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*JOINT FORCES STAFF COLLEGE*  
JOINT ADVANCED WARFIGHTING SCHOOL



**A NATIONAL MARITIME SALVAGE RESPONSE ORGANIZATION:  
The key to timely opening of America's Ports and Waterways**

by

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Lieutenant Commander, US Coast Guard

A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense.

Signature: \_\_\_\_\_

April 2009

Thesis Advisor: Dr. Paul Melshen, JFSC

## ABSTRACT

The United States has largely become a country of imports and very few exports, with as much as 90% of those imports arriving by ships into our ports and waterways. Keeping these ports and waterways free and clear is necessary for our economy to continue as more and more companies adopt ‘just in time delivery’ systems. The cost to the U.S. economy of a single day of closure in the Port of Los Angeles-Long Beach is estimated to range anywhere from \$65 million to \$150 million.<sup>1</sup> A transportation security incident (TSI)<sup>2</sup> similar to the attack that was carried out on the *USS Cole* in 2000 or the French Flagged tank ship *Limburgh* in 2002, could mean multiple days of port closures in some of the nations busiest ports. But it is not only the intentional damage to ships that wreak havoc on maintaining a free and clear port and waterway, natural disasters in the form of hurricanes or tsunamis could deposit obstructions to our ports and waterways, as evidenced by Hurricanes Katrina and Ike. This paper examines the response and recovery capabilities of the United States and those agencies chiefly responsible for maritime salvage; the U.S. Coast Guard, U.S. Navy, and U.S. Army Corps of Engineers. This examination and the case studies in this paper make the obvious clear, the U.S. Coast Guard is the agency in position to become the lead for a national maritime salvage response organization.

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<sup>1</sup> Congressional Budget Office, *The Economic Costs of Disruptions in Container Shipments*, Congressional Budget Office analysis, March 29, 2006, 2.

<sup>2</sup> Transportation Security Incident as defined in Title 33 Code of Federal Regulations Part 101.105 as, “a security incident resulting in signification loss of life, environmental damage, transportation system disruption, or economic disruption in a particular area.”

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## TABLE OF CONTENTS

<b>Chapter I. Introduction</b> .....	<b>1</b>
<b>Chapter II. Maritime Salvage Defined and the Origins</b> .....	<b>7</b>
<b>Chapter III. Disaster Response, An Evolutionary Process</b> .....	<b>11</b>
Federal Response Plan 1992 .....	12
National Response Plan 2004 .....	13
National Response Framework 2008.....	14
<b>Chapter IV. Response Agency Organizational Boundaries</b> .....	<b>16</b>
Federal Emergency Management Agency .....	16
U.S. Coast Guard .....	18
U.S. Army Corps of Engineers .....	20
U.S. Navy.....	22
<b>Chapter V. Agency Statutory Responsibilities and Capabilities</b> .....	<b>23</b>
Federal Emergency Management Agency .....	23
U.S. Coast Guard .....	25
U.S. Army Corps of Engineers .....	27
U.S. Navy.....	28
<b>Chapter VI. Assessment of U.S. Salvage Capabilities</b> .....	<b>33</b>
2003 Transportation Research Board Workshop.....	33
2008 Marine Disaster Exercise Ports of Los Angeles-Long Beach.....	39
<b>Chapter VII. National Salvage Response Organization</b> .....	<b>44</b>
Codification of Salvage and Marine Firefighting Regulations .....	44
National Strategy for Maritime Security and MTS Recovery .....	50
<b>Chapter VIII. Case Studies</b> .....	<b>54</b>
Hurricanes Katrina and Rita 2005.....	54
Hurricane Ike 2008 .....	57
<b>Chapter IX. Conclusion and Recommendations</b> .....	<b>60</b>
<b>Bibliography</b> .....	<b>62</b>
<b>Vita</b> .....	<b>67</b>

## FIGURES

Figure 4.1: FEMA Regional Offices and Boundaries

Figure 4.2: U.S. Coast Guard Geographical Boundaries (Area, District, Sector)

Figure 4.3: U.S. Army Corps of Engineers Divisional Boundaries

Figure 7.1: Notional Salvage Response Framework

*“yesterday, December 7th, 1941—a date which will live in infamy—the United States of America was suddenly and deliberately attacked by naval and air forces of the Empire of Japan.”*

*F. D. R.*<sup>3</sup>

## **I. INTRODUCTION**

Perhaps the largest maritime salvage operation in our nations history is the port clearance and recovery operations that followed the tragic events at Pearl Harbor. The salvage efforts continued for a year after that “date which will live in infamy”, during which time naval divers as well as civilian contractors worked diligently plugging, patching, and dewatering the sunken ships so that they could be permanently repaired in an appropriate shipyard. So important was this event, that the U.S. Navy entered into a contract to establish the Naval Salvage Service on December 11, 1941, just 4 short days after the bombing.<sup>4</sup> The hurricanes that ravaged the Gulf Coast in August and September of 2005 provided a present day snapshot at what devastation might occur if a large scale Transportation Security Incident (TSI)<sup>5</sup> occurred in one of our nation’s ports or navigable waterways.

The events of September 11, 2001, caused the United States to take a hard look at our maritime transportation system, critical infrastructure, and our response and recovery capabilities. Additionally, the U.S. completed multiple iterations of port vulnerability assessments in an attempt to identify the criticality of our ports and waterways. 9/11

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<sup>3</sup> Franklin D. Roosevelt, “A Date Which Will Live in Infamy” Speech, Washington, DC, December 8, 1941, <http://www.archives.gov/education/lessons/day-of-infamy/images/infamy-address-1.gif> (accessed February 2, 2009).

<sup>4</sup> “This Day in Naval History – Dec 11.,” *Maritime Reporter and Engineering News*, (December 11, 2008), <http://marinelink.com/Story/ShowStory.aspx?StoryID=213813> (accessed February 9, 2009).

<sup>5</sup> Transportation Security Incident as defined in Title 33 Code of Federal Regulations Part 101.105 as, “a security incident resulting in signification loss of life, environmental damage, transportation system disruption, or economic disruption in a particular area.”

could actually be considered a positive event as it relates to the nations emergency response capacity, due to the fact that a critical examination took place immediately thereafter and identified areas in need of improvement. The National Response Plan (NRP) and National Incident Management System (NIMS) are two such examples that were developed in 2003-2004 under the direction of Homeland Security Presidential Directive (HSPD)-5. The NRP was refined even further in 2008 with the publication of the National Response Framework (NRF), the core document that provides the structure and mechanism for national level policy for incident management.”<sup>6</sup> The NRF is an evolutionary document that first came to life in 1992 as the Federal Response Plan, followed in 2004 by the NRP.<sup>7</sup> The development of NIMS and refinement of the NRP, as well as the Federal Emergency Management Agency’s (FEMA) role and history of disaster response, are discussed in detail in Chapter III.

In an attempt to clarify the maritime salvage response organization, one must first understand that there is a plethora of agencies involved, with a mixed bag of roles and responsibilities, and much of the time, no clearly articulated command and control structure. An overview of the primary agencies involved is described in Chapter IV, along with their respective organizational structures and geographical boundaries. One glance at the command structure as well as the geographical breakdown of the agencies involved immediately reveal the seams that inevitably cause confusion during emergency response actions. In spite of these glaring organizational differences, it is somewhat impressive to see what can be accomplished during major disaster response operations.

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<sup>6</sup> Federal Emergency Management Agency, “About the National Incident Management System,” <http://www.fema.gov/emergency/nims/AboutNIMS.shtm> (accessed February 9, 2009).

<sup>7</sup> U.S. Department of Homeland Security, *National Response Framework*, Washington, DC, January 2008, 2. Hereafter cited as *National Response Framework*.

In addition to the geographical and command structure differences, the primary agencies involved with maritime salvage have a wide range of authorities which naturally direct each agency to focus towards their primary responsibilities. Due to this agency centric mindset, difficulties arise when trying to come to consensus on prioritization of the maritime salvage effort. Individual agency authorities are not the only driving force behind this issue, funding often follows in the shadows of those statutory requirements, and frequently, becomes the driving force behind any single agencies focus. Chapter V describes the umbrella of mandates and statutory authorities that the primary response agencies fall under.

While our response posture may have been improved, our U.S. government salvage assets have only grown older. The U.S. Navy salvage assets are quickly reaching their expected life cycle, and some of the U.S. Coast Guard assets are already beyond that mark. There have been multiple studies completed on recapitalization of these aging Navy salvage assets, some of these studies are examined in Chapter V, with a focus on three major issues:

- (1) Operating methods, with exploration of ownership and operations alternatives, whether it be a government owned ship operated by a contractor, or vice versa, or as an alternative found to have the lowest life cycle cost, a vessel owned and operated by a contractor.
- (2) Ship design, realizing that multi-mission ship design has evolved to the point that the new single class of salvage ships would likely take the place of the currently utilized two separate hull/ship designs.
- (3) Acquisition process, with the recognition that using an antiquated systems

architecture method for procuring new assets almost always delivers a product that is not an exact fit to service needs.

Besides these recapitalization studies of our Navy salvage assets, there has also been a critical examination of the commercial salvage assets currently in service. Due to the historically low rates of marine casualties, the number of commercial salvage companies operating in the United States has dwindled through the years.<sup>8</sup> No longer can maritime salvage companies and contractors solely rely on traditional salvage work to stay afloat in our current economic environment. The paradigm shift has caused the commercial salvage companies to be multi-faceted in their business approach, and similar to the Navy's realization that today's salvage ships must be designed as a multi-mission platform, so too, have the commercial salvage companies designed their response assets. This drop in the number of professional commercial salvors in the U.S. correlates to longer response times to arrive on scene. A September 2008 exercise in the Ports of Los Angeles and Long Beach CA, demonstrated how this delay can affect the clearing of a waterway. This exercise, the currently available commercial salvage capabilities, as well as our federal, state and local government response capabilities are considered in detail in Chapter VI.

As fallout from the grounding of the *Exxon Valdez* and the legislative mandate that followed, the Oil Pollution Act of 1990, the U.S. made changes to many commercial shipping regulations with an eye towards protection of the environment. One such regulation was the requirement for ships to identify salvage and marine firefighting

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<sup>8</sup> National Research Council, Committee on Marine Salvage Issues, Marine Board, Commission on Engineering and Technical Systems, *A Reassessment Of The Marine Salvage Posture In The United States*, National Academy Press, Washington, DC, 1994, 8. Hereafter cited as *A Reassessment Of The Marine Salvage Posture In The United States*.

resources capable of responding to locations in which the ship operated in U.S. waters. Until December 31, 2008, the regulations fell short by not identifying response time criteria for these identified salvage resources, 15 years after the regulation was first published, and nearly 20 years since the *Exxon Valdez* grounded in Prince William Sound, AK. Additionally, these requirements apply only to ships that carry group I-IV oils as their primary or secondary cargo, although applicability to other ships is still being considered. Despite the time delay experienced in the publication of this rule governing salvage and marine firefighting, it is a positive step toward achieving a more robust salvage capability in the U.S.

Despite the positive evolution of our emergency response organizations outlined in Chapter III, our ports and waterways continue to be vulnerable much like Pearl Harbor was on that fateful Sunday in December 1941. A terrorist could just as plausibly cause a major disruption to our economy by disabling the Maritime Transportation infrastructure, which is exploitable and open to attack. Furthermore, the federal response to Hurricane's Katrina and Rita provided a wake up call on the need to refine our Maritime Transportation System (MTS) recovery plans. In response to that wake-up call, the Department of Homeland Security, has taken great strides with the introduction of the Maritime Infrastructure Recovery Plan (MIRP), placing the Coast Guard at the helm as the lead agency. In addition to the MTS recovery plans and the MIRP, port salvage response plans have also been promulgated, and once fully implemented, will add greatly to our nation's capacity to respond to TSI's. Chapter VII details these plans and the steps our nation has taken towards the formation of a national salvage response organization.

The positive changes to our MTS response and recovery posture are identified in

the case studies examined in Chapter VIII; the Federal Response to Hurricanes Katrina and Rita in 2005 as compared to Hurricane Ike in 2008. As with most new initiatives, growth, maturity, and practice will further refine our nation's ability to respond to catastrophic incidents in our MTS. While 'practice' may not make 'perfect' when it comes to a national salvage response organization, it certainly is testament to the efforts made by all agencies throughout the past eight years since 9/11.

*“What romance the sea offers - enchantment of distant travel, treasure hunting, daredevil rescue, and other untold adventure! It’s no wonder that thrill seekers from around our wet and stormy globe often embrace seafaring excitement as a way of life. Professional and casual salvors are at the forefront of these tempters of fate. What better way to make a living than by braving ever looming danger to save doomed property from the clutches of nautical disaster?”*

Steven W. Block<sup>9</sup>

## II. MARITIME SALVAGE DEFINED AND THE ORIGINS

The 1989 International Maritime Organization’s (IMO) Convention on Salvage defines maritime salvage as “any act or activity undertaken to assist a vessel or any other property in danger in navigable waters or in any other waters whatsoever.”<sup>10</sup> Salvage can include towing, patching and refloating, or any other repair method used to remove the vessel from the environment or waterway that it might be impeding.

Admiralty and maritime law regarding salvage has been refined throughout the years, with the aforementioned 1989 IMO Convention being the latest to date. The origins of maritime salvage law can be traced back to the 900 B.C. Rhodian sea laws, which allowed the “salvor to claim reward based on a percentage of the cargo or ship recovered and the danger involved in the operation. Awards varied from 10 percent for cargo washed ashore to between 33 and 50 percent for recovered cargo, based on the depth of a shipwreck.”<sup>11</sup> Remarkably, this method has not been changed drastically over

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<sup>9</sup> Steven W. Block, *Maritime Salvage: the Big Business of Saving Vessels, Cargo and Equipment*, October 2000, [http://www.bpmlaw.com/portals/15/Documents/Legal\\_Lookout\\_1000.pdf](http://www.bpmlaw.com/portals/15/Documents/Legal_Lookout_1000.pdf) (accessed March 2, 2009).

