EMSA

European Maritime Safety Agency

Technical Report

Discharge facilities for oil recovered at sea

Geographical distribution, technical challenges, solutions and alternatives related to the discharge of oil recovered at sea by specialised vessels, following a large oil spill in Europe

September 2012

Report prepared for the European Maritime Safety Agency under
Contract Number 11/EMSA/OP/O7/2011
by Environmental Protection Engineering SA.

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Executive Summary

This report is the main deliverable of the project "*Study on discharge facilities for oil recovered at sea – Geographical distribution, technical challenges, solutions and alternatives related to the discharge of oil recovered at sea by specialised vessels, following a large oil spill in Europe*" (EMSA OP/07/2011), commissioned by EMSA. The objective of the project, as determined in its tender specifications, was to provide EMSA with a study on available facilities to receive oil recovered at sea by the Agency's specialised response vessels following a large oil spill, The discharge of oil to these facilities will allow EMSA's vessels to maximise their time spent in oil recovery operations. The treatment and final disposal of recovered oil were out of the scope of the project.

A number of 35 facilities (out of 495 initially contacted from which only 67 replied) were assessed to be suitable to accommodate EMSA's vessels and receive recovered oil providing at least a capacity of 1,000 m^3 that might be readily available for the reception of recovered oil immediately or after a short notice. An inventory of facility-specific Technical and Operational Envelopes that has been incorporated in the Annex II of the report, provides information on a range of issues including contact details of the facility, its immediate and long-term capacity, the restrictions on the quality and quantity of oil, as well as operational details relating to the berthing of incoming vessels and the conduct of discharging operations.

The data collected were analysed in depth enabling the identification of the technical limitations of the discharge facilities. The technical limitations that might compromise the discharge of oil recovered by EMSA's vessels relate to: a) the quality of recovered oil, particularly its viscosity, the presence of debris and water-in-oil emulsions, and b) the berthing and discharging operations of EMSA's vessels, in particular the suitability of berths and jetties, the connection of vessels' manifolds to the facility's cargo arms/receiving piping and various, operational requirements such as the inerting of cargo tanks, etc. Engineering solutions aimed at overcoming the oil-related restrictions were proposed taking into account that they must be safe for the operating personnel onboard the EMSA's vessels, proven, commercially available, and feasible for applying onboard EMSA's vessels. Each one of these technologies has its own benefits and constraints when considered relative to the problem dealt with. In addition, alternative solutions, such as ship-to-ship transfer, were proposed to deal with the constraints connected to operational issues of EMSA's vessels when discharge of recovered oil is to take place.

A complete GIS analysis with regards to the identified facilities and their range of operation is included in this report. In particular, it covers the geographical distribution of the facilities that responded positively to the questionnaire, those that responded with a certain storage capacity but without meeting the threshold of 1,000 m^3 of immediate capacity, the remaining facilities from the study conducted by EMSA in 2007, and the EMSA Stand-by Oil Spill Response vessels. Moreover, a set of scenarios were examined to determine whether the European waters are adequately covered in terms of delivering the oil recovered at sea. In all scenarios (i.e. oil spills of 1,000, 10,000, and 40,000 m^3 in European waters) the area off the coast of Iceland, off the west coasts of Norway and part off the northern coasts of Turkey are not covered by the identified facilities. As the size of the studied spills increases more areas are left uncovered, e.g. the gulf of Biscay, the Mediterranean Sea, and the North Sea.

TABLE OF CONTENTS

LIST OF MAPS

LIST OF TABLES

LIST OF FIGURES

1 Introduction - Objectives

One of the tasks of the European Maritime Safety Agency (EMSA) is to support on request with additional means, in a cost efficient way, the pollution response mechanisms of EU Member States. Following public procurement procedures, EMSA has established contracts for at-sea oil recovery services around the European coastline with commercial vessel operators. The primary objective of the Stand-by Oil Spill Response Vessel service is to "top-up" the marine oil recovery capacity of Member States thus minimising the potential impact to the European coastline.

The Stand-by Oil Spill Response Vessels will, under normal circumstances, carry out their usual commercial activities. However, in the event of an oil spill, and following a request for assistance from a Member State, the nominated vessel will cease its normal activities and, at short notice, be mobilised and operate as a certified oil recovery vessel. The efficient and rapid discharge of the at-sea recovered oil is essential in order to allow these specialised vessels to maximise their time spend in oil spill recovery operations.

The objective of the project titled "*A study on discharge facilities for oil recovered at sea – Study of the geographical distribution, technical challenges, solutions and alternatives related to the discharge of oil recovered at sea by specialized vessels, following a large oil spill in Europe*" was to provide EMSA with a study on available facilities such as reception facilities for ship-generated waste, refineries, waste treatment companies, etc., to receive oil recovered at sea by EMSA's Stand-by Oil Spill Response Vessels following a large oil spill.

The individual and interrelated tasks set in the study are as follows:

- A detailed review and assessment of existing onshore oil discharge facilities for receiving large quantities of oil recovered at sea.

Following the identification and assessment of potential facilities, a facility-specific Technical and Operational Envelope was developed presenting in a uniform and consistent manner all necessary data collected from completed questionnaires, the communication with the operators of the facilities and other sources of information.

- An analysis of technical limitations of discharge facilities and proposal of engineering solutions for EMSA's vessels.

The technical limitations that might compromise the discharge of oil recovered by EMSA's vessels to the facilities were analysed on a regional basis and a set of detailed technical solutions are proposed to overcome the identified obstacles and limitations.

- An assessment of the geographical coverage of discharge facilities aimed at identifying potential geographical gaps that might jeopardise oil recovery operations taking into account trade patterns and tanker routes and the eligible facilities.

2 Identification of potential facilities to receive oil recovered at sea during spill response operations involving EMSA's contracted oil spill response vessels

2.1 Methodology

Task 1.1 of the study was related to the selection and contact potential discharge facilities and compile relevant and detailed information on their technical capabilities/limitations and geographical coverage. According to the methodology proposed, the identification of potential facilities was carried out through:

1. the advanced search of the IMO Global Integrated Shipping Information System (GISIS) as well as other sources,
2. the contact and seeking of information from the EMPOLLEX National Correspondents and, the
3. contact of the European Integrated Pollution Prevention and Control (IPPC) Bureau in an attempt to search for facilities not included in GISIS dealing with oily waste treatment and recovery operations.

EMSA carried out in 2007 a study to determine the distribution of oil receiving facilities along the European coastline and their restrictions to accept the oil recovered at sea. About 35 facilities indicated that they were prepared to accept the oil recovered at sea, but with restrictions. These facilities were also included in the inventory of facilities to be contacted.

2.2 Criteria used in searching GISIS

Data on ship-generated waste reception facilities included in GISIS come from the systematic efforts of the International Maritime Organization (IMO) to collect and disseminate up-to-date information on the availability of reception facilities, with the aim to promote the effective implementation of MARPOL 73/78. It's the responsibility of the Maritime Administrations of signatory countries to this Convention to communicate to IMO a list of the available reception facilities per type of MARPOL pollutant in their ports and terminals.

Three specific criteria in combination were used to search the data base of the IMO Global Integrated Shipping Information System (GISIS) to identify potential facilities to receive oil recovered at sea during spill response operations involving EMSA's oil spill response vessels. In case of absence of information in GISIS (i.e. Norway) other sources were sought such the respective database of Intertanko (http://www.intertanko.com/Members-Information/Port-Information/).

The criteria set for searching were: a) type of waste, b) type of facility and c) the minimum quantity (at least 1,000 m^3) of the selected types of waste that can be received.

- Type of ship-generated waste

  Two types of ship-generated waste relating to MARPOL Annex I were selected: tank washings and dirty ballast. Facilities referred in GISIS capable of receiving oil tank washings and dirty ballast, invariably, constitute fixed and high storage capacity installations serving the needs of oil tankers. In terms of quantity, dirty ballast accounts for about 30% of the deadweight of an oil tanker while in terms of quality represents lean oil/water mixtures. Similarly, rich in oil tank washings collected in the slop tanks (tanks specifically designated for the collection of tank drainings, tank washings and other oily mixtures) of an oil tanker normally represent around 1.5 – 8% of its deadweight. Although the phase-out of single hull oil tankers has eliminated the existence of non-segregated ballast tanks vessels, however reception facilities of this type are still in existence, mainly in crude oil refineries or terminals.

- Type of facility

  Fixed (indicated as F) as well as floating facilities such as tankers or barges (indicated as T) were selected. Fixed facilities are stationary facilities accessible from the sea which enable the direct, on-shore collection of oily wastes. It is noted that in the 2007 EMSA Study, a number of EU Member States provided information on arrangements to use floating facilities, a fact that was considered to be particularly important allowing spilled oil recovery at sea to proceed faster. In case, no indication was provided in GISIS on the type of facility, the entry was incorporated in the inventory of facilities to be contacted.

- Minimum discharge quantity

  In relation to GISIS data that refer to discharge restrictions/limitations per available facility, the minimum quantity of 1,000 m^3 was selected as threshold search criterion.

2.3 Development of facility/vessel interface questionnaire

This questionnaire (Annex I) was developed to enable, on the one hand the identification of the potential facilities to receive recovered oil from those initially contacted, and secondary the collection of vital information on the particulars of the facilities in relation to their compatibility with EMSA oil response vessels. After its review and refinement from EMSA, information on the following thematic areas was sought:

- <u>Oil acceptance procedures</u>, including the immediate and long-term capacity of the facility, any restrictions in relation to the quality of oil that can be received and sampling.

- <u>Facility – vessel compatibility</u>, including the particulars of fixed (port installations) or floating facilities, approaching and mooring items, and

- <u>Oil handling operations</u>, including the number and size of oil discharge equipment, the availability of additional pumping equipment and discharge requirements.

An appendix was incorporated in the questionnaire indicating potential contaminants that might be present in the oil recovered.

2.4 Inventory of facilities to be contacted

The search of potential facilities to receive oil recovered at sea during spill response operations involving EMSA's oil spill response vessels, resulted into the identification of four hundred and ninety-five (495) facilities. These facilities were initially contacted by e-mail while in various cases communication over the phone was attempted to verify the contact details of the recipients or to request for additional information or clarification. The complete list of facilities that were contacted is presented in Annex II.

Only sixty-seven (67) facilities responded, which were evaluated with regard to their suitability to accommodate EMSA's vessels and capability to receive recovered oil was subsequently assessed.

2.5 Facilities that might receive oil recovered from spill response operations

In the context of this study, thirty-five (35) facilities have been identified to be suitable to receive recovered oil from operations conducted by EMSA's Stand-by Spill Response Vessels. These facilities are presented in the following table.

Table 1: Presentation of the identities and the capacities of the identified facilities

Country	Port	Potential Oil Discharging Facilities				
		Name	Type		Capacity (m^3)	
			Fixed	Floating	Immediate*	Long term**
Belgium	Antwerp	Belgian Oil Services MARPOBEL	✓		1,600	1,000
Finland	Kokkola	Kokkola Oil Terminal	✓		15,000	15,000
Cyprus	Vasiliko	Ecofuel	✓		1,000	1,000
France	Dunkerque	Hydropale	✓		1,000	1,000
France	Fos	Fos Deballasting Facility	✓		1,000	2,500
France	Lavera	Fluxel Sas	✓		1,000	5,000
Germany	Nordenham – Blexen	Grave – Blexen	✓		1,000	3,000
Italy	La Spezia	Sepor	✓		1,200	30,000
Italy	Santa Panagia	ISAB T.S.S.	✓		5,000	5,000
Ireland	Bantry Bay	Conoco Philips	✓		50,000	50,000 – 100,000
Ireland	Cork	Conoco Philips	✓		7,000	7,000
Latvia	Ventspils	JSC Ventbunkers	✓		10,000	20,000
Lithuania	Klaipeda	Klaipedos Nafta	✓		7,000	5,000
Malta	Marsaxlokk	San Lucian Oil Company	✓		1,500	2,000
Malta	Valetta	Waste Oil Company LTD	✓		<1,000	2,000
Malta	Valetta	Ricasoli	✓		1,000	2,000 – 2,500
Netherlands	Rotterdam	Int. Slop Disposal B.V	✓		10,000	25,000
Romania	Constanta	W.W.T.P.	✓		2,500	5,000
Sweden	Oxelosund	Oxelosunds Hamm	✓		100,000 – 150,000	100,000 – 150,000
Portugal	Sines	CLT Oil terminal	✓		25,000	40,000
Portugal	Setubal	Eco-Oil TAC	✓		2,500	5,000
Italy	Trieste	Crismani Ecologia		✓	1,750	2,000
United Kingdom	Falmouth	Falmouth Petroleum Ltd	✓		1,000	1,600
Greece	Piraeus	Floating		✓	8,000	40,000

Country	Port	Potential Oil Discharging Facilities				
		Name	Type		Capacity (m³)	
			Fixed	Floating	Immediate*	Long term**
		Separator Ecomaster				
Spain	Tarragona	Repsol Tarragona	✓		5,000	N/A
Greece	Thessaloniki	North Aegean Slops	✓		1,500	4,500
Cyprus	Limassol	VGN Sludge		✓	<1,000	1,500
Spain	Algeciras	Cepsa Refineria "Gibraltar San Roque	✓		5,400	14,700
Denmark	Fredericia	Fredericia Marine Terminal	✓		7,000	25,000
United Kingdom	Flotta, Orkney	Flotta Oil Terminal	✓		1,000	*Depends on tank availability*
Turkey	Botas Ceyhan	Botas Petroleum Facilities	✓		60,000	60,000
Finland	Kotka	Vopak	✓		2,900	5,800
Sweden	Loudden	Stena Loudden	✓		6,000	8,000
Sweden	Halmstad	Stena Halmstad	✓		15,000	20,000
Sweden	Gothenburg	Stena Gothenburg	✓		10,000	15,000

***Immediate capacity** is the capacity readily available for the reception of recovered oil immediately or after a short notice (approx. 48 hours).

****Long term capacity** is the additional capacity that could be made available by any facility after one week.

An inventory of facility-specific Technical and Operational Envelopes, comprehensively displaying the location and contact details of each one facility, the restrictions on the quality and quantity of oil, as well as operational details relating to the berthing of incoming vessels and the conduct of discharging operations has been incorporated in Annex III of the report.

2.6 Presentation of the results

2.6.1 Baltic Sea

There are eight EU Member States countries surrounding the Baltic Sea. These are Finland, Estonia, Latvia, Lithuania, Sweden, Poland, Germany and Denmark. In order to identify facilities that would be capable of receiving oil recovered at sea, the GISIS database was searched, the contact list of the previous EMSA study was taken into account and contacts were made with the maritime authorities of these countries.

As a result of the afore-mentioned search:

- Fourteen (14) facilities from Finland were contacted, four (4) of which eventually responded. The facility "Deep port" in the port of Kokkola, provided a positive reply, in terms of capacity. The facility *"Pansio Oil and Chemical Harbour"* in the port of Turku responded to the questionnaire, but it was considered to be unsuitable since it can only provide an immediate capacity of 250 m^3 and didn't give any information regarding the long term capacity. The facility *"Oiltanking Sonmarin Oy"* in the port of Kotka stated that it is a chemical/oil terminal with a capacity of 80,000 m^3, but usually their tanks are occupied by their clients' products and therefore, it was considered that it could not be included in the assessment. Finally, the *"Mussalo Vopak Terminal"*, didn't provide feedback through the questionnaire, but stated that the EMSA study 2007 figures can be used as a best estimate of possible available capacity and that the data has not changed since 2007.

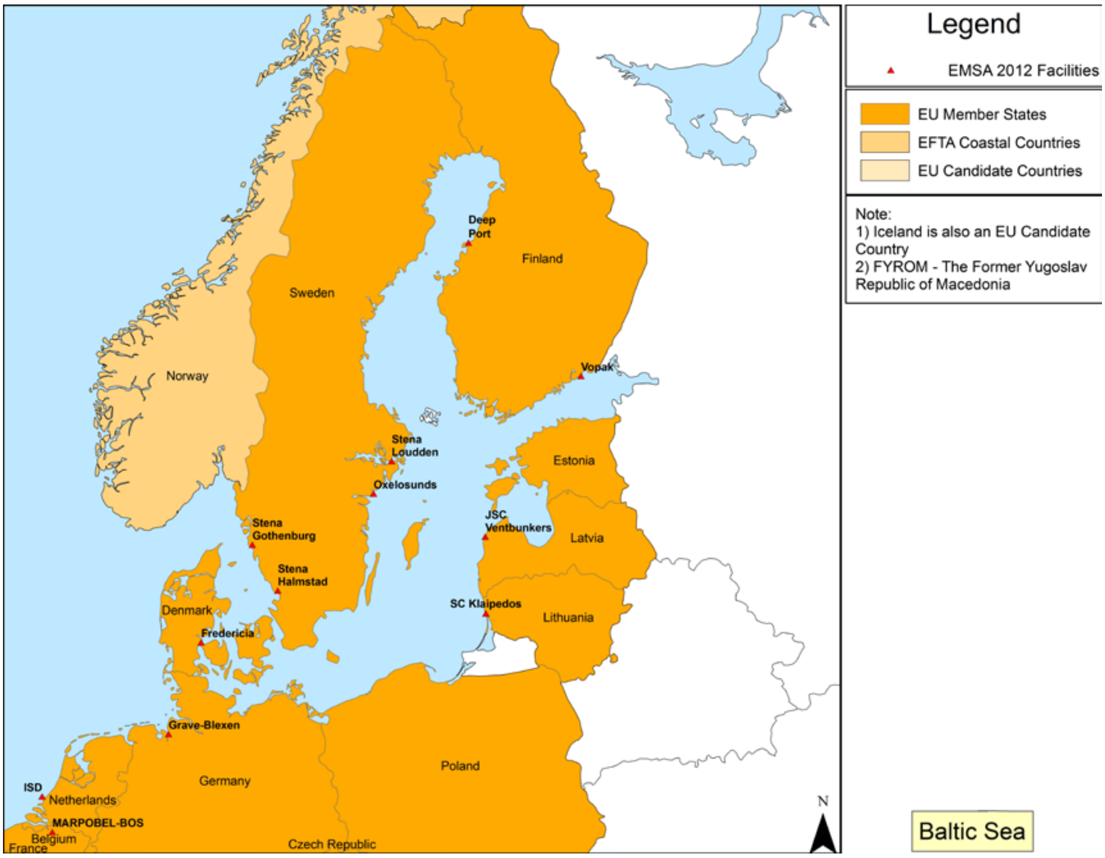
- Thirteen (13) facilities from Estonia were contacted, three (3) of which were indicated by the Estonian Board of Police and Boarder Guard. More specifically, the Estonian maritime authority stated that there are arrangements to be signed in the near future between the Estonian Board of Police and Boarder Guard and three bunkering companies, regarding the transfer of collected waste from marine pollution. The three companies, whose contact details were provided by the Estonian maritime authority, are *"Bominflot Estonia"*, *"NT Marine"* and *"Oiliken Bunkering"*. The only Estonian response received was from *"Bominflot Estonia"* which stated that it doesn't have any facility in operation and they only rent storages from third parties.

- Six (6) facilities from Latvia were contacted. The only response from Latvia came from *"JSC Ventbunkers"* in the port of Ventspils, which was identified as a facility that is capable of receiving recovered oil.

- Four (4) facilities from Lithuania were contacted, two (2) of which responded to the questionnaire. The *"SC Klaipedos Nafta"* in the port of Klaipeda was identified to be able to receive oil recovered at sea. However, the *"JSC Klaipeda passenger and cargo terminal"*, which was identified by the previous EMSA Study, as a facility that could potentially receive recovered oil, stated to be under structural changes which led in May 2012 to the termination of their previous activities.

- Forty (40) facilities from Sweden were contacted, six (6) of which responded to the study. The *"Oxelosunds Hamn"* in the port of Oxelosund provides a significant immediate and long term capacity which can serve almost the entire Baltic Sea through various scenarios that are described in task 1.3. In the 2007 study, the company *"Reci Industri AB"* provided information for the three (3) facilities that they operated in the ports of Loudden, Halmstad and Gothenburg. Since 2007, *"Reci Industri AB"* has been acquired by *"Stena"*, which was contacted. *"Stena Oil"* stated that the information that was provided by *"Reci Industri AB"/"Stena Recycling"*, in the context of the previous study, is still valid today and that it may be used for the purposes of the current study. Moreover, the *"Karlshamn Hamn AB"* in the port of Karlshamn responded to the study but it was considered to be unsuitable, since its capacity does not exceed the 500m^3. Finally, a group of facilities in the "*Port of Helsinborg*" ("*Bulkhamnen, Skaneterminalen, Spannmalsterminalen, Oljeterminalen Vasthamnen Oceanhamnen, Cityhamnen and Norra Hamnen*") responded to the study, but stated to have a capacity below 1,000 m^3 and therefore they were considered to be unsuitable for the purposes of this study.

- Seventeen (17) facilities from Poland were contacted and only one (1) responded to the questionnaire. This is the *"Port of Gdynia"* which indicated that it does not possess a facility that could be used for receiving oil that has been recovered at sea.



Map 1: Regional map presenting the identified facilities in the Baltic Sea

- Nineteen (19) facilities from Germany were contacted, five (5) of which are located around the Baltic. Among these five facilities, only the *"Port of Stralsund"* responded that it cannot receive 1,000 m^3 of oil that has been recovered during oil spill operations.

- Eighteen (18) facilities from Denmark were contacted. Only two (2) facilities eventually responded. The *"Copenhagen Malmo Port AB"* stated that it does not have any tanks in the oil terminal neither in Copenhagen nor in Malmo and therefore it was considered to be an unsuitable facility for the purposes of this study. On the contrary, the "*Fredericia Marine Terminal*" which is located in the port of Fredericia, was identified as a facility that can potentially receive oil that has been recovered at sea.

<u>Summary</u>

Summing up, the conduct of this study resulted in the identification of nine (9) facilities in the Baltic Sea. These facilities have immediate capacities that extend from 2,900m^3 to 100,000m^3 and long term capacities that extend from 5,000m^3 to 100,000m^3. The nine facilities that were identified provide maximum coverage for a variety of scenarios which will be described in section 3.

2.6.2 North Sea

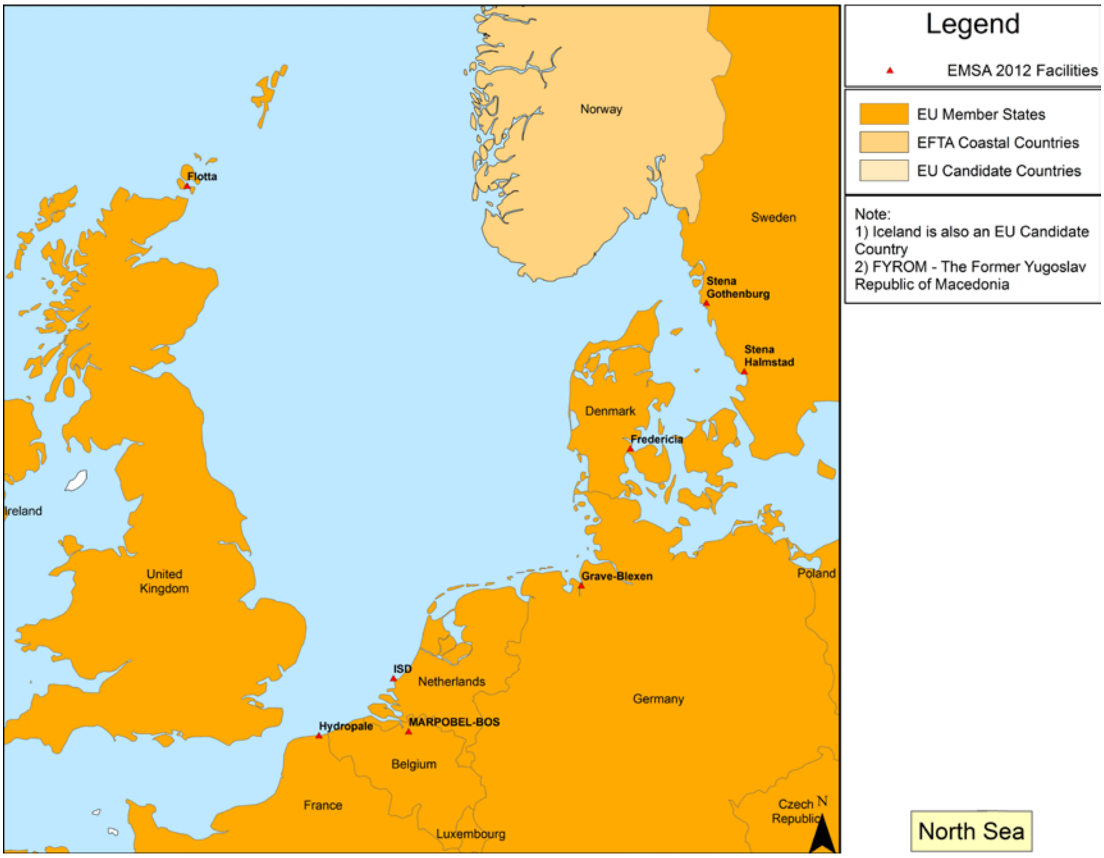
There are six Member States countries surrounding the North Sea. These are Denmark, Germany, Netherlands, Belgium, France and the United Kingdom. The same methodology that was described for the Baltic Sea was also applied here for the searching of suitable facilities for the purposes of this study.

The result of this search is listed below:

- There was no response from the contacted Danish facilities that are located on the coastline facing the North Sea.

- Nineteen (19) facilities from Germany were contacted, fourteen (14) of which are located on the German coastline that is facing the North Sea. Three (3) among the latter facilities responded. The *"Hafenamt Brake"* in the port of Brake stated that in their port they don't have any facilities that would allow them to handle oil or oily mixtures. On the contrary, the *"Grave-Blexen"* which is based within the port of Nordenham-Blexen, was identified as a facility that can recover at least 1,000 m^3 of oil that has been recovered during spill recovery operations. Finally, a response was received by the *"AVG Hamburg"*, which was identified by the previous study as a facility that can potentially receive recovered oil. *"AVG Hamburg"* stated that, at the moment, they don't have the possibility to receive oil from vessel directly into their tank farm and that they also don't have the capacity to take over at least 1,000 m^3 at once.

- Eighteen (18) facilities from the Netherlands were contacted, two (2) of which eventually responded. The *"International Slop Disposal B.V."*, located in the port of Rotterdam was identified as a facility that may accept more than 1,000 m^3 of recovered oil. Another answer was received by the *"Vopak Terminal Europoort"*. This facility stated that it hires tanks to customers and that normally all tanks are occupied. Therefore it cannot be among the facilities that can meet the purposes of the project. Furthermore, it must be noted that according to the Dutch Ministry of Transport, Public Works and Water Management, the government of the country has approved the national contingency plan, in the context of which the level of response capacity is based on an accident resulting in an outflow of 15,000 m^3 of oil. In order to respond stand-by contracts have been in place for the use of Trailing Suction Hopper Dredgers (TSHD). However, there are no special arrangements for handling recovered oily water mixtures and no stand-by contracts with on shore facilities have been made.



Map 2: Regional map presenting the identified facilities in the North Sea

- Forty six (46) facilities from Belgium were contacted, two (2) of which eventually responded. *"Marpobel"* located within the port of Antwerp was identified as a facility that may accept quantities of recovered oil exceeding 1,000 m^3. On the contrary, the *"Marpos nv"* which was identified as a suitable facility in the context of the previous study, didn't qualify for the purposes of this study. The reasons which contributed to the exclusion of *"Marpos nv"* were the low immediate capacity and the fact that only trucks may discharge oil to this facility. Moreover, it is worth mentioning that answers were received by the Belgian maritime authority and the Flemish public waste agency *"OVAM"*. The Belgian maritime authority stated that the development of an inventory of suitable facilities across the country to receive oil collected from spill response operations is in progress and that the outcome of this work is intended to be incorporated in the national contingency plan through the establishment of temporary storage arrangements. Despite the fact that they expressed their intention of providing this list for the purposes of this study, it has not been received yet. *"OVAM"* responded that they have forwarded the questionnaire to Belshore (febem), which is the Belgian federation of Port Reception Facilities, who expressed their willingness to cooperate. However, no provision of information has been received from this source.

- Only one (1) facility situated on the French coastline facing the North Sea provided the necessary information requested. This is, *"Hydropale"* located in the port of Dunkerque. This facility was found to be fulfilling the criteria set for this project.

- Fifty (50) facilities from the United Kingdom were contacted. Among these facilities, there are four (4) facilities located on the North Sea coastline, as follows: The *"Flotta Oil Terminal"* in the port of Flotta, Orkney, that might receive at least 1,000 m^3 of oil that has been recovered during spill recovery operations. *"A&P Tyne"* indicated the absence of facilities to receive 1,000 m^3 of oil. The *"Port of Great Yarmouth"* stated that there are no fixed or floating installations that can be used for the reception of large quantities of oil spill materials. Finally, the *"Vopak Terminal Ltd"* which is based in London Purfleet & W. Thurrock responded that there are no discharge installations available for oil recovered at sea at this storage facility. Moreover, the Maritime Coast Guard Agency of the United Kingdom provided a document titled "Development of a Protocol for the Treatment and Disposal of Oily Waste in the UK". It is the outcome of a study that was conducted in the framework of the EU supported project "Emergency Response to coastal oil, chemical an inert pollution from shipping – EROCIPS". It aimed for the identification of the capacity for the temporary storage, treatment and disposal of oily waste following a major oil spill in the UK. One of the most important findings of the study was that the UK's existing facilities are in general, inadequate and not prepared to handle significant quantities of oily waste within the country. Large scale potential storage centers do not exist, and MoUs between MCA and the private initiative are not in place.

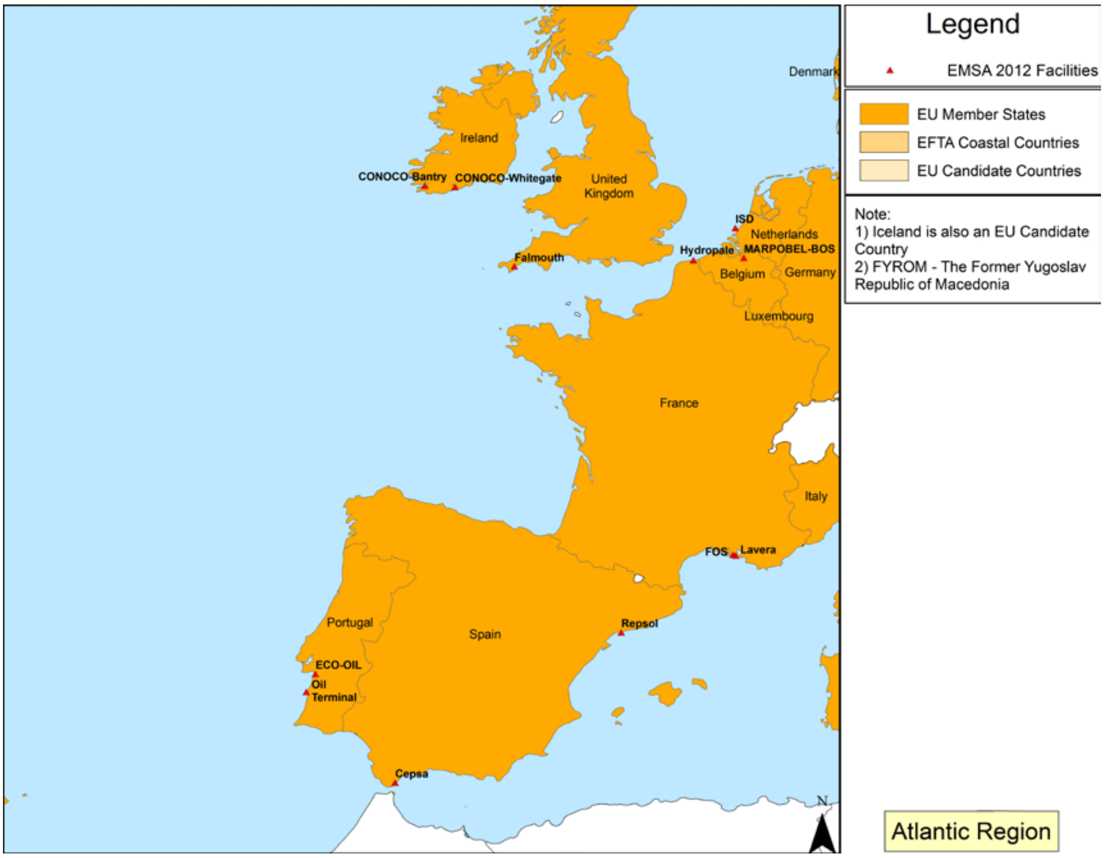
<u>Summary</u>

Summing up, the assessment of existing facilities that can receive oil recovered at sea in the North Sea resulted in the identification of five (5) facilities. These facilities have immediate capacities that range from 1,000 m^3 to 10,000 m^3 and long term capacities that extend from 1,000 m^3 to 15,000 m^3. These facilities provide a significant geographical coverage for various scenarios as analysed in detail in section 3.

2.6.3 Atlantic Region

There are five (5) Member State countries and one Candidate Country whose coastlines are facing the Atlantic Ocean. The United Kingdom, Ireland, France, Spain and Portugal are the above-mentioned Member State countries and Iceland is the Candidate Country. The results that have arisen following the employment of the methodology for the searching of facilities that has been previously described, are listed below:

- Fifty (50) facilities from the United Kingdom were contacted. Among them, there are five (5) facilities along the Atlantic coastline that responded in the context of this project. The *"Falmouth Petroleum Ltd"* based within the port of Falmouth was identified as a facility that may receive at least 1,000 m^3 of oil. The *"Manchester Ship Canal Company Ltd"* stated that it does not own any facilities that would be suitable for receiving recovered oil. Moreover, the *"Caernarfon Harbour Trust"* indicated that the Caernarfon port is no longer a commercial port and as such it does not have any discharge facilities for handling oil recovered at sea. Furthermore, the *"A&P Falmouth"* reported that the acceptance of recovered oil from vessels is not applicable to this facility. Finally, the *"Port of Belfast"* stated that it does not have any facilities to receive recovered oil from sea.



Map 3: Regional map presenting the identified facilities in the Atlantic Region

- Twelve (12) facilities from Ireland were contacted, three (3) of which responded to the request to provide information. Two (2) facilities were identified as capable of receiving quantities of recovered oil in excess of 1,000 m^3. Both are operated by "Conoco Philips". These are the *"Bantry Bay Terminal"* which is located in the port of Bantry Bay and the *"Whitegate Refinery"* located in the port of Cork. An answer was also received by the *"Shannon Foynes Port Company"* which was identified as a suitable facility by the previous study. According to their answer, the Shannon Estuary has six facilities within the port's jurisdiction and all of them have oil tank space for the use of industry and commercial activities. However all of these facilities are privately owned and indications and agreements are that space will be made available to the Port Company and the Irish Coast Guard in the event of an incident involving oil pollution. The representative of the *"Shannon Foynes Port Company"* forwarded the questionnaire to all facilities within port's jurisdiction but no answer was received by them.

- Ninety nine (99) facilities from France were contacted, but none of them lying on the Atlantic coastline responded.

- Seventeen (17) facilities from Spain were contacted, but none of the facilities situated along the Atlantic coastline provided any information for the purposes of this study.

- Seven (7) facilities in Portugal were contacted, three (3) of which provided the requested information. Two (2) facilities were identified as capable of receiving at least 1,000 m^3 of oil that has been recovered during spill recovery operations. These are the *"Eco-Oil-Tratamento de Aguas Contaminadas"* which is based in the port of Setubal and the *"Oil Terminal"* which is based within the port of Sines. An answer was also received by the *"Deposito Pol Nato De Lisboa"* which was identified as a suitable facility in the context of the previous study. According to their representative, the tank capacity, pier and other discharge facilities that could be used for the reception of oil recovered at sea, are no longer available.

- Five (5) facilities from Iceland were contacted, two (2) of which were indicated by the Environment Agency of Iceland. No tank space has been designated for storage of oil recovered at sea. There is an oil treatment facility on the island, in Reykjavik and two oil companies who own depots in approximately thirty locations around the island. The only facility that responded was the *"Oliudreifing ehf"* which stated that it does not have facilities that could be used to receive recovered oil.

Summary

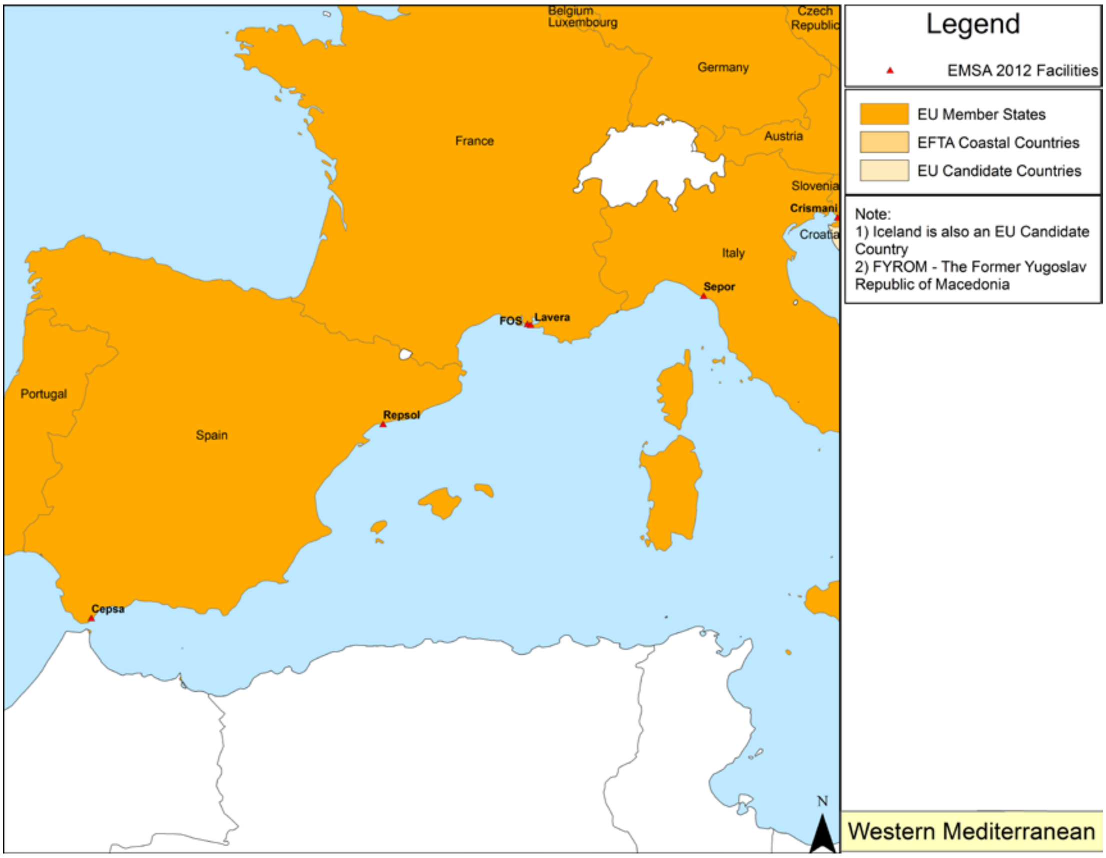
Summing up, the conduct of this study resulted in the identification of five (5) facilities in the European Atlantic coastline. These facilities have immediate capacities ranging from 1,000 m^3 to 50,000 m^3 and long term capacities that range from 1,600 m^3 to 100,000 m^3. A geographical gap can be observed due to the lack of facilities on the Atlantic coastline of France and Spain. This finding is analysed in section 3.

2.6.4 Mediterranean Sea

There are seven (7) EU Member State Countries and two EU (2) Candidate Countries whose coastlines border the Mediterranean Sea. Spain, France, Italy, Malta, Slovenia, Greece and Cyprus are the above-mentioned Member State Countries and the two candidate countries are Croatia and Turkey. The results of the search for facilities surrounding the Mediterranean Sea are presented below:

- Seventeen (17) facilities from Spain were contacted, but only two (2) responded. These facilities are located on the Mediterranean coastline and they were both identified to be capable of accepting at least 1,000 m^3 of oil that has been recovered during spill recovery operations. These facilities are the Cepsa Refinery *"Gibraltar San Roque"* which is based in the port of Algeciras and *"Repsol Tarragona"*.

- Ninety nine (99) facilities from France were contacted. Two (2) facilities, the *"Deballasting facility of FOS"* which is based in the port of FOS and the "*Port of Lavera*" might receive recovered oil.



