

Boston Harbor First Responder Exercise Series

June 24-25, 2013

**AFTER ACTION
REPORT/IMPROVEMENT PLAN**

August 2013

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HANDLING INSTRUCTIONS

1. The title of this document is the Massachusetts Department of Environmental Protection Boston Harbor First Responder Exercise Series
2. The information gathered in this AAR/IP is unclassified
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EXECUTIVE SUMMARY

The Massachusetts Department of Environmental Protection (MassDEP) is conducting three Boston Harbor First Responder Exercises in 2013. The first two exercises occurred on June 24-25, 2013 at the Moon Island Training Academy (MITA). The third exercise will be conducted on September 19, 2013. The goal of these exercises is to prepare first responders in the Boston Harbor region to demonstrate basic familiarization with MassDEP-provided pre-positioned oil spill response equipment including its proper use and deployment, utilizing common booming tactics and strategies outlined in the MassDEP Geographic Response Plans (GRP).

Figure 1. View of the Exercise Area at Moon Island Training Academy



Photo courtesy of Nuka Research and Planning Group, LLC¹

¹ All photos in document courtesy of Nuka Research and Planning Group, LLC

Figure 2. Exercise Deployment Plan



The MassDEP First Responder exercise series at Moon Island was developed to exercise local area first responder's Inter-Agency Planning and Coordination, Resource Coordination, and Local Oil Spill Preparedness capabilities. The Exercise Design Team (EDT) was comprised of several agencies, including the Boston Fire Department (BFD), Boston Police Department (BPD), the Massachusetts Environmental Police (MEP), City of Boston Mayor's Office of Emergency Management (OEM), the MassDEP, the United States Coast Guard Sector Boston (USCG), and Nuka Research and Planning Group, LLC (Nuka Research).

In preparation for this exercise, Initial, Mid-Term, and Final Planning Conferences were held.

The Initial Planning Conference (IPC) was held on January 17, 2013 at the United States Coast Guard Sector Boston. A Mid-Term Planning Conference (MPC) was held on April 2, 2013 at the Moon Island Training Academy and the Final Planning Conference (FPC) was held on June 5, 2013 via teleconference.

During the course of the IPC, the EDT discussed and determined exercise objectives, schedule, and structure. At the conclusion of the IPC, exercise dates, participation and objectives were clear and action items assigned. Topics covered included:

- Exercise scope
- Exercise objectives
- Design requirements and conditions including:

- Exercise dates
- Timing of the exercise in relation to tidal schedule
- Logistical needs
- Agency participation

During the MPC, the EDT further refined the exercise tasks, logistical needs, participation and objectives and:

- Reviewed the draft Exercise Plan
- Conducted a walkthrough of the MITA facility and the proposed exercise sites.

During the FPC, a comprehensive review of all exercise objectives was conducted as well as detailed, final discussions to review logistics and resolve all open issues.

Based on the EDT’s deliberations, the following objectives were developed for the Boston Harbor First Responder Exercise site:

- Objective 1:
 - Familiarize Boston Harbor Region First Responders with the purpose, use, and deployment of pre-positioned oil spill response equipment.
 - Foster Inter-Agency Planning and Coordination by providing the opportunity for local responders to work with Federal (USCG) and State (MassDEP and Mass Environmental Police) responders to plan for and deploy protective booming tactics.
- Objective 2:
 - Deploy Diversion and Exclusion booming tactics developed during Initial planning Conference utilizing Pre-Positioned oil spill response trailer and equipment located at BFD Moon Island Training Academy (MITA).
 - Evaluate MITA facility as staging area and review site access considerations.
 - Evaluate operational challenges associated with deploying boom in on-scene wind and sea state conditions.
- Objective 3: Conduct post-deployment “hot wash” and debrief to identify lessons-learned for the After Action Report/Improvement Plan and identify any planning or operational gaps brought out by the deployment exercise and incorporate into Improvement Plans.

The purpose of this report is to analyze exercise results, identify strengths to be maintained and built upon, identify potential areas for further improvement, and support development of corrective actions.

Major Strengths

The major strengths identified during this exercise are as follows:

- Local agencies worked together to achieve objectives.
- Local responders demonstrated ability to adapt and modify initial deployment plan as necessary to safely meet objectives.
- Assets from all participating agencies were integrated effectively to support the exercise objectives.
- Communications were clear, concise, and effective.

Primary Areas for Improvement

The primary areas for improvement identified during this exercise, including recommendations, are as follows:

- First responders would benefit from additional opportunities to practice boom deployment in a variety of environmental conditions.
- First Responders would benefit from additional hands-on training prior to on-water deployment in areas including:
 - Connecting boom sections
 - Connecting towing bridles
 - Rigging anchor sets
- More practical boats should be used. On some vessels, first responders had trouble making on-water connections due to the height of the vessels main deck above the water (freeboard).
- First Responders should practice towing boom, especially when maneuvering in channels, congested areas, and in areas of high current speeds.
- First Responders would also benefit from having an experienced first responder on each of the vessels to help as needed during the deployment of the boom.
- The depth at high tide should be noted before the exercise to ensure proper length of anchor line.

Overall, the exercise was successful in providing an opportunity for first responders to deploy boom and strengthen inter-agency participation. Future exercises, both formally planned full-scale exercises as well as smaller inter and intra-departmental exercises and drills will be beneficial in strengthening local first responders' skill in deploying oil spill containment boom and will provide additional opportunities for inter-town and state coordination.

