



MassDEP Geographic Response Plan – 2017 West Island Causeway (BB-10) Exercise

October 12, 2017

The After-Action Report/Improvement Plan (AAR/IP) aligns exercise objectives with preparedness doctrine to include the National Preparedness Goal and related frameworks and guidance. Exercise information required for preparedness reporting and trend analysis is included; users are encouraged to add additional sections as needed to support their own organizational needs.

EXERCISE OVERVIEW

Exercise Name	2017 West Island Causeway GRP Exercise
Exercise Date	October 12, 2017
Scope	This exercise is a Full Scale Exercise, planned for approximately six hours in Fairhaven, MA and upon the waters of Buzzards Bay. Exercise play is limited to Long Island, the West Island causeway and the adjacent shoreline.
Mission Area(s)	Response
Core Capabilities	Environmental Response/Health and Safety, Operational Coordination, Operational Communications.
Objectives	<p>Objective 1: Demonstrate the ability to deploy oil spill equipment from one or more MassDEP pre-positioned oil spill response trailers utilizing common Geographic Response Plan (GRP) tactics.</p> <p>Objective 2: Demonstrate the ability to assemble a spill response organization utilizing Incident Command System (ICS) principles through execution of an Assignment List (ICS 201) and implementation of on-site incident management and tactical operations.</p> <p>Objective 3: Demonstrate the ability to effectively communicate between multiple local, state, and federal agencies including fire departments, police departments, harbormasters, and other state and federal first responders using VHF communications.</p>
Threat or Hazard	Discharge of oil into a navigable waterway
Scenario	An oil spill has occurred that threatens Buzzards Bay in the vicinity of Long Island and West Island. The Fairhaven and Acushnet Fire Departments and Harbormaster staffs will utilize GRP BB-10 to deploy protective booming to protect sensitive resources in Buzzards Bay near Long Island.
Sponsor	Massachusetts Department of Environmental Protection (MassDEP).
Participating Organizations	<p>Participating organizations included:</p> <ul style="list-style-type: none">• Fairhaven Fire Department (FFD)• Fairhaven Harbormaster (FHM)• Acushnet Fire Department (AFD)• Massachusetts Department of Environmental Protection (MassDEP)



- U.S. Coast Guard Sector Southeast New England (USCG)
- Moran Environmental Recovery (MER)
- Nuka Research and Planning Group, LLC (Nuka Research)

Note: See Appendix B for participant count



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Fairhaven Fire Department "Marine 25" uses a trip line to position an anchor and secure diversion boom in place.



Photo courtesy of Nuka Research & Planning Group

Exercise participants conduct an operational and safety briefing prior to commencing the exercise.



Photo courtesy of Fairhaven Fire Department



Figure 1. West Island Causeway GRP (BH-12)

ANALYSIS OF CORE CAPABILITIES

Aligning exercise objectives and core capabilities provides a consistent taxonomy for evaluation that transcends individual exercises to support preparedness reporting and trend analysis. Table 1 includes the exercise objectives, aligned core capabilities, and performance ratings for each core capability as observed during the exercise and determined by the evaluation team. Table 2 includes compiled data from the Exercise Evaluation Guide (EEG) including the organizational capability targets, associated critical tasks, and observations as observed during the exercise and determined by the evaluation team.

Objective	Core Capability	Performed without Challenges (P)	Performed with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Demonstrate the ability to deploy oil spill equipment from one or more MassDEP pre-positioned oil spill response trailers utilizing common Geographic Response Plan (GRP) tactics.	Environmental Response/ Health and Safety	P			
Demonstrate the ability to assemble a spill response organization utilizing Incident Command System (ICS) principles through execution of an Incident Briefing (ICS 201) and implementation of on-site incident management and tactical operations.	Operational Coordination	P			
Demonstrate the ability to effectively communicate between multiple local, state, and federal agencies including fire, police and harbormaster departments using VHF communications	Operational Communications	P			
<p>Ratings Definitions:</p> <ul style="list-style-type: none"> Performed without Challenges (P): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. Performed with Some Challenges (S): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified. Performed with Major Challenges (M): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; contributed to additional health and/or safety risks for the public or for emergency workers; and/or was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws. Unable to be Performed (U): The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s). 					

