



# Geographic Response Strategy Exercise Series – Essex/Ipswich

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## After-Action Report/Improvement Plan

September 22, 2021

The After-Action Report/Improvement Plan (AAR/IP) aligns exercise objectives with preparedness doctrine 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

<b>Exercise Name</b>	2021 Essex/Ipswich GRS Exercise
<b>Exercise Dates</b>	September 22, 2021
<b>Scope</b>	This is a full-scale exercise, planned for approximately six hours in Ipswich, MA and upon the waters of Plum Island Sound. Exercise play is limited to Plum Island Sound in the vicinity of Ipswich Yacht Club (IYC) and the adjacent shoreline.
<b>Focus Area(s)</b>	Prevention, Protection, Response
<b>Capabilities</b>	Environmental Response/Health and Safety, Operational Coordination, Operational Communications.
<b>Objectives</b>	<p><b>Objective 1:</b> Demonstrate the ability to deploy oil spill equipment from one or more MassDEP pre-positioned oil spill response trailers utilizing common Geographic Response Strategy (GRS) tactics.</p> <p><b>Objective 2:</b> 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.</p> <p><b>Objective 3:</b> 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 and UHF communications.</p>
<b>Threat or Hazard</b>	Discharge of oil into a navigable waterway
<b>Scenario</b>	An oil spill has occurred that threatens Plum Island Sound. The Essex and Ipswich Fire Departments and Harbormasters will utilize the Plum Island Sound GRS (NS-10) to protect sensitive resources in Plum Island Sound and the surrounding area.
<b>Sponsor</b>	Massachusetts Department of Environmental Protection (MassDEP)
<b>Participating Organizations</b>	<p>Participating organizations will include:</p> <ul style="list-style-type: none"> <li>• Ipswich Fire Department (IFD)</li> <li>• Ipswich Police Department/Harbormaster (IPD)</li> <li>• Essex Fire Department (EFD)</li> <li>• Essex Harbormaster (EHM)</li> <li>• MassDEP</li> <li>• U.S. Coast Guard Sector Boston</li> <li>• Moran Environmental Recovery (MER)</li> <li>• Nuka Research</li> </ul> <p><i>Note: See Appendix B for participant count</i></p>
<b>Point of Contact</b>	<p>Julie Hutcheson, Marine Oil Spill Program Coordinator  Massachusetts Department of Environmental Protection  Oil Spill Prevention and Response Program  1 Winter St.  Boston, MA 02108  (617) 366-7424  julie.hutcheson@mass.gov</p>

MER personnel provide training on use of sorbents and culvert blocking

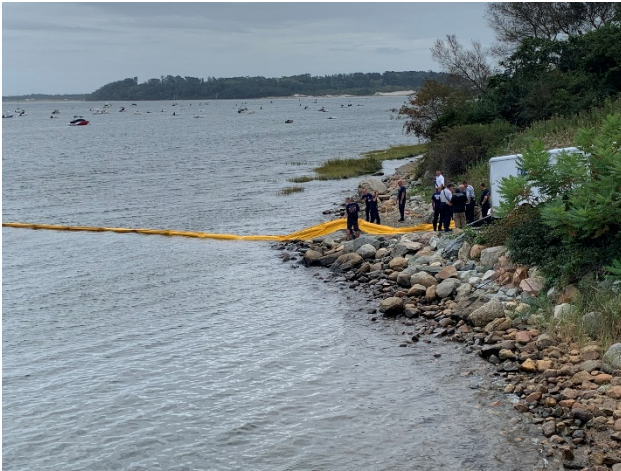


The Ipswich Fire Department Incident Commander reviews the operations plan with all participants



Photos courtesy of Nuka Research & Planning Group

Shoreside personnel assist with deployment of boom from MassDEP oil spill response trailer



