

Natural Disaster Causing Technology Disasters in Mobile Bay Area



Photo Credit: NOAA

*June 8 - 9, 2016
NOAA's Gulf of Mexico Disaster Response Center
Mobile, AL*

A WORKSHOP REPORT

COASTAL RESPONSE RESEARCH CENTER



Acronyms

ACP	Area Contingency Plan	NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ADCNR	Alabama Department of Conservation and Natural Resources	NERRS	National Estuarine Research Reserve System
ADEM	Alabama Department of Environmental Management	NGO	Non-Governmental Organization
ARD	Assessment and Restoration Division (ORR)	NIMS	National Incident Management System
ASPA	Alabama State Port Authority	NOAA	National Oceanic and Atmospheric Administration
BOA	Basic Ordering Agreement	NPFC	National Pollution Funds Center (USCG)
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (also known as Superfund)	NRC	National Response Center (USCG)
CERT	Community Emergency Response Team	NRDA	Natural Resource Damage Assessment
CGE	Computable General Equilibrium	NRF	National Response Framework
COTP	Captain of the Port (USCG)	NRPT	NOAA Regional Preparedness Training
CRRC	Coastal Response Research Center	NWS	National Weather Service (NOAA)
CWA	Clean Water Act	OCM	Office for Coastal Management (NOAA)
DRC	Gulf of Mexico Disaster Response Center (ORR)	OPA 90	Oil Spill Pollution Act of 1990
DRF	Disaster Relief Fund	ORR	Office of Response and Restoration (NOAA)
ERD	Emergency Response Division (ORR)	OSC	On-Scene Coordinator
ERRA	Electronic Regional Risk Atlas	OSLTF	Oil Spill Liability Trust Fund
FEMA	Federal Emergency Management Agency	OSRO	Oil Spill Removal Organization
FOSC	Federal On-Scene Coordinator	POC	Point of Contact
GIS	Geographic Information System	RCP	Regional Contingency Plan
GOM	Gulf of Mexico	RP	Responsible Party
GoMRI	Gulf of Mexico Research Initiative	RRT	Regional Response Team
GRP	Geographic Response Plan	T&E	Threatened and Endangered
HazMat	Hazardous Materials	UC	Unified Command
ICS	Incident Command System	USACE	United States Army Corps of Engineers
IMT	Incident Management Team	USCG	United States Coast Guard
LEPC	Local Emergency Planning Committee	USEPA	United States Environmental Protection Agency
MBNEP	Mobile Bay National Estuary Program	USFWS	United States Fish and Wildlife Service
MOA	Memorandum of Agreement		
NaTech	Natural Disasters Triggering Technological Disasters		

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- Will Underwood, ADCNR

The workshop was facilitated by Nancy Kinner from the Coastal Response Research Center (CRRC; www.crrc.unh.edu) and was held at the DRC in Mobile, AL. CRRC has extensive experience with issues related to oil spills. The Center is known for its independence and excellence in the areas of environmental engineering, marine science, and ocean engineering as they relate to spills. CRRC has conducted numerous workshops bringing together researchers, practitioners, and scientists of diverse backgrounds (including from government, academia, industry, and non-governmental organizations) to address issues in spill response, restoration and recovery.

We wish to thank the following presenters for their participation in the workshop:

- Kim Albins, NOAA ORR
- CDR Christopher Cederholm, USCG
- Adam Davis, NOAA ORR
- Leo Francendese, USEPA
- Dr. Nancy Kinner, CRRC
- Kevin Kirsch, NOAA ORR
- Ashley Leflore, USACE
- CRD Kevin Lynn, USCG
- Tom Smith, USACE
- Peter Tuttle, USFWS

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Lastly, we would like to thank the DRC for hosting the workshop.

Introduction

On June 8-9, 2016, the Coastal Response Research Center (CRRRC)¹ and Gulf of Mexico Disaster Response Center (DRC) co-sponsored a National Oceanic and Atmospheric Administration (NOAA) Regional Preparedness Training (NRPT) Workshop at the DRC's facility in Mobile, AL. The workshop, titled "Natural Disaster Causing Technology Disasters in Mobile Bay Area", focused on preparedness, planning, and improving response to an oil spill occurring during a natural disaster (e.g., flooding from a tropical storm) and explored the roles and responsibilities under the *Robert T. Stafford Disaster Relief and Emergency Assistance Act* (Stafford Act) and the *Oil Pollution Act of 1990* (OPA 90).

Thirty participants (Appendix A) represented federal, state and local agencies, industry, and non-governmental organizations (NGOs).

The workshop was the second of three in the NRPT series to provide a focused training to enhance Gulf of Mexico regional preparedness across NOAA line offices and among key state, federal, and other stakeholder partners. The overall goal of the NRPT workshops was to better understand human and natural resources at risk, the roles and responsibilities of different response agencies, and the science that drives decision-making during a coastal emergency. The first workshop, held at the Flower Garden Banks National Marine Sanctuary Office in Galveston, TX on May 25-26, 2016, focused on preparedness, planning, and improvement of response to a potential oil spill that threatened the sanctuary, particularly dispersant use and *in-situ* burning, while developing the framework for an Environmental Tradeoff Analysis to evaluate response options. The third workshop, held in St. Petersburg, FL on June 28-30, 2016, focused on risk communications during a major oil spill.