SECTION 1: EXERCISE OVERVIEW

Exercise Details

Exercise Name

Massachusetts Department of Environmental Protection Boston Harbor First Responder Exercise Series

Type of Exercise

Full-Scale Exercise

Exercise Start Date

June 24, 2013

Exercise End Date

June 25, 2013

Duration

6 hours (each day)

Location

The exercise in-briefing took place at the Moon Island Training Academy in the city of Quincy, MA, with the field exercise following at the same location.

Sponsor

The MassDEP was the sponsor of the exercise, with input from the participating agencies, the U.S. Coast Guard, City of Boston Mayor's Office of Emergency Management on behalf of the Metro-Boston Homeland Security Region, and facilitation by Nuka Research and Planning Group, LLC (contractor to MassDEP).

Program

MassDEP Marine Oil Spill Program-First Responder Oil Spill Exercises

Mission

This exercise was designed to provide an opportunity for municipal first responders to practice protective booming tactics and refine inter-agency coordination during emergency response activities.

Capabilities

Planning, Communications, WMD and Hazardous Materials Response and Decontamination.

Scenario Type

The scenario is a simulated oil spill in Boston Harbor that incorporates the deployment of protective booming tactics and strategies.

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Participating Organizations

Participating organizations included:

- Boston Fire Department
 - Marine Unit
 - MITA Trainees
 - Special Operations Unit
- Boston Police Department
 - Harbormaster
 - Marine Unit
 - Hazardous Material Unit
- Massachusetts Department of Environmental Protection
- Massachusetts Environmental Police
- Moran Environmental Recovery
- Nuka Research and Planning Group, LLC
- United States Coast Guard Sector Boston
- Mass Division of Marine Fisheries
- City of Boston, Mayor's Office of Emergency Management

Number of Participants

- Players: 73
- Controllers: 1
- Facilitators: 6
- Observer/Evaluators: 5

Note: Participant numbers represent totals from both days' exercises. The total number of participants on Day 1 was 43 and Day 2 was 30.

SECTION 2: EXERCISE DESIGN SUMMARY

Exercise Purpose and Design

As a result of the Buzzards Bay oil spill in 2003, and subsequent passage of the Oil Spill Act of 2004, the Commonwealth of Massachusetts, through the Department of Environmental Protection's (MassDEP) Oil Spill Program has developed and carried out a comprehensive program to protect coastal resources. The program includes three elements: 1) the development of 160 Geographic Response Plans (GRP) to protect environmentally sensitive areas, 2) the acquisition and distribution of 83 oil spill response equipment trailers to coastal communities and, 3) the development of a training and exercise program to better prepare local first responders, including fire departments, police departments, harbor masters and other town officials, to respond to oil spills that threaten environmentally sensitive areas in their communities. The MassDEP First Responder and GRP Exercise Program is currently in the fifth year of field exercises involving local fire, harbor, police, shellfish, and emergency management personnel along with state and federal agencies (Mass Division of Marine Fisheries, U.S. Coast Guard, Mass Environmental Police, National Oceanic and Atmospheric Administration). The exercise design, facilitation, planning, and reporting are funded by MassDEP. Participating towns may receive HSEEP grant funding to cover overtime and backfill costs. The MassDEP First Responder exercise series at Moon Island, as part of this exercise regime, will provide an opportunity for First Responders in the Boston Harbor region to deploy the oil spill response equipment contained within the pre-positioned oil spill response trailers provided to them through the MassDEP Oil Spill Program utilizing common tactics and strategies to safely and effectively protect sensitive areas of Boston Harbor. These exercises will also provide an opportunity to reinforce interagency and interdepartmental cooperation and participation, focusing on interoperable communication, and mutual aid.

Exercise Objectives, Capabilities, and Activities

Capabilities-based planning allows for EDTs to develop exercise objectives and observe exercise outcomes through a framework of specific action items that were derived from the Target Capabilities List (TCL). The capabilities listed below form the foundation for the organization of all objectives and observations in this exercise. Additionally, each capability is linked to several corresponding activities and tasks to provide additional detail.

Based upon the identified exercise objectives below, the EDT decided to demonstrate the following capabilities during this exercise:

- **Objective 1:**
 - **Planning:**
 - Successfully demonstrate the ability to plan and coordinate a multi-town/multi-jurisdictional exercise
 - Initial, Mid-Term, and Final Planning Conferences as outlined above under Executive

Summary.

- **Objective 2:**
 - **Communications:**
 - Assign common operating frequency (800 Mhz) for Command and Operations;
 - Supply radios as needed to support interoperable communications; and
 - Communicate effectively during drill between shoreside/on-water responders and exercise controller.
- **Objective 3:**
 - **WMD and Hazardous Materials Response and Decontamination**
 - Simulate incident; assign responders;
 - Deploy boom; and
 - Demobilize boom.