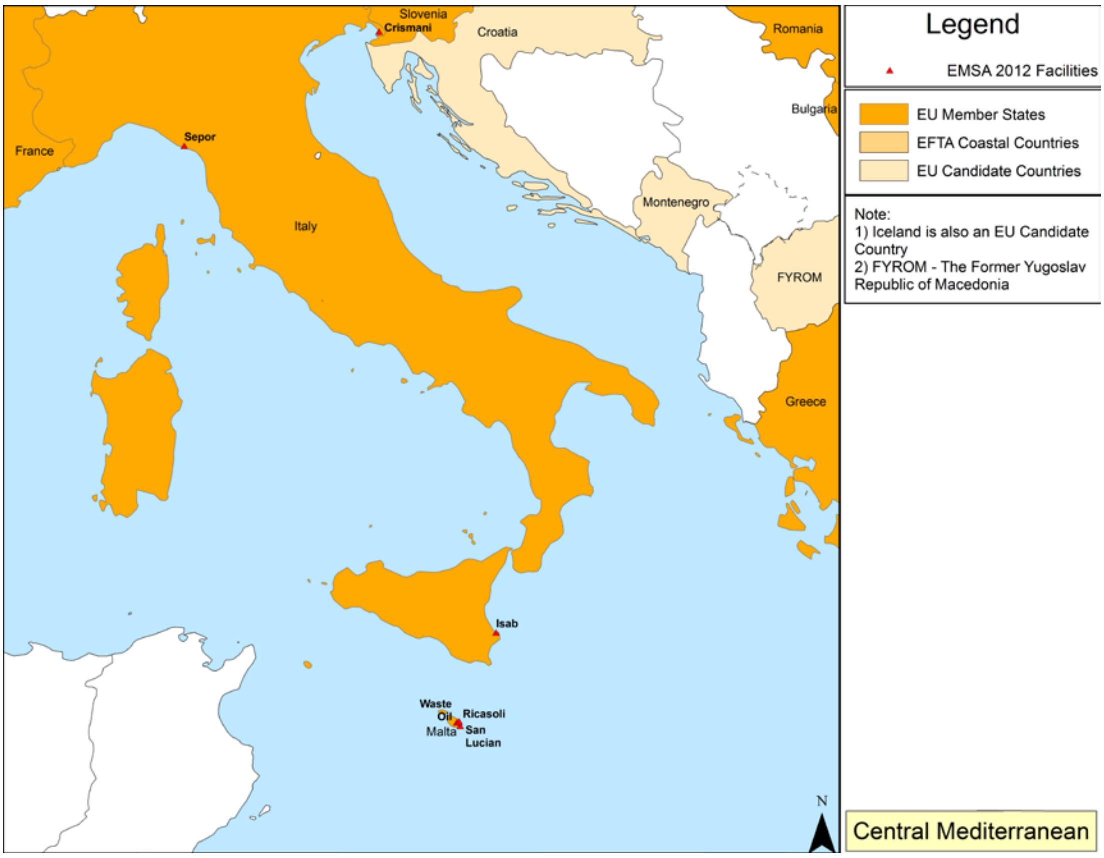
Map 4: Regional map presenting the identified facilities in the Western Mediterranean Sea

- Forty three (43) facilities from Italy were contacted, seven (7) of which responded by providing information. Three (3) among the latter were found to be able to receive at least 1,000 m^3 of recovered oil. These facilities are: *"Sepor"* in La Spezia, the *"Isab Terminal South Site"* in Santa Panagia and *"Crismani Ecologia"* which is based in the port of Trieste. The facilities of *"Priolo Servizi"*and *"Rimorchiatori Riuniti Porto di Genova"*were not found to meet the criteria set while only small capacities might be provide by the *"Banchina Secomar"* in the port of Ravenna and the *"Oily Mixtures Treatment plant"* in the port of Leghorn. It should be noted that *"Banchina Secomar"* and *"Treatment plant oily mixtures"* were identified as suitable facilities in the EMSA's 2007 study.

- Five (5) facilities were contacted in Malta, four (4) of which responded. The representative of the Maltese Maritime Authority provided contact details for the *"Ricasoli Tank Cleaning Ltd"* and the *"Waste Oils Company Limited"*, which are both based in the port of Valetta. Moreover, the *"San Lucian Oil Company"* which is based in Marsaxlokk was also identified as a suitable facility for the purposes of this study. Finally, the *"Oiltanking Malta Ltd"* was found unsuitable, since it is not able to receive/store recovered oil.

- One facility from Slovenia was contacted. It was the Koper based, small capacity (less than 1,000 m^3) *"Bilge water separation"* facility.

- Three (3) facilities from Croatia were contacted, without any response.

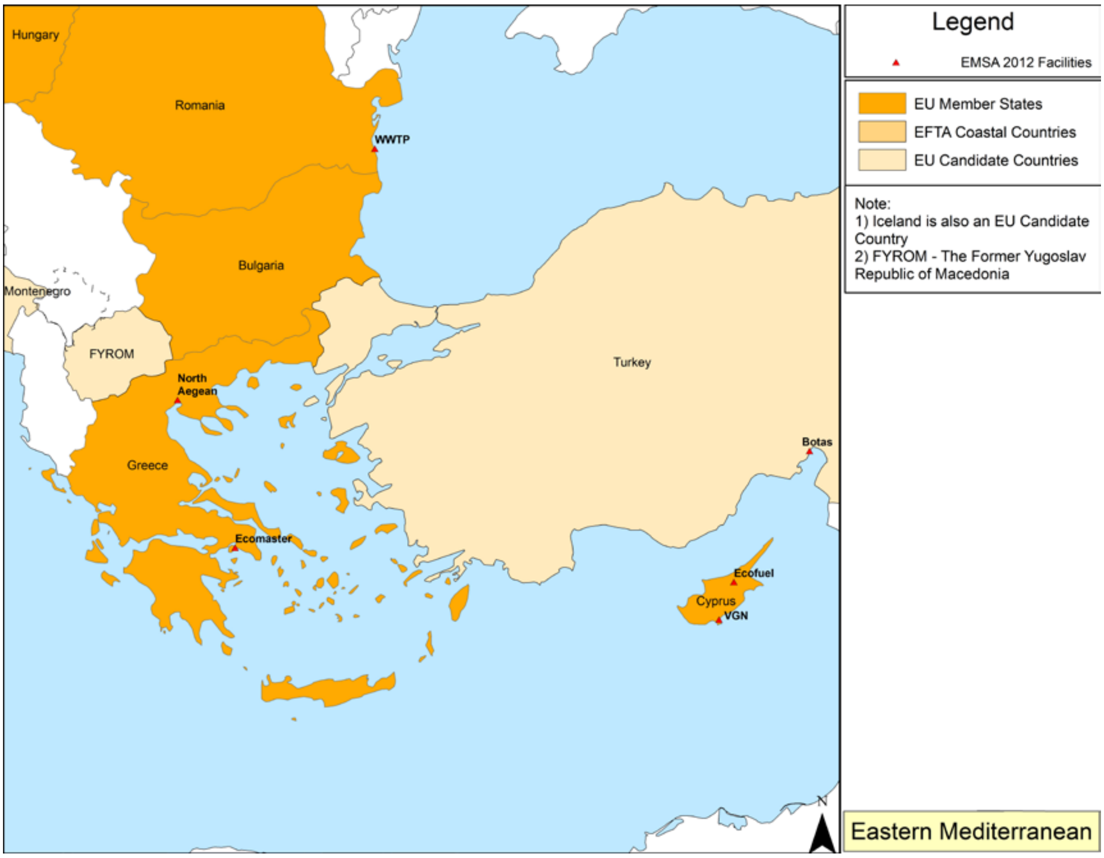


Map 5: Regional map presenting the identified facilities in the Central Mediterranean Sea

- Seventeen (17) facilities from Greece were contacted, three (3) of which provided information. The *"Floating Separator Ecomaster"* operating as reception facility in the port of Piraeus and the *"North Aegean Slops"* in the port of Thessaloniki were identified as capable of receiving quantities of recovered oil that exceed the 1,000 m^3, while *"Hellenic Shipyards S.A."* in the port of Elefsis is not suitable.

- Seven (7) facilities from Cyprus were contacted, three (3) of which responded. Information on the eligible facilities of *"Ecofuel (Cyprus) Ltd"* and *"VGN Sludge"* were provided by the Maritime Authority of the country that also noted that the management of oily residues is typically accomplished via the cooperation of these two facilities. There are no available facilities at the *"Larnaca Oil Terminal".*

- Nineteen (19) facilities from Turkey were contacted, two (2) of which provided feedback. The *"Botas Petroleum Facilities"* in the port of Botas-Ceyhan, was identified as a facility capable of receiving large quantities of oil recovered. On the contrary, the *"Toros Port Institution"* indicated that it is a private terminal owner and operator and as such, it cannot provide the type of information requested.



Map 6: Regional map presenting the identified facilities in the Eastern Mediterranean Sea

<u>Summary</u>

Summing up, the conduct of this study resulted in the identification of fifteen (15) facilities in the Mediterranean Sea. These facilities have immediate capacities that range from 300 m^3 to 60,000 m^3 and long term capacities that range from 1,000 m^3 to 60,000 m^3. The suitable facilities around the Mediterranean Sea provide a satisfying geographical coverage for a variety of scenarios that are analysed in section 3.

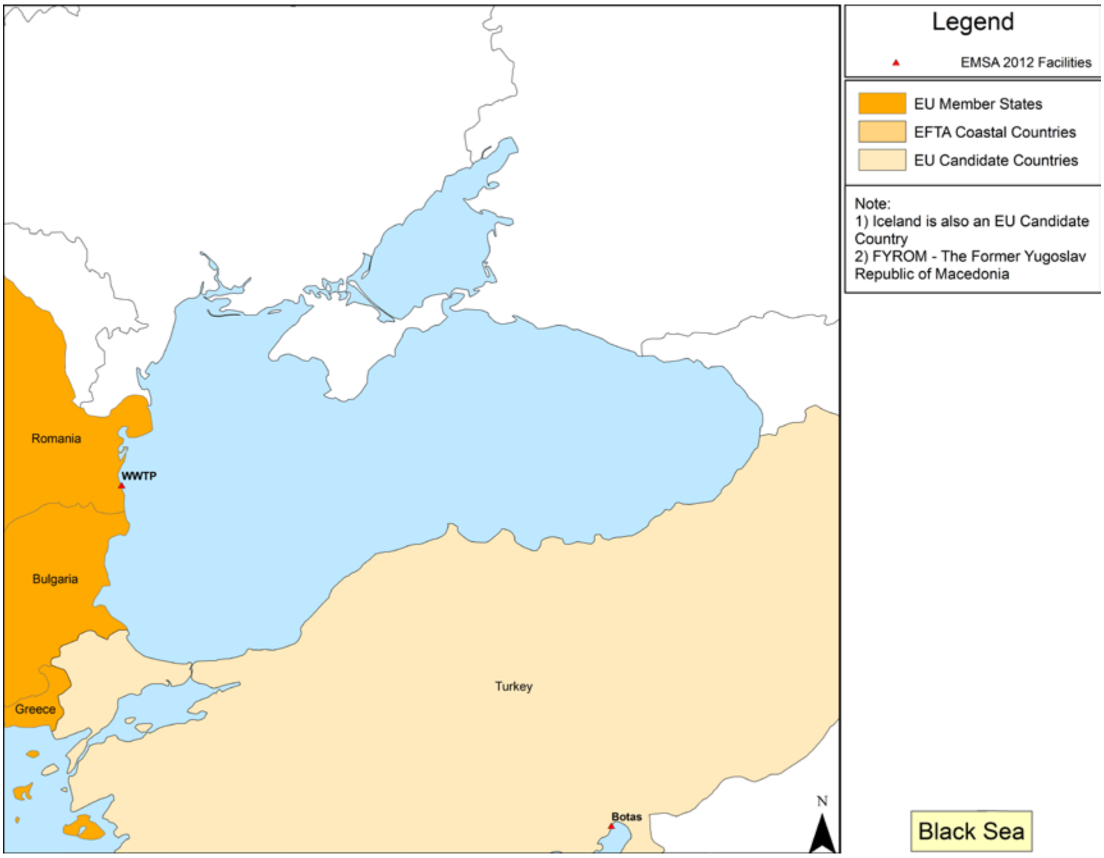
2.6.5 Black Sea

There are two (2) EU Member State Countries and one (1) EU Candidate Country surrounding the Black Sea. These are Bulgaria, Romania and Turkey. The results for the facilities surrounding the Black Sea are presented below:

- Three (3) facilities from Bulgaria were contacted, without any response.

- Five (5) facilities from Romania were contacted. The Maritime Authority of the country provided information for the *"Waste Water Treatment Plant"* in the port of Constanta and also confirmed that the two facilities identified in the 2007 study can no longer receive recovered oil.

- None of the facilities of Turkey operating along the Black Sea coastline provided any feedback.



Map 7: Regional map presenting the identified facilities in the Black Sea

2.7 Overview of the main characteristics for each facility

Table 2: Overview table presenting the capacities of the identified facilities

Area	No.	Name of the facility	Country	Port	Immediate Capacity (m^3)	Long term Capacity (m^3)
Baltic Sea	1	**Deep port**	Finland	Kokkola	15,000	15,000
	2	**Vopak**	Finland	Kotka	2,900	5,800
	3	**JSC Ventbunkers**	Latvia	Ventspils	10,000	20,000
	4	**SC Klaipedos Nafta**	Lithuania	Klaipeda	7,000	5,000
	5	**Stena Loudden**	Sweden	Loudden	6,000	8,000
	6	**Oxelosunds Hamn**	Sweden	Oxelosund	100,000	100,000
	7	**Stena Halmstad**	Sweden	Halmstad	15,000	20,000
	8	**Stena Gothenburg**	Sweden	Gothenburg	10,000	15,000
	9	**Fredericia Marine Term.**	Denmark	Fredericia	7,000	25,000
North Sea	10	**Grave - Blexen**	Germany	Nordenham	1,000	3,000
	11	**ISD**	Netherlands	Rotterdam	10,000	25,000
	12	**Marpobel**	Belgium	Antwerp	1,600	1,000
	13	**Hydropale**	France	Dunkerque	1,000	1,000 every 5 days
	14	**Flotta Oil Terminal**	UK	Flotta/Orkney	1,000	-
Atlantic Region	15	**Bantry Bay Terminal**	Ireland	Bantry Bay	50,000	50,000 – 100,000
	16	**Whitegate Refinery**	Ireland	Cork	7,000	1,500 per day
	17	**Falmouth Petroleum Ltd**	UK	Falmouth	1,000	1,600
	18	**Eco – Oil - TAC**	Portugal	Setubal	2,500	5,000
	19	**Oil Terminal**	Portugal	Sines	25,000	40,000
Mediterranean Sea	20	**Cepsa Refineria GSR**	Spain	Algeciras	5,400	14,700
	21	**Repsol Tarragona**	Spain	Tarragona	5,000	N/A
	22	**Fos Deballasting Facility**	France	Fos	1,000	5,000
	23	**Port of Lavera**	France	Lavera	1,000	2,500
	24	**Sepor**	Italy	La Spezia	1,200	30,000
	25	**Isab Terminal South Site**	Italy	Santa Panagia	5,000	5,000

Area	No.	Name of the facility	Country	Port	Immediate Capacity (m^3)	Long term Capacity (m^3)
	26	**Ricasoli Tank Cleaning Ltd**	Malta	Valetta	1,000	2,500
	27	**San Lucian Oil Company**	Malta	Marsaxlokk	1,500	
	28	**Waste Oil Company Ltd**	Malta	Valetta	300	2,000
	29	**Crismani Ecologia**	Italy	Trieste	1,750	2,000
	30	**Ecomaster**	Greece	Piraeus	8,000	40,000
	31	**North Aegean Slops**	Greece	Thessaloniki	1,500	4,500
	32	**Ecofuel (Cyprus Ltd)**	Cyprus	Vasiliko	1,000	35,000
	33	**VGN Sludge**	Cyprus	Limassol	700	1,500
	34	**Botas Petroleum Facilities**	Turkey	Botas–Ceyhan	60,000	60,000
Black Sea	35	**WWTP**	Romania	Costanta	2,500	5,000

Table 3: Overview table presenting the limitations on the size of vessels that can be accommodated in the identified facilities

Area	No.	Name of the facility	Main Dimensions			
			Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)
Baltic Sea	1	Deep port	180	50	30	9.5
	2	Vopak	-	-	-	10
	3	JSC Ventbunkers	228 - 270	N/A	32	12.5 - 15
	4	SC Klaipedos Nafta	250	Not limited	36	12.5
	5	Stena Loudden	180	-	-	9
	6	Oxelosunds Hamn	250	50	43	12.8
	7	Stena Halmstad	215	-	-	9.7
	8	Stena Gothenburg	200	-	-	11.5
	9	Fredericia Marine Term.	175 - 275	N/A	50	10 - 14
North Sea	10	Grave - Blexen	170	70	30	6.5
	11	ISD	250	-	-	14.5
	12	Marpobel	200 - 228	-	30 - 32	6.6 - 8
	13	Hydropale	80	-	15	10
	14	Flotta Oil Terminal	280	50	N/A	18
Atlantic Region	15	Bantry Bay Terminal	95	N/A	N/A	6.5
	16	Whitegate Refinery	259	N/A	45	12.5
	17	Falmouth Petroleum Ltd	160	40	N/A	8
	18	Eco – Oil - TAC	380	90	60	7.5
	19	Oil Terminal	106 - 282	70 - 110	N/A	9 - 16
Mediterranean Sea	20	Cepsa Refineria GSR	125 - 241	50 - 65	N/A	N/A
	21	Repsol Tarragona	155 - 230	74 - 85	-	8.2 - 11.25
	22	Fos Deballasting Facility	130 - 370	-	16 - 55	7 - 20
	23	Port of Lavera	120 - 250	-	19 - 40	10.1 - 12.5
	24	Sepor	80	-	-	9.5

Area	No.	Name of the facility	Main Dimensions			
			Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)
	25	Isab Terminal South Site	400	87	N/A	22.5
	26	Ricasoli Tank Cleaning Ltd	300	30	45	10
	27	San Lucian Oil Company	200	N/A	N/A	11.5
	28	Waste Oil Company Ltd	200	40	30	11.5
	29	Crismani Ecologia	No limits			
	30	Ecomaster	No limits			
	31	North Aegean Slops	120	-	-	12
	32	Ecofuel (Cyprus Ltd)	-	-	-	-
	33	VGN Sludge	No limits			
	34	Botas Petroleum Facilities	355	168	-	23
Black Sea	35	WWTP	200	50	No restriction	10.5

Every EMSA's vessel operating in the area can discharge at this facility

Not all EMSA's vessels operating in the area can discharge at this facility

None of the EMSA's vessels operating in the area can discharge at this facility

Table 4: Overview table presenting the main technical limitations of each facility

Area	No.	Name of the facility	Restrictions on the composition of the recovered oil			Oil handling operations		
			Max Kin. Visc. (cSt)	Acceptance of emulsions	Acceptance of debris	Receiving Arms/Pipes (Number x diameter)	Available reducers (Number x diameter)	Should the cargo tanks of the discharging vessel be inerted?
Baltic Sea	1	Deep port	2.0 - 16	No	No	3 x 10"	No	No
	2	Vopak	100	-	-	6" & 8"	-	-
	3	JSC Ventbunkers	500 @ 20°C	Yes	No	1 x 4"	No	No
	4	SC Klaipedos Nafta	Liquid	Yes	No	12"	1 x 12" to 6" & 2 x 16" to 12"	No
	5	Stena Loudden	250	Yes	-	8"	-	-
	6	Oxelosunds Hamn	700	No	No	1 x 12" & 1 x 16"	No	No
	7	Stena Halmstad	250	Yes	-	6"	-	-
	8	Stena Gothenburg	250	Yes	-	6"	-	-
	9	Fredericia Marine Terminal	10 @ 20°C	No	No	10"	No	Yes
North Sea	10	Grave - Blexen	-	-	-	1 x 6"	1 from 6" to 8"	No
	11	ISD	No restrictions	Yes	Yes	4" - 10"	Unlimited range	No
	12	Marpobel	500	Yes	Max 3%	6"	5 x 8"-6", 5 x 8"-4", 5 x 6"-4"	No
	13	Hydropale	100	Yes	No	1 x 4/6"	No	No
	14	Flotta Oil Terminal	180	Yes	No	4 x 16"	No	Yes
Atlantic Region	15	Bantry Bay Terminal	Flowing @ ambient temp.	No	No	1 x 16" & 2 x 6"	No	Yes
	16	Whitegate Refinery	Flowing @ ambient temp.	No	No	6" or 10"	4 x 6"-8", 4 x 6"-10", 4 x 6"-12" & more	No
	17	Falmouth Petroleum Ltd	10000	Yes	No	1 x 6"	2 x 100mm/4" - 150mm/6"	No

Area	No.	Name of the facility	Restrictions on the composition of the recovered oil			Oil handling operations		
			Max Kin. Visc. (cSt)	Acceptance of emulsions	Acceptance of debris	Receiving Arms/Pipes (Number x diameter)	Available reducers (Number x diameter)	Should the cargo tanks of the discharging vessel be inerted?
	18	Eco – Oil - TAC	-	Yes	Yes	2 x 6” or 8”	1 x 14” - 8”, 1 x 12” - 8”, 1 x 10” - 8”	No
	19	Oil Terminal	-	Yes	No	16” to 6”	Can be provided	Yes
Mediterranean Sea	20	Cepsa Refineria GSR	700	Yes 1% max	No	6” & 4”	1 x 12” - 6”, 1 x 10” - 6”, 1 x 8”- 6”, 1 x 6” - 4”	Yes
	21	Repsol Tarragona	1000 @ 40°C	No	No	12” & 8”	2 x 6” - 8”, 2 x 8” - 12”, 2 x 10” - 12”	Yes
	22	Fos Deballasting Facility	380	No	No	8” to 16”	No	Yes
	23	Port of Lavera	380	No	No	6”, 8”, 12”	No	Yes
	24	Sepor	-	-	Max 1%	6”	3 x 4” - 6”, 3 x 4” - 3”	No
Mediterranean Sea	25	Isab Terminal South Site	-	-	-	22 x 8”/16”	14 x 8” - 12”, 7 x 12” - 16” , 1 x 10” - 12”	Yes
	26	Ricasoli Tank Cleaning Ltd	-	Preferably none	No	2 x 10” & 1 x 8”	1x14”-10”, 1x12”-10”, 1x 10”-8”, 1x 10”-6”, 1x8”-6”	No
	27	San Lucian Oil Company	400	-	No	1 x 8”	1 x 4” - 6” 1 x 6” - 8”	No
	28	Waste Oil Company Ltd	380	Yes	No	1 x 6”	2 x 4” - 6” 2 x 6” - 8”	No
	29	Crismani Ecologia	-	Yes	Yes	16”	1x4”-6”, 1x6”-	No

Area	No.	Name of the facility	Restrictions on the composition of the recovered oil			Oil handling operations		
			Max Kin. Visc. (cSt)	Acceptance of emulsions	Acceptance of debris	Receiving Arms/Pipes (Number x diameter)	Available reducers (Number x diameter)	Should the cargo tanks of the discharging vessel be inerted?
							8”, 1x6”-10”	
	30	Ecomaster	must be pump able	Yes	No	2”, 3”, 4”, 6”, 8”	2 x4”-2”, 2 x6”-4”, 2 x8”-6”	No
	31	North Aegean Slops	-	-	No	6”	All types of diameters	No
	32	Ecofuel (Cyprus Ltd)	-	Yes	Yes	6”	No	No
	33	VGN Sludge	-	-	-	2”, 3”, 4”	No	No
	34	Botas Petroleum Facilities	-	-	-	4 x 16”, 18”, 20”	2 x 16” - 18”, 2 x 18” - 20”, 1 x 16” - 16”	Yes
Black Sea	35	WWTP	60	Yes	No	1 x 3”	1 x 3” - 2”	Yes

31

No limitations

Limitations which can be overcome by implementing one of the engineering solutions identified

Limitations which cannot be overcome

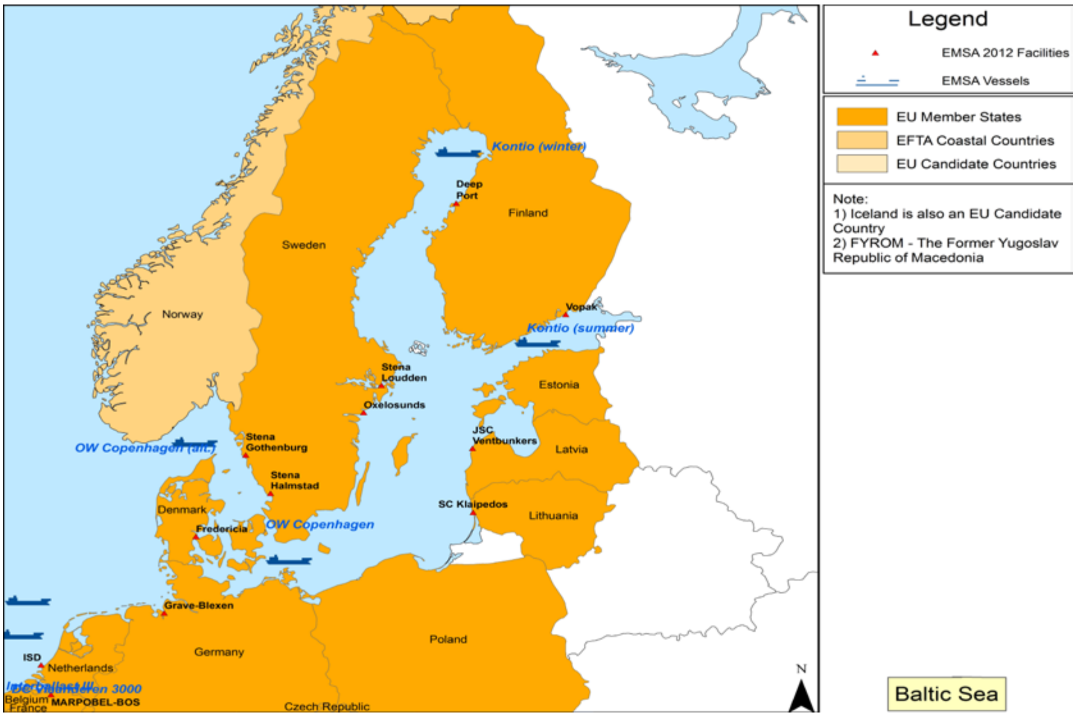
3 Analysis of technical limitations of discharge facilities and engineering solutions for emsa's vessels

3.1 Region-based technical limitations

The capabilities and restrictions of the identified facilities are analyzed below in relation to the areas of commercial operation of the EMSA's Stand-by Oil Spill Response Vessels.

3.1.1 Baltic Sea

In the Baltic Sea, nine (9) facilities were identified as being capable of accommodating EMSA's vessels trading in the area, (*Kontio and OW Copenhagen*), as follows: "*SC Klaipedos Nafta*" in the port of Klaipeda with initial capacity 7,000 m^3, "*Oxelosunds Hamm*" in Oxelosund with immediate reception capacity 100,000 m^3, "*JSC Ventbunkers*" in Ventspils with immediate capacity 10,000 m^3, "*Deep port*" in the port of Kokkola and "*Vopak*" in Finland of 15,000 m^3 and 2,900 m^3 respectively, "*Stena Gothenburg*", "*Stena Loudden*" and "*Stena Halmstad*" of 10,000 m^3, 6,000 m^3 and 15,000 m^3 respectively, and "*Fredericia Marine*" in Denmark providing an initial reception capacity of 7,000 m^3.



Map 8: Regional map presenting the identified facilities and EMSA's vessels in the Baltic Sea

The level of sulphur in oil is a common factor to determine whether recovered oil can be accepted in the facilities, the upper limit of which ranges from 0.5 to 3%. The reduction of sulphur content within the permissible limits of a receiving facility involves complex, chemical processes such as hydrotreatment or advanced oxidation, the assessment of which as a potential, shipboard application goes beyond the scope of this project. Other qualitative restrictions include the absence of debris and emulsions, the viscosity (with very low viscosities for distillate and fuel oils to be normally accepted in the "*Deep port*"), the density of oil, the concentration of water and the organic load expressed as Chemical Oxygen Demand.

With regard to the principal particulars of EMSA's vessels operating in the Baltic Sea, no restrictions are posed in the designated berths and jetties: Berths 1 and 2 in "*SC Klaipedos Nafta*", Berths 30, 31, 32 and 33 of "*JSC Ventbunkers*", Pier No.7 in the port of "*Kokkola*", the port installation in "*Oxelosunds Hamm*", the facilities operated by Stena Recycling and the jetties 41 and 42 at "*Fredericia Marine*".

Table 5: Overview table presenting the limitations on the size of vessels that can be accommodated in the facilities and the particulars of EMSA's vessels based in the Baltic Sea

Area	Facility	Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	L_{OA} (m)	Vessel	Area
Baltic Sea	**Deep port** (Berth 7)	180	50	30	9.5		8	24.2	98.6	**Kontio**	Baltic Sea
	Deep port (Berth 7)	180	50	30	9.5		5.3	14.6	90.5	**OW Copenhagen**	
	Vopak (Vopak Kotka)	-	-	-	10		8	24.2	98.6	**Kontio**	
	Vopak (Vopak Kotka)	-	-	-	10		5.3	14.6	90.5	**OW Copenhagen**	
	JSC Ventbunkers (Berths 30-33)	228 - 270	N/A	32	12.5 - 15		8	24.2	98.6	**Kontio**	
	JSC Ventbunkers (Berths 30-33)	228 - 270	N/A	32	12.5 - 15		5.3	14.6	90.5	**OW Copenhagen**	
	SC Klaipedos Nafta (Berths 1,2)	250	Not limited	36	12.5		8	24.2	98.6	**Kontio**	
	SC Klaipedos Nafta (Berths 1,2)	250	Not limited	36	12.5		5.3	14.6	90.5	**OW Copenhagen**	
	Stena Loudden	180	-	-	9		8	24.2	98.6	**Kontio**	
	Stena Loudden	180	-	-	9		5.3	14.6	90.5	**OW Copenhagen**	
	Oxelosunds Hamn (Berth 11)	250	50	43	12.8		8	24.2	98.6	**Kontio**	
	Oxelosunds Hamn (Berth 11)	250	50	43	12.8		5.3	14.6	90.5	**OW Copenhagen**	
	Stena Halmstad	215	-	-	9.7		8	24.2	98.6	**Kontio**	
	Stena Halmstad	215	-	-	9.7		5.3	14.6	90.5	**OW Copenhagen**	
	Stena Gothenburg	200	-	-	11.5		8	24.2	98.6	**Kontio**	

Area	Facility	Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	L_{OA} (m)	Vessel	Area
	Stena Gothenburg	200	-	-	11.5		5.3	14.6	90.5	**OW Copenhagen**	
	Fredericia Marine Terminal (Jetties 41, 42)	175 - 275	N/A	50	10 - 14		8	24.2	98.6	**Kontio**	
	Fredericia Marine Terminal (Jetties 41, 42)	275	N/A	50	10 - 14		5.3	14.6	90.5	**OW Copenhagen**	

No limitations for accommodating EMSA's vessels in the identified facilities.

Limitations for accommodating EMSA's vessels in the identified facilities.

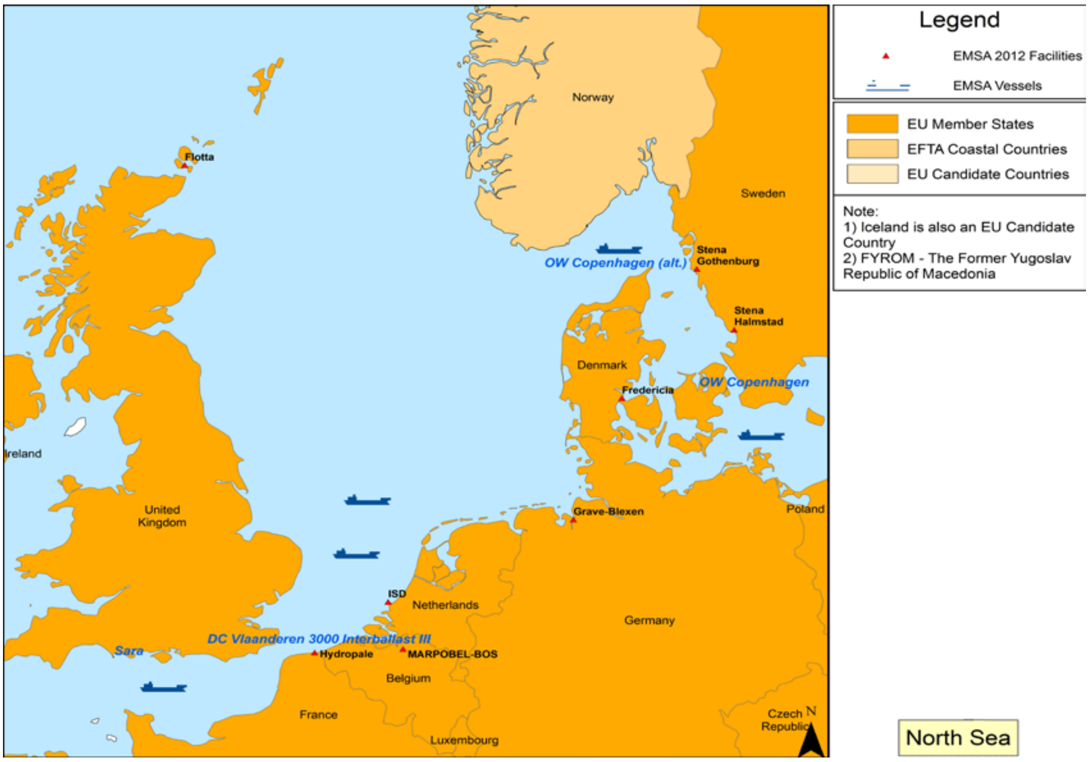
The nominal, maximum discharging capacity of *Kontio and OW Copenhagen* can easily meet the minimum rates required by all facilities, however in a number of facilities ("*Stena Recycling*" operated facilities, "*Vopak*" and "*JSC Ventbunkers*"), the discharging rate of the vessels must be limited to the ones accepted. Invariably, cargo pumps of tankers and other vessels have the ability to adjust the flow rate running from idle to full speed.

3.1.2 North Sea

In the North Sea, five (5) facilities were identified as eligible to be used as discharging facilities by the Stand-by Spill Response Vessels trading in the area, (*DC Vlaanderen 3000* and *Interballast III*).

The facilities are as follows: "*Marpobel*" in Antwerp, "*International Slop Disposal B.V.*" in Rotterdam, "*Hydropale*" in the port of Dunkerque, "*Grave-Blexen*" in the Nordenham – Blexen on the west bank of the mouth of the Weser river, and the "*Flotta Oil Terminal*" in Orkney in the United Kingdom.

In relation to the quality of oil, "*Grave-Blexen*" is one of the few facilities where no restrictions exist, while a more stringent regime applies for the waste treatment facilities of "*Marpobel*", "*Hydropale*" and "*International Slop Disposal B.V.*" setting limits on sulphur level, flashpoint, Total Base Number – TBN (a measure of alkaline additives in oil used to neutralising acids contamination during combustion), chlorinated hydrocarbons, etc.



Map 9: Regional map presenting the identified facilities and EMSA's vessels in the North Sea

"*Hydropale*" operated berth can be only used by *Interballast III* as the maximum, permissible length is 80 m. However the company owns and manages the 700 dwt and 57 m long barge *Nissimus* that can be used as a temporary, discharging facility prior to the port facility. The facility of "*International Slop Disposal B.V."* is easily accessible by both *Interballast III* and *DC Vlaanderen 3000 while "Flotta Oil Terminal's"* jetty, "*Grave - Blexen's*" Seeschiffs Brucke and "*Marpobel's*" Berths 267 and MarM are also accessible without serious restrictions. The provision of reducers and spools for the two vessels is discussed later in this section while the margins of flow rates during discharging are not of concern except the cases of "*Hydropale*" and "*Marpobel*" where limited discharging rates must be achieved.

Table 6: Overview table presenting the limitations on the size of vessels that can be accommodated in the facilities and the particulars of EMSA's vessels based in the North Sea

Area	Facility	Max L$_{OA}$ (m)	Min L$_{OA}$ (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	L$_{OA}$ (m)	Vessel	Area
North Sea	**Grave – Blexen** (Seeschiffs Brucke)	170	70	30	6.5		6.6	14	89.2	**DC Vlaanderen 3000**	North Sea
	Grave – Blexen (Seeschiffs Brucke)	170	70	30	6.5		6.4	13.2	65.4	**Interballast III**	
	International Slop Disposal B.V. (Berth No 4)	250	-	-	14.5		6.6	14	89.2	**DC Vlaanderen 3000**	

Area	Facility	Max LOA (m)	Min LOA (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	LOA (m)	Vessel	Area
	International Slop Disposal B.V. (Berth No 4)	250	-	-	14.5		6.4	13.2	65.4	**Interballast III**	
	Marpobel (Berths 267, MAR N)	200 - 228	-	30 - 32	6.6 - 8		6.6	14	89.2	**DC Vlaanderen 3000**	
	Marpobel (Berths 267, MAR N)	200 - 228	-	30 - 32	6.6 - 8		6.4	13.2	65.4	**Interballast III**	
	Hydropale (Hydropale/1)	80	-	15	10		6.6	14	89.2	**DC Vlaanderen 3000**	
	Hydropale (Hydropale/1)	80	-	15	10		6.4	13.2	65.4	**Interballast III**	
	Flotta Oil Terminal (Jetty)	280	50	N/A	18		6.6	14	89.2	**DC Vlaanderen 3000**	
	Flotta Oil Terminal (Jetty)	280	50	N/A	18		6.4	13.2	65.4	**Interballast III**	

No limitations for accommodating EMSA's vessels in the identified facilities.

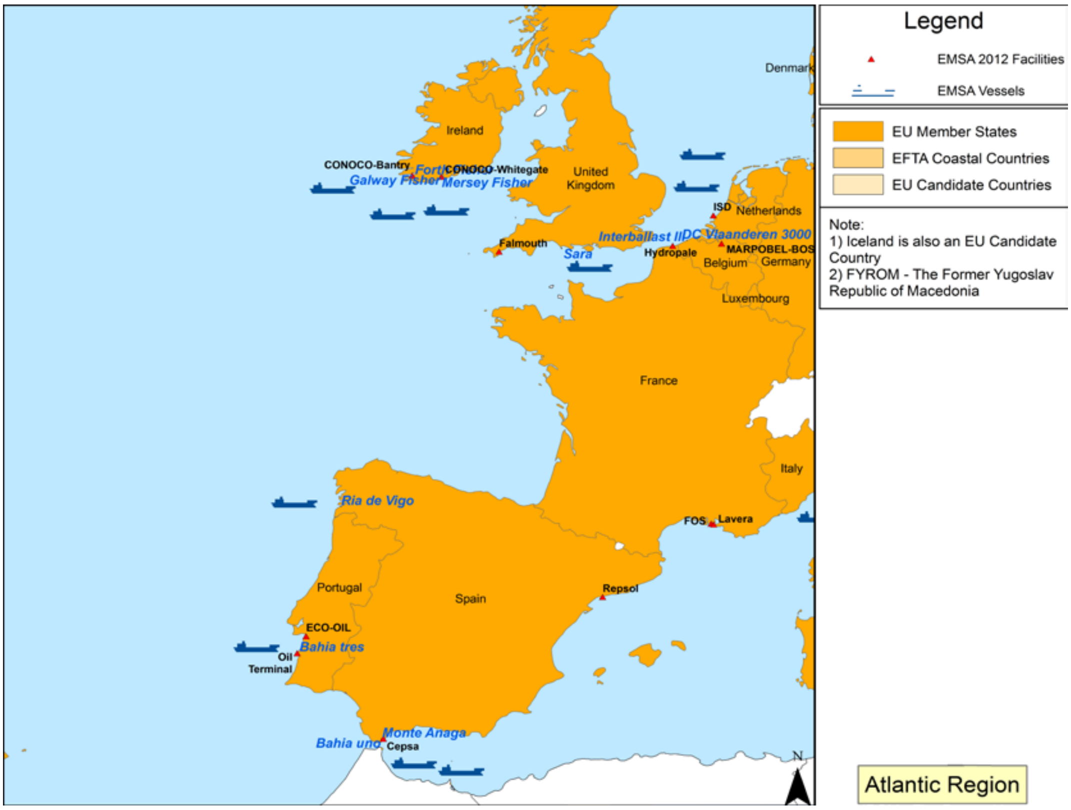
Limitations for accommodating EMSA's vessels in the identified facilities.

3.1.3 Atlantic Region

In the Atlantic Region, five (5) facilities were identified to be able to receive recovered oil by EMSA's vessels trading in the area, (*Sara, Bahia Tres, Ria de Vigo, Forth Fisher, Galway Fisher and Mersey Fisher*). These are the ConocoPhillips operated oil terminals in Cork ("*Whitegate Refinery*") and in Bantry Bay ("*Bantry Bay Terminal*"), the "*Falmouth Petroleum*" northwest of the English Channel, "*Eco Oil*" in Setubal and "*Oil Terminal*" in Sines.

