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APPENDIX B TO PART 155—DETERMINING AND EVALUATING REQUIRED RESPONSE RESOURCES FOR VESSEL RESPONSE PLANS

1. Purpose

1.1 The purpose of this appendix is to describe the procedures for identifying response resources to meet the requirements of subparts D, E, F, and G of this part. These guidelines will be used by the vessel owner or operator in preparing the response plan and by the Coast Guard to review vessel response plans. Response plans submitted under subparts F and G of this part will be evaluated under the guidelines in section 2 and Table 1 of this appendix.

2. Equipment Operability and Readiness

2.1 All equipment identified in a response plan must be capable of operating in the conditions expected in the geographic area in which a vessel operates. These conditions vary widely based on the location and season. Therefore, it is difficult to identify a single stockpile of response equipment that will function effectively in every geographic location.

2.2 Vessels storing, handling, or transporting oil in more than one operating environment as indicated in Table 1 must identify equipment capable of successfully functioning in each operating environment. For example, vessels moving from the ocean to a river port must identify appropriate equipment designed to meet the criteria for transiting oceans, inland waterways, rivers, and canals. This equipment may be designed to operate in all of these environments or, more likely, different equipment may be designed for use in each area.

2.3 When identifying equipment for response plan credit, a vessel owner or operator must consider the inherent limitations in the operability of equipment components and response systems. The criteria in Table 1 of this appendix must be used for evaluating the operability in a given environment. These criteria reflect the general conditions in certain operating areas.

2.4 Table 1 of this appendix lists criteria for oil recovery devices and boom. All other equipment necessary to sustain or support response operations in a geographic area must be designed to function in the same conditions. For example, boats which deploy or support skimmers or boom must be capable of being safely operated in the significant wave heights listed for the applicable operating environment. The Coast Guard may require documentation that the boom identified in a response plan meets the criteria in Table 1 of this appendix. Absent acceptable documentation, the Coast Guard may require that the boom be tested to demonstrate that it meets the criteria in Table 1 of this appendix. Testing must be in accordance with certain American Society for Testing Materials (ASTM) standards [ASTM F 715 (incorporated by reference, see §155.140) Standard Methods of Testing Spill Control Barrier Membrane Materials], or other tests approved by the Coast Guard.

2.5 A vessel owner or operator must refer to the applicable Area Contingency Plan to determine if ice, debris, and weather-related visibility are significant factors in evaluating the operability of equipment. The Area Contingency Plan will also identify the average temperature ranges expected in a geographic area in which a vessel operates. All equipment identified in a response plan must be designed to operate within those conditions or ranges.

2.6 The requirements of subparts D, E, F, and G of this part establish response resource mobilization and response times. The location that the vessel operates farthest from the storage location of the response resources must be used to determine whether the resources are capable of arriving on scene within the time required. A vessel owner or operator shall include the time for notification, mobilization, and travel time of resources identified to meet the maximum most probable discharge and Tier 1 worst case discharge requirements. For subparts D and E of this part, tier 2 and 3 resources must be notified and mobilized as necessary to meet the requirements for arrival on scene. An on-water speed of 5 knots and a land speed of 35 miles per hour is assumed, unless the vessel owner or operator can demonstrate otherwise.

2.7 For subparts D and E of this part, in identifying equipment, the vessel owner or operator shall list the storage location, quantity, and manufacturer's make and model, unless the oil spill removal organization(s) providing the necessary response resources have been evaluated by the Coast Guard, and their capability has been determined to equal or exceed the response capability needed by the vessel. For oil recovery devices, the effective daily recovery capacity, as determined using section 6 of this appendix, must be included. For boom, the overall boom height (draft plus freeboard) must be included. A vessel owner or operator is responsible for ensuring that identified boom has compatible connectors.

2.8 For subparts F and G of this part, in identifying equipment, the vessel owner or operator shall list the storage location, quantity, and manufacturer's make and model, unless the oil spill removal organization(s) providing the necessary response resources have been evaluated by the Coast Guard, and their capability has been determined to equal or exceed the response capability needed by the vessel. For boom, the

overall boom height (draft plus freeboard) must be included. A vessel owner of operator is responsible for ensuring that identified boom has compatible connectors.

