

## WCMRC 2017 2,500 Tonne Equipment Deployment Exercise

### After Action Review

#### Overview

On the dates of June 6-7, 2017, WCMRC conducted its bi-annual Tier 3 equipment deployment exercise. The exercise was jointly designed, planned and conducted by WCMRC's Response Readiness and Operations groups, and simulated the response to a spill of approximately 2,500 tonnes of Bunker C fuel oil in the waters of Plumper Sound. The main design concept of the exercise was to develop a scenario in which the incident occurs at a rough midpoint between two of WCMRC's Operations Areas, and mobilize and conduct a coordinated combined response.

As described in the Participant Package developed for the exercise, the undertaking was broken into two days to maximize the amount of hours to be spent conducting response activities. As such, the mobilization to the incident was exercised on June 6, and the on-scene response activities of containment, recovery and protection were exercised on June 7.

As described in WCMRC's Oil Spill Response Plan (OSRP), the purpose of the exercise is to demonstrate and evaluate the effectiveness of the response capability, utilizing a defined scenario that includes notification, spill assignments, the deployment of a representative sample of WCMRC equipment, and may include spill management personnel for a managed response to a spill of up to 2,500 tonnes. As well as achieving proscribed objectives related to certification as defined in the OSRP, WCMRC's Exercise Program also serves to further the training of WCMRC and external responders, and identify areas within the Incident Command System, training programs and response procedures that can be improved upon.

The purpose of this After Action Review is to serve as an aid to evaluation and continuous improvement, by examining the actions taken to achieve the objectives and how they relate to the expected action as defined. Based on the results of this analysis as well as debrief discussions with various elements of the Incident Management Team, recommendations will be made to make capitalize on lessons learned, build upon successes and overcome challenges. An improvement plan is outlined below to detail how these lessons will be incorporated not only into future exercises and responses, but into WCMRC's day-to-day operations as a whole.

#### Exercise Objectives, Observations and Recommendations

WCMRC's Exercise Program is carried out over a three year period, and is fully described in Section 13 of the OSRP. This section has details regarding the objectives, response functions and goals to be exercised over the certification cycle.

For this particular exercise, WCMRC defined the following objectives, along with expected actions and evaluation criteria.

**Objective:** Evaluate the effectiveness of mobilizing a coordinated, combined response involving response assets and personnel from South Coast and Vancouver Island Operations Areas

**Expected Actions:**

- Primary Duty Officer will receive notification of activation, and will engage support from Secondary Duty Officer in order to mobilize cascading resources from other Operations Area

- Duty Officers will discuss situation and will formulate an initial plan to respond to the incident, including assets and personnel needed from both Operations Areas, initial response activities to be undertaken, support functions to be activated, and communication methods to be used
- Primary Duty Officer will record assets, personnel, activities (including departure/arrival and start/stop times) on the ICS-201 through the exercise

**Evaluation Criteria:**

- Primary Duty Officer will reach Secondary Duty Officer by phone within 10 minutes of receiving initial notification of activation
- Duty Officers will determine assets and personnel needed to respond to the incident
- Duty Officers will determine initial response activities to be undertaken, including containment, recovery and protection strategies
- Duty Officers will determine support functions to be activated, including Response Readiness Team members to assist in determining sensitive areas to be protected
- Duty Officers will determine communication methods to be used
- Primary Duty Officer, or another responder who is delegated the responsibility, will accurately capture and record information on assets, personnel and activities throughout the exercise
- Initial resources from both South Coast and Vancouver Island will arrive in Plumper Sound within 4 hours of initial notification and activation, and arrival times will be recorded for comparison and assessment

**Observation:** As part of the plan and design phase of the exercise, WCMRC conducted a drill, non-emergency call to the 24-hour emergency line to simulate and evaluate this component. A timeline was recorded on the ICS-201 as follows:

0605: Call received by Primary Duty Officer, initial information and 'quick hits' collected

0614-0618: Internal notification, escalation up to VI Area Manager / Director of Operations

0621: Coordination call to Secondary Duty Officer based in Vancouver to request support

0626: Simulate external notification to Transport Canada

0630: Primary Duty Officer and VI Area Manager coordinate to determine initial response, begin to activate resources

0640: Internal activation of Response Readiness and Logistics groups by Director of Operations to support with trajectory modelling, identification of sensitivities, activation of contractors and vessels-of-opportunity (VOO), identify staging areas and accommodations, activate aerial support; Internal activation of Safety, Information and Liaison Officers

0650: Call from SC Area Manager to coordinate initial SC assets to be mobilized

Throughout the activation simulation, and carrying on to the exercise conduct on June 7, information was recorded on the ICS-201 by the Primary Duty Officer, then by a scribe once the Duty Officer transitioned to the role of On-Water Recovery Group Supervisor.