<sup>10</sup> International Maritime Organization, *International Convention on Salvage, 1989*, April 28, 1989, [http://www.imo.org/Conventions/mainframe.asp?topic\\_id=259&doc\\_id=687](http://www.imo.org/Conventions/mainframe.asp?topic_id=259&doc_id=687) (accessed February 2, 2009). Hereafter cited as *International Convention on Salvage*.

<sup>11</sup> Mark A. Wilder, “Application of salvage law and the law of finds to sunken shipwreck discoveries,” *Defense Counsel Journal*, (January 1, 2000), <http://www.allbusiness.com/legal/litigation/905878-1.htm> (accessed February 24, 2009).

the past 3000 years, with major milestones; in 1869, following the U.S. Supreme Court ruling of “The Blackwall”, in 1910 with the Convention for the Unification of Certain Rules of Law respecting Assistance and Salvage at Sea, in 1967 as an amendment to the 1910 Convention, leading up to the 1989 Convention.

The 1869 U.S. Supreme Court case “The Blackwall” is still used as case law basis for determining salvage awards. The case established the six Blackwall Factors, which are used to determine the amount of the salvage award, much like the Rhodian laws did.

The factors are:

- (1) The labor expended by the salvors in rendering salvage service;
- (2) The promptitude, skill, and energy displayed in rendering the service and saving the property;
- (3) The value of the property employed by the salvors in rendering the service, and the danger to which such property was exposed;
- (4) The risk incurred by the salvors in securing the property from the impending peril;
- (5) The value of the property saved, and;
- (6) The degree of danger from which the property was rescued.<sup>12</sup>

These Blackwall Factors were used in the 1998 salvage case, the largest salvage award to date, when the tank ship *Cherry Valley*, came upon the Tug *J.A. Orgeron* and barge *Poseidon* experiencing propulsion failure 8 miles off of the coast of Fort Pierce, Florida. What was thought to be a routine salvage case, in which the *Cherry Valley* was

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<sup>12</sup> Ibid.

merely rendering assistance, as is required by the IMO Convention on Salvage<sup>13</sup>, turned out to be a lucrative salvage effort for the company. The cargo on the deck barge *Poseidon* happen to be an external fuel tank for NASA's space shuttle, valued at \$53 million. Key to determining the salvage award for the *Cherry Valley* was Blackwall Factor (5); whereas had this been a load of grain, aggregate or even machine parts, the salvage award might have only been a fraction of the \$4.125 million that was finally settled on.

These 1869 Blackwall Factors for determination of the salvage award have endured the test of time, as they are included in the 1910 Convention as well as the 1967 amendments. The major change in the 1989 Convention is the recognition that environmental protection must be considered in salvage, and an additional factor for determining the salvage award reads as follows; "the skill and efforts of the salvors in preventing or minimizing damage to the environment."<sup>14</sup> The Convention was opened for signature at IMO beginning July 1, 1989, although not signed by the U.S. until April 22, 1992, and finally brought into force on July 14, 1996, one year after the obligatory 15 nations became signatory to it. The issue of environmental protection during salvage efforts was one of the major concerns expressed by maritime professionals at a 2003 workshop, which was held to assess the U.S. salvage capabilities, and the lack of responder immunity that exists in the U.S. Whereas some salvors submit that this fear exists due to the possibility of civil or even criminal lawsuits being brought up in the case

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<sup>13</sup> Article 10 of the International Convention on Salvage, titled Duty to render assistance, requires that "Every master is bound, so far as he can do so without serious danger to his vessel and persons thereon, to render assistance to any person in danger of being lost at sea."

<sup>14</sup> *International Convention on Salvage*.

of pollution being inadvertently released from a vessel during a salvage attempt. This contentious issue is revisited in Chapter VI, as well as how the United Kingdom has addressed the problem within their territorial seas.

*“We've talked a lot about unifying command today and I want to try to get more in detail on that. I think it's, first, important for you to explain to us your view of what the Unified Command looks like to the American people, because I don't think anybody understands what that looks like. We might understand it in military terms but it's different when FEMA is on the ground. So could you give us, sort of, a sketch of what it looks like?”*

*Congressman William Shuster (R-PA)*

### **III. DISASTER RESPONSE, AN EVOLUTIONARY PROCESS**

Mention the words ‘disaster response’ and most people conjure up images of individuals responding to the Twin Towers collapsing on 9/11, the 2004 Indian Ocean Tsunami waves coming ashore in Indonesia, or people standing on their roofs waiting to be rescued as Hurricane Katrina came ashore in New Orleans. Each of these events furthered the refinement of our nation’s response capabilities and doctrine. This chapter will highlight some of our nation’s major milestones that have led to these enhancements.

The Congressional Act of 1803 was legislation enacted in response to the great fire in Portsmouth, NH in 1802. FEMA considers this Act, “the first piece of disaster legislation,” to be part of their earliest beginnings as an organization.<sup>15</sup> Through the 1900’s, similar legislative acts empowered agencies as the authority for disaster relief such as; the 1932 commissioning of the Reconstruction and Finance Corporation to provide loans for reconstruction and repair following earthquakes and other natural disasters, and the Flood Control Act of 1944, which empowered the Army Corps of Engineers as the authority for flood control and lead agency following flooding disasters. In the 1960’s, the Federal Disaster Assistance Agency, part of the Department of Housing and Urban Development, became the lead federal entity for disaster relief and recovery. By the 1970’s, over one-hundred federal agencies had some role in disaster relief, which

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<sup>15</sup> Federal Emergency Management Agency, *FEMA History*, <http://www.fema.gov/about/history.shtm> (accessed February 10, 2009). Hereafter cited as *FEMA History*.

prompted the National Governors Association request to President Jimmy Carter for a centralized federal response agency. By the signing of Executive Order 12127, President Carter “merged many of the separate disaster-related responsibilities into the Federal Emergency Management Agency.”<sup>16</sup>

The first Director of FEMA was John Macy, who developed an Integrated Emergency Management System which established the following goals:

- (1) Foster a full federal, state, and local government partnership with provisions for flexibility to achieve common national goals.
- (2) Emphasize implementation of emergency management measures which are known to be effective.
- (3) Achieve more complete integration of emergency management planning into mainstream state and local policy-making and operational systems.
- (4) Build on the foundation of existing emergency management plans, systems and capabilities to broaden their applicability to the full spectrum of emergencies.<sup>17</sup>

The 1992 publication of the Federal Response Plan (FRP) served as an implementation vehicle for the Robert T. Stafford Disaster Relief and Emergency Assistance Act, which is outlined in detail in Chapter V of this paper. “The FRP describes the policies, planning assumptions, concept of operations, response and recovery actions, and responsibilities . . . that guide Federal operations following Presidential declaration of a major disaster or emergency.”<sup>18</sup>

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<sup>16</sup> Ibid.

<sup>17</sup> Federal Emergency Management Agency, *I-S Emergency Manager: An Orientation to the Position*, [http://training.fema.gov/EMIweb/downloads/is1\\_Unit1.pdf](http://training.fema.gov/EMIweb/downloads/is1_Unit1.pdf) (accessed February 28, 2009).

<sup>18</sup> Federal Emergency Management Agency, *Federal Response Plan*, Washington, DC, April 1999, iii.

The Federal Government adopted the National Response Plan (NRP) in 2004 as “an all-discipline, all-hazards plan that establishes a single, comprehensive framework for managing domestic incidents. It provides the structure and mechanisms for the coordination of Federal support to State, local, and tribal incident managers.”<sup>19</sup> The NRP was built with the realization that domestic incidents are primarily handled at the state and local level, but depending on the size of the event, the NRP is stood up, in a flexible and scalable manner, employing only those aspects of the NRP that are required. HSPD-5 instructed the “Secretary of Homeland Security (HLS) to coordinate the Federal government’s resources utilized in response to or recovery from terrorist attacks, major disasters, or other emergencies if and when any one of the following four conditions applies:

- (1) A Federal department or agency acting under its own authority has requested the assistance of the Secretary;
- (2) The resources of State and local authorities are overwhelmed and Federal assistance has been requested by the appropriate State and local authorities;
- (3) More than one Federal department or agency has become substantially involved in responding to the incident; or
- (4) The Secretary has been directed to assume responsibility for managing the domestic incident by the President.”<sup>20</sup>

In addition to the NRP, HSPD-5 also directed the development and administration of the National Incident Management System (NIMS), a system that could be utilized across all

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<sup>19</sup> U.S. Department of Homeland Security, *National Response Plan One team, one goal . . . a safer, more secure America*, [http://www.dhs.gov/xlibrary/assets/NRP\\_Brochure.pdf](http://www.dhs.gov/xlibrary/assets/NRP_Brochure.pdf) (accessed February 28, 2009).

<sup>20</sup> U.S. President, *Homeland Security Presidential Directive 5 (HSPD-5)*, February 23, 2003.

levels of government, as well as nongovernmental organizations (NGO) and the private sector as a method to prevent and respond to incidents regardless of size, location, or complexity. “NIMS is not an operational incident management or resource allocation plan,” rather it “represents a core set of doctrines, concepts, principles, terminology, and organizational processes that enables effective, efficient, and collaborative incident management.”<sup>21</sup> Flexibility and standardization are key concepts and principals that allow NIMS to attain this incident management prowess, and the following five core components provide the fabric of the systems approach utilized in its development; preparedness, communications and information management, resource management, command and management, and ongoing management and maintenance.

Further refining the NRP, the Federal Government adopted the National Response Framework (NRF) in 2008. While not substantially different than the NRP, the NRF is more “accurately aligned with its intended purpose . . . moreover, it was evident that the NRP and its supporting documents did not constitute a true operational plan in the sense understood by emergency managers . . . its content was inconsistent with the promise of its title.”<sup>22</sup> The core principals that the NRF is built upon are; (1) engaged partnerships, (2) tiered response, (3) scalable, flexible and adaptable operational capabilities, (4) unity of effort through unified command, and (5) readiness to act.<sup>23</sup> The NRF was written with the realization that a high turnover rate exists amongst senior officials throughout federal and state government agencies, as well as the private sector. That being said, “For the

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<sup>21</sup> Federal Emergency Management Agency, *National Incident Management System*, Washington, DC, December 2008, Preface.

<sup>22</sup> *National Response Framework*, 2-3.

<sup>23</sup> Federal Emergency Management Agency, *National Response Framework (NRF) – FACT SHEET*, <http://www.fema.gov/pdf/emergency/nrf/NRFOnePageFactSheet.pdf> (accessed February 18, 2009).

Nation to be prepared for any and all hazards, its leaders must have a baseline familiarity with the concepts and mechanics of the *Framework*.”<sup>24</sup> The NRF, in conjunction with NIMS, supports the National Strategy for Homeland Security goal of “Respond to and recover from incidents that do occur”.<sup>25</sup>

The development and refinement of the nation’s disaster response capacity and organization is testament to the ability of the U.S. to learn from the past. While the NRP and NRF came largely as a result of lessons learned following 9/11 and Hurricane Katrina, it will behoove the U.S. to continually assess the disaster response posture, in order to ensure we are *Semper Paratus*, “always ready”.

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<sup>24</sup> *National Response Framework*, v.

<sup>25</sup> U.S. Department of Homeland Security, *National Strategy for Homeland Security*, Washington, DC, October 2007, 1.

*“In many cases, the FEMA/USACE/USCG efforts were quite effective. In other cases, the efforts were encumbered by the absence of early development of clear overarching policy, lack of communication/coordination of assets, ad-hoc assembly of teleconferencing to effect some degree of local and regional coordination, and the absence of clear guidance for development of national or regional prioritization of efforts.”*

*SUPSALV report on Hurricanes Katrina and Rita*<sup>26</sup>

#### **IV. RESPONSE AGENCY ORGANIZATIONAL BOUNDARIES**

One of the Hurricane Katrina lessons learned, that is addressed by SUPSALV later in this paper, is the disjointed organizational boundaries of the primary agencies involved in maritime salvage, and the problems it presents the response organization. One might ask how Federal agencies could be organized in such a patchwork manner. In an attempt to capture the source of this problem, I will describe the primary response agencies, the reasons behind their creation, and their organizational structure and areas of responsibility.

##### **Federal Emergency Management Agency (FEMA)**

While not a hands-on maritime salvage response organization, per se, FEMA is the primary agency responsible for coordinating “the federal government’s role in preparing for, preventing, mitigating the effects of, responding to, and recovering from all domestic disasters, whether natural or man-made, including acts of terror.”<sup>27</sup> For the first 20+ years of FEMA’s existence, they fell under the direction of the Office of National Preparedness, but in 2003, they moved into the newly created Department of Homeland Security. FEMA acts “as an honest broker between departments and agencies, providing

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<sup>26</sup> U.S. Navy, *U.S. Navy Salvage Report Hurricanes Katrina and Rita*, Commander, Naval Sea Systems Command, Washington, DC, January 2007, 7-1. Hereafter cited as *U.S. Navy Salvage Report Hurricanes Katrina and Rita*.

<sup>27</sup> *FEMA History*.

a command structure, and serving as a single point of entry for state and local officials.”<sup>28</sup>

The organization is broken down into ten regional offices and two area offices that work directly with state and local emergency response officials, as well as Federal partners. Figure 4.1 is a graphical depiction of the regional geographical boundaries.