Nancy Kinner (CRRRC Co-Director) and Charlie Henry (DRC Director) provided the welcome and introductions for the Mobile Bay workshop. Charlie Henry provided background information about the NRPT workshops and their goals. The goals of the Mobile Bay workshop were to increase awareness, understanding, and coordination among participating stakeholder groups and agencies during response and recovery to natural disasters that result in widespread impacts to industry, commerce, communities, and natural resources in the Mississippi and Alabama coastal zone.

Objectives of the Mobile Bay workshop were to:

- Bring together a diverse group representing agencies and stakeholders who may be impacted by or involved in response to Natural disasters triggering technological disasters (NaTech); and
- Increase regional preparedness by identifying potential strategies for improved response, enhanced resilience, and quicker recovery when NaTech events occur.

NaTech events may result in a complicated response due to widespread impacts to industry, commerce, business, residents, and natural resources in the coastal zone. Additionally, the response may be further complicated as response actions occur under multiple enabling legislative authorities at the same time – namely, the Stafford Act (due to the natural disaster) and OPA 90 (due to the oil spill).

¹ A list of acronyms is provided on Page 1 of this report.

The workshop consisted of presentations, a forum to answer participant questions, and breakout sessions. Presentation topics included: primers on federal disaster response legislation and spill regulations, case studies of responses under the Stafford Act and OPA 90, and an overview of the Mobile Bay area.

The breakout sessions included discussions of: roles and challenges for different stakeholder groups and for given NaTech scenarios, additional spill response challenges due to the natural disaster, and improvements in preparation and planning for NaTech.

The agenda for the workshop can be found in Appendix B.

Presentations

A summary of each presentation from the workshop is provided in this section. Slides for the presentations are located in Appendix C. Most summaries were written by the presenters.

National Incident Management System and National Response Framework

CDR Kevin Lynn (U.S. Coast Guard (USCG) Gulf Strike Team) provided an overview on the National Response Framework (NRF) and the National Incident Management System (NIMS) as part of a refresher and primer on federal disaster response legislation. During times of emergency, the U.S. is guided in its response protocol by two overarching concepts, among many other levels of federal, state and local doctrine. The NRF meets the president's national preparedness objective and outlines how the federal government will provide coordinated support to the other echelons of government. NIMS meets the president's objective for managing domestic incidents and establishes the concepts for incident command and multi-agency coordination. This presentation provided an overview of concepts, implementation, key functions, and relationships to the public, private sector, NGOs and all levels of government. Major coordination actions of the federal government authorized by the Stafford Act, associated Emergency Support Functions, and initiating triggers were presented along with a high level overview of the Incident Command System (ICS) and concept of Unified Command (UC). The presentation concluded with a discussion on how the NRF and NIMS are interdependent on each other and emphasized the critical need for partnership and preparedness.

Robert T. Stafford Disaster Relief and Emergency Assistance Act

Ashley Leflore (U.S. Army Corps of Engineers (USACE)) provided a brief overview of the history of disaster legislation and how the Stafford Act became the authority by which the federal government supports local and state efforts in disasters. This presentation served as the second part of the refresher and primer on federal disaster response legislation.

The Stafford Act consists of seven sections (i.e., titles): (1) congressional findings, (2) preparedness and mitigation, (3) administrative information, (4) types of federal assistance programs, (5) types of emergency assistance programs, (6) emergency preparedness, and (7) miscellaneous rules regarding assistance.

Three types of federal assistance were discussed:

1. A major disaster declaration occurs after an event has caused damage,
2. An emergency declaration is an occasion in which federal assistance is required to save lives, protect property, or lessen a threat (in the latter case, it can be declared prior to the event),
3. Fire Management Assistance includes grants, equipment, personnel, and supplies made available to supplement community efforts when a fire on public property, forest, or grasslands threatens a major disaster declaration.

The intent of the Stafford Act can be described in two core principles: (1) it is a supplement to state and local efforts, which means it is not an entitlement, and has to be approved among various parameters as a third level of assistance; and (2) the legislation can only be triggered by the request of the governor in the state impacted. The governor must submit an official request that includes: the severity of the event, what assistance is requested, what local/state resources and funds are committed to the effort, and what priorities are for assistance.

The assistance provided includes:

- Individual assistance (e.g., lodging, help with rent, disaster counseling),
- Public assistance (e.g., debris removal, restoring the use of public roads and utilities),
- Hazard mitigation, which is a grant program to fund measures that reduce risk (e.g., buying out properties, elevating homes).

The Federal Emergency Management Agency (FEMA) administers most authorities under the Stafford Act and all assistance is financed through the Disaster Relief Fund (DRF). The DRF is a congressional appropriation with funding that is not limited to fiscal years and does not expire.

More information on the Stafford Act can be found in the Media Library on the FEMA website².

Federal Spill Regulations Refresher and Primer

CDR Christopher Cederholm (USCG Sector Mobile) and Leo Francendese (U.S. Environmental Protection Agency (USEPA)) provided an overview to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), OPA 90, the *Clean Water Act* (CWA), and the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA).

A number of federal authorities are responsible for governing oil spills in the U.S. The main actors in the governing system are a combination of state, federal and international authorities. They are collectively responsible for creating and implementing legislation to prevent oil spills and handling the decisions and procedures that follow in the aftermath.

