Boston Harbor First Responder Exercise Series

September 19, 2013

AFTER ACTION REPORT/IMPROVEMENT PLAN

October 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) conducted 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 was conducted on September 19, 2013. The goal of these exercises were 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).

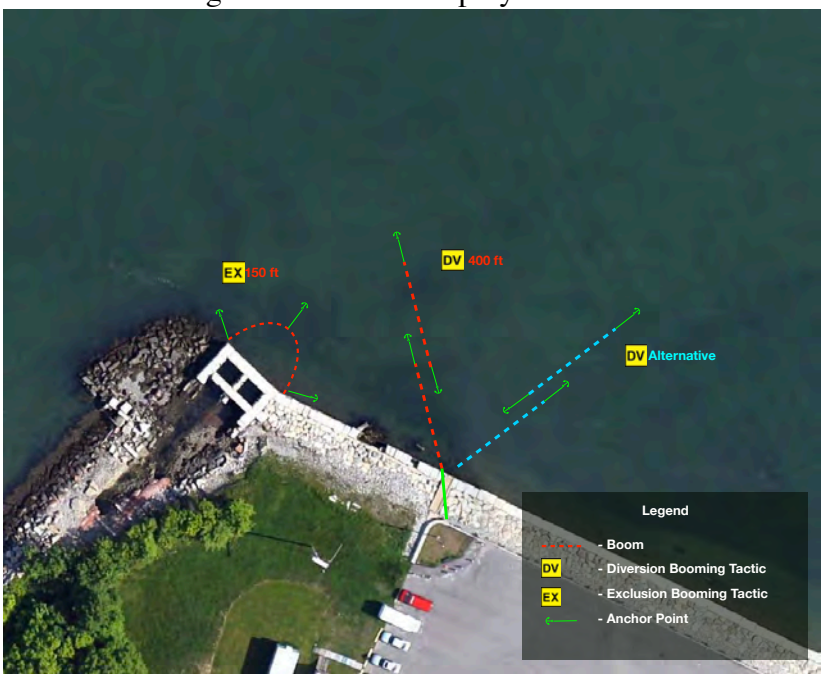
An After Action Report was completed for the June exercises and submitted to the City of Boston Mayor's Office of Emergency Management on behalf of the Metro-Boston Homeland Security Region. All information in this report is related to the exercise held on September 19th.

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

Photo courtesy of Nuka Research and Planning Group, LLC[1]

[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 Planning Team (EPT) 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. A Final Planning Conference (FPC) for the June 24-25 exercises was held on June 5, 2013 and, due to the length of time between the June and September exercise dates, another FPC was held on September 9, 2013.

During the course of the IPC, the EPT 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 EPT 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 EPT'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
- While the MITA facility proved to be an adequate staging area, its usefulness is limited due to the absence of a pier and docking facilities. While some participating vessels were able to approach the seawall to transfer equipment and personnel during the exercise, a dock would have made it possible for all participating vessels to safely moor at MITA and make personnel and equipment transfer much easier to accomplish. The addition of docking facilities at MITA will make it an ideal staging area not only for oil spill incidents, but also for all-hazards incident response throughout Boston Harbor and the Boston Harbor Islands.

Overall, the exercise was once again successful in providing an opportunity for first responders to practice with and deploy oil containment 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

September 19, 2013

Exercise End Date

September 19, 2013

Duration

5 hours

Location

All exercise activity took place at the Moon Island Training Academy in the city of Quincy, MA. Participating vessels moored at the nearby Marina Bay facility and vessel crews and passengers were transported between MITA and Marina Bay via the MITA shuttle bus.