Figure 4.1 FEMA Regional Offices and Boundaries<sup>29</sup>

<sup>28</sup> U.S. President, *A Federal Response To Hurricane Katrina Lessons Learned*, February 23, 2006.

<sup>29</sup> Federal Emergency Management Agency, *Map of Regional Offices*, <http://www.fema.gov/about/regions/index.shtm> (accessed February 10, 2009).

## **U.S. Coast Guard**

The Coast Guard is the oldest continuous sea service, with origins dating back to the Revenue Cutter Service, which was founded on August 4, 1790. Led by then Secretary of Treasury, Alexander Hamilton, the initial major missions included enforcement of tariff and trade laws and prevention of smuggling. In 1915, Congress merged the Revenue Cutter Service with the Lifesaving Service to form the Coast Guard, “a military service and a branch of the armed forces of the United States at all times.”<sup>30</sup> The organization is made up of nine District offices as well as two Area Commands. Of interest in the near future, on June 1, 2009, the two Area Commands, Atlantic Area in Portsmouth VA, and Pacific Area in Alameda CA, will be dissolved with the formation of an Operations Command located in Portsmouth VA. The formation of a singular Operations Command is intended to provide greater unity of command across the entire spectrum of Coast Guard operations by placing a single officer in charge of mission execution. Each District office is further divided into anywhere from 2 to 7 Sector Commands, depending on the geographical boundaries, for a total of 35 Sectors. Statutorily speaking, the Sector Commanding Officers are designated with multiple responsibilities including: Captain of the Port (COTP), Federal On Scene Coordinator (FOSC), Officer in Charge Marine Inspection (OCMI), Area Maritime Security Coordinator (AMSC), and Search and Rescue Mission Coordinator (SMC). The formation of the Sector Commands took place after 9/11 to provide a singular chain of command across all Coast Guard operational functions. Prior to the formation of the Sector Commands, the geographical areas were typically filled by two separate

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<sup>30</sup> U.S. Code 14 (2007), § 1.

Commands; a Marine Safety Office Commander which filled the role of COTP, FO SC, and OCMI, and a Group Commander that filled the role of SMC. The AMSC was a responsibility that was added after the passing of the Maritime Transportation Security Act of 2002, which coincided on a similar timeframe as the formation of the Sector Commands. Figure 4.2 is a graphical depiction of the nine District offices and 35 Sector Command geographical boundaries.

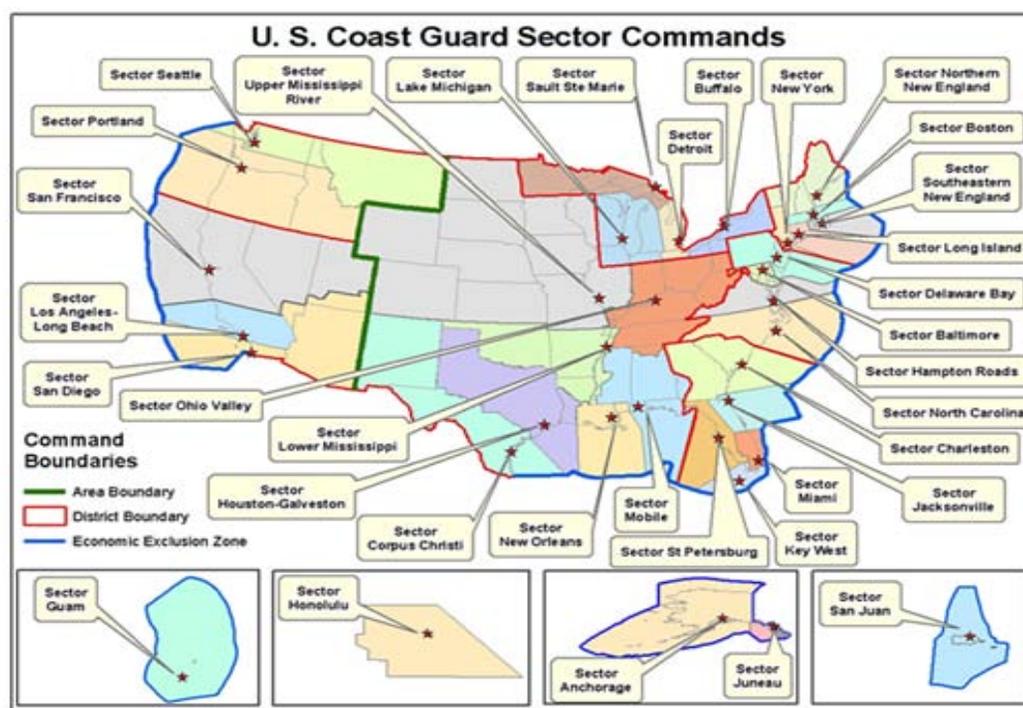


Figure 4.2 U.S. Coast Guard Geographical Boundaries (Area, District, Sector)<sup>31</sup>

<sup>31</sup> U.S. Coast Guard, *Sector Boundaries*, <http://homeport.uscg.mil/mycg/portal/ep/programView.do?channelId=-18301&programId=28061&programPage=/ep/program/cgSectorMap.jsp&pageTypeId=13489> (accessed February 10, 2009).

## **U.S. Army Corps of Engineers (USACE)**

The USACE as an organization has been in existence ever since 1779, with the first Army Engineers being appointed by George Washington. The USACE was actually disbanded from service following the revolutionary war, but in 1802, the USACE was reestablished as a separate branch of the Army. Since that time the USACE have performed a multitude of functions for the U.S. Government, but the two functions directly related to maritime infrastructure are their initial surveying and clearing of navigable waterways. In the following years, the USACE further improved our maritime transportation system by constructing lighthouses, jetties and wharfs, and publication of accurate charts of the shipping channels. The mapping of the shipping channels is one of the most important functions that the USACE provides to ensure our ports and waterways remain freely flowing to commercial and recreational shipping. After establishing their organization as the nation's premier disaster response organization in the late 19<sup>th</sup> century and into the first half of the 20<sup>th</sup> century, the signing of the Federal Disaster Relief Act of 1950 formally designated the USACE as the lead federal agency for flood disasters. In the later half of the 20<sup>th</sup> century, the USACE further justified their existence by exemplary performance in a number of high profile emergency and disaster relief operations. The current organizational structure of the USACE includes nine Division offices, with seven in CONUS and two OCONUS. Figure 4.3 is a graphical depiction of the nine Division offices.

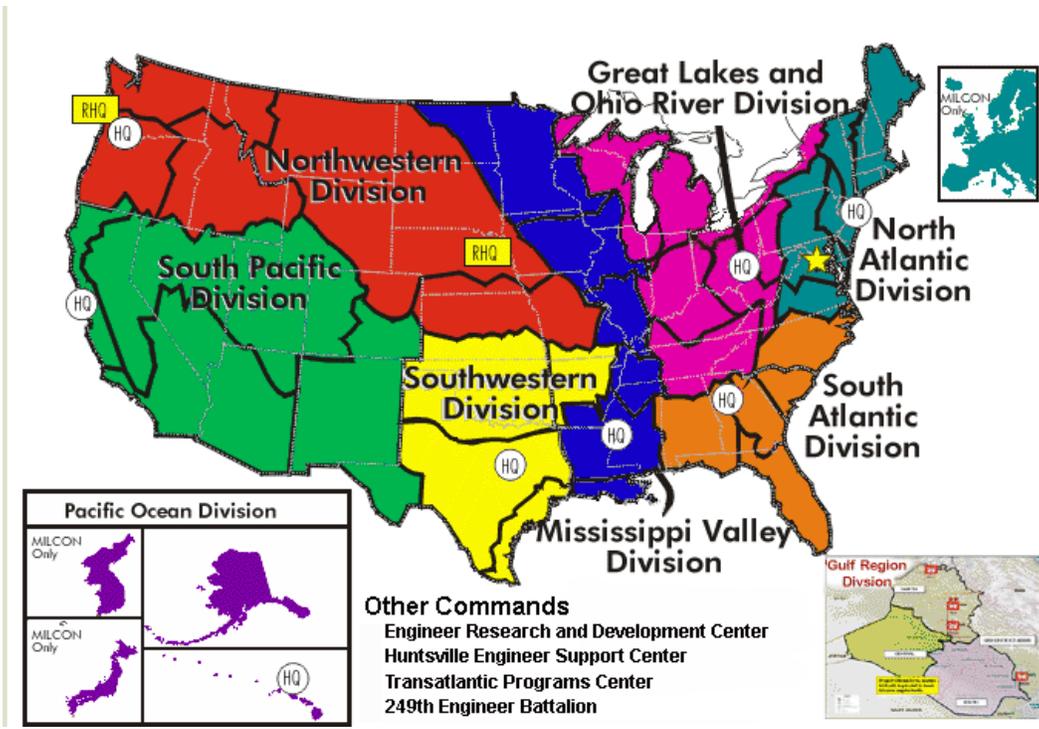


Figure 4.3 U.S. Army Corps of Engineers Divisional Boundaries<sup>32</sup>

<sup>32</sup> U.S. Army Corps of Engineers, *Locations*, <http://usace.army.mil/about/Pages/Locations.aspx> (accessed February 2, 2009).

## **U.S. Navy**

The three entities with primary responsibility to maritime salvage for the Navy are the Supervisor of Salvage and Diving (SUPSALV), Military Sealift Command (MSC), and Mobile Diving and Salvage Units (MDSUs). SUPSALV and MSC are located at the Navy Yard in Washington DC, while the MDSU's are located in Pearl Harbor HI and Norfolk VA. The eight primary surface assets operated by the MSC that are utilized for maritime salvage are under operational control of the Navy's numbered fleets; currently, 2<sup>nd</sup> Fleet has one Rescue and Salvage Ship (T-ARS) and two Fleet Ocean Tugs (T-ATF), 3<sup>rd</sup> Fleet has one T-ARS and two T-ATFs, 5<sup>th</sup> Fleet has one T-ATF, and 7<sup>th</sup> Fleet has one T-ARS.

### **Agency Boundary Summary**

This chapter makes it quite clear that the agency geographical boundaries are drastically different, and to align them would be a colossal task. One must realize that the boundaries were set years ago, and no doubt, took into account all of the factors affecting the individual organization and how it would affect their operations. Accepting that this is the case, the role of interagency coordination and networking must be the primary goal of agency chiefs. If this is accomplished effectively, the geographical boundaries should not be a major limitation to efficient disaster response and recovery efforts.

*“We live in a Coastal Nation state that relies on interconnected rivers, lakes, oceans, and waterways to feed us, supply us with energy, connect us with the global supply chain, provide us with recreation, and buffer us from those who would do us harm or exploit our scarce resources.”*

*Admiral Thad Allen<sup>33</sup>*

## **V. AGENCY STATUTORY RESPONSIBILITIES AND CAPABILITIES**

There are many agencies that have statutory responsibilities with regard to maritime salvage, but the four primary players are; Federal Emergency Management Agency, U.S. Coast Guard, U.S. Army Corps of Engineers, and U.S. Navy. Laying out the Emergency Support Functions that fund salvage response activities following disaster declarations, the Federal Emergency Management Agency provides the overarching command structure for disaster response and recovery efforts. The Coast Guard’s primary interest is recovery and restoration of our maritime transportation system whilst minimizing pollution to the environment, while the Army Corps of Engineers ensures the U.S. navigable waterways remain clear of obstructions. The Navy’s role can best be described as hands on support, primarily with the help of their MDSU under the guidance of the SUPSALV, and the use of their surface salvage assets, operated by the MSC.

### **Federal Emergency Management Agency (FEMA)**

The Robert T. Stafford Disaster and Emergency Assistance Act is the primary authority used by FEMA in their disaster response activities. The President has delegated FEMA through executive orders for administering the major provisions of the Stafford Act. The Disaster Relief Fund provides the monies for Stafford Act authority, for the following five Presidential Declarations:

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<sup>33</sup> U.S. Coast Guard, *The U.S. Coast Guard Strategy for Maritime Safety, Security, and Stewardship*, January 19, 2007.

- **Major disaster.** The President issues a major disaster declaration after receiving a request from the governor of the affected state. Major disaster declarations may be issued after a natural catastrophe or “regardless of cause, fire, flood or explosion.” A declaration authorizes DHS to administer various federal disaster assistance programs for victims of declared disasters. Each major disaster declaration specifies the type of incident covered, the time period covered, the types of disaster assistance available, the counties affected by the declaration, and the name of the federal coordinating officer.

- **Emergency.** The declaration process for emergencies is similar to that used for major disasters; the President may, however, issue an emergency declaration without a gubernatorial request if primary responsibility rests with the federal government. An emergency declaration may be issued on “any occasion or instance” in which the President determines that federal assistance is required. Under an emergency declaration, the federal government funds and undertakes emergency response activities, debris removal, and individual assistance and housing programs. DRF expenditures for an emergency are limited to \$5 million per declaration unless the President determines that there is a continuing need; Congress must be notified if the \$5 million ceiling is breached.

- **Fire suppression.** The Secretary of DHS is authorized to provide fire suppression assistance to supplement the resources of communities when fires threaten such destruction as would warrant a major disaster declaration.

- **Defense emergency.** Upon request from the governor of an affected state, the President may authorize the Department of Defense (DOD) to carry out emergency work for a period not to exceed 10 days. DOD emergency work is limited to work essential for the preservation of life and property.