During the mobilization phase on June 6, mobilization and arrival times at Plumper Sound were recorded on vessel logs; for exercise purposes, it is identified as an opportunity to have a centralized way to note and record these times for easier assessment, preferably using radio communications and the ICS-201.

**Recommendation:**

WCMRC should continue to implement activation and mobilization based objectives into exercises and deployments; along with internal coordination and activation based exercises, these are simple drills that can be conducted to train, test and improve the Duty Officer SOP.

**Objective:** Evaluate the effectiveness of simultaneous mobilization and deployment of assets focused towards the initial response activities of containment, recovery and protection

**Expected Actions:**

- Assigned response activities will be undertaken simultaneously as assets arrive on scene

- Assets will work to establish containment boom around the 'casualty'
- Assets will conduct on-water recovery of product
- Assets will work to implement protection booming in locations determined through Response Readiness Team support

**Evaluation Criteria:**

- Assets will commence and complete their assigned response activity once on scene, unless otherwise ordered by their direct superior
- Containment booming will be in place around the casualty within 2 hours of assigned resources arriving on scene
- On-water recovery activities will be initiated within 1 hour of assigned resources arriving on scene
- An initial protection booming strategy will be in place within 2 hours of assigned resources arriving on scene

**Observation:**

As part of defining the activities to be undertaken by response assets as they arrived on scene, WCMRC develop 13 assignments, in the form of ICS-204 documents, which were distributed to vessel crews, along with supporting documentation, as part of the morning briefing of the exercise. The ICS-204 forms detailed the nature of the specific assignment, the resources and personnel assigned to undertake it, supporting resources assigned, and defined the supervisor responsible for those assets and assignments under the span-of-control developed in the ICS-207 Organization Chart for the exercise.

In regards to the assignments and evaluation criteria the following was observed:

- Containment was achieved in approximately 2 hours with Kepner Boom deployed from the *GM Penman*, assisted by the *Burrard Cleaner No. 6*
- Skimming operations were commenced within ½ hour by the *MJ Green* and *Burrard Cleaner No. 9*, 1 ½ hours by the Current Buster Task Force, and within ½ hour by the *GM Penman* after containment booming activities were completed
- An initial protection booming strategy was deployed within 1 ½ hour by the Shoreline Protection Group, and an additional strategy was deployed in the next 1 ½ hour

Under the direction of the Recovery and Protection Branch Director (On-Water Ops), On-Water Recovery Group Supervisor and Shoreline Protection Group Supervisor, some assets were directed to other tasks and assignments in order to allow for the opportunity to undertake various functions during the exercise.

Key learnings from the conduct of this objective will be discussed in more detail below.

**Recommendation:**

WCMRC should continue to conduct exercises and training as joint design, planning and conduct efforts between operational areas where possible. As discussed below with regard to mobilization, there will be excellent opportunity for learnings and collaboration as the organization expands to include new response bases and assets. This will have important trickle-down effects on the development and testing of Geographic Response Plans and the initial response activities to be conducted, depending on which assets arrive on scene first.

**Objective:** Evaluate the effectiveness of mobilizing sufficient resources to meet Tier 3 2,500T response capacities to the scene within 18 hours (*NB: mobilization of some resources may only be simulated, however a representative sample of WCMRC equipment will be deployed*)

**Expected Actions:**

- Sufficient skimming capacity will be mobilized to the scene
- Sufficient storage capacity will be mobilized, or simulated to be mobilized to the scene
- Sufficient booming capacity will be mobilized, or simulated to be mobilized to the scene

**Evaluation Criteria:**

- At least 6.26 tonnes/hour of skimming capacity will be mobilized to the scene within 18 hours of activation
- At least 760 tonnes of storage capacity will be mobilized, or simulated to be mobilized to the scene within 18 hours of activation
- At least 8275 metres of boom will be mobilized, or simulated to be mobilized to the scene within 18 hours of activation
- Each mobile skimming asset mobilized will have a capability to conduct shuttle storage activities to help ensure continuous skimming activities can be maintained

**Observation:**

WCMRC mobilized, or simulated the mobilization of boom, skimming and storage capacity meeting the needs of Tier 3 requirements in the Primary Area of Response (PAR).