Essex Harbormaster deploys boom to implement Diversion strategy at boat ramp



Photos courtesy of Nuka Research & Planning Group

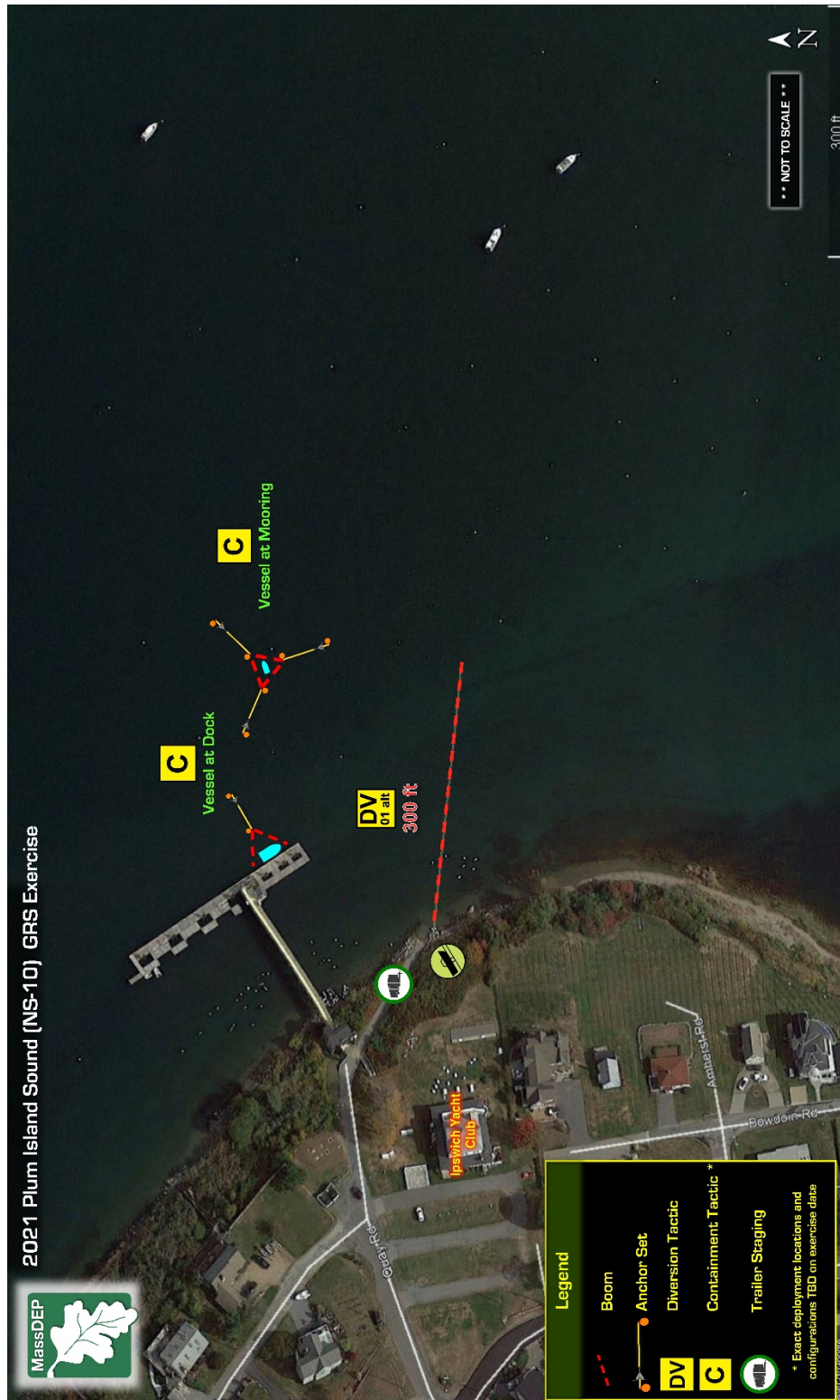


Figure 1. Exercise Tactics Map

## ANALYSIS OF CAPABILITIES

Aligning exercise objectives and 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 capabilities, and performance ratings for each capability as observed during the exercise and determined by the evaluation team.

Objective	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 Strategy (GRS) tactics.	Environmental Response/Health and Safety		S		
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 and UHF communications	Operational Communications	P			
<p>Ratings Definitions:</p> <p><b>Performed without Challenges (P):</b> 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.</p> <p><b>Performed with Some Challenges (S):</b> 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.</p> <p><b>Performed with Major Challenges (M):</b> 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.</p> <p><b>Unable to be Performed (U):</b> The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s).</p>					