- **Pre-declaration activities.** When a situation threatens human health and safety, and a disaster is imminent but not yet declared, the Secretary of DHS may place agency employees on alert. DHS monitors the status of the situation, communicates with state emergency officials on potential assistance requirements, and deploys teams and resources to maximize the speed and effectiveness of the anticipated federal response and, when necessary, performs preparedness and preliminary damage assessment activities.<sup>34</sup>

While the regional offices do maintain some full time employees in order to liaison with federal, state and local partners, large portions of the work force are Disaster Assistance Employees (DAE). “DAE’s, also known as a Stafford Act employee or

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<sup>34</sup> Report for Congress, *Federal Stafford Act Disaster Assistance: Presidential Declarations, Eligible Activities, and Funding*, Keith Bea, Congressional Research Service, Washington, DC, August 29, 2005, 1-3.

Reservist, perform disaster response and recovery activities, usually at temporary work sites located in disaster damaged areas . . . They perform key program, technical, and administrative functions during disasters.”<sup>35</sup> Additionally, FEMA sends personnel to regional offices and the incident areas when State governments request federal assistance.

### **U.S. Coast Guard**

Coast Guard statutory authority is granted under Title 14 United States Code (U.S.C.) Part 88, the ‘Saving Life and Property Act’ of August 4, 1949, which allows the Coast Guard to “perform any and all acts necessary to rescue and aid persons and protect and save property” to include the ability to “destroy or tow into port sunken or floating dangers to navigation.”<sup>36</sup> While this Act allows the Coast Guard some hands-on salvage capabilities, the “Coast Guard has consistently maintained that it is not in the salvage business”, and “does not have any substantial salvage capability in the sense of conducting a major offshore salvage operation.”<sup>37</sup> Rather, the Coast Guard does maintain the ability to save life through search and rescue capabilities, as well as a robust environmental protection capability through the National Contingency Plan (NCP).<sup>38</sup>

The NCP’s purpose and objective is, “to provide the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants and contaminants.”<sup>39</sup> The NCP was first developed and published in 1968 following the discharge of 37 million gallons of crude oil from the tank

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<sup>35</sup> Federal Emergency Management Agency, *Disaster Assistance Employees, (Reservists)*, <http://www.fema.gov/plan/ehp/employment.shtm> (accessed February 10, 2009).

<sup>36</sup> *U.S. Code* 14 (2007), § 88.

<sup>37</sup> *A Reassessment Of The Marine Salvage Posture In The United States*, 112.

<sup>38</sup> *Ibid*, 6.

<sup>39</sup> *U.S. Code of Federal Regulations* 40 (2008), § 300.1.

ship *Torrey Canyon* off of the coast of England. In recognition of the problems incurred during the response to this oil discharge, “U.S. officials developed a coordinated approach to cope with potential spills in U.S. waters,” providing “the first comprehensive system of accident reporting, spill containment, and cleanup,” and establishing “a response headquarters, a national reaction team, and regional reaction team.”<sup>40</sup> The NCP is contained within Title 40 Code of Federal Regulations (CFR) Protection of the Environment, the lead agency designated for the response organization, the National Response Team, is the Environmental Protection Agency (EPA), while the Coast Guard fills the role as the Vice Chair. The NCP has been further refined throughout the years, taking into account the following regulatory measures; Clean Water Act of 1972, Superfund legislation of 1980, and finally the Oil Pollution Act of 1990 (OPA-90). The role that OPA-90 has played in strengthening our national salvage posture is discussed in Chapter VII.

One of the primary salvage capabilities that the Coast Guard brings to the table is the Salvage and Engineering Response Team (SERT). In the event of a vessel grounding, collision, or allision,<sup>41</sup> the Coast Guard Captains of the Port (COTP) and Federal On-Scene Coordinators (FOSC) often look to the SERT for their guidance and recommendations. The SERT is staffed by a team of Coast Guard naval engineers assigned to the Marine Safety Center in Washington DC, the office with primary responsibility of approving all new and major construction on U.S. Flagged commercial ships. There are a number of technical evaluations that the SERT can perform in order to

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<sup>40</sup> U.S. Environmental Protection Agency, *National Oil and Hazardous Substances Pollution Contingency Plan Overview*, [www.epa.gov/oem/content/lawsregs/ncpover.htm](http://www.epa.gov/oem/content/lawsregs/ncpover.htm) (accessed February 2, 2009).

<sup>41</sup> An allision is defined as vessel contact with a fixed or stationary object.

assist the COTP and FOSC including: “assessment and analysis of intact and damage stability, hull stress and strength, grounding and freeing forces, prediction of oil/hazardous substance outflow, and expertise on passenger vessel construction, fire protection, and safety.” The SERT’s capabilities also include mobile computing capability for on-scene deployment, as well as access to the Marine Safety Center’s database of over 5,000 hull files that can be used while generating models of the vessel in distress. Quite possibly the most beneficial aspect of the SERT comes in the form of their professional relationships with the staff at SUPSALV.<sup>42</sup>

### **U.S. Army Corps of Engineers (USACE)**

While most people would think that the Coast Guard would be charged with maintaining a clear and unobstructed navigable waterway, that responsibility primarily rests with the USACE and the authority bestowed upon the Secretary of the Army in 33 U.S.C. 409, 414, 415, and 416. Specifically, 33 U.S.C. 414 authorizes the USACE to remove sunken water craft or other obstructions in the navigable waters of the United States. A Memorandum of Agreement between the USACE and Coast Guard provides procedures to determine if the sunken water craft or other obstruction is considered a hazard to navigation, and proceeds with removal on a timeline considered appropriate based on the criticality of the waterway.<sup>43</sup> 33 U.S.C. 415 provides further specificity by requiring the owner or operator of the vessel obstructing a navigable waterway, as determined by the Coast Guard, to begin removal of such obstruction within 24 hours; if

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<sup>42</sup> U.S. Coast Guard, *HOMEPORT SERT Services*, [http://homeport.uscg.mil/mycg/portal/ep/contentView.do?contentId=83082&pageTypeId=0&contentType=EDITORIAL&BV\\_SessionID=@@ @0137180985.1234808452@@ @&BV\\_EngineID=cccfadeghhhd fimcfjgcfgfdffhdghj.0](http://homeport.uscg.mil/mycg/portal/ep/contentView.do?contentId=83082&pageTypeId=0&contentType=EDITORIAL&BV_SessionID=@@ @0137180985.1234808452@@ @&BV_EngineID=cccfadeghhhd fimcfjgcfgfdffhdghj.0) (accessed October 29, 2008).

<sup>43</sup> U.S. Coast Guard, *Navigation and Vessel Inspection Circular No. 9-02, Change 3*, Washington, DC, April 29, 2008, 6-32.

the owner or operator fails to proceed as required, the USACE begins their removal or destruction of the vessel. In order to perform this salvage work, USACE either utilizes their own equipment or contracting authority, or they may “request Navy assistance and/or obtain assistance under an existing Navy salvage contract,” depending on the complexity of the salvage.<sup>44</sup>

### **U.S. Navy**

The U.S. Navy meanwhile, truly is the only organization with hands on salvage capabilities. The Salvage Facilities Act authorizes “The Secretary of the Navy to provide, by contract or otherwise, necessary salvage facilities for public and private vessels.”<sup>45</sup> It also “allows for the maintenance of national salvage capability for use in peacetime, war, or national emergency” and, “in cooperation with the Military Sealift Command (MSC), shall maintain a core nucleus of ships and personnel trained in salvage and ocean towing.”<sup>46</sup> Maintaining this core nucleus is vital to the U.S. maritime salvage capabilities in the event of a natural disaster as well as providing effective response resources following a transportation security incident involving the blockage or disruption to one of our vital U.S. ports. “Salvage operations pose unique tasks which require specialized equipment and systems as well as highly trained personnel,” ranging “from routine and emergency vessel tows, to dive tasks at shallow depths, to more demanding missions such as refloating sunken or stranded ships, raising

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<sup>44</sup> *A Reassessment Of The Marine Salvage Posture In The United States*, 115.

<sup>45</sup> *U.S. Code* 10 (2007), § 7361.

<sup>46</sup> U.S. Navy, *Salvage and Recovery Program OPNAV INSTRUCTION 4240.2G*, Office of the Chief of Naval Operations, Washington, DC, December 11, 2007, 2. Hereafter cited as *OPNAV INSTRUCTION 4240.2G*.

submarines...and recovering objects from the deepest depths of the oceans.”<sup>47</sup> In order to carry out this monumental task, the Navy relies on three entities including; SUPSALV, MSC, and the MDSU’s.

SUPSALV is designated by the Secretary of the Navy as the person in charge of maintaining sufficient capacity for the salvage of Government vessels, and when needed, privately-owned commercial vessels. SUPSALV performs this mission with the help of 4 Rescue and Salvage vessels (T-ARS) and 4 Fleet Ocean Tugs (T-ATF). The T-ARS are purposefully built salvage vessels with multiple missions to include; towing, supporting manned diving operations, debeaching stranded vessels, and providing deepwater heavy lift capability.<sup>48</sup> The ships were built in Sturgeon Bay, WI by Peterson Builders, Inc., and commissioned between 1985-86; the ships are 255 feet in length with a 7.5 ton capacity boom forward, as well as a 40 ton capacity boom aft. They also can support supplied air diving operations to 190 feet.<sup>49</sup> The four T-ARS’s were operated by the Navy until 2006-07, when they were decommissioned and transferred to the MSC, and are currently crewed with 26 civil servant merchant mariners and 4 navy personnel. One point of clarity is that these civil servant merchant mariners (CIVMARS) are employees of the U.S. government, and “differ from commercial civilian mariners in one key aspect: they can be reliably controlled and are dependable under heinous combat

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<sup>47</sup> Ibid.

<sup>48</sup> U.S. Military Sealift Command, *T-ARS Fact Sheet*, <http://www.msc.navy.mil/factsheet/t-ars.asp> (accessed December 1, 2008)

<sup>49</sup> U.S. Navy, *T-ARS 50 Safeguard Class Salvage Vessel*, [http://supsalv.org/00c2\\_ars50.asp?destpage=00c2&pageID=2.5.1](http://supsalv.org/00c2_ars50.asp?destpage=00c2&pageID=2.5.1) (accessed December 1, 2008). Hereafter cited as *T-ARS 50 Safeguard Class Salvage Vessel*.

conditions.”<sup>50</sup> Although operated by the MSC, these ships continue their service as the newest and primary salvage vessels for the Navy.<sup>51</sup> The MSC also operates the 4 T-ATF’s to provide SUPSALV with additional assets to employ in their role as salvor. The T-ATF’s are used to augment the Navy’s towing , fire fighting, and heavy lift capabilities and were built at Marinette Marine Corp., and commissioned between 1980-81.<sup>52</sup> As mentioned, the newest of these salvage assets, the T-ARS’s are approaching 25 years of service while the T-ATF’s rapidly approach their expected service life of 40 years in 2019.

Recapitalization studies and assessments of salvage capabilities have been conducted by the Navy concerning replacement ships for the T-ARS/T-ATF, with the possibility of replacing them with one multi-mission capable platform. The Navy *Salvage Ship Recapitalization Study* conducted in 2006 by the Center for Naval Analysis focused on possible alternative operating methods to the traditional government owned and civilian operated ships (GOCO). The two alternative operating methods were; contractor owned/government operated (COGO) and contractor owned and operated (COCO). The results of this study showed that for a 25 year life cycle cost, the COCO method is actually a more economical method of operation by a small margin.<sup>53</sup> The primary savings with the COCO alternative is based on a possibility that the ships could be used in the commercial market when not being utilized by the Navy, and with this

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<sup>50</sup> Center for Naval Analysis, *Navy Salvage Ship Recapitalization Study*, Richard Sperling, John D. Keenan, Alexandria, VA, November 2006, 8. Hereafter cited as *Navy Salvage Ship Recapitalization Study*.

<sup>51</sup> *T-ARS 50 Safeguard Class Salvage Vessel*.

<sup>52</sup> U.S. Navy, *T-ATF 166 Powhatan Class Fleet Ocean Tug*, [http://supsalv.org/00c2\\_t-atf166.asp?destpage=00c2&pageID=2.5.1](http://supsalv.org/00c2_t-atf166.asp?destpage=00c2&pageID=2.5.1) (accessed December 1, 2008).

<sup>53</sup> *Navy Salvage Ship Recapitalization Study*, 2-3.

employment option, comes an estimated savings of up to \$457 million.<sup>54</sup> The study assumed two different fleet force sizes; one in support of POM-08 Navy surface ship forces which required seven ocean towing and salvage ships, and an alternative more preferable to SUPSALV utilizing a fleet force of nine ships.<sup>55</sup>

The second recapitalization study utilized The Joint Capabilities Integration Development System (JCIDS) as the acquisition model, which uses a systems architecture approach in order to “incorporate the capabilities derived from strategic guidance into a Department of Defense Architecture Framework (DODAF) product.”<sup>56</sup> The JCIDS process came about due to the realization that system architecture frequently results in an end product that is not suitable for the single service perspective, let alone the joint force.

Besides the surface assets that SUPSALV employs, the MDSUs provide another hands-on resource that can be utilized in their salvage efforts. The MDSUs “provide combat ready, expeditionary, rapidly deployable Mobile Diving and Salvage Detachments (MDSU) to conduct harbor clearance, salvage, underwater search and recovery, and underwater emergency repairs in any environment.”<sup>57</sup> With the reality that the Navy’s organic salvage assets cannot provide the global reach and capability necessary to perform effective and efficient salvage operations in every situation, SUPSALV maintains “competitive long-term contracts with commercial salvors to

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<sup>54</sup> Ibid, 5.

<sup>55</sup> Ibid, 6.

<sup>56</sup> George T. (Judd) Southworth, “Systems Architecting Approach to Towing and Salvage Ship Recapitalization,” (master’s thesis, Naval Postgraduate School, June 2008), v.