Scenario Summary

The scenario for each exercise was a simulated oil spill in Boston Harbor that threatens Moon Island and the surrounding area. Local responders from the BFD, BPD, and MEP, with assistance from Moran Environmental, MassDEP, and Nuka Research, were directed by the exercise controller to deploy an Exclusion (EX) and Diversion (DV) tactic along MITAs northeast seawall as depicted in Figures 1-2. The Exercise Design Team developed an Exercise Plan (ExPlan), which was utilized and modified as necessary during the exercise. Following an initial classroom session (Figure 3) and field equipment familiarization sessions (Figures 4-5) and safety and operational briefings, the first responders transported, deployed, evaluated, demobilized, and stored the boom and anchors used in the exercise (See Figures 6-10). A safety vessel (MEP and BFD) was assigned for each days exercise. Professional spill responders from Moran Environmental and Nuka Research personnel provided assistance and direction to the first responders. Personnel from Nuka Research and MassDEP acted as facilitators, providing direction, answering questions, and managing the exercise timetable.

Figure 3 Participants Gather During Exercise Briefing

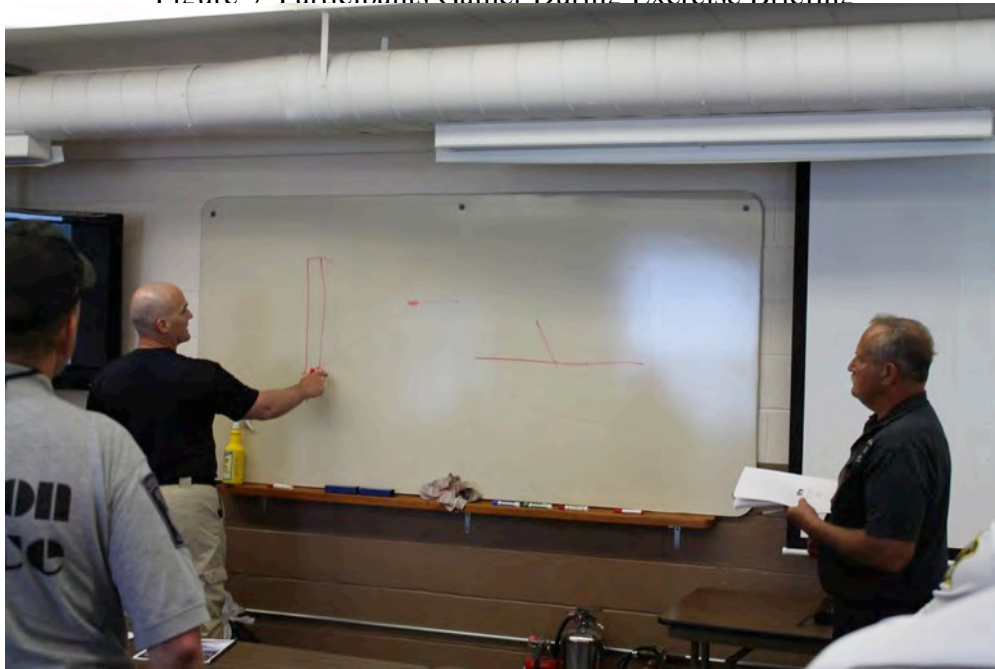


Figure 4. Equipment Overview with Boston Harbor Spill Response Trailer



Figure 5. Culvert Plug Demonstration Using SCBA to Inflate



Figure 6. Deploying Boom from MITA Oil Spill Response Trailer



Figure 7. BPD First Responder Setting Anchor for Diversionary Booming Tactic



Figure 8. Multiple Agencies Work Together to Deploy Oil Spill Containment Boom



Figure 9. Exclusion and Diversion Booming Tactics Anchored by First Responder Personnel



Figure 10. Demobilizing Boom Utilizing BFD (MITA) Ladder Truck



Following equipment demobilization and repacking, post-exercise Hot Washes were conducted on each day, during which participants were asked to share any insights learned during the exercise and/or any suggestions on modifications needed to successfully deploy the tactic. Many Participants completed Exercise Evaluations (Appendix C) upon completion of each exercise. The observers included representatives from the Coast Guard, Massachusetts Environmental Police, MassDEP, and members of the Boston Fire and Police Departments

Figure 11. Rinsing Boom during Demobilization Phase



Boston Fire Department (MITA)	Boston PD Harbormaster	Boston FD Marine Unit	Massachusetts Environmental Police
16' Pre-Positioned oil spill response equipment trailer	31' SAFE Boat/300HP	Marine Unit 1	31'/200HP
E-One Ladder Truck	27' Boston Whaler/200HP	Marine Unit 2	27'/150HP
E-One Pump Truck	22' Zodiac/115HP		
F-250 Pick-up Truck			

Table 1: Major Assets Supplied for Exercise by Agency

SECTION 3: ANALYSIS OF CAPABILITIES

This section of the report reviews the performance of the exercised capabilities, activities, and tasks. In this section, observations are organized by capability and associated activities. The capabilities linked to the exercise objectives of the Boston Harbor First Responder Exercise Series are listed below, followed by corresponding activities. Each activity is followed by related observations, which include references, analysis, and recommendations.

Capability 1: Planning

Capability Summary: The Planning capability was implemented during pre-exercise planning conferences and during the functional exercise. The capability required Fire Chiefs and local officials from the city of Boston to identify objectives, select an exercise location, select booming tactics to be tested, and assign manpower, vessels, and other resources to support the exercise. Effective pre-planning led to a successful exercise.

Activity 1.1: Initial and Mid-Planning Conferences to discuss exercise objectives, tactics selection and other issues outlined above in the Executive Summary.

Observation 1.1: Strength: Representatives from all agencies worked well together, offering suggestions and weighing the merit of each before accepting or rejecting them and providing alternatives.

