

WCMRC 2018 Tier 1 – 150 Tonne Exercise

‘Age of Aquarius’ After Action Review

Overview

On the date of October 23, 2018, Western Canada Marine Response Corporation (WCMRC) conducted its annual Tier 1 operational exercise, named ‘Age of Aquarius’. The exercise was planned and conducted by WCMRC, working with Canship Uglan Ltd. as the Polluter, and simulated the initial response to a spill of approximately 200 tonnes of Marine Gas Oil (MGO) from their bunkering tanker the *M/T CL Aquarius* in English Bay. Further details regarding the exercise design and scenario can be referenced in the document ‘WCMRC 2018 Tier 1 Exercise Submission’.

As described in WCMRC’s Oil Spill Response Plan (OSRP), the purpose of the Tier 1 exercise is to demonstrate and evaluate the effectiveness of the Response Organization’s (RO) response capability, utilizing a defined scenario that includes notification, spill assignments, and the activation of incident management personnel for a response to a spill of up to 150 tonnes within the Vancouver Harbour Designated Port. 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, and help build relationships and preparedness with industry members on the coast; relationship building was of primary concern with this exercise, as Canship Uglan is a new member to the coast of British Columbia, and there was an excellent opportunity to exercise similar procedures and capabilities that they would be familiar with due to relationships with ROs in eastern Canada.

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 Scenario

On the morning of October 23, 2018, the 90m bunkering tanker *M/T CL Aquarius* is in loaded condition. She is safely moored alongside *MV Golden Star* in English Bay. Crew of the *Aquarius* have just commenced discharging of Marine Gas Oil (MGO) to the *Golden Star*.

MV Speedy was proceeding to anchorage. They lost steering and consequently she hit the *CL Aquarius* into the area of COT 2/3. The *Aquarius* suffered a hull rupture and about 200 tonnes of MGO was spilled.

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 1: Exercise the WCMRC Activation process with Canship Uglund

Expected Actions:

- Receive initial call from Polluter through the WCMRC emergency line.
- Ensure caller is an active member and the person calling is listed as an Authorized Individual.
 - If the Polluter is a non-member, a third-party agreement must be in place before deployment of resources.
- Record details of the incident
- Notify the most appropriate Operations Supervisor, Manager or Director
- Notify and brief for mobilization appropriate initial response resources
- Notify senior management personnel who may be required to form the IMT
- Appoint a Spill Response Manager for on-going spill management
- Make appropriate internal and external notifications
- Complete an ICS201 (Incident Briefing) form throughout the exercise

Evaluation Criteria:

- Completed Spill Incident Report Checklist
- Duty Officer will receive call from Emergency Line within 10 minutes, and will receive adequate information to reach initial caller
- Duty Officer will record 'quick-hits' information as per Duty Officer SOP
- Duty Officer confirms that the caller is a member of WCMRC
- Completion of an initial work order and/or third-party agreement as required
- Completion of Internal notifications per Duty Officer SOP
- External notifications completed per Duty Officer SOP
- A completed ICS201

Observation:

- Initial call was received by answering service at 0718
- Quick Hits information was recorded by Duty Officer upon reaching caller
- Vessel identified as member, persons authorized identified on agreement
- Initial Work Order (No. 1) dispatched at 0725, signed copy received from authorized signee at 0834
- Internal notifications (Operations Supervisor, Manager, Director, company-wide email) completed
- External notifications (Transport Canada) completed

- Information from Quick Hits transcribed to ICS 201 and handed off to Spill Response Manager (SRM) with Admin Support assisting

Assessment/Recommendations:

Given the announced exercise circumstance, the initial emergency call from the *CL Aquarius* vessel master to WCMRC was reported as being smooth and issue free. The Duty Officer was able to correctly identify that the caller was not an authorized signee, therefore the Work Order would need to be sent to an authorized person identified on the agreement; it was noted that in a stressful situation, it will be key for a Duty Officer or SRM to ensure they look through subsequent pages of the agreement to find the list of authorized persons, as there may be several.

It was also noted that in a situation where the Polluter's organization is based remotely and there is expectation that a Unified Command and an Incident Command Post (ICP) will be formed, the SRM should press the Polluter to appoint a local delegate to deal with while necessary personnel mobilize to integrate into the (ICP).