Table 1. Summary of Core Capability Performance

Core Capability	Organizational Capability Target	Associated Critical Tasks	Observation Notes
<p>Environmental Response/ Health and Safety</p>	<p>Overview of Response Equipment</p>	<ul style="list-style-type: none"> • Access Mass DEP Trailer • Identify boom and sorbents • Connect boom together • Connect towing bridle to boom • Connect components of anchor system together 	<ul style="list-style-type: none"> • Performed without Challenges (P) • All equipment was readily available in both trailers. The 12-inch boom in the Fairhaven trailer appeared to be at the end of its service life and had gaps in flotation that limited its effectiveness and allowed surrogate (peat moss) to splash over the boom. Recommendation: <u>Replace the 12-inch boom in the Fairhaven trailer that was ineffective in containing the surrogate.</u> • There was additional sorbent boom in the Fairhaven trailer well in excess of the standard allotted inventory. Given the large amount of use the trailer experiences for fuel spills, it certainly makes sense to leave it there. In addition, it appears that there is more use of the Fairhaven trailer than is currently documented. Recommendation: <u>Follow up with the Fairhaven FD to document how many times they have used the trailer and its equipment to respond to oil spills and mystery sheens and make sure those circumstances match up with reported activities.</u>

	<p>Basic Booming Operations</p>	<ul style="list-style-type: none"> • Transport and tow boom. • Anchoring and Connecting boom to shore • <i>Safe</i> vessel and crew operations. (Refer to ICS-208) 	<ul style="list-style-type: none"> • Performed without Challenges (P) • All operations conducted in a safe manner. • The shore team did an outstanding job of faking the boom out on the shore and deploying it into the water. • The shore team did an excellent job of setting a shore anchor and securing the boom. As the tide came in, the shore team showed outstanding initiative by shifting the boom from the shore anchor to a large pile above the high tide mark and well suited for the task of securing the boom. • The shore team effectively accomplished boom recovery and decontamination. They showed great teamwork in decontaminating the boom and loading it into the trailer on the boat ramp. • Safety Officer did an outstanding job of ensuring lifejackets were worn at all times and ensuring safe booming operations. • Eric Arruda and Michael Leger (Acushnet FD) provided a classroom lecture and a field demonstration for the use of a surf caster and drone to transfer a messenger¹ line across a narrow body of water without using a boat. This method allows a more rapid deployment of boom and also allows for deployment of boom across a water body that is too shallow for a boat to operate in. Best Practice: <u>Integrate these tactics, techniques and procedures into the next revision of the tactics guide. This update may need to wait for development of policy to ensure compliance with current and anticipated future FAA regulations for Unmanned Aircraft Systems.</u>
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¹ A messenger line is a light line used to connect to and haul a heavier line (as between ships) or, in this case of the demonstrated method, haul a slightly heavier boom tending line across a waterbody.