References: Homeland Security Exercise and Evaluation Program, Volume II, February 2007

Analysis: Objectives were well aligned and exercise design proceeded smoothly. All agencies (BFD, BPD, MEP) committed manpower and vessels to the exercise as outlined in Table 1 above. There was agreement that the exercise should provide an opportunity for broad participation by as many local responders as possible including BFD Marine and Hazmat Units, MITA staff, BPD Harbormaster, and MEP.

Recommendations: Consider future multi-jurisdictional oil spill response operations-based exercises, including drills and functional exercises.

Activity 1.2: Mid-Term and Final Planning Conferences to assign manpower and equipment, work through exercise logistics, and additional activities outlined above in the Executive Summary.

Observation 1.2: Strength: All agencies coordinated and integrated equipment, vessels, and manpower. BFD, BPD, and MEP personnel and assets were integrated into each days exercise to provide an opportunity for all agencies to work together in achieving exercise objectives.

References: Homeland Security Exercise and Evaluation Program, Volume II, February 2007

Analysis: Logistical pre-planning led to a smooth exercise. Each agency supplied vessels, equipment and responders, providing an opportunity to work together in a task force/strike team setting with personnel and vessel crews from different agencies.

Recommendations: Continue to periodically conduct first responder exercises using spill response equipment and multi-jurisdictional approach.

Capability 2: Communications

Capability Summary: On-water spill response operations require a common tactical communications capability so that responders from multiple agencies can work together safely and effectively on the water and shoreline, and so that the Incident Command can maintain situational awareness of tactical operations.

Activity 2.1: Assign Communications Channels.

Observation 2.1:

Strength: In this exercise, all participants shared the same frequency. BFD (MITA) provided handheld radios (Motorola-Frequency 486.2250) for use by all participants and utilized the Boston Fire Radio System (Channel 14). The geographic proximity made sharing the same frequency efficient and ensured timely communications between the exercise controller and all shoreside and on-water task force/strike team elements.

References: Homeland Security Exercise and Evaluation Program, Volume II, February 2007, National Incident Management System

Analysis: All participants maintained good radio discipline minimizing radio “chatter” and confining radio communications to essential information. This practice was evident throughout the exercise, during which exercise facilitators monitored radio communications and observed that while the responders communicated key information needed to deploy the boom, they did so quickly, succinctly, and without undue extraneous chatter.

Recommendations: Continue to observe good radio practices. While not done in this exercise, recommend that IC and Tactical Ops typically utilize separate channels.

Activity 2.2: Communicate Effectively During Drill Between On-Water/Shoreside Responders and IC.

Observation 2.2:

Strength: Participating agencies shared information concisely and clearly between responders on vessels and shoreside.

References: Homeland Security Exercise and Evaluation Program, Volume II, February 2007, National Incident Management System

Analysis: Common operational practices between the three fire departments and previous coordination helped to ensure that radio communications were streamlined and effective. Participants and exercise facilitators maintained good situational awareness throughout the exercise.

Recommendations: N/A

Capability 3: WMD and Hazardous Materials Response and Decontamination

Capability Summary: MassDEP has developed an oil spill response capacity throughout coastal regions of the state by providing oil spill response equipment trailers to local fire departments, developing GRPs (tactical plans to protect sensitive areas from oil spill impacts), and providing initial training to local first responders. This functional exercise provided a key link by allowing first responders from different agencies within the Boston Harbor region to work together to exercise their ability to deploy boom from a oil spill response trailer during a mock oil spill. This community-based spill response program requires that towns and agencies be able to work together, since a major oil spill may require significant mutual aid and assistance. This field exercise provided a realistic scenario for the agencies to work together to improve their spill response capacity.

Activity 3.1: Simulate Incident; Assign Responders

Observation 3.1:

Strength: Participants from all three agencies were assigned by the exercise facilitator to on-water and shoreside task forces. The on-water task forces who were primarily assigned to boom deployment were comprised of one BFD vessel, two BPD vessels, and two MEP vessels (one served as the safety vessel) on Day 1 (June 24th) and one BFD vessel and two BPD vessels (one served as the safety vessel) on Day 2 (June 25th). These vessels included personnel from their respective departments with some vessels also included MassDEP, Moran Environmental, and USCG personnel. The shoreside task force was comprised primarily of BFD personnel as well as BPD, Moran Environmental, and USCG personnel. Assets utilized during the exercise are outlined above in Table 1.

References: Homeland Security Exercise and Evaluation Program, Volume II, February 2007

Analysis: The process of assigning first responders to various task forces/strike teams provided an opportunity for the departmental leadership to consider the strengths and abilities of their responders for various spill response functions. The exercise deployment plan served as a tactical plan that was ready for field implementation. Each team was comprised of responders from each participating agency to promote interagency coordination.

Recommendations: Continue to promote inter-departmental and inter-agency coordination during future first responder and GRP exercises. For exercises where ICS is implemented, adequate pre-planning and identification of personnel to fill key Command-level, Section, Division, and Group leadership positions is critical to exercise success and should be accomplished at the Final Planning Conference.

Activity 3.2: Deploy Boom

Observation 3.2:

Strength: Vessel and shore-based task forces/strike teams worked well together to implement the booming tactic/strategy under somewhat challenging site conditions (current speed).