<sup>57</sup> U.S. Navy, *Mobile Diving and Salvage Unit ONE Command Vision and Mission*, <http://www.mdsu1.navy.mil/Mission.html> (accessed February 2, 2009).

provide additional assets, personnel, and cutting-edge technology as needed.”<sup>58</sup> Specifically, these contracts provide “for worldwide (1) towing, (2) salvage, (3) deep ocean search and recovery, (4) ocean engineering, and (5) oil spill response.”<sup>59</sup> With the realization that space is not unlimited on either the T-ARS or T-ATF, SUPSALV also maintains emergency ship salvage material (ESSM) in warehouses, strategically placed worldwide, to provide specialized salvage and pollution abatement equipment in a variety of locations.<sup>60</sup>

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<sup>58</sup> Transportation Research Board, Committee for Marine Salvage Response, Marine Board, *Marine Salvage Capabilities; Responding to Terrorist Attacks in U.S. Ports – Actions to Improve Readiness*, National Academy Press, Washington, DC, 2004, 2. Hereafter cited as *Marine Salvage Capabilities; Responding to Terrorist Attacks in U.S. Ports – Actions to Improve Readiness*.

<sup>59</sup> *Navy Salvage Ship Recapitalization Study*, 10-11.

<sup>60</sup> *Ibid*, 12-13.

*“In short, by any objective strategic analysis, the ports of Los Angeles and Long Beach present very seductive targets for an adversary that is intent on disrupting the economy of the United States...Yet national security planners have not seen safeguarding this or other major U.S. commercial seaports as a top strategic priority.”*

*Dr. Stephen E. Flynn<sup>61</sup>*

## **VI. ASSESSMENT OF U.S. SALVAGE CAPABILITIES**

Following the catastrophic events of September 11, 2001, the United States’ maritime salvage capabilities have been on government officials and industry experts minds, given the likelihood of a terrorist led event unfolding in one of our ports or waterways. To address this issue, the National Academies Marine Board, a committee within the Transportation Research Board convened a workshop in March 2003, bringing together marine transportation and salvage professionals, governmental regulators, and industry stakeholders to evaluate the current capabilities to respond to such an incident and to develop a strategy to improve noted deficiencies.<sup>62</sup> This was not the first time that the U.S. maritime salvage capabilities were studied, but it had been nearly ten years since the most recent study had been completed. In 1994, the National Research Council’s (NRC) Marine Board, Committee on Marine Salvage Issues, published their report *A Reassessment of the Marine Salvage Posture of the United States*.<sup>63</sup> This reassessment was a look at the original 1982 report commissioned by NRC’s Marine Board entitled

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<sup>61</sup> Stephen E. Flynn, “Mahan Revisited: Why Resilient Commercial Seaports are a National Security Imperative,” Keynote presentation at The Transportation Research Board of the National Academies Marine Board Maritime Disaster Workshop, University of California, Irvine, CA, September 4, 2008, 2-3.

<sup>62</sup> *Marine Salvage Capabilities; Responding to Terrorist Attacks in U.S. Ports – Actions to Improve Readiness*.

<sup>63</sup> *A Reassessment Of The Marine Salvage Posture In The United States*.

*Marine Salvage in the United States.*<sup>64</sup>

The 2003 workshop addressed a wide range of issues including; (1) physical salvage and harbor clearance operations, (2) economic and political, (3) legal and human capacity, and (4) environmental. Two terrorist incident driven scenarios were delivered to the workshop attendees, consisting of a collision between a cruise ship and chemical tanker in the Port of Houston directly blocking the ship channel, and an explosion onboard a product tanker on the Mississippi River in the vicinity of the Port of New Orleans. The conference attendees were then divided into four groups, with each group assigned the task of addressing one of the four issues detailed above. An overview of the major considerations for each issue is described below.

### **Physical Salvage and Harbor Clearance Issues**

There were many areas of concern addressed regarding the physical salvage and harbor clearance issues, but the following topics touch on some of the key issues. It was well recognized and demonstrated following 9/11 that when our nation faces a crisis, cooperation is paramount. As detailed earlier in this paper, the number of dedicated salvage assets available in the U.S. is dwindling based on a diminishing number of marine casualties. That is not to say that equipment being utilized for some other activity in the marine industry could not be utilized in salvage activities if faced with a national emergency. Because of this fact, industry experts feel that there currently exists sufficient capacity to carry out a major salvage operation. The questions that comes to bear then, is the time at which it takes to mobilize and arrive on scene of any given salvage response, as well as the concern regarding a multiple incident response in a few

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<sup>64</sup> National Research Council, Committee on the National Salvage Posture, Marine Board, Commission on Engineering and Technical Systems, *Marine Salvage in the United States*, National Academy Press, Washington, DC, 1982. Hereafter cited as *Marine Salvage in the United States*.

strategically thought out locations. Part of this question could be answered by the recommendation that the American Salvage Association “could develop a list of what each member has available (pumps, compressors, equipment, etc.). SUPSALV has some of this information, but a fully documented and verified inventory prepared by industry could be more comprehensive and up to date.”<sup>65</sup>

### **Financial, Economic, and Political Issues**

Funding programs for oil spills or hazardous material releases have been available since the Oil Spill Liability Trust Fund (OLSTF) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) were established in 1986<sup>66</sup> and 1980<sup>67</sup> respectively. Coast Guard FOSCs often access these funds when no immediate Responsible Party<sup>68</sup> can be identified, but a like-kind mechanism is currently not

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<sup>65</sup> *Marine Salvage Capabilities; Responding to Terrorist Attacks in U.S. Ports – Actions to Improve Readiness*, 13.

<sup>66</sup> U.S. Coast Guard, National Pollution Funds Center, *The Oil Spill Liability Trust Fund*, [http://www.uscg.mil/npfc/About\\_NPFC/osltf.asp](http://www.uscg.mil/npfc/About_NPFC/osltf.asp) (accessed February 17, 2009).

<sup>67</sup> U.S. Environmental Protection Agency, *Superfund Regulations and Enforcement*, <http://www.epa.gov/superfund/policy/remedy/sfremedy/regenfor.htm> (accessed February 17, 2009).

<sup>68</sup> “Responsible Party” as it applies to the OLSTF and CERCLA is defined in OPA-90 as: (A) Vessels. — In the case of a vessel, any person owning, operating, or demise chartering the vessel. (B) Onshore facilities.— In the case of an onshore facility (other than a pipeline), any person owning or operating the facility, except a Federal agency, State, municipality, commission, or political subdivision of a State, or any interstate body, that as the owner transfers possession and right to use the property to another person by lease, assignment, or permit. (C) Offshore facilities.— In the case of an offshore facility (other than a pipeline or a deepwater port licensed under the Deepwater Port Act of 1974 (33 U.S.C. 1501 et seq.)), the lessee or permittee of the area in which the facility is located or the holder of a right of use and easement granted under applicable State law or the Outer Continental Shelf Lands Act (43 U.S.C. 1301–1356) for the area in which the facility is located (if the holder is a different person than the lessee or permittee), except a Federal agency, State, municipality, commission, or political subdivision of a State, or any interstate body, that as owner transfers possession and right to use the property to another person by lease, assignment, or permit. (D) Deepwater ports.— In the case of a deepwater port licensed under the Deepwater Port Act of 1974 (33 U.S.C. 1501–1524), the licensee. (E) Pipelines.— In the case of a pipeline, any person owning or operating the pipeline. (F) Abandonment.— In the case of an abandoned vessel, onshore facility, deepwater port, pipeline, or offshore facility, the persons who would have been responsible parties immediately prior to the abandonment of the vessel or facility.

available for a terrorist response fund. The conference attendees recommended that some type of fund be modeled around the current architecture of the OLSTF and CERCLA.

Economic issues are wide ranging, but obviously at the forefront of the decision making process. Clearing ports and waterways for commercial traffic is imperative, as each day that the port remains closed performing salvage operations, impacts are felt both directly and indirectly on the local economy, and a prolonged port closure will inevitably affect our nation's economy. Additional disruptions will include the need for vessel traffic and cargo to be diverted to alternative ports, and the inexorable increase in Maritime Security and Homeland Security Advisory Levels, that would follow a terrorist led incident.<sup>69</sup>

### **Legal, Forensic, and Human Casualty Issues**

Key issues identified by this breakout group include; limiting liability to salvage companies, FBI as first responders, and the prioritization of life-saving related to preservation of evidence at a crime scene. As previously mentioned, cooperation and expedient response among salvage companies is usually not an issue. What does become a potential issue though is the liability that looms over a salvors head in the case of an unintended consequence as a result of them taking action, such as pollution being released during a salvage operation that puts the salvor into a potential civil or even criminal violation. This begs to question that some form of responder immunity must be extended to the maritime salvage community, much like it is in many federal laws and international treaties. William L. Peck explored the immunities currently available and makes the following argument that sums up this issue,

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<sup>69</sup> *Marine Salvage Capabilities; Responding to Terrorist Attacks in U.S. Ports – Actions to Improve Readiness*, 14-15.

With effective responder immunity for salvors we can have our cake and eat it too: providing reasonable protection for salvors will help the environment. By allowing salvors to do their work without fear of liability in the event their good-faith efforts fails, salvors are more likely to respond to a casualty at an early stage; and having responded early, are more likely to succeed in helping both the casualty and the marine environment.<sup>70</sup>

The U.K. has addressed this issue through a partnership of their Maritime and Coastguard Agency (MCA) and several coastal fire and rescue services, called the Maritime Incident Response Group (MIRG).<sup>71</sup> The MIRG “formalizes the relationship between the MCA and various emergency response entities, increasing the number of trained and experienced responders and increasing the likelihood that those involved in addressing such emergencies at sea are on the same page.”<sup>72</sup> A similar program could be adopted, albeit not as formalized, in the U.S., through the committees that bring together government and industry officials with common responsibilities for maritime salvage and port recovery.

Equally key to timely response efforts following a terrorism incident is the all-clear signal that must be given by the Federal Bureau of Investigation (FBI) for salvage operations to begin, due to FBI’s need to analyze any potential crime scene before it is disturbed. In the case of hazardous materials or unsafe conditions persisting at the scene, this delay in the all-clear signal could be significant, thus first responders must be adequately trained to work in this type of an environment. Irrespective of this all-clear

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<sup>70</sup> William L. Peck, “Responder Immunity and Salvage,” <http://www.iosc.org/papers/01852.pdf> (accessed February 16, 2009).

<sup>71</sup> United Kingdom Maritime and Coastguard Agency, *The Maritime Incident Response Group*, <http://www.mirg.org.uk/about.shtml> (accessed February 28, 2009).

<sup>72</sup> Dennis Bryant and John A. Witte Jr., “Salvage and Marine Firefighting,” *Maritime Reporter and Engineering News*, (February 11, 2009), <http://marinelink.com/en-US/News/Article/Salvage-and-marine-firefighting/329667.aspx> (accessed February 28, 2009).

signal is the fact that lifesaving efforts take precedence over the preservation of a crime scene.<sup>73</sup>

### **Environmental Issues**

It is a fact of life that environmental issues will be a contentious point with regard to salvage operations; whether it be responder contact with hazardous materials, or the need to jettison oil or hazardous cargo in order to achieve a stable vessel, to the disposal of dredge spoils or firefighting waste. Additionally, this group stressed the “need to address at the national, state, and local levels the provisions of places of refuge or safe havens for vessels in dire situations ... the failure to provide a safe haven in the case of the *Prestige*<sup>74</sup> oil spill, for example, is recognized as a major contributor to the disastrous outcome of that incident.”<sup>75</sup> Fortunately, this concern has been addressed and potential ports of refuge are being identified at the International and National level. In response to the *Prestige* oil spill and other similar casualties, the International Maritime Organization (IMO) developed and adopted Assembly Resolution 949 (23) titled, Guidelines on Places of Refuge for Ships in need of Assistance. “The purpose of these Guidelines is to provide Member Governments, shipmasters, companies, and salvors with a framework enabling them to respond effectively and in such a way that . . . the efforts of the shipmaster and ship company concerned and the efforts of the government authorities

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<sup>73</sup> *Marine Salvage Capabilities; Responding to Terrorist Attacks in U.S. Ports – Actions to Improve Readiness*, 16-17.

<sup>74</sup> Oil tanker that was denied entry into ports of France, Spain, and Portugal, which could have contributed to the ship deteriorating to the point that it broke in two, sank, and released approximately 20 million gallons of oil off the coast of Spain.

<sup>75</sup> *Marine Salvage Capabilities; Responding to Terrorist Attacks in U.S. Ports – Actions to Improve Readiness*, 18.

involved are complementary.”<sup>76</sup> In response to this Assembly Resolution and as a signatory member to the IMO, the National Response Team developed Guidelines for Places of Refuge Decision Making, and the Coast Guard published a policy for Places of Refuge in Commandant Instruction 16451.9. While all three of these documents are guidelines<sup>77</sup>, it can be said that they have at least provided the framework and mindset that considering a place of refuge for stricken vessels has been studied using a risk based methodology.

The Transportation Research Board committee recommendations to improve salvage readiness included the need to “conduct detailed exercises incorporating plausible terrorist incidents, the complement of response systems and equipment, and the total response organizational structure.”<sup>78</sup> In September 2008, this recommendation was played out in a Marine Board hosted, “Marine Disaster Workshop: Response to and Recovery from Channel Closures at the Ports of Los Angeles and Long Beach.” Key to this exercise was an in depth scenario and response study performed by Titan, a wholly-owned subsidiary of Crowley Marine Services, who specializes in commercial marine salvage and wreck removal. Like the 2003 workshop discussed earlier in this chapter, the scenario involved the total blockage of the waterway by multiple deep draft vessels, something not experienced during response and recovery efforts following Hurricane’s

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<sup>76</sup> International Maritime Organization, *Resolution A.949(23) Guidelines on Places of Refuge for Ships in need of Assistance*, March 5, 2004, 5.