The NCP established the response system the federal government follows in the event of an oil spill and/or release of hazardous materials into the environment. The NCP was a response by U.S. policy makers to the *SS Torrey Canyon* oil tanker spill in 1967 off the coast of England. It has since been amended by CWA, OPA 90, and CERCLA.

² <http://www.fema.gov/media-library>

The purpose of the NCP 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. The four general priorities include:

1. Giving safety and human health top priority during every response action,
2. Stabilizing the situation in order to prevent the event from worsening,
3. Using all necessary containment and removal tactics in a coordinated manner to ensure timely, effective response,
4. Taking action to minimize further environmental impact from additional discharges.

The NCP established the Regional Response Teams (RRTs) and their roles and responsibilities which include coordinating preparedness, planning, and response at the regional level. Each RRT consists of a team made up of federal agency representatives, as well as state and local government representatives and an incident-specific team that are activated in a response.

The NCP also defines the objective, authority, and scope of the National Contingency Plan, Regional Contingency Plans (RCPs), and Area Contingency Plans (ACPs) (which may also include Geographic Response Plans (GRPs)).

Agency jurisdictions as the Federal On-Scene Coordinator (FOSC) include:

- USCG - discharges of oil; release of hazardous substances, pollutants and/or contaminants into the environment in the coastal zone,
- USEPA - discharges of oil; release of hazardous substances, pollutants and/or contaminants into the environment inland,
- Department of Defense - discharges of oil; release of hazardous substances, pollutants and/or contaminants into the environment from military-operated facilities, installations, munitions and/or military vessels,
- Department of Energy - discharges of oil; release of hazardous substances, pollutants and/or contaminants into the environment from DOE facilities or non-DOD radiation sources.

Notice of discharge and releases are made to the National Response Center (NRC) which is the federal government's communications center. Reports to the NRC activate the NCP and the federal government's response capabilities.

The CWA is the primary federal law in the U.S. governing water pollution. Its objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. It is administered by USEPA, in coordination with state governments.

OPA 90 increased the role and dimensions of the NCP by establishing more robust planning and response systems to prevent and mitigate spills in marine environments. It is the primary legislation that governs oil spills in the U.S. The establishment of OPA 90 substantiated the federal government's role in responding to oil spill cleanups. OPA 90 made amendments to the already existing CWA to provide three options to the delegated authorities through the president. The options include:

- Conducting immediate cleanup by federal authorities,
- Monitoring the response of the responsible party,
- Commandeering the cleanup activities of the responsible party.

Hence, OPA 90 gives the federal government the authority to determine the level of cleanup required.

OPA 90 was established as a result of the *Exxon Valdez* oil spill in 1989 and it created the Oil Spill Liability Trust Fund (OSLTF) using the primary source of revenue from a per-barrel tax on the oil industry. The responsible party (RP) is liable for costs and damages. OPA 90 also establishes a certain dollar amount above which an RP is not liable for paying for the cost of a spill; this value was updated in December 2015. The National Pollution Funds Center (NPFC) has a billing and collection program to recover costs expended from the OSLTF. Included in the use of the funds is the response costs incurred by the USCG and USEPA, as well as the payments to Federal, State and Tribal Natural Resource Trustees (Trustees) to conduct Natural Resource Damage Assessments (NRDAs) and restorations. It also allows the USCG to designate Basic Ordering Agreement (BOA) contracts to Oil Spill Removal Organizations (OSROs).

CERCLA, administered by the USEPA, was enacted in 1980 and it: (1) established prohibitions and requirements concerning closed and abandoned hazardous waste sites, (2) provided for liability of persons responsible for releases of hazardous waste at these sites, and (3) established a trust fund to provide for cleanup when no responsible party could be identified.

As part of the RRT 4 RCP, a Memorandum of Agreement (MOA) between the USCG and USEPA delineates the inland and coastal zone geographical boundaries establishing responsibility for the pre-designation of the FOSC. The USEPA provides the pre-designated FOSC for pollution response in inland zones and the USCG Captain of the Port (COTP) is the pre-designated FOSC for pollution in the coastal zone.

The USCG and the USEPA use the ICS management system called, which is a part of the NIMS, which provides a framework for responses, including oil spill responses.

The EPA On-Scene Coordinator website³ provides updates on spills and releases under OPA 90 and CERLA where USEPA is the FOSC. The NOAA Incident News⁴ website provides information about spills where NOAA ORR provides scientific support for the incident response.

³ <https://www.epaosc.org/>

⁴ <https://incidentnews.noaa.gov/>

Case Study: Stafford Act Response

Kim Albins (NOAA Marine Debris Program) provided a brief overview of an historic flooding event which occurred in South Alabama in April 2014 and resulted in a declaration of the Stafford Act. Severe weather and over 20 inches of rainfall resulted in record flooding. In anticipation of ongoing severe weather, Alabama's governor declared a State of Emergency to initiate a state-level response to supplement local efforts. Local municipalities, including fire and police departments, and county and state responders led initial search and rescue operations. At the state's request, President Obama made a Major Disaster Declaration on May 2 making federal disaster aid available. \$1.9 million was allocated for debris removal on a cost-sharing basis. Storm impacts were varied and included one confirmed fatality, road closures, sinkholes, flooded homes and debris in waterways. After Baldwin County rejected the state's request to lead waterway debris removal operations, the Alabama Department of Conservation and Natural Resources (ADCNR) took the lead as an applicant to FEMA with the USACE providing technical assistance under a mission assignment. In order to be eligible for Stafford Act funding, debris must be storm-related, a threat to navigation safety, and/or impacting threatened and endangered species habitat. Waterway debris removal operations occurred during September-October 2014.