3. Determining Response Resources Required for the Average Most Probable Discharge

3.1 A vessel owner or operator shall identify and ensure, by contract or other approved means, that sufficient response resources are available to respond to the 50-barrel average most probable discharge at the point of an oil transfer involving a vessel that carries oil as a primary cargo. The equipment must be designed to function in the operating environment at the point of oil transfer. These resources must include—

3.1.1 Containment boom in a quantity equal to twice the length of the largest vessel involved in the transfer capable of being deployed within 1 hour of the detection of a spill at the site of oil transfer operations. If the transfer operation is more than 12 miles from shore, the containment boom must be deployed within 1 hour plus the travel time from the nearest shoreline at a speed of 5 knots.

3.1.2 Oil recovery devices with an effective daily recovery capacity of 50 barrels or greater available at the transfer site within 2 hours of the detection of an oil discharge.

3.1.3 Oil storage capacity for recovered oily material indicated in section 9.2 of this appendix.

4. Determining Response Resources Required for the Maximum Most Probable Discharge

4.1 A vessel owner or operator shall identify and ensure, by contract or other approved means, that sufficient response resources are available to respond to discharges up to the maximum most probable discharge volume for that vessel. The resources should be capable of containing and collecting up to 2,500 barrels of oil. All equipment identified must be designed to operate in the applicable operating environment specified in table 1 of this appendix.

4.2 To determine the maximum most probable discharge volume to be used for planning, use the lesser of—

4.2.1 2500 barrels; or

4.2.2 10 percent of the total oil cargo capacity.

4.3 Oil recovery devices necessary to meet the applicable maximum most probable discharge volume planning criteria must be located such that they arrive on scene within 12 hours of the discovery of a discharge in higher volume port areas and the Great Lakes, 24 hours in all other rivers and canals, inland, nearshore, and offshore areas, and 24 hours plus travel time from shore in all open ocean areas.

4.3.1 Because rapid control, containment, and removal of oil is critical to reduce spill impact, the effective daily recovery capacity for oil recovery devices must equal 50% of the planning volume applicable for the vessel as determined in section 4.2 of this appendix. The effective daily recovery capacity for oil recovery devices identified in the plan must be determined using the criteria in section 6 of this appendix.

4.4 In addition to oil recovery capacity, the vessel owner or operator must identify in the response plan and ensure the availability of, through contract or other approved means, sufficient boom available within the required response times for oil connection and containment, and for protection of shoreline areas. While the regulation does not set required quantities of boom for oil collection and containment, the owner or operator of a vessel must still identify in a response plan and ensure, through contract or other approved means, the availability of the boom identified in the plan for this purpose.

4.5 The plan must indicate the availability of temporary storage capacity to meet the requirements of section 9.2 of this appendix. If available storage capacity is insufficient to meet this requirement, the effective daily recovery capacity must be downgraded to the limits of the available storage capacity.

4.6 The following is an example of a maximum most probable discharge volume planning calculation for equipment identification in a higher volume port area:

The vessel's cargo capacity is 10,000 barrels, thus the planning volume is 10 percent or 1,000 barrels. The effective daily recovery capacity must be 50 percent of the planning volume, for 500 barrels per day. The ability of oil recovery devices to meet this capacity will be calculated using the procedures in section 6 of this appendix. Temporary storage capacity available on scene must equal twice the daily recovery capacity as indicated in section 9 of this appendix, or 1000 barrels per day. This figure would represent the information the vessel owner or operator would use to identify and ensure the availability of, through contract or other approved means, the required response resources. The vessel owner would also need to identify how much boom was available for use.

5. Determining Response Resources Required for the Worst Case Discharge to the Maximum Extent Practicable

5.1 A vessel owner or operator shall identify and ensure, by contract or other approved means, that sufficient response resources are available to respond to the worst case discharge of oil cargo to the maximum extent practicable. Section 7 of this appendix describes the method to determine the required response resources.

5.2 Oil spill recovery devices identified to meet the applicable worst case discharge

planning volume must be located such that they can arrive at the scene of a discharge within the time specified for the applicable response tier listed in §155.1050(g).