**Table 1. Summary of Core Capability Performance**

Core Capability	Organizational Capability Target	Associated Critical Tasks	Exercise Observations
<p><b>Environmental Response/ Health and Safety</b></p>	<p><b>Overview of Response Equipment</b></p>	<ul style="list-style-type: none"> <li>• Access Mass DEP Trailer</li> <li>• Identify boom and sorbents</li> <li>• Connect boom together</li> <li>• Connect towing bridle to boom</li> <li>• Connect components of marine and shoreside anchor systems together</li> </ul>	<ul style="list-style-type: none"> <li>• All personnel participated in and were fully engaged in four hands-on training stations including, 1) boom connection and familiarity, 2) marine anchor system set-up, 3) shoreside anchor system set-up, 4) culvert blocking and sorbent material familiarity.</li> </ul>
	<p><b>Basic Booming Operations</b></p>	<ul style="list-style-type: none"> <li>• Transfer boom and equipment between shore and vessel</li> <li>• Transport and tow boom</li> <li>• Anchoring and connecting boom to shore</li> <li>• Deployment of marine anchor systems</li> <li>• Safe vessel and crew operations (Refer to ICS-208)</li> </ul>	<ul style="list-style-type: none"> <li>• Removal from trailer and staging of boom at IYC boat ramp was conducted efficiently despite the challenging location. The IYC ramp is long, steep and narrow and the Ipswich Fire Department personnel expertly navigated the ramp, backing the trailer close to the waterline.</li> <li>• Shore teams did an excellent job setting up a shoreside anchor point using the rebar supplied in the trailer. A shoreside anchor point was set-up twice by two different teams as outlined below.</li> <li>• During the first DV deployment, the IPD 25 ft Safeboat (MARINE 2/M2) experienced some difficulty towing the boom into position due to the wind and strong current and as a result, the forward-most section of rebar making up the shoreside anchor point bent significantly. The anchor point as a whole did hold without failure.</li> </ul>
	<p><b>Implement Tactics in GRS</b></p>	<ul style="list-style-type: none"> <li>• Deploy containment around a vessel at a mooring</li> <li>• Deploy diversion boom (DV)</li> </ul>	<ul style="list-style-type: none"> <li>• The first deployment of the DV strategy was conducted by the IPD 25 ft Safeboat (MARINE 2/M2) using a stern tow. While M2 successfully deployed the DV strategy, and as noted above, they did experience some difficulty towing the boom into position due to the wind and strong current. Additionally, the boom had initially been secured to the vessel (following pass-off from shore to the vessel using a tending line instead of the actual anchor or trip line which had to be switched out before deploying and caused the vessel to drift down current and away from the deployment location. Once reconfigured, M2 crew tied secured the trip line and towed with anchor</li> </ul>

Core Capability	Organizational Capability Target	Associated Critical Tasks	Exercise Observations
			<p>line played out as per classroom recommendation.</p> <ul style="list-style-type: none"> <li>• Surrogate was distributed following this first deployment to ensure a successful test could be completed prior to tide shift. Surrogate was deployed in such a way to allow some surrogate to drift past the boom segment to observe how and where the predominant current would carry it. Some surrogate was contained and captured by the boom segment though none of it reached the shoreline prior to demobilization. Despite this, and based on observations by exercise participants, the current strategy will likely be effective though MassDEP should consider lengthening this strategy to provide a greater opportunity for diversion and shoreside recovery.</li> <li>• The second deployment of the DV strategy was completed by the Essex Harbormaster (MARINE 3/M3) with personnel from IPD/M2 resetting the shoreside anchor point. M3 used a bow tow to tow and set the DV boom segment and appeared to have an easier time of it than M2.</li> <li>• IFD (MARINE 1/M1) then made preparations to attempt a third set of the DV strategy by first recovering the DV anchor and towing the boom back to shore so that they could then attempt a third deployment. As M1 towed the moob to shore, the anchor line at the shoreside end of the boom came untied from the bridle causing the boom segment to drift away from shore. The decision was made to have M1 complete the tow back to shore, demobilize, rinse, and repack.</li> </ul>
Operational Coordination	Create and Execute an Assignment List (ICS 201)	<ul style="list-style-type: none"> <li>• Fill out ICS 201</li> <li>• Assignments in ICS 201 are followed and on-scene adjustments were made as necessary</li> <li>• Participants demonstrate command and control of exercise</li> </ul>	<ul style="list-style-type: none"> <li>• <b>The Incident Commander proactively coordinated three separate deployments of the DV strategy and two shoreside anchor set-up evolutions, rotating each vessel and shoreside strike team through each evolution to maximize the training benefit.</b></li> <li>• Shoreside and on-water strike teams generally coordinated their</li> </ul>