Case Study: OPA 90 Response

Adam Davis (NOAA ORR Emergency Response Division (ERD)) provided a case study presentation on an oil spill response in the Mobile River which occurred in 2011. The spill originated from a bulk oil storage facility during a tank-to-tank transfer on Blakely Island and resulted in the discharge of approximately 500 barrels of oil to the river. This spill was limited to localized impacts, such as a brief river closure, and did not involve a complex or prolonged cleanup. The oil in the river was quickly contained with boom. A number of deep draft vessels and smaller vessels, barges, and a dredge were oiled and required decontamination.

The case study was chosen to demonstrate the roles, responsibilities and authorities of agencies responding under a typical OPA 90 response with an identified and UC response structure. The RP initiated their response plan, notified the NRC, and mobilized their OSRO. The OSRO and RP secured the source, contained the spill, and mobilized cleanup crews. The USCG received notice from the NRC, contacted the RP and ordered an overflight for assessment. The USCG mobilized to the incident in order to set up UC. Then, in concert with NOAA, they began the larger assessment of impacts and resources at risk.

The complications in the response included an initial confusion as to the product type (i.e., crude vs. refined) and its associated fate in the environment. Weather hindered operations on the first day which resulted in an increased amount of oiled debris (and increased cleanup costs). The river was closed for several days.

The RP funded the response under OPA 90/CWA Limits of Liability. The USCG accessed the OSLTF with reimbursement from the RP. There were third party claims for the oiled vessels and loss of revenue due to the river closure.

Mobile River Delta and Basin Overview

Tom Smith (USACE) provided a brief overview of the Mobile River Delta and Basin relative to its natural features, salient industrial elements, transportation and wastewater infrastructure and adjoining population centers.

Salient natural features included:

- Five rivers (Mobile, Tensaw, Blakeley, Spanish, and Apalachee) form the second largest delta, the fourth largest watershed based on drainage, and the fifth largest based on area in the U.S.,
- There is 415 sq. mi bay area with average depth of 10 ft. and over 135 mi of shoreline and it was designated as one of 28 National Estuary Programs in 1995,
- It is one of the most diverse ecosystems in the U.S. with three types of wetland habitats, extensive seagrasses, 200+ species of fish, major shellfish communities, and 300+ species of birds and reptiles,
- The Mobile-Tombigbee River basin is one of 51 U.S. Fish and Wildlife Service (USFWS) recognized Strategic Habitat Units in Alabama where the agency is managing and restoring populations of rare fishes, mussels, snails, and crayfishes,
- It is only one of two places on earth where the phenomenon of “Jubilees” occur (i.e., crustaceans and demersal fish can be found in shallow coastal water in large numbers),
- The Alabama seafood industry contribute approximately \$461 million in revenue annually and 10,000 jobs.

Salient industrial elements:

- The Port of Mobile is the twelfth busiest in the U.S. with a reported 54 million tons of commerce,
- Commercial and military ship builders include Austal with an ongoing \$3.5 billion littoral combat ship contract,
- There is a growing aerospace industry including large scale passenger plane manufacturing and repair.

Transportation and wastewater infrastructure:

- Interstate 10 and U.S. Highway 90 both span the area from east to west and pass through tunnels beneath the Mobile River. Additionally, Interstate 10 is elevated approximately 20 ft. above the Bay,
- Annually, 6.2 tons of material passes through the Port of Mobile by rail,
- The Mobile Area Water and Sewer System, has two wastewater treatment plants located at McDuffie Island and Three Mile Creek. The McDuffie Island plant processes 28 million gallons per day (MGD) and is 15 ft. above sea level. Three Mile Creek plant processes 12.8 MGD and the site elevation ranges 10 to 30 ft. above sea level.

Adjoining population centers (i.e., communities within proximity to the Port of Mobile and bound by Interstate 10 to the sound and Three Mile Creek to the north):

- The “Down the Bay” area is approximately 11 ft. above sea level with mostly slab on grade construction,
- The “Downtown Historic District” is approximately 13 ft. above sea level with step-up raised first floor elevations,
- The “Downtown and LODA” areas are approximately 13 ft. above sea level with primarily nonresidential first floor space,
- “De Tonti Square” is approximately 10 ft. above sea level with step-up raised first floor elevations,
- “Orange Grove, Renaissance” is approximately 10 ft. above sea level with slab on grade construction,
- “Plateau (Africatown)” on average, 20 ft. above sea level with slab on grade construction,
- There are two Hospitals along the banks of Three Mile Creek with parking lots and drives at 9 ft. above sea level with nonresidential first floor and 700 beds.