The initial capacity of the abovementioned facilities ranges from 1,000 m^3 in "*Falmouth Petroleum*" to 50,000 m^3 in "*Bantry Bay Terminal*". The Cork based refinery mentioned the lack of relevant experience in processing water in oil emulsions. Discharge of recovered oil might take place via the existing slop receiving piping fitted at both, two available berths, however, Berth No.2 is marginally suitable only for the vessels *Forth Fisher, Galway Fisher* and *Mersey Fisher* (due to the maximum permissible draft of 6.75 m). Berth No. 1 of the facility is suitable for all EMSA Stand-by Oil Spill Response Vessels trading in the area.

Sara is the only vessel that meets the acceptable ship particulars' criteria to make use of the Pier No. 5 in the "*Oil Terminal*" facility (minimum LOA 110 m) while all other vessels (except for *Sara*) can be accommodated in Piers No.6 and No.7. The Piers No.2, No.3 and No.4 are not suitable for any of the EMSA Stand-by Oil Spill Response Vessels operating in the wider Atlantic region. No restrictions in the quality of oil were indicated by "*Eco Oil*". The facility can accommodate vessels bigger than 90 m in LOA. *Ria de Vigo* cannot make use of the available berth in the Terninal Tanquisado, while all other vessels can be easily accommodated.



Map 10: Regional map presenting the identified facilities and EMSA's vessels in the Atlantic Region

The "*Bantry Bay Terminal*" allocates a Single Point Mooring where oil tankers bigger than 180 m can be safely moored, and a jetty (SCH jetty) able to accommodate vessels up to 95 m long. *Bahia Tres* and *Sara* do not meet the berthing criteria of this jetty which is suitable for the rest vessels (*Forth Fisher*, *Galway Fisher*, *Mersey Fisher* and *Ria de Vigo).*

Table 7: Overview table presenting the limitations on the size of vessels that can be accommodated in the facilities and the particulars of EMSA's vessels based in the Atlantic Region

Area	Facility	Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	L_{OA} (m)	Vessel	Area
Atlantic Region	**ConocoPhilips Bantry Bay Terminal** (SCH jetty)	95	N/A	N/A	6.5		6.2	15.58	91	**Forth / Galway Fisher**	Atlantic Region
	ConocoPhilips Bantry Bay Terminal (SCH jetty)	95	N/A	N/A	6.5		6.02	15.5	91.4	**Mersey Fisher**	
	ConocoPhilips Bantry Bay Terminal (SCH jetty)	95	N/A	N/A	6.5		7	16.5	111.3	**Sara**	

Area	Facility	Max LOA (m)	Min LOA (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	LOA (m)	Vessel	Area
	ConocoPhilips Bantry Bay Terminal (SCH jetty)	95	N/A	N/A	6.5		6.8	13.5	69	**Ria de Vigo**	
	ConocoPhilips Bantry Bay Terminal (SCH jetty)	95	N/A	N/A	6.5		7	18	99.8	**Bahia Tres**	
	ConocoPhilips Whitegate Refinery (Berth 1)	259	N/A	45	12.5		6.2	15.58	91	**Forth / Galway Fisher**	
	ConocoPhilips Whitegate Refinery (Berth 1)	259	N/A	45	12.5		6.02	15.5	91.4	**Mersey Fisher**	
	ConocoPhilips Whitegate Refinery (Berth 1)	259	N/A	45	12.5		7	16.5	111.3	**Sara**	
	ConocoPhilips Whitegate Refinery (Berth 1)	259	N/A	45	12.5		6.8	13.5	69	**Ria de Vigo**	
	ConocoPhilips Whitegate Refinery (Berth 1)	259	N/A	45	12.5		7	18	99.8	**Bahia Tres**	
	Falmouth Petroleum Ltd (Eastern Breakwater)	160	40	N/A	8		7	16.5	111.3	**Sara**	
	Falmouth Petroleum Ltd (Eastern Breakwater)	160	40	N/A	8		6.2	15.58	91	**Forth / Galway Fisher**	
	Falmouth Petroleum Ltd (Eastern Breakwater)	160	40	N/A	8		6.02	15.5	91.4	**Mersey Fisher**	

No limitations for accommodating EMSA's vessels in the identified facilities.

Limitations for accommodating EMSA's vessels in the identified facilities.

Area	Facility	Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	L_{OA} (m)	Vessel	Area
Atlantic Region	**Falmouth Petroleum Ltd** (Eastern Breakwater)	160	40	N/A	8		6.8	13.5	69	**Ria de Vigo**	Atlantic Region
	Falmouth Petroleum Ltd (Eastern Breakwater)	160	40	N/A	8		7	18	99.8	**Bahia Tres**	
	Eco-oil T.A.C. (Eco-oil)	380	90	60	7.5		7	18	99.8	**Bahia Tres**	
	Eco-oil T.A.C. (Eco-oil)	380	90	60	7.5		6.8	13.5	69	**Ria de Vigo**	
	Eco-oil T.A.C. (Eco-oil)	380	90	60	7.5		7	16.5	111.3	**Sara**	
	Eco-oil T.A.C. (Eco-oil)	380	90	60	7.5		6.02	15.5	91.4	**Mersey Fisher**	
	Eco-oil T.A.C. (Eco-oil)	380	90	60	7.5		6.2	15.58	91	**Forth / Galway Fisher**	
	Falmouth Petroleum Ltd (Eastern Breakwater)	160	40	N/A	8		7	16.5	111.3	**Sara**	
	Falmouth Petroleum Ltd (Eastern Breakwater)	160	40	N/A	8		6.2	15.58	91	**Forth / Galway Fisher**	
	Falmouth Petroleum Ltd (Eastern Breakwater)	160	40	N/A	8		6.02	15.5	91.4	**Mersey Fisher**	
	Oil Terminal (Piers No6, No7)	106	70	N/A	9		7	18	99.8	**Bahia Tres**	
	Oil Terminal (Piers No6, No7)	106	70	N/A	9		6.8	13.5	69	**Ria de Vigo**	
	Oil Terminal (Pier No5)	282	110	N/A	16		7	16.5	111.3	**Sara**	
	Oil Terminal (Piers No6, No7)	106	70	N/A	9		6.02	15.5	91.4	**Mersey Fisher**	
	Oil Terminal (Piers No6, No7)	106	70	N/A	9		6.2	15.58	91	**Forth / Galway Fisher**	

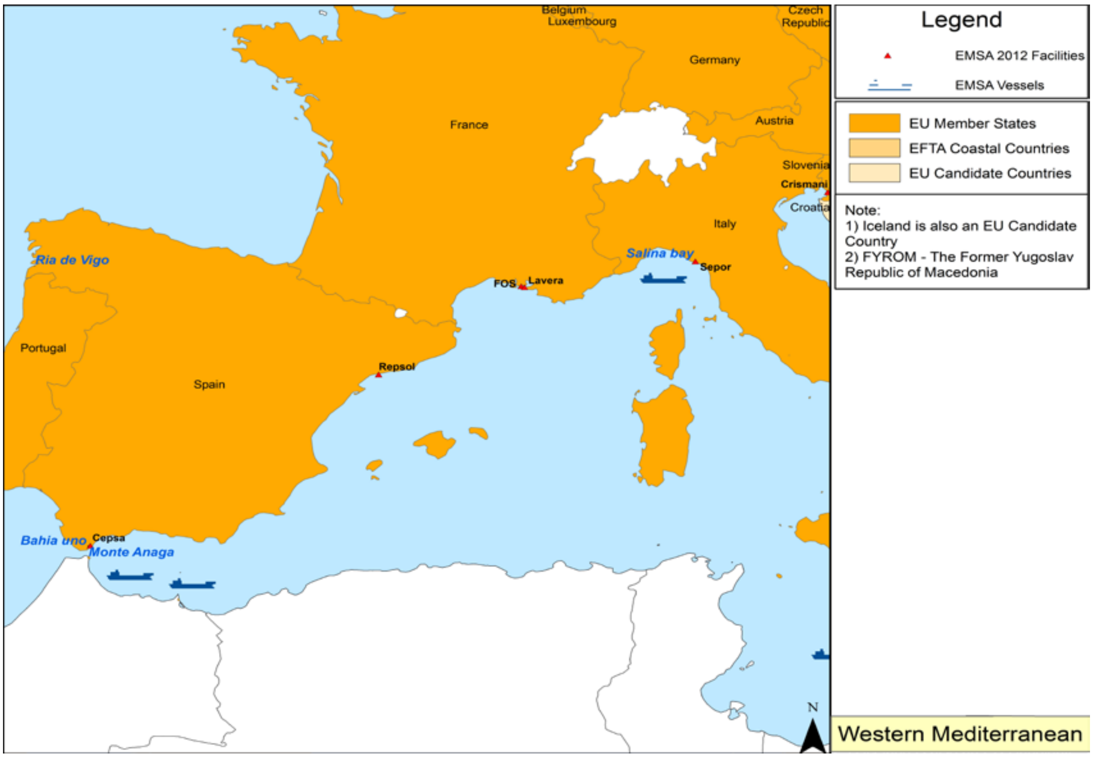
No limitations for accommodating EMSA's vessels in the identified facilities.

Limitations for accommodating EMSA's vessels in the identified facilities.

3.1.4 Western Mediterranean Sea

In the Western Mediterranean Sea, five (5) recovered oil receiving facilities were identified, able to accommodate, under certain conditions, the EMSA's contracted vessels trading in the area, (*Bahia Uno, Salina Bay and Monte Anaga*). These are: "*Sepor Water Treatment Plant*" in La Spezia, "*Port of Lavera*", "*Fos Deballasting Facility*" in Fos with almost similar initial capacity (1,000 m^3) and with the long term capacity to be ranging from 2,500 to 30,000 m^3, "*Cepsa Gibraltar San Roque*" in Algeciras and "*Repsol Tarragona*" the immediate capacity of the last two to be around 5,000 m^3.

"*Sepor Water Treatment Plant*" set almost no restrictions in the quality of oil (except for the presence of debris that should not be in excess of 1% v/v). Absence of debris and oil emulsions and limitations on the acceptable allowable viscosity are the main oil-related restrictions indicated by "*Port of Lavera*" and "*Fos Deballasting Facility*" as well as the two facilities in Spain. In addition, for the two facilities in France, the density of oil should not be more than 0.99 which would probably restrict the discharge of certain heavy residual and refined products and crude oils as well as spilled oils where uptake of extraneous materials including suspended material occurs. More thorough sampling of oil is required by both facilities in Spain with the "*Repsol*" operated facility to indicate that sampling must be carried out for each one tank that it is to be discharged.



Map 11: Regional map presenting the identified facilities and EMSA's vessels in the Western Mediterranean Sea

In "*Fos Deballasting Facility*", C2 berth should be avoided by *Bahia Uno* due to the marginal allowable beam and displacement. Similarly, *Monte Anaga*'s beam is marginally lower than the permissible one in C2. All other berths (0, 0bis, 1, 2 and 5) are suitable for all vessels.

In Lavera, *Monte Anaga*, *Bahia Uno* and *Salina Bay* when in fully loaded condition cannot be accommodated in the berths K1, K5 and K6 due to the facility's relatively small permissible draft for approaching vessels. However, berths A4, A2, B, C, D, E and F capable of accommodating deeper vessels with a minimum draft 10.1 m are considered to be suitable for the abovementioned vessels to be berthed alongside.

Table 8: Overview table presenting the limitations on the size of vessels that can be accommodated in the facilities and the particulars of EMSA's vessels based in the Western Mediterranean Sea

Area	Facility	Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	L_{OA} (m)	Vessel	Area
Western Mediterranean Sea	**Cepsa Ref. "Gibraltar S.R."** (Berths C, D, E)	125 - 241	50 - 65	N/A	N/A		5.8	15.6	71.01	**Bahia Uno**	Western Mediterranean Sea
	Cepsa Ref. "Gibraltar S.R." (Berths C, D, E)	125 - 241	50 - 65	N/A	N/A		5.3	15.3	87.16	**Monte Anaga**	
	Cepsa Ref. "Gibraltar S.R." (Berths C, D, E)	125 - 241	50 - 65	N/A	N/A		5.53	13.1	74.7	**Salina Bay**	
	Repsol Tarragona (Berth 11)	155	74	-	8.2		5.8	15.6	71.01	**Bahia Uno**	
	Repsol Tarragona (Berths 11, 35)	155 - 230	74 - 85	-	8.2 - 11.25		5.3	15.3	87.16	**Monte Anaga**	
	Repsol Tarragona (Berth 11)	155	74	-	8.2		5.53	13.1	74.7	**Salina Bay**	
	Deballasting facility of FOS (Piers C2, 0, 0bis, 1, 2, 5)	130 - 370	-	16 - 55	7 - 20		5.53	13.1	74.7	**Salina Bay**	
	Deballasting facility of FOS (Piers C2, 0, 0bis, 1, 2, 5)	130 - 370	-	16 - 55	7 - 20		5.3	15.3	87.16	**Monte Anaga**	
	Deballasting facility of FOS (Piers C2, 0, 0bis, 1, 2, 5)	130 - 370	-	16 - 55	7 - 20		5.8	15.6	71.01	**Bahia Uno**	
	Port of Lavera	120 -	-	19 -	10.1 -		5.53	13.1	74.7	**Salina Bay**	

Area	Facility	Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	L_{OA} (m)	Vessel	Area
	(Berths A4, A2, B, C, D, E, F)	250		40	12.5						
	Port of Lavera (Berths A4, A2, B, C, D, E, F)	120 - 250	-	19 - 40	10.1 - 12.5		5.3	15.3	87.16	**Monte Anaga**	
	Port of Lavera (Berths A4, A2, B, C, D, E, F)	120 - 250	-	19 - 40	10.1 - 12.5		5.8	15.6	71.01	**Bahia Uno**	
	Sepor Water Treatment Plant (Berth 1)	80	-	-	9.5		5.53	13.1	74.7	**Salina Bay**	
	Sepor Water Treatment Plant (Berth 1)	80	-	-	9.5		5.3	15.3	87.16	**Monte Anaga**	
	Sepor Water Treatment Plant (Berth 1)	80	-	-	9.5		5.8	15.6	71.01	**Bahia Uno**	

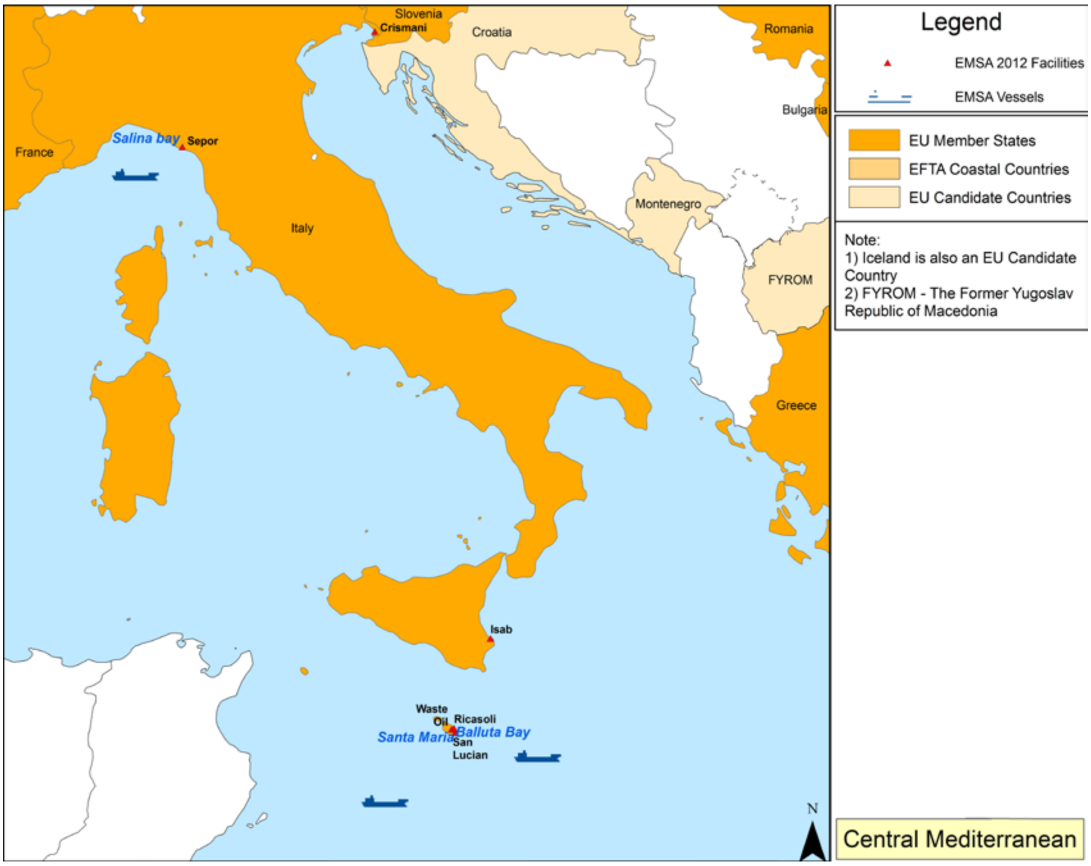
No limitations for accommodating EMSA's vessels in the identified facilities.

Limitations for accommodating EMSA's vessels in the identified facilities.

In general all vessels intended to call at the Fos-Lavera port complex must keep an underkeel clearance of 1/10th of the permissible draft while during the call it is recommended that it is not less than 0.5 m. It must be noted, that the oil and gas terminals in Fos and Lavera are operated by "*Fluxel SAS*", as a result of the implementation of the French ports reform plan. Berth No.11 in the Tarragona facility is not suitable for *Salina Bay* and *Monte Anaga* due to its restrictive minimum permissible length overall (74 m).

3.1.5 Central Mediterranean Sea

In the Central Mediterranean area, five (5) facilities were identified to be able to receive recovered oil by the vessels *Santa Maria* and *Balluta Bay*, as follows: "*Isab Terminal South Site*" in Santa Panagia, "*San Lucian O.C.*" in Marsaxlokk and two more facilities in Valletta, "*Ricasoli Tank Cleaning*" and "*Waste Oil C.L.*", as well as the floating facilities (a tanker and two barges) of "*Crismani Ecologia*" at the port of Trieste in the Adriatic Sea.



Map 12: Regional map presenting the identified facilities and EMSA's vessels in the Central Mediterranean Sea

The "*Ricasoli Tank Cleaning Facility*" with initial capacity of 1,000 m^3 and 2,000 m^3 long-term capacity, is presently undergoing a refurbishment program of its tank farm. For the time being only one operational tank, out of a total of five tanks is available to receive in the short- term. Therefore, once all five tanks will be fully refurbished, the full capacity of the facility would be at least 12,500 m^3. It has been designed to serve tank cleaning of tankers and other vessels that will be dry docked in the neighboring shipyard and to receive and treat dirty ballast, oily slops and other oily mixtures. It must be noted that the jetty is sited in sheltered waters within the port breakwater, equipped with flue type inert gas supplying systems.

The "*Isab T.S.S.*" (5,000 m^3 initial and long term capacity) indicated that there are no restrictions in the composition of oil that might receive. The oil terminal owns a 1,300 m long, finger pier consisting of 5 berths (1, 2, 5, 6 and 7) where different oil cargoes can be handled ranging from crude oil to LPG and gasoline. It must be noted that dirty ballast and tank washings from oil tankers can be received via a 28'' line in dedicated tanks.

Table 9: Overview table presenting the limitations on the size of vessels that can be accommodated in the facilities and the particulars of EMSA's vessels based in the Central Mediterranean Sea

Area	Facility	Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	L_{OA} (m)	Vessel	Area
Central Mediterranean Sea	**Isab Terminal South Site** (Berth 4)	400	87	N/A	22.5		5.52	13.1	74.12	**Balluta Bay**	Central Mediterranean Sea
	Isab Terminal South Site (Berth 4)	400	87	N/A	22.5		6.82	14.05	93.1	**Santa Maria**	
	Ricasoli Tank Cleaning Ltd (Berth 1)	300	30	45	10		5.52	13.1	74.12	**Balluta Bay**	
	Ricasoli Tank Cleaning Ltd (Berth 1)	300	30	45	10		6.82	14.05	93.1	**Santa Maria**	
	San Lucian Oil Company (Sloc Buoys)	200	N/A	N/A	11.5		5.52	13.1	74.12	**Balluta Bay**	
	San Lucian Oil Company (Sloc Buoys)	200	N/A	N/A	11.5		6.82	14.05	93.1	**Santa Maria**	
	Waste Oil Company Ltd (Flac Stone)	200	40	30	11.5		5.52	13.1	74.12	**Balluta Bay**	
	Waste Oil Company Ltd (Flac Stone)	200	40	30	11.5		6.82	14.05	93.1	**Santa Maria**	
	Floating Facility										
	Crismani Ecologia	No limits					5.52	13.1	74.12	**Balluta Bay**	
	Crismani Ecologia	No limits					6.82	14.05	93.1	**Santa Maria**	

No limitations for accommodating EMSA's vessels in the identified facilities.

Limitations for accommodating EMSA's vessels in the identified facilities.

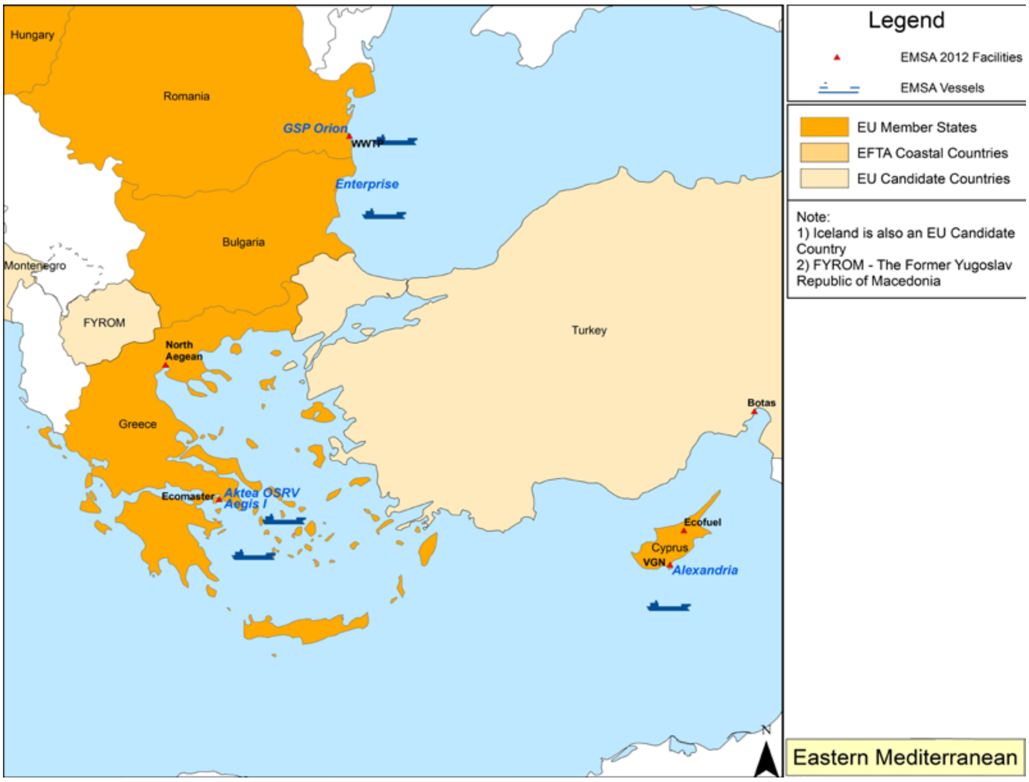
The use of the abovementioned berths for receiving recovered oil depends on the availability and the following information gives the range of limits and ship particulars for all berths. The presence of debris, the viscosity and also the flash point (must not be less than 60^{O}C) are among the issues of concern identified by the rest three Maltese facilities in relation to the handling of recovered oil. The "*Isab T.S.S.*" is not accessible by the *Balluta Bay* which trades in the area as well as by *Bahia Uno, Salina Bay* and *Aktea OSRV* trading in the Western and Eastern area respectively due to its prohibitive minimum L_{OA} of 87 m.

"*San Lucian O.C.*", "*Ricasoli Tank Cleaning Facility*", and "*W.O.C.L.*" are accessible by *Santa Maria* and *Balluta Bay*.

3.1.6 Eastern Mediterranean Sea

Five (5) facilities operating in the Eastern Mediterranean confirmed their ability to receive oil recovered from spill response operations: two (2) facilities in Greece (a 272 m long, floating waste oil separator in the port of Piraeus providing an immediate capacity of 40,000 m^3 and a facility in the port of Salonika in Northern Greece with an initial reception capacity of 1,500 m^3.) In terms of the quality of oil, both facilities did not indicate serious restrictions apart from the presence of debris.

Two other facilities were identified in Cyprus, "*Ecofuel*" an on-shore waste oil treatment facility located in the port of Vasiliko and a Limmasol based, operator of barges with a total storage capacity equal to 1,500 m^3 that can provide an alternative solution for *Alexandria* whose draft in the loaded condition exceeds the permissible one in the port of Vasiliko (8.6 m).



Map 13: Regional map presenting the identified facilities and EMSA's vessels in the Eastern Mediterranean Sea

Table 10: Overview table presenting the limitations on the size of vessels that can be accommo-dated in the facilities and the particulars of EMSA's vessels based in the Eastern Mediterranean Sea

Area	Facility	Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	L_{OA} (m)	Vessel	Area
Eastern Mediterranean Sea	**Floating Facility**										Eastern Mediterranean Sea
	Floating Separator Ecomaster	No limits					4.87	12.6	78.5	**Aktea OSRV**	
	Floating Separator Ecomaster	No limits					3.5	11.5	61.55	**Aegis I**	
	Floating Separator Ecomaster	No limits					9.6	18.5	94	**Alexandria**	
	North Aegean Slops (6th pier)	120	-	-	12		4.87	12.6	78.5	**Aktea OSRV**	
	North Aegean Slops (6th pier)	120	-	-	12		3.5	11.5	61.55	**Aegis I**	
	North Aegean Slops (6th pier)	120	-	-	12		9.6	18.5	94	**Alexandria**	
	Ecofuel (Cyprus) Ltd	-	-	-	-		9.6	18.5	94	**Alexandria**	
	Ecofuel (Cyprus) Ltd	-	-	-	-		4.87	12.6	78.5	**Aktea OSRV**	
	Ecofuel (Cyprus) Ltd	-	-	-	-		3.5	11.5	61.55	**Aegis I**	
	Floating Facility										
	VGN Sludge Ltd	No limits					9.6	18.5	94	**Alexandria**	
	VGN Sludge Ltd	No limits					4.87	12.6	78.5	**Aktea OSRV**	
	VGN Sludge Ltd	No limits					3.5	11.5	61.55	**Aegis I**	
	Botas Petroleum Facilities (Berths 1 - 4)	355	168	-	23		9.6	18.5	94	**Alexandria**	
	Botas Petroleum	355	168	-	23		4.87	12.6	78.5	**Aktea OSRV**	

Area	Facility	Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)	Draft (m)	Breadth (m)	L_{OA} (m)	Vessel	Area
	Facilities (Berths 1 - 4)									
	Botas Petroleum Facilities (Berths 1 - 4)	355	168	-	23	3.5	11.5	61.55	**Aegis I**	

No limitations for accommodating EMSA's vessels in the identified facilities.

Limitations for accommodating EMSA's vessels in the identified facilities.

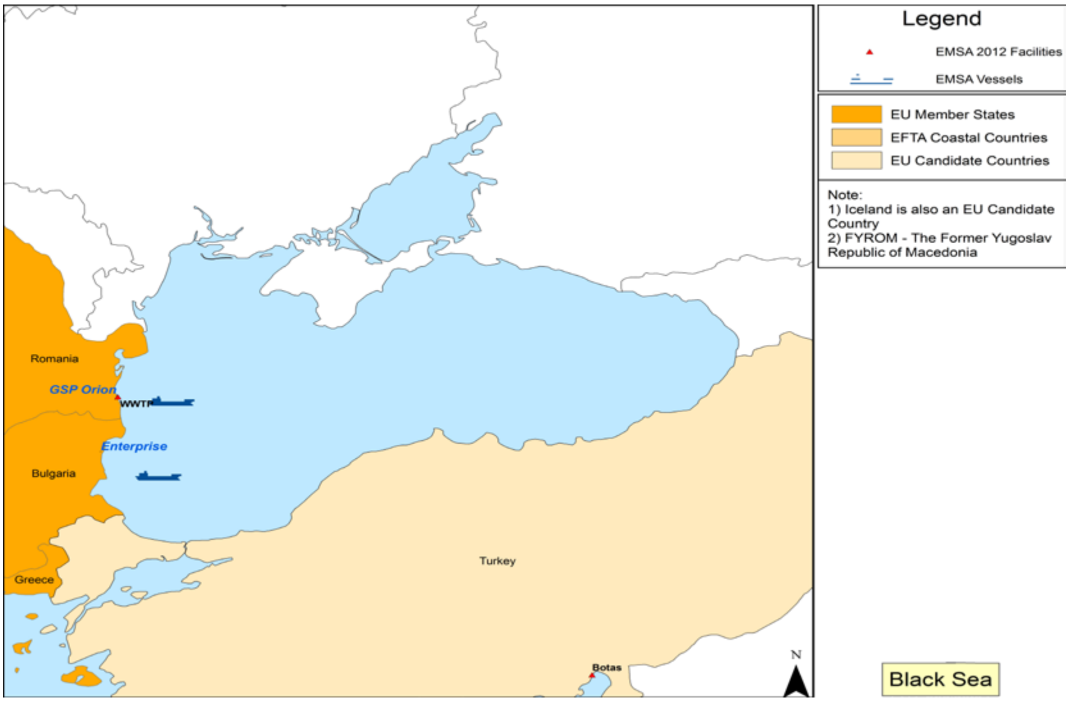
The fifth one is the "*Botas oil terminal"* in Ceyhan, Turkey providing four berths: Berth 1 & 2 designed to accommodate vessels in the approximate range of 80,000 - 300,000 dwt, while Berth 3 & 4 are designed to accommodate vessels between 30,000 - 150,000 dwt, practically vessels less than 168 m long are not allowed to be berthed. It is obvious that none EMSA contracted vessel including those regularly trading in the Eastern Mediterranean (*Alexandria, Aktea OSRV* and *Aegis*) can be accommodated in the "*Botas oil terminal",* however it was considered that this facility should not be ignored, as transfer of collected oil to a bigger oil tanker that can be safely berthed to this terminal might offer a solution to a major pollution incident in the area.

The restrictions of "Ecofuel" to receive recovered oil, as far as its quality is concerned, refer to the level of sulphur (<1%), the chlorinated hydrocarbons, and the flash point (> 55^{0}C). *Aktea OSRV* and *Aegis* can be easily accommodated in "*Ecofuel*".

3.1.7 Black Sea

In the Black Sea, one (1) facility has been identified as being capable of receiving recovered oil from operations in the area. It is the "*Waste Water Treatment Plant*" in the port of Constanta, being under the management of the Maritime Ports Administration. Its immediate capacity is 2,500 m^3, while a second discharge of 2,500 m^3 is feasible after 48 – 72 hours, as determined by the nominal treatment rate. The long term capacity is 5,000 m^3.

The kinematic viscosity of oil should not be more than 60 cSt at 50^{o}C, the maximum seawater level less than 50%, sulphur less than 1% and debris should not be present. The vessels *GSP Orion and Enterprise* that normally operate in the Black Sea can be easily accommodated in the Berth No. 69 of the port of Constanta.



Map 14: Regional map presenting the identified facilities and EMSA's vessels in the Black Sea

Table 11: Overview table presenting the limitations on the size of vessels that can be accommodated in the facilities and the particulars of EMSA's vessels based in the Black Sea

Area	Facility	Max L_{OA} (m)	Min L_{OA} (m)	Max Beam (m)	Max Draft (m)		Draft (m)	Breadth (m)	L_{OA} (m)	Vessel	Area
Black Sea	**Waste Water Treatment Plant** (Berth 69)	200	50	No restriction	10.5		6.2	16.8	60	**GSP Orion**	Black Sea
	Waste Water Treatment Plant (Berth 69)	200	50	No restriction	10.5		5.7	13.8	64.4	**Enterprise**	

No limitations for accommodating EMSA's vessels in the identified facilities.

Limitations for accommodating EMSA's vessels in the identified facilities.

3.2 Analysis of limitations

3.2.1 Introduction

The technical limitations that might compromise the discharge of oil recovered by EMSA's vessels to the identified facilities relate to:

1. the quality of spilled oil at the stage of recovery and storage onboard EMSA's vessels, in particular its non-intrinsic properties including the presence of debris and emulsions, the viscosity and the flash point following the weathering of oil at sea, and

2. the berthing and discharging operations of EMSA's vessels, in particular the suitability of berths and jetties, the connection of vessels' manifolds to the facility's cargo arms/receiving piping and various, operational requirements as the inerting of cargo tanks, etc.

3.2.2 Debris

The presence of debris in recovered oil was considered to be a prohibitive factor for the majority of the facilities. Only a limited number of facilities (it must be noted that they are all ship-generated waste treatment companies) replied that the presence of debris is irrelevant or causes no restrictions to the acceptance of oil while others (two facilities) indicated quantitatively the maximum permissible content (ranging from 1% to 3%).

The collection of debris along with spilled oil and water is more common in near shore areas than in the open sea and it is also dependent on the type of the oil recovery equipment deployed by EMSA's vessels.

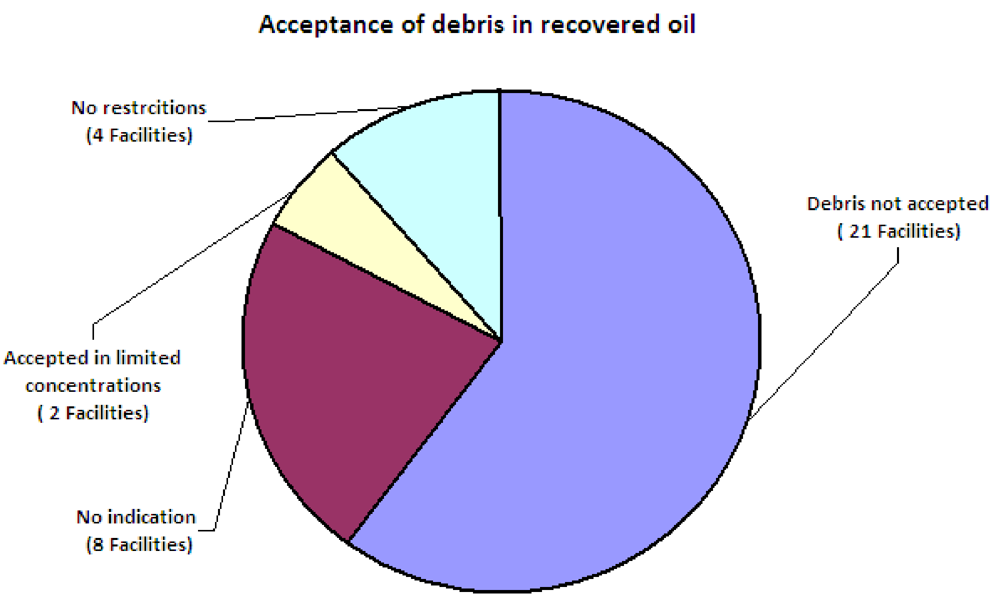


Figure 1: Acceptance of debris in the collected oil

3.2.3 Viscosity

Diversified answers were received on the viscosity of oil that the facilities can handle, depending on the type of facility (waste oil treatment facility, dedicated slops receiving station, etc). A number of nine (9) facilities specified that the maximum allowable viscosity of oil that they can receive and handle is less than 380 cSt at 10 to 50^{O}C, while only 6 of the total have either no restrictions at all or the maximum viscosity might be from 700 to 10,000 cSt at the same range of temperatures.

The following graph displays the range of the maximum, accepted viscosities of recovered oil by the facilities. As a number of facilities did not provide a reference temperature for the viscosity that they specified, the graph projects the values at a range of temperatures (from 10 to 50^{O}C), assuming that the temperature of 50^{O}C might be considered as the corresponding one when such an indication was omitted. The greater maximum value (700 cSt) corresponds to the maximum viscosity that the RMG and RMK series of residual fuels should have according to international, commercial standards.

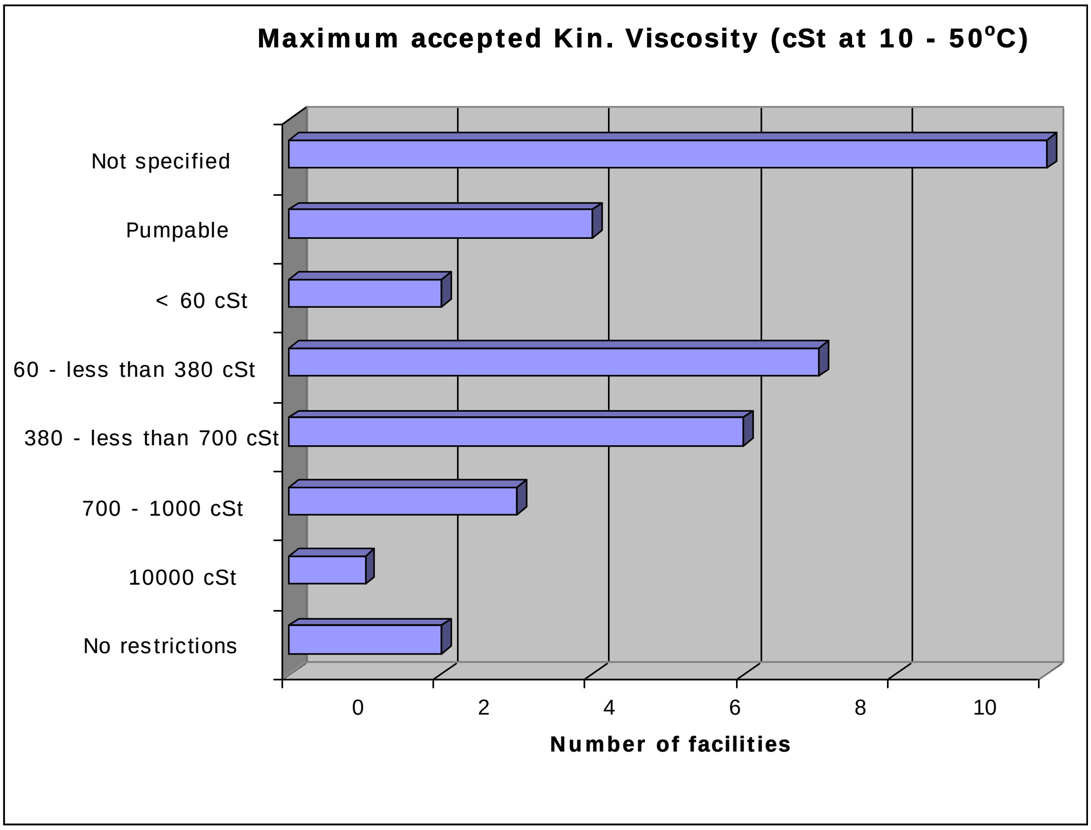


Figure 2: Viscosities of recovered oil that might be accepted by the facilities

3.2.4 Presence of water-in-oil emulsions

With regard to the difficulties encountered due to the presence of water-in-oil emulsions, seventeen (17) facilities responded that they can receive emulsions without serious restrictions, one (1) facility that only minor concentrations of emulsions in the recovered oil are acceptable (up to 1%), while ten (10) facilities indicated that oil containing emulsions cannot be received.

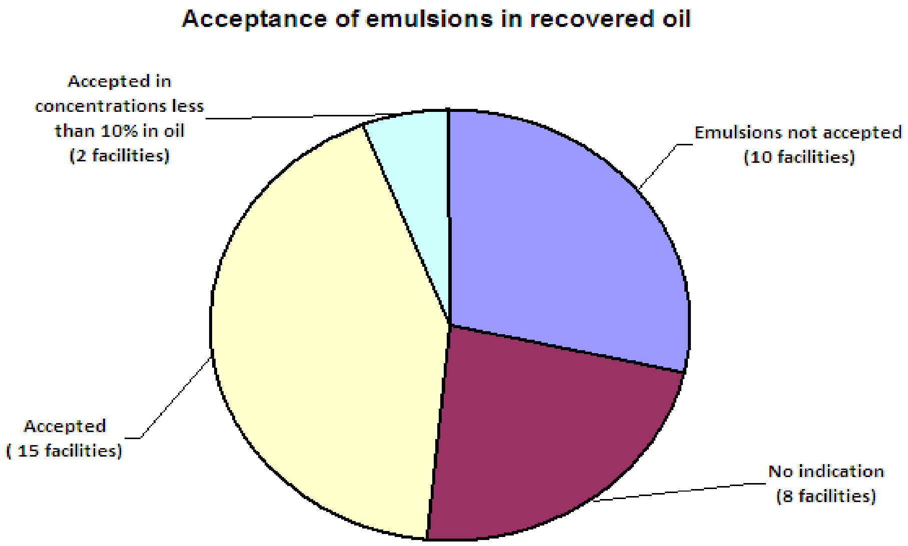


Figure 3: Acceptance of emulsions in the collected oil

Sampling of oil from a representative tank or from all cargo tanks of the discharging vessel is a common requirement for almost all facilities. Similarly, the submission of the Material Safety Data Sheet (MSDS) of the primary oil carried as cargo was considered to be useful in providing information on the origin, the dangers and the measures that should be taken to ensure occupational safety and sound handling.