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 Staff
  - Special Operations Unit
  - Dive 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
- City of Boston, Mayor's Office of Emergency Management

Number of Participants

- Players: 35
- Controllers: 1
- Facilitators: 6
- Observer/Evaluators: 4

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, harbormasters 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 EPTs 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 EPT 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 Planning Team developed an Exercise Plan (ExPlan), which was utilized and modified as necessary during the exercise. Following an initial classroom session and field equipment familiarization sessions (Figures 3-5) and safety and operational briefings, the first responders transported, deployed, evaluated, demobilized, and stored the boom and anchors used in the exercise (See Figures 6-11). A safety vessel (MEP) was assigned for the 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 controllers and facilitators, providing direction, answering questions, and managing the exercise timetable.

Figure 3. Equipment Overview with Boston Harbor Spill Response Trailer

Figure 4. Culvert Plug Demonstration

Figure 5. Responders making connections with boom pre-deployment

Figure 6. Deploying boom from the MITA Oil Spill Response Trailer

Figure 7. Multiple Agencies Work Together to Deploy Oil Spill Containment Boom

Figure 8. Shore crew watches as boom is deployed by First Responder Personnel

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

Figure 10. Assemblage of all participating vessels post-deployment

Following equipment demobilization and repacking, a post-exercise Hot Wash was conducted, during which participants and observers were asked to share any insights learned during the exercise and/or any suggestions for improving these first responder exercises. Many participants completed Exercise Evaluations (Appendix C) upon completion of each exercise. The observers included representatives from the Coast Guard, MassDEP, and personnel from the City of Boston Mayor's Office of Emergency Management.

Figure 11. Vessels, vehicles, and personnel during the Demobilization Phase

Boston Fire Department (MITA)	Boston PD Harbormaster	Boston FD Marine Unit	Massachusetts Environmental Police
2 - 16' Pre-Positioned oil spill response equipment trailer	27' Brunswick	Marine Unit 2 (Standby)	41' UTB (Safety)
E-One Ladder Truck	27' Kvichak	Marine Unit 3	31' SAFEBoat
E-One Pump Truck			16' Roughneck
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. Future field exercises should consider including the Massachusetts State Police marine unit and the MassPort marine units to identify their capabilities and coordinate their roles in a marine oil spill response.

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 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. It was understood prior to commencement of on-water activities that some of the participating vessels would not be returning to MITA at the conclusion of the field exercise and instead would return to their home base. As the exercise neared its conclusion, some of the participating vessels remained on-scene but transferred their BFD hand-held radios to the MEP 16' Roughneck for delivery back to MITA. This prevented exercise controllers and other participants from communicating directly with these vessels during the demobilization phase.

Recommendations: Participating vessels must maintain radio communication with all participants throughout all phases of the exercise. For future exercises when assigned portable hand-held radios are being utilized, expectations and procedures for maintaining communications throughout all exercise phases must be clearly articulated to and followed by all participants.

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 full-scale 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 an 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 controller 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 three MEP vessels (one served as the safety vessel). These vessels included personnel from their respective departments while some vessels also included MassDEP, Moran Environmental, and USCG personnel. The shoreside task force was comprised primarily of BFD personnel as well as 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 exercise.

On-water boom deployment commenced at the peak of high tide and during slack water[2]. Following deployment of the exclusion (EX) tactic as depicted in Figure 2, BFD personnel from MITA released hay into the old outfall canal to demonstrate how oil would be captured in the EX boom at the outfall. The deployment of the EX tactic and the deployment of the Diversion tactic (Figure 2 alternative was used based on state of tide and winds) were completed successfully although just as responders completed the DV deployment, the current increased dramatically as slack water ended and the tide began to ebb. This prevented any further adjustment to the DV strategy and demobilization commenced soon after completing deployment.

Recommendations: The success of this deployment was due in large part to the location and timing of the deployment (minimal current during slack tide) and favorable weather conditions. Changing conditions towards the end of the deployment (current speed increase) made further boom adjustment difficult. While the deployment had essentially reached its logical conclusion, if conditions had remained favorable, additional time may have been spent demonstrating how booming strategies, once deployed, can be adjusted based on changing conditions. This exercise therefore highlights the importance of selecting booming strategies and deployment locations that are conducive to successful deployments when the participants include personnel with little to no experience. 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, harbormasters 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:

[2] A period when a body of water is between tides or water that is free of currents.