Introduction to Natural Hazards Triggering Technological Disasters

Nancy Kinner provided an overview of NaTech (e.g., the 1 million gallon Murphy Oil spill (St. Bernard Parish, LA) caused when Hurricane Katrina displaced an oil storage tank). Much of the research and planning and preparedness for NaTech has been done in the European Union and Japan, but more recently within the U.S. (e.g., the June 2016 FEMA-led “Cascadia Rising” exercise that centered on an earthquake and tsunami triggering technological disasters). The key components in emergency response are often no different for NaTech events than natural disasters, but it is the need to conduct multiple, concurrent responses that makes preparation and planning essential. Integrated Risk Management is essential for NaTech planning: to identify multiple risks and discuss how to address synchronous events.

The presentation described several ongoing NaTech related activities: (1) the European Commission’s NaTech Accident Database; (2) the electronic regional risk atlas (ERRA) being pioneered in central Europe; (3) the “bow-tie” approach to integrated risk management; and (4) the extended NaTech risk analysis framework. The latter project, a collaboration between European and Japanese scientists, uses models of natural disasters to predict the susceptibility of industrial facilities (i.e., fragility) to damage. This helps identify key infrastructure to upgrade and protect in order to avoid or mitigate technological disasters. A second part of the project uses a “comprehensive economy-wide simulation model” (computable general equilibrium (CGE) model) and existing local input – output tables of goods and services to minimize supply chain disruption resulting from NaTech. These latter two approaches (fragility and CGE modeling) could be used in the U.S., especially for storm-prone ports (e.g., New Orleans, LA; Mobile, AL) to plan/prepare for NaTech events.

Natural Resource Trustee Perspective on Impacts and Challenges: Natural Resource Damage Assessment and Restoration

Peter Tuttle (USFWS) and Kevin Kirsch (NOAA ORR Assessment and Restoration Division (ARD)) provided an overview on NRDA and restoration.

Under CERCLA and OPA 90, the parties responsible for a release of hazardous substances or an oil spill are financially responsible for a variety of costs, including among other things, the cost to clean up the release and the cost to compensate the public and the environment for natural resources and resource services lost or diminished by the release and associated response activities. Federal, State, and Tribal Trustees, acting on behalf of the public, are responsible for leading NRDA efforts to assess the effects of the oil spill and associated response actions to natural resources and to restore injured resources to the condition in which they would have been, but for the spill (i.e., baseline).

In simple terms, NRDA may be defined as a compensatory (not a punitive) process used by the Trustees to determine the nature and extent of injury to trust resources caused by an oil spill or the release of a hazardous substance for the purpose of restoring the natural resources. NRDA compensates the public and the environment for these injuries and losses. Federal Trustees are designated by the president. State Trustees are designated by the governor. Injury is defined as any adverse change in the condition of resources or resource services caused by exposure to the released material or action taken to respond to the release. Natural resources include land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, or held in trust by, the U.S., States, Tribes, or foreign governments. Trustees are mandated to use monies recovered through the NRDA process to restore, rehabilitate, replace, or acquire the equivalent of the natural resources injured by the release. To meet this mandate, Trustees seek to restore injured resources and services to baseline. The public must also be compensated for interim losses (the losses that occur during the time it takes the resources to recover to baseline). RPs are responsible the cost of assessing injuries to natural resources and can participate in the NRDA. The public is able to participate in restoration planning.

Disaster Scenario Overview

Adam Davis provided context to a potential disaster scenario with publicly available Geographic Information System (GIS) tools including the Environmental Response Management Application (ERMA®)⁵ and the Coastal Flood Exposure Mapper⁶ as well as images of oil spills from Hurricane Katrina and its associated storm surge.

CRRC further refined the potential scenario to:

- Date: September 7, 2017,
- Slow-moving tropical storm hits the Mobile Bay area causing 4-5 ft. of flooding in the downtown area resulting in the causeway bridge closure (the tunnels remain open),
- An oil tanker, with crew on-board and a 100 million gallon capacity, is partially submerged in the Port of Mobile adjacent to the Convention Center.

A spill scenario in 2017 potentially includes new cruise line industry operations in the Port of Mobile. It is important to note that forecasts of a tropic storm may not be a cause for evacuation of the port and the subsequent flooding from a slow-moving storm may not always be predicted.

⁵ <https://erma.noaa.gov>

⁶ <https://coast.noaa.gov/floodexposure>

Breakout Sessions

Workshop participants were divided into three or four groups for breakout sessions. The first breakout session consisted of four different groups based on the types of organizations the participants represented. [N.B., There were two groups that represented federal and state agencies.] The second and third breakout session had three parallel groups (i.e., each group discussed the same topic). An effort was made by CRRC to have a distribution of participant expertise in all groups. A list of the breakout groups is located in Appendix D. Each group had a leader to help facilitate the discussion and a notetaker equipped with a laptop and projector to capture discussion points. Each group completed a predetermined workshop template (Appendix E).

The summary and distillation of key points from the breakout sessions are presented below. Breakout session notes are located in Appendix F.

Session I

The first breakout session was in the afternoon on the first day of the workshop. The session identified stakeholder needs and concerns. Groups were divided into the following categories:

- Federal and state agencies,
- National Estuarine Research Reserve System (NERRS), NGOs, academia, education and outreach,
- Port and local stakeholders.

Participants discussed the following questions for the NaTech event in the Mobile Bay area:

1. What would your role(s) be?
2. What do you foresee being the greatest challenge for you in your current role(s)?
3. What do you want others to understand better about your roles?
4. What other organizations in this category (e.g., federal and state agencies) have not been mentioned? What are their roles?
5. From your perspective, who are potential stakeholder groups affected by or concerned with the oil spill and/or the storm-related disaster? What is their greatest concern? How can they be better involved and/or informed? What do they need to know?