It is worth mentioning, that the supply of an MSDS to a vessel is now an obligation for oils carried as cargoes or used as propulsion fuels under SOLAS, Chapter 5 (Carriage of cargoes) and their relevant form and content are described in the IMO Resolution (MSC.150(77)). Among other, a SOLAS compliant MSDS must contain information on the physical and chemical characteristics of petroleum products, the flash point, the existence of toxic substances and the maximum permissible concentrations of exposure. It must be noted that the composition of oil recovered at sea is different from the oil spilled.

3.2.5 Berthing

Section 2.1 of the report emphasises on the capability of EMSA's vessels to be accommodated at the identified facilities to conduct oil discharge operations. In general, most facilities are accessible without serious restrictions by the EMSA's vessels trading in the area of operation of the facilities. The most common restrictions refer to the maximum permissible draft (in fully loaded condition) and the length of the vessel, while certain facilities designed to accommodate bigger oil tankers are not accessible by any EMSA's vessel. Transfer of oil collected by an EMSA's vessel that cannot be berthed to these facilities to another tanker compatible with the facilities, constitutes an alternative way of discharge that must be considered. An assessment of this prospect is presented in section 2.4.3 of the report. It must be noted that a number of facilities are self-propelled or towed oil tankers, floating separators, and barges which means that the discharging operation is practically a ship to ship transfer operation.

3.3 Engineering solutions associated with the quality of recovered oil

3.3.1 Removal of debris

3.3.1.1 Introduction

This section provides basic information about the nature and origin of floating debris at sea; a summary of the information collected with regard to debris removal capabilities of the oil recovery equipment fitted onboard of EMSA's vessels, and presents a number of engineering solutions.

The engineering solutions that were identified and considered to provide an almost equivalent level of efficacy in removing debris from the flow stream of recovered oil are the following:

- Self-cleaning strainers/filters,
- Hydrocyclones, and
- Vibrating screens.

These technologies were found to be:

- safe for the operating personnel onboard the EMSA's vessels,
- compact, easy to operate and proven in removing debris from waste oil streams in various applications sector,
- commercially available, and
- feasible for applying onboard EMSA's vessels.

The principle of operation, the basic specifications (components, range of capacities, operational requirements, approximate weight and cost), and the identified advantages/disadvantages are presented for each proposed solution.

3.3.1.2 Types and origin of floating debris

Oil collected from the surface of the sea can contain debris such as seaweed, wood, plastic materials of various types, dead marine organisms, suspended sediments, etc. Their size, hardness and density are considered to be the most critical properties in relation to the spilled oil skimming operations and to the problems they might cause to a receiving facility following their discharge. Over time, oil spilled at sea will tend to accumulate debris that might float on the sea surface originating from the land, the ship or installation involved in an accident or other sources.

Floating debris at sea might come from many sources. They might be washed into the sea by heavy rainfall through rivers and streams, picked up off a beach by waves and tidal action, or indirectly deposited from other sources. They can travel long distances in the ocean, and the most buoyant types of floating debris are plastics and some types of rubber. Paper, wood, and cloth items initially float but tend to sink once they become saturated with water. Glass, metal, and some types of rubber sink unless air is trapped in pockets of the material.

The presence of debris in an area where spill recovery operations are to take place depends on many factors such as the proximity to the land, sewage outfalls, landfills, industrial activities, etc. but also to the existence of small or large scale permanent gyres at sea where entrapped marine litter is circulated.

Storm water runoff can carry street litter into storm drains which conveys the debris and water to a nearby river or stream and then directly to the sea. Typical debris of this origin includes drink cups, cigarette butts, beverage containers, medical items, etc. Heavy debris loads and turbulent mixing are expected in areas close to rivers deltas and estuaries. The following table shows some of the most common sources of floating debris at sea with some indicative examples (*adapted from EPA 2002*) along with some additional sources which are likely to be associated with a marine spill:

Table 12: Presentation of the most common sources and types of floating debris

Source	Examples of debris
Storm water discharges	Street litter runoff (cigarette butts, etc), medical items, resin pellets, food packaging, beverage containers, etc.
Combined sewer overflows	Street litter, sewage related items, medical items and other material.
Nonpoint sources	Garbage left behind in bathing beaches, litter from agricultural activities, etc.
Ships	A notable change in the discharge regime is anticipated from 1st January 2013, when only food waste and solid bulk cargo residues not harmful to the marine environment, will be permitted to be discharged into the sea from ships according to the revised Annex V of MARPOL.
Ship's cargo and/or packaging material	In case a spill involves one or more vessels carrying cargo that would float, the oil recovery operation might be confronted with all types and sizes of debris (the most common being plastic and other finished products, plastic raw material and wood).
Waste disposal sites	Improper operation of landfills close to the coastline might cause the accumulation of litter in the near shore area.
Response operations	Debris that originate from the response operation itself and could include sorbent materials, ropes, destroyed oil booms.
Offshore and industrial activities *(a)*	Plastic pellets, drill pipe thread protectors and other material generated by the industrial processes including loading/unloading operations in ports and terminals.
Illegal discharges	Illegal discharge of waste is a source of floating debris. It might include various items such as food packaging, small appliances, etc.

Source	Examples of debris
Natural disasters	All kinds of debris washed out from land following a natural disaster such as a tsunami or large flood. A large event of this type might often also cause an oil spill.
Natural materials	Debris that originates from the weathering of coasts or cliffs near to the coast line.

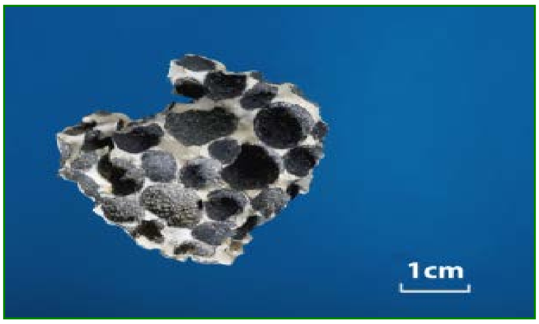


Figure 4: Floating debris relating to the Deep Water Horizon oil spill, EPA 2011

An example of debris originating from offshore activities is a 'honeycomb' material found floating in coastal waters, following the explosion of *Deepwater Horizon* in the Gulf of Mexico on 20 April 2010 and the subsequent release of crude oil from the Macondo well. Floating debris were as large as 20 cm, heavily or not oiled, bearing a uniform distribution of black spheres (1 cm in diameter) embedded in a white porous substrate that might have originated from the foam flotation material used to help maintain buoyancy for the pipe conveying oil from the well to the rig.

Figure 5: Debris from eroded volcanic cliffs in an oil spill, EPE 2010

3.3.2 Debris screening capability of oil recovery systems on EMSA’s vessels

Both the primary and secondary oil recovery systems in EMSA’s vessels have a capacity to handle debris (i.e. through the cutting knifes’ feature of transfer pumps) or to remove macro-debris (by means of screens as a protection of the transfer pump or as an integral component to optimise the flow of oil). For example, the KOSEQ weir type, oil recovery system is equipped with an adjustable debris bar screen fitted at the inner pontoon in front of the oil collection chamber. The mesh of the bar screen is about 11 cm and it is rotated

90° down so that the debris is pushed by the water pressure through the screen underneath the sweeping arm. The adjustment of the debris screen is hydraulically controlled from the control cabinet on the rigid sweeping arm handling crane. The brush cassette that might be used for the recovery of high viscosity oil is fitted with a movable debris screen.

The Lamor oil primary and secondary oil recovery systems when combined with GT A pumps with debris cutting knife are capable of handling solids such as seaweed, plastic items and ropes. Similarly, Desmi skimmers with DOP 250 pumps can handle debris up to 50 mm, and Markleen and Framo skimmers' pumps are equipped with cutting knives.

While in principle, debris only up to the size of the transfer hoses' diameter or the size of the pump can be handled in suction skimmers, screw pumps and pumps using cutting knifes could further reduce the size of debris. Weir skimmers are more vulnerable to debris, while disk or brush skimmers can be considered more tolerant to small debris.

3.3.2.1 Background

In general, the function of debris removal equipment is intended to:

- separate and remove the larger material which might interfere with the efficiency of the operations of oil receiving facilities, and
- protect downstream the oil transfer pumps and the associated piping of vessels from hard and large debris in the recovered oil flow.

The screening/filtering equipment used in the waste treatment industry has progressed over the recent years due to the need for more controllable and finer screening. Wastewater that originates from various production processes contains coarse solids that can interfere with treatment processes or cause undue mechanical wear and increased maintenance on wastewater treatment equipment. To minimize potential problems, these materials require a preliminary treatment that might consist of screening depending on the targeted size.

The control and removal of debris and other material is carried out by manually cleaning the bar screens (large in size, in order to reduce the frequency of screenings collection operations) or by automatically cleaned strainers, filters, hydrocyclones, vibrating screens or other equipment (in cases of high flow rates of polluted waters with a high solids content).

A broad definition of screen types in relation to the size of the debris or material screened (*adapted from EPA, Ireland, 1995*) is as follows:

Table 13: Presentation of the main screen types

Screen type	Aperture
Coarse	> 50 mm
Medium	10 – 50 mm
Fine	< 10 mm
Straining	< 3 mm

Coarse screens with bar spacing of the order of 70 – 100 mm are designed to intercept only the largest materials and these are generally held back in the flow to be manually or mechanically removed. The proposed equipment in the section that follows, is targeted and was found to be effective in removing debris ranging from less than 1 cm to 5 cm in size, - collected from the oil recovery systems of the vessels. However, the screen opening of the equipment or the size of debris to be removed must be carefully selected to avoid longer cleaning cycles - in particular for the self-cleaning systems - and unreasonable costs. The possibility of simultaneous operation of both sweeping arms discharging at different manifolds on port and starboard makes necessary the fitting of dual systems, one for each side of the vessel.

3.3.2.2 Automatic self-cleaning Strainers – Filters

3.3.2.2.1 Strainers

Self-cleaning strainers are installed where continuous removal of debris is required and where flow cannot be interrupted for cleaning the straining elements as it might be required in spilled oil collection operations. These strainers are used where manual cleaning is not convenient or practicable for reasons such as: the need for frequent cleaning, difficult access for cleaning when required, variable loading rate, etc. Debris is retained inside the cavities of a straining element. The accumulated debris and solids are then backwashed or displaced towards a draining line.

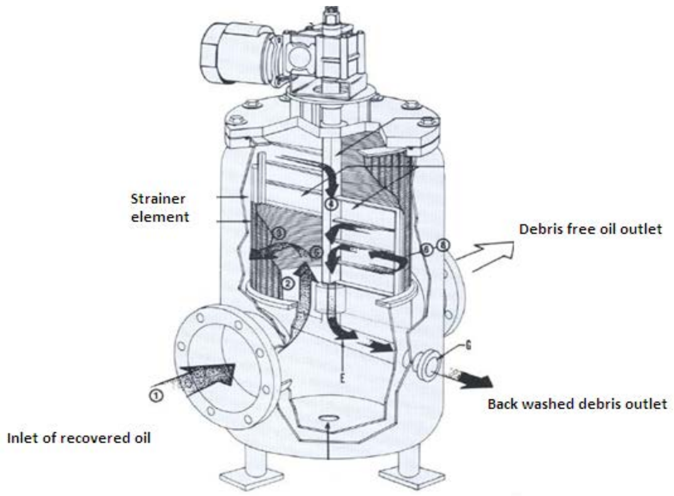


Figure 6: Layout of a self-cleaning strainer (from Fluid Engineering, 2010)

Cleaning the straining element is accomplished by using the pressure differential between line pressure and atmosphere. During the cleaning cycle, when the backwash valve is opened to atmosphere, a portion of the strained fluid reverses flow back across the isolated section of element, lifts off the debris, and ejects it out of the strainer.

Automatic self-cleaning strainers are commonly used in the waste treatment sector and many other activities where the removal of debris and other finer material is necessary. Continuous flow is assured and protection is provided for nozzles, pumps, valves, and other process equipment. With an automatic control system monitoring the strainer operation, cleaning is normally accomplished by an integral backwash system. A small portion of the screen element is isolated and cleaned by reverse flow. Strainers with efficient design are capable of using only a small amount of the strained liquid to carry away the debris from the strainer.

To summarize the basic principle of operation, the fluid with debris enters the strainer's large bottom chamber where the line velocity is reduced. Flow continues upward, passing radially through the ″sealed″ screen element. Debris of pre-determined size is trapped on the inside of the screen. The flow is uninterrupted and the strained clean fluid continues its path into the correctly proportioned outer annulus of the strainer body and exits through the outlet nozzle. For backwash cleaning a hollow, full flow backwash arm extending the full length of the screen element rotates slowly inside of the screen and is piped to atmosphere. When cleaning is required the automatic backwash valve opens the system to atmosphere, causing a high velocity reverse flow across the isolated section of the screen. Debris is flushed from this segment of the screen into the backwash arm and out of the strainer via the backwash piping.

During the backwashing cycle the main flow is uninterrupted and continues to be strained in the normal manner. An automatic control system consisting of an electrical panel, actuated valves and a differential pressure switch operates the strainer. The control system will automatically close the backwash valve after the screen element is properly cleaned. The unit can also be operated manually or in the continuous backwash mode. The installation of most commercially available systems on a vessel requires electric power for the shaft driving motor and the control panel and a combined drain-backwash connection.

The basic specifications of self-cleaning strainers are outlined in the next table.

Table 14: Presentation of the basic specifications of self-cleaning strainers

Basic specifications	
Self cleaning strainer	
Purpose	Removal of debris prior to vessel manifolds
Method	Retention of debris and solids in the range of 1 to 5 cm at the straining wire element and removal through back washing
Basic Components	- Stainless steel straining element and housing - Back wash valve with electric actuator - Electric motor and cleaning shaft - Explosion proof control panel - Differential pressure switch
Recommended capacity	125 – 300 m^3/h
Operational requirements	Extensive range of operating pressures Power source 230 V, 0.3 – 0.5 HP
Approx. weight	From 80 to 150 kg.
Approx. cost	20,000 € for 150 m^3/h

3.3.2.2.2 Filters

Self-cleaning filters can remove finer material than the abovementioned strainers with diameter ranging from tens to hundreds of micrometers. In addition, they are used to prevent flow of large material which might cause partial blocking or damage of the internal surface of other separation equipment connected in line, ensuring the undisturbed and efficient operation of the latter. There are various methods of cleaning based on the Bernoulli Effect, vacuum back flashing, etc. Filtering equipment making use of the Bernoulli Effect generally consist of a predetermined size basket sieve, a moving disk mounted on a piston used for the cleaning procedure, an automated flushing valve and the filter housing. The duration of the filtration phase depends upon the degree of contamination of the medium.

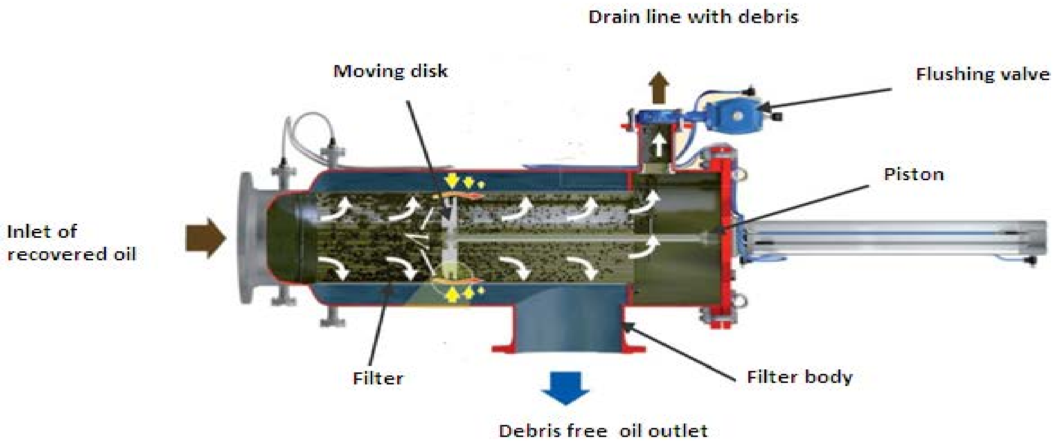


Figure 7: A self-cleaning filter (from Bernoulli AB, 2012)

The flushing mode of the system is initiated by the differential pressure monitor or by a time interval control system. The flushing valve opens in this phase, creating a pressure gradient with respect to the system pressure in the piping. This pressure gradient causes the coarser and easily removable particles to be flushed out of the strainer insert. The filtration continues during this phase and the flushing volume is defined and limited by a restrictor in the flushing drain spigot. As the flushing interval is open, the pneumatically actuated piston with the flushing disc moves into the strainer and creates a large local increase in speed within the gap between the flushing disc and the strainer insert. This causes a static pressure drop, known as the Bernoulli Effect. The external pressure on the clean side of the filter then is higher in the area of the flushing disc than in the area of the flushing disc and the strainer. Together with the greatly increased flow speed, this causes "suction" on the filter element. The contaminants are flushed out of the filter as a result of the flushing valve being open, creating a pressure gradient. The flushing disc returns to the starting position but the flushing valve remains open. This allows the remaining particles to exit the filter. In addition, the lower section of the filter insert is cleaned during the upwards movement of the flushing disc. The flow characteristics returning to what they were has a self cleaning effect, according to Bernoulli.

The basic specifications of self-cleaning filters are summarized in the next table.

Table 15: Presentation of the basic specifications of self-cleaning filters

Basic specifications	
Self cleaning filters	
Purpose	Removal of debris prior to vessel manifolds
Method	Pneumatically operated, self-cleaning screening of solids in the range 0,1 – 1 cm
Basic Components	- Filter basket and housing - Cylinder disk and piston - Flushing valve - Differential pressure switch
Recommended capacity	125 – 300 m^3/h

Basic specifications	
Self cleaning filters	
Operational requirements	Water connection Air connection Power source (for the control panel) 230 V, consumption 10 W
Approx. weight	Dependent on filter material. For a stainless steel of 150 m^3/h about 25 kg
Approx. cost	About 10,000 € for a 150 m^3/h system

Technical solutions for debris removal		
Type of equipment	**Advantages**	**Disadvantages**
Strainers – Filters	▪ Self-cleaning process (electrically or pneumatically operated) ▪ Small footprint (0,3 to 0,6 m^2 for a 300 m^3/h – 8'') ▪ Broad range of flow rates and piping sizes ▪ Various marine applications (in seawater cooling, fire-control and sanitary systems, etc) as well as in the petroleum industry ▪ Small pressure drop (0,1 bar at 180 m^3/h – 8'' to 0,3 bar at 330 m^3/h-8'') ▪ Relatively small flow required for strainer material cleaning (less than 3% - 5% of the line flow) ▪ Minimal power consumption	▪ Sticky debris might require longer back-wash cycle duration ▪ Volume of debris should be less than 3 % of the whole flow stream ▪ Pumping of very high viscosity oils could be further impeded

Table 16: The advantages and disadvantages of self-cleaning strainers and filters

3.3.2.2.3 Hydrocyclones

The working principle of the separation carried out in a hydrocyclone is identical to the well known cyclonic separation principle. Fluid and particles enter a cylinder tangentially and start to rotate. The rotation generates a centrifugal radial force towards outside. As most particles have a density larger than water, the particles experience an effective force towards outside. A drag force acting in radial direction exists whenever a particle moves in a fluid. Further, the flow is turbulent and thus particles also experience forces in random direction.

Gradients in the centrifugal forces along the central axis of the cyclone induce a vertical pressure gradient. The outcome of this force field is that particles and debris concentrate towards outside leave via the lower drain exit whereas a cleaned flow leaves via the overflow tube at the top side. The separation efficiency of a specific cyclonic unit is dependent on particle size, particle/fluid density difference, particles concentration, working pressure and the pressure difference between entry, drain and overflow. A hydrocyclone has no moving parts and achieves solid/liquid separation by virtue of a pressure drop across the unit.

Hydro cyclones are classified by the size of the cone and will separate particles in the coarse, medium, fine and ultra fine-size ranges. They can be used for separation of water and solids, but also for separation of water and oil. The higher the difference is between oil and water or water and solids, the better is the separation efficiency of hydrocyclones.

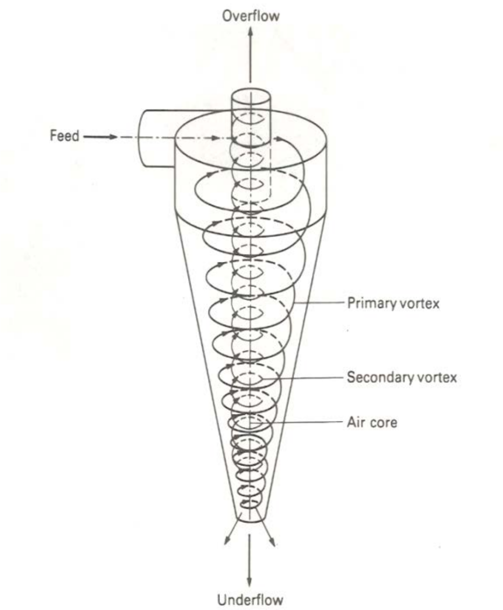


Figure 8: Principle of operation of hydrocyclones (from Unit Operations of Chemical Engineering, 5th Edition)

Some of the critical factors to be considered in the use of a hydrocyclone as a debris separating system are:

- The design of the hydrocyclone, based on optimum geometric ratios to achieve maximum separation efficiency.
- Density difference meaning that the efficiency of separating is dependant on the difference in density between the solids and the oil/water mixture. The separation efficiency increases as the difference in density increases.
- Flow rate in the sense that the strength of the centrifugal forces induced in the separator is a function of the flow rate. At low flows, forces are insufficient to establish the required vortex and little separation can take place. Once the vortex is

established, the efficiency rises rapidly. Whilst most separators decrease in efficiency as flow increases, for hydrocyclones, separation efficiency increases gradually as a function of the flow rate. The upper flow limit is generally set by the pressure available between inlet and reject streams.

Hydrocyclones have operating pressures between 3 and 5 bars and pressure drop in the cyclones might be from less than 1 to 1.5 bars. This means that in some cases where pressure in the system outlet is not enough to direct the recovered oil in the storage tanks of a vessel, an additional booster pump should be used to increase the pressure. The footprint and height of the system depends on its overall hydraulic capacity. They have no moving parts, and their operational and maintenance cost is minimal while their control is restricted to checking the flow rate and the differential pressure.

The basic specifications of hydrocyclones are summarized in the next table.

Table 17: Presentation of the basic specifications of hydrocyclones

Basic specifications	
Hydrocyclones	
Purpose	Removal of debris prior to vessel manifolds
Method	No moving parts or screens, debris and solids down flowed due to the exerted centrifugal force
Basic Components	- Hydrocyclone with threaded connections to inlet/outlet openings - Pressure relief valve - A debris collection tank might be connected to the lower part of the cone
Recommended capacity	125 – 300 m^3/h
Operational requirements	Only flow of recovered oil and pressure within the affordable limits
Specifications	Cylinder height (mm) 300 – 350 Cylinder ID (mm) 380 Cone angle a (^{0}) 20 Weight 200 to 400 kg
Approx. cost	25,000 – 30,000 € for a 150 m^3/h system

Technical solutions for debris removal		
Type of equipment	**Advantages**	**Disadvantages**
Hydrocyclones	▪ Hydrocyclones are very effective in high concentrations of solids in liquids. ▪ No supply of power, air, or water is required. ▪ Relatively small footprint, when the unit is installed vertically. ▪ Only control of the flow rate and the differential pressure is required. ▪ Broad range of flow rates and inlet openings.	▪ They are flow rate sensitive and do not operate well at below 90% of the design flow rate. ▪ Very limited use in marine applications. A promising technology for ballast water treatment, in particular, for removing sediments during ballasting. ▪ Could not remove debris with density smaller than water. ▪ On average, pressure drops might be from less than 1 to 1.5 bars. That might make necessary the fitting of a booster pump on the vessel.

Table 18: Presentation of the advantages and disadvantages of hydrocyclones

3.3.2.2.4 Vibrating screens

Vibrating screens are used to make solid particle size separations with diameter ranging from several centimeters to less than 1 mm and they constitute the favorable solution in case, variations in flow rates and particle density are anticipated, or the feed solids content exceeds 25-30 % of the total.

The vibrating screen is a type of gravity fed, sieving equipment, horizontal or of concentric type, with variable speed and inclination control, used to separate materials into various sizes passing through apertures in the screen or travelling across the screen surface in controlled pathways with the aim of further processing, or far end use, depending on the particular needs.

They are mainly used for screening materials in industrial activities such as the metallurgy, mines, building materials, transportation, chemical industries, waste management, etc. Similar applications to the removal of debris in oil collected from spill response operations include solid contaminants removal from waste oil of various origins such as crankcase oil, lubricating oil, etc by means of single or double deck vibrating stainless steel screens to produce secondary fuel oil for industrial burners. Vibrating screens are being manufactured today as gravity fed or in line pneumatic fed systems, stationary or mobile able to operate on a batch or continuous basis, with explosion proof or not motor.

The vibrating screen consists of a gyratory motor that generates the linear motion of the single or multiple-deck screening machine maximizing the rate at which material passes through the screen, a supporting device, a vibration transmission part, and the screens made from various materials (stainless steel to synthetic material) placed on different decks.

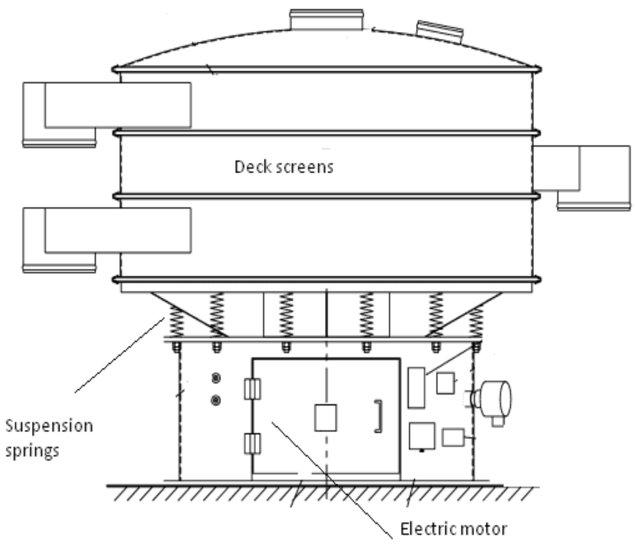


Figure 9: Basic layout of a multi-deck vibrating screen (from Kason Co., 2011)

Single-deck vibrating screens are generally utilized for removing a small percentage of oversize material through the upper discharge spout while multiple deck screens are generally utilized for "classifying" of particles in more than two predetermined sizes.

The basic specifications of vibrating screens are summarized below.

Table 19: Presentation of the basic specifications of vibrating screens

Basic specifications	
Vibrating screens	
Purpose	Removal of debris prior to vessel manifolds
Method	Retention of debris and solids on vibrated flat screens (2 to 200 mm)
Basic Components	- Electric motor creating inertial vibration - Transmission system - Single or multiple stainless steel screens of the favorable mesh - Reinforced structure
Recommended capacity	125 – 300 m^3/h
Operational requirements	Adjustable operating frequency (rpm) Motor power from 10 to 40 Kw Sieve layers 1 - 2
Approx. size	Sieve area from 500 x 2,000 mm
Approx. cost	20,000 – 25,000 € for a 150 m^3/h system

Table 20: Presentation of the advantages and the disadvantages of vibrating screens

Technical solutions for debris removal		
Type of equipment	**Advantages**	**Disadvantages**
Vibrating Screens	▪ An effective solution when variations in flow rates are anticipated or debris and suspended solids content exceed 25% - 30%. ▪ Similar applications in the waste oil treatment sector. ▪ Explosion proof gyratory motor can be combined with the equipment for installation on a tanker's deck. ▪ Footprint depends on the surface of sieves (1 to 2 m^2 for 300 m^3/h). ▪ Stable and durable equipment.	▪ Clogging of screen openings due to sticky effluents might be a problem and frequent cleaning is required ▪ Vibrating screens generate higher sound levels.

3.3.2.2.5 Conclusions

Removing debris from recovered oil on a vessel is generally a challenging operation due to the variability of the quantity and quality of debris that might be encountered during spill response activities. Coarse filtering equipment is routinely incorporated in shipboard machinery to protect pumps and other equipment from large objects.

The proposed technologies were considered to be technically sound, compact, simple to operate and amenable to retrofit on existing vessels by having assessed the status, the commercial availability and their effectiveness when applying to waste oil. Each proposed solution has its own benefits and constraints when considered relative to the problem of debris.

Safety of oil spill response operations is of overarching importance and only solutions that might be effective in removing debris and at the same time do not compromise the safety and the operation of the vessels, were proposed.

These solutions were also considered to be feasible for application onboard of EMSA's vessels, when taking into account the following factors:

- Scale-up/capacity of the equipment. The flow rates for debris removal of the commercially available systems must match the oil recovery rates of EMSA's vessels.
- Relatively small footprint, minimum power requirements and other supplies.
- Explosion proof equipment is available by the vendors for the electromechanical parts of strainers and vibrating screens, while hydrocyclones have no electric parts at all.
- The solutions are recommended as fully enclosed, on-deck applications between the discharging transfer piping of oil recovery systems and the receiving manifolds of the vessels to avoid debris enter the storage tanks and facilitate the control of the process.
- Reasonable capital costs. The smaller the particles of debris and the higher the flow rate, the higher the capital cost.

Challenges that exist with the potential onboard use of debris removal equipment are as follows:

- The separated oily debris must be stored and disposed properly. Additional storage capacity might be necessary.
- Pressure drop due to emulsified oil and debris might exceed those recommended by vendors.
- It is well understood that space onboard an oil spill response vessel is an important consideration for shipboard applications. Reduction of the available, free space on the weather deck and limited access by crew is anticipated.

- EMSA's vessels are fitted with dual, port and starboard, primary oil recovery equipment which make necessary the installation and use of similarly dual debris removal systems.

3.3.3 Water-in-oil emulsions and viscosity

3.3.3.1 Introduction

The treatment of water-in-oil emulsions is discussed in this section. It provides a background on the formation and stability of water-in-oil emulsions, comprehensive information on the use and efficacy of chemical emulsion breaking agents and identifies the key factors of emulsion breaking as a feasible process to take place onboard of EMSA's vessels.

3.3.3.2 Background

In general, emulsions constitute a suspension of droplets, greater than about 10 μm, consisting of two completely immiscible liquids, one of which is dispersed throughout the other. Emulsification of oil is caused by the uptake of water by the oil which results in a substance with increased viscosity. The mechanism of formation of water-in-oil emulsions is not yet fully understood, but it might begin with sea energy forcing the entry of small water droplets into the oil.

Water-in-oil emulsions originate from oil spills at sea, in crude oil production, etc., and they are almost the opposite kind of emulsion normally found in the bilge water of the engine room of a vessel, where oil constitutes the dispersed phase.

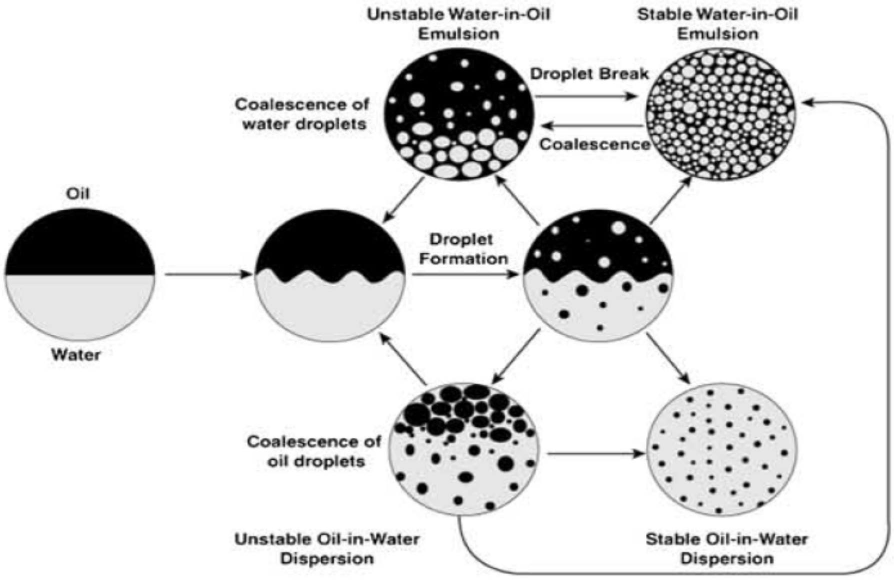


Figure 10: Formation of oil and water emulsions (from Lewis et al. 1994)

Work on the applicability of emulsion breaking agents initiated shortly after the *Amoco Cadiz* oil spill. It included small-scale laboratory tests, and trials on vessels and land-based facilities, to determine the effectiveness of various substances and commercial agents, toxicity testing, etc.

Relatively recently, the understanding of emulsions, their stability and its relation to viscosity, the factors affecting their formation as well as potential techniques that might be deployed to break the emulsions is being more effectively investigated.

Stability is widely used to refer to the persistence of an emulsion in the environment, and has been identified as an important characteristic of water-in-oil emulsions. Some emulsions quickly decompose into separate oil and water phases once removed from the sea surface, while more stable emulsions can persist for days to years. This property is a consequence of the small droplet size and the presence of an interfacial film on the droplets in emulsions, which make stable dispersions. The interfacial film plays an important role in stabilizing the water droplets against coalescence and these films offer extremely high resistance preventing water from separating.

Water-in-oil emulsions are commonly classified in terms of their stability to the following types:

Table 21: Classification of water-in-oil emulsions

Types of water-in-oil emulsions *(adapted from NRT Science & Technology Committee, 1997)*	
Unstable	Unstable emulsions usually persist for only a few hours after mixing of oil and water stops. The properties and appearance of unstable emulsions are almost the same as those of the leaking oil. Unstable water-in-oil emulsions do not retain significant amounts of water, as its droplets are held in the oil by its viscosity. They are formed when water droplets are incorporated into oil by the sea's wave action and there are not enough asphaltenes and resins in the oil or if there is a high amount of aromatics in the oil which stabilizes the asphaltenes and resins, preventing them from acting on the water droplets.
Stable	Stable emulsions will persist for days, weeks and longer. They are reddish-brown solid-like materials with an average water content of about 80% on the day of formation and about the same one week later. They show viscoelastic properties and their viscosities are at least three orders of magnitude greater than that of the initially leaking oil. In addition, many stable emulsions increase in viscosity over time. Their stability might derive from the strong visco-elastic interface caused by asphaltenes, perhaps along with resins. Increasing viscosity may be caused by increasing alignment of asphaltenes at the oil-water interface.
Semi-stable	Semi-stable emulsions are probably the most commonly-formed emulsions in the field following an oil spill. These emulsions can be red or black in appearance. Their properties lay between stable and unstable emulsions and it is believed that these emulsions either lack sufficient asphaltenes to render them completely stable or contain too many destabilizing materials. They are reddish-brown viscous liquids with an average water content of 64% on the first day of formation and less than 30% one week later. They generally break down fairly completely within one week.

In principle, the viscosity of crude oil and oil products varies as the logarithm of the temperature, broadly ranging from approximately 5 to many thousands cSt at 15°C. The viscosity of spilled oil at sea depends on the viscosity of the fresh oil, the temperature, the presence of solids, and the existence of emulsions. Evaporation and emulsification increase the viscosity of the spilled oil.

Heating of oil with the aim to reduce viscosity is effective in the absence of stable emulsions that prevent water and oil separation. As it can be seen from the following table and diagram (from "*Recommendations concerning the design of heavy fuel treatment plants for diesel engines*", CIMAC, 2006) for various marine fuel oils (the percentage of light fractions of which is less than in crude oils and thus the evaporation relatively limited), heating within the cargo tanks of EMSA's vessels might be sufficient. A favorable viscosity of 100 cSt might be achieved at temperatures from 60 – 80^{0}C depending on the type of fuel oil.

Table 22: Presentation of viscosities for different types of oil in relation to the temperature

Type of fuel oil	Viscosity (50^{o}C)	Temperature (^{o}C) corresponding to 100 cSt
RMK 55	700	85
RMH	380	75
RME	180	63

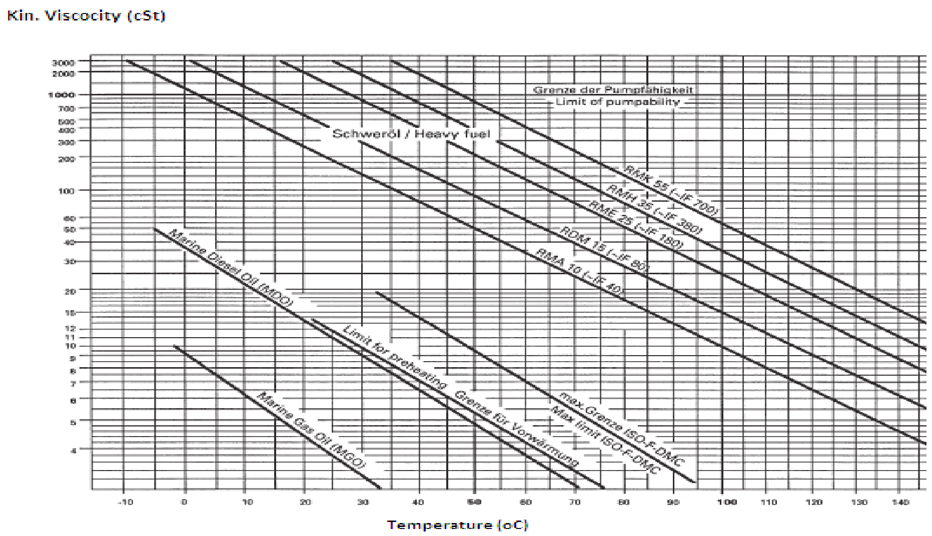


Figure 11: Viscosity - temperature for fuel oils (CIMAC, 2006)

Looking at various crude oils of different origin, their viscosity in fresh condition might exceed 600 cSt at temperatures less than 40^{0}C. For instance some known crude oils that present medium to high viscosities are the following:

Table 23: Presentation of viscosities for various types of oil at temperatures not exceeding the 40 ^{o}C

Common name	Origin	Viscosity (cSt at 37.8^{o}C)
Tia Juana Pesada	Venezuela	3,780
Panuco	Mexico	4,790
Pilon	Venezuela	1,950
Boscan	Venezuela	20,000
Heavy Lake Mix	Venezuela	631

Common name	Origin	Viscosity (cSt at 37.8°C)
LSWR	Indonesia	330
Shengli	China	220

The solution of blending emulsified oil with lighter oil with the aim to reduce its viscosity is not effective. Blending of non emulsified oil with lighter oil onboard EMSA vessels might be effective to reduce the viscosity, but it is not recommended for the following reason.

It is not cost effective due to the quantity of light oil needed. For instance to reduce the viscosity of a 2,000 cSt (50°C) recovered oil to 500 cSt (50°C), 88% of recovered oil must be blended with 12% of a light oil 4 cSt (40°C). For more viscous oils, the proportional quantity of light oil is bigger and the storage capacity that will be needed increases.

From a legislative point of view, Regulation VI/5.2 of SOLAS states that the physical blending of bulk liquid cargoes during a sea voyage is prohibited. Physical blending refers to the process whereby the ship's cargo pumps and pipelines are used to internally circulate two or more different cargoes with the intent to achieve a cargo with a new product designation. Production processes refer to any deliberate operation whereby a chemical reaction between a ship's cargo and any other substance or cargo takes place. Although the abovementioned requirement on cargo blending is not relevant to bunker tankers, it is questionable whether these vessels can proceed in the blending of recovered oil with lighter oils.

3.3.3.3 Use of emulsion breaking agents

Emulsion breaking is a process used in several applications in areas such as waste water treatment, coating manufacturing, crude oil production and refining, etc. The most common method of emulsion breaking is the combination of heat and application of specific agents. Emulsion breaking agents are products used to break or prevent the formation of emulsions in the sea and in tanks. To date, most commercial products of this kind are hydrophilic surfactants, more soluble in water than in oil, and therefore have the ability to revert the water-in-oil emulsion into two separate phases.

The effectiveness of emulsion breaking by means of chemical agents depends on:

- the nature and dosage of the agent,
- the thorough mixing of the agent and the emulsion,
- the heating needed to enhance the process, and
- the residence time within a tank to permit settling of demulsified water droplets.

Emulsion breaking with the combination effect of proper agents and heating is considered to be accomplished in three steps:

- flocculation at which formation of flocs occurs when the emulsifier film surrounding the water droplets becomes weak,
- coalescence that causes the rupture of the emulsifier film and the uniting of water droplets, and
- settling of water at which a clear interface between oil and water appears.