References: Homeland Security Exercise and Evaluation Program, Volume II, February 2007

Analysis: This exercise provided first responders who were otherwise unfamiliar with oil spill response equipment, tactics, and strategies with practical experience in utilizing the pre-positioned equipment that has been provided to them and in deploying oil spill containment boom. On-water strike teams coordinated their activities towing, anchoring, and positioning boom and generally worked well together throughout the deployment and retrieval phases of the exercises.

On Day 1, the exclusion tactic as depicted on the exercise deployment plan was not deployed due to the state of the tide and time constraints. On Day 2 adjustments were made to the schedule to allow adequate time, based on the tide and exercise schedule, to deploy both strategies. Due to the strong current (relative to the size and horsepower of the participating vessels), level of experience amongst the participants, and time constraints, the diversion tactic could not be deployed as depicted on the exercise deployment plan on Days 1 and 2. On Day 1, connecting the boom sections on-water proved to be difficult. The prescribed exclusion boom array (two 200 ft. boom legs in a cascade array) could not be deployed as depicted within the time allotted for the exercise.

On Day 2, the deployment plan was modified to eliminate the need to connect boom sections on-water. Instead, the shore-side strike team prepared two, two hundred ft.

sections of boom and alternating vessels deployed each section. This technique, which more closely models the procedure that experienced spill response contractors would typically use, was moderately more successful but the same factors that impacted the ability to deploy this strategy on Day 1 came into play on Day 2. The exclusion boom array was deployed on Day 2 but was not set in the ideal fashion because the participating vessels had difficulty, due to nearby underwater obstructions (rocks), in getting close enough to the seawall/outfall and because the anchor lines utilized were too long for use along the seawall (relative to the water depth) which caused both ends of the boom to drift away from the seawall/outfall.

Recommendations: Every effort should be made to select basic strategies that can be easily deployed by first responders. In most cases, first responders do not have as much experience as commercial oil spill response contractors and some strategies will pose more of a challenge to first responders. First Responder and GRP exercises should be tailored to provide enough of a challenge to local first responders without being overly complex and difficult to deploy. Conduct future GRP deployment exercises to keep boom deployment skills current and to test GRP strategies at other locations. Improve boom deployment and tending skills by deploying existing GRPs that call for and incorporate boom arrays in different configurations and tending throughout the tide. Deployment of longer boom arrays and those that are relatively more complex (cascade arrays) should not be confused with towing longer sections of boom; a practice that is discouraged. For towing purposes, both due to the relatively small size of vessel used by local first responders, harbor masters and others, and due to relative lack of boom towing experience amongst first responders, it is recommended that boom segments be limited to 200 ft.

Activity 3.3: Demobilize Boom

Observation 3.3:

Strength: The boom was offloaded, staged, retrieved, rinsed and re-stowed without incident.

References:

Analysis: Demobilization of boom can be time-consuming and tedious. In this exercise, demobilization and transport was done both by hand as the boom itself was deployed directly off the MITA seawall and did not require towing long distances over water. Responders worked well throughout this process, showing strong teamwork. BFD/MITA provided an engine to support boom rinsing. Despite the absence of a boat ramp and dock facilities at MITA, first responders were able to successfully demobilize boom and other equipment safely. BFD personnel at MITA utilized a ladder truck to lift boom segments from the water, making demobilization easier. More information on this procedure can be found below under best practices

Recommendations: Ideally, a staging area should provide waterside access including boat ramps and dock facilities for the boom trailer and accompanying towing vehicle. If immediate waterside staging for the trailer is not possible, first responders must find an alternate means of safely removing and transporting the boom from the trailer to the deployment site. Once a corridor has been identified, on-scene commanders must ensure that there are adequate personnel to transport the boom and that all hazards have been eliminated or reduced as much as practicable along the transport corridor. For nighttime operations, adequate lighting should be in place along the entire corridor. Limited portable lighting is included in all MassDEP pre-positioned trailers. While demobilization during these types of exercises tends to take place at the end of sometimes very long training days, it is important to ensure that boom retrieval and transport back to the trailer (whether on-water and overland) is done in a deliberate manner with good situational awareness, to avoid potential navigation and personnel safety issues. For exercises that approach 5 or more hours, providing lunch for participants may help to alleviate fatigue.

SECTION 4: CONCLUSION

Overall, these were useful and successful exercises. While the diversion strategy was not successfully deployed in the strict sense of the term, the deployment itself exposed first responders to the unique challenges in deploying oil containment, familiarized them with the pre-positioned oil spill equipment provided to them by MassDEP, and provided an opportunity to work with other local agencies. All three local agencies worked together seamlessly. Although the tidal current presented a challenge, the boom deployment was accomplished relatively quickly and safely. MITA, despite the absence of a boat ramp and dock facilities, proved to be an adequate staging area and even though ICS elements were not incorporated into these first responder exercises, would otherwise serve as an excellent Incident Command Post.

It must be noted that the strategies that were deployed during these exercises could have likely been successfully deployed by participants had more time been allotted for the exercise and generally can be more easily deployed by experienced commercial oil spill response contractors. Additional artificiality was built-in to the exercise as the exercise facilitator and Exercise Design Team members deliberately broke down the deployment into stages (deploying short segments at a time in a specific order in order to provide multiple opportunities to repeat various boom deployment techniques and procedures by each participating vessel).