5.3 The effective daily recovery capacity for oil recovery devices identified in a response plan must be determined using the criteria in section 6 of this appendix. A vessel owner or operator shall identify the storage locations of all equipment that must be used to fulfill the requirements for each tier.

5.4 A vessel owner or operator shall identify the availability of temporary storage capacity to meet the requirements of section 9.2 of this appendix. If available storage capacity is insufficient to meet this requirement, then the effective daily recovery capacity must be downgraded to the limits of the available storage capacity.

5.5 When selecting response resources necessary to meet the response plan requirements, the vessel owner or operator must ensure that a portion of those resources are capable of being used in close-to-shore response activities in shallow water. The following percentages of the on-water response equipment identified for the applicable geographic area must be capable of operating in waters of 6 feet or less depth:

(i) Open ocean—none.

(ii) Offshore—10 percent.

(iii) Nearshore, inland, Great Lakes, and rivers and canals—20 percent.

5.6 In addition to oil spill recovery devices and temporary storage capacity, a vessel owner or operator shall identify in the response plan and ensure the availability of, through contract or other approved means, sufficient boom that can arrive on scene within the required response times for oil containment and collection. The specific quantity of boom required for collection and containment will depend on the specific recovery equipment and strategies employed. Table 2 of this appendix lists the minimum quantities of additional boom required for shoreline protection that a vessel owner or operator shall identify in the response plan and ensure the availability of, through contract or other approved means.

5.7 A vessel owner or operator shall also identify in the response plan and ensure, by contract or other approved means, the availability of an oil spill removal organization capable of responding to a shoreline cleanup operation involving the calculated volume of emulsified oil that might impact the affected shoreline. The volume of oil for which a vessel owner or operator should plan should be calculated through the application of factors contained in Tables 3 and 4 of this appendix. The volume calculated from these tables is intended to assist the vessel owner or operator in identifying a contractor with sufficient resources. This planning volume is not used explicitly to determine a required amount of equipment and personnel.

6. Determining Effective Daily Recovery Capacity for Oil Recovery Devices

6.1 Oil recovery devices identified by a vessel owner or operator must be identified by manufacturer, model, and effective daily recovery capacity. These capacities must be to meet the applicable planning criteria for the average most probable discharge; maximum most probable discharge; and worst case discharge to the maximum extent practicable.

6.2 For the purposes of determining the effective daily recovery capacity of oil recovery devices, the following method will be used. This method considers potential limitations due to available daylight, weather, sea state, and percentage of emulsified oil in the recovered material. The Coast Guard may assign a lower efficiency factor to equipment listed in a response plan if it determines that such a reduction is warranted.

6.2.1 The following formula must be used to calculate the effective daily recovery capacity:

$R=T\times24\times E$

R—Effective daily recovery capacity

T—Throughput rate in barrels per hour (nameplate capacity)

E—20% efficiency factor (or lower factor as determined by the Coast Guard)

6.2.2 For those devices in which the pump limits the throughput of liquid, throughput rate will be calculated using the pump capacity.

6.2.3 For belt or mop type devices, the throughput rate will be calculated using data provided by the manufacturer on the nameplate rated capacity for the device.

6.2.4 Vessel owners or operators including in the response plan oil recovery devices whose throughput is not measurable using a pump capacity or belt or mop capacity may provide information to support an alternative method of calculation. This information must be submitted following the procedures in section 6.5 of this appendix.

6.3 As an alternative to section 6.2 of this appendix, a vessel owner or operator may submit adequate evidence that a different effective daily recovery capacity should be applied for a specific oil recovery device. Adequate evidence is actual verified performance data in spill conditions or test using certain ASTM standards [ASTM F 631 (incorporated by reference, see §155.140) Standard Method for Testing Full Scale Advancing Spill Removal Devices], or an equivalent test approved by the Coast Guard.

6.3.1 The following formula must be used to calculate the effective daily recovery capacity under this alternative:

$R=D\times U$

R—Effective daily recovery capacity

D—Average Oil Recovery Rate in barrels per hour (Item 13.2.16 in ASTM F 631; or actual performance data)

U—Hours per day that a vessel owner or operator can document capability to operate equipment under spill conditions. Ten hours per day must be used unless a vessel owner or operator can demonstrate that the recovery operation can be sustained for longer periods.

