Adapting Tanker C-Plan Scenario 809 for Gulf of Alaska Response
December 2006: Task 2

December 18, 2006

Prepared by:
Cape International, Inc.
for
Nuka Research and Planning Group, LLC.
Table of Contents

Introduction ............................................................................................................5

Response Vessels Deployed on Day Four: 
Tanker Aground at Seal Rocks ..............................................................................7

Support Vessels ....................................................................................................10

Conclusion............................................................................................................10

References .............................................................................................................11
This page is intentionally blank.
Adapting Tanker C-Plan Scenario 809 for Gulf of Alaska Response

December 2006: Task 2

December 18, 2006

Introduction

This report analyzes a post-72 hour and out-of-region response for a large spill occurring during moderate or building weather. It adapts Scenario 809 from the Prince William Sound Tanker Oil Discharge Prevention and Contingency Plan (Tanker C-Plan) to calculate the number of tugs or towing vessels needed for a sustained response in the Gulf of Alaska.

The following modifications have been made:

- The tanker grounding and spill were moved from the vicinity of Zailkof Point on Montague Island (60°18’ North, 146°55’ West) to Seal Rocks (60°09.7’ North, 146°49.5’ West), a distance 8.6 nm south-southeast of Zailkof Point. This places the incident in the Gulf of Alaska: outside the three-mile territorial limit, but still in the contiguous zone of the US. This location outside of territorial waters is significant in that oil barges must be certified “oceans”. Tugs and towing vessels do not usually require a certificate of inspection (COI). However, the response barge COI will require the attending/towing vessel to be capable of accommodating all barge response personnel.

- The spill trajectory was changed based on the new location. Most of the oil now moves southwest in the open ocean, impacting the east shoreline of Montague Island. Eventually, the oil will impact the lower Kenai Peninsula in the vicinity of Gore Point (140 nm southwest of Seal Rocks), lower Cook Inlet, and Kodiak Island.

---

1 Volume 2, Part 3, Supplemental Information Documents (SID) #4, Section 1 – Scenario 809. Beginning at page 768.
2 Required by 46 U.S.C. 2101(2) and 01(6), 46 CFR 0.10- and 46 CFR 2.0-.
3 The average velocity of the surface current in this vicinity is estimated to be over 12 km/day (7.4 miles/day) (Favorite, 1970).
The scenario rests on the following assumptions as well:

- The Seal Rocks scenario assumes that weather allows for safe operations in exposed, open-ocean conditions. In reality, much of the time the weather will be above Realistic Maximum Response Operating Limits (RMROL) as described at (18 AAC 75.990(55)). The near shore task forces, in particular, will be impacted by the exposed conditions along the east shoreline of Montague Island. Task forces, when able to operate, will require more safety and support vessels than for the more sheltered waters in Scenario 809.

- Out-of-region (OOR) barges and large vessels needed for operations beyond Day Four will arrive with their own tugs and/or assist vessels.

- Scenario 809 of the Tanker C-Plan adequately addresses spill response resources needed for a post 72-hour response; therefore this analysis considers tug availability only.

Analysis of this scenario begins on Day Four. Otherwise, all other components of the scenario remain the same.
December 2006: Task 2

Response Vessels Deployed on
Day Four: Tanker Aground at Seal Rocks

According to the PWS Tanker C-Plan, all the response vessels and task forces listed below are on scene and operating by Day Two. The following list describes the actions being taken by response resources on-scene by Day Four; they are summarized in Table 1.

1. **The grounded tanker is leaking at a rate of 2,000 bbls per hour.**
   The total estimated release is 630,000 bbls at Day Four with the potential for a total spill of 809,000 bbls total. Two tugs are alongside to assist and stabilize the vessel (Harvey Consulting, LLC., 2006).

2. **Lightering from the stricken vessel to a tanker of opportunity (TOO#1) continues.**
   Two tugs hold the TOO#1 in place. The number of tugs required to support the TOO will vary. ADEC has confirmed that tug support is required (Harvey Consulting, LLC, 2006). The assumption is made that prudent seamanship requires two tugs to position and hold the vessel in place. Once the TOO is laden with lightered oil, it will require two escorts as per 33 CFR 168.

3. **Four TransRec barges with tugs are operating (OW TF #1-#4).**
   Two of the barge/tug combinations are remaining close to the grounded tanker, skimming fresh oil as it leaks from the vessel. The other two task forces are directed to thick oil patches by aerial surveillance (PWSRCAC OSPR, 2005).