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. As was done during the exercises in June 2013, BFD personnel at MITA utilized a ladder truck to lift boom segments from the water. While this was previously identified as a best practice, after further observation and consideration MassDEP discourages this practice as it introduces unnecessary safety concerns and changes the character of the staging area into an overhead working environment that then requires the use of hard hats, proper lifting slings and additional safety equipment and procedures not currently included in the MassDEP pre-positioned trailers and corresponding exercise program.

Recommendations: As indicated above under "Primary Areas for Improvement", the addition of docking facilities at MITA will enhance its usefulness as a staging area not only for oil spill incidents, but also for all-hazards incident response throughout Boston Harbor and the Boston Harbor Islands. 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, Boston Harbor first responders should work to identify suitable boat ramps, piers, docks or waterfront locations where boom from the trailers can be deployed from. Once these deployment locations have been identified, on-scene commanders must ensure that there are adequate personnel to transport the equipment 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, this was a useful and successful exercise. The deployment itself exposed first responders to the unique challenges in deploying oil containment boom, 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. Despite the absence of a boat ramp and dock facilities, MITA 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.

This deployment highlighted one key issue. Conditions at the time of deployment are a key factor in the ability of first responders to successfully deploy the equipment provided in the pre-positioned trailers. During the first two exercises in June 2013, and as outlined in the corresponding AAR, the current speed at the time of the exercise made it difficult for first responders, utilizing the vessels normally at their disposal, to successfully deploy the EX and DV strategies outlined in the EXPLAN. During this exercise, conditions were favorable and allowed participants to successfully deploy both strategies with little trouble. This 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. Further, any real or perceived limitations 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.

The group demonstrated the ability 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 was 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 used BFD-supplied handheld radios as outlined above in Observation 2.1.

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

- Participants were able to work well in a scenario that mixed responders from multiple agencies.
- Hands-on training on connecting boom sections and towing bridles to the ends of boom sections, reinforced by visual and verbal instruction, is essential and effective in preparing first responders to successfully and safely deploy the pre-positioned equipment provided to them by MassDEP.
- Based on characteristics including size, type, freeboard, horsepower, the particular vessels used in this exercise proved appropriate for deployment, particularly the 16 ft

Roughneck provided by MEP. These types of small "Johnboats" are commonly used by commercial responders as they have a shallow draft, low freeboard, and are maneuverable.

- As previously noted, the seawall at MITA is not an ideal deployment location and the addition of docking facilities at MITA will enhance its usefulness as a staging area not only for oil spill incidents, but also for all-hazards incident response throughout Boston Harbor and the Boston Harbor Islands.
- 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. These factors along with the experience of participating responders must be taken into account when planning future exercises and preparing for actual deployment.
- 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.
- A multi-day exercise series like this one provides opportunities to build on lessons learned and refine the First Responder and GRP Exercise program.

Best Practices

During this exercise series, BFD personnel developed a technique 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.

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 September 19, 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	September 2013	September 2014

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	September 2013	September 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, MassDEP:

- 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, MassDEP and Nuka Research 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.

MassDEP, Nuka Research, and the U.S. Coast Guard will be collaborating on another poster that has been approved for the 2014 International Oil Spill Conference, tentatively entitled "Massachusetts First Responder Exercises: Preparing Local Communities for Oil Spill Response." This poster will provide an overview of the MassDEP First Responder Training and Exercise Program describing the systematic approach to training and preparedness that has been developed, provide recommendations for implementation of this local first responder training in other areas of the United States and throughout the world, and highlight how this program has increased first responders competency and skills as they relate to oil spill response resulting in a higher degree of readiness and preparedness amongst first responders throughout coastal Massachusetts.