6.4 A vessel owner or operator submitting a response plan shall provide data that supports the effective daily recovery capacities for the oil recovery devices listed. The following is an example of these calculations:

A weir skimmer identified in a response plan has a manufacturer's rated throughput at the pump of 267 gallons per minute (gpm).

267 gpm=381 barrels per hour
R=381×24×.2=1,829 barrels per day

After testing using ASTM procedures, the skimmer's oil recovery rate is determined to be 220 gpm. The vessel owner or operator identifies sufficient resources available to support operations 12 hours per day.

220 gpm=314 barrels per hour
R=314×12=3,768 barrels per day

A vessel owner or operator will be able to use the higher capacity if sufficient temporary oil storage capacity is available.

6.5 Determinations of alternative efficiency factors under section 6.2 or alternative effective daily recovery capacities under section 6.3 of this appendix will be made by Commandant (CG–5431), Coast Guard Headquarters, 2100 2nd St.,SW., Stop 7581, Washington, DC 20593–7581 or *vrp@uscg.mil*. Oil spill removal organizations or equipment manufacturers may submit required information on behalf of multiple vessel owners or operators.

7. Calculating the Worst Case Discharge Planning Volumes

7.1 A vessel owner or operator shall plan for a response to a vessel's worst case discharge volume of oil cargo. The planning for on-water recovery must take into account a loss of some oil to the environment due to evaporations and natural dissipation, potential increases in volume due to emulsification, and the potential for deposit of some oil on the shoreline.

7.2 The following procedures must be used to calculate the planning volume used by a vessel owner or operator for determining required on-water recovery capacity:

7.2.1 The following must be determined: the total volume of oil cargo carried; the appropriate cargo group for the type of petroleum oil carried [persistent (groups II, III, and IV) or non-persistent (group I)]; and the geographic area(s) in which the vessel operates. For vessels carrying mixed cargoes from different petroleum oil groups, each group must be calculated separately. This information is to be used with Table 3 of this appendix to determine the percentages of the total cargo volume to be used for removal capacity planning. This table divides the cargo volume into three categories: oil lost to the environment; oil deposited on the shoreline; and oil available for on-water recovery.

7.2.2 The on-water oil recovery volume must be adjusted using the appropriate emulsification factor found in Table 4 of this appendix.

7.2.3 The adjusted volume is multiplied by the on-water oil recovery resource mobilization factor found in Table 5 of this appendix from the appropriate operating area and response tier to determine the total on-water oil recovery capacity in barrels per day that must be identified or contracted for to arrive on scene within the applicable time for each response tier. Three tiers are specified. For higher volume port areas, the contracted tiers of resources must be located such that they can arrive on scene within 12, 36, and 60 hours of the discovery of an oil discharge. For the Great Lakes, these tiers are 18, 42, and 66 hours. For rivers and canals, inland, nearshore, and offshore, these tiers are 24, 48, and 72 hours. For the open ocean area, these tiers are 24, 48, and 72 hours with an additional travel time allowance of 1 hour for every additional 5 nautical miles from shore.

7.2.4 The resulting on-water recovery capacity in barrels per day for each tier is used to identify response resources necessary to sustain operations in the applicable geographic area. The equipment must be capable of sustaining operations for the time period specified in Table 3 of this appendix. A vessel owner or operator shall identify and ensure the availability of, through contract or other approved means, sufficient oil spill recovery devices to provide the effective daily oil recovery capacity required. If the required capacity exceeds the applicable cap described in Table 6 of this appendix, then a vessel owner or operator must contract for at least the quantity of resources required to meet the cap, but must identify sources of additional resources as indicated in §155.1050(p). For a vessel that carries multiple groups of oil, the required effective daily recovery capacity for each group is calculated and summed before applying the cap.

7.3 The following procedures must be used to calculate the planning volume for identifying shoreline cleanup capacity:

7.3.1 The following must be determined: the total volume of oil cargo carried; the appropriate cargo group for the type of petroleum oil carried [persistent (groups II, III, and IV) or non-persistent (group I)]; and the geographic area(s) in which the vessel operates. For a vessel carrying cargoes from different oil groups, each group must be calculated separately. Using this information,

Table 3 of this appendix must be used to determine the percentages of the total cargo volume to be used for shoreline cleanup resource planning.