3.3.3.4 Factors to be considered in providing EMSA's vessels with emulsion breaking capability

- <u>Emulsion breaking agent – oil ratio</u>

The emulsion breaking agents are effective at a 1:100 to about 1:2,000 emulsion breaking agent - oil ratios ("*Development of a test for water-in-oil emulsions breakers*", Environment

Canada & US Minerals Management Service, 1993). Assuming that use of suitable emulsion breaking agents is to be made on EMSA vessels at nominal ratios 1: 1000 and 1:2000, then the quantities of the agent that need to be stored onboard capable of demulsifying a volume of collected oil corresponding to the total of the cargo capacity of a vessel, are as follows (referring to the EMSA vessels with the minimum (950 m^3) and the maximum (7458 m^3) cargo tanks capacity and the average one for all vessels.

Table 24: Presentation of the emulsion breaking agent oil – ratio in relation to storage capacity

Emulsion breaking agent – oil ratio	Storage capacity (m^3)		
	Minimum	Maximum	Average
1:1000	0,9	7,4	3,6
1:2000	0,4	3,7	1,8

It is obvious that the smaller the ratio, the smaller the storage capacity of the agent required. In addition, for vessels with relatively limited cargo capacity, the required quantity of agent for a full cargo operation is limited.

It is recommended that removable and refillable, intermediate bulk containers (IBCs), made preferably of high density polyethylene, be used as storage means of emulsion breaking agents onboard. The storage means should have the necessary strength and structural integrity and be marked with the proper UN number. Many commercial emulsion breaking agents are being classified according to the IMDG Code or other national systems for the transport of hazardous substances as Miscellaneous or Environmentally Hazardous Substances (Class 9).

As explained further down in this section, the injection of emulsion breaking agent to the emulsified oil, can be made either in the discharging hose of the skimmer prior to the manifolds of a vessel, or during the discharge of oil to a facility (for vessels with a pump room) with the feed point placed in the discharge piping after cargo pumps.

The dosage rate in relation to the pumping capacity of each primary oil recovery system (125 – 300 m^3/hour, capacity for brush and weir skimmer respectively) are shown in the following table:

Table 25: Presentation of the emulsion breaking agent - oil ratio in relation to dosage rate per discharging skimmer

Emulsion breaking agent – oil ratio	Dosage rate per discharging skimmer (lt/hour)	
	Max brush skimmer	Max weir skimmer
1:1000	125	300
1:2000	62,5	150

The dosing pump is recommended to be an air diaphragmatic chemical dosing pump, which is a positive displacement pump, with most of them to making use of a combination of the reciprocating action of a rubber, a thermoplastic or synthetic diaphragm and suitable non-return check valves to pump a fluid.

There are two options for the injection of the emulsion breaking agent:

- Prior to the manifold for all vessels having submerged cargo pumps

The feeding point of the dosing pump will be connected to a suitable point of the discharging hose of the oil recovery system prior to the vessel's manifolds. The injection of the emulsion breaking agent will be made before the recovered oil enters the cargo tanks. In case that a common collector is already or will be fitted on the vessel, the feeding point might be adapted prior to a static mixer connected to the outlet of the discharging hose of the recovery system. Two emulsion breaking arrangements will be needed for each manifold, port and starboard, unless only a single receiving point exists.

- Close to the cargo pump suction for vessels with a pump room

The other alternative is to make use of the emulsion breaking agent during the discharge of recovered oil from the cargo tanks of a vessel to the receiving facility. The dosing pump and the storage means might be installed in the engine room while the feeding point might be in the cargo piping of each cargo pump of the vessel. The materials used in for the construction of the feed point must be made by stainless steel and the feed point is recommended to inject in the middle of the cargo flow. The rationale behind this solution is that the breaking of emulsion will start occurring upon the injection of the agent while the separation of oil from water will take place in the tanks of the receiving facility that might be used as primary collection or buffer tank. It must be noted that this option does not allow the use of decanting system in the cargo tanks, therefore it is less efficient in terms of oil recovery capacity of the vessel.

<u>Heating to enhance emulsion breaking</u>

Emulsion breaking is considered to be more effective at an elevated temperature as an increase in temperature reduces the viscosity of oil, increases the mobility of water droplets (they acquire more kinetic energy in which the collisions between droplets of water phase will be more common and therefore, the interaction between these mechanisms improves separation), increases the settling rate of water and weakens the interfacial film.

Manufacturers of commercial products such as Nalco, Tramfloc, etc. recommend a temperature for the emulsified oil after being treated with the emulsion breaking agent, ranging from 65 to 80^0C. Use of organic polymers (glycol esters, polyacrylates, etc) that are non volatile and non flammable is recommended. Agents containing of naphtha or aromatic hydrocarbons might be flammable. Highly aromatic solvents are not suitable for use because of their very high acute toxicity to most marine organisms.

<u>Mixing</u>

Emulsion breaking increases with increasing mixing energy applied to the recovered oil. It can be achieved by increasing the turbulence of the flow, adding mechanical mixing energy or increasing the length of the flow route. It is recommended that a static in-line mixer (a geometric mixing element fixed within a pipe, which use the energy of the flow stream to produce effective mixing between two or more fluids), suitable for high viscosity oils to be fitted on a vessel, between the discharging hose of the oil recover system and the receiving manifold/common collector. In general, static in-line mixers consist of a series of stationary, helical elements, bonded end to end and at angles to each other, within steel or plastic tube housing. These elements divert, twist and mix oil and emulsion breaking agent flow streams to produce a homogenized mixture.

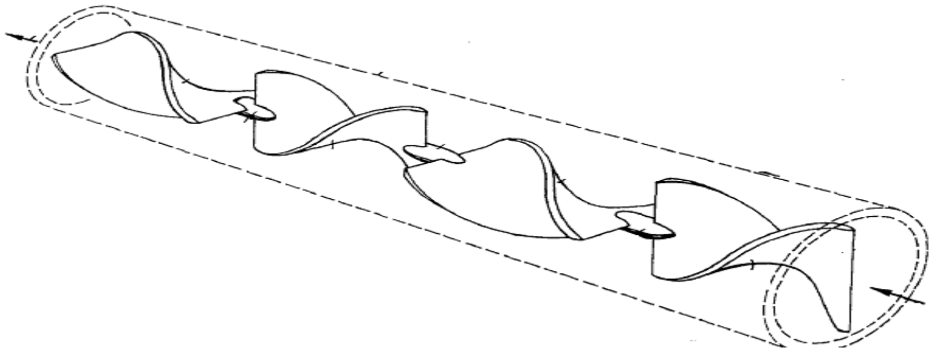


Figure 12: Basic layout of a static mixer (from Stamixco 2007)

<u>Retention of treated oil</u>

While emulsion breaking might occur almost directly (less than an hour depending on the stability of emulsion, water content, etc), the separation of oil and water and the creation of a clear interface between them, provides the opportunity to the vessel to proceed with decanting the water settled in the cargo tanks. This is more related to the determination of the permissible oil content in the water to be decanted and the time elapsed from the breaking of the emulsion. Once the recovered oil is mixed with the emulsion breaking agent, it settles in the decanting tanks. As the decanted water might contain emulsion breaking agents, its impact to the marine environment should be evaluated.

Table 26: Presentation of the basic specifications of onboard treatment of emulsions

Basic specifications	
Onboard treatment of emulsions	
Purpose	Breaking of water in oil emulsions
Method	Heating and injection of emulsion breaking agents
Basic Components	• A diaphragmatic metering pump (2 x 125 lt/hour – 2 x 300 lt/hour) • Portable storage means • Static mixer • Connection parts of metering pump to storage means/feeding point
Recommended capacity	125 – 300 m^3/h
Operational requirements	Manual dosing with direct setting or pre-set dosing following assessment of the stability of emulsion Power 10 – 16 W, 50 Hz Operating pressure up to 6 bars
Approx. weight	Dosing pump 3 – 5 kg
Approx. cost	Cost of metering pump and connection piping 4,000 – 6,000 € Static mixer 2,000 – 3,000 €

Table 27: The advantages and disadvantages of the emulsion breaking solution

Technical solutions for emulsion breaking		
Process	**Advantages**	**Disadvantages**
Emulsion breaking	▪ An effective solution when stable water-in-oil emulsions are collected. ▪ Similar applications in the downstream petroleum sector. ▪ Settling and decanting of free water increases the vessel's temporary storage capacity during spill response operations. ▪ Substantial reduction of the quantity of water in the recovered oil to be finally discharged to a facility.	▪ No single product is fully effective for all types of emulsions. ▪ There is no experience on the use of emulsion breaking agents onboard of vessels. ▪ Emulsion breaking must be considered on a case-by-case basis. ▪ Storage of chemicals onboard is required. The quantity depends on the emulsion breaking agent – oil ratio and the cargo tanks capacity of the vessel.

3.3.3.5 Conclusions

The technical constraints dealt with in this section relate to the viscosity and the presence of emulsions in the recovered oil. Water-in-oil emulsions and viscosity are interrelated, as the presence of emulsions influences the viscosity of oil and the water content, while increasing the overall quantity to be discharged to a facility.

The reduction of viscosity down to permissible limits is required by the operators of the facilities and can be accomplished by heating of oil in the cargo tanks of EMSA's vessels, in case that no stable water-in-oil emulsions exist. The anticipated effects of heating of recovered oil are the reduction of viscosity, the increase of the mobility of water droplets, the stimulation of coalescence and the increase of settling rate. Blending of non-emulsified oil with lighter oils onboard the vessels is not recommended as it was not found to represent a cost-effective solution.

Emulsion breaking, as a combination of injecting and mixing proper demulsifiers with oil and heating was considered to be useful in case of stable water-in-oil emulsions and also feasible to take onboard EMSA's vessels. It must be also noted that it is questionable if those facilities that responded that they cannot receive water-in-oil emulsions would be able to accept the contaminated oil with emulsion breaking agents.

Emulsion breaking must be considered on a case-by-case basis. A simplified diagram that can be used as a decision making tool for the conduct of this process is presented below:

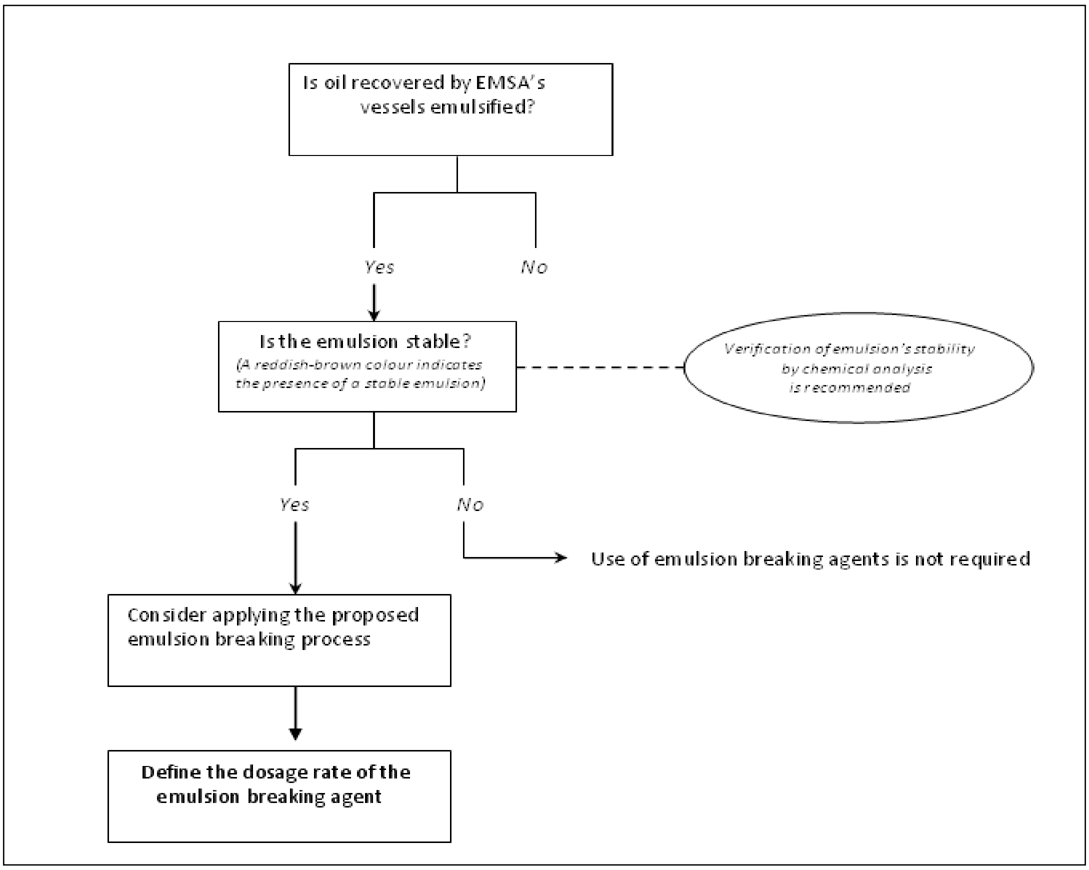


Figure 13: Decision making for the conduct of emulsion breaking

The injection and mixing of emulsion breaking agents should be preceded by the removal of debris as the latter would enhance the efficiency of the emulsion breaking process. This is a standard practice in wastewater treatment to remove large or finer debris and solids that can interfere with the treatment process or cause undue mechanical wear and clogging to downstream equipment.

The following picture is a conceptual drawing showing the installation of a strainer and an emulsion breaking unit on the port side of the weather deck of the Aktea OSRV. The emulsion breaking unit consists of an emulsion breaking agent storage tank, a dosing pump and a static mixer all positioned between the discharging hose of the oil skimmer and the ship's manifolds.

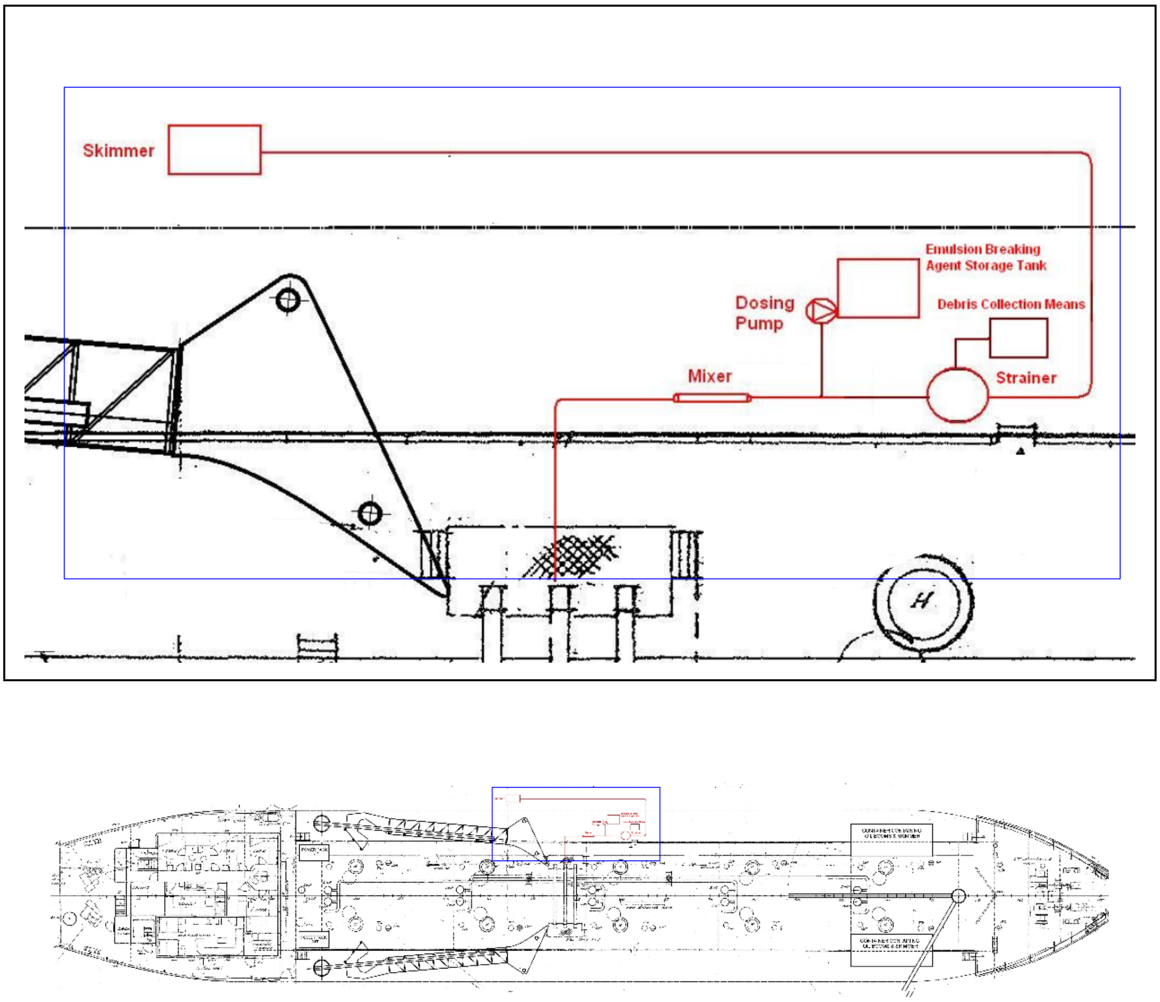


Figure 14: Aktea OSRV's deck plan showing the potential fitting of a combined debris screening and emulsion breaking system

3.3.4 References and additional resources

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16. *"Static Mixing, Reaction, Heat Transfer & Fluid Dynamics Technology" Stamixco Technology, 2007.*

3.4 Engineering solutions associated to the operations of EMSA's vessels

3.4.1 Inerting of cargo tanks

3.4.1.1 Introduction

A number of facilities indicated that the tanks of the discharging vessel must be inerted during the conduct of recovered oil discharging operations. The supply of inert gas in the cargo tanks of a crude oil, petroleum or chemical tanker is a well-known cargo tank protection measure required by SOLAS and the IBC Code respectively, aimed at preventing dangerous accumulations of explosive mixtures in intact cargo tanks during routine operations and throughout the ballast voyage and also at minimizing the risk of ignition from the generation of static electricity. The purpose of inerting and maintaining the cargo tanks of a tanker in inerted condition via the supply of an inert gas to a hydrocarbon gas/ air mixture, is to increase the lower flammable limit concentration and to decrease the upper flammable limit. The flammable limits vary for different pure hydrocarbon gases and for gas mixtures derived from different petroleum liquids.

Tankers fitted with an inert gas system should have their cargo tanks kept in a non-flammable condition at all times and additionally:

- tanks should be kept in the inert condition whenever they contain cargo residues or ballast. The oxygen content should be kept at 8% or less by volume with a positive gas pressure in all cargo tanks, and
- the atmosphere within the tank should make the transition from the inert gas condition to the gas free condition without passing through the flammable condition, meaning that before any tank is gas freed, it would be purged with inert gas until the hydrocarbon content of its atmosphere is below the critical dilution line (inert mixtures that do not become flammable when diluted with air).

Sources of inert gas on a tanker might be:

- the uptake of the flue gas from the main or auxiliary boilers,
- an independent inert gas generator, or
- a gas turbine plant equipped with an afterburner.
-

The basic components of an inert gas system fed with the exhaust gas from boilers include the flue gas isolating valves, the scrubber to cool the flue gas and remove most of the particulate soot and sulphur oxides, the blowers to deliver the scrubbed gas to the cargo tanks at a sufficient rate, the non return arrangements and the distribution piping.

3.4.1.2 Statutory requirements and EMSA vessels

The existing SOLAS requirements (II-2) on the supply of inert gas to protect cargo tanks against fire, apply to tankers of 20.000 dwt and above that carry crude oil, petroleum products or other liquid products having a flash point not exceeding 60°C (closed cup test) and whose Reid vapour pressure is below that of atmospheric pressure.

These requirements applied to existing tankers of that size (built before 1982) and new tankers (built after 1982). As it can be seen in the following table that summarizes SOLAS and the IBC Code respective requirements, the installation of an inert gas system is dependent on the type of oil carried, the date of built of the vessel and the cargo tank washing capacity.

It is obvious that in general, all EMSA tankers, due to their relatively smaller size than the threshold size of 20.000 dwt, are not required to comply with SOLAS regulations on inert gas systems. However, a number of EMSA contracted product tankers and bunker vessels are fitted with an inert gas system, a fact probably relating to the particular cargoes carried and their respective carriage conditions. For instance the IBC Code requires for certain cargoes carried in chemical and product tankers to be carried in inerted tanks.

Apart from the size of the vessels and the cargo required installation of a inert gas system, emphasis must be given to the carriage of products having a flashpoing exceeding 60°C and the potential heating of cargo tanks. SOLAS regulations do not apply to tankers carrying petroleum products having a flash point exceeding 60°C. That means that product tankers may carry bitumens, lubricating oils, heavy fuel oils, asphalt mixtures, etc. without having to be fitted with an inert gas system, or if already fitted, without having those tanks carrying such cargoes during a voyage inerted.

If cargoes with a flash point exceeding 60°C, will be transported heated or at temperatures near to or above their flashpoint, a flammable atmosphere can occur. When such cargoes are transported at a temperature higher than 5°C below their flash point they should be carried in an inerted condition.

It must be noted that the benefits that might be gained from the mandatory installation of inert gas systems in new oil tankers less than 20.000 dwt and new chemical tankers carrying low flash point cargoes is currently evaluated by IMO as a measure to minimize the risk of fires and explosions, in response to a number of accidents in this size of tankers, the cause of which was that standard industry safe operations were not properly followed.

Table 28: Summary of SOLAS and IBC Code regulations on inert gas system

Type of cargoes	Oil tankers 20.000 – 40.000 DWT built before 1/6/1982	Oil tankers of 20.000 DWT and above not included in the previous column	Chemical tankers of 20.000 DWT and above built before 1/7/1986	Chemical tankers of 20.000 DWT and above built after 1/7/1986	
				Capacity of cargo tanks does not exceed 3.000 m^3	Capacity of cargo tanks exceeds 3.000 m^3
Crude Oil	Yes	Yes	Yes	Yes	Yes
Oil products	No, provided that washing machines supply not in excess of 60 m^3/hour	Yes	Yes, with the exception of tankers as in the first column	Yes	Yes
Chapter 17 Cargoes, IBC Code	-	-	No	No, provided that, the individual nozzle capacities of tank washing machines do not exceed 17.5 m^3/hour and the total combined throughput from the number of machines in use in a cargo tank does not exceed 110 m^3/hour	Yes
Chapter 18 Cargoes IBC Code (classified but without being regulated by the IBC Code)	No	Yes	No	No, provided that, the individual nozzle capacities of tank washing machines do not exceed 17.5 m^3/hour and the total combined throughput from the number of machines in use in a cargo tank does not exceed 110 m^3/hour	Yes

3.4.1.3 Flash point of recovered oil

Flashpoint is the lowest temperature in degrees Celsius (closed cup test) at which a product will give off sufficient flammable vapour to be ignited, as determined by an approved flashpoint apparatus (when an external flame is applied under specified test conditions).

The concentration of many fresh crude oils in volatile components is high and may be flammable for as long as these components have not evaporated. The flash point of oil as cargo as well as marine fuels is an important parameter from a handling and storage point of view.

The flash point of heavy oils such as intermediate and heavy fuel oils or highly weathered crude oils, is usually measured using a Pensky-Martens analyser. Sampling and determination of the flash point is indispensable in reducing the uncertainty over the flammability of a spilled oil upon recovered by the EMSA vessels and prior to its discharge in a facility.

The flash point of crude oils, petroleum products and fuel oils changes as the weathering at sea progresses following a spill. Evaporation of the more volatile components causes significant changes in the physical properties and the chemical composition of spilled oils. In the context of a relatively recent (2003) study, titled "*Characteristics of spilled oils, fuels and petroleum products, composition and properties of selected oils*", conducted by the USEPA, these properties including the flash point were measured at the laboratory not only in samples of fresh oil but also to samples of spilled oils following the evaporation of volatile compounds.

The following tables taken from the abovementioned study, demonstrate the relation between the flash point of a number of tested crude and fuel oils when spilled at sea and the evaporation measured as weight loss.

Table 29: Presentation of the relation between the flash point and the evaporation of the Alaska North Slope Crude Oil when spilled at sea

Alaska North Slope Crude Oil	
Loss of weight (%)	Flash point (°C)
0	-8
10.0	19
22.5	75
30.5	115

Table 30: Presentation of the relation between the flash point and the evaporation of the Arabian Light Oil

Arabian Light Oil	
Loss of weight (%)	Flash point (°C)
0	<-10
9.2	36.5
17.6	71.7

26.0	>110

Table 31: Presentation of the relation between the flash point and the evaporation of the Heavy Fuel Oil

Heavy Fuel Oil	
Loss of weight (%)	Flash point (^{o}C)
0	111
2.5	133

Table 32: Presentation of the relation between the flash point and the evaporation of Fuel Oil No. 5

Fuel Oil No.5	
Loss of weight (%)	Flash point (^{o}C)
0	94
7.2	136

It is not advisable that EMSA's vessels not fitted with a fixed inert gas system to be equipped with a fixed or portable inert gas system. What it is considered to be more pragmatic and practical is to measure the flash point of oil at its state at sea or during recovery onboard a vessel. As the evaporation of volatile compounds progresses, the flash point of the remaining oil at sea raises in levels that render it as non flammable.

If the flash point is well above 60^{o}C, then this information might be presented to the operators of the facilities, as one of the elements (inerting of cargo tanks) that need to be discussed and agreed in the context of a ship-facility discharging plan.

3.4.2 Cargo manifold reducers

The procedures for an intended discharge of recovered oil should be pre-planned and agreed between the EMSA's vessel and the operator of the receiving facility. Among the elements of the operation that need to be considered, one is the ship-shore transfer equipment and how a safe and effective connection is to be ensured between the cargo arms or cargo hoses of the facility and the cargo manifolds or discharging piping of the vessel.

Some facilities can provide reducers of a limited range of sizes to enable the transfer of oil, however in most cases; EMSA's vessels should carry this kind of fittings when a discharge operation is to take place. Reducers of appropriate size should be provided to EMSA's vessels, stored on the main deck, in the forecastle locker or elsewhere convenient to the cargo manifolds.

The following table presents the required sizes of reducers that must be available on board EMSA's vessels to enable the connection of at least one of their cargo manifolds to the piping of the facilities that exist in the area of operation of the vessels.

A comparison of the cargo manifolds fitted on EMSA's vessels and any additional reducers stored onboard against the size of the available cargo arms of the facilities and any other reducers that might be provided by the facilities, was carried out to identify the required size of reducers. It must be noted that the exact number of reducers cannot be specified, as information on the existence of cross over lines and valves used for interchanging the cargo manifold and lines on deck, the potential use of more than one receiving arms of a facility, etc., was not collected.

Table 33: Presentation of the size of manifold reducers of EMSA's vessels

EMSA's Vessel	**Size of manifold reducers** 
Alexandria	14" – 16"
	8" – 6"
	8" – 3"
Balluta Bay	12" – 8"
	16" – 8"
	10" – 8"
Santa Maria	12" – 10"
	16" – 12"
	16" – 8"
OW Copenhagen	10" – 8"
	10" – 6"
	16' – 8"
	12" – 10"
	16" – 10"
Kontio	10" – 5"
	6" – 5"
	8' – 5"
	12" – 5"
	5" – 4"
DC Vlaanderen 3000	10" – 6"
	16" – 6"
Interballast III	10" – 6"
	16" – 6"
Sara	12" – 10"
	16" – 12"
Forth/Galway Fisher	10" – 6"
	16" – 10"
Mersey Fisher	16" – 8"
Aegis	4" – 6"
Ria de Vigo	16" – 12"
Bahia Tres	16" – 12"

EMSA's Vessel	Size of manifold reducers 
	16" – 10"
	16" – 8"
Bahia Uno	16" – 12"
	16" – 8"
Salina Bay	16" – 8"
	12" – 8"
	10" – 8"
Aktea OSRV	16" – 8"
	4" – 3"
GSP Orion	5 – 3"
	16" – 5"
	5" – 4"
	6" – 5"

The reducers must be made of steel and be fitted with flanges that conform to ANSI B16.5, Class 150 or equivalent. A number of EMSA's vessels and facilities already have various reducers at their disposal, however, it is recommended that an exchange of information between the vessels and the facilities be made when any material other than steel is used, to ensure that the strength of the existing reducers is equivalent to steel. All flange connections and reducers should be fully bolted and have the proper gasket.

3.4.3 The prospect of transferring oil to another tanker

As explained in section 2.2 of the report, some EMSA's vessels, due to their size, will not be able to discharge recovered oil to a number of facilities. These facilities that are designed to accommodate relatively bigger oil tankers are the following:

- "*Bantry Bay*" terminal in Ireland. The minimum LOA of oil tankers that can discharge at its SPM is 180 meters.
- "*Isab T.S.S.*" facility in Santa Panagia, Italy. It is not accessible to the vessels *Balluta Bay*, *Bahia Uno*, *Salina Bay* and *Aktea OSRV*.
- "*Repsol Tarragona*" in Spain, one of the available berths of which (No.80) is only suitable for oil tankers longer than 140 meters.
- "*Botas petroleum facility*" in Ceyhan, Turkey. None EMSA's vessel including those normally operating in the Mediterranean Sea can be berthed in the facility, where only oil tankers bigger than 30,000 dwt are allowed.

The advantage that these facilities might offer in case of a major pollution incident is obvious, thus, transfer of oil collected by an EMSA's vessel that cannot be berthed there to another tanker compatible with the facility, constitutes an alternative way of discharge that must be considered.

Ship to ship transfer (STS) operation is an operation when crude oil, petroleum product or other cargoes are transferred between vessels moored alongside each other. Such operations may take place when both ships are underway or at anchor and they can be conducted at sea (offshore waters or partially sheltered waters) or in a port. An STS operation at sea might take place within the jurisdiction of a coastal state. In such cases, local regulations must be also taken into account while permits might be needed.

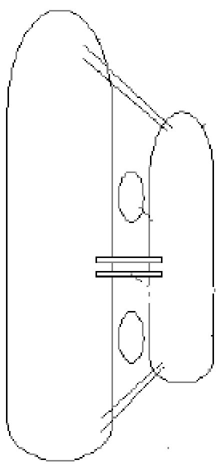
It must be noted that a new Chapter (Chapter 8) on the prevention of pollution during the transfer of oil cargo between oil tankers at sea has been added to the Annex I of MARPOL. It contains regulations effective since 1 January 2011, which apply to oil tankers of 150 grt and above, engaged in the transfer of oil at sea.

The new regulations require that oil tankers engaged in such operations should have an approved STS Operation Plan. The Authorities of coastal states in the jurisdictional waters of which the transfer is to take place must be timely notified. The managing company of the vessel and her crew should be familiar and trained to carry our these operations. The transfer should be under the advisory control of a properly qualified person, records should be maintained, etc.

The STS Operations Plan must be developed taking into account the information contained in the best practice guidelines for STS operations that have been identified by the IMO, as follows:

- ICS/OCIMF "*Ship to Ship Transfer Guide (Petroleum) 4th Edition".* The guide provides advice to Masters, Marine Superintendents and others who are responsible for planning STS transfer operations, primarily of crude oil and petroleum products.
- IMO's "*Manual on Oil Pollution, Section I, Prevention*".

Elements that should be considered in advance of a ship to ship transfer operation are displayed schematically below.



Elements to be assessed prior to a ship to ship transfer operation

- Compatibility of EMSA vessel and receiving tanker
- Dedicated equipment
- Area of operation in terms of the prevailing conditions
- Permits
- Human element and safe procedures

Figure 15: STS operation elements

- <u>Compatibility of vessels</u>

The discharging EMSA's vessel and the receiving tanker must be compatible in design and equipment and they must also comply with the various specifications and recommendations included in their STS Operation Plans. Compatibility in design and equipment can ensure that the mooring operation, the handling of flexible hoses, and the transfer of oil can be safely conducted.

In relation to cargo handling compatibility, the elements that should be examined are the following:

- The size and number of manifolds to be used.
- The minimum and maximum expected height of the manifold above the waterline during the transfer operation, and the freeboard differences during the transfer.
- The suitability of shipboard cranes.
- The adequacy of hose supports at the ship's side to prevent damage to hoses through chafing.
- The compliance of manifolds of both vessels with the respective OCIMF's *Recommendations for Oil Tanker Manifolds and Associated Equipment*.

▪ Dedicated equipment

The basic equipment used in a STS operation includes fenders, transfer hoses including connection flanges and lifting equipment, and mooring lines and associated deck equipment that must be deployed according to an agreed mooring plan.

Fenders used in STS transfer operations are divided into two categories: a) primary fenders which are positioned along the parallel body of the ship to yield the maximum protection by absorbing the kinetic energy as the vessels berth alongside, and b) secondary fenders used to protect the bow and stern plating from inadvertent contact, if the ships get out of alignment during mooring or unmooring. ISO 17357 on High-Pressure Floating Pneumatic Rubber Fenders (2002) specifies the material, performance and dimensions of floating pneumatic fenders which are intended to be used for the berthing and mooring of a ship to another ship or berthing structure.

The required flow rates and the size of manifolds will determine the size and type of cargo hoses and their structural strength. The hoses should be specially designed and constructed for the oil to be handled. STS operations require hose connections to be well made. To simplify hose connection, ships must be fitted with cargo manifolds designed in accordance with OCIMF's *Recommendations for Oil Tanker Manifolds and Associated Equipment.*

The essential personnel and equipment including support craft needed for an STS operation might be provided by an STS Service Provider which is a company or organization specialized in providing services for the safe control and conduct of such operations. The OCIMF Guide titled "*Ship to Ship Service Provider Management*" gives STS Service Providers with the principles and elements of a good safety and environmental management system to cover STS operations.

▪ Area of operation

The area of the STS operation must be selected to ensure safety, by evaluating the shelter it provides against the sea state and the weather, the distance from the discharging facilities, sufficient area to allow for normal drift when it is to take place underway or a proper anchorage, the maritime traffic density, etc.

▪ Human Element issues

As STS operations might require additional duties and tasks for the personnel of the discharging and receiving vessel than those routinely undertake and perform, therefore a pre-operation identification of the state of experience and the additional competences and training needed is necessary. Where there is little or no experience with STS operations, consideration should be given to get additional experienced STS personnel prior to the operation to assist with the training of personnel and the STS operation.

3.4.4 Conclusions

The technical constraints dealt with in this section refer to operational issues of EMSA's vessels when the discharge of recovered oil is to take place in the identified facilities.

A number of facilities, in particular those normally handling crude oil and flammable petroleum products, indicated that the cargo tanks of the discharging vessels should be maintained inerted during the discharge operation. In 2.3.4.2 section of this report, it was shown that the respective SOLAS requirements on the supply of inert gas are applicable to tankers of 10,000 dwt and above that carry oils with a flash point less than 60^{o}C. A number of EMSA's vessels (product tankers and bunker vessels) are fitted with an inert gas system.

The installation of an inert gas system (of flue gas type or an independent generator) onboard an EMSA's vessel requires major retrofitting and significant costs. During the weathering of oil at sea, the evaporation of volatile compounds might normally cause the increase of the flash point and subsequently might render it inflammable. When recovered oil is to be delivered to a facility that requires inerting of the cargo tanks of the discharging vessel, sampling or oil and measuring the flash point is recommended. If the flash point measured proves that the recovered oil is not flammable, inerting of cargo tanks might not be necessary. A ship-facility discharging plan is also recommended to be jointly developed between EMSA's vessels and the identified facilities, aimed at examining and agreeing on a number of operational issues including the assessment of the actual need of inerting.

Differences in the size of cargo arms-receiving pipes of the facilities and the discharging manifolds-piping of EMSA's vessels make necessary the use of reducers of proper diameter and material. While some facilities can provide reducers of a certain size to enable the transfer of oil, EMSA's vessels should be provided with reducers of appropriate size when a discharge operation is to take place. The required sizes of reducers that must be available onboard the vessels to enable the connection of at least one of their manifolds to the piping of the facilities in their area of operation was identified in chapter 2.4.2.

A number of EMSA's vessels, due to their size, are not able to discharge recovered oil to some of the identified facilities. Transfer of oil collected by an EMSA's vessel, due to the fact that its berthing is not permitted to the abovementioned facilities, to another tanker compatible with the facility, might counterbalance the loss of opportunity. Chapter 2.4.3 of the report summarizes the elements that must be considered to proceed with planning the conduct of a ship-to-ship transfer operation in a port or at sea, including the compatibility of vessels, the use of equipment, the identification of a suitable operation area, etc.

Ship-to-ship transfer operations should be also considered for very large oil spills (> 40,000 m^3). This solution has been successfully used during the *Prestige* incident when the vessel *British Shield* having a storage capacity of 3,835 m^3 was chartered to act as a transshipment and storage facility that was not directly involved in the recovery of oil. The vessel was initially stationed at Vilagarcia close to the main areas of spill response operations.

3.4.5 References and additional resources

1. "*International Convention for the Safety of Life at Sea*", Consolidated Edition, IMO, 2004.

2. "*International Code for the Construction and Equipment of ships carrying dangerous chemicals in bulk*", Resolution MSC.176 (79), IMO, 2004.

3. "*Characteristics of Spilled Oils, Fuels, and Petroleum Products: Composition and Properties of Selected Oils*", Environment Canada & National Exposure Research Laboratory Office of Research and Development United States, July 2003.

4. “*Ship to Ship Transfer Guide – Petroleum”, 4th Edition, ICS/OCIMF, 2005.*
5. *“High-Pressure Floating Pneumatic Rubber Fenders”, ISO 17357, ISO 2002.*
6. “*Ship to Ship Service Provider Management*”, OCIMF, 2011.

4 Assessment of the geographical coverage of onshore discharge facilities and EMSA's vessels

4.1 Introduction

The geographical coverage of the identified facilities is efficiently communicated through GIS maps. They include the development of buffer zones surrounding the potential facilities, which identify the operational range of EMSA's specialized vessels (suitably adjusted through the definition of variables such as speed) for the collection and transportation of recovered oil to an adequate storage point.

The GIS analysis carried out includes spatial data (actual location of the storage facilities), coupled with tabular data known as attribute data on general information. About each of the spatial features such as the name, the area and the country of the facility, its immediate and long term capacities, the number and size of hoses/loading arms, or the allowable discharges pressures (minimum and maximum) at hoses/loading arms would make up the attribute data.

4.2 Description of the layers that were constructed within the GIS platform

In order to provide a complete view of the findings of the present study, four layers were built within the GIS platform:

- The first layer represents the most significant findings of this study, which is that thirty five facilities around Europe were identified to be capable of receiving substantial quantities of recovered oil following oil spill response operations. A number of significant characteristics for each facility were incorporated in the platform, thus offering a quick overview of each facility.

- The second layer mainly represents (twelve out of the fifteen facilities) the facilities that did not meet the 1,000 m^3 criterion. It was also considered appropriate to incorporate three more facilities, two of which responded negatively and one of which cannot receive recovered oil directly from ships. These facilities are "Deposito Pol Nato de Lisboa", "JSC Klaipeda passenger" and "Marpos NV" respectively. The reason that led to their inclusion in this layer was the fact that they were identified as suitable facilities in the context of the previous study and it was thought that it would be important to show that they are no longer considered to be suitable.

- The third layer represents fourteen of the thirty four facilities that were identified by the previous EMSA study but did not respond to the request of information in the context of the present study. Their incorporation in the maps was thought to be necessary since they might be able to receive recovered oil, thus contributing to the increase of geographical coverage by the facilities.

- The fourth layer represents the network of EMSA's Stand-by Oil Spill Response vessels and the geographical positions of the available equipment around Europe. Within the platform, the main characteristics of the vessels that affect the various scenarios are presented.

4.3 Formation of potential scenarios

Following the formation of the four layers within the GIS platform, the procedure of developing scenarios of oil pollution throughout the European waters took place. The main criteria, upon which these scenarios were developed, are given below:

- The size of the potential oil spill – spills (in the sense of demand) of 1,000 tons, 10,000 tons and of 40,000 tons were assumed.
- The range from the discharge facilities for servicing the potential oil pollution – namely trips of 24 hours with a predetermined speed for the EMSA vessels.
- The speed of EMSA vessels – a service speed of 12 knots was selected.

Table 34: Presentation of potential scenarios of oil pollution

Scenarios	Quantity of spilled oil (m^3)	Covered range from the discharge facilities	EMSA vessels speed
1	1,000	Trips of 24 hours	12 knots
2	10,000	Trips of 24 hours	12 knots
3	40,000	Trips of 24 hours	12 knots

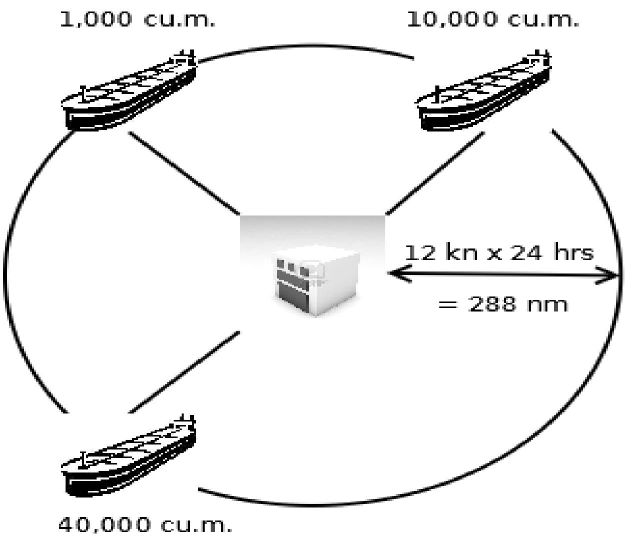


Figure 16: The concept based upon which the scenarios were developed

In GIS terms, the intention of this analysis was to create for each scenario and combination of the aforementioned criteria buffer zones around all identified and subsequently selected discharge facilities so to meet the set envelop. This was enhanced through the integration of the range and capability of each EMSA contracted vessel. By producing all these buffer zones, the realistic highlight of the geographical gaps in terms of coverage by both facilities and EMSA vessels was achieved.