<sup>77</sup> As clarified in the NRT Guideline for Places of Refuge Decision making; “Guidelines” means the decision-making guidelines and matters set forth in this document. Notwithstanding many such words as “may,” “should,” “will,” or “would,” these guidelines are intended solely as factors that may be considered with respect to the exercise of judgment in deciding whether, where, and when to direct or permit a vessel to seek a place of refuge, as well as considered during the execution and implementation of any such decisions.

<sup>78</sup> *Marine Salvage Capabilities; Responding to Terrorist Attacks in U.S. Ports – Actions to Improve Readiness*, 29-30.

Katrina, Rita, or Ike, but likely situation in the event of a terrorist led TSI. Many of the potential issues identified in the 2003 workshop surfaced while the scenario was played out, with some issues being magnified, a result of the geographical location of the drill, and something that must be considered during all response efforts.

Key findings and recommendations that mirrored the 2003 workshop recommendations, outlined below, included; (1) The U.S. is capable of handling a worst case scenario, but time is of the essence, (2) Security restrictions that typically follow TSI's do not allow for early entry of advance site survey teams, (3) Salvor immunity must be addressed, especially in environmentally sensitive state/region, and (4) Salvage response structure still not identified in national response documents such as NRF. The key points to each of these issues are outlined in the following paragraphs.

### **U.S. Salvage Community Capabilities**

Due to the large number of hurricane's making landfall in the U.S. over the past three years, many of the U.S. commercial salvage entities have had sufficient practice at wreck removal operations, and thus, it is believed that the U.S. does have the capability to responding to an incident similar to the scenario presented during the exercise.<sup>79</sup> The problem that exists with the response is the lack of heavy lift assets on the West Coast of the U.S., and the time to mobilize assets from the East and Gulf Coasts, or alternatively, the Customs issues that would need to be addressed in order to utilize assets from the Far East.<sup>80</sup>

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<sup>79</sup> U.S. Navy, *Salvage Response Study Port of Los Angeles/Long Beach Salvage Response Scenario*, Commander, Naval Sea Systems Command, Washington, DC, June 6, 2008, 77. Hereafter cited as *Salvage Response Study Port of Los Angeles/Long Beach*.

<sup>80</sup> *Ibid*, 78.

### **Security Restrictions Following TSI's**

The very nature of a TSI will inevitably increase the Maritime Security (MARSEC)<sup>81</sup> level in the respective port, if not throughout the nation. The increase in MARSEC and follow on investigation carried out by Federal authorities causes an inevitable delay in response operations. A key asset identified as a solution to this issue are the MDSU's and their ability to gain rapid access to the salvage site due to their military affiliation, as well as SUPSALV's prepositioned ESSM, which can be used to augment commercial salvage entities capabilities early-on during the event.<sup>82</sup>

### **Salvor Immunity**

Key issues identified with respect to responder immunity are the strict adherence to OPA-90 and California state oil spill statutes by government officials in this region. As discussed, previously, commercial salvage companies are in the business of protecting the environment, but on occasion, unintended pollution releases do occur during the process of salvage operations. The key event that needs to take place is the coordination of all entities involved, to include; ASA, DHS, EPA, DOJ, and State Attorney Generals, in order to manage the expectations and realities of response to marine casualty salvage operations.<sup>83</sup>

### **Standardized Salvage Response Organization**

The lack of a clearly identified salvage response organization in the NRF has been

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<sup>81</sup> MARSEC levels are set to reflect the prevailing threat environment to the marine elements of the national transportation system, including ports, vessels, facilities, and critical assets and infrastructure located on or adjacent to waters subject to the jurisdiction of the U.S.

<sup>82</sup> *Salvage Response Study Port of Los Angeles/Long Beach*, 78.

<sup>83</sup> *Ibid*, 79-80.

a common complaint of SUPSALV. The newly developed Salvage Response Plans, required by the SAFE Port Act, and discussed in Chapter VII, should go a long way in satisfying SUPSALV's appetite for clearer delineation of a salvage response command structure. Additionally, the Coast Guard has recently published salvage and marine firefighting regulations applicable to most vessels that carry oil as their primary or secondary cargo.

Opening the waterway to commercial traffic, and the expediency in which it is required was addressed during this exercise and the 2003 workshop. During the 2003 workshop and the scenario in the Houston ship channel, the group estimated that an emergency dredging operation could open up an alternative channel within 24 hours of equipment arriving on scene.<sup>84</sup> The problem that arises when any dredge operation takes place is the disposal of dredge material and the environmental concern it raises.<sup>85</sup> While emergency dredging might be the only solution to quickly reopening a waterway, the geographical layout of the port will ultimately determine the necessity of this dredging, as is the situation in the following scenario. The Ports of Los Angeles and Long Beach, although separate entities, are geographically located together as one port complex in San Pedro Bay. The ports are protected from the sea by a nine mile long breakwater, with openings of approximately 2000 feet that act as harbour entrances into each port respectively. As a contingency, and in the event of a blockage of one or both of these port entrances, vessels could continue to call on the ports by entering around the end of

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<sup>84</sup> *Marine Salvage Capabilities; Responding to Terrorist Attacks in U.S. Ports – Actions to Improve Readiness*, 12.

<sup>85</sup> *Salvage Response Study Port of Los Angeles/Long Beach*, 77.

the breakwater. While this route is not optimum for safe vessel traffic<sup>86</sup>, 70-80% of all vessels calling on the port would continue to be able to transit to their berths, with the remaining vessels having too great of a draft to enter using this route.<sup>87</sup>

Many of the issues identified during the workshop and exercise discussed in this chapter have since been addressed by the Department of Homeland Security, with the Coast Guard as the lead agency. These new initiatives are identified in the following chapter and how they were applied during the response to Hurricane Ike in Chapter VIII 'Case Studies'.

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<sup>86</sup> Navigational buoys are not present to clearly mark a deep draft shipping channel.

<sup>87</sup> The author was Chief of Waterways Management for the Coast Guard in Los Angeles-Long Beach from 2002-2004, and responsible for the Coast Guard Vessel Traffic Service operations. The percentages listed are representative of the shipping traffic at that time, and although there has been a movement towards larger ships, would still be a fairly accurate estimate.

*“The Congress should update the national statement of salvage policy (10 USC 7361-7367, Salvage Facilities Act of 1948) to recognize the vital role that salvage plays in minimizing the public consequences of maritime casualties.”*

*National Research Council, 1982 Report on Marine Salvage in the United States*<sup>88</sup>

## **VII. NATIONAL SALVAGE RESPONSE ORGANIZATION**

Statements similar to the above recommendation by the National Research Council have been echoed throughout the past 27 years in forums ranging from salvage conferences to an environmental organization’s congressional testimony. While an update to the National Salvage Policy has not been made in quite some time, the U.S. has taken major steps towards increasing the response and readiness posture, as it relates to the maritime salvage.<sup>89</sup> This chapter will highlight two such catalysts that have brought our posture to the level we currently enjoy; the codifying of salvage and marine firefighting regulations, and the emphasis that has been placed on Maritime Transportation System recovery in our National Strategy for Maritime Security.

### **The Codification of Salvage and Marine Firefighting Regulations**

Much like the oil discharge from the *Torrey Canyon* was the stimulus behind the National Contingency Plan (NCP), the 1989 grounding of the tank ship *Exxon Valdez* in Prince William Sound, and resulting discharge of nearly 11 million gallons of crude oil, was the stimulus behind the regulatory measure, titled OPA-90. If the NCP hadn’t already enhanced our response organization, OPA-90 was sure to refine the Coast Guard’s posture towards the environmental protection aspect of maritime salvage. OPA-90 sparked a multiplicity of changes and recommendations, and one such change was an

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<sup>88</sup> *Marine Salvage in the United States*, 102.

<sup>89</sup> Richard B. Fairbanks, “Salvage: Time is of the Essence,” *Maritime Reporter and Engineering News*, (April 5, 2004), <http://marinelink.com/en-US/News/Article/Salvage-Time-is-of-the-Essence/323152.aspx> (accessed February 28, 2009).

amendment to the Federal Water Pollution Control Act (FWPCA). This amendment brought about a requirement applicable to all vessels carrying petroleum products as their primary or secondary cargo, to prepare and submit for Coast Guard approval, a Vessel Response Plan (VRP). The VRP is intended to minimize damage to the environment by requiring ship owners and operators to consider the cargo and operating conditions in which they normally do business. Some necessary elements of the VRP include notification procedures, shipboard spill mitigation procedures, shore based response activities, and training procedures.<sup>90</sup> The essential element as it relates to maritime salvage, is the requirement for vessels to identify and ensure availability of a salvage company with appropriate expertise and equipment capable of deploying within 24 hours of notification.

To those that have worked in a government regulatory drafting capacity, it is no surprise that this can be a lengthy and somewhat burdensome process, and the rules governing salvage and marine firefighting upheld this expectation. In mid-1997, it was apparent that development was not taking place on pace to meet the scheduled regulatory implementation date of February 1998. Taking this into consideration, the Coast Guard held a public workshop to address the issues that remained a challenge for the execution of the salvage regulations. The major issues that remained outstanding and required addressing included (1) Defining the salvage capability that is necessary in the plans, (2) Establishing how quickly these resources must be on scene, and (3) Determining what constitutes adequate salvage resources.<sup>91</sup>

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<sup>90</sup> *U.S. Code of Federal Regulations* 33 (2008), § 155.1030.

<sup>91</sup> *Federal Register*, Volume 67, No. 91, May 10, 2002, 31869.

On February 12, 1998, a notice was published in the Federal Register, suspending the 24-hour requirement for a period of three years. The 24-hour requirement was suspended another three years in a January 17, 2001, Federal Register Notice. On May 10, 2002, the Coast Guard published a notice of proposed rulemaking (NPRM) titled, “Salvage and Marine Firefighting Requirements; Vessel Response Plans for Oil.” Along with the publication of the NPRM, the Coast Guard held four public meetings to address questions regarding the new regulation, as well as an overwhelming response of 104 letters commenting on the proposed rule.

Keeping in mind that much of the Coast Guard mission had been heavily refocused toward port security following the events of 9/11, the personnel that were responsible for these regulations were also redirected toward drafting the port security measures included in the Maritime Transportation Security Act of 2002.<sup>92</sup> On January 12, 2004, a third such suspension of the 24-hour requirement was published, pushing back the implementation date this time to February 12, 2007. The regulatory delay was criticized by the American Salvage Association, an industry group “created in response to the need of providing an identity and assisting in the professionalizing of the U.S. marine salvage and firefighting response . . . to professionalize and improve marine casualty response in North American coastal and inland waters.”<sup>93</sup> The article urged the Coast Guard to move forward on the regulatory efforts in hopes that it “would not only improve the nation’s marine environmental protection capability, it would also improve the

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<sup>92</sup> The author was assigned to the Office of Design & Engineering Standards under the Director of Commercial Regulations & Standards at USCG Headquarters during this period, and witnessed the shift in focus in order to publish regulations related to Port and Vessel Security in a timely manner.

<sup>93</sup> American Salvage Association, “United in Pursuit of Excellence,” <http://www.americansalvage.org/united.htm> (accessed February 2, 2009).

nation's homeland security and terrorist response capabilities.”<sup>94</sup> It also pointed out the position and realization of former Homeland Security Secretary Tom Ridge that “terrorists might try to disrupt traffic by sinking a vessel in an important waterway, thereby seriously impacting commerce and the economy.”<sup>95</sup>

To complicate the issue, many of the public comments received following the 2002 NPRM addressed environmental issues, and thus, required that a Programmatic Environmental Assessment be completed. To the disbelief of some, a fourth and final suspension of the 24-hour requirement was published in February 2007, pushing back the implementation date until February 12, 2009. This additional time was “to permit the Coast Guard to complete its work on the regulatory and environmental assessments.”<sup>96</sup> Finally, on December 31, 2008, a Final Rule was published establishing an effective date of January 30, 2009. One major change with this regulatory action is in the applicability, in that the detailed salvage regulations apply to only those tank vessels carrying group I-IV oils. John A. Witte, Jr., ASA President was quick to praise the Coast Guard, “We are so pleased with the announcement of the promulgation of the salvage and firefighting regulations, . . . These regulations will go a long way toward ensuring that the nation is ready and has the capability to respond to accidental or terrorist events in the marine sector that require a professional salvage response.”<sup>97</sup>

The Coast Guard and Maritime Transportation Act of 2004 further amended the

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<sup>94</sup> “ASA urges USCG for Salvage Regulations,” *Maritime Reporter and Engineering News*, (March 12, 2004), <http://www.marinelink.com/Story/ShowStory.aspx?StoryID=13934> (accessed February 9, 2009).

<sup>95</sup> *Ibid.*

<sup>96</sup> *Federal Register*, Volume 73, No. 251, December 31, 2008, 80619.