7.3.2 The shoreline cleanup planning volume must be adjusted to reflect an emulsification factor using the same procedure as described in section 7.2.2 of this appendix.

7.3.3 The resulting volume will be used to identify an oil spill removal organization with the appropriate shoreline cleanup capability.

7.4 The following is an example of the procedure described above:

A vessel with a 100,000 barrel capacity for #6 oil (specific gravity .96) will move from a higher volume port area to another area. The vessel's route will be 70 miles from shore.

Cargo carried: 100,000 bbls. Group IV oil
Emulsification factor (from Table 4 of this appendix): 1.4 Areas transited: Inland, Nearshore, Offshore, Open ocean
Planned % on-water recovery (from Table 3 of this appendix):
Inland 50%
Nearshore 50%
Offshore 40%
Open ocean 20%
Planned % oil onshore recovery (from Table 3 of this appendix):
Inland 70%
Nearshore 70%
Offshore 30%
Open ocean 30%
General formula to determine planning volume:
(planning volume)=(capacity)×(% from Table 3 of this appendix)×(emulsification factor from Table 4 of this appendix)
Planning volumes for on-water recovery:
Inland 100,000×.5×1.4=70,000 bbls
Nearshore 100,000×.5×1.4=70,000 bbls
Offshore 100,000×.4×1.4=56,000 bbls
Open ocean 100,000×.2×1.4=28,000 bbls
Planning volumes for on shore recovery:
Inland 100,000×.7×1.4=98,000 bbls
Nearshore 100,000×.7×1.4=98,000 bbls
Offshore 100,000×.3×1.4=42,000 bbls
The vessel owner or operator must contract with a response resource capable of managing a 98,000-barrel shoreline cleanup in those areas where the vessel comes closer than 50 miles to shore.

Determining required resources for on-water recovery for each tier using mobilization factors: (barrel per day on-water recovery requirements)=(on-water planning volume as calculated above)×(mobilization factor from Table 5 of this appendix).

		Tier 1	Tier 2	Tier 3
Inland/Nearshore 70,000	×	.15	.25	.40
Offshore 56,000	×	.10	.165	.21
Open ocean 28,000	×	.06	.10	.12
equals (barrels per day)				
Inland/Nearshore		10,500	17,500	28,000
Offshore		5,600	9,240	11,760
Open ocean		1,680	2,800	3,360

Since the requirements for Tier 1 for inland and nearshore exceed the caps, the vessel owner would only need to contract for 10,000 barrels per day for Tier 1. No additional equipment would be required to be identified because the required Tier 3 resources are below the Tier 3 caps.

10% of the on-water recovery capability for offshore, and 20% of the capability for inland/nearshore, for all tiers, must be capable of operating in water with a depth of 6 feet or less.

The vessel owner or operator would also be required to identify or contract for quantities of boom identified in Table 2 of this appendix for the areas in which the vessel operates.

8. Determining the Capability of High-Rate Response Methods

8.1 Calculate cumulative dispersant application capacity requirements as follows:

8.1.1 A vessel owner or operator must plan either for a dispersant capacity to respond to a vessel's worst case discharge (WCD) of oil, or for the amount of the dispersant resource capability as required by §155.1050(k)(3) of this chapter, whichever is the lesser amount. When planning for the cumulative application capacity that is required, the calculations should account for the loss of some oil to the environment due to natural dissipation causes (primarily evaporation). The following procedure should be used to determine the cumulative application requirements:

8.1.2 Determine the WCD volume of oil carried in gallons, and the appropriate oil group for the type of petroleum oil carried (Groups II, III, IV). For vessels carrying different oil groups, assume a WCD using the oil group that constitutes the largest portion of the oil being carried, or the oil group with the smallest natural dissipation factor;

8.1.3 Multiply the WCD in gallons by the natural dissipation factor for the appropriate oil group as follows: Group II factor is 0.50; Group III factor is 0.30; and Group IV factor is 0.10. This represents the amount of oil that

can be expected to be lost to natural dissipation. Subtract the WCD lost to natural dissipation from the total oil amount carried to determine the remaining oil available for treatment by dispersant-application; and

8.1.4 Multiply the oil available for dispersant treatment by the dispersant to oil planning application ratio of 1 part dispersant to 20 parts oil (0.05). The resulting number represents the cumulative total dispersant-application capability that must be ensured available within the first 60 hours.