A summary of equipment capacity mobilized by WCMRC includes:

Boom: 5550M actual, 3932M simulated (9482M total)

Skimming: 169.4T/HR

Storage: 4246.3T

Equipment requirements for a Tier 3 (2500T) incident in the PAR:

Boom: 8275M

Skimming: 6.26T/HR

Storage: 760T

Two 40 tonne mini-barges and one 15.9 tonne mini-barge were mobilized to support skimming operations through shuttle storage, and a 4000 tonne response barge was mobilized to the immediate area to minimize transit time for transfers.

As part of the mobilization phase (June 6) of the exercise, all WCMRC resources reached the scene within the 18 hour requirement.

**Recommendation:**

WCMRC should continue to focus on mobilization during future exercises; capturing learnings regarding mobilization times to different areas in varying conditions or times of day will be especially important as the organization expands to include new response bases and assets.

**Objective:** Evaluate the effectiveness of spill response contractors in carrying out assignments as directed through demonstrating necessary certification and training documents

**Expected Actions:**

- Be able to demonstrate that contractors activated as part of simulated response have all necessary marine certifications and training to carry out assigned task

**Evaluation Criteria:**

- All necessary certification and training documents will be available for review

**Observation:** During the process of gathering training and certification records for participants in the exercise, it was noted that training records are not maintained in a standardized format between the Operations Areas. As such, it was discovered that there were some discrepancies in the records and certifications maintained for internal staff and contractors.

**Recommendation:**

As WCMRC brings a new training management system online prior to organizational expansion, due diligence should be taken to ensure that all necessary certifications are recorded, and that training records are adequately maintained.

**Objective:** Evaluate the effectiveness of establishing an on-water logistics Staging Area on a ramp barge

**Expected Actions:**

- Setup of the Staging Area will be guided according to a Logistics Staging Area Plan (LSAP) describing method for deployment on a ramp barge
- An equipment trailer will be mobilized to the Staging Area
- A boom trailer will be mobilized to the Staging Area
- A shoreline trailer will be mobilized to the Staging Area
- A staging area trailer will be mobilized to the Staging Area
- A food truck will be mobilized to support the response, and the Staging Area will be a hub to supply meals
- A drone contractor will be capable of operating from the Staging Area

**Evaluation Criteria:**

- An LSAP for deployment on a ramp barge will be developed and used for setup of the Staging Area
- An equipment trailer will be mobilized to the Staging Area
- A boom trailer will be mobilized to the Staging Area
- A shoreline trailer will be mobilized to the Staging Area
- A staging area trailer will be mobilized to the Staging Area
- A food truck will be mobilized to the support the response, and the Staging Area will be a hub to supply meals
- A drone contractor will be capable of operating from the Staging Area

**Observation:**

Based on learnings from the response to a spill incident in Seaforth Channel, WCMRC further developed the concept of deploying on-water Staging Areas on ramp barges, for use in remote areas with limited shore access; the development work led to the creation of an LSAP for a 'proof-of-concept' Staging Area barge, where numerous Logistics and other supporting functions could be tested and evaluated. Given that the exercise was a proof of concept, it is recognized that many of the functions tested during the exercise would not be suitable for deployment on the same barge in an actual incident.

WCMRC employed the services of AquaTrans to source a tug and a 76m (250') ramp barge, which was loaded in Vancouver Harbour according to the LSAP developed.

Resources mobilized to the Staging Area barge included:

- Trailer 213 (Equipment Trailer)
- Trailer 709 (Boom Trailer)
- Trailer 215 (Shoreline Trailer)
- Trailer 511 (Staging Area Trailer)
- Trailer 303 (Decon Trailer)
- Satellite Communications Dome and supporting equipment
- Ambulance
- 40-cubic-yard Waste Bin
- Porta-potties
- UAV Operator

Boom and anchor kits deployed for the purposes of shoreline protection were requested from the Staging Area by the Shoreline Protection Group Supervisor, and were deployed and subsequently recovered by the barge crew.

Additionally, the Staging Area acted as an on-water hub where vessel crews pick up and eat lunches prepared by the offsite food truck, use the washroom facilities and have an area to rest. Crews arriving at the barge passed through the decon area set up.