Core Capability	Organizational Capability Target	Associated Critical Tasks	Exercise Observations
			activities well which resulted in successful deployments of the DV strategy and well-coordinated shoreside support activity.
<b>Operational Communications</b>	<b>Effectively Communicate Using VHF equipment</b>	<ul style="list-style-type: none"> <li>• Create Communications Plan</li> <li>• Communicate with other participants using organic UHF equipment</li> </ul>	<ul style="list-style-type: none"> <li>• The IC designated Ipswich Fire Direct as the frequency to be used for the deployment</li> <li>• While some participants did indicate (during the hot wash) that some difficulties were encountered, both radio and voice communications were generally clear, concise, and timely.</li> </ul>

**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 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 (GRS) tactics

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

### Capability 1: Environmental Response/Health and Safety

#### Strengths

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

**Strength 1:** Excellent teamwork demonstrated by all vessel and shoreside strike teams as well as generally between Ipswich and Essex FD and Harbormaster personnel.

**Strength 2:** Despite their relative unfamiliarity with carrying out these spill response related tasks, all participants did an outstanding job independently resolving problems when they arose with little oversight from the IC and/or exercise controllers.

**Strength 3:** The IC planned for and carried out three separate deployments of the DV strategy and set-up of the shoreside anchor point. This repetition allowed more opportunity for all participants to carry out and become more proficient in carrying out multiple critical tasks.

#### Areas for Improvement

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

**Area for Improvement 1:** Shore-to-vessel/vessel-to-shore boom transfer procedures

**Reference:** MassDEP GRS Exercise Training Curriculum

**Analysis:** In some cases, when boom sections were being transferred from shore to the towing vessels, improper techniques were being utilized to secure and tow boom sections. In some cases, heaving lines (which are not rated for towing and only intended as a means to transfer a tending or anchor line to a vessel) were tied-off to the vessel and used for towing. This is considered to be an instructional issue and will be resolved by adding to the existing curriculum related to towing and incorporating more specific training on the proper use of heaving lines as well as more detailed general instruction on passing boom and equipment from shore to vessel (and vice-versa) using tag and heaving lines as well as preparing boom for towing and anchoring once a vessel has received boom from shore.

**Area for Improvement 2:** Towing and anchoring options in current and wind

**Reference:** MassDEP GRS Exercise Training Curriculum

**Analysis:** As in many past exercises, some vessel encountered difficulty in vessel maneuvering and boom towing due to high current and wind. During this exercise, one vessel towed the boom segment from the bow while another towed from the stern. It was noted that, at least in this case, that towing from the bow was it was relatively easier when compared to towing from the stern. In many cases, difficulty in towing and maneuvering boom segments is unavoidable and inherent to oil spill response operations but efforts will be made to enhance classroom and field instruction to emphasize the importance of selecting the appropriate towing method based on conditions, vessel, type and operator experience and in reevaluating and reconfiguring towing set-up during a deployment if conditions and circumstances dictate.

**Area for Improvement 3:** Modification to Geographic Response Strategy (GRS)**Reference:** Plum Island Sound Entrance (NS-10) GRS**Analysis:** While the current DV-01 alt strategy depicted in the NS-10 GRS will most likely be somewhat effective at diverting oil and minimizing impact to Plum Island Sound, and based on observations by exercise participants, MassDEP should consider lengthening this strategy to increase/maximize oil encounter rate.**Objective 2: 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**

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

**Capability 2: Operational Coordination****Strengths**

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

**Strength 1:** The Incident Commander proactively coordinated three separate deployments of the DV strategy and two shoreside anchor set-up evolutions, rotating each vessel and shoreside strike team through each evolution to maximize the training benefit.**Strength 2:** Shoreside and on-water strike teams generally coordinated their activities well which resulted in successful deployments of the DV strategy and well-coordinated shoreside support activity.**Areas for Improvement**

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

**Area for Improvement 1:** N/A**Reference:** N/A**Analysis:** N/A**Objective 3: Demonstrate the ability to effectively communicate between multiple local, state, and federal agencies including fire, police and harbormaster departments using VHF and UHF communications**

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

## Capability 3: Operational Communications

### Strengths

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

**Strength 1:** While some participants did indicate (during the hot wash) that some difficulties were encountered, both radio and voice communications were generally clear, concise, and timely.