The following assumptions were made during the design of the scenarios:

- The time of discharge of the recovered oil at sea per vessel and per facility was not taken into account; the time window adopted is set to 24 hrs and it covers only the voyage time.

- The time between the first and the second possible discharge for each facility is not taken into account; the scenarios were mainly based on the immediate capacity of each of the selected facilities.

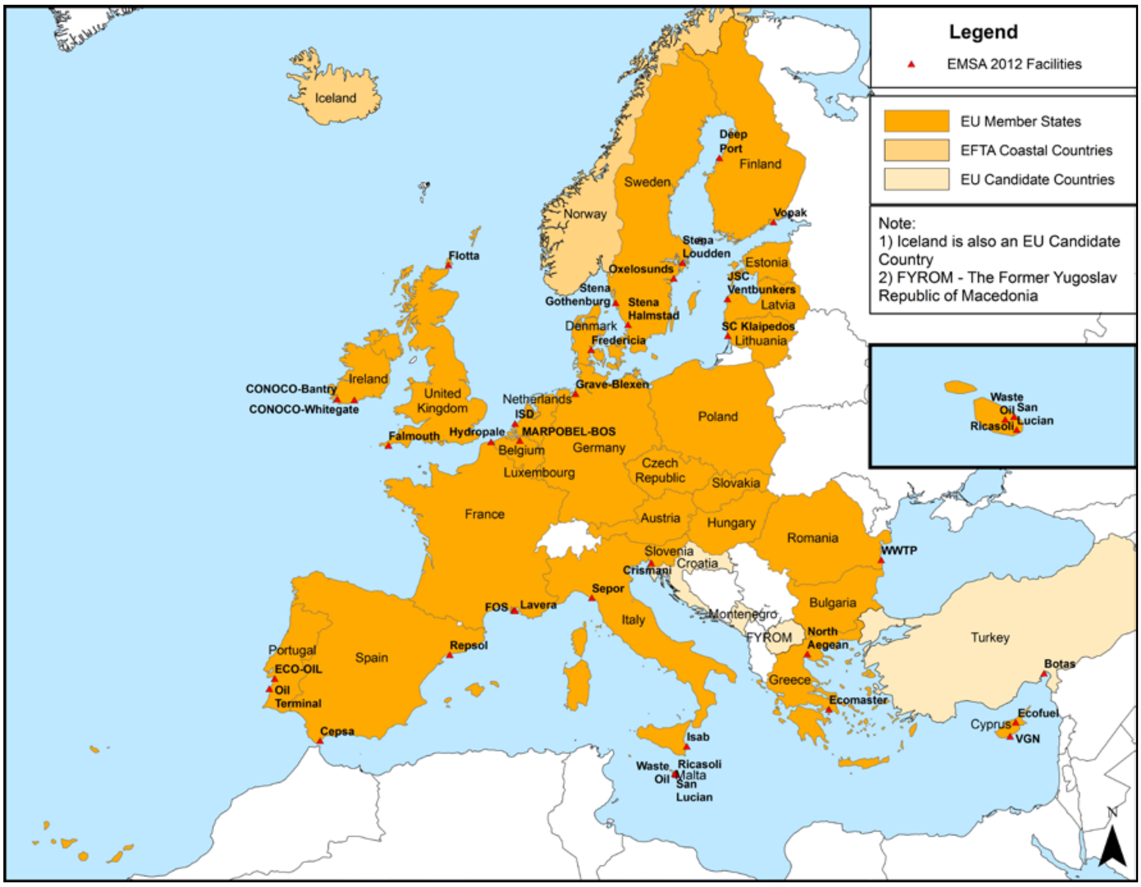
- The potential effect of weather conditions on the overall chain of events in such operations is not taken into account; the speed integrated in the scenarios equals 12 knots for all cases.

- The potential delay of operations due to local traffic and/or congestion is not taken into account; for all scenarios the time window in respect to the distance from the selected facilities is set to 24hrs.

Through the multi-criteria geographical analysis presented later on in this report the focus is given on technological and operational aspects of the facilities e.g. acceptance or not of debris. This way, the attention is shed upon crucial features of the facilities that can damage the overall efficiency of the oil recovery operations.

4.4 Results

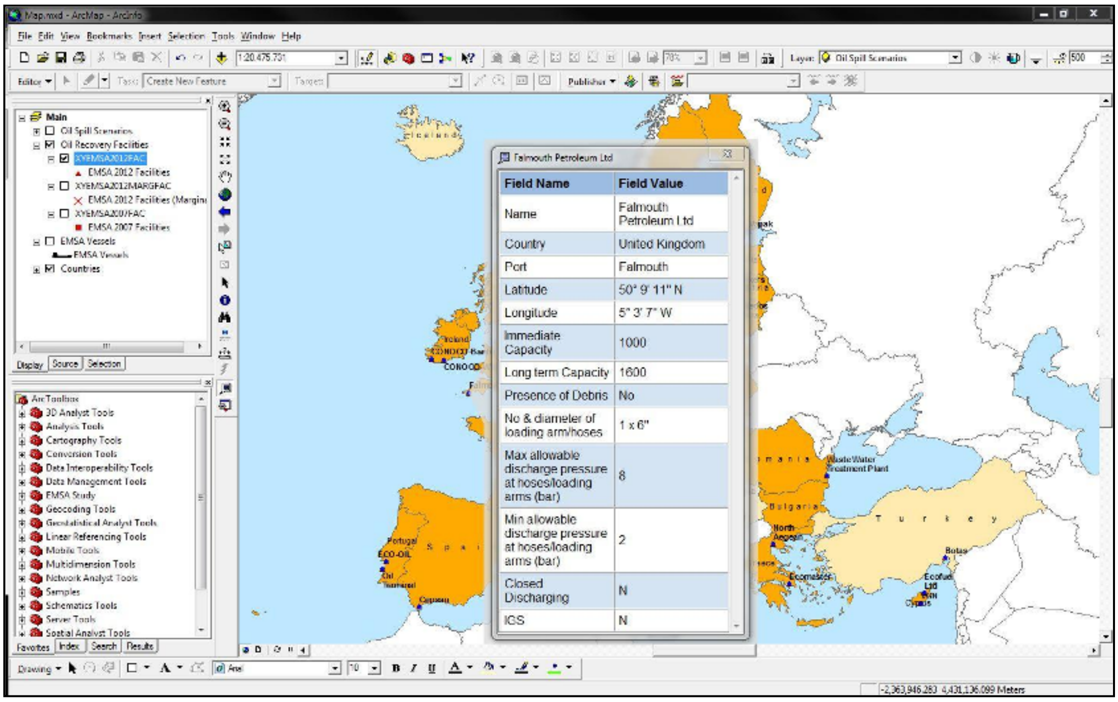
Map 15 presented below shows the identity and geographical distribution of the thirty five facilities that responded positively to the questionnaire with regards to their capability for storing oil recovered at sea. It is reminded that the overall target of this study refers to pollution response in case of large oil spills. Based on this, a threshold related to the facilities' capacity was set at 1,000 m^3 for immediate storage of oil recovered at sea. The map shows the storage facilities that meet the above said criterion, with all identified facilities having provided complete and duly answered questionnaires. The answers received present a fairly even distribution of candidate facilities between the north and south coasts of Europe. The country with the largest number of positive/successful answers is Sweden (4). Interestingly, the islands of Malta and Cyprus contribute to the overall network with 3 and 2 potential storage facilities, respectively. Other countries with significant representation are Portugal, Spain, Italy, Greece, France, the UK, Ireland and Finland. Sweden, Ireland and Turkey contributed the largest candidate facilities, in terms of volume of immediate storage capacity.



1. Deep port
2. Vopak
3. JSC Ventbunkers
4. SC Klaipedos
5. Stena Loudden
6. Oxelosunds
7. Stena Halmstad
8. Stena Gothenburg
9. Fredericia
10. Grave – Blexen
11. ISD
12. Marpobel - BOS
13. Hydropale
14. Flotta
15. Falmouth
16. CONOCO-Bantry
17. CONOCO-Whitegate
18. Eco –oil
19. Oil Terminal
20. Cepsa
21. Repsol
22. Fos
23. Lavera
24. Sepor
25. ISAB
26. WOCL
27. SLOC
28. Ricasoli
29. Crismani
30. Ecomaster
31. North Aegean
32. VGN
33. Ecofuel
34. Botas
35. WWTP

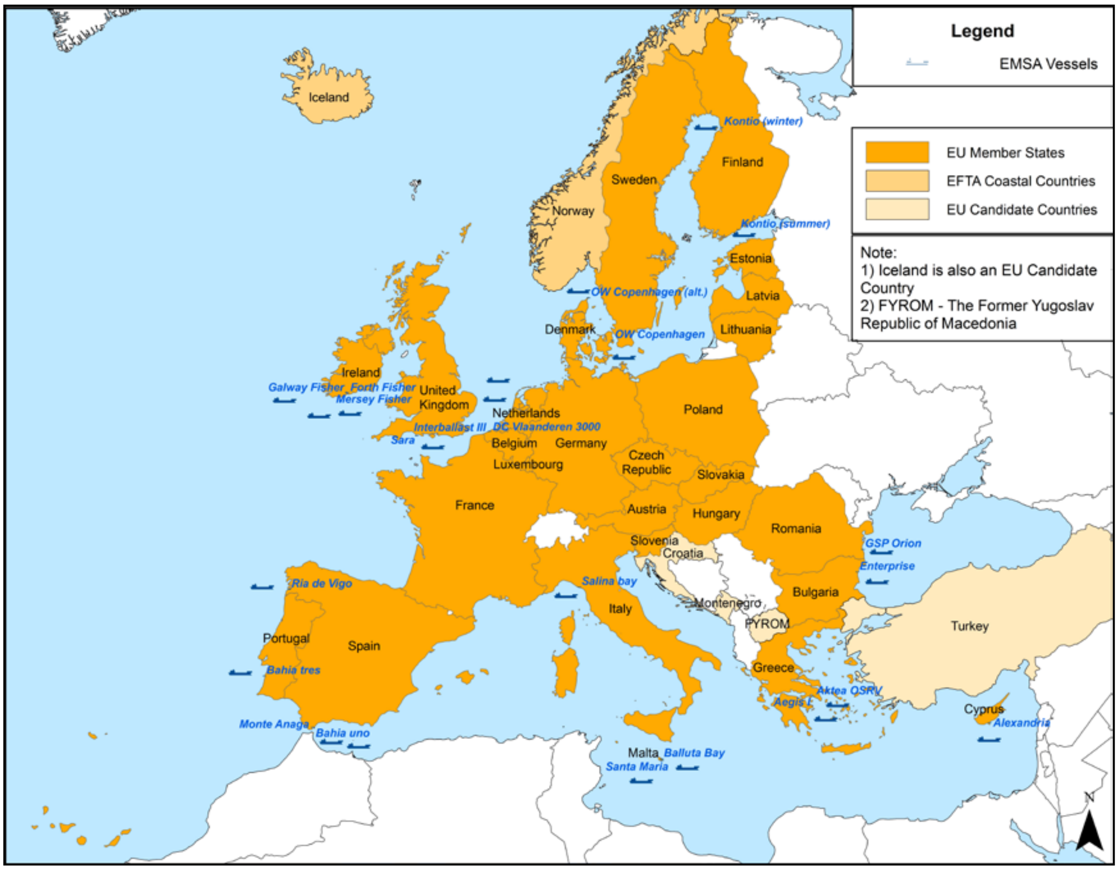
Map 15: Facilities for discharge of oil recovered at sea in Europe

Map 16 shows the formulation of the HTML popup with the attribute data for the thirty five facilities that answered positively in the distributed questionnaire; in particular, the HTML popup provides a set of selected information for each facility. This set of predetermined information provides an overall picture of the characteristics of facilities for discharge of oil recovered at sea.



Map 16: Presentation of the main characteristics for each facility that may be quickly overviewed within the GIS platform

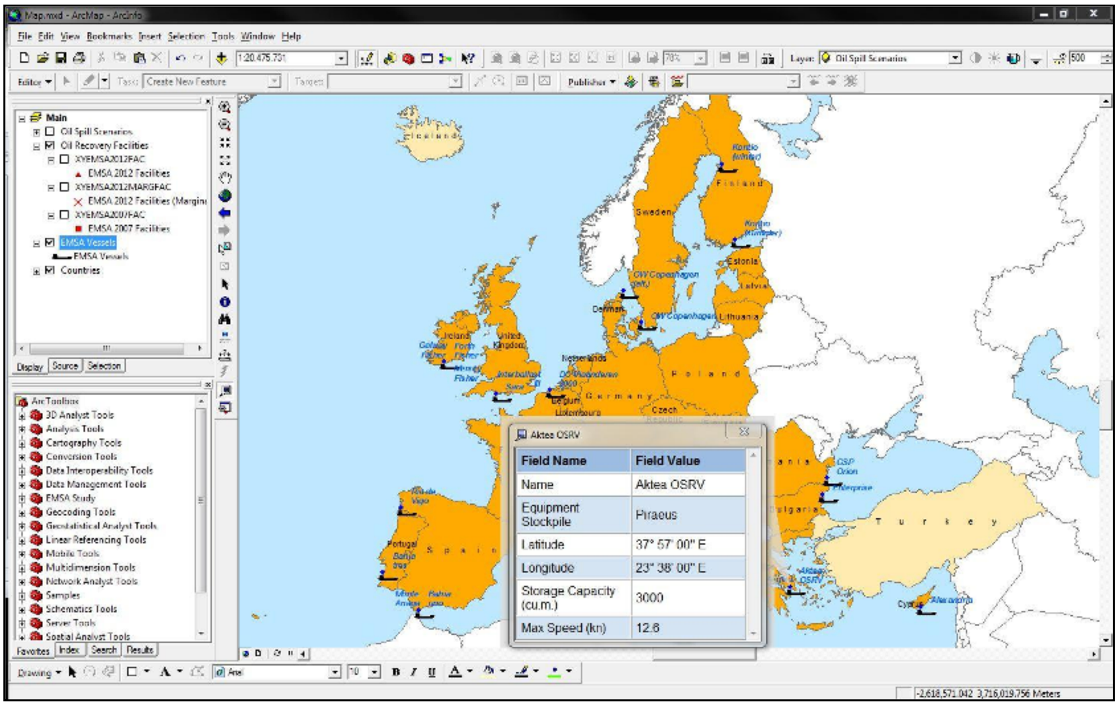
Map 17 shows the distribution of the EMSA stand-by oil spill response vessels in European waters; these vessels cover predetermined geographical areas and they formulate a network capable to respond efficiently to significant oil spillage in Europe. The EMSA stand-by oil spill response vessels are commercial vessels which can be rapidly converted to oil pollution response activities. The contracted vessels have large recovered oil storage capacities and a choice of oil recovery systems (sweeping arms or boom & skimmer system).



1. Kontio	6. Galway Fisher	11. Bahia Uno	16. Aktea OSRV
2. OW Copenhagen	7. Mersey Fisher	12. Monte Anaga	17. Aegis I
3. DC Vlaanderen 3000	8. Sara	13. Salina Bay	18. Alexandria
4. Interballast III	9. Ria de Vigo	14. Balluta Bay	19. Enterprise
5. Forth Fisher	10. Bahia Tres	15. Santa Maria	20. GSP Orion

Map 17: EMSA's vessels

Map 18 shows the HTML popup for the existing network of the EMSA stand-by oil spill response vessels and its main characteristics.

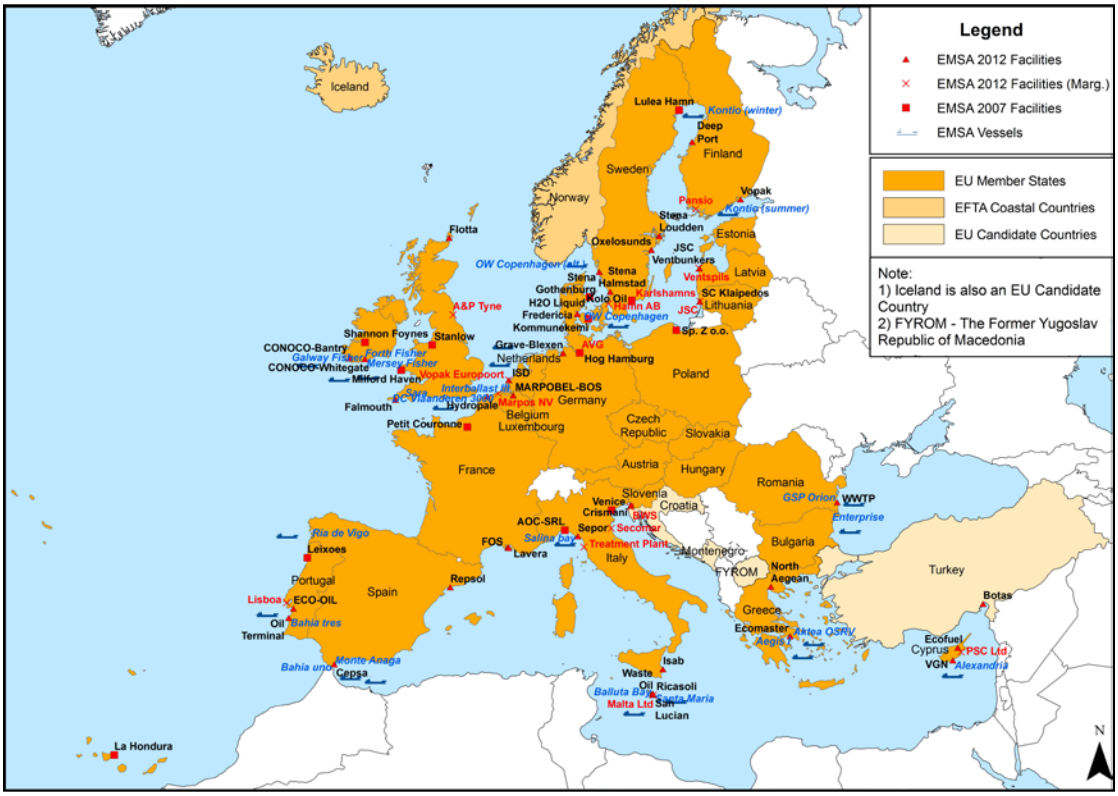


Map 18: Presentation of the main characteristics for each vessel that may be quickly overviewed within the GIS platform

Map 19 shows the following layers used within the GIS platform:

- The facilities that responded positively to the distributed questionnaire of this study (EMSA 2012 facilities);
- The facilities that also responded in an adequate manner to the questionnaire, however had an immediate storage capacity that did not meet the set criterion of 1,000 m^3 – this layer also covers 3 facilities that changed their status from the last study commissioned by EMSA in 2007 from capable to receiving significant quantities of oil recovered at sea to mainly not able to meet the 1,000 m^3 threshold (EMSA 2012 facilities (Marginal));
- The facilities that were identified in the study commissioned by EMSA in 2007 and for some reason they were not integrated in the current study (EMSA 2007 facilities);
- The network of the EMSA stand-by oil spill response vessels (EMSA vessels).

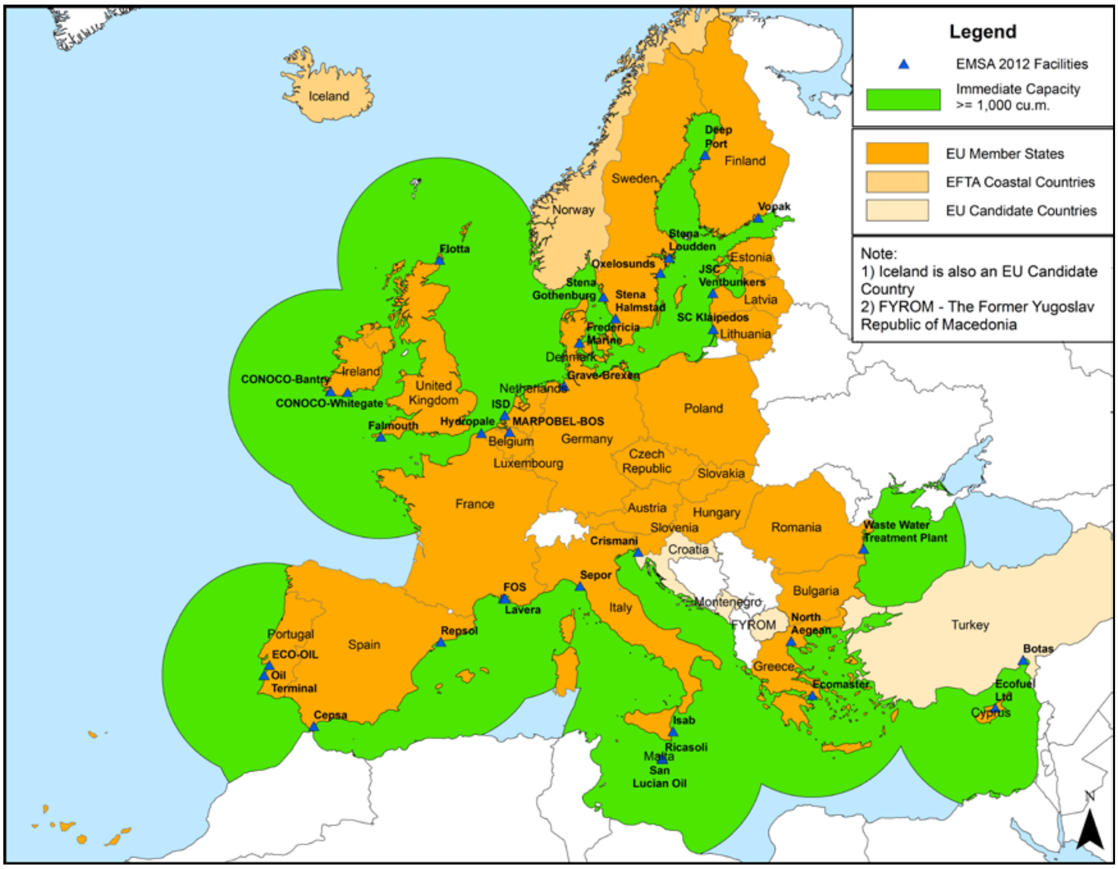
The so called marginal EMSA 2012 facilities in principle do not satisfy the 1,000 m^3 threshold, however they do provide some storage capacity. Nevertheless, in case of large oil spills in European waters the majority of them could be taken into account in the development of the overall counter pollution strategic planning, even as back-up solutions for the efficient conclusion of such operations.



Map 19: Overview of all the layers that were built within the GIS platform

Map 20 shows the results of the oil spill scenario of 1,000 m^3 in European waters. It is reminded that the implemented scenarios in this study <u>do not</u> contemplate an oil spill at a given site (static mode). Instead they based on the possibility of a 1,000 m^3 oil spill occurring <u>anywhere</u> in European waters (dynamic mode). In this approach, the facility that is within the operational range of service and meets the conditions of the scenarios (e.g. to be able to accept a specific quantity/volume of oil recovered at sea, or to have the capability to handle debris during the procedure) is displayed. In effect, the scenarios are based on whether the facilities can accommodate the incoming oil laden vessels (e.g. the EMSA Stand-by Oil Spill Response Vessels), mainly in terms of storage capacity; an analysis of other interesting parameters such as the number of docks and simultaneous discharge points, or potential environmental limitations (e.g. limited draught) has been presented earlier in this study. This way, a coverage distribution for all European waters is provided according to each scenario and the 'problematic' areas are easy to be identified should an oil spill occur at their vicinities.

In particular for the scenario of having a spill of 1,000 m^3, the areas covered by the existing network of storage facilities are presented with green color; the radius of these buffer zones is calculated through the combination of a service speed for the EMSA contracted vessels of 12 knots by a trip to reach the facility of 24 hours in maximum. As it can be seen the green color covers the majority of the coastal areas of Europe.

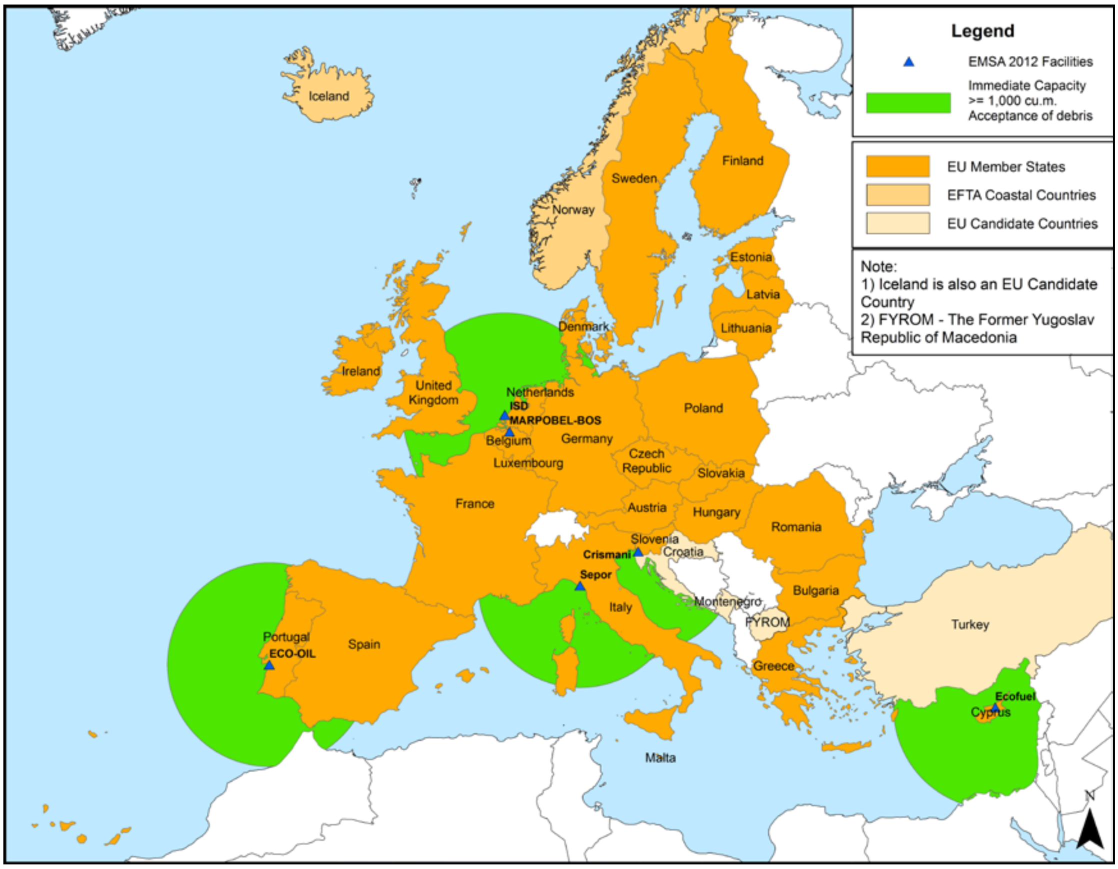


Map 20: Geographical coverage of the identified facilities in the case of a spill of 1,000 m^3

However, the picture with regards to the coverage of European waters changes completely in Map 21 for the scenario within which the efficient handling of debris from the facilities during such operations is deemed necessary. To this end, a very limited number of facilities explicitly stated that they can operate with presence of debris in the oil recovered at sea. Therefore the coverage is limited to the English Channel part of the North Sea, the Southern Atlantic Region, the northern central Mediterranean Sea and the eastern Mediterranean Sea. (It must be noted that the facilities that did not answer the respective question in the questionnaire are not taken into account in the development of the specific map).

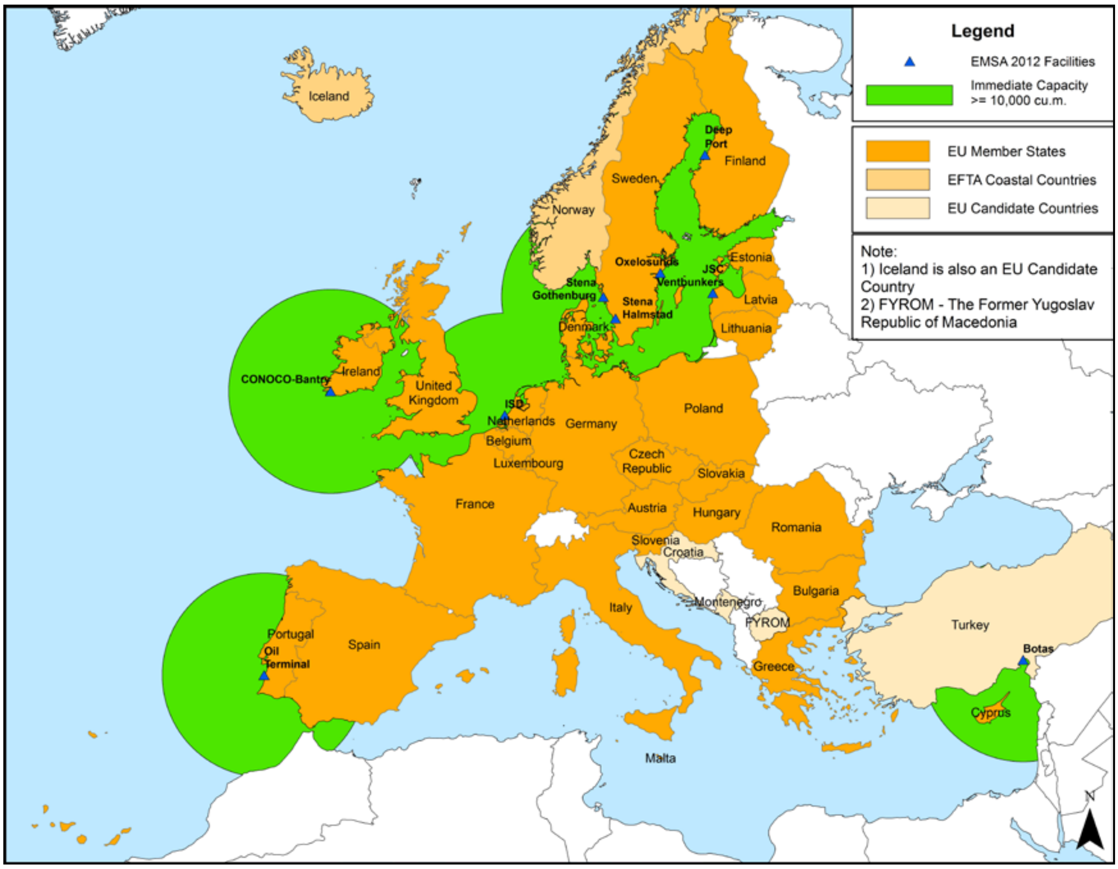
**Immediate capacity* is the capacity readily available for the reception of recovered oil immediately or after a short notice (approx. 48 hours)*

***Long term capacity* is the additional capacity that could be made available by any facility after one week.*



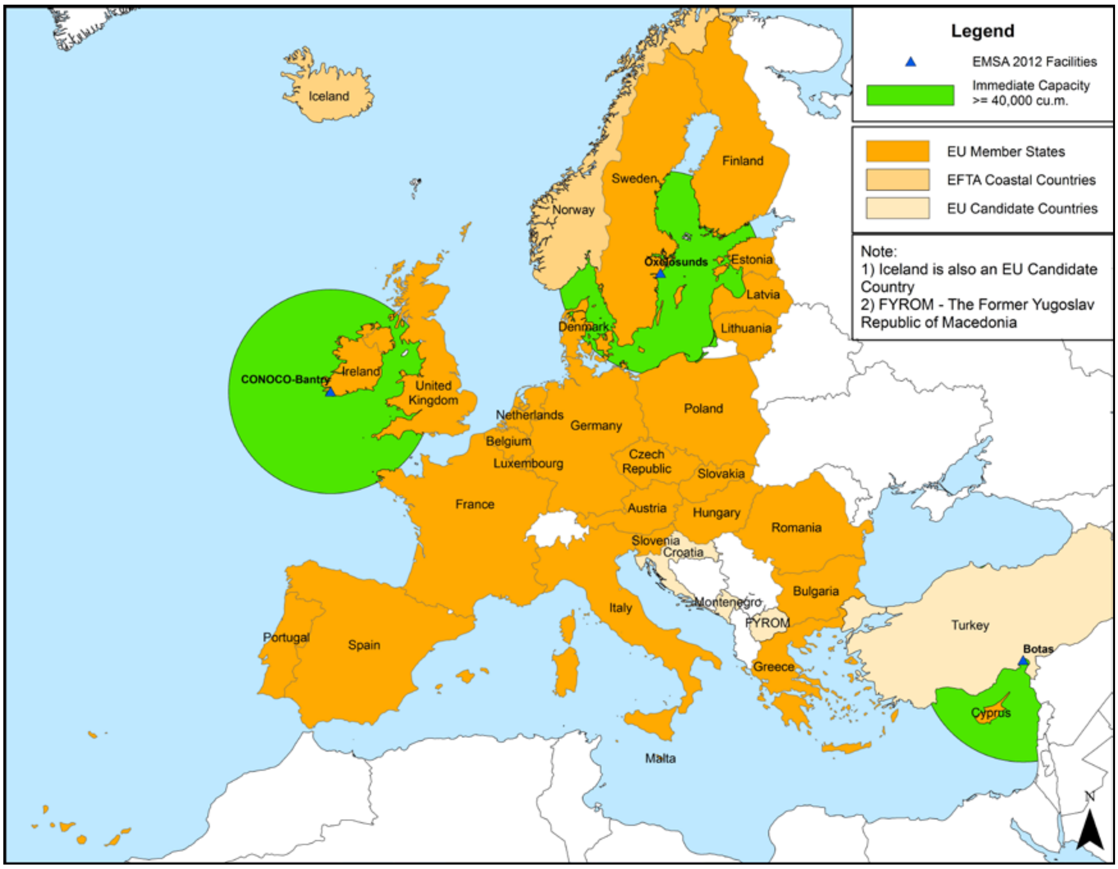
Map 21: Geographical coverage of facilities that can accept debris in the case of a spill of 1,000 m^3

Map 22 gives the results for the scenario of having a 10,000 m^3 oil spill in European waters; once more, the area covered by green color shows storage facilities that are able to accept the oil recovered at sea in such quantities. Hence it is mainly the west, northwestern and north parts of European waters that are covered should a spill of such magnitude occur. There is also a facility in south Turkey that can store oil recovered at sea for the broader sea area of Cyprus.



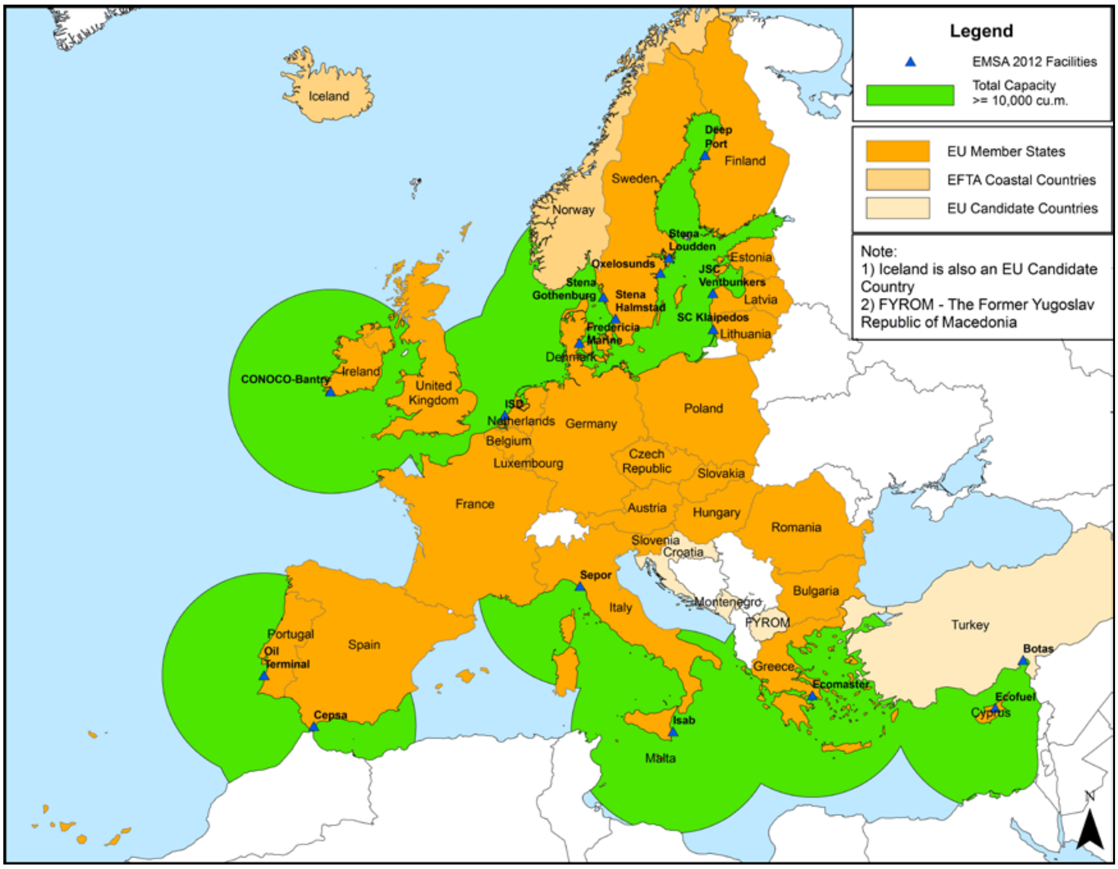
Map 22: Geographical coverage of the identified facilities in the case of a spill of 10,000 m^3

Map 23 presents the results of the simulation involving the scenario of having a 40,000 m^3 oil spill in European waters; the area covered with green color shows only 3 facilities capable to accept oil recovered at sea in such quantities. As expected the coverage should such an oil spill occur somewhere in European waters is extremely limited; in particular, only Baltic Sea and the Straits of Kiel, the west coasts of Great Britain and the coasts of Ireland, and the sea area around Cyprus through the facility of Botas in Turkey are adequately accommodated.



Map 23: Geographical coverage of the identified facilities in the case of a spill of 40,000 m^3

Map 24 shows the results for the scenario of serving the oil recovered at sea for oil spills of 10,000 m^3 in European waters, with facilities that have a total capacity that equals the sum of their immediate* and long term** capacities; the areas shown in green color depict the parts that are covered by the identified facilities. The use of the total capacity may not give a ‘realistic’ hands-on storage capacity for each of the identified facilities (for example, the long term capacity can correspond to the re-usage of the intermediate capacity after a given time period, or the provision of the long term capacity can be available only after specific time etc); however, it provides an overall picture of the storage potential for the identified facilities within an extended time window that may correspond to the duration of a counter pollution operation with regards to a spill of 10,000 m^3. Moreover, this map can be used in direct comparison with the map already presented for the spill scenario of 10,000 m^3 taking into account only the intermediate capacity of the identified facilities. In this context, almost the entire Mediterranean Sea (except a part of western Mediterranean Sea) is also accommodated for the delivery of the oil recovered at sea should oil spill of 10,000 m^3 occurs in European waters.