Federal and State Agencies

Federal agency participation included NOAA, USACE, USCG, USEPA, and USFWS. State agency participation included ADCNR and Alabama Department of Environmental Management (ADEM).

The role(s) of the federal agencies during a NaTech response include:

- NOAA: Provides weather forecasts, physical damage assessments and NRDA's, and scientific support to the FOSC; assists with marine debris and in the safe navigation in ports with NOAA charts and surveying for debris in waterways (except for Corps channels); and is a Trustee,
- USACE: If Stafford Act is enacted, supports FEMA,
- USCG: Serves as FOSC for the incident in the coastal zone, conducts search and rescue, and determines whether to open or close port areas (i.e., COTP's authority),
- USEPA: Provides OSC support to the USCG,
- USFWS: Provides support to the IC on how to minimize impacts to resources (e.g., threatened and endangered (T&E) species, habitat), and is a Trustee.

The role from the state government agencies during a NaTech response include:

- ADCNR: Leads FEMA requests for support, involved in search and rescue, and is a Trustee
- ADEM: Administers major environmental laws (e.g., CWA, Clean Air Act), and is a Trustee

A challenge from the state agency perspective is the State's willingness to cover the cost share requirement of the Stafford Act. There is also a perception issue because the public does not understand the limitations of the agencies' authorities and funding. If the Stafford Act is invoked, it is important to understand and communicate how the public's involvement or volunteer efforts impact whether the activity is eligible for reimbursement from FEMA.

A challenge within the federal agencies is the competing demands of personnel and time during a NaTech response. Further, the USCG must prioritize missions (e.g., search and rescue over environmental protection) in the response efforts. Communication and coordination within and between organizations, as well as the dissemination of information to the public is a challenge.

Other federal entities that would be involved in a NaTech response include:

- FEMA,
- Department of Homeland Security,
- National Guard,
- NOAA National Weather Service,
- U.S. Public Health Service,
- National Parks Services,
- Centers for Disease Control and Prevention.

Other state agencies that would be involved in a NaTech response include:

- AL Department of Transportation,
- AL Law Enforcement Agency,
- Geologic Survey of Alabama.

NERRS, NGOs, Academia, Education and Outreach

Participants from MS-AL Sea Grant, the Gulf of Mexico Research Initiative (GoMRI), AL Sierra Club and Grand Bay NERR comprised the “NERRS, NGOs, Academia, Education and Outreach” breakout group.

Sea Grant does not have a mandatory role in responding to a NaTech event, however, the organization would serve as a liaison for NOAA to assess the needs of communities. NERRS facilities and equipment can be provided for responders and response efforts. NGOs (e.g., AL Sierra Club) can coordinate volunteers and evaluate and advocate for change in legislation to address future NaTech events. Academia can collect data and information. All of these organizations have networks and the ability to engage with the community. The organizations can all reach out to stakeholders and share information, field questions and correct misinformation.

Challenges include: accessing information from the UC in a timely manner in order to share with stakeholders, reporting and responding to unforeseen concerns, as well as creating and understanding their roles in response efforts.

In general, these types of organizations seek to aid the response effort by making information more accessible to the public, or providing preparedness training for local communities.

Other organizations that could be involved in a NaTech response include:

- Faith-based organizations,
- Other NGOs,
- Civic clubs,
- Neighborhood associations.

Port and Local Stakeholders

Participants representing the Alabama State Port Authority (ASPA), BAE Systems, and the City of Mobile comprised the “Port and Local Stakeholders” breakout group. The Harbormaster from the ASPA is responsible for ensuring the operations of the port, the safety of navigation, and the security of the harbor, which includes determining which vessels move in and out of the port and at what times. In the event of flooding, the City of Mobile would be involved regarding impacts to the city’s stormwater. An employee from BAE Systems, representing private industry, discussed the company’s role if a spill originated from or impacted their facility. If that happened, BAE would oversee remediation and reporting.

Challenges for the port and local stakeholders include: accessing the information from the UC to the industry, not including local responders in the response effort when the federal government is involved (where other responders do not understand the area), and there is limited response equipment. Documentation, inspections, and reimbursement involving the federal government were also viewed as challenges. The greatest challenge would be to resume port operations after a NaTech event due to its impact on the economy. Not only is there an impact of a closed port to the local economy with employees out of work, but the reach of the port is global where manufacturing in other areas would quickly shut down without shipments of inventory transiting from the port.

Other local agencies and stakeholder that would be involved in a NaTech response include:

- Local industry (e.g., tank farms, oil facilities, bar pilots, tug captains),
- Local business (e.g., Convention Center),
- Hotels,
- Cruise ships,
- Downstream users (e.g., just-in-time manufacturing),
- Police and fire department,
- Mobile and Baldwin County health departments,
- Local utilities (e.g., power, wastewater, water),
- Schools,
- Elected and appointed officials.

