, Terrebonne Parish President

Mr. Chris Corset, Ocean Conservancy

Mr. Thomas Dardar, United Houma Tribal Nation

Mr. Eric Dear, Mississippi DEP

Mr. John Dosh, Escambia County, FL EOC Director

CAPT William Drelling, USCG

CDR James Elliott, USCG

CAPT Willard Ellis, USCG

Mr. Thomas Enright, Executive Counsel for GOHSEP

Ms. Clarice Friloux, United Houma Tribal Nation

CAPT John Furman, USCG

CAPT Austin Gould, USCG

Mr. Garrett Graves, LA Governor's Coastal Advisor

Mr. Clint Guidry, LA Shrimp Association

Mr. Roland Guidry, LOSCO

CAPT James Hanzalik, USCG

Mr. Richard Harrell, Mississippi SOCO

Mr. Eric Haugstad, Tesoro

CDR Julia Hein, USCG

Mr. Charlie Henry, NOAA

Ms. Tammy Herrington, Mobile Baykeeper

CAPT Thomas Hooper, USCG

Mr. Charlie Huber, Consultant

Ms. Juliette Kayyem, DHS

CAPT Brian Kelley, USCG

CDR James Kelly, USCGR

Mr. Paul Kemp, Louisiana Coast Initiative, Audubon

Kim Ketterhagan, National EMAC coordinator from the state of Michigan

Ms. Susan Kidirca, National Wildlife Foundation

Mr. John Kotula, Alaska DEC

RADM Mary Landry, USCG

LCDR Daniel Lauer, USCG

Dr. William Lehr, NOAA

CAPT Anthony Lloyd, USCG

Dr. Jane Lubchenco, NOAA

Deputy Secretary Jane Lute, DHS

Marine Spill Response Corporation (MSRC)

Dr. Buzz Martin, Texas General Land Office

Dr. Marcia McNutt, USGS

CAPT James McPherson, USCG

Mr. Scott Metzger, Clean Harbors

Ms. Cecilia Munoz, White House

RADM Roy Nash, USCG

RADM Peter Neffenger, USCG

Ms. Regan Nelson, Natural Resources Defense Council

CAPT Jeffrey Novotny, USCG

Mr. Billy Nungesser, Plaquemines Parish President

LCDR Christopher O'Neil, USCG

CAPT Joseph Paradis, USCG

Mr. Frank Paskewich, Clean Gulf Associates

Ms. Debra Payton, NOAA

CDR Brian Penoyer, USCG

CDR Zachary Pickett, USCG

Mr. Robert Pond, USCG (ret)

CAPT Steven Poulin, USCG

The Response Group

Ms. Cynthia Sartu, Gulf Restoration Network

CAPT Scott Schaefer, USCG

Charlie Smith, EMAC coordinators for the state of Mississippi

Mr. Michael Sole, Florida SOCO

CAPT Edwin Stanton, USCG

Wendy Stewart, EMAC coordinator for the state of Florida

Mr. Doug Suttles, BP

Mr. Ed Thompson, BP

Mr. Donald Triner, DHS

Ms. Dana Tulis, EPA

United States Northern Command (NORTHCOM)

Mr. Mike Utsler, BP

Mr. Brian de Vallance, DHS

CAPT Roderick Walker, USCG

Mr. George Wallace, Miller Environmental

Dr. Glen Watabayashi, NOAA

RADM James Watson, USCG

Mr. Philip Wieczynski, FL DEP

Dr. Gregory Wilson, EPA

Mr. Philip Woods, Alabama SOCO

Mr. Rusty Wright, BOEMRE

RADM Paul Zukunft, USCG

Mr. Jerome Zurang, LA Office of Coastal Restoration