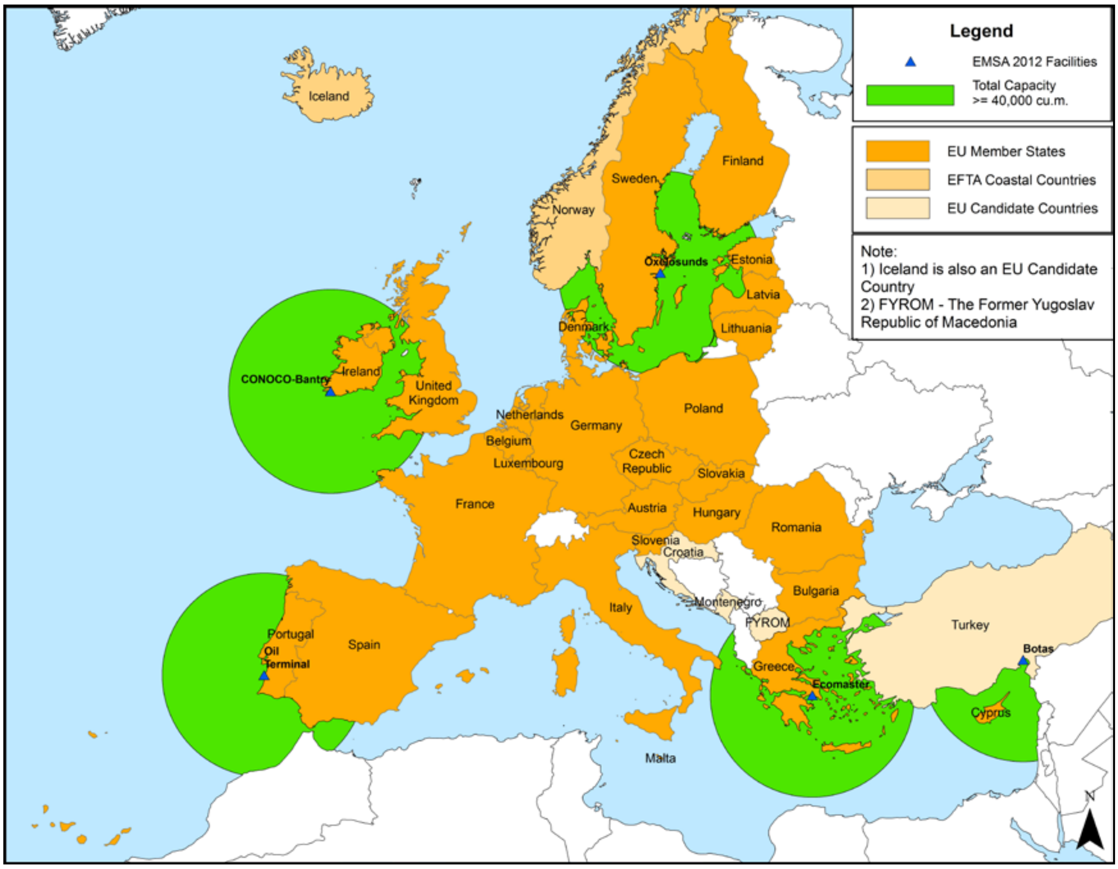


Map 24: Geographical coverage of the identified facilities that have a total capacity which exceeds 10,000 m^3

Map 25 shows the results for the scenario of serving the oil recovered at sea for oil spills of 40,000 m^3 in European waters, with facilities that have a capacity that equals the sum of their immediate and long term capacities; the areas shown in green color depict the parts that are covered by the identified facilities. In comparison with the respective scenario for the intermediate capacities of the identified facilities, the sea regions around Greece (namely, the Aegean Sea, the Ionian Sea, the Sea of Crete and part of the Libyan Sea) are also adequately accommodated by Ecomaster. Moreover the sea area off the coasts of Portugal and the west coasts of Galicia, Spain are also served by Oil Terminal.

**Immediate capacity* is the capacity readily available for the reception of recovered oil immediately or after a short notice (approx. 48 hours)*

***Long term capacity* is the additional capacity that could be made available by any facility after one week.*



Map 25: Geographical coverage of the identified facilities that have a total capacity which exceeds 40,000m^3

Maps 26, 27 and 28 present the geographical gaps resulting from the implementation of the selected scenarios. These areas are recorded as areas of potential risk with regards to the delivery of oil recovered at sea to storage facilities.

A solution for these 'orphan' areas can be the adoption of ship to ship transfer; the standards implemented for this solution must be high enough to secure the safety of the involved players and the protection of both the marine and littoral environment. In effect current standards already provide for risk assessment with regards to this procedure; however the implemented risk methodologies must be revisited for a substantial upgrade of this effort.

The aforementioned 'orphan' areas comprise the following:

<u>For oil spills of 1,000 m^3 in European waters:</u>

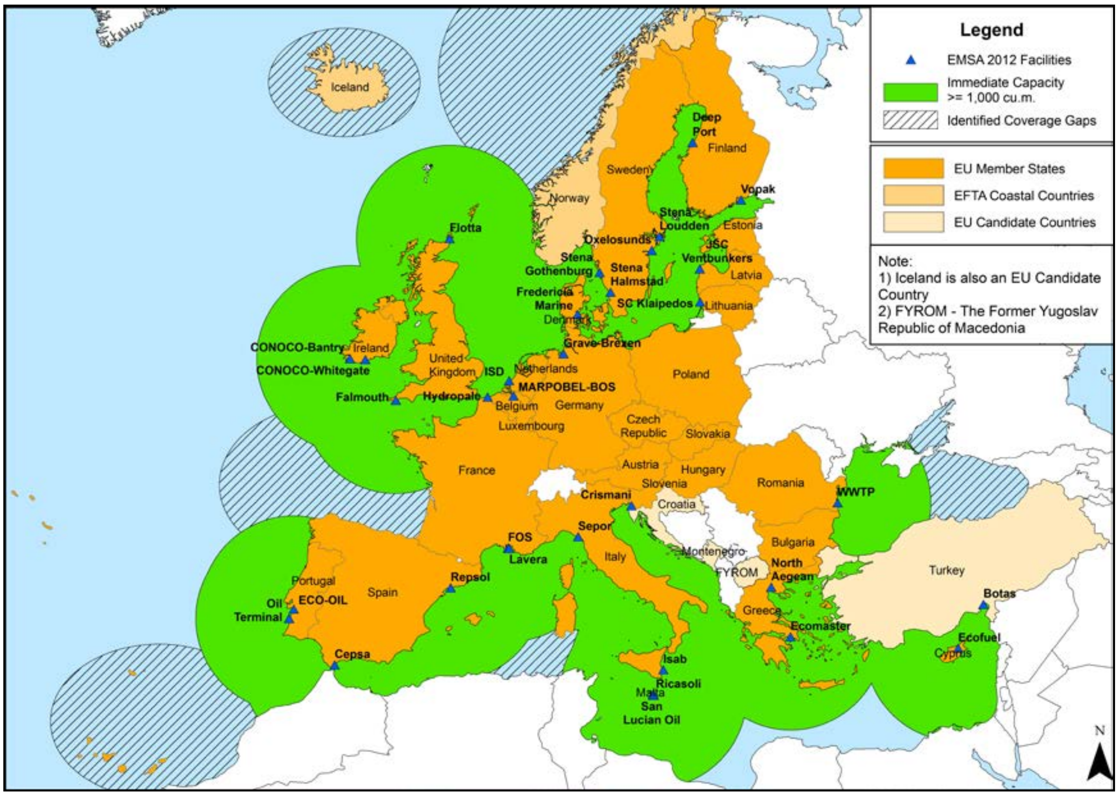
- Off the west coasts of Norway;
- Off the coasts of Iceland;
- Part of the Biscay Gulf, France and off the north coasts of Spain;
- A limited part of the central Mediterranean Sea (i.e. the sea region south to Sardinia);
- Off part of the north coasts of Turkey.

For oil spills of 10,000 m^3 in European waters:

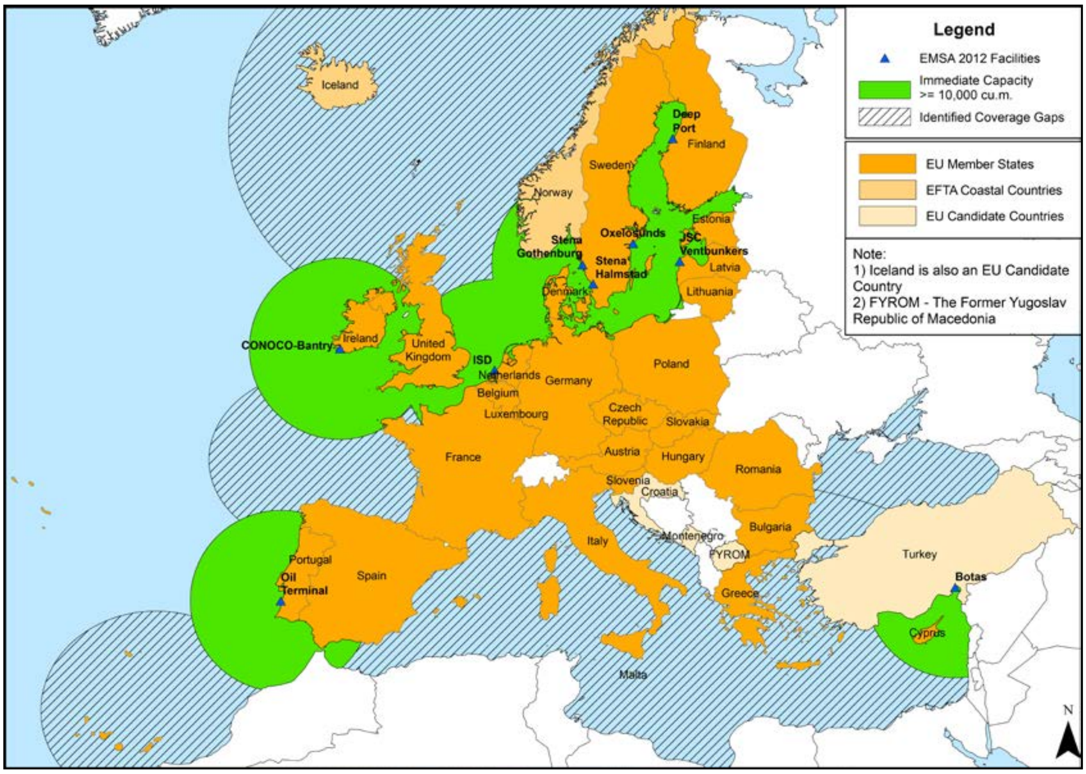
- Off the west coasts of Norway;
- Off the coasts of Iceland;
- Off the northern coasts of Great Britain;
- Off the western coasts of France and off the north coasts of Spain (European Atlantic);
- Almost the entire Mediterranean Sea (except the area off the coasts of Cyprus)
- The Black Sea.

For oil spills of 40,000 m^3 in European waters:

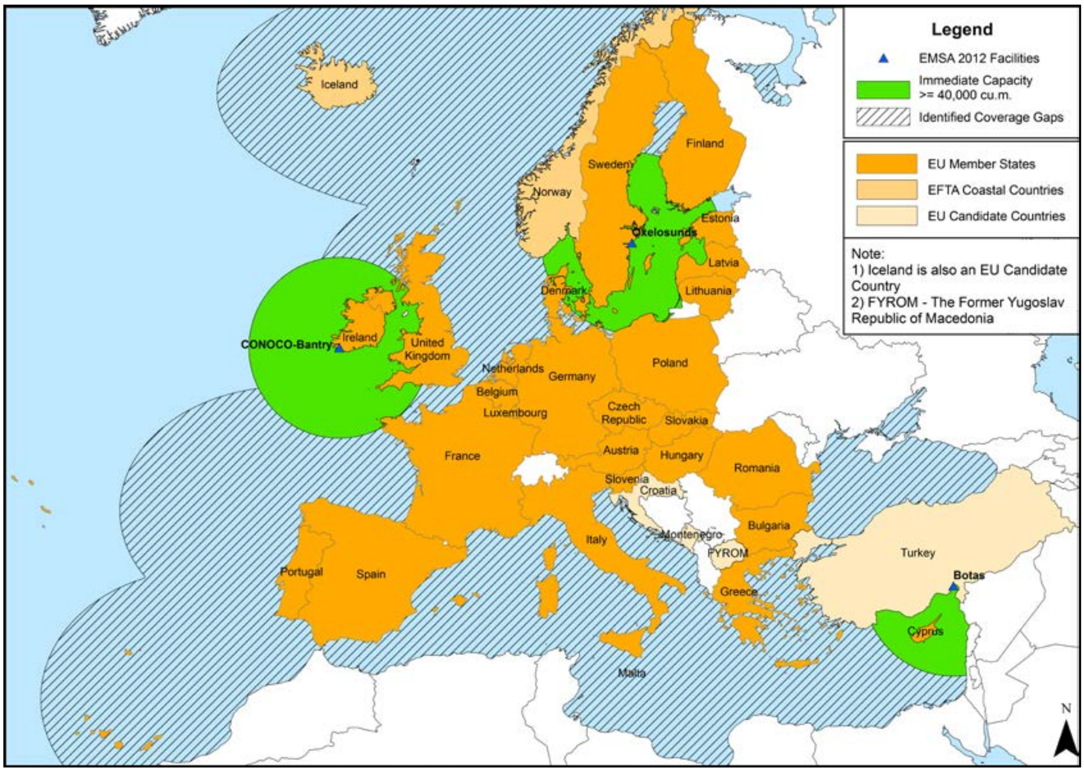
- Off the west coasts of Norway;
- Part of the Bothnian gulf;
- The North Sea;
- Off the coasts of Iceland;
- Off the northern and eastern coasts of Great Britain;
- The English Channel;
- Off the coasts of France, Spain and Portugal (European Atlantic);
- Almost the entire Mediterranean Sea (except the area off the coasts of Cyprus)
- The Black Sea.



Map 26: Geographical gaps that were identified for the spill scenario of 1,000 m^3



Map 27: Geographical gaps that were identified for the spill scenario of 10,000 m^3



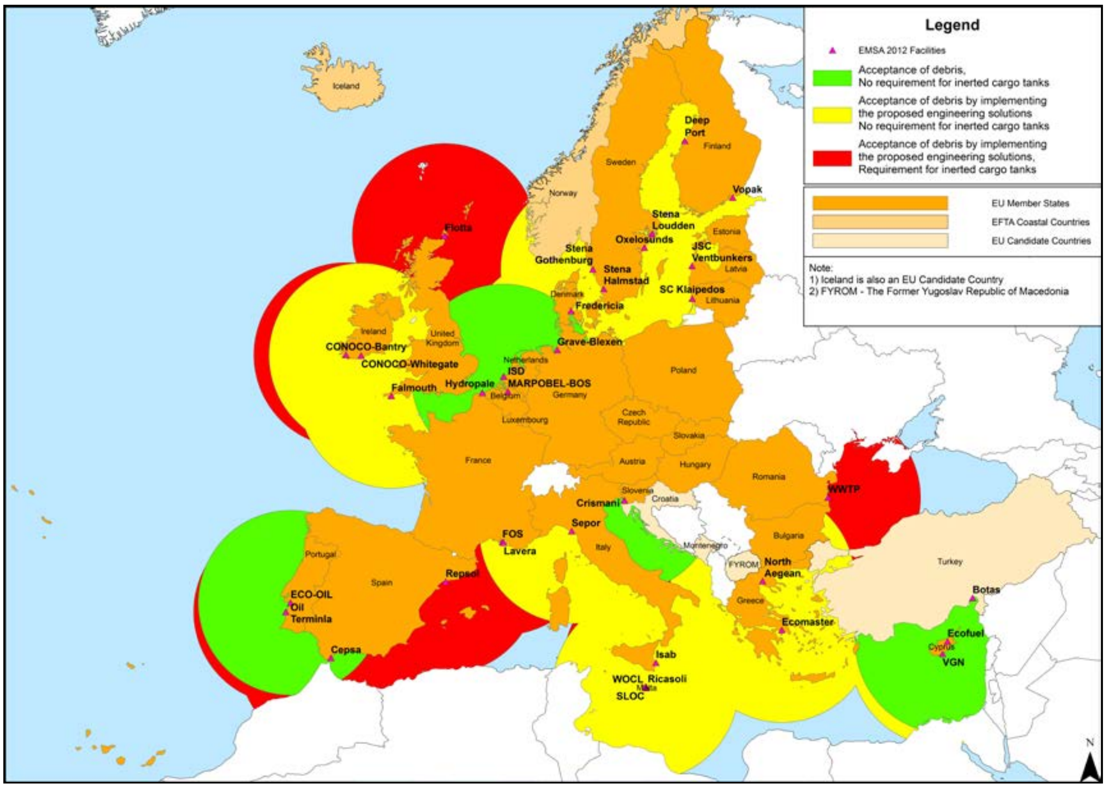
Map 28: Ge ographical gaps that were identified for the spill scenario of 40,000 m^3

4.5 Multi - criteria analysis

This section covers the results a multi - criteria geographical analysis with respect to the parameters of acceptance or not of debris, acceptance or not of emulsions and requirement or not for inerted cargo tanks.

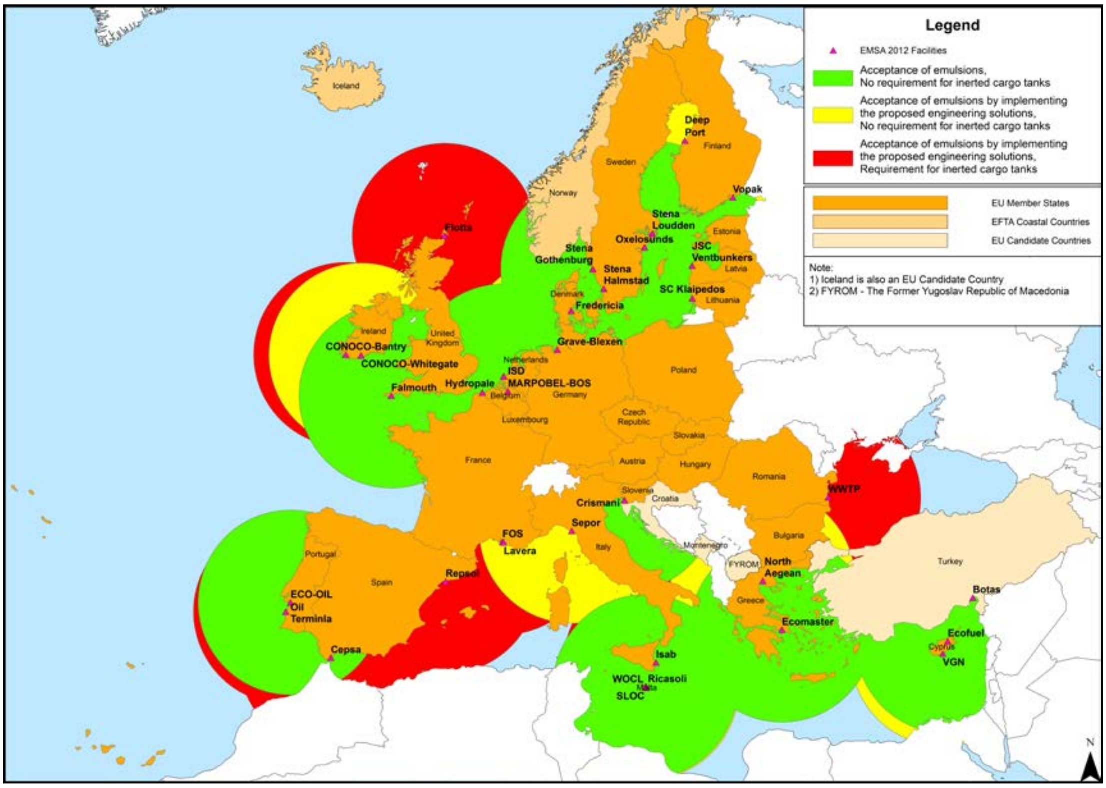
The adopted color key employs three colors: green color means no problem, yellow color means the need for implementation of the proposed engineering solutions and the red color refers to problematic areas in respect to the selected parameters. The logic upon which the color code was employed consists in the fact that if a geographical area is covered by two buffer zones and the one is green and the other yellow, then the green overlaps the yellow because there is a facility in the area that may be used, as on the basis of two selected criteria. Following the same logic, the yellow buffer zones overlap the red ones.

Map 29 presents the results from the multiple geographical analysis taking into account the possibility of accepting or not of debris and the requirement or not of inerted cargo tanks for the selected facilities. It is shown that yellow color prevails in European waters; thus indicating the need for the implementation of the proposed engineering solutions.



Map 29: Multiple criteria geographical analysis (debris and inerted cargo tanks) for the selected facilities

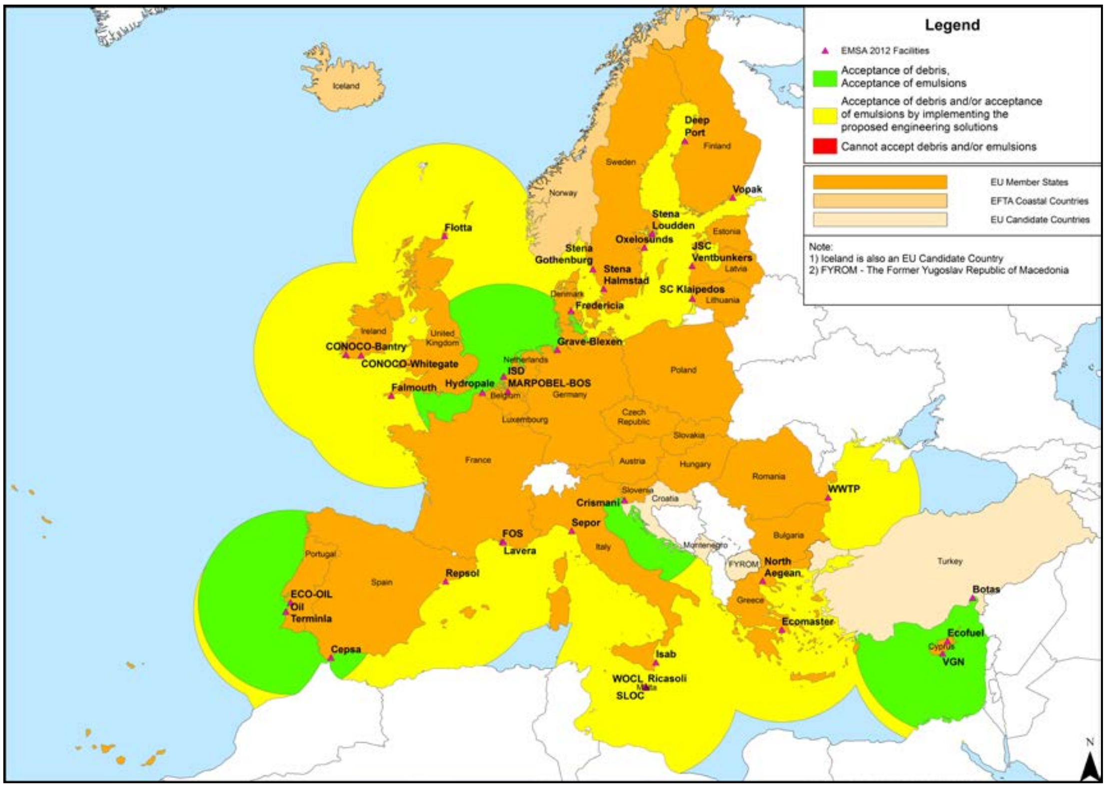
Map 30 shows the areas covered by the selected facilities in which emulsions may be either accepted without any restrictions or by implementing the proposed engineering solutions in combination to the existence or not of requirement for inerted cargo tanks. In this case, the green color dominates in the European waters. This outcome was expected considering the significant number of facilities that do not have any restrictions for the acceptance of emulsions nor require the cargo tanks of the serving vessels to be inerted.



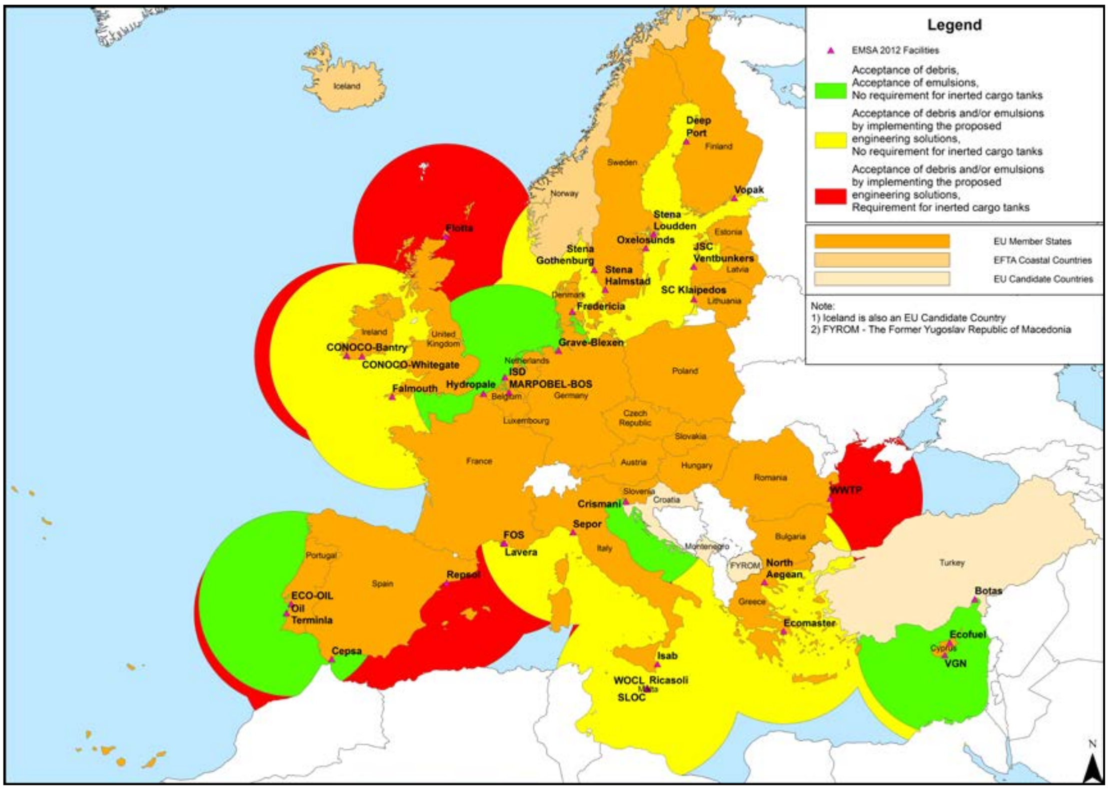
Map 30: Multiple criteria geographical analysis (emulsions and inerted cargo tanks) for the selected facilities

Maps 31 and 32 present the corresponding results from the multi – criteria geographical analysis in relation to debris and emulsions and debris, emulsions and inerted cargo tanks respectively.

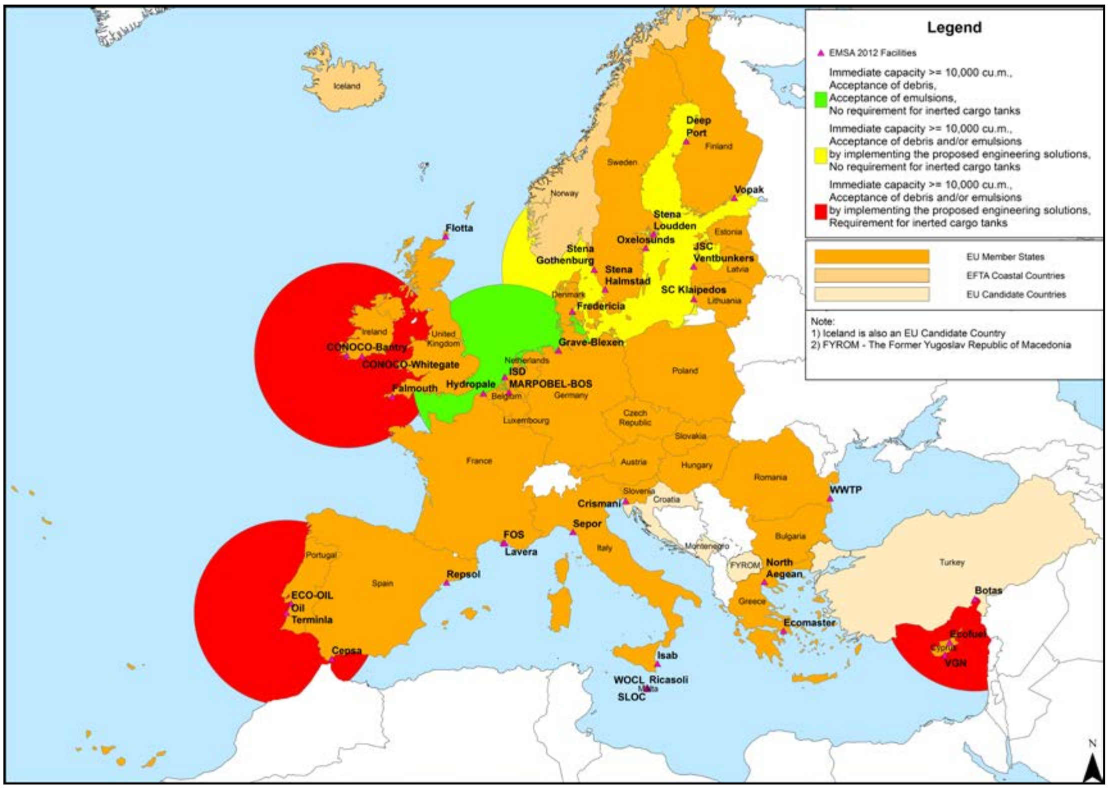
Moreover, maps 33 and 34 show the results from the multi – criteria geographical analysis taking into account debris, emulsions and inerted cargo tanks. In particular, map 33 refers to the scenario of a spill of 10,000 m^3 in European waters where as map 34 covers the scenario of a 40,000 m^3 spill.



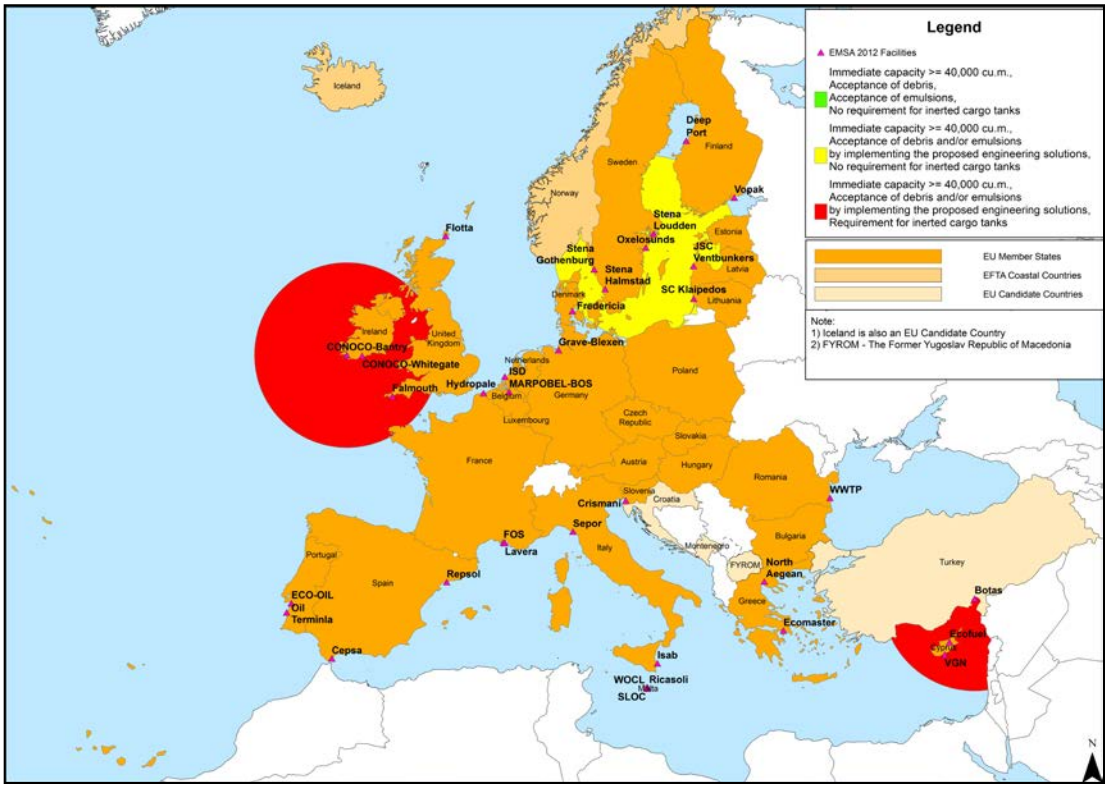
Map 31: Multiple criteria geographical analysis (debris and emulsions) for the selected facilities



Map 32: Multiple criteria geographical analysis (debris, emulsions and inerted cargo tanks) for the selected facilities



Map 33: Multiple criteria geographical analysis (debris, emulsions and inerted cargo tanks) for the selected facilities for the 10,000 oil spill scenario



Map 34: Multiple criteria geographical analysis (debris, emulsions and inerted cargo tanks) for the selected facilities for the 40,000 oil spill scenario

5 Conclusions

In a large scale marine oil pollution emergency, sufficient time or resources may not be available to evaluate the suitability of alternative storage options of oil recovered at sea in the area of the oil spill, to analyse the limitations and the restrictions that might compromise the discharge of oil to on-shore facilities and to identify sound solutions aimed at overcoming, if possible, these restrictions. The efficient and rapid discharge of oil collected at sea by EMSA's Stand-by Oil Spill Response Vessels (and those of Member States) is essential to allow these vessels to maximize their time spent in oil recovery operations, in particular following a major oil spill.

The central objective of this project titled "*A study on discharge facilities for oil recovered at sea – Study of the geographical distribution, technical challenges, solutions and alternatives related to the discharge of oil recovered at sea by specialized vessels, following a large oil spill in Europe*" was to provide EMSA with a study on available facilities such as reception facilities for ship-generated waste, refineries, waste treatment companies, etc., to receive oil recovered at sea by EMSA's Stand-by Oil Spill Response Vessels following a large oil spill.

Task 1.1 of the study was related to the selection and contact potential discharge facilities and to compile relevant and detailed information on their technical capabilities/limitations and geographical coverage. The identification of potential facilities, in addition to those that had indicated their ability to receive recovered oil in the context of the 2007 EMSA study, was carried out mainly through the advanced search of the IMO Global Integrated Shipping Information System (GISIS) following the setting of certain criteria used in combination, as follows:

1. type of waste, in particular, tank washings and dirty ballast as defined in Annex I of MARPOL. Facilities referred in GISIS capable of receiving oil tank washings and dirty ballast, invariably, constitute fixed and high storage capacity installations serving the needs of oil tankers.
2. type of facility, including fixed facilities which are stationary facilities accessible from the sea that enable the direct, on-shore collection of oily wastes and floating such as tankers or barges, self-propelled or not.
3. the minimum quantity of the selected types of waste that can be collected. The volume of 1,000 m^3 was selected as the threshold search criterion.

The National Correspondents of EMSA's Marine Pollution Expert Exchange Programme (EMPOLLEX) were also contacted and asked to provide information on discharge facilities with a key role in EU Member States' national or regional contingency planning or on other facilities that in the recent past, discharge of oil recovered at sea has taken place. Contact details of eligible facilities in various EU Member States, details on the state of storage of recovered oil and the applicable procedural arrangements, findings from relevant studies, and information on future agreements for the disposal of oil were kindly provided by six of the National Correspondents.

A structured questionnaire was developed and sent to the operators of the identified facilities to facilitate the communication and the collection of data on the compatibility of the facilities with EMSA's Stand-by Oil Spill Response Vessels, any restrictions originated from the quality of oil and other details of the discharging operations.

A number of 35 facilities (out of 495 contacted) were identified to be suitable to accommodate EMSA's vessels and receive recovered oil providing at least a capacity of 1,000 m^3 that might be readily available for the reception of recovered oil immediately or after a short notice.

The replies received show a limited number of facilities that: a) have positively responded to the questionnaire sent and b) do have the technical capability to receive recovered oil. We can partly attribute this to the possibility that some oil companies and facilities are showing reluctance in being involved with oil spill operations. Although all possible efforts were made to identify more facilities and obtain the information on their particulars, the possibility that other facilities exist cannot be excluded.

The abovementioned information following its verification was incorporated in a facility-specific Technical and Operational Envelope, comprehensively displaying the location and contact details of the facility, its immediate and long-term capacity, the restrictions on the quality and quantity of oil, as well as operational details relating to the berthing of incoming vessels and the conduct of discharging operations. Fact-verification missions to the identified facilities might be advisable to clear any uncertainties that might exist and enable a better understanding of the conditions of the discharge operations in case of a pollution incident. On a regional, geographical basis, the facilities found to be capable of receiving oil recovered by EMSA's vessels are the following:

- Baltic Sea: "*SC Klaipedos Nafta*" in the port of Klaipeda, Lithuania, "*Oxelosunds Hamm*", "*Stena Gothenburg*", "*Stena Loudden*"and "*Stena Halmstad* in Sweden, "*JSC Ventbunkers*" in Latvia, the port of "*Kokkola"* and "*Vopak Kotka"* in Finland, and "*Fredericia Marine*" in Denmark.
- North Sea: "*Marpobel*" in Antwerp, Belgium, "*International Slop Disposal B.V*." in Rotterdam, the Netherlands, "*Hydropale*" in the port of Dunkerque, France, "*Grave-Blexen*" in the Nordenham – Blexen on the west bank of the mouth of the Weser river in Germany and the "*Flotta Oil Terminal"* in Orkney in the United Kingdom.
- Atlantic Region: the ConocoPhillips operated oil terminals in Cork ("*Whitegate Refinery*") and in Bantry Bay ("*Bantry Bay Terminal*") in Ireland, the "*Falmouth Petroleum*" northwest of the English Channel in the United Kingdom, "*Eco Oil*" in Setubal and "*Oil Terminal*" in Sines of Portugal.
- Western Mediterranean: "*Sepor Water Treatment Plant*" in La Spezia, Italy, "*Port of Lavera*" and "*Fos Deballasting Facility*" in France, "*Cepsau Gibraltar San Roque*" and "*Repsol Tarragona*", Spain.
- Central Mediterranean: "*Isab Terminal South Site*" in Santa Panagia and "*Crismani Ecologia*"at the port of Trieste in the Adriatic Sea, Italy, "*San Lucian O.C*." in Marsaxlokk and two more facilities in Valletta, Malta "*Ricasoli Tank Cleaning*" and "*Waste Oil C.L*.".
- Eastern Mediterranean: "*Ecomaster floating separator*" in the port of Piraeus, and "*North Aegean Slops*" in the port of Salonika in Northern Greece.
- Black Sea: The "*Waste Water Treatment Plant*" in the port of Constanta, Romania.

In the context of the project's Task 1.2, an analysis of technical limitations and restrictions raised by the facilities was carried out, followed by a review of proposed engineering solutions. The technical limitations that might compromise the discharge of oil recovered by EMSA's vessels relate to:

a. the quality of recovered oil, particularly its viscosity, the presence of debris and water-in-oil emulsions, and
b. the berthing and discharging operations of EMSA's vessels, in particular the suitability of berths and jetties, the connection of vessels' manifolds to the facility's cargo arms/receiving piping and various, operational requirements such as the inerting of cargo tanks, etc.

The primary and secondary oil recovery systems in EMSA's vessels have a limited capacity to handle debris or screen macro-debris. Removing debris from recovered oil on a vessel is generally a challenging operation due to the variability of the quantity and quality of debris that might be encountered during spill response activities. Technologies that were considered to provide an acceptable efficiency are those of self-cleaning strainers/filters, hydrocyclones and vibrating screens. They were found to be safe for the operating personnel onboard the EMSA's vessels. These are, proven solutions for the treatment of waste oil in various applications sectors, commercially available, and potentially feasible for applying onboard EMSA's vessels. Each one of these technologies has its own benefits and constraints when considered relative to the problem of debris removal. However, there are challenges that need to be considered before applying these technologies: the temporary storage of oil contaminated debris, deviations in the actual performance of these systems due to the presence of emulsions, viscosity and the type of oil, the nature and the expected low specific gravity of debris, the reduction of free space on the weather deck of the vessels and the installation of dual port and starboard systems.

Reduction of oil viscosity within the permissible limits required by the operators of the facilities can be accomplished by heating the recovered oil in the cargo tanks of EMSA's vessels, in case that no stable water-in-oil emulsions exist. Emulsion breaking, as a combination of injecting and mixing proper demulsifying agent with oil recovered at sea and heating was considered to be a proper solution in case of stable water-in-oil emulsions and potentially feasible to apply onboard EMSA's vessels. As the effectiveness of the recommended solution is strongly dependable on various factors including the stability of emulsions, the selection of proper chemical agents and the mixing level of the agent and the emulsion, the addition of emulsion breaking agents to the recovered oil must be considered on a case-by-case basis.

The implementation of the proposed solutions onboard EMSA's vessels must be also supported by properly trained technicians as well as instruments to determine the physical and chemical properties of oil such as the flash point, viscosity, stability of emulsions, water content, chemical compounds, etc. EMSA's vessels are equipped with viscometers but the viscosity of recovered oil might exceed their limit (around 1,000 cSt at 50^0C for most of them).

An inventory of approved or environmentally acceptable emulsion breaking agents based on toxicity testing should eventually be developed for use across the European waters. Simple tests to determine the stability of emulsions and the efficacy of emulsion breaking agents would be also helpful. If emulsion breaking is to become a viable process, then the whole treatment must be further studied; the agents that might be used, mixing of oil and agents, time after which decanting of water is feasible, the exact point where feeding of agent can be injected, etc.

The most serious technical constraints connected to the operational issues of EMSA's vessels during the discharge operations include the need for the inerting of cargo tanks of the discharging vessel and the supply of reducers of proper size in their cargo manifolds or discharging piping. The installation of an inert gas system onboard of an EMSA's vessel requires major retrofitting and significant costs. An increase of the flash point well above the flammable limits is expectable due to the weathering of spilled oil. Therefore sampling and measurement of this property might constitute a basis for discussion with the facilities that have mentioned it as a requirement.