4. **The skimming vessel Valdez Star (OW TF #5) is on scene as per the Tanker C-plan.**
   Its recovery efforts are somewhat compromised by not having the Allison Creek barge alongside. The Allison Creek is not “Oceans” certified (Cape International, Inc. and Nuka Research and Planning Group, LLC., 2006).

5. **A second tanker of opportunity (TOO#2) is on scene for receiving oil recovered by the open-water containment and recovery task forces (OW/TF #1 through #6).**
   Two tugs are assigned to assist this tank ship. As with TOO#1, the assumption is made that prudent seamanship requires two tugs to position and hold this vessel in place during lightering operations.

6. **Two barges with their respective towing vessels, Barge Responder 500-2 and Barge 450-7 (TF #6), are on-scene to receive oil recovered by near shore free oil recovery task forces (NS FO/TF #1 through #8).**
   A third barge with tug may be required, given that a storage barge can only support three task forces. Additional tugs may be out-of-region (OOR) vessels.

7. **Hopper and deck barges are on-scene for debris and waste removal.**
   In our opinion, a tug is required for these barges if the barge size or number of barges rafted or strung together exceeds the horsepower of smaller vessels of opportunity. The additional tug may be OOR.

---

4 Volume 2, Part 3, SID #4, Section 1.2.3, Resource Mobilization.
5 Thus the reason this is titled Scenario 809 in the PWS Tanker C-Plan. See Volume 1, Part 2, Section 7 of the PWS Tanker C-Plan.
6 Tanker C-plan, Volume 2, Section 3, Figure 3.1, Sample Near Shore Task Force.
Tanker Aground at Seal Rocks

**DAY FOUR**

630,000 Barrels of Oil Released

- Responder Barge 500-2 (one tug)
- Lightering Tanker (two tugs)
- Tanker Aground (two tugs)
- Open Water TransRec Task Force #1 & #2 (two tugs)
- Tank of Opportunity for Receiving Recovered Oil (two tugs)

TF #6 Oil Recovery Barge 450-7 (one tug)

Valdez Star OW/TF #5

Open Water TransRec Task Force #3 & #4 (two tugs)

**NOTES:**

(1): Nearshore Free-oil Recovery Task Forces #1-#8 work north and east of Montague Island as weather permits. Supported by TF#6, Barge 500-2. Additional lightering barges with tugs may be needed. Tugs may also be needed for moving mini-barges, debris, and waste hopper/deck barges.

(2): See Figure 2-1 of PWS Tanker C-Plan for configuration of TransRec Task Force.
Table 1. Response to Tanker Grounding at Seal Rocks and/or Gulf of Alaska.
Day Four: 630,000 barrels lost to date with oil leaking at 2,000 bbls per hour (Adapted from Scenario 809)

<table>
<thead>
<tr>
<th>Task Force(TF)/Vessel</th>
<th>Minimum Manning</th>
<th>Oceans Certified</th>
<th>Recovery Capacity (bbls)</th>
<th>Recovery Rate (bbls per hour)</th>
<th>Tug Required</th>
<th>Approx Total Task Force Personnel Required (ex Tug operators)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Water Recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TF#1 TransRec Barge 450-8</td>
<td>4</td>
<td>Yes</td>
<td>148,500</td>
<td>2,200</td>
<td>1</td>
<td>8 for workboats, 4 for barge</td>
<td>Tug or support vessel must accommodate all TF personnel. (Ref: Barge COI.)</td>
</tr>
<tr>
<td>TF#2 TransRec Barge 450-1</td>
<td>4</td>
<td>Yes</td>
<td>149,000</td>
<td>2,200</td>
<td>1</td>
<td>8 for workboats, 4 for barge</td>
<td>Tug or support vessel must accommodate all TF personnel. Barge must be unmanned while in transit. (Ref: Barge COI.)</td>
</tr>
<tr>
<td>TF#3 TransRec Barge Mineral Creek</td>
<td>4</td>
<td>Yes</td>
<td>191,000</td>
<td>2,200</td>
<td>1</td>
<td>8 for workboats, 4 for barge</td>
<td>Tug or support vessel must accommodate all TF personnel. Barge must be unmanned while in transit. (Ref: Barge COI.)</td>
</tr>
<tr>
<td>TF#4 TransRec Barge 450-3</td>
<td>4</td>
<td>Yes</td>
<td>149,000</td>
<td>2,200</td>
<td>1</td>
<td>8 for workboats, 4 for barge</td>
<td>Tug or support vessel must accommodate all TF personnel. (Ref: Barge COI.)</td>
</tr>
<tr>
<td>TF#5 Valdez Star (deployed with recovery/storage barge or bladders)</td>
<td>6 (4)</td>
<td>Yes</td>
<td>1310 (additional recovery/storage capacity required)</td>
<td>2,000</td>
<td>0 (smaller line handling tug needed if Barge 450-7 employed)</td>
<td>4 for workboats, 6 for Valdez Star, (4 for recovery barge if deployed with Valdez Star)</td>
<td>Barge Allison Creek, normally operating with Valdez Star, is not certified for oceans. Will need ‘oceans-certified’ storage barge or storage bags (bladders or dracones) to support Valdez Star recovery efforts. (Ref: Barge COI.)</td>
</tr>
</tbody>
</table>