Objective 2: Exercise mobilization and response times according to the Response Organization Tier 1 Planning Standards (equipment deployed on scene within six hours)

Expected Actions:

- Upon activation, responders will be briefed upon the situation and safety considerations prior to mobilizing to the scene and staging area
- The initial vessel on scene will conduct a site assessment including air monitoring and hazard identification

Evaluation Criteria:

- Deployment times are not to exceed six hours on scene
- Responders will mobilize with appropriate PPE for the response as briefed by the Safety Officer
- Mobilization and arrival times on scene for all resources are to be recorded on the ICS201

Observation:

- Exercise briefing, operational briefing and safety briefing/tailgate took place at WCMRC Kensington facility
- Vessel/staging area crews mobilized from Kensington between 0730-0810
- Initial vessels (*Sentinel 24*, *Sentinel 25* and *Texada Sentinel*) arrived on scene at 0840, conducted site assessment and commenced deploying primary containment
- Subsequent vessel arrival times:
 - 0855 *Sentinel 1*
 - 0903 *Hecate Sentinel*
 - 0905 *MJ Green*
 - 0945 *Seymour Sentinel*
- Initial land-based assets (TRL 511 and 303 with trucks and crew) reached Vanier Park Staging Area at 0848
- Subsequent trailer arrival times:
 - 0850 TRL 225 towed by Dolphin Transport

- TRL 188 with truck and crew at 0900

Assessment/Recommendations:

Mobilization of assets was smooth under the exercise circumstances, and a representative sample of Tier 1 and additional WCMRC equipment was deployed on scene well within the planning standard mandated response times.

Emphasis was placed on initial responders conducting a thorough site assessment to identify any risks and hazards to be considered or mitigated, and air monitoring; site assessment is a procedure and skill that WCMRC is continuously developing and should continue to train and exercise.

The relocation of Tier 1 TRL 225 with 1500m of boom to Main Street Dock was identified as an excellent improvement in operational posture, as it allows for significant resources to be easily accessible within the inner harbour, and enabling rapid mobilization within the Designated Port area.

Objective 3: Exercise the establishment of primary and secondary containment booming around the casualty tanker

Expected Actions:

- Primary containment to be established with solid flotation curtain boom from the *Texada Sentinel* (a Tier 1 dedicated response resource)
- Secondary containment to be established with self-inflating curtain boom (Kepner Seacurtain) from the *Hecate Sentinel* (a 'Plan+' resource)

Evaluation Criteria:

- Primary containment to be completed by dedicated Tier 1 resources
- Secondary containment to be completed by additional resources for training and demonstration purposes
- Containment resources (boom + ancillary equipment) to be appropriate for product and environmental conditions

Observation:

- Deployment of primary containment boom was initiated by the *Texada Sentinel* and *Sentinel 25* at 0845 and completed at 0857, utilizing 210m solid floatation curtain boom placed in a free floating wrap around the casualty vessel
- Deployment of secondary containment boom was initiated by the *Hecate Sentinel*, assisted by *Sentinel 24*, *Sentinel 25* and *Texada Sentinel* at 0917 and completed at 0951, utilizing 450m self-inflating curtain boom, and installed in a fashion to surround the casualty vessel utilizing four 80lb anchors

Assessment/Recommendations:

The exercise provided a rare opportunity for WCMRC to practice establishing containment booms around an actual vessel, allowing for invaluable experience for crews and the organization. As per previous experience in wrapping a large vessel at anchorage, the initial solid flotation boom was deployed in a manner in which it was not anchored, and would allow the vessel to naturally swing

on the anchor chain with changes in the tide. In order to avoid potential damage to the boom from abrasion against the anchor chain or sides of the hull, the self-inflating boom used for secondary containment was deployed and anchored away from the hull; it is acknowledged that this was a temporary arrangement for the purposes of the exercise, and would not be applicable in a real incident due to the vessel shifting at anchor – however, it also allowed opportunity for the crews to gain experience in utilizing the 80lb anchors to deploy this size of boom, and they proved successful in this application, particularly in conjunction with the new anchor line snotters developed for the boom. WCMRC should examine additional methods of separating boom from the chain and hull of the vessel for this application.

Crews also noted that while the Kepner SeaCurtain self-inflating curtain boom from the *Hecate Sentinel* is equipped with ASTM style end connectors, there are still complications to attach in onto itself (or to the boom from the *GM Penman*) due to the design; crews will be looking into modification or retrofit options to facilitate this task, as well as best techniques and practices to work with the equipment as it stands, and to ensure compatibility with existing SeaCurtain boom in inventory.