	<p>Implement Tactics in GRP</p>	<p>Diversion Boom</p>	<ul style="list-style-type: none"> • Performed Without Challenges (P) • Due to a strong northeasterly wind, the DV-01 GRP tactic was not tested as depicted. Instead, a modified ebb tide diversion tactic was deployed in the same general location since, despite a flood tide, the wind would be the primary element impacting the flow of the deployed surrogate. To accommodate these environmental conditions, 300 ft of boom was deployed in a northeast/southeast configuration from the shoreline immediately adjacent to the Hoppe's Landing boat ramp and successfully served to demonstrate the principal of diversion booming to participants. <u>This configuration will not replace the current DV-01 tactic and will not be added as an alternative ebb tide strategy as it was not configured (or tested) to serve as one.</u> • Strong winds drove the surrogate along the length of the boom and the surrogate ended up collecting at the anticipated shore side recovery location. • The crew of Acushnet FD "Marine 1" was able to tow 300 feet of boom offshore but struggled to set an anchor due to the lack of horsepower. Once offshore, the anchor was transferred to Fairhaven FD Marine 25 for deployment. • The use of trip lines allowed for easy adjustment of the anchor for the diversion booming tactic. • The lack of a cleat on the aft end of Marine 1 made towing the boom from the stern impossible. Towing boom from the stern is the proscribed method when towing for any distance other than maneuvering to prevent engine damage. Instead, Marine 1 skillfully towed the boom from a cleat on the bow with the tag line to the boom travelling under the boat. This configuration was made possible due to a prop shroud keeping the line out of the outboard engine propeller. This configuration required constant tension on the tag line, which is challenging and not always possible. Leaving slack in the line could potentially result in a fouled prop. Recommendation: <u>Acushnet FD replace their aging skiff with a newer vessel that can tow a line from the stern.</u> • Once the boom was transferred to Fairhaven FD Marine 25, the boom was easily towed into position. The crew on Marine 25 struggled a bit with the anchor system and tag line configuration but quickly solved the problem and proceeded with positioning the anchor in the intended position. Student feedback from one of the boat crew noted that having an instructor on the boat would have been helpful. Recommendation: <u>An instructor should deploy with the vessels deploying anchors when practicable.</u>
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<p>Operational Coordination</p>	<p>Execute An Assignment List (ICS 201)</p>	<ul style="list-style-type: none"> • Assignments in ICS 201 are followed and on-scene adjustments. • Participants demonstrate command and control of exercise 	<ul style="list-style-type: none"> • Performed without Challenges (P) • IC effectively controlled exercise. Strike teams were well organized and effectively carried out assigned tasks. • Due to weather conditions approaching small craft advisory status, the IC made an excellent decision early on to focus exclusively on the diversion booming tactic, affording all boat crews the opportunity to practice it in lieu of attempting a more challenging, and less safe containment booming tactics at the pier or around vessel on a mooring. • IC maintained constant awareness of all assets under his direction and skillfully shifted the safety vessel responsibilities seamlessly as each boat took turns towing boom into place.
<p>Operational Communications</p>	<p>Effectively Communicate Using VHF equipment</p>	<ul style="list-style-type: none"> • Create Communications Plan • Communicate with other participants using organic VHF equipment 	<ul style="list-style-type: none"> • Performed without Challenges (P) • VHF and voice communications were outstanding. There appeared to be enough marine radios for all participants and voice communications were effectively used as well when appropriate.

Table 2. Summary of Organizational Capability Targets and Associated Critical Tasks

The following sections provide an overview of the performance related to each exercise objective and associated core capability, highlighting strengths and areas for improvement.

Objective 1: Demonstrate the ability to deploy oil spill equipment from one or more MassDEP pre-positioned oil spill response trailers utilizing common Geographic Response Plan (GRP) tactics

The strengths and areas for improvement for each core capability aligned to this objective are described in this section.

Core Capability 1: Environmental Response/Health and Safety

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: Exercise participants from Acushnet and Fairhaven, along with MassDEP, Nuka Research and Moran Environmental worked well together to complete assigned tasks.

Strength 2: The use of stations during the trailer demonstration was effective in facilitating increased student participation during the trailer equipment demonstration.

Strength 3: All vessels did an excellent job of towing sections of boom and setting anchors. Shore teams were also outstanding in securing diversion boom with a shore anchor at first and when the tide came in, they shifted to a pile on the shore.

Strength 4: The Incident Commander did an outstanding job of modifying the diversion booming tactic by factoring in weather conditions so that it effectively moved surrogate along the boom toward a designated shore side recovery location.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Replace the 12-inch boom in the Fairhaven trailer that was ineffective in containing the surrogate.

Reference: Massachusetts GRP Tactics Guide

Analysis: All equipment was readily available in both trailers. The 12-inch boom in the Fairhaven trailer appeared to be at the end of its service life and had gaps in flotation that limited its effectiveness and allowed surrogate (peat moss) to splash over the boom.

Area for Improvement 2: Follow up with the Fairhaven FD to document how many times they have used the trailer and its equipment to respond to oil spills and mystery sheens and make sure those circumstances match up with reported activities.

Reference: N/A

Analysis: There was additional sorbent boom in the Fairhaven trailer well in excess of the standard allotted inventory. Given the large amount of use the trailer experiences for fuel spills, it certainly makes sense to leave it there. In addition, it appears that there is more use of the Fairhaven trailer than is currently documented.

Area for Improvement 3: Integrate tactics, techniques and procedures for using a drone and surf caster as demonstrated in this exercise into the next revision of the tactics guide.

Reference: N/A

Analysis: Eric Arruda and Michael Leger (Acushnet FD) provided a classroom lecture and a field demonstration for the use of a surf caster and drone to transfer a messenger line across a narrow body of water without using a boat. This method allows a more rapid deployment of boom and also allows for deployment of boom across a water body that is too shallow for a boat to operate in. An update to the Tactics Guide may need to wait for development of policy to ensure compliance with current and anticipated future FAA regulations for Unmanned Aircraft Systems.