<sup>97</sup> “ASA Praises Salvage & Firefighting Reg,” *Maritime Reporter and Engineering News*, (January 7, 2009), <http://www4.marinelink.com/en-US/News/Article/ASA-Praises-Salvage-Firefighting-Reg/329286.aspx> (accessed February 9, 2009).

requirements of the FWPCA, which added a requirement for non-tank vessels to prepare and submit a VRP for Coast Guard approval. This amendment came about as a realization that while these vessels weren't carrying petroleum products as their primary or secondary cargo, they do have the capacity to carry large amounts of fuel oil in order to run their propulsion and power generating plants. The fuel oil that most commercial deep draft ships use is Number 6 fuel oil, also called heavy fuel oil or Bunker C, which is characterized by a thick, viscous liquid comparable to asphalt.<sup>98</sup> Additionally, current non-tank vessel fuel tanks are often times found along the skin of the ship,<sup>99</sup> precariously positioned so that the slightest breach into them could cause a devastating release into the environment. UC-Berkeley engineering professor, and former oil tanker captain, made the comparison between the exposure of these fuel tanks and the reputation garnered by a 1970's Pinto, whose gas tank could explode in the event of a rear end collision.<sup>100</sup> While regulations affecting new ships have been promulgated by the International Maritime Organization to avoid this situation, existing ships will not be required to change their fuel oil tank layout unless they undergo a major conversion.<sup>101</sup> The following incident

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<sup>98</sup> National Oceanic and Atmospheric Administration, "FACT SHEET: No. 6 Fuel Oil (Bunker C) Spills," [http://www.dec.state.ak.us/SPAR/PERP/RESPONSE/SUM\\_FY05/041207201/fact/noaa\\_971\\_no\\_6.pdf](http://www.dec.state.ak.us/SPAR/PERP/RESPONSE/SUM_FY05/041207201/fact/noaa_971_no_6.pdf) (accessed February 21, 2009).

<sup>99</sup> Tanks on most commercial vessels are integral to the hull of the ship, meaning that one of the sides of the tanks is typically the "shell" plating, which is to say the plating that is directly adjacent to the sea, whether it be bottom or side plating, or sometimes both. One of the provisions in the OPA-90 regulations require tank ships to have a double hull, meaning there is a buffer space between the cargo tanks and the shell plating. Regulations have since been promulgated that apply to cargo ships carrying more than 600 cubic meters of fuel oil with keels laid after August 1, 2008.

<sup>100</sup> Mike Taugher, "Starting in 2010, Ships Must Put Fuel Tanks in Safer Place," *Bay Area News Group, San Jose Mercury News*, November 17, 2007, <http://fredfelleman.wordpress.com/2007/11/19/hull-weaknesses-to-be-addressed/> (accessed February 21, 2009).

<sup>101</sup> International Maritime Organization, *International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL)*, Annex I, Regulation 12a, March 2006.

further reinforces the need for non-tank VRP's.

On November 7, 2007, the container ship *Cosco Busan* was performing a routine transit from their berth in the Port of Oakland to sea when they struck the span of the San Francisco-Oakland Bay Bridge. The resulting collision tore a hole in their fuel tanks, and a release of approximately 53,000 gallons of heavy fuel oil into San Francisco Bay. Despite the fact that this is not a tank ship with millions of gallons of petroleum as cargo, the *Cosco Busan* did have a fuel capacity of 1.8 million gallons of fuel oil<sup>102</sup> and a “Nontank VRP that received Interim Operating Authorization from the Coast Guard.”<sup>103</sup> The presence of a VRP obviously did not prevent this accident from happening, but the response mechanisms and procedures contained in the VRP may have minimized the environmental impact of this spill. This is supported by the National Transportation Safety Board Marine Accident Report that indicated, “The designated ‘oil spill response organizations’ level of response to the *Cosco Busan* fuel oil spill was timely and effective,”<sup>104</sup>

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<sup>102</sup> Taugher.

<sup>103</sup> Ryan D. Allain, e-mail message to author, February 26, 2009.

<sup>104</sup> National Transportation Safety Board, *Marine Accident Report, Collision of Hong Kong-Registered Containership M/V Cosco Busan with Delta Tower of the San Francisco-Oakland Bay Bridge Synopsis*, <http://www.nts.gov/Publictn/2009/MAR0901.htm> (accessed February 18, 2009).

## The National Strategy for Maritime Security and MTS Recovery

Prior to 9/11, the Coast Guard's major concern as it related to maritime salvage operations primarily dealt with protection of the environment. That is not to say that Coast Guard COTPs were not concerned with MTS recovery or the safe and secure movement of vessels and cargo throughout the port complex. A shift in this focus came with the issue of NSPD-41 and HSPD-13, which established policy and guidelines to enhance our nation's security interests through the protection of our maritime infrastructure. Within these directives the "Secretaries of Defense and Homeland Security shall jointly lead a collaborative interagency effort to draft a recommended National Strategy for Maritime Security, . . . such a strategy must present an over-arching plan to implement this directive and address all of the components of the Maritime Domain<sup>105</sup>." <sup>106</sup> The resulting National Strategy for Maritime Security was published in September 2005, and included eight supporting plans to provide detail and specificity in order to carry out the strategy.<sup>107</sup> Of most concern as it relates to maritime salvage is the Maritime Infrastructure Recovery Plan (MIRP).

Originally, the implementation of the MIRP was to take place following a TSI that has been declared to be an Incident of National Significance<sup>108</sup> (INS).<sup>109</sup> With the

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<sup>105</sup> The maritime domain is defined as all areas and things of, on, under, relating to, adjacent to, or bordering on a sea, ocean, or other navigable waterway, including all maritime-related activities, infrastructure, people, cargo, and vessels or other conveyances.

<sup>106</sup> U.S. President, *National Security Presidential Directive NSPD-41, Homeland Security Presidential Directive HSPD-13*, December 21, 2004, 4-5.

<sup>107</sup> U.S. Department of Homeland Security, *The National Strategy for Maritime Security*, Washington, DC, September 2005, 27.

<sup>108</sup> As defined in the NRP, Incidents of National Significance are high-impact events that require an extensive and well-coordinated multiagency response to save lives, minimize damage, and provide the basis for long-term community and economic recovery.

publication of the NRF in 2008, “the term Incident of National Significance” was “eliminated in order to focus on a more agile coordinated response by the entire incident management community. The designation of an Incident of National Significance became an arbitrary and confusing trigger point for various levels of response.”<sup>110</sup> Irrespective of terminology or plan employment declarations, the primary objective of MIRP is to restore cargo flow and passenger vessel activity. The Coast Guard plays a leadership role in this effort, which requires close coordination with other governmental agencies, as well as private sector entities, due to their position as major stakeholders in the bulk of maritime transportation infrastructure assets. While the responsibility of keeping a port and waterway open for commercial ship traffic remains with the government, the private sector entities will be the ones to make the “decision to repair, replace, or rebuild private physical assets following a catastrophic event.”<sup>111</sup>

Building upon the recommendations from the Maritime Recovery and Restoration Task Force (MR2TF) that was formed after Hurricane Katrina, as well as the U.S. Coast Guard Strategy for Maritime Safety Security and Stewardship, a National Maritime Recovery Symposium was held in an effort to build a better MTS recovery tool. Attended by more than 160 representatives of federal and state government, as well as the private sector, the symposium identified six crucial needs for effective and efficient MTS recovery to include; “(1) An integrated government/industry recovery management

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<sup>109</sup> U.S. Department of Homeland Security, *The Maritime Infrastructure Recovery Plan*, Washington, DC, April 2006, 2.

<sup>110</sup> U.S. Department of Homeland Security, *What’s new in the National Response Framework*, Washington, DC, January 22, 2008, 2.

<sup>111</sup> House Committee on Homeland Security, *U.S. Coast Guard Statement of Rear Admiral James Watson on the Assessing the Resiliency of our National Supply Chain*, May 7, 2008, 3. Hereafter cited as *Assessing the Resiliency of our National Supply Chain*.

organization, (2) An integrated recovery communications system, (3) An integrated government/industry business continuity planning system, (4) A national plan for logistics support of cargo diversion, (5) Government awareness of cargo flows and inter-modal connectivity, and (6) Federal funding mechanisms to support state and local preparedness.”<sup>112</sup>

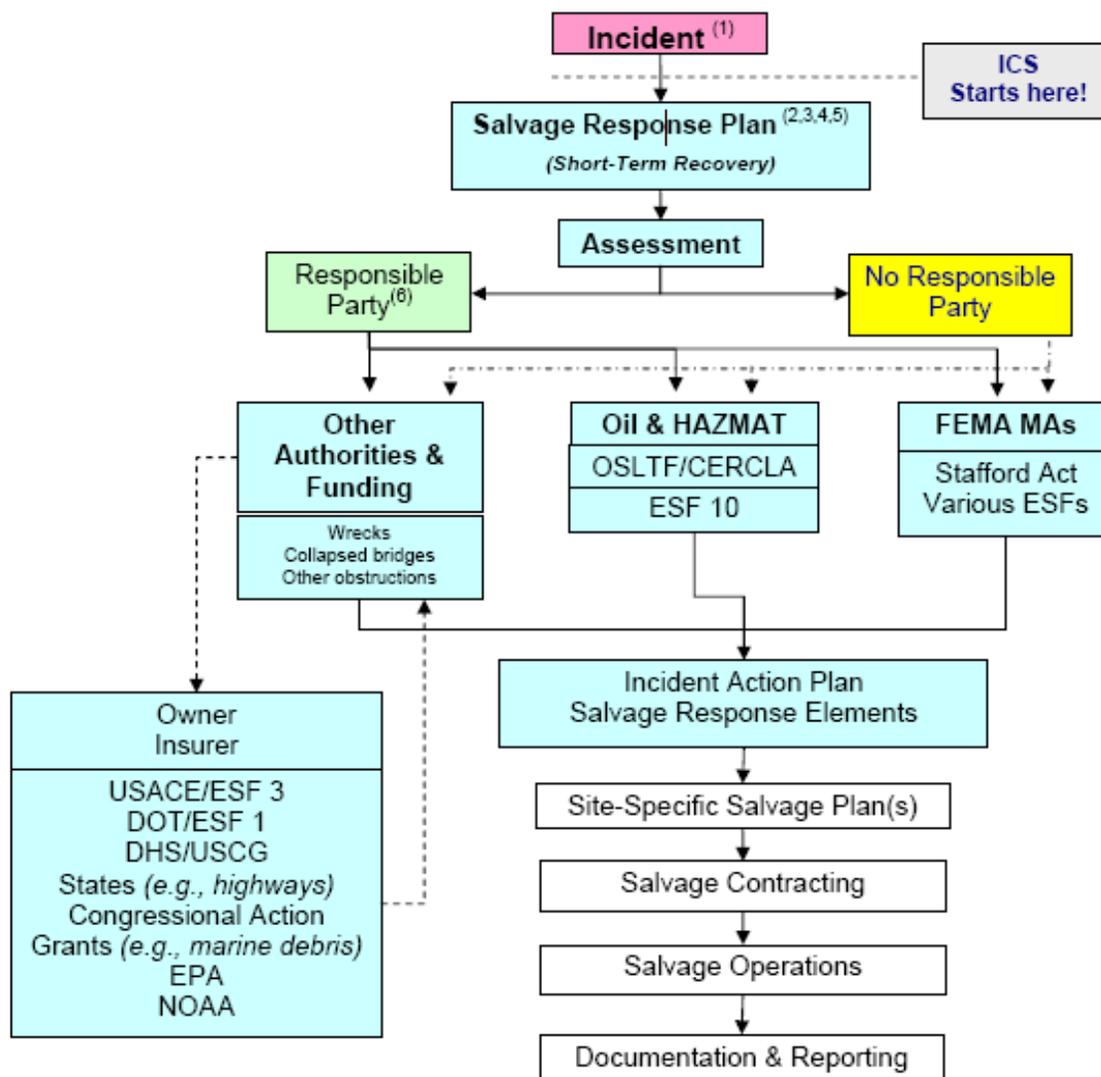
Additional traction for increasing our nation’s ability to respond and recover from terrorist related attacks on our ports and waterways came through the passing of the Security and Accountability For Every Port Act of 2006, or the “SAFE Port Act.” The SAFE Port Act amended the Area Maritime Transportation Security Plans to include a Salvage Response Plan (SRP). The intent of the Salvage Response Plans are, “to identify salvage equipment capable of restoring operational trade capacity, and to ensure that the waterways are cleared and the flow of commerce through United States ports is reestablished as efficiently and quickly as possible after a maritime transportation security incident.”<sup>113</sup> In order to assist COTP/FMSC’s draft SRP’s, a Navigation and Vessel Inspection Circular published a recommended template. The template was designed to promote plan consistency between COTP zones, for the benefit of the Coast Guard officials, government response agencies, and commercial salvage companies. In addition, a ‘Notional Salvage Response Framework’, found on the following page, provides a basic line decision process for some common salvage scenarios.

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<sup>112</sup> U.S. Coast Guard, *Commandant Instruction 16000.28 Recovery of the Marine Transportation System for Resumption of Commerce*, Washington, DC, February 18, 2008.

<sup>113</sup> *U.S. Code* 46 (2007), § 70103(b)(2)(F)

## NOTIONAL SALVAGE RESPONSE FRAMEWORK



### Notes:

1. Transportation Security Incident/other Transportation Disruption (e.g., manmade event, natural disaster).
2. Supporting plan to MTS Recovery during short-term recovery phase.
3. Relies on existing authorities & funding.
4. Applies to removal of obstructions to navigation from federally defined navigable waters.... "To ensure that the waterways are cleared and the flow of commerce through the United States ports is reestablished as efficiently and quickly as possible after a maritime transportation security incident ..." per the SAFE Port Act.
5. Will be structured for all-hazard and all transportation disruption compatibility.
6. For the purpose of this notional diagram, Responsible Party includes the responsible party as defined by the Oil Pollution Act of 1990; the identified owner, operator, or lessee of a sunken or grounded vessel or wreck; and, the owner, operator or lessee of other obstructions in the waterway such as structures, train cars, and vehicles.