The UAV Operator used a designated area on the barge as a launch/recovery zone and were able to operate from the barge with no issues.

**Recommendation:**

WCMRC should continue to build upon the concept of on-water Staging Area barges, as this is considered a major success of the exercise. LSAPs should be developed for barges which can fill various Logistical and support functions, including equipment/working platform, waste/decon and accommodations. Additional learnings to be considered in future development are the better suitability of lower-freeboard barges, the deployment of a floating gangway for easier access, use of a boom retrieval device for easier equipment recovery and availability of a shunt truck for easier loading.

**Objective:** Evaluate the effectiveness of WCMRC to safely conduct a man-overboard and recovery drill using a 'Rescue Randy' mannequin

**Expected Actions:**

- As an inject to the exercise, a 'Rescue Randy' mannequin will be utilized to simulate a man-overboard situation
- According to the principles of the man-overboard SOP under development, responders will safely execute a full rescue and recovery process

**Evaluation Criteria:**

- Recovery of 'Rescue Randy' will take place according to the principles of WCMRC's man-overboard SOP, which is under development
- The debrief process on this objective will focus on evaluating the safety and effectiveness of all phases of the recovery, including on-board communications, ship to command communications, and coordination of post rescue treatment and transport of the 'patient'; recovery time will not be the main concern for evaluation

**Observation:** Under the observation of the two Safety Officers for the exercise, WCMRC conducted a man-overboard recovery drill using a mannequin and the *Burrard Cleaner No. 9*; the Safety Officers were to observe the drill, and compare to the Standard Operating Procedure (SOP) under development.

The drill took approximately 5 minutes to complete, using the man-overboard recovery device on the vessel. As a whole, the recovery was considered to have gone relatively well, with some points for improvement with respect to overall delicacy and standard hand signals for communication. The drill only encompassed the man-overboard and recovery elements; post rescue treatment and recovery were not undertaken.

**Recommendation:**

WCMRC should continue to plan and design safety related exercise objectives, as they provide excellent learning opportunities for the organization; it must be ensured that training and drills take place as per a realistic scenario, for example that there is actually a patient being recovered. As discussed below, WCMRC should also continue to examine SOPs from a safety and training perspective, in order to continuously evaluate and improve their effectiveness. An opportunity has also been identified to ensure that operation of all safety gear and conduct of safety procedures, including man-overboard recovery device, is included as a required competency when signing off vessel crew during training.

**Objective:** Evaluate the effectiveness of employing a food truck to support the response

**Expected Actions:**

- A food truck will be mobilized to support the response
- The food truck will support the Logistics Section in providing hot meals to responders as necessary

**Evaluation Criteria:**

- A food truck will be mobilized to support the response
- The food truck will be capable of providing hot meals as needed all responders in the field



**Observation:** A food truck was mobilized to the accommodations on Pender Island to support feeding of responders during the exercise. The food truck provided a hot breakfast buffet at the morning briefing on June 7, then prepared bagged lunches of wraps, fruit and soup which were distributed to responders on the water either by logistics vessel, or at a central location for pickup at the Staging Area barge. Some confusion arose distributing the lunches to crews out on the water due to the means of delivery or pickup, and some challenges were seen over soup containers fitting in the bags.

**Recommendation:**

As feeding is a constant challenge, but an extremely important function, WCMRC should ensure that it is considered a key role and responsibility during incidents and exercises; an individual should be responsible for developing a feeding plan and schedule, and ensuring that these are implemented. WCMRC should also define an ideal nutritious and portable boxed lunch for field and vessel crews, which can be efficiently prepared and packed, and then distributed to crews in vessel or team specific bins either prior to heading to the field, or delivered as needed.

**Objective:** Evaluate the effectiveness of employing Corporate Traveler support to cascade personnel to the incident area from North Coast Operations Area

**Expected Actions:**

- Corporate Traveler will be employed to cascade in personnel from North Coast
- Mobilization and travel times are to be recorded in order to assess time taken to cascade personnel

**Evaluation Criteria:**

- A minimum of 2 responders will be cascaded to the incident area from North Coast Operations Area
- Mobilization and travel times are to be recorded for assessment

**Observation:**

Corporate Traveler was employed to arrange travel for three Operations staff from North Coast Operations area; the crew were assigned to the skimming vessels *MJ Green* and *GM Penman*, in order to best take advantage of sharing knowledge and experience, and gain exposure to a class of vessel to be deployed to North Coast in the future.