8.1.5(i) The following is an example of the procedure described in paragraphs 8.1.1 through 8.1.4 above: A vessel with a 1,000,000 gallons capacity of crude oil (specific gravity 0.87) will transit through an area with preauthorization for dispersant use in the nearshore environment on the U.S. East Coast.

WCD: 1,000,000 gallons, Group III oil.

Natural Dissipation Factor for Group III: 30 percent.

General formula to determine oil available for dispersant treatment: ((WCD)—[(WCD) × (natural dissipation factor)] = available oil.

E.g., 1,000,000 gal − (1,000,000 gal × 0.30) = 700,000 gallons of available oil.

Cumulative application capacity = Available oil × planning application ratio (1 gal dispersant/20 gals oil = 0.05).

E.g., 700,000 gal oil × (0.05) = 35,000 gallons cumulative dispersant-application capacity.

(ii) The requirements for cumulative dispersant-application capacity (35,000) for this vessel's WCD is less than the overall dispersant capability cap for non-Gulf Coast waters required by §155.1050(k) of this chapter. Because paragraph 8.1.1 of this appendix requires owners and operators to ensure the availability of the lesser of a vessel's dispersant requirements for WCD or the amount of the dispersant cap provided for in §155.1050(k)(3), the vessel in this example would be required to ensure the availability of 35,000 gallons of dispersant. More specifically, this vessel would be required to meet the following tier requirements in §155.1050(k), which total 35,000 gallons application:

Tier—1 4,125 gallons—Completed in 12 hours.

Tier—2 23,375 gallons—Completed in 36 hours.

Tier—3 7,500 gallons—Completed in 60 hours.

8.2 Determining Effective Daily Application Capacities ''EDACs'' for dispersant response systems as follows:

8.2.1 EDAC planning estimates for compliance with the dispersant application requirements in §155.1050(k)(3) are to be based on:

8.2.1.1 The spill occurring at sites 50 nautical miles off shore furthest from the primary dispersant staging site(s);

8.2.1.2 Specific dispersant application platform operational characteristics identified in the Dispersant Mission Planner 2 or as demonstrated by operational tests;

8.2.1.3 Locations of primary dispersant staging sites; and

8.2.1.4 Locations and quantities of dispersant stockpiles.

8.2.2 EDAC calculations with supporting documentation must be submitted to the NSFCC for classification as a Dispersant Oil Spill Removal Organization.

8.2.3(i) EDAC can also be calculated using the Dispersant Mission Planner 2 (DMP2). The DMP2 is a downloadable application that calculates EDAC for different dispersant response systems. It is located on the Internet at: *http://www.response.restoration.noaa.gov/spilltools*

(ii) The DMP2 contains operating information for the vast majority of dispersant application platforms, to include aircraft, both rotary and fixed wing, and vessels. The DMP2 produces EDAC estimates by performing calculations that are based on performance parameters of dispersant application platforms, locations of primary dispersant staging sites, home based airport or port locations, and for planning purposes, a 50 mile from shore dispersant application site. The 50 mile offshore site used in the DMP2 would be the location furthest from the primary dispersant staging site identified in the vessel response plan.

8.2.4 For each Captain of the Port Zone where a dispersant response capability is required, the response plan must identify the following:

8.2.4.1 The type, number, and location of each dispersant application platform intended for use in meeting dispersant delivery requirements specified in §155.1050(k)(3) of this chapter;

8.2.4.2 The amount and location of available dispersant stockpiles to support each platform; and

8.2.4.3 A primary staging site for each platform that will serve as its base of operations for the duration of the response.

8.3 In addition to the equipment and supplies required, a vessel owner or operator must identify a source of support to conduct the monitoring and post-use effectiveness evaluation required by applicable Local and Area Contingency Plans.

8.4 Identification of the resources for dispersant application does not imply that the use of this technique will be authorized. Actual authorization for use during a spill response will be governed by the provisions of the National Oil and Hazardous Substances Contingency Plan (40 CFR part 300) and the applicable Local or Area Contingency Plan.