Challenges and Stakeholder Concerns

There were challenges that were identified in the breakout groups that applied to or were related across categories, including:

- Limited funding,
- Limited personnel and equipment,
- Timely communication (with public, internal within the response, to impacted industries other than RP, from UC),
- Federal agency logistical support,
- Interagency coordination,
- Personnel turn-over,
- Prioritization of missions,
- Managing social media/other media,
- Combatting public perception,
- Entities lacking a response mentality,
- Responders caught in the middle (i.e., public demand for information vs. reluctance to release information),
- Apparent slowness of response due to lag time in permitting (e.g., T&E species),
- Injection of politics into the response,
- Financial loss while the port is closed,
- Federal response using non-local personnel, equipment, etc.,
- Established protocols for access,
- Tapping into NGOs, NERRS, and academic networks to improve response and prepare (e.g., communication to stakeholders, training of local communities).

The overall concern for all stakeholders is knowing what is happening and when everything will return to “normal”. Table 1 summarizes the stakeholder concerns identified in Breakout Session I.

Table 1. Summary list of stakeholder concerns for Breakout Session I for a NaTech event in the Mobile Bay area

Stakeholder	Concern
Public	<ul style="list-style-type: none"> • When can I get back home? • How do I get reimbursed? • Health and safety, including mental health/stress concerns • Who can help me gain access to services? • Loss of livelihood • Financial losses • Seafood safety
Local business	<ul style="list-style-type: none"> • Loss of livelihood • When can I re-open? • Financial losses • Mental health/stress • Loss of personnel
Tourism (e.g., cruise lines)	<ul style="list-style-type: none"> • Mental health/stress • Financial loss • Public perception • Environmental impacts
NGOs (e.g., Sierra Club, Bay Keeper)	<ul style="list-style-type: none"> • Environmental impacts • Mission-based concerns
Seafood Industry/Commercial Fishing	<ul style="list-style-type: none"> • Environmental impacts • Financial loss • When can I fish again? • Mental health/stress
Recreational Fishing	<ul style="list-style-type: none"> • When can I fish again?
Elected officials	<ul style="list-style-type: none"> • Public perception • Impact on electability • How is my constituency affected? • How is my infrastructure impacted?
Industry (e.g., transportation, manufacturing)	<ul style="list-style-type: none"> • When is navigation safe? • What are priorities for vessel movement? • When can we go back to normal operation? • Financial losses
Trustees	<ul style="list-style-type: none"> • Environmental impacts
Tribes	<ul style="list-style-type: none"> • When can I get back home? • Health and safety, including mental health/stress concerns • How do I get reimbursed?

	<ul style="list-style-type: none"> • Who can help me gain access to services? • Loss of livelihood • Financial losses • Cultural impacts • Seafood safety
Subsistence users	<ul style="list-style-type: none"> • When can I get back home? • Health and safety, including mental health/stress • How do I get reimbursed? • Who can help me gain access to services? • Loss of livelihood • Financial losses • Food scarcity and seafood safety
NERRS, NPS	<ul style="list-style-type: none"> • Environmental impacts
Local schools	<ul style="list-style-type: none"> • Health and safety • When can students return? • Limited resources, personnel
Hospitals	<ul style="list-style-type: none"> • Public access • High demand during period of limited resources and staffing
Local utilities (e.g., power, sewer, water)	<ul style="list-style-type: none"> • Facility repairs • Financial losses • When can facilities operate again? • Communication

Session II: Planning and Preparedness

The second breakout session was in the morning of the second day of the workshop. Participants revisited the challenges and concerns from the first session and addressed the following questions:

1. What would likely work “as planned” (i.e., if there was only an oil spill)?
2. What would be the special challenges in responding to the oil spill as a result of the flooding and storm-related issues?
3. What is missing in the existing plans/preparedness? What should be added or changed?
4. How well prepared are we to predict what will happen/impacts and respond? What can we do to better predict impacts?
5. What are the possible “unknowns”? How do we deal with uncertainty?
6. What best practices would help us to respond better?

In the event of a spill, an NRC notification would be issued and the USCG COTP and Harbormaster would be notified. The USCG, as FOOSC, would be the federal lead in the response effort with the following efforts:

- Initiate search and rescue (if needed),
- Notify state, county, local agencies, etc.,
- Shut down river traffic, businesses, and facilities,
- Set up security zones on water and land,
- Initiate Hazardous Materials (HazMat) response,
- Mitigate and stabilize sources,
- Activate the ACP including vessel/facility response plan(s) and GRPs as part of response efforts and identify areas that need immediate protection,
- Request NOAA trajectories,
- Set up Incident Command Post.

Challenges that may arise in spill response as a result of flooding and storm-related issues include:

- Mobilizing assets due to access and impacted transportation routes (e.g., causeway closed),
- Containing the spill due to flooding,
- Storm conditions may impact the oil spill trajectory,
- Increase in oiled debris from contaminated land (instead of storm debris),
- Storm impacts the response efforts,
- Difficult to establish a perimeter and secure the scene.

There is a prioritization to conduct search and rescue before an environmental response. There may be displaced people and public health concerns. There may be reduced spill response personnel due to the storm response efforts. Communications within and between organizations may be impacted. A loss of power would be a constraint.

In terms of the predicting impacts, the ability to predict flooding exists, tide and current data is immediately available, the spill trajectory analysis is developed rapidly by NOAA ORR, and storm forecasting is provided by NOAA National Weather Service (NWS). There is an understanding of how water moves around Mobile Bay and the city as a result of sea level rise and storm surge work that could be tied into response efforts. In prioritizing a response, GRPs show sensitive areas (e.g., booming strategies, T&E species locations). By conducting Area Committee Meetings before an incident occurs, responders can be made aware of the sources of information and existing models. The use of remote sensing could better predict impacts, however, they may have limited use during a storm.