Objective 4: Exercise the operation of oil recovery resources appropriate to the spill incident

Expected Actions:

- *Seymour Sentinel* (a Tier 1 dedicated response resource) will undertake recovery operations as directed
- *MJ Green* (Tier 2 resource) and *Hecate Sentinel* (Plan+ resource) will undertake recovery operations as directed

Evaluation Criteria:

- Main oil recovery operations to include dedicated Tier 1 resources
- Other oil recovery operations undertaken for training and demonstration purposes
- Oil recovery resources (skimmers + ancillary equipment) to be appropriate for product and environmental conditions
- Oil recovery operations to work in conjunction with portable storage resources (see Objective 5)

Observation:

- *Seymour Sentinel* commenced skimming operations in the vicinity of the casualty at 0945; the *Seymour Sentinel* had its belt skimmer fitted with diesel pads, ideal for recovery of lighter viscosity oil
- *MJ Green* commenced skimming operations at 0920, working in conjunction with the *Sentinel 208* mini-barge as additional storage resource; the *MJ Green* was equipped with its grooved disc skimmers, ideal for recovery of lighter viscosity oil
- *Hecate Sentinel* commenced skimming operations at 1025, once deployment of its boom was completed; although the *Hecate Sentinel* was equipped with brush skimmers less suitable for lighter viscosity oil and therefore was not an ideal application for this incident, it was a good opportunity to further train with the attached UAV operators for the exercise
- Additional skimmers deployed to the Staging Area included the Triton 60 skimmer from Trailer 188 and the Sala Roll Pump with Manta Ray head – these resources were available for demonstration but not run up

Assessment/Recommendations:

Deployment of oil recovery operations proved smooth and efficient in the exercise context. It is acknowledged that in a real scenario, oil recovery resources would be directed to follow the oil trajectory as determined in the Emergency Operations Centre/Incident Command Post, and work in conjunction with available aerial surveillance assets to locate and target the thickest parts of the slick to maximize efficiency; in this exercise, the trajectory model indicated that the currents would cause the slick to move in a northwesterly direction from the incident location, however due to the marine event permit requiring the exercise to remain around Anchorage Zulu, the vessels operated in that area.

WCMRC has put significant effort for 2018 into training with UAV operators attached to skimming vessels, in order to provide additional situational awareness and assist the crews in locating the thickest parts of the slick; the value of this training has been acknowledged by crews, and was acknowledged in the EOC through the additional situational awareness provided by a live feed of video from the incident site.

Objective 5: Exercise the operation of portable storage resources to support oil recovery operations

Expected Actions:

- Mini-barges and/or seaslugs will be used to simulate 'shuttle storage' operations from resources undertaking oil recovery operations
- A vacuum truck deployed to the Staging Area (see Objective 7) will be used to simulate offloading the shuttle storage resource

Evaluation Criteria:

- An offload shuttle storage and offload operation will take place from at least one oil recovery resource in operation
- Portable storage resources (storage + ancillary equipment) to be appropriate for product and environmental conditions

Observation:

- The *Sentinel 208* mini-barge was used by the *MJ Green* as additional storage capacity for recovery operations; starting at 0950 the *MJ Green* was able to practice offloading from its integral tank to the tank on the mini-barge using its onboard offload pump
- At approximately 1135, the *MJ Green* arrived at Vanier Park boat launch to simulate offloading to a land-based storage container (for example a vacuum truck, floating collar tank, B-train tanks, baker tank etc.); this provided an opportunity to practice using the DOP-250 pump with the mini-barge for the first time
- No se slug was utilized for the purpose of the exercise
- The vacuum truck component was not exercised due to complications during planning

Assessment/Recommendations:

WCMRC has made temporary storage a focus of several exercises and workshops for 2018; there are still many challenges to be overcome on the technical side (towing and operating laden mini-barges, heating of oil, transfer operations, availability of resources to assist with shoreside

offloading, storage and transport), as well as on the regulatory side (certifications and training needed, manning requirements etc.); WCMRC should continue to work as it has on resolving these issues, and continue working closely with Transport Canada for guidance and assistance where necessary.

A discussion was raised in the EOC regarding the best possible site around the incident location to undertake offloading from on-water storage to either a land based storage container or to a transport option; the discussion determined that there are few ideal options both practical in terms of access, as well as without other concerns of visibility and security issues; in general it was determined that port or shipyard facilities would be ideal so long as practical, however the necessity of the response operation may call for other sites to be considered.