This deployment highlighted two key issues; 1) Not all booming tactics and strategies can be deployed by first responders based on available resources and, 2) The limited amount of time allotted for each exercise sometimes prevent inexperienced first responders from deploying certain tactics and strategies within the given exercise time frame. These factors must be considered when determining how to best implement the tactics and strategies contained within the MassDEP GRPs and how best to utilize first responder personnel and resources. This does not negate the need to take pre-emptive action to protect sensitive coastal resources by utilizing the GRPs to proactively deploy protective booming in advance of an actual or potential oil spill.

Weather conditions for these first responder exercises at Moon Island/MITA were satisfactory. The current speed, while not excessive, presented a challenge to responders. However, these conditions did not impede the ability of responders to deploy the boom during both a flood tide and the beginning of an ebb tide cycle, as planned. The group demonstrated the capability to integrate multiple agency resources and personnel in a unified response. Equipment from both of the 16 foot pre-positioned oil spill equipment trailers located at MITA were utilized. One trailer was used to provide an overview of equipment and that equipment was utilized to demonstrate proper anchor set-up, proper technique for connecting boom segments as well as towing bridles, and proper use of culvert plugs. The other trailer was used as the source of the boom and anchors that were utilized for the deployments. Participants became more familiar with deploying, setting, and demobilizing boom, anchors, and floats, as well as the use of inflatable culvert plugs included in each trailers inventory. All participants communicated effectively and clearly using BFD-supplied handheld radios as outlined above in Observation 2.1.

Lessons learned from this exercise included but were not limited to:

- Responders were able to work well in scenario that mixed responders from multiple agencies.
- While visual and verbal instruction was provided (during the classroom session) on how to connect towing bridles to the ends of boom sections, First Responders on Day 1 noted the need for further direction (from exercise facilitators) on how to properly connect boom sections, towing bridles, and how to simultaneously connect both the towing bridle and the anchor system when it becomes necessary to transition immediately from towing to anchoring. This was rectified on Day 2 by including a hands-on session that allowed all participants to practice (landside) connecting boom segments and towing bridles prior to the on-water deployment.
- Booming tactics and strategies can be difficult to deploy in areas where currents are strong and in windy conditions when utilizing smaller vessels commonly used by local first responders. Additional difficulties can also be encountered when utilizing vessels that have a high freeboard (height of a vessels deck above water level). These factors along with the experience of participating responders must be taken into account when planning future exercises and preparing for actual deployment.
- Exercise Facilitators and the EDT must balance the need to structure the exercise in a way that provides an exercise benefit to First Responders who have never deployed oil spill containment boom before along with the need to deploy the specific tactic and strategy utilizing the optimal techniques, personnel and equipment that will be used in an actual incident. As noted previously, the vessels and techniques utilized during this exercise were not optimal in terms of effective deployment of the selected tactics, particularly the diversion tactic, but were in most cases, ideal for providing maximum exposure to the equipment and techniques.
- Additional equipment including additional crown anchor buoys and lines as well as D-rings would have made towing, setting, and adjusting the boom easier for First Responders. This additional equipment is not currently provided in the pre-positioned trailers.
- MITA is an adequate staging area and potential temporary Incident Command Post although the lack of a pier or floating dock facilities did prove to be a minor obstacle when conducting equipment/personnel transfer and deployment.
- A two-day exercise provides opportunities to build on lessons learned and refine the First Responder and GRP Exercise program.
- BFD personnel noted the importance of ensuring that all Fire Department personnel understand the program that is in place for trailer maintenance and equipment replacement and the roles that MassDEP and MER play in carrying out these activities. Suggestions were made to ensure that all Fire Department personnel know who within their department maintains keys for each trailer and to post information inside each trailer that outlines the trailer maintenance and equipment procedures including important points of contact (Fire Department, MassDEP, and MER). A recommendation was also made to place relevant GRPs within each trailer so they are immediately accessible to first

responders once on-scene.² This feedback is a great example of how these exercises serve as a conduit for local first responders to regularly communicate process and program improvements to MassDEP and contribute to the overall success of this training and exercise program.

Best Practices

During these exercises, BFD personnel developed two techniques that had never been incorporated before in previous exercises and should be considered for use in future exercises and actual incidents:

- The two pre-positioned oil spill response equipment trailers located at MITA did not come equipped with generators and air compressors for inflation of the provided culvert plugs. As part of the exercise, use of the culvert plugs was demonstrated and BFD personnel determined that a standard Scott Air Pack typically used by firefighters could be utilized to inflate the culvert plugs. The proper fittings were acquired to connect the Scott Air Pack to the culvert plug and this technique was utilized for inflation (Figure 5). This technique will be further refined, procedures/instructions developed, and MassDEP will consider acquisition of the proper fittings to place in each trailer throughout the state to facilitate use of this procedure.

- BFD personnel incorporated the use of MITA's on-site ladder truck to act as a crane to remove all containment boom during equipment demobilization. This technique had never been used before and proved an effective and efficient method of safely removing the boom from the water, especially in a location like the MITA facility that lacks a boat ramp and dock facilities or other locations where waterside access is problematic. This technique can be considered for use by other departments during exercises and actual incidents as long as it can be done safely and as long as the apparatus is sufficient to handle the weight of the boom.