Figure 7.1 Notional Salvage Response Framework<sup>114</sup>

<sup>114</sup> U.S. Coast Guard, *Navigation and Vessel Inspection Circular No. 9-02, Change 3*, Washington, DC, April 29, 2008, 6-39.

*“Hurricanes Katrina and Rita drastically demonstrated the need for a robust, comprehensive and nationally integrated response capability; it is imperative that we continue to address this need....We must capitalize on the synergies created by having FEMA within DHS, and continue to develop a united front against all hazards, all threats, at all times.”*

*Admiral Thad Allen*<sup>115</sup>

## **VIII. CASE STUDIES**

In an effort to capture how our MTS response and recovery posture has improved since 9/11, this chapter reflects on the response and lessons learned from Hurricane’s Katrina and Rita in 2005 and how they were applied during the response to Hurricane Ike in September 2008. Although there are still gaps in our national disaster response organization, it is clear that we have made major improvements as they relate to maritime salvage.

### **Hurricane Katrina and Rita**

The hurricanes that ravaged the Gulf Coast in August and September of 2005 will forever provide a reminder that terrorists are not the only ones that can test our national response capabilities, Mother Nature can too. The resultant salvage and recovery effort that followed showed what potential problems we may encounter as a nation if a terrorist led TSI does indeed take place in a U.S. port or waterway.

After action reports from multiple sources<sup>116</sup> catalog the many lessons learned from the disaster response to Hurricane’s Katrina and Rita. Chief of these lessons was the lack of a clear response organization, funding challenges, and the ever present

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<sup>115</sup> Senate Committee on Homeland Security and Governmental Affairs, *U.S. Coast Guard Statement of Admiral Thad W. Allen, Commandant, on, FEMA’s Placement in the Federal Government*, June 8, 2006, 5.

<sup>116</sup> Reports published by FEMA, SUPSALV, USCG, and the USG, as well as personal testimony were considered in this section.

communication failures. SUPSALV published an excellent report in order to try and capture some of these missteps, and brought the following issues to light as their primary challenges and recommendations. From the beginning, SUPSALV did not feel as if they were employed to their fullest capacity. As Captain Richard Hooper put it, “When SUPSALV arrived on scene, local FEMA officials were completely absorbed with personnel rescue tasks and did not have time to consider how to use SUPSALV most effectively. Because SUPSALV operated outside JTF Katrina, SUPSALV had to find its own means to insert itself into the recovery process.”<sup>117</sup> SUPSALV’s recommendation to this issue is to clearly identify a Command and Control organization for salvage operations as a Support Annex within the National Response Framework, and define the manner in which the various stakeholder agencies should respond. Key to this recommendation is the designation of a National Marine Salvage Response Coordinator due to the multiple jurisdictional boundaries as discussed in Chapter IV. For example, the FEMA response organization was broke up into state boundaries (Alabama, Mississippi, Louisiana, and Texas), while the USACE was split into three different divisions, furthermore, the response effort spanned three Coast Guard Sector commands. This problem was realized long before Katrina ever occurred, and was included in the recommendations contained in the conference proceedings of the 2003 Transportation Research Board workshop discussed in Chapter VI. Two of the recommendations support SUPSALV’s call out for a standardized response organization in that, “The membership of the Secretary of Homeland Security’s National Maritime Security Advisory Committee should be modified to include a marine salvage expert”, and “The

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<sup>117</sup> *U.S. Navy Salvage Report Hurricanes Katrina and Rita*, 7-1.

structure of the National Response Plan should provide for the inclusion of salvage expertise in the National Incident Management System (NIMS).”<sup>118</sup>

SUPSALV also recommended that responsibilities need to be clarified with respect to the FEMA Emergency Support Functions (ESF) that relate to maritime salvage, primarily ESF-3 (Debris Removal) and ESF-10 (Pollution abatement), as the lack of clear guidance resulted in duplicative efforts, and subsequent waste of federal money and valuable response time. Funding challenges identified by SUPSALV included the manner in which money was supplied on a piecemeal like basis, requiring estimates for every single vessel to be salvaged, and lengthy delay caused by this process. “As a result, funding dribbled in vessel-by-vessel and task-by-task. With literally hundreds of vessels to be removed, this process was inefficient and inconsistent with salvage industry practice and price-costing on a day rate basis.”<sup>119</sup> An additional funding challenge identified that the scope of the current Stafford Act needs to be explored to address some of the issues that response agencies faced, and consequently, slowed the relief efforts that they could provide.<sup>120</sup>

Communication failures encountered during disaster response activities should be anticipated and preventative measures and contingencies should already be well thought out. In the event of KATRINA, satellite phones and VHF radios became the primary means of communication. Additionally, our growing dependency on technological solutions requires that interoperability and functionality be maintained. SUPSALV

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<sup>118</sup> *Marine Salvage Capabilities; Responding to Terrorist Attacks in U.S. Ports – Actions to Improve Readiness*, 5.

<sup>119</sup> *U.S. Navy Salvage Report Hurricanes Katrina and Rita*, 7-3.

<sup>120</sup> *Ibid*, 7-4.

identified this interoperability shortfall in the laptops that they were issued and their inability to leverage this technology in a multi-agency environment.<sup>121</sup>

### **Hurricane Ike**

While the salvage, wreck, and debris removal efforts are still ongoing from Hurricane Katrina and Rita, another Hurricane of enormous proportions ‘Ike’ made its way into the Gulf Coast in August 2008, making landfall in the vicinity of the Port of Galveston. Had the lessons learned after Katrina and Rita taken shape in our response efforts? One thing was for certain, the agencies involved were much more forward leaning in anticipation of the devastation Ike might bring to the Texas shoreline. Clear evidence of this is the Coast Guard request for forces to SUPSALV a day before Ike made landfall, as compared to SUPSALV deployment to Katrina response operations three days after the storm had made landfall.<sup>122</sup> Granted, Hurricane Ike created much less of a salvage, wreck, and debris removal problem than did Katrina and Rita, so a direct comparison between the two response operations cannot be carried out. Even so, an action like this early request for forces proves that our national response posture has improved over recent past.

The response to Hurricane Ike allowed the Coast Guard to employ the MTS Recovery Unit (MTSRU) and MTS Common Assessment and Recording Tool (CART) that were developed following the issuance of NSPD-41 and HSPD-13, and lessons learned from the response to Hurricane’s Katrina and Rita. The MTSRU was developed in order to “track and report on the status of the MTS, understand critical recovery

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<sup>121</sup> Ibid, 7-7.

<sup>122</sup> Ibid, 3-2.

pathways, recommend courses of action, provide all stakeholders with an avenue of input to the local response organization, and provide the Unified Commander with recommended priorities for MTS recovery.”<sup>123</sup> CART was established to provide a database to “assist the MTSRU in making MTS Recovery recommendations to the Unified Command and facilitates MTS Recovery Operations by:

- (1) Providing timely and accurate information on pre-incident conditions in a Sector Area of Responsibility (AOR);
- (2) Comparing baseline data and post incident data to characterize the extent of the impact on the MTS;
- (3) Auto-generating the MTS Executive Summary Report in various formats to ease the sharing of data with all MTS stakeholders; and
- (4) Use of web-based format facilitates transmission and sharing of MTS Recovery Status and Impact reports.”<sup>124</sup>

The utilization of these two mechanisms allowed for a rapid recovery from Hurricane Ike and a clear common operating picture of the MTS recovery efforts at all levels within the government. Unlike Katrina and Rita, SUPSALV immediately had a position within the response organization, being utilized by the USACE to carry out their responsibility of clearing the federal channel, as well as being tapped by the Coast Guard Captain of the Port to head up the salvage cell.<sup>125</sup> An additional improvement to the

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<sup>123</sup> U.S. Coast Guard, *Commandant Instruction 16000.28 Recovery of the Marine Transportation System for Resumption of Commerce*, Washington, DC, February 18, 2008.

<sup>124</sup> U.S. Coast Guard, *CART Common Assessment & Reporting Tool User Manual*, Version 1.0, Washington, DC, 3.

<sup>125</sup> U.S. Navy, *Naval Sea Systems Command Supervisor of Salvage Hurricane Ike Flag\_1.ppt*, Washington, DC, February 2, 2009, 4.

salvage effort came with the addition of Pre-Scripted Mission Assignments (PSMAs) mandated by the Post Katrina Emergency Management Reform Act of 2006.<sup>126</sup> The PSMAs were developed as a template that could be utilized to speed response time and “standardize development of mission assignments prior to and during disaster operations.”<sup>127</sup> It is clear that the cumulative effect of all of these newly adopted programs and initiatives resulted in a smoother response to Hurricane Ike, than what was experienced following Katrina and Rita. As discussed earlier, it is impossible to do a direct comparison between the two events, but it appears to be fairly evident that our nation’s response capacity has strengthened greatly.

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<sup>126</sup> *U.S. Code* 6 (2007), § 753(c).

<sup>127</sup> Federal Emergency Management Agency, *Federal Disaster Response Assets and Enhancements*, <http://www.fema.gov/media/archives/2007/061207.shtm> (accessed February 9, 2009).

“The Coast Guard has broad, multi-faceted jurisdictional authority and responsibility to ensure the safety and security of the nations’ MTS. As such, the Coast Guard is uniquely positioned to coordinate MTS recovery efforts and to date has made significant progress towards improving the nation’s preparedness posture in support of Department of Homeland Security (DHS) strategic goals for recovery.”

*Rear Admiral James Watson*<sup>128</sup>

## **IX. CONCLUSIONS AND RECOMMENDATIONS**

The above quote from Coast Guard RDML Watson is a testament that the Coast Guard is uniquely positioned to become the leader of a national maritime salvage response organization. Taking the lead on this is a natural fit to the perception, that is reality, in nearly every port throughout the U.S., whereas the Sector Commanders are considered significant leaders amongst industry as well as federal, state and local agencies. Part of this leadership status is enjoyed in part, because of the designation as an Armed Force under Title 10, U.S.C., while part of it comes from the agencies reputation as a lead within DHS. When it comes down to it though, it is the individual personalities within the port complex that will determine success. The initiatives and programs that have taken shape since 9/11 and Hurricane Katrina will go a long to improve the response posture of the U.S., but there is always room for improvement.

The Salvage Response Plan initiative as well as the formation of the MTS Recovery Unit and Common Assessment & Recording Tool has taken great strides towards formalizing a maritime salvage response organization. Despite these excellent programs, there is still a need to continue the regulatory process on the Vessel Response Plan requirements for all vessels, not just those carrying group I-IV oils as their primary or secondary cargo. By codifying the VRP requirements for all vessels, the salvage

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<sup>128</sup> *Assessing the Resiliency of our National Supply Chain.*

response to the majority of commercial vessels<sup>129</sup> operating in our ports and waterways will have been addressed in pre-negotiated arrangements. Although research has shown that marine casualties are decreasing, the human element will endure, as was identified with the *Cosco Busan* allision in San Francisco Bay, and salvage assets will be necessary throughout our country.

The time to mobilize heavy lift assets, as reported in Chapter VI, and the preponderance of these salvage assets throughout the East and Gulf coasts will play a major factor in port recovery in those highly utilized West coast ports including, but not limited to; Los Angeles-Long Beach, Oakland, Seattle-Tacoma, and Valdez. It would be wise then, to complete further research to determine strategic ports in our nation's infrastructure, and determine average transit times for a standard suite of salvage assets to respond to a worst case scenario involving a deep draft ship blocking a critical waterway. While the casualty scenarios are seemingly endless, this would at least give the planner some indication and expectation of the desired outcome. This would also bring to light any major deficiencies in our salvage asset inventory, and allow senior officials a measure to determine the degree of risk that our nation is willing to incur with respect to the timely restoration of our Maritime Transportation System.

Continued interagency collaboration, scenario based exercises, and a continuous reassessment of our salvage assets is the best course moving ahead. While slight rudder changes may be necessary to stay on track, the U.S. has and will persevere, and in the words of the Coast Guards 23<sup>rd</sup> Commandant, ADM Thad Allen, we will continue our quest to build a response capacity for "all hazards, all threats, at all times."

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<sup>129</sup> The non-tank vessel VRP requirement only applies to vessels 400 gross tons and greater, so there will be a very small population of vessels operating without a VRP and associated pre-negotiated Salvage arrangements.

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## VITA

A native of Burbank, South Dakota, LCDR Manning entered the Coast Guard Academy in 1990 upon graduation from Vermillion High School. He received his commission in 1994 and was assigned to the Coast Guard Cutter ACTIVE as the Main Propulsion Division Chief and Damage Control Assistant. His follow on tour was at the Naval Postgraduate School in Monterey, CA, where he earned a Master of Science degree in Mechanical Engineering, and obtained his license as a Professional Engineer. Following postgraduate school, LCDR Manning was assigned to the Machinery Branch of the Systems Engineering Division at CG Headquarters, Office of Design and Engineering Standards. From 2002 to 2006, LCDR Manning was assigned to Marine Safety Office/Group Los Angeles-Long Beach where he served as the Waterways Management Division Chief from 2002-2004, and in the Vessel Inspections Division and as the Port State Control Branch Chief from 2004-2006. In 2006, following a 2 month Merchant Marine Industry Training program with Princess Cruises, LCDR Manning was assigned as Supervisor of Marine Safety Detachment St Thomas, USVI. His next assignment is the Coast Guard Liaison Officer to the Joint Chiefs of Staff, J7 Joint Operational War Plans Division.

LCDR Manning is married to the former Carri Anne Jakubowski of Brookfield, Wisconsin. They have a 3 year old daughter, Maggie, and 1 year old son, Dane.