Area for Improvement 4: Acushnet FD replace their aging skiff with a newer vessel that can tow a line from the stern.

Reference: Massachusetts GRP Tactics Guide

Analysis: The lack of a cleat on the aft end of Marine 1 made towing the boom from the stern impossible. Towing boom from the stern is the proscribed method when towing for any distance other than maneuvering to prevent engine damage. Instead, Marine 1 skillfully towed the boom from a cleat on the bow with the tag line to the boom travelling under the boat. This configuration was made possible due to a prop shroud keeping the line out of the outboard engine propeller. This configuration required constant tension on the tag line, which is challenging and not always possible, leaving slack in the line could potentially result in a fouled prop.

Area for Improvement 5: An instructor should deploy with the vessels deploying anchors when practicable.

Reference: Massachusetts GRP Tactics Guide

Analysis: Once the boom was transferred to Fairhaven FD Marine 25, the boom was easily towed into position. The crew on Marine 25 struggled a bit with the anchor system and tag line configuration but quickly solved the problem and proceeded with positioning the anchor in the intended position. Student feedback from one of the boat crew noted that having an instructor on the boat would have been helpful.

Objective 2: Demonstrate the ability to assemble a spill response organization utilizing Incident Command System (ICS) principles through development and execution of an Incident Briefing (ICS 201) and implementation of on-site incident management and tactical operations.

The strengths and areas for improvement for each core capability aligned to this objective are described in this section.

Core Capability 2: Operational Coordination

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: The Incident Commander effectively controlled exercise. Strike teams were well organized and effectively carried out assigned tasks.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: None

Reference: N/A

Analysis: N/A.

Objective 3: Demonstrate the ability to effectively communicate between multiple local, state, and federal agencies including fire departments, police departments, harbor masters, and other state and federal first responders using VHF communications

The strengths and areas for improvement for each core capability aligned to this objective are described in this section.

Core Capability 3: Operational Communications

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: The communications plan was followed as designed in the final planning meeting. All participants used the identified frequencies or voice communications when appropriate for exercise communications.

Strength 2: All exercise participants showed great teamwork in distributing radios to all teams to enable all communications to be on Channel 17.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: None

Reference: US Coast Guard VHF Channels (<https://www.navcen.uscg.gov/?pageName=mtvhf>).

Analysis: N/A

Shore team prepares the boom for deployment and builds a shore anchor.



Photo courtesy of Nuka Research & Planning Group

An oil spill surrogate (peat moss) is used to test the effectiveness of the boom tactic.



Photo courtesy of Beth David

Acushnet Fire Fighters demonstrate how to use a drone to transfer a messenger line.



Photo courtesy of Nuka Research & Planning Group

Vessels from the Acushnet Fire Department and Fairhaven Fire and Harbormaster Departments participate in the GRP Exercise.



Photo courtesy of Fairhaven Fire Department

APPENDIX A: IMPROVEMENT PLAN

This IP has been developed specifically for the towns of Acushnet and Fairhaven following the MassDEP GRP Exercise conducted on October 12th, 2017.

Core Capability	Issue/Area for Improvement	Corrective Action	Capability Element ²	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Core Capability 1: Environmental Response/Health and Safety	Fairhaven Trailer Boom.	Replace the 12-inch boom in the Fairhaven trailer.	Equipment	MER	John Duponte	11/15/17	2/15/17
	Trailer Use Reporting	Follow up with the Fairhaven FD to document actual trailer use.	Planning	Nuka Research	Mike Popovich	11/15/17	2/15/17
	Drone/Surf Caster Tactics	Integrate tactics, techniques and procedures for using a drone and surf caster into the tactics guide.	Planning	Nuka Research	Mike Popovich	11/15/17	2/15/17
	Acushnet FD Vessel Upgrade	Acushnet FD should replace their aging skiff with a newer vessel that can tow a line from the stern.	Equipment	Acushnet FD	TBD	TBD	TBD
	Location of Instructors During Exercise	An instructor should deploy with the vessels deploying anchors when practicable.	Exercise	Nuka Research/MER	Mike Popovich/John Duponte	10/20/17	12/15/17
Core Capability 2: Operational Coordination	None	N/A	N/A	N/A	N/A	N/A	N/A
Core Capability 3: Operational Communications	None	N/A	N/A	N/A	N/A	N/A	N/A

² Capability Elements are: Planning, Organization, Equipment, Training, or Exercise.