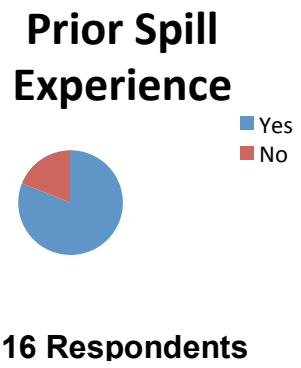
APPENDIX C: EXERCISE EVALUATION FORM

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.		

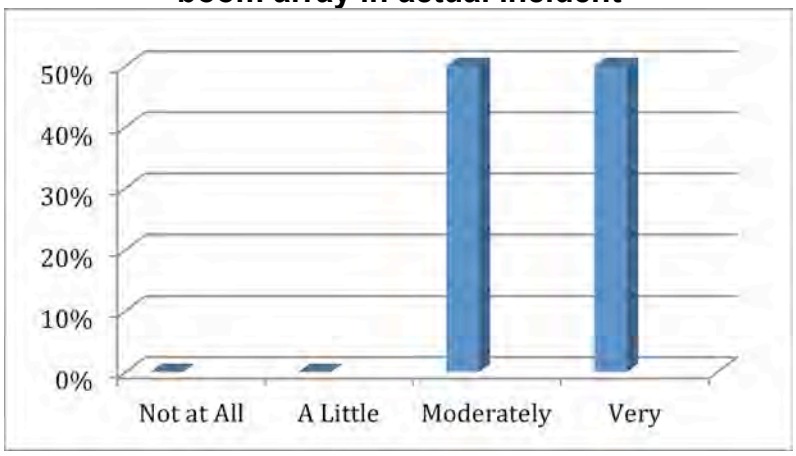
Based on your experience today, would you feel comfortable setting a similar boom array during an actual incident? NOT AT ALL A LITTLE MODERATELY VERY
Please evaluate how well the Moon Island Training Academy worked for deploying and demobilizing boom from the trailer for this deployment: ___ Ideal staging 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	81%	19%
More Prepared after Exercise	100%	0%
Better Understanding of Deploying Spill Response Tactics	100%	0%
Participate in Future GRP Deployments	100%	0%
Field Objectives Clearly Explained and/or Met	100%	0%
Exercise Conducted Safely	100%	0%



16 Respondents

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



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 Marina Bay docks and BFD MITA personnel transport crews to MITA.
9:30	Conduct Operational Overview/Briefing **Module 1 –Introduction** **Module 2 – Trailer/Equipment Overview** **Module 3 – Booming Basics** **Module 4 – Booming Tactics** **Module 5 – Exercise Brief**	MITA Classroom. Will present general information on GRPs, tactics, and protective booming equipment. Will review principles of oil spill response including site-specific clean-up tactics and strategies. Develop Operational and Comms Plan and assign personnel.
10:30	Equipment Familiarization and Hands-On demonstration	MassDEP Pre-positioned equipment trailer (MITA-outside)
11:15	Group operational and safety briefing and assignments for deployment	MITA Classroom. Present scenario, assign personnel and equipment, conduct safety briefing, and finalize Deployment Plan.
11:30	Lunch*	*Vessel crews will be transported to Marina Bay 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	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 classroom for debrief and fill out evaluations.
2:30	Adjourn	

Tides (Boston Harbor –19SEP13)

HIGH				LOW			
AM	ft	**PM**	ft	**AM**	ft	**PM**	ft
11:35	11.1			**5:20**	-0.9	**5:44**	-1.0

APPENDIX E: ACRONYMS

Acronym Table

Acronym	Meaning
BFD	Boston Fire Department
BHFR	Boston Harbor First Response
BPD	Boston Police Department
DV	Diversion booming
EPT	Exercise Planning Team
EMA	Emergency Management Agency
EMPG	Emergency Management Performance Grant
EX	Exclusion Booming
FPC	Final Planning Conference
GRP	Geographic Response Plan
HSEEP	Homeland Security Exercise and Evaluation Program
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
MITA	Moon Island Training Academy
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