### Areas for Improvement

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

**Area for Improvement 1:** N/A

**Reference:** N/A

**Analysis:** N/A

Ipswich PD prepares to receive and deploy diversion boom



Ipswich PD takes diversion boom in tow



Ipswich PD completes diversion boom deployment



Diversion boom strategy successfully deployed at IYC



Photos courtesy of Nuka Research & Planning Group

## Appendix A: IMPROVEMENT PLAN

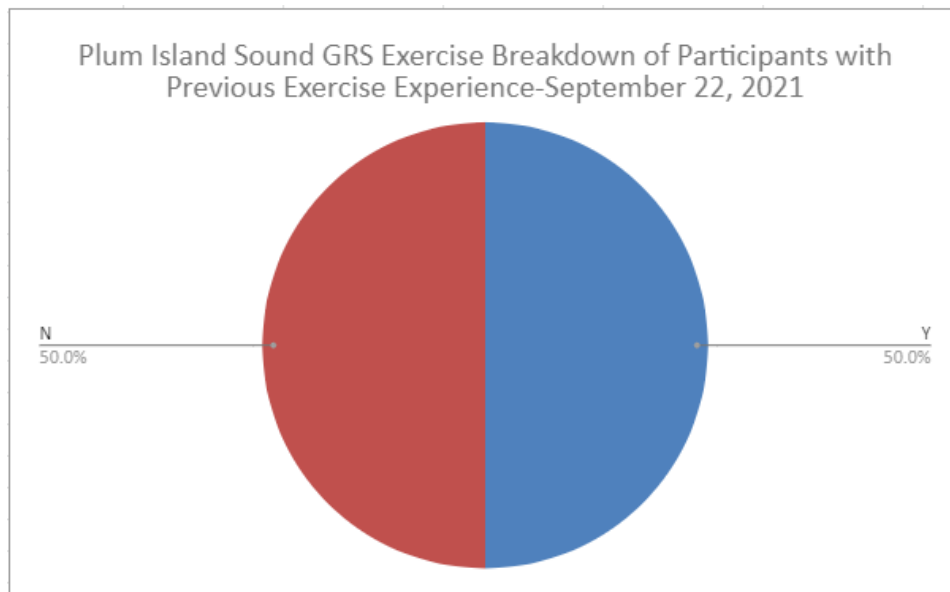
This IP is developed specifically for MassDEP, MER, Nuka Research and the Towns of Ipswich and Essex as a result of the MassDEP Geographic Response Strategy exercise conducted on September 22, 2021.

Capability	Issue/Area for Improvement	Corrective Action	Capability Element <sup>1</sup>	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Capability 1: Environmental Response/Health & Safety	1. Shore-to-vessel/vessel-to-shore boom transfer procedures	Enhancing existing curriculum related to towing, use of heaving and tag lines and preparing boom for towing and anchoring once a vessel has received boom from shore.	Training	Nuka Research	M. Popovich	10/01/21	03/01/22
Capability 1: Environmental Response/Health & Safety	2. Towing and anchoring options in current and wind	Enhance classroom and field instruction to emphasize the importance of selecting the appropriate towing method	Training	Nuka Research	M. Popovich	10/01/21	03/01/22
Capability 1: Environmental Response/Health & Safety	2. Modification to Geographic Response Strategy (GRS)	Lengthen the NS-10 DV-01 alt strategy to increase/maximize oil encounter rate	Planning	Nuka Research	M. Popovich	10/01/21	03/01/22

<sup>1</sup> Capability Elements are: Planning, Organization, Equipment, Training, or Exercise


## APPENDIX B: PARTICIPANTS & RESOURCES

Participating Organizations	
Town of Ipswich, MA	Participant Count
Ipswich Fire Department	8
Ipswich Police Department/Harbormaster	6
<b>Town of Essex, MA</b>	
Essex Fire Department	5
Essex Harbormaster	3
<b>TOWN PARTICIPANTS</b>	<b>22</b>
<b>Federal</b>	
United States Coast Guard Sector Boston	3
<b>State</b>	
Massachusetts Department of Environmental Protection (MassDEP)	0
Nuka Research and Planning Group, LLC (contractor for MassDEP)	3
Moran Environmental Recovery (contractor for MassDEP)	2
<b>TOTAL</b>	<b>30</b>