As expected given the challenges travelling by air between Prince Rupert and southern British Columbia, it took approximately 4 hours for staff to travel from the North Coast area to Vancouver, not including time required to actually reach the location of the incident.

**Recommendation:**

WCMRC should continue to mobilize Operations staff to other areas to participate in exercises, deployments and training, to take advantage of opportunities for knowledge sharing and area familiarization.

**Objective:** Evaluate the effectiveness of employing a drone contractor operating from an on-water Staging Area, and the ability to use drone capabilities to create injects to the exercise

**Expected Actions:**

- A drone contractor will be activated and mobilized to the on-water Staging Area
- The drone contractor will operate a UAV system from the on-water Staging Area
- A live stream view from the UAV will be transmitted to the on-water Staging Area for viewing by the On-Water Recovery Group Supervisor and other members of the IMT
- Members of the IMT will be able to use streamed view from the UAV to create injects to the exercise, for example directing the course of a skimming vessel to a more optimal recovery position

**Evaluation Criteria:**

- A drone contractor will be activated and mobilized to the on-water Staging Area

- The drone contractor will be capable of operating a UAV system from the on-water Staging Area
- A live stream view from the UAV will be transmitted to the on-water Staging Area
- An inject to the exercise will be created stemming from the live input from the UAV

**Observation:**

Canadian UAVs was activated by WCMRC to participate in the exercise and operate their UAV from the on-water Staging Area. A Notice To Airmen (NOTAM) was filed with NAV CANADA to ensure that the notification requirements of their Special Flight Operations Certificate (SFOC) was fulfilled. The Operator designated a 10'x20' area on the barge as a launch/recovery area according to the LSAP, and set up Command and Control links at the Staging Area Trailer. The observer was able to move around the barge as necessary to ensure visual control with the UAV system and maintain the necessary communications signals.

The UAV flew 12 sorties, ranging from approximately 5 minutes up to 25 minutes, employing both electro-optical and infrared cameras; live stream from the video was available for view by any person on the Staging Area barge.

The UAV Operators maintained in contact with air traffic via air-band radio, and vessels involved in the exercise via UHF radio supplied by WCMRC, in coordination with the Air Operations Branch Director. At approximately 1100, the UAV system was following the Current Buster Task Force, and communicated with the lead vessel by radio to advise of a thicker part of the slick to the port side, and recommending that they adjust course to encounter this if possible; the Task Force responded and performed a turn manoeuvre to port.

**Recommendation:**

WCMRC should continue to incorporate UAV operations into exercises and deployments, and continue to drill the concept of aerial coordination of on-water operations. Opportunities should also be explored to integrate UAV Operators into training in other functions in spill response, for example SCAT, to determine if there are applications for the technology.

## Other Key Learnings and Recommendations

**Item:** *GM Penman* SOP

**Observation:** The Safety Officers took advantage of the equipment deployments on the *GM Penman* to observe activities according to the vessel's SOP, which is being developed. There were some areas observed where the SOP was determined to be insufficient, for example during the recovery of gear, where more detail is needed. It was also identified from a training perspective, that as similar SOPs are rolled out, it provides good opportunity to conduct practical training according to the SOP.

**Recommendation:** During equipment deployments and exercises, WCMRC should continue to review and assess SOPs, and ensure that they are incorporated into training programs going forward.

**Item:** Priority of response activities

**Observation:** As part of the operational planning for the exercise, WCMRC planned for assets to undertake assigned response activities upon their arrival at the scene of the incident. However, during post-exercise debriefs, it was noted that there would be situations where an asset capable of conducting multiple missions (for example the *GM Penman* or *Burrard Cleaner No. 8/11*) might arrive on scene, and be designated to conduct recovery operations in the form of a sweep, while containment booming of a casualty has still not been undertaken. It was discussed that in such instances, it might be applicable to base response activities on their priority in the circumstances,



for example to undertake containment, even if the equipment available is not ideal for prolonged deployment.

**Recommendation:** WCMRC should examine and define priority of initial response activities, to allow for re-tasking of assets, in instances it is more ideal than simultaneous and strict implementation of containment, recovery and protection assignments.