Objective 6: Exercise the deployment of a protection booming strategy in the vicinity of the incident

Expected Actions:

- Incident Management Team staff working in the Emergency Operations Centre (see Objective 8) will assist in determining spill trajectory and potential resources at risk
- Direction on the deployment of a protection booming strategy will be communicated to operational resources in the field
- A protection booming strategy will be deployed

Evaluation Criteria:

- Spill trajectory model developed
- Initial resources at risk identified
- Successful communication of protection booming strategy directed to crews
- Protection booming resources (boom + ancillary equipment) to be deployed from Tier 1 resources
- Protection booming resources (boom + ancillary equipment) to be appropriate for product and environmental conditions

Observation:

- A trajectory model was developed in the EOC, indicating the slick would move in a northwesterly direction
- Initial resources at risk were identified utilizing WCMRC's Environment Unit Portal, with the development of an ICS 232 Resources at Risk Summary accounting for the trajectory model developed
- A protection booming strategy in the form of a Geographic Response Strategy (GRS) was communicated to crews in the field via email, for use on a mobile device with the Avenza application and deployment (GRS CS0059 Heritage Harbour was deployed)
- Solid flotation curtain boom drawn from Trailer 225 (Tier 1 resource) was deployed by *Sentinel 24* and *Texada Sentinel*, completed at 1122

Assessment/Recommendations:

WCMRC has put significant effort into enhancing the GRS component of the Coastal Response Program in 2018, with emphasis on automating development and facilitating use in the field; therefore the successful communication of the GRS from the EOC to the field and successful deployment utilizing the tools developed demonstrates the progress made so far.

It is recognized that the site deployed is not consistent with the northwesterly travel of the oil as predicted by the trajectory model, as the site was pre-planned and confirmed in the marine event permit, and the focus of the exercise objective was to practice the process of determining the sensitivities at risk, and test the function of the tools under development.

Objective 7: Exercise the deployment of a Staging Area to support the response

Expected Actions:

- A Staging Area will be deployed at Vanier Park boat launch
- Tier 1 resources including Trailer 225 (boom trailer) and Trailer 188 or 219 (small equipment trailer) will be deployed to the Staging Area
- Trailers 303 (decon) and 511 (staging area) will be deployed to the Staging Area
- A decontamination area will be set up
- A vacuum truck will be mobilized to assist with storage offloading operations
- Staging Area staff will include a Staging Area Manager and contracted support staff
- Radio communications will be established with on-water resources and the EOC

Evaluation Criteria:

- Deployment times of resources to Staging Area are not to exceed six hours
- Radio communications established
- Trailer, equipment and consumable logs completed as required

Observation:

- A Staging Area was deployed at Vanier Park boat launch, staffed by a Staging Area Manager, Operations Admin Support, two Operations Staff, and one contracted staff, with the following equipment assets
 - Initial land-based assets (TRL 511 and 303 with trucks and crew) reached Vanier Park Staging Area at 0848
 - Subsequent trailer arrival times:
 - 0850 TRL 225 towed by Dolphin Transport
 - TRL 188 with truck and crew at 0900
- A decontamination corridor and area was set up and crews arriving at the dock were directed to pass through prior to entering the staging area
- The vacuum truck component was not exercised due to complications during planning
- Radio communications were established with on-water resources and the EOC according to the prescribed communications channels outlined in the morning Operations Briefing (UHF Channel 1)
- Logs were completed as required for the boom resources drawn from Trailer 225

Assessment/Recommendations:

In general the Staging Area deployment was considered to have been successful. Mobilization of assets was smooth under the exercise circumstances, and a representative sample of Tier 1 and additional WCMRC equipment was deployed on scene well within the planning standard mandated response times. The Staging Area was determined to be tidy and of efficient set up.

The decontamination area was well set up, and it is recognized that in a real incident the area would be set up closer to the dock; for the purposes of the exercise, the Park Board events permit did not allow for blocking of the boat launch or path passing through the area.