Agency	Resource	Exercise Function
Ipswich Fire Department	14 ft Ribcraft (MARINE 1)	Safety vessel, boom towing/deployment
Ipswich Fire Department	MassDEP Oil Spill Response Trailer	Boom deployment
Ipswich Police Department	25 ft Safeboat (MARINE 2)	Safety vessel, boom towing/deployment
Essex Fire Department	MassDEP Oil Spill Response Trailer	Equipment demonstration and hands-on training
Essex Harbormaster	23 ft Parker (MARINE 3)	Safety vessel, boom towing/deployment

## APPENDIX C: PARTICIPANT FEEDBACK



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

**Participant Feedback Form**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Strongly disagree	Mildly disagree	Neutral	Mildly agree	Strongly agree

**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)


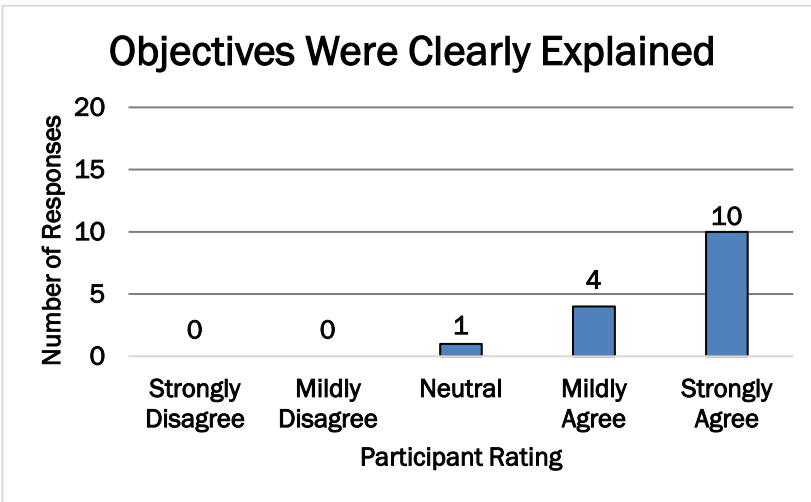


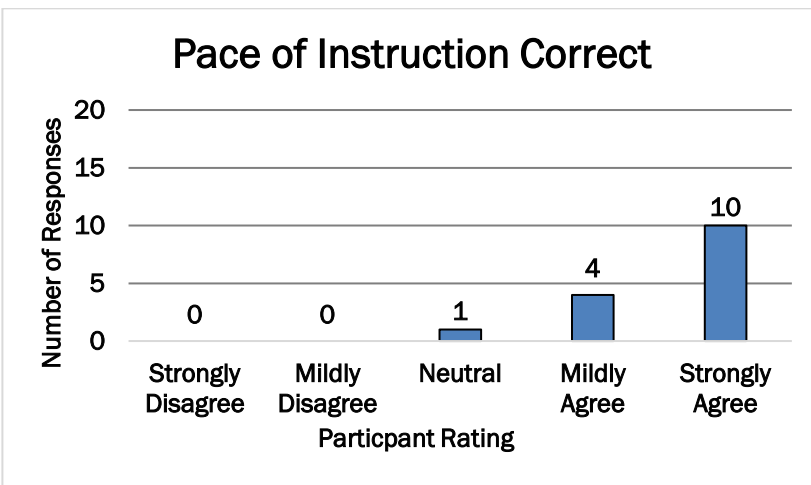
Figure 2. Participant Feedback Form



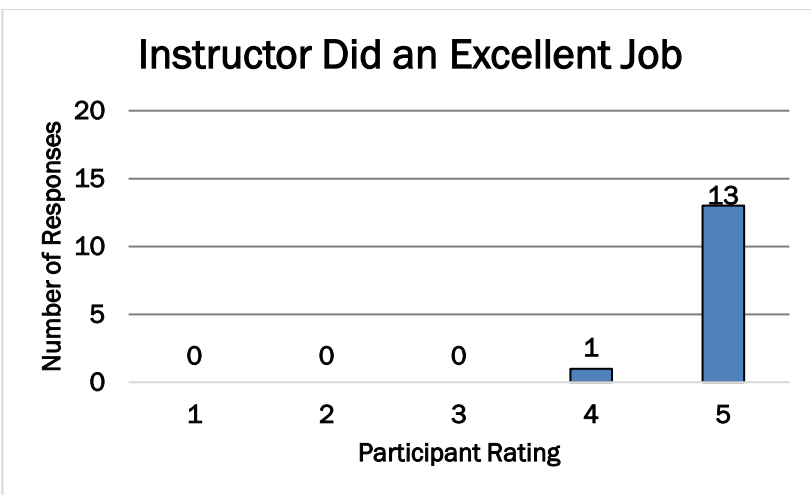