²Prior to these exercises MassDEP began compiling information to be placed in each trailer including an inventory of equipment contained in each trailer, restocking and reporting procedures listing the home page of MassDEP OSA Training & Equipment website (with URL prominently displayed), a MassDEP 24 hr Emergency Notification sticker, a map of MassDEP oil spill response trailer locations, a safety instructions card, and finally, all local GRPs (laminated) for the area where the trailer is located. This effort is ongoing. The MassDEP Marine Oil Spill Training & Equipment Resources website (<http://www.mass.gov/eea/agencies/massdep/cleanup/marine/oil-spill-training-and-equipment-resources.html>) and the Massachusetts GRP website (<http://grp.nukaresearch.com/index.htm>) already contain this and other information.

APPENDIX A: IMPROVEMENT PLAN

This IP has been developed specifically for Massachusetts, Suffolk County, following the Massachusetts Department of Environmental Protection First Responder Exercise Series conducted on June 24th and June 25th, 2013. These recommendations draw on both the After Action Report and the After Action Conference.

Improvement Plan Matrix

Capability	Observation Title	Recommendation	Corrective Action Description	Capability Element	Primary Responsible Agency	Agency POC	Start Date	Completion Date
Capability 1: Planning	1. Towns would benefit from further cooperative boom deployment exercises.	1.1 Continue to periodically conduct first responder exercises using spill response equipment and multi-jurisdictional approach.	1.1.1 Arrange additional cooperative exercises at a different sites	Planning	MassDEP	DEP representative	July 2013	July 2014

Homeland Security Exercise and Evaluation Program (HSEEP)
 After Action Report/Improvement Plan Massachusetts Department of Environmental Protection
 (AAR/IP) Boston Harbor First Responder Exercise Series

Capability 3: WMD and Hazardous Materials Response and Decontamination	1. Vessel and shore- based task forces/strike teams work well together	3.2 Tailor future exercise tactics and strategies to maximize successful strategic deployment	3.2.1 During exercise design phase, select basic strategies that can be easily deployed by first responders.	WMD and Hazardous Materials Response and Decontamination	MassDEP	DEP representative	July 2013	July 2014

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APPENDIX B: LESSONS LEARNED

While the After Action Report/Improvement Plan includes recommendations which support development of specific post-exercise corrective actions, exercises may also reveal lessons learned which can be shared with the broader homeland security audience. The Department of Homeland Security (DHS) maintains the *Lessons Learned Information Sharing* (LLIS.gov) system as a means of sharing post-exercise lessons learned with the emergency response community. This appendix provides jurisdictions and organizations with an opportunity to nominate lessons learned from exercises for sharing on *LLIS.gov*.

For reference, the following are the categories and definitions used in LLIS.gov:

- **Lesson Learned:** Knowledge and experience, positive or negative, derived from actual incidents, such as the 9/11 attacks and Hurricane Katrina, as well as those derived from observations and historical study of operations, training, and exercises.
- **Best Practices:** Exemplary, peer-validated techniques, procedures, good ideas, or solutions that work and are solidly grounded in actual operations, training, and exercise experience.
- **Good Stories:** Exemplary, but non-peer-validated, initiatives (implemented by various jurisdictions) that have shown success in their specific environments and that may provide useful information to other communities and organizations.
- **Practice Note:** A brief description of innovative practices, procedures, methods, programs, or tactics that an organization uses to adapt to changing conditions or to overcome an obstacle or challenge.

Exercise Lessons Learned

The MassDEP First Responder Exercise program, as well as the GRP development and testing program should be considered a best practice as it provides a model for other states to follow. This program is unlike any other in the country in that it provides a comprehensive method to:

- Develop and test Geographic Response Plans for oil spills
- Train first responders on boom deployment basics as well as specific GRP tactics

Additionally, MADEP:

- Provides equipment in the form of pre-positioned and fully stocked oil spill response trailers that are assigned to select Massachusetts coastal communities
- Provides long-term maintenance and support of the equipment via a maintenance and equipment replacement program

This program has proven highly successful and garnered praise from the international community. In 2011, MADEP and Nuka Research and Planning Group, (the contractor overseeing the project) submitted a white paper (later approved and entered as a poster) at the International Oil Spill Conference in Portland, OR in 2011. The poster was entitled “Approaches to Development and Testing of Geographic Response Plans in Massachusetts and Rhode Island” and won first place in the Preparedness category.

APPENDIX C: EXERCISE EVALUATION FORM

Boston Harbor First Responder Exercise		Test date:	
Instructions to Evaluators: Complete this form based on your observations of the GRP exercise.			
Evaluator Name:		Evaluator Organization:	
What was your role in exercise? (responder, observer, facilitator, etc.)			
What was your level of spill response experience prior to this exercise?			
NONE TRAINING ONLY SOME SPILL RESPONSE A LOT			
Please check a box to respond to the following.		YES	NO
1. I feel more prepared to deploy oil spill response equipment now than I did prior to this exercise.			
2. I have a better understanding of spill response tactics than I did prior to this exercise.			
3. I would participate in future oil spill response equipment or Geographic Response Plan deployments at other sites.			
4. The objectives were clearly explained and the deployment exercise met the objectives.			
5. The exercise was conducted safely.			
Based on your experience today, would you feel comfortable setting a similar boom array during an actual incident?			
NOT AT ALL A LITTLE MODERATELY VERY			
Please evaluate how well the Moon Island Training Academy worked for deploying and demobilizing boom from the trailer for this deployment:			
___ Ideal staging area for boom for this tactic.			
___ Sufficient as a staging area for boom for this tactic.			
___ Not sufficient as a staging area for boom for this tactic.			
Did the Exercise Plan (map diagram) provide clear direction as to how and where to deploy the boom? If not, please identify problems & suggest improvements.			

