MATERIAL, EQUIPMENT AND VEHICLES TO BE INCLUDED IN THE FACILITY FOR EMERGENCY RESPONSE

Sea Vehicles

Marine vessels are the means necessary for laying the barrier on the sea surface in case of a potential spill, transferring the response sources to the spill area and collecting the spilled oil at sea.

Boat; It is used to deliver the necessary equipment and response personnel to the spill area during the operation. It is also necessary to effectively surround the spill by guiding the barrier in surrounding the spill with the barrier.

Barc ; It is a temporary storage equipment that enables the oil collected from the sea surface to be stored at sea during the response. The oil collected from the sea surface with scrapers is transferred to the barges, and the oil stored at the end of the intervention is transported to the shore by means of barge in order to be disposed of .

Tug; It is a sea vehicle that guides the ships in order to ensure the safe movement of the ships that will berth and leave the facility during the berthing and departure maneuvers.

Mooring Boat; During the berthing of the ship to the pier, it ensures that the ship ropes are delivered to the pier and tied to the pier by the land moorings. At the same time, it ensures that the ropes connected to the pier are properly stopped during the ship's departure from the pier.

STAR Refinery, Petkim and STAD provide tugboat and mooring services to Petkim and UZMAR Denizcilik ve Sanayi Tic.Ltd . and SANMAR Denizcilik Makina ve Tic. Inc. meets.

Oil Barriers

Oil barriers are equipment that allow oil to collect on the sea surface, to surround it, to change its direction, and also to prevent oil from hitting the shore and affecting the shoreline and sensitive areas.

The parts of the barriers that are above the water are called the freeboard and the parts that are under the water are called the draft , and the barriers must be designed in such a way that the balance on the water will not be disturbed by the average current speed and the average wind effect. According to the circular numbered 2009/6 published by the TR Ministry of Transport and Infrastructure, the minimum qualifications of the barriers are shown in Table 1. According to STAR Refinery and STAD Table 1, they are in the category of “Shore Facility Without Breakwater”, and in the selection of barriers, the freeboard height should not be less than 35 cm, the buoyancy: weight ratio should be 4:1 and the tensile strength should be 22 kN . In Petkim , on the other hand, the piers where the ships dock remain inside the breakwater. However, since the outlet point of the rainwater canal is in the region without a breakwater, it is more appropriate to choose the barrier according to the characteristics of the "Coastal Facility without a Breakwater".

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Table 1 Minimum Specifications of Oil Barriers

Minimum Specifications of Oil Barriers		Freeboard (cm)	Water Withdrawal (cm)	Lift Force / Weight Ratio	Tensile Strength (kN)
Barriers to be used in the breakwater (Least)	Barriers purchased in 2007 and before	15	Cannot be less than freeboard value	4:1	22
	Barriers purchased after 2007	20			
Barriers to be used in coastal facilities outside and without a breakwater (Least)	Barriers purchased in 2007 and before	25	Cannot be less than freeboard value	4:1	22
	Barriers purchased after 2007	35			

Barriers need to be laid in a fast time during the response operation, and the source of the spill and the area where the spill is concentrated should be surrounded first. In this way, oil scrapers are collected from the sea surface more effectively.

Oil Scrapers and Pumps

Oil skimmers are mechanical equipment that physically collects oil from the sea surface. The working mechanisms of oil skimmers according to collection principles are summarized below:

Brush Type Oil Scrapers; The debris is collected from the water surface by the brushes on the rotating parts. Since the brushes are oil -loving (oil-loving), they effectively collect the oil from the water surface. Solid particles collected with the oil are separated from the oil by the teeth on the scraper. The collected oil is transferred to the storage tanks by means of pumps. This type of oil scraper is effective for high density oil types such as crude oil.

Weir Type Oil Scrapers; Depending on the concentration of the oil accumulating on the water surface, the oil is collected in the collection reservoir located in the middle of the scraper, with the effect of the density difference. In the absence of heavy spillage, this type of scraper collects large amounts of water along with the oil. Therefore, it is effective for more medium viscosity spills.