9. Additional Equipment Necessary To Sustain Response Operations

9.1 A vessel owner or operator is responsible for ensuring that sufficient numbers of

trained personnel, boats, aerial spotting aircraft, sorbent materials, boom anchoring materials, and other resources are available to sustain response operations to completion. All such equipment must be suitable for use with the primary equipment identified in the response plan. A vessel owner or operator is not required to list these resources in the response plan, but shall certify their availability.

9.2 A vessel owner or operator shall evaluate the availability of adequate temporary storage capacity to sustain the effective daily recovery capacities from equipment identified in the plan. Because of the inefficiencies of oil spill recovery devices, response plans must identify daily storage capacity equivalent to twice the effective daily recovery capacity required on scene. This temporary storage capacity may be reduced if a vessel owner or operator can demonstrate by waste stream analysis that the efficiencies of the oil recovery devices, ability to decant water, or the availability of alternative temporary storage or disposal locations in the area(s) the vessel will operate will reduce the overall volume of oily material storage requirements.

9.3 A vessel owner or operator shall ensure that their planning includes the capability to arrange for disposal of recovered oil products. Specific disposal procedures will be addressed in the applicable Area Contingency Plan.

TABLE 1—RESPONSE RESOURCE OPERATING CRITERIA

[Oil Recovery Devices]

Operating Environment	Significant Wave Height [1] (feet)	Sea State
Rivers & Canals	≤1	1
Inland	≤3	2
Great Lakes	≤4	2–3
Ocean	≤6	3–4

[Boom]

Boom Property	Use			
	Rivers & Canals	Inland	Great Lakes	Ocean
Significant Wave [1,2] Height (feet)	≤1	≤3	≤4	≤6
Sea State	1	2	2–3	3–4
Boom height—in. (draft plus freeboard)	6–18	18–42	18–42	≥42
Reserve Buoyancy to Weight Ratio	2:1	2:1	2:1	3:1 to 4:1
Total Tensile Strength—lbs.	4,500	15–20,000	15–20,000	>20,000
Skirt Fabric Tensile Strength—lbs.	200	300	300	500
Skirt Fabric Tear Strength—lbs.	100	100	100	125

[1] Oil recovery devices and boom must be at least capable of operating in wave heights up to and including the values listed in Table 1 for each operating environment.

[2] Equipment identified as capable of operating in waters of 6 feet or less depth are exempt from the significant wave height planning requirement.

TABLE 2—SHORELINE PROTECTION REQUIREMENTS

Location	Boom	Availability hours	
	Ensured by contract or other approved means (ft.)	Higher volume port area	Other areas
Persistent Oils			
Open Ocean	.....	.....	.....
Offshore	15,000	24	48
Nearshore/Inland/Great Lakes	30,000	12	24
Rivers & Canals	25,000	12	24
Non-Persistent Oils			
Open Ocean	.....	.....	.....
Offshore	.....	.....	.....
Nearshore/Inland/Great Lakes	10,000	12	24
Rivers & Canals	15,000	12	24

Spill Location	Nearshore/Inland/ Great Lakes			River		
Sustainability of on-water oil recovery	4 days			3 days		
Oil Group	% Natural Dissipation	% Recovered Floating oil	% Oil on shore	% Natural Dissipation	% Recovered Floating oil	% Oil on shore
I Non-persistent oils	80	20	10	80	10	10
II Light crudes and fuels	50	50	30	40	15	45
III Medium crudes and fuels	30	50	50	20	15	65
IV Heavy crudes /residual fuels	10	50	70	5	20	75

Note: Percentage may not sum to 100; reflects enhanced on-water recovery capacity

Table 3 Removal Capacity Planning Table

Spill Location	Open ocean			Offshore		
Sustainability of on-water oil recovery	10 days			6 days		
Oil Group	% Natural Dissipation	% Recovered Floating oil	% Oil on shore	% Natural Dissipation	% Recovered Floating oil	% Oil on shore
I Non-persistent oils	100	/	/	95	[5]*	/
II Light crudes	90	10	/	75	25	5
III Medium crudes and fuels	75	20	[5]*	60	40	20
IV Heavy crudes /residual fuels	50	20	[30]*	50	40	30

* Included in table for continuity; no planning required.