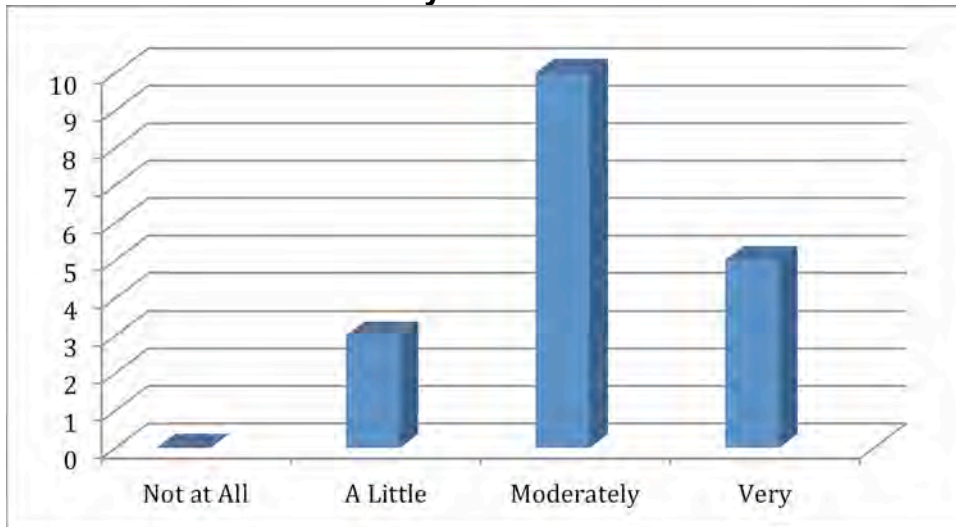
	Yes	No
Prior Oil Spill Experience	61%	39%
More Prepared after Exercise	95%	5%
Better Understanding of Deploying Spill Response Tactics	100%	0%
Participate in Future GRP Deployments	95%	5%
Field Objectives Clearly Explained and/or Met	95%	5%
Exercise Conducted Safely	95%	5%

Prior Spill Experience



18 Respondents

Based on experience today, comfort level with setting a similar boom array in actual incident



Moon Island Training Academy as Staging Area



APPENDIX D: EXERCISE EVENTS SUMMARY TABLE

Schedule of Events

Time	Event	Location/Details
8:30	BPD, BFD, and MEP vessel crew transport	Vessel crews muster at Harbor View docks and BFD MITA personnel transport crews to MITA.
9:00	Conduct Operational Overview/Briefing Module 1 – Introduction Module 2 – Trailer/Equipment Overview <u>Outside</u> - Conduct equipment familiarization (at trailer) Module 3-GRP 101 Module 4 – Booming Basics Module 5 – Booming Tactics Module 6 – Exercise Brief Classroom Sessions in BOLD	Will present general information on GRPs, tactics, and protective booming equipment. Will review principals of oil spill response including site-specific clean-up tactics and strategies. Develop Operational and Comms Plan and assign personnel. MITA Classroom and parking lot.
11:00	Group operational and safety briefing and assignments for deployment	MITA parking lot. Present scenario, assign personnel and equipment, conduct safety briefing, and finalize Deployment Plan.
11:30	Lunch*	*Vessel crews will be transported to Harbor View docks, get underway and transit to the MITA facility for the deployment exercise
12:00	Deploy Diversion (DV) and Exclusion (EX) tactics. Leave boom in place to evaluate anchor holding	Vessels launch from BPD docks (in Boston). Load boom to vessels from MITA seawall. Responders will deploy boom as drawn in plan. Shoreside teams will assist. Other task forces and observers/evaluators will watch from shore.
1:30	Evaluate EX and DV tactics.	Evaluate tactics deployed. Assess overall deployment configuration and determine effectiveness in deployment location.
1:45	Demobilize EX and DV.	Break down boom and tow back to boat ramp. Rinse and store boom in trailer.
2:15	Debrief	Reconvene at MITA parking lot for debrief and fill out evaluations.
2:30	Adjourn	

Tides (Boston Harbor)

Tides (Boston Harbor – 24JUN13)

HIGH				LOW			
AM	ft	PM	ft	AM	ft	PM	ft
		12:34	10.8	6:20	-1.9	6:35	-0.8

Tides (Boston Harbor – 25JUN13)

HIGH				LOW			
AM	ft	PM	ft	AM	ft	PM	ft
12:48	12.3	1:29	10.9	7:13	-1.9	7:29	-0.8

APPENDIX E: ACRONYMS

Acronym Table

Acronym	Meaning
BHFR	Boston Harbor First Response
DV	Diversion booming
EDT	Exercise Design Team
EMA	Emergency Management Agency
EMPG	Emergency Management Performance Grant
EX	Exclusion Booming
FPC	Final Planning Conference
GRP	Geographic Response Plan
IAP	Incident Action Plan
ICS	Incident Command System
IPC	Initial Planning Conference
IC	Incident Command(er)
LL	Lessons Learned
MassDEP	Massachusetts Department of Environmental Protection
MPC	Mid-Planning Conference
OEM	City of Boston Mayor's Office of Emergency Management
TCL	Target Capabilities List
UHF	Ultra High Frequency
USCG	United States Coast Guard
VHF	Very High Frequency