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Roller and Disc Type Oil Scrapers; The scraper unit is a disc type consisting of roller or disc-shaped parts. The oil held on the reels or discs is transferred to the collection reservoir from there to the storage tanks by means of pumps. It is effective for the recovery of medium viscosity petroleum derivatives from the sea surface.

Pumps are mechanical equipment used by oil skimmers to transfer oil collected from the sea surface to temporary storage tanks or to transport vehicles to ensure the disposal of oil accumulated in storage tanks. The most commonly used pump types in spill response work are centrifugal pumps, diaphragm pumps, screw pumps and multistage pumps.

Temporary Storage Tanks

Temporary storage tanks are storage units where the oil collected by the scrapers is transferred by pumps and temporarily accumulated. The wastes are stored temporarily until the final disposal operations are carried out, and the different types of wastes that arise are classified and transferred in an appropriate manner.

Absorbent Materials

Absorbent Barriers; It is effectively used in cleaning and improvement activities of areas such as shore and pier during cleaning activities. At the same time, the efficiency of the barrier is increased by placing it inside the barrier surrounding the oil on the sea surface, while some oil is absorbed by the absorbent barrier.

Absorbent Pads ; During cleaning activities, cleaning operations are carried out by laying on the surface of the oil spill. It is widely used in coastal cleaning and in the final stage of sea cleaning.

Equipment, Materials and Vehicles Recommended for the Facility within the Scope of Level 1, and May Be Required in the Facility within the Scope of Level 2 and Level 3

STAR Refinery, Petkim and STAD terminals receive Level 1, Level 2 and Level 3 Emergency Response Services jointly. Since April 1, 2019, NRC Environmental Protection Waste Management and Treatment Services Inc. has been providing 24/7 Emergency Response Service within the facility with a response team of 24 people. In this context, equipment, materials and vehicles needed by the facilities for Level 1, Level 2 and Level 3 services will be used jointly and have been deployed at 4 points;

STAR Refinery Area Response Point (Response Station No. 1):
In 6 Containers;
Offshore Barrier: 600 m.
Coastal Barrier 300 m.
sorbent Boom : 300 m.
Skimmer : 1 set
Storage Tank: 10 m3

Petkim Region Intervention Point (Intervention Station No. 2):
In 2 Containers;
Offshore Barrier: 400 Meters

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Petkim Inflatable Barrier: 750 Meters
Shore Barrier: 200 Meters

No. 3 Marine Vehicles Mooring Point:
1 NRC Emergency Response his ship
3 NRC Barriers _ Laying boat

NRC- SOCAR SEZ Main Response Depot No. 4:
The rest of Level1, 2 and 3 equipment and materials are located in this region located within the borders of STAR Refinery.
The locations of equipment, materials and vehicles and the distance of these locations to the intervention points are shown in Figure 1 and Figure 2.