Tanker Salvage and Lightering

|                          |                 |                 |                          |                               |              |                                                               |          |
| Assit grounded tanker    | Yes             |                 |                          |                               | 2            | Two tugs assist and stabilize grounded tanker. (Ref: Dec 2005 PWS Tug Fleet Workshop) |          |
| Tanker of Opportunity (TOO#1) | Yes |                 | 200,000                | varies                        | 2            | Tanker of Opportunity (TOO) is used for lightering grounded tanker. Two tugs are needed for maneuvering the TOO and preventing collision between TOO and grounded tanker. |          |

Recovered Oil Storage

|                          |                 |                 |                          |                               |              |                                                               |          |
| Tanker of Opportunity (TOO#2) | Yes |                 | >200,000               | varies                        | 2            | For lightering TransRec recovery barges. |          |
| Lightering Barge 500-2    | 4               | Yes             | 67,000                  | varies                        | 1            | 4                                                              |          |
| TF#6 Lightering Barge 450-7 | 2               | Yes, but see COI for special conditions | 150,000 | 1 | 2 | Tug or support vessel must accommodate all TF personnel. (Ref: Barge COI.) |          |

Debris and Waste Management

|                          |                 |                 |                          |                               |              |                                                               |          |
| Deck & hopper barges[4]  | 0               | May need waiver | n/a                     | n/a                           | 1            | 8                                                              | Tug needed if barge string exceeds two or more. These could be out of region (OOR) vessels. |          |
Support Vessels

By Day Four, up to 329 fishing vessels may be arriving for the response effort depending on weather conditions and vessel availability, type, and capability. The majority would support near shore free oil recovery. Field personnel number over 800. Over 130,000 feet of boom has been deployed. With this much equipment and personnel assigned, many of which are working off-shore in the Gulf of Alaska, the number of rescue, safety and command/control vessels should be increased significantly from the number presented in the PWS Tanker C-Plan. For example, there should be two, rather than one, safety shuttles assigned to each near shore free oil recovery task force (NS/FO TF). Increases in safety and support vessels imply an increase in command/control vessels.

Towing and support vessels must have the capacity, safety, and lifesaving equipment to accommodate all persons assigned to the recovery barges.

Conclusion

Thirteen to fourteen tugs or suitable towing vessels are needed to stabilize the stricken tanker (two tugs), position the two tankers of opportunity (four tugs), tow the six oil spill recovery and storage barges (six tugs), provide additional support for near shore recovery operations (one OOR tug), and move debris/waste barges (one OOR tug). These towing vessels must be capable of working in exposed, heavy weather conditions. They must also be capable of transporting, accommodating, and providing immediate relief/rescue of all spill response barge personnel. As this scenario shows, a major spill to the Gulf of Alaska could require three or four tugs beyond those included in the current 10-tug system. This assumes that any tanker of opportunity has moved out of the system, or two additional tugs would be require to remain with it as escorts. Out-of-region resources filling this additional need may need to be mobilized immediately to be available on Day Four, or as soon as possible thereafter, depending on travel time from their home ports. Safety, support, and command/control vessels must be increased for a Gulf of Alaska response.

---

7 Tanker C-plan, Volume 1, Table 1.2.4, Equipment Tally Sheet.
8 Tanker C-plan, Figure 3-1, Sample Near Shore Task Force.
9 For a full description of these requirements, see Cape International, Inc. and Nuka Research and Planning Group, LLC., 2006.
References