Objective 8: Exercise the deployment of Incident Management Team staff to form an initial Emergency Operations Centre (EOC) to support the response

Expected Actions:

- An initial EOC will be formed at WCMRC's Kensington facility, staffed by a Spill Response Manager, Operations support, Logistics support, Planning support and Finance support
- Radio communications will be established with on-water resources and the Staging Area
- Situational information will be gathered and displayed, including the development of a Common Operating Picture
- Incident Management Team staff will assist in generating and compiling required response documentation (see Objective 9)
- Incident Management Team staff will coordinate with Canship Uglund and government agencies as required

Evaluation Criteria:

- All ICS sections staffed
- Situational information and Common Operating Picture developed and maintained
- Radio communications established

Observation:

- EOC set up commenced at Kensington facility immediately after the morning briefings finished and as crews mobilized to the field
- Representation within the EOC included a Canadian Coast Guard (CCG) representative and a BC Ministry of Environment (BC MoE) representative
- ICS section staffing included a Spill Response Manager, Operations, Planning, Logistics and Finance sections
- A Common Operating Picture was developed using inputs from radio communications with the field, entries of the ICS 201, AIS tracking of vessels and live visual feed from the UAV operation
- A situation board display was populated and maintained during the exercise
- Radio communications were established with the field and the Staging Area
- Communications were established via email with Canship Uglund in order to exchange subsequent Work Orders
- The ICS 201 was maintained throughout the exercise

Assessment/Recommendations:

Acknowledging the artificialities of the exercise and the resulting rapid set up of the EOC, feedback from EOC staff was that this was the most successful exercise so far in terms of gaining situational awareness of the field activities, being able to effectively communicate information and direction to the responders in the field, and effectively plan for future activities based on current.

EOC staff ran through an abbreviated ICS Planning Cycle, including defining response objectives in cooperation with CCG and BC MoE representatives, then developing strategies and tactics in order to refine work assignments for the next operational period of the response; this was performed with the anticipation that WCMRC incident management staff would be integrating into a larger Incident Command Post as designated by CCG and BC MoE under the Greater Vancouver Integrated Response Plan.

This exercise approach of quickly establishing an incident management component to support the ongoing response worked very effectively and should be followed in future exercises.

Objective 9: Exercise spill documentation processes

Expected Actions:

- Completion of the following documentation:
 - Duty Officer Quick Hits
 - WCMRC Work Orders and Third-Party Agreement as required
 - ICS 201 Initial Incident Briefing
 - ICS 214a Individual Logs (for Incident Management Team personnel)
 - W302 Daily Equipment and Consumable Worksheets
 - W302A and W302B Timesheets
 - Tailgate Safety forms
 - Vessel and Trailer logs

Evaluation Criteria:

- Creation of a spill file on WCMRC Sharepoint for compilation
- All expected documentation will be completed and collected for review

Observation:

- Spill file was created on WCMRC Sharepoint for compilation of exercise documentation and collaborative sharing of working documents
- Field crews were distributed with required documents prior to mobilization and briefed to complete and return
- In general required documentation completed and collected

Assessment/Recommendations:

In previous exercises WCMRC has continually been putting a focus on spill documentation; results have been improving along with improvements to processes and training. Documentation should continue to be a focus.

Key Lessons Learned

Item: Kepner SeaCurtain Connectors

Learning: Crews noted that while the Kepner SeaCurtain self-inflating curtain boom from the *Hecate Sentinel* is equipped with ASTM style end connectors, there are still complications to attach in onto itself (or to the boom from the *GM Penman*) due to the design; crews will be looking into modification or retrofit options to facilitate this task, as well as best techniques and practices to

work with the equipment as it stands, and to ensure compatibility with existing SeaCurtain boom in inventory. This review should include looking into compatibility with other boom in WCMRC inventory, including Vikoma HiSprint and Desmi Ro-Boom.

Item: Exercise Design (simultaneous field and EOC deployment)

Learning: Acknowledging the artificialities of the exercise and the resulting rapid set up of the EOC, feedback from EOC staff was that this was the most successful exercise so far in terms of gaining situational awareness of the field activities, being able to effectively communication information and direction to the responders in the field, and effectively plan for future activities based on current. This exercise approach of quickly establishing an incident management component to support the ongoing response worked very effectively and should be followed in future exercises.

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 improvement can be made both for day-to-day operations, as well as for future responses and exercises.

This report will be circulated internally, and is to be formally reviewed organization wide. 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 quarterly meetings 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 debrief sessions.

This report will also be reviewed periodically before and during the planning phase of future exercises, and it will be the responsibility of the exercise development team to sure ensure that applicable recommendations are acted upon.