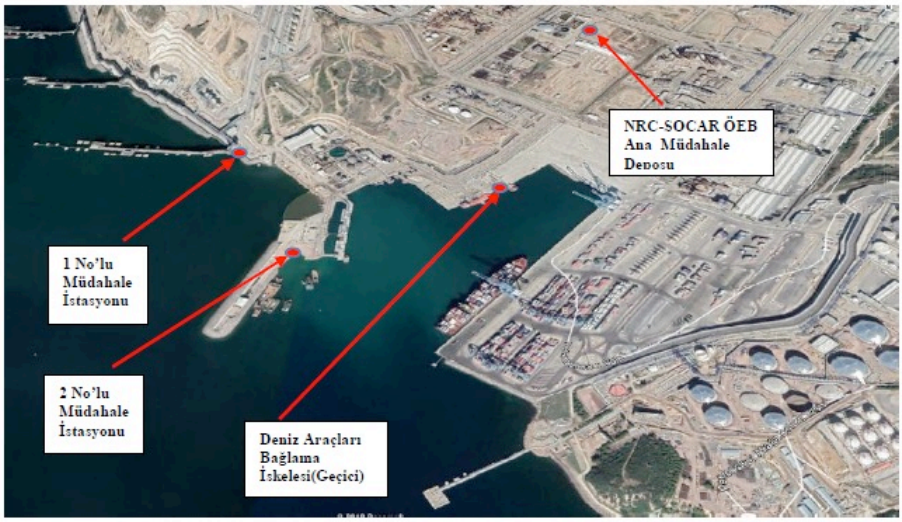

Figure 1 Locations of equipment , materials and vehicles

Figure 2 Distance of equipment, materials and vehicles to intervention points

The list of equipment, materials and vehicles recommended to be in the facility within the scope of Level 1 is presented in Table 2, and the list of equipment, materials and vehicles that may be required under Level 2 and Level 3 is presented in Table 3.

In determining the length of the barrier, it is taken into account that the barrier is more than 3 times the length of the largest ship approaching the pier.

Table 2 Recommended Equipment, Materials and Vehicles for Three Facilities under Level 1

No.	Equipment/Material/ Vehicle	Features	Recommended Amount in the Facility
BARRIER AND COAST PROTECTION			
one	Offshore Barrier	Inflatable or cylindrical infill type barrier suitable for offshore conditions	1.500 m.
2	Coast Guard Barrier	To be used for Coastal Protection Purposes	500 meters
3	Anchor Set	Buoy, anchor, chain and rope to suit the oil barrier	30 sets
SCRAPERS			
4	scraper	20m ^{3} /h capacity, oil scraper	4 sets
PUMPS			
5	Diaphragm Pump	With hose, fittings and filter	3 sets
SORBENT INGREDIENTS			
6	Sorbent Barrier	20 cmx3m in size, with a mass absorption capacity ratio (pollutant/ sorbent) of 10 sorbent barrier	2,000 m
7	sorbent Pad	With a mass absorption capacity ratio (pollutant/ sorbent) of 5, in packs of 100, in square shape	60 bales
STORAGE AND BLOWER UNITS			
8	Portable Tank	10 m ^{3} capacity; With tank linings, roof covers and floor mats	6 sets
9	Portable Tank	5 m ^{3} capacity ; With tank linings, roof covers and floor mats	6 sets
10	Floating Storage Tank	10 m3 ^{capacity} floating storage tank	6 sets

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11th	Floating Storage Tank	5 m3 capacity floating storage tank	6 sets
12	Waste Container	240 liters, plastic	6 pieces
WASHERS			
13	Pressure Washer	Pressure Washer for Shore Cleaning	3 pieces
PROTECTIVE EQUIPMENT / MATERIALS			
14	Personal Protective Equipment	Tyvek Overalls, glasses, gloves, work shoes, hard hat	Sufficient for the Field Response Team.
15	Citrus Organic Cleanser	Hand and body cleaner	15 liters
16	Safety Signs	Safety strip and safety signs	3 sets
VARIOUS			
17	Camera	For spill detection and proof	1 pc
18	Gas Meter	4 types of gas measuring feature	3 pieces
19	Air Tube Breathing System	With gas mask and backrest	6 sets
20	Full Face Mask	Full face mask with cartridge according to H_2S	12 sets
21	Equipment to be Used in Coastal Cleaning	Shovel, Washing brush, etc.	Sufficient for the Field Response Team.
22	Wheelbarrow	For use in coastal cleaning	10 units
23	Radio	It has the features to provide land contact with the boat and the ship.	9 pieces
BOATS			
24	workboat	Suitable for laying barriers and pulling barc has the features to be resistant to 4 bophora	2 pieces

STAR Refinery, Petkim and STAD, "Communiqué on the Election of the Companies/Institutions/Organizations That Can Be Given Emergency Response in the Pollution of the Marine Environment with Petroleum and Other Harmful Substances, and the Working Procedures of the Companies/Institutions/Organizations Holding Authorization Certificates and Coastal Facilities" (Communiqué No: 2009/ 4) according to Table 2 , it has to have the equipment or transfer it to the authorized company within the scope of the authorization transfer. In this context, NRC Environmental Protection Waste Management and Treatment Speed . Inc. contracted with.