APPENDIX B: EXERCISE PARTICIPANTS

Participating Organizations	
City of Fairhaven, MA	Participant Count
Fairhaven Fire Department	11
Fairhaven Harbormaster	3
City of Acushnet, MA	
Acushnet Fire Department	10
TOWN PARTICIPANTS	24
Federal	
United States Coast Guard (USCG)	4
State	
Massachusetts Department of Environmental Protection (MassDEP)	2
Nuka Research and Planning Group, LLC (contractor for MassDEP)	3
Moran Environmental Recovery (contractor for MassDEP)	2
TOTAL	35

24% of first responders reported having previous GRP exercise experience.

APPENDIX C: EXERCISE EVALUATION FORM

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**MassDEP
Geographic Response Plan (GRP)
Exercise and Testing Program**

Participant Feedback Form

1 Strongly disagree	2 Mildly disagree	3 Neutral	4 Mildly agree	5 Strongly agree
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Please use the above rating scale to answer the questions for each of the following topics.

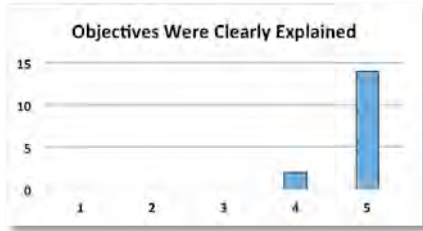
The objectives were clearly explained and the exercise met those objectives.	1 2 3 4 5
Comments:	
The material appropriately challenged me and the pace of instruction was correct.	1 2 3 4 5
Comments:	
The instructor(s) did an excellent job.	1 2 3 4 5
Comments:	
I found the classroom to be a comfortable learning environment.	1 2 3 4 5
Comments:	
I feel more prepared to respond to an oil spill than I did before this exercise.	1 2 3 4 5
Comments:	
The best thing about this training was _____.	
This training could have been improved by _____.	

Please use the back of the sheet if you need more room for comments.

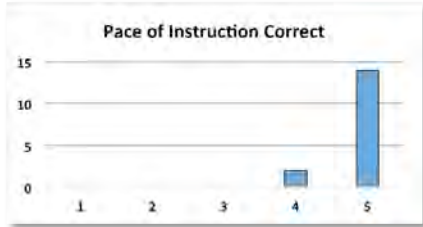
(Rev 2016)



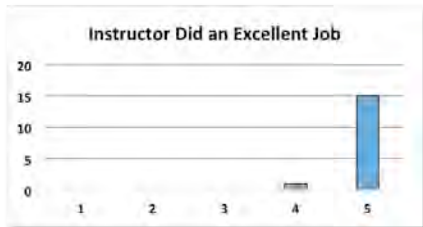
Student Feedback Summary



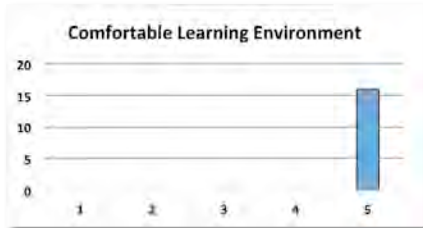
Comments: "during exercise mix experienced personnel with less experienced" "everything was explained at the beginning of class" "classroom was informative" "



Comments: "the material was presented thoroughly"



Comments: "very informational" "the explanation of the program was very clear"



Comments: "great place"



Comments: "practical could have been better if weather cooperated" "practical training was very good experience" "doing different drill that we do. There is always improvement" "very thorough and informative" "the weather was a good challenge"

The best thing about this training was... "interoperability between multiple agencies with the same goal" "hands on" "working with other towns" "Both classroom + Practical" "getting to use the equipment multi agency participation" "learned new tactics" "hands on activity" "literally had no idea what I was doing, but now I do" "hands on" "live hands on portion" "learning" "working with another department" Hands on/being out on water"

This training could be improved by.... "yearly training" "n/a" "Showing crews how to properly attach bridles, anchor/line + release line previously to practical" "having an instructor on the boat to aid in any issues or questions" "couldn't think of anything." "less wind"