Table 3 Removal Capacity Planning Table

TABLE 4—EMULSIFICATION FACTORS FOR PETROLEUM OIL CARGO GROUPS

Non-persistent oil 72 G:	
Group I	1.0
Persistent oil:	
Group II	1.8
Group III	2.0

TABLE 4—EMULSIFICATION FACTORS FOR PETROLEUM OIL CARGO GROUPS—Continued

Group IV	1.4

TABLE 5—ON-WATER OIL RECOVERY RESOURCE MOBILIZATION FACTORS

Area	Tier 1	Tier 2	Tier 3
Rivers and Canals	.30	.40	.60
Inland/Nearshore/Great Lakes	.15	.25	.40
Offshore	.10	.165	.21
Ocean	.06	.10	.12

Note: These mobilization factors are for total resources mobilized, not incremental resources.

TABLE 6—RESPONSE CAPABILITY CAPS BY GEOGRAPHIC AREA

	Tier 1	Tier 2	Tier 3
As of February 18, 1993:			
All except rivers & canals & Great Lakes	10K bbls/day	20K bbls/day	40K bbls/day.
Great Lakes	5K bbls/day	10K bbls/day	20K bbls/day.
Rivers & canals	1,500 bbls/day	3,000 bbls/day	6,000 bbls/day.
February 18, 1998:			
All except rivers & canals & Great Lakes	12.5K bbls/day	25K bbls/day	50K bbls/day.
Great Lakes	6.35K bbls/day	12.5K bbls/day	25K bbls/day.
Rivers & canals	1,875 bbls/day	3,750 bbls/day	7,500 bbls/day.
February 18, 2003			
All except rivers & canals & Great Lakes	12.5K bbls/day	25K bbls/day	50K bbls/day.
Great Lakes	6.25K bbls/day	12.3K bbls/day	25K bbls/day.
Rivers & canals	1,875 bbls/day	3,750 bbls/day	7,500 bbls/day.

Note: The caps show cumulative overall effective daily recovery capacity, not incremental increases.
K = Thousand
bbls = Barrels
TBD = To be determined

[CGD 91–034, 61 FR 1100, Jan. 12, 1996, as amended by CGD 96–026, 61 FR 33666, June 28, 1996; USCG–1999–5151, 64 FR 67176, Dec. 1, 1999; USCG–2005–21531, 70 FR 36349, June 23, 2005; USCG–2008–0179, 73 FR 35015, June 19, 2008; USCG–2001–8661, 74 FR 45029, Aug. 31, 2009; USCG–2010–0351, 75 FR 36285, June 25, 2010]

APPENDIX C TO PART 155—TRAINING ELEMENTS FOR OIL SPILL RESPONSE PLANS

1. General

1.1 The portion of the plan dealing with training is one of the key elements of a response plan. This concept is clearly expressed by the fact that Congress, in writing the Oil Pollution Act of 1990, specifically included training as one of the sections required in a vessel or facility response plan. In reviewing submitted response plans, it has been noted that the plans often do not provide sufficient information in the training section of the plan for either the user or the reviewer of the plan. In some cases, plans simply state that the crew and others will be training in their duties and responsibilities, with no other information being provided. In other plans, information is simply given that required parties will receive the necessary worker safety training (HAZWOPER).

1.2 The training section of the plan need not be a detailed course syllabus, but it must contain sufficient information to allow the user and reviewer (or evaluator) to have an understanding of those areas that are believed to be critical. Plans should identify key skill areas and the training that is required to ensure that the individual identified will be capable of performing the duties prescribed to them. It should also describe how the training will be delivered to the various personnel. Further, this section of the plan must work in harmony with those sections of the plan dealing with exercises, the spill management team, and the qualified individual.

1.3 The material in this appendix C is not all-inclusive and is provided for guidance only.

2. Elements To Be Addressed

2.1 To assist in the preparation of the training section of a vessel response plan, some of the key elements that should be addressed are indicated in the following sections. Again, while it is not necessary that the comprehensive training program for the company be included in the response plan, it