The “unknowns” from the scenario included:

- What is the weather forecast? Will it escalate impacts?
- Are there other threats escalating (e.g., wastewater treatment plant, neighboring industries impacted by flooding)?
- Are there human casualties from the natural disaster?

- What OSROs are available?

In general, outreach is not included in existing preparedness plans. In order to prepare for NaTech events and response, contingency plans could include:

- Ability for the public to report oil sighting (e.g., to submit photographs in the case of oil spreading),
- Use of the county social media,
- Incorporation of public perception into the messaging (instead of combating it).

In addition, plans could also include a process for security to protect the public due to flooding and contamination on land.

In order to better respond, it is important to practice NaTech responses (e.g., trainings, drills, tabletop exercises). Use of contingency plans (i.e., ACPs, GRPs, facility and vessels plans) during these practices can help identify ways to refine/improve the plans.

Session III: Next Steps

The last breakout session was in the afternoon of the second day of the workshop and participants addressed the following questions:

- What steps need to be taken to improve preparation and planning (as discussed in breakout session II) to address this kind of scenario?
- Who should be involved in implementing these steps (e.g., partnerships, teams)?
- What are the impediments, if any (e.g., funding)?
- How long would it take to implement the steps (e.g., months, years, continual)?

After the participants in the breakout groups identified these steps, they prioritized them in terms of importance. The top responses are summarized below.

Two of the three groups identified increased participation at the USCG Area Committee meetings and training events is the most important step in planning for a NaTech event and response. Increased participation would improve the content of the ACP, as well as build relationships and increase understanding of the various roles and responsibilities during response. Participants should include USCG, NOAA, USEPA, ADEM, Sea Grant, NERRS, Mobile Bay National Estuary Program, NGOs, industry, elected officials, and state and local agencies. Currently, the participation in and frequency of these meetings are low. Challenges include scheduling conflicts, time commitment issues, and general complacency. Personnel turnover results in out of date email contact lists. The participation in Area Committee meetings and training must be a continual effort.

All three groups highly ranked the frequency of tabletop exercises and trainings for preparedness planning. Organizations include: USACE, FEMA, U.S. Army, USCG, Trustee agencies, NGOs, public health agencies, and state and local government. One group included media participation in training exercises as part of building relationships and improving messaging. Tabletop exercises that use GRPs and online tools would provide the opportunity to update contingency plans. In addition to funding, challenges include the lack of interest or engagement. These training exercises must be a continual effort.

One group suggested more equipment and training of the local police department in HazMat response (e.g., mimic OSC equipment) in order to protect responders and improve communication. This would include the local police department and city council. Once funding was secured, training could be implemented in months, however, the training refresher would be on an annual basis.

One group identified the need for an internal and external process and procedure for developing and releasing press releases, and for sharing information and data from the UC. An efficient process would better improve the safety for stakeholders and the public, while allowing responders to focus on the response. This would involve the UC including the Incident Management Team (IMT), members of the Joint Information Center, and the environmental unit. This would require execution at different levels within the USCG and there would need to be a willingness to address this throughout the organization. The process and procedure could be developed within three months.

Another group suggested organizing public forums (e.g., town hall meetings) with communities to educate them about what to expect during a NaTech response and use the opportunity to combat misconceptions. Forums would include spokespeople from individual agencies, Local Emergency Planning Committees (LEPC), and other members of the community.

Conclusions

The workshop was an opportunity to increase awareness, understanding, and coordination among participating stakeholder groups and agencies involved in a NaTECH response. Unfortunately, NaTech events will continue to occur. In addition to Hurricane Katrina, the weather conditions from Hurricane Sandy (2012) caused: a diesel spill at the Motiva Refinery (Sewarren, NJ), a biodiesel spill at the Kinder Morgan Terminal (Carteret, NJ), a fuel oil spill at the Phillips 66 Refinery (Linden, NJ), and other spills which spread oil and hazardous materials in NY and NJ waterways and ports. The workshop was an example of the importance of continual regional training to improve preparedness, planning and response to potential oil spills that impact natural and human resources. Discussions among all of the potential stakeholders prior to spills always improve the “climate” for response when an actual spill occurs.

The workshop identified the need for:

- More continual and frequent Area Committee meetings and trainings with greater participation among stakeholders to: update and improve the ACP and GRPs, better understand the roles and responsibilities of responders, and build relationships,
- More training and equipment for local police departments for HazMat response,
- An internal and external process and procedure for developing and releasing press releases, and sharing information and data from the UC, as well as a process to communicate with communities so they know what to expect when an incident happens.

The challenge of communicating important information to the public and media in a timely manner was highlighted throughout the workshop. The third workshop in the NRPT series, “Addressing Public Concerns During Spill Response... Sorting Fact from Fiction During Response” held June 28-29, 2016 in St.

Petersburg, FL had the goal of improving responders' knowledge of the current state-of-science of risk communication during oil spills and their ability to communicate to the public about the response. The challenges identified from the Mobile Bay workshop reported here were considered during the FL NRPT workshop.