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Table 3 Equipment, Materials and Vehicles That May Be Required in Three Facilities Under Level 2 and Level 3

No.	Equipment/Material/Vehicle	Features	Amount Required
BARRIER AND COAST PROTECTION			
one	Offshore Barrier	Inflatable or cylindrical infill type barrier suitable for offshore conditions	3,000 m.
2	Coast Guard Barrier	To be used for Coastal Protection Purposes	1000 meters
3	Anchor Set	Buoy, anchor, chain and rope to suit the oil barrier	50 sets
SCRAPERS			
4	Oil Scraper	20m ^{3} /h capacity, oil scraper	7 sets
PUMPS			
5	Diaphragm Pump	With hose, fittings and filter	4 sets
SORBENT INGREDIENTS			
6	Sorbent Barrier	20 cmx3m in size, with a mass absorption capacity ratio (pollutant/ sorbent) of 10 sorbent barrier	3,000 m.
7	sorbent Pad	With a mass absorption capacity ratio (pollutant/ sorbent) of 5, in packs of 100, in square shape	150 bales
STORAGE UNITS			
8	Portable Tank	10 m ^{3} capacity; With tank linings, roof covers and floor mats	8 sets
9	Portable Tank	5 m ^{3} capacity ; With tank linings, roof covers and floor mats	8 sets
10	Floating Storage Tank	10 m3 ^{capacity} floating storage tank	8 sets
11th	Floating Storage Tank	5 m3 ^{capacity} floating storage tank	8 sets

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12	Waste Container	240 liters, plastic	8 pieces
WASHERS			
13	Pressure Washer	Pressure Washer for Shore Cleaning	5 pieces
PROTECTIVE EQUIPMENT / MATERIALS			
14	Personal Protective Equipment	Tyvek Overalls, glasses , gloves, work shoes, helmet , etc.	Sufficient for the Field Response Team.
15	Eye Washing Unit	Portable	6 sets
16	Citrus Organic Cleanser	For hand and body cleaning	20 liters
17	Safety Signs	Safety strip and safety signs	6 sets
VARIOUS			
18	gas measuring device	4 types of gas measuring feature	4 units
19	Air Tube Breathing System	With gas mask and backrest	6 sets
20	Full Face mask	Full face mask with cartridge suitable for $H_{2}S$'	24 pcs
21	Lighting Tower	Lighting Tower-With Generator	3 pieces
22	Equipment to be used in Coastal Cleaning	Shovel, Washing brush, etc.	Sufficient for the Field Response Team.
23	Wheelbarrow	For use in coastal cleaning	10 units
24	Bird and Wildlife Escape and Protection Equipment	For the Conservation of Wildlife	3 sets
BOATS			
25	workboat	has the features to be resistant to 4 boreholes suitable for laying barriers and pulling barc .	2 pieces
26	Oil Spill Response Boat	Boat equipped to respond to an oil spill	1 pc
V ASSES			
27	forklift	Assisting in the transport of materials	1 pc
28	Van	Capacity required to transport materials	2 pieces
COMPUTER AND COMMUNICATION			
28	office equipment	Equipment including computers, printers, faxes, scanners and telephones	1 set

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In case of spills within the scope of Level 2 and Level 3, STAR Refinery, Petkim and STAD have agreed on the "Selection of Companies/Institutions/Organizations That Can Be Entrusted with Emergency Response in Pollution of the Marine Environment with Petroleum and Other Harmful Substances, and the Working Procedures of Companies/Institutions/Organizations with Authorization Certificates and Coastal Facilities" According to the Communiqué (Communiqué No: 2009/4), NRC Environmental Protection Waste Management and Treatment Service, a company authorized within the scope of this communiqué . A.Ş. _

can be used together with equipment, materials and vehicles recommended to be in the facility under Level 1 specified in Table 2 in case of a spill under Level 2 and Level 3 .

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