**Item:** Identification of a 'lead' element during coordinated, multi-area response

**Observation:** During the design and planning of the exercise, it was identified that though this was to be a coordinated response with assets from multiple areas, the span-of-control would necessitate the identification of a clear 'lead'; it was decided that VI would take on the lead in this response, therefore the VI Area Manager took on the role of Recovery and Protection Branch Director (On-Water Ops). This was considered one of the key successes of the exercise, as there was a clear span-of-control, and a clear structure of command for activities in the field.

**Recommendation:** WCMRC should ensure to implement clear structure and span-of-control during exercises and responses; this is an ideal element to incorporate into Geographic Response Plans, to clearly define the area or base that will assume initial on-water command.

**Item:** Shuttle Storage and learnings

**Observation:** As part of a planned exercise objective, WCMRC conducted transfer, shuttle storage and offload activities from all skimming assets to the *Burrard Cleaner No. 18* barge.

Transfer from a skimming vessel to a mini-barge was conducted by skimming into the integral tank, then transferring to the mini-barge, allowing for continuous skimming as the mini-barge was swapped out, and is a regular element of WCMRC training and deployments.

A learning through recent deployments is that the mini-barges tow very well while light, and well at slow speeds (~4 knots) when fully loaded; however, they can be hazardous to tow when partially loaded due to the free surface effect of the product within the tanks.

As previously known, WCMRC recognizes that towing of mini-barges, both loaded and unloaded, is not an ideal task for outboard-engine equipped vessels, and important consideration when sourcing VOOs for shuttle storage missions.

**Recommendation:** WCMRC should ensure that mini-barges are fully loaded prior to attempting to take under tow. When planning for VOO inclusion in response activities, it should be ensured that only capable vessels are assigned to shuttle storage tasking.

**Item:** Offloading of mini-barges to *Burrard Cleaner No. 18*

**Observation:** As described above, mini-barges were shuttled to the *Burrard Cleaner No. 18*, where they were tied up, and the tanks offloaded to the barge; offloading was undertaken with a diaphragm pump on the deck of the *No. 18*, and rated transfer hoses, which worked successfully. The PD 75 spate pump is considered an ideal choice due to being self-priming up to 8.8m (~29') of suction. On the *No. 18*, there are many options for pumps that can be either run from the deck or lowered down to a mini-barge, depending on if the pump can develop the head necessary to pump up the ~5.5m (18') freeboard of the barge.

**Recommendation:** WCMRC should continue to test and train the offloading procedure from a mini-barge to a response barge, and examine whether there are options that can compete with a spate pump for suitability.

**Item:** Containment booming with Kepner Boom

**Observation:** Containment booming was deployed during the exercise by the *GM Penman* deploying its 457m (1500') of Kepner Boom in a rectangle, assisted by the *Burrard Cleaner No. 6*,

which undertook anchoring; this proved to be a challenge, as the heavy anchors WCMRC has been testing for this purpose were not available, and would have been suitable for this purpose.

**Recommendation:** WCMRC should continue to test and train with the heavy anchors being developed. To date, each Operations Area has tested the anchors during a deployment, and have made recommendations to improve the equipment and effectively and safety handle the anchors.

**Item:** Kepner Boom connector ends

**Observation:** The Kepner Boom on the *GM Penman* and sister ship *Hecate Sentinel* is equipped with large ASTM connectors at the ends, designed to be able to connect together; however, it was observed that they are difficult to handle, and not necessarily an improvement over the flat-bar connectors on other WCMRC Kepner Boom.

**Recommendation:** WCMRC should examine the advantages and disadvantages of different forms on connectors on Kepner Boom, and determine the most ideal solution.

### Improvement Plan

In order to gain maximum value from the recommendations suggested in this review and debrief, an approach must be taken to ensure that lessons learned can be acted upon and implemented both for day-to-day operations, as well as for future responses and exercises.

Debrief items will be tracked on the ICS 233 - Open Action Tracker to ensure that follow ups can be made and reviewed. There will be ongoing meetings with members of WCMRC senior management and assigned personnel in order to periodically review items from past debriefs and recent spills and exercises. RRT has taken on the responsibility to coordinate and facilitate these meetings and follow-ups.

The Open Action Tracker, as well as supporting After Action Reviews, will also be reviewed periodically before and during the planning phase of future exercises in order to leverage opportunities to evaluate improvement based on debrief items and recommendations. It will be the responsibility of the exercise design team to sure ensure that recommendations are acted upon and improvement is seen.