### Participant Feedback Summary



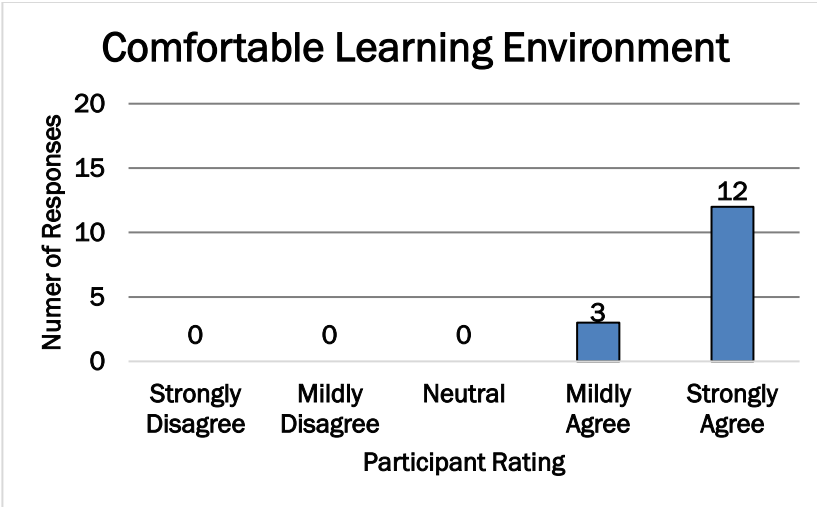
Comments: "Weren't able to practice containment"



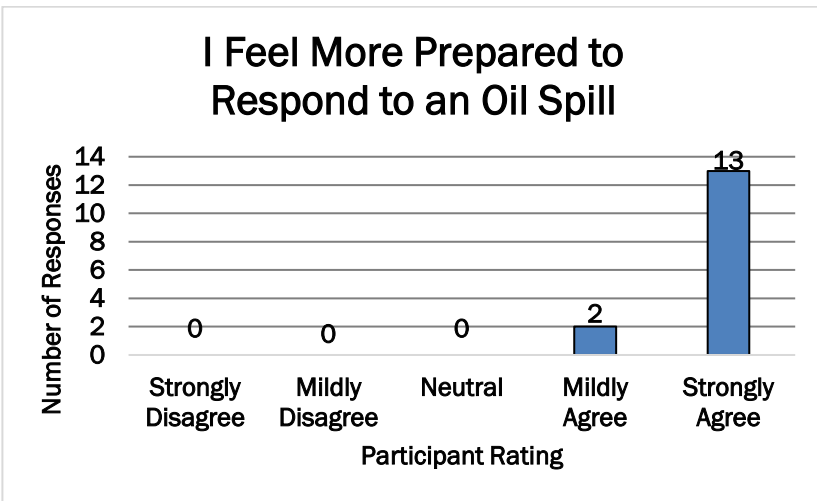
Comments: None.



Comments: None



**Comments:** "IBYC was very accommodating," "Hard to see projector"



**Comments:** "Trainers on vessels would be helpful,"

**The best thing about this training was...**"Networking," "Being on the water and hands on training," "The practical helped to connect the classroom portion with real experience," "On water training," "Hands on time was longer than classroom," "The hands on," "On the boat," "Great doing the live training and deploying the booms"

**This training could be improved by...**"Having an instructor on the boat," "Less wind," "Having an instructor on the boats," "I think it would have been helpful to have an instructor in the boat," "Working on team communication," "Having an instructor on the boat that was pulling out the boom," "More water time," "Great training"