The transfer of oil collected by an EMSA's vessel, to another tanker when the berthing is not feasible, constitutes an alternative solution, even when the distance of an oil spill from to an eligible facility challenges the oil recovery operations. It was attempted to identify the main elements that should be considered to proceed with planning ship-to-ship transfer operations in a port or at sea, including the compatibility of vessels, the use of equipment, the identification of a suitable operation area, etc.

6 ANNEX I: Facility questionnaire

QUESTIONNAIRE

A. INTRODUCTION

The main objective of this Questionnaire is to verify whether your facility can be used to discharge oil that has been recovered at sea during spill response operations involving Oil Spill Response Vessels of the European Maritime Safety Agency (EMSA).

We would like to ask you to provide us with some essential information on your facility and its interface with the abovementioned vessels to enable a potential discharge of oil.

If you operate more than one facility capable of receiving recovered oil, please complete one questionnaire per facility.

If you have positively responded in the context of the 2007 EMSA[1] study that your facility can be used for this purpose, you are kindly requested to re-confirm its availability to receive recovered oil and reply to the more specific questions, as follows.

Country Port

Type of Facility Fixed (port installation) ☐

Floating (managed by you) ☐

Name of Facility

Location Name of terminal/pier/jetty/other

Latitude Longitude

Please provide the following details for the contact point of your facility.

Contact Point Name/Company name	
Telephone Number	
Fax Number	
Email Address	
Address	

Does your facility have the capacity to receive at least 1,000 m^3 of oil that have been recovered during spill recovery operations?

Yes ☐ No ☐

If Yes, please reply to the following questions.

B OIL ACCEPTANCE PROCEDURES

► What is the immediate capacity of your facility for receiving recovered oil?

[1] In 2007, EMSA conducted a similar survey: "Report on Facilities for Oil Recovered at Sea in Europe".

Immediate capacity[2] (m³)

► How much time is needed for your facility to accept a second discharge of recovered oil and what would be the available capacity?

Time

Capacity (m³)

► What is the long term capacity of your facility for receiving recovered oil?

Long term capacity[3] (m³)

► How many vessels can discharge at your facility at the same time?

► Please indicate if there are any restrictions on the composition of recovered oil that your facility can accept. Please note that the Appendix at the end of this questionnaire, provides a list of normal contaminants.

- Maximum kinematic viscosity (cSt)

- Maximum sea water content (%)

- Presence of emulsions (water in oil emulsion) (yes/no)

- Presence of debris (yes/no)

- Maximum sulphur content (%)

- Other restrictions

► Would you require a sample to be taken for a chemical analysis to be performed prior to the reception of recovered oil?

► If Yes, what is the required volume of sample that must be provided to your facility?

---

[2] ***Immediate capacity*** *is the capacity readily available for the reception of recovered oil immediately or after a short notice (approx. 48 hours)*

[3] ***Long term capacity*** *is the additional capacity that could be made available by your facility after one week. For example, if there is one tank with 20,000m³ which is normally empty and would be available immediately, and 3 other tanks of 20,000m³ which could be available after one week. Therefore, immediate storage capacity is 20,000m³ and additional long term storage capacity after 7 days is 60,000m³.*

► Would you require additional information on the oil that was initially spilled, (e.g. Material Safety Data Sheet (MSDS). If Yes what type of information?

C. FACILITY - VESSEL COMPATIBILITY

C.1 Fixed Facilities (Port Installation)

Please fill in the following table as appropriate. In case that your facility can receive oil in more than one berth, please use the additional columns.

Name/Number of Berth			
Depth of water alongside (m)			
Maximum LOA (Length Overall) (m)			
Minimum* LOA (Length Overall) (m)			
Maximum Beam (m)			
Maximum Draft (m)			
Maximum Displacement (tons)			
Minimum Displacement (tons)			
Maximum Bow distance to Centre Manifold (m)			
Minimum Bow distance to Centre Manifold (m)			
Maximum Allowable Manifold Height above the water (m)			
Minimum Allowable Manifold Height above the water (m)			
Maximum air draught (m)			

** This needs to be provided to ensure that small ships can be effectively moored and stay alongside at a berth designed for much bigger ships. It should be noted that the smallest EMSA vessel has a LOA of 70 meters and the biggest of 111 meters.*

C.2 Floating Facilities

Please fill in the following table as appropriate. In case that your facility can receive oil at more than one floating facility, please use additional columns.

Name and type of facility (tanker or barge, single hull, double hull)			
Maximum LOA (Length Overall) (m)			
Minimum LOA (Length Overall) (m)			
Maximum Draft (m)			
Maximum Displacement (tons)			
Minimum Displacement (tons)			
Maximum Allowable Manifold Height above the water (m)			
Minimum Allowable Manifold Height above the water (m)			
Minimum Freeboard (m)			
Other limiting factors			

► Does the floating facility provide the necessary means, in terms of number and characteristics, to enable the discharge operation, such as fenders, hoses, cranes, etc.

Yes ☐ No ☐

► Maximum allowable wind speed at berthing/approaching to the facility.

Please specify if there is any other limiting factor (weather) that could impact berthing or cause discharge operations to be discontinued.

► Do you have a specific Mooring Plan that details all necessary mooring information for vessels such as the minimum number of mooring lines for the vessel, the relative position of bollards or quick release hooks, etc.?

Yes ☐ No ☐

If Yes, please provide a copy of the Plan or any other mooring lines layout and other details.

If not, please specify the minimum number of mooring lines, their length, the minimum breaking load and any other relevant information considered as useful for the mooring operations in your facility.

D. OIL HANDLING OPERATIONS

- Number and diameter of loading arms/hoses through which oil will be handled (cm/inches)
- Maximum allowable discharge pressure at hoses/loading arms (bar)
- Minimum allowable discharge pressure at hoses/loading arms (bar)
- Normal discharge pressure at hoses/loading arms (bar)
- Maximum flow rate (m^3/hour)
- Minimum flow rate (m^3/hour)
- Maximum temperature of oil during transfer (^0C)

► Are reducers/connections, etc. available in the facility?

Yes ☐ No ☐

If yes, specify their number/diameter (cm/inches).

Number	From (mm/inches)	To (mm/inches)

► Are any booster pumps available in the facility to enhance the transfer of the recovered oil?

Yes ☐ No ☐

If yes, please provide the following information.
- Type of pump
- Capacity (m^3/hour),
- Maximum viscosity of oil that can be handled (cSt)
- Differential pressure (bar)

► Are any portable oil heating systems available in the terminal?

Yes ☐ No ☐

If Yes, please indicate the available heating capacity in Kw, transfer medium, type, etc.

► Is closed discharging required to be conducted in your facility (closed ullage and sighting ports, etc).

Yes ☐ No ☐

► Do you require cargo tanks of the discharging vessel to your facility to be inerted?

Yes ☐ No ☐

Appendix

List of normal contaminants present in oil recovered at sea

In the event of an oil spill at sea, several factors will affect the characteristics of oil that will be recovered by the dedicated skimming devices onboard the EMSA Oil Spill Response Vessels. Regardless of oil type and quantity, emulsification can occur within 24 hours of an oil spill as a result of wave and wind action. With certain types of crude oil and oil products, stable water-in-oil emulsions might be formed containing 50-80% sea water that may obtain high viscosities (up to 1 million cSt) at ambient temperature, making them difficult to handle or pump.

It is anticipated that oil recovered by EMSA vessels during a major spill, might be contaminated with:

► salt;

► suspended material and debris (e.g. sand, pebbles, more substances needed);

► chemical dispersants/surfactants;

Oil spill dispersants are mixtures of surface active agents in one or more organic solvents, aimed at enhancing the dispersion of oil into the water column by reducing the interfacial tension between oil and water. The surface active agents most commonly are fatty acid esters and the solvents are glycol ethers and light petroleum distillates;

► organic material (seaweed, etc.).

7 ANNEX II: Facilities' envelopes

TABLE OF CONTENTS OF ANNEX II

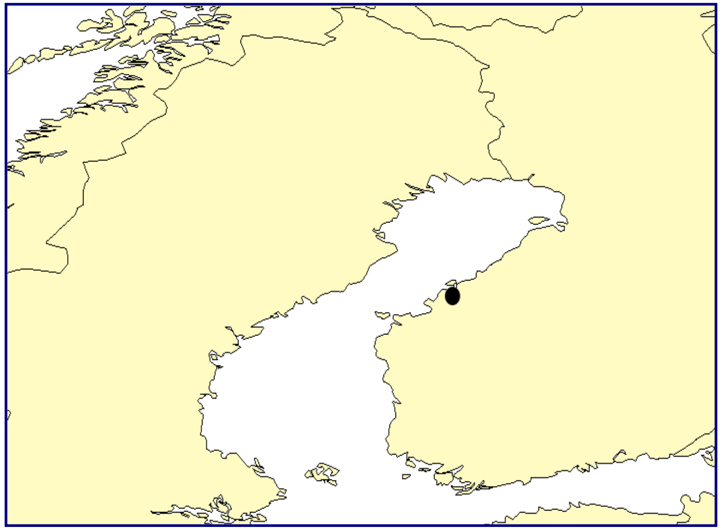
1 Baltic Sea

1.1 Deep port

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Baltic Sea**
Country	**Finland**
Port	**Kokkola**
Facility	**Deep Port**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS



A.1 Location of the facility

Latitude 63°51,67 N Longitude 23°02,4 E

Oil quay, 7

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Port of Kokkola
Telephone Number	+358 6 8242400, +358 44 7809132
Fax Number	+358 6 8242444
Email Address	satama@kokkola.fi
Address	Satamakatu 53, 67900 Kokkola, Finland

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	15,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 7 days 15,000
Long term capacity (m^3)	15,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

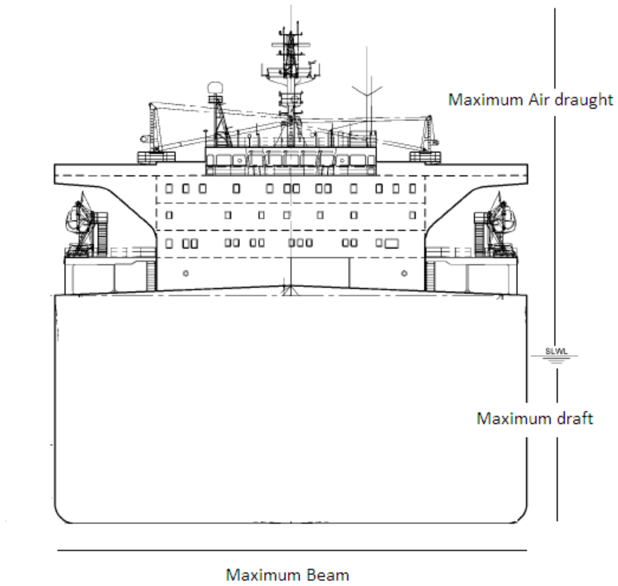
Maximum kinematic viscosity	2.0-4.5 cSt (middle distillates), 8.5-16 cSt (fuel oil)
Maximum sea water content (%)	500 ppm
Presence of emulsions	Not acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	1,0 w/w
Other restrictions	

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	10
Additional information on oil recovered that must be provided to the facility	MSDS, Product data sheet, Analysis report (if available)

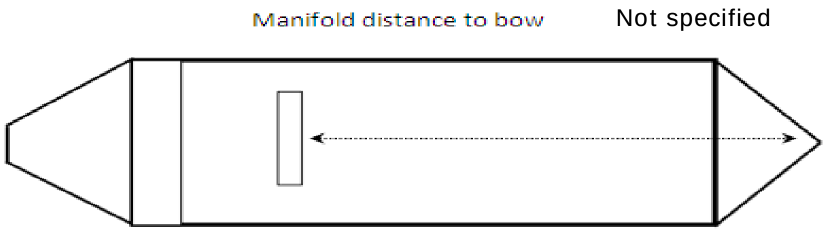
C. TECHNICAL INFORMATION ON THE FACILITY

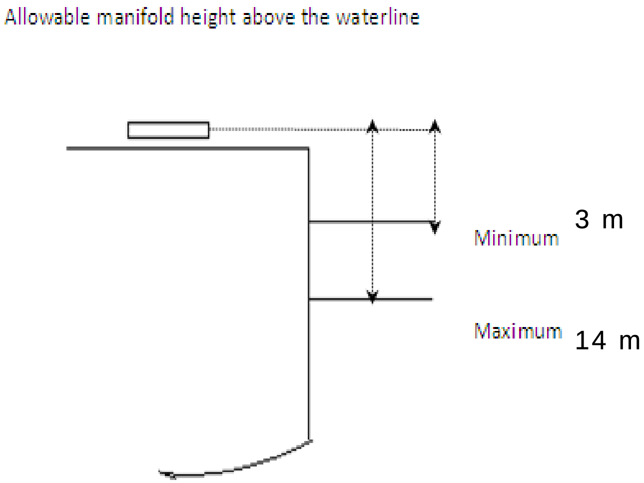
C.1 Berthing and Mooring

Name/Number of Berth	7
Depth of water alongside (m)	10.5
Maximum LOA (m)	180
Minimum LOA (m)	50
Maximum Beam (m)	30
Maximum Draft (m)	9.5
Maximum Displacement (tons)	20,000 tdw
Minimum Displacement (tons)	1,000 tdw
Maximum air draught (m)	N/A



C.2 Oil handling operations





Number and diameter of loading arms/hoses through which oil will be handled (inches)	3 x 10
Maximum allowable discharge pressure at hoses/loading arms (bar)	10
Minimum allowable discharge pressure at hoses/loading arms (bar)	0,5
Normal discharge pressure at hoses/loading arms (bar)	5 -7
Maximum flow rate (m^3/hour)	1,100
Minimum flow rate (m^3/hour)	100
Maximum temperature of oil during transfer (^0C)	120

- **Availability of reducers/connections in the facility**

  No
- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**

  No
- **Availability of portable oil heating systems in the terminal**

  No
- **Other discharging related information**

  No

1.2 Vopak

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Baltic Sea**
Country	**Finland**
Port	**Kotka**
Facility	**Vopak**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

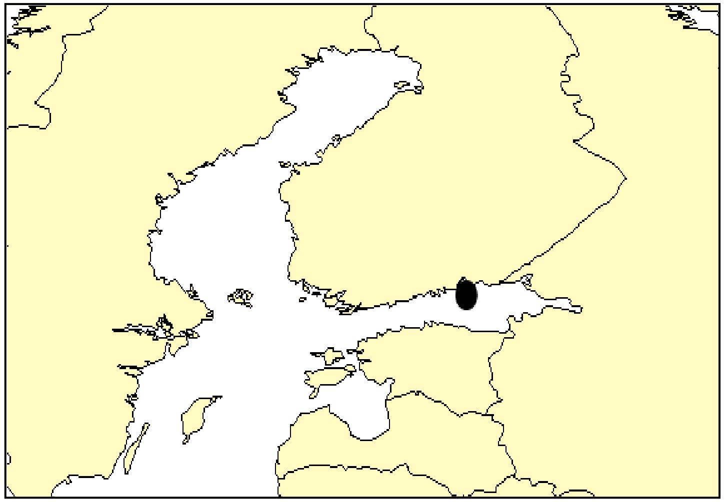
Vopak Kotka

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Vopak Terminal Mussalo
Telephone Number	+ 358 5 2269 200
Fax Number	+ 358 5 2269 241
Email Address	ramon.ernst@vopak.com
Address	Mussalo Deep Harbour 48310 Kotka



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	2,900
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 - -
Long term capacity (m^3)	5,800
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

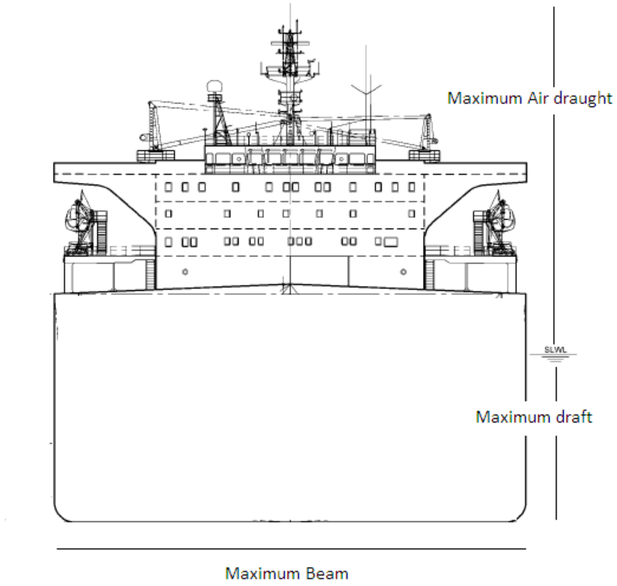
Maximum kinematic viscosity (cSt)	100
Maximum sea water content (%)	10 %
Presence of emulsions	-
Presence of debris	-
Maximum sulphur content (%)	No restriction for short-term storage
Other restrictions	-

Need for sampling and chemical analysis	No
Volume of sample that must be provided for a chemical analysis (liters)	-
Additional information on oil recovered that must be provided to the facility	-

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

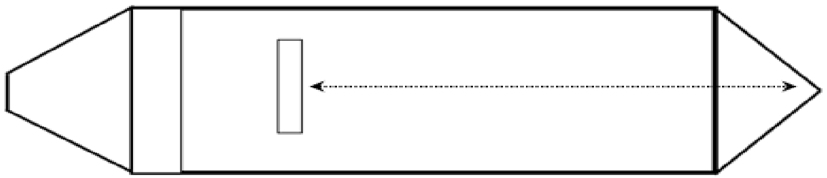
Name/Number of Berth	Vopak
Depth of water alongside (m)	-
Maximum LOA (m)	-
Minimum LOA (m)	-
Maximum Beam (m)	-
Maximum Draft (m)	10
Maximum Displacement (tons)	-
Minimum Displacement (tons)	-
Maximum air draught (m)	-



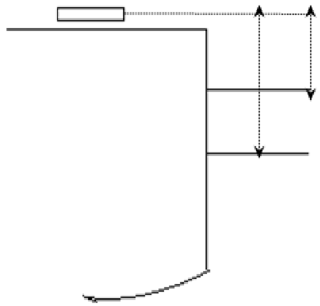
- Maximum allowable wind speed at berthing/approaching to the facility: -
- Existence of a specific Mooring Plan: -
- Other limiting factors: -
- Mooring details: -

C.2 Oil handling operations

Manifold distance to bow Not specified



Allowable manifold height above the waterline



Not specified

Number and diameter of loading arms/hoses through which oil will be handled (inches)	6” & 8”
Maximum allowable discharge pressure at hoses/loading arms (bar)	-
Minimum allowable discharge pressure at hoses/loading arms (bar)	-
Normal discharge pressure at hoses/loading arms (bar)	-
Maximum flow rate (m^3/hour)	250
Minimum flow rate (m^3/hour)	-
Maximum temperature of oil during transfer (^{0}C)	-

- Availability of reducers/connections in the facility

-

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

No

1.3 JSC Ventbunkers

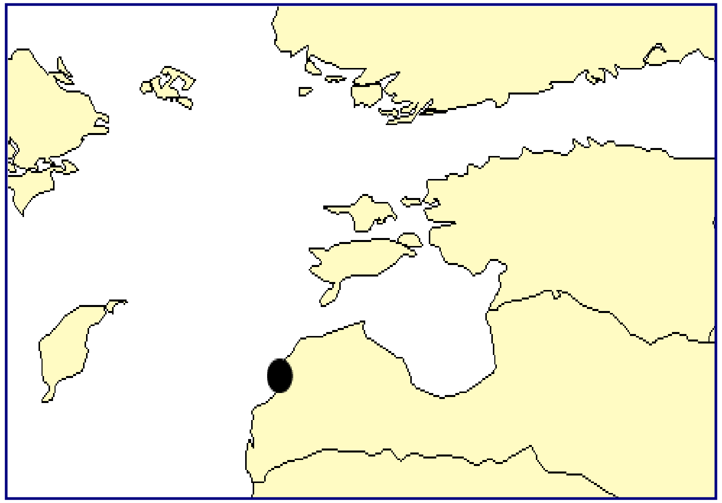
INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Baltic Sea**
Country	**Latvia**
Port	**Ventspils**
Facility	**JSC Ventbunkers**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 57^{0}23'59" N Longitude 21^{0}32'53" E, Piers Nr. 2, 3



A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	JSC Ventbunkers
Telephone Number	+371 63602501
Fax Number	+371 63602504
Email Address	ventbunkers@ventbunkers.lv
Address	Dzintaru str.92, Ventspils, Latvia, LV-3602

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	10,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	72 10,000
Long term capacity (m^3)	20,000
Number of vessels that can discharge at the facility at the same time	2

B.2 Restrictions on the composition of the recovered oil

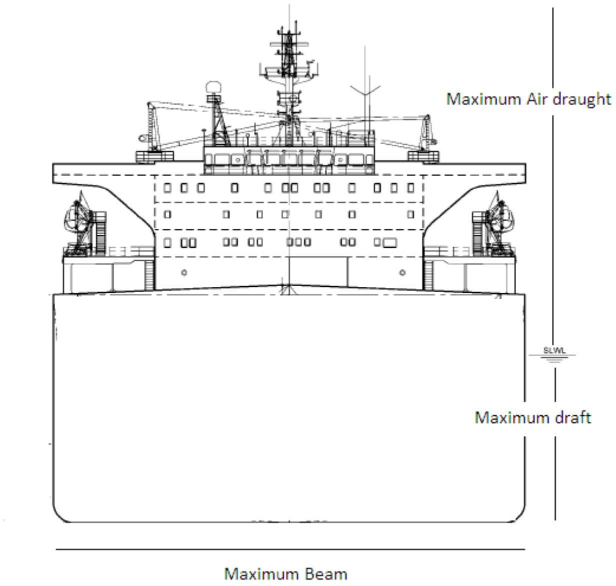
Maximum kinematic viscosity (cSt)	500 at 20^{0}C
Maximum sea water content (%)	100
Presence of emulsions	Acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	3%
Other restrictions	COD 4000 mg/l

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	3 x 1 liter
Additional information on oil recovered that must be provided to the facility	An MSDS of the cargo or fuel spilled is sufficient

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

Name/Number of Berth	30	31	32	33
Depth of water alongside (m)	13.5	13.5	17.0	17.0
Maximum LOA (m)	228	228	270	270
Minimum LOA (m)	N/A	N/A	N/A	N/A
Maximum Beam (m)	32.0	32.0	32.0	32.0
Maximum Draft (m)	12.5	12.5	15.0	15.0
Maximum Displacement (tons)	N/A	N/A	N/A	N/A
Minimum Displacement (tons)	N/A	N/A	N/A	N/A
Maximum air draught (m)	N/A	N/A	N/A	N/A



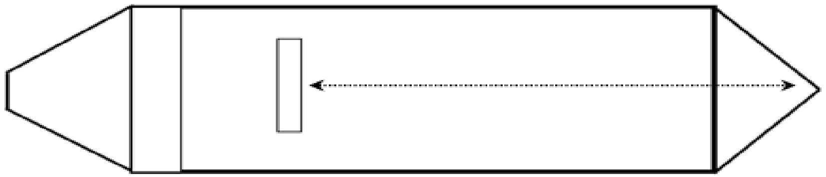
- Maximum allowable wind speed at berthing/approaching to the facility: 14 m/s
- Non existence of a specific Mooring Plan

C.2 Oil handling operations

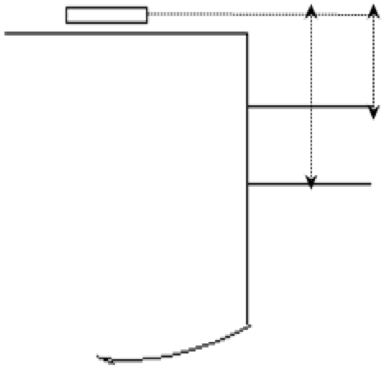
Manifold distance to bow

Maximum 30: 113m
31: 105 m
32: 140 m
33: 138 m

Minimum N/A



Allowable manifold height above the waterline



Minimum N/A

Maximum 4 m

Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 4
Maximum allowable discharge pressure at hoses/loading arms (bar)	12
Minimum allowable discharge pressure at hoses/loading arms (bar)	2
Normal discharge pressure at hoses/loading arms (bar)	3
Maximum flow rate (m^3/hour)	250
Minimum flow rate (m^3/hour)	50
Maximum temperature of oil during transfer (^0C)	90

- Availability of reducers/connections in the facility

No

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

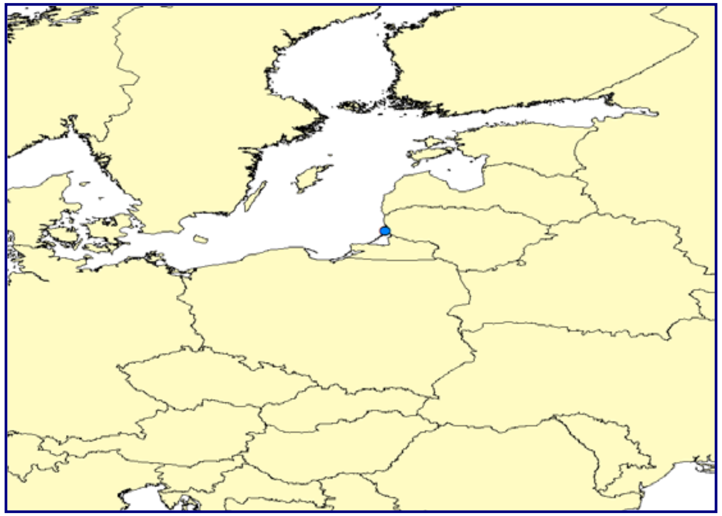
Closed discharging operations are required.

1.4 SC Klaipedos Nafta

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Baltic Sea**
Country	**Lithuania**
Port	**Klaipeda**
Facility	**SC Klaipedos Nafta**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS



A.1 Location of the facility

Latitude $55^{0}43'20"N$ Longitude $21^{0}05'40"E$

Jetties No 1 and No 2

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	SC Klaipedos Nafta
Telephone Number	+370 46391772
Fax Number	+370 46311399
Email Address	info@oil.lt
Address	Buriy g. 19, a/d/ 81, 91003 Klaipeda

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OILTHAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	7,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 - -
Long term capacity (m^3)	5,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

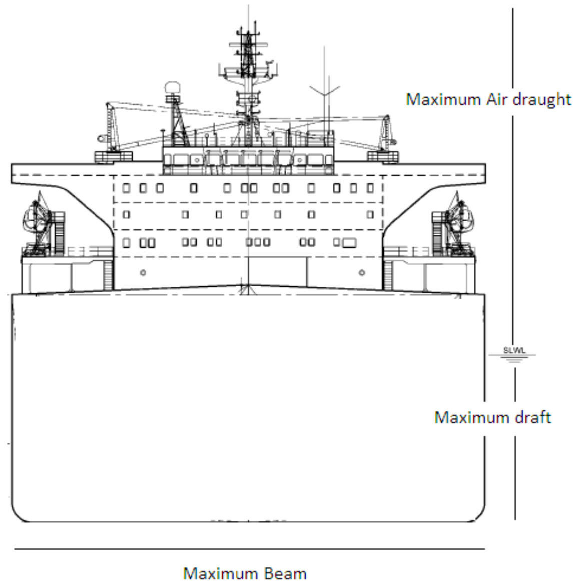
Maximum kinematic viscosity (cSt)	Liquid at 50^{o}C
Maximum sea water content (%)	10 PSU
Presence of emulsions	Acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	2%
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	2
Additional information on oil recovered that must be provided to the facility	An MSDS of the cargo or fuel spilled is sufficient

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

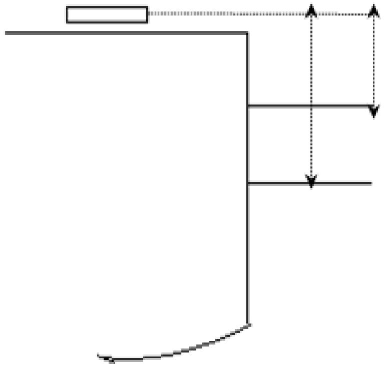
Name/Number of Berth	1	2
Depth of water alongside (m)	14	14
Maximum LOA (m)	250	250
Minimum LOA (m)	Not limited	Not limited
Maximum Beam (m)	36	36
Maximum Draft (m)	12.5	12.5
Maximum Displacement (tons)	Not limited	Not limited
Minimum Displacement (tons)	Not limited	Not limited
Maximum air draught (m)	8	8



C.2 Oil handling operations

The data below apply to both jetties No. 1 and No.2

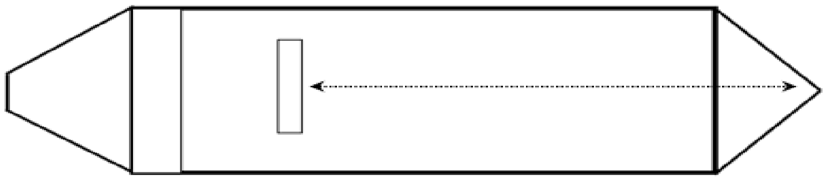
Allowable manifold height above the waterline



Minimum 1.6 m

Maximum 15.85 m

Manifold distance to bow Not limited



-

Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 12
Maximum allowable discharge pressure at hoses/loading arms (bar)	5
Minimum allowable discharge pressure at hoses/loading arms (bar)	3
Normal discharge pressure at hoses/loading arms (bar)	4
Maximum flow rate (m^3/hour)	700
Minimum flow rate (m^3/hour)	5
Maximum temperature of oil during transfer (^0C)	60

-

-
-

- **Availability of reducers/connections in the facility**

Number	From (inches)	To (inches)
1	12’’	6’’
2	16’’	12’’

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

Closed discharging operations are required.

1.5 Stena Loudden

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Baltic Sea**
Country	**Sweden**
Port	**Loudden**
Facility	**Stena Recycling AB**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

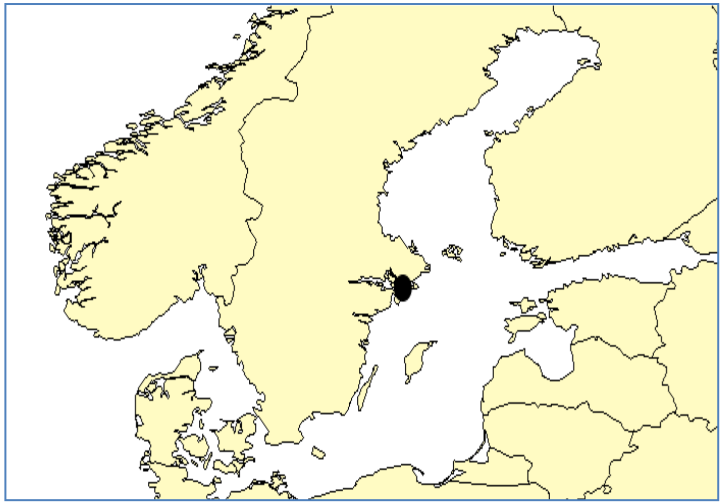
Stena Recycling AB Stockholm

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Stena Recycling AB
Telephone Number	+ 46 0104 45 72 65
Fax Number	-
Email Address	fredrik.laliberte@stenaoil.com
Address	Oljehamnen Loudden 115 27 Stockholm



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	6,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 - -
Long term capacity (m^3)	8,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

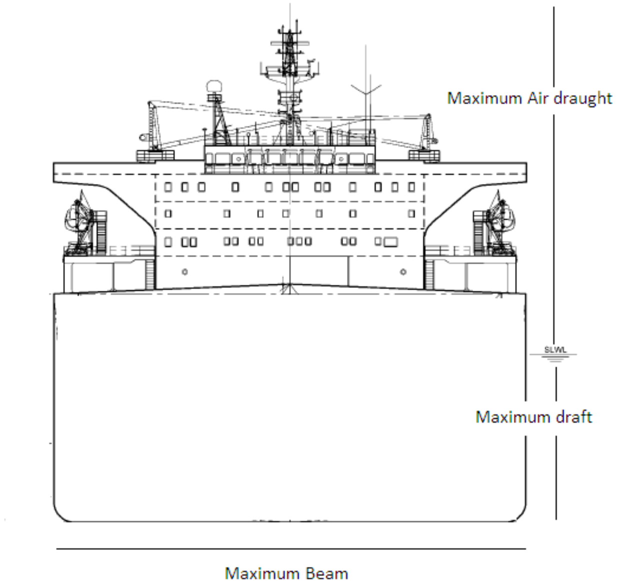
Maximum kinematic viscosity (cSt)	250 at 50°C
Maximum sea water content (%)	-
Presence of emulsions	Acceptable
Presence of debris	-
Maximum sulphur content (%)	Depend on the quantity of oil
Other restrictions	Depend on the quantity of oil

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	-
Additional information on oil recovered that must be provided to the facility	Pour point and temperature

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

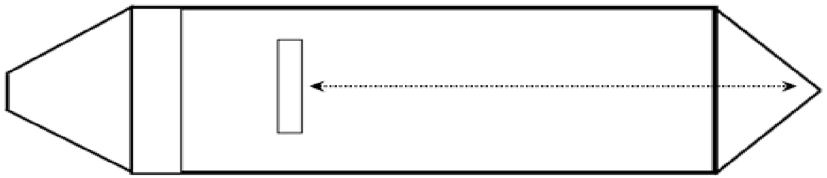
Name/Number of Berth	Stena Loudden
Depth of water alongside (m)	-
Maximum LOA (m)	180
Minimum LOA (m)	-
Maximum Beam (m)	-
Maximum Draft (m)	9
Maximum Displacement (tons)	-
Minimum Displacement (tons)	-
Maximum air draught (m)	-



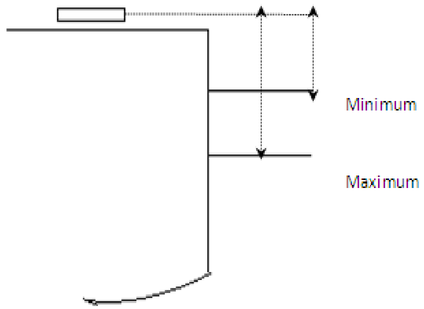
- Maximum allowable wind speed at berthing/approaching to the facility: -
- Existence of a specific Mooring Plan: -
- Other limiting factors: -
- Mooring details: -

C.2 Oil handling operations

Manifold distance to bow Not specified



Allowable manifold height above the waterline



Not specified

Number and diameter of loading arms/hoses through which oil will be handled (inches)	8”
Maximum allowable discharge pressure at hoses/loading arms (bar)	8
Minimum allowable discharge pressure at hoses/loading arms (bar)	-
Normal discharge pressure at hoses/loading arms (bar)	-
Maximum flow rate (m^3/hour)	300
Minimum flow rate (m^3/hour)	-
Maximum temperature of oil during transfer (^{0}C)	-

- Availability of reducers/connections in the facility

-

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

No

1.6 Oxelosunds Hamn

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Baltic Sea**
Country	**Sweden**
Port	**Oxelosund**
Facility	**Oxelosunds Hamn**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 58^{0}39.614' N Longitude 17^{0}07.341'E

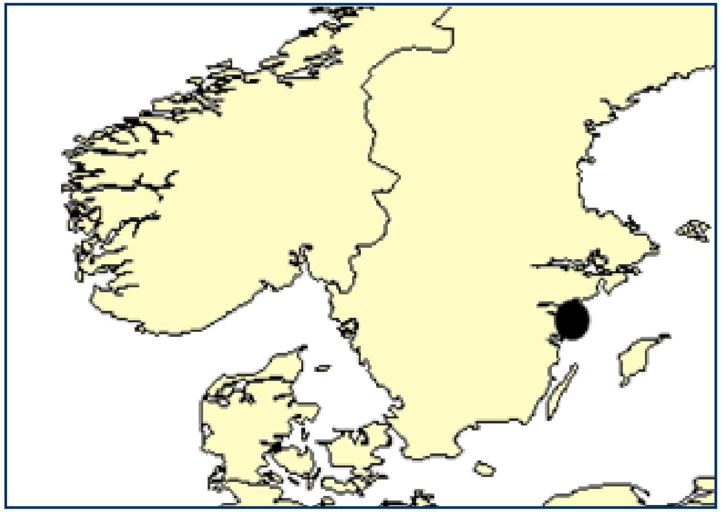
Oil Pier (11)

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Oxelosunds Hamn AB
Telephone Number	+46 155 258000
Fax Number	+46 155 34321
Email Address	port@oxhamn.se
Address	Box 26 613 21 Oxelosund



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	100,000 Storage of oil in dedicated rock caverns
Long term capacity (m^3)	100,000
Time needed for accepting a second discharge and quantity of recovered oil	A 2nd discharge can take place immediately making use of the rest available storage capacity
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

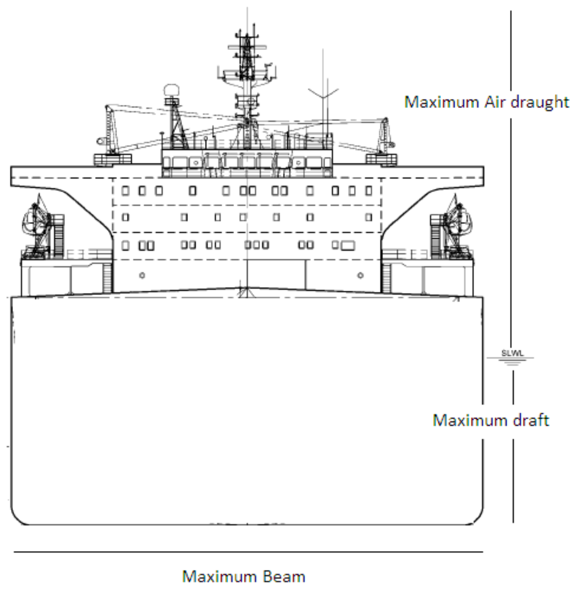
Maximum kinematic viscosity (cSt at 50^{0}C)	700 at 50^{o}C
Presence of emulsions	Not acceptable
Presence of debris	Not acceptable
Maximum density	0,98
Minimum flashpoint (^{0}C)	60
Other restrictions	Min. flash point 60^{o}C

Volume of sample that must be provided for a chemical analysis (liters)	5
Additional information on oil recovered that must be provided to the facility	An MSDS of the cargo or fuel spilled is sufficient as well as other details on the origin of the oil

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

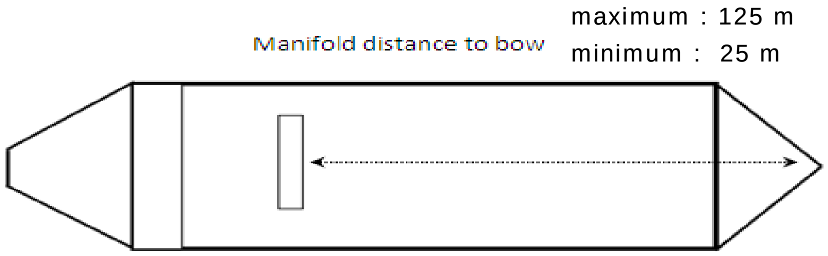
Name/Number of Berth	11
Depth of water alongside (m)	13.5
Maximum LOA (m)	250
Minimum LOA (m)	50
Maximum Beam (m)	43
Maximum Draft (m)	12.8
Maximum Displacement (tons)	-
Minimum Displacement (tons)	-
Maximum air draught (m)	-

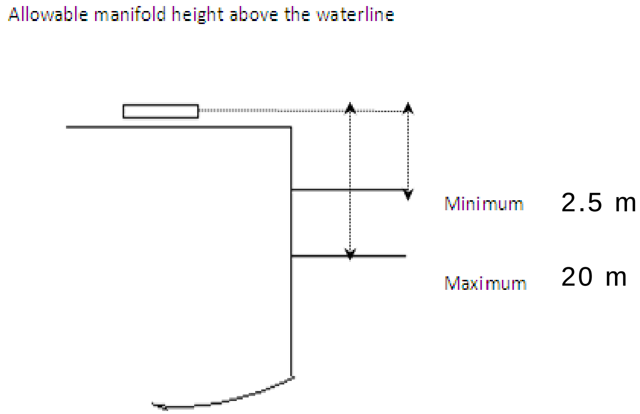


- Maximum allowable wind speed at berthing/approaching to the facility: Dep. of vessels size and manoeuvrability.

- Other limiting factors exist that could impact berthing or cause discharge operations to be discontinued: Arms disconnected at 20 m/s or earlier if necessary due to swell in unfavourable wind directions.
- A specific Mooring Plan does not exist and no other mooring details are provided.

C.2 Oil handling operations





Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 12” & 1 x 6”
Maximum allowable discharge pressure at hoses/loading arms (bar)	10
Minimum allowable discharge pressure at hoses/loading arms (bar)	-
Normal discharge pressure at hoses/loading arms (bar)	0
Maximum flow rate (m^3/hour)	2500 + 3500
Minimum flow rate (m^3/hour)	-
Maximum temperature of oil during transfer (^{0}C)	15 ^{o}C below flash point , 15 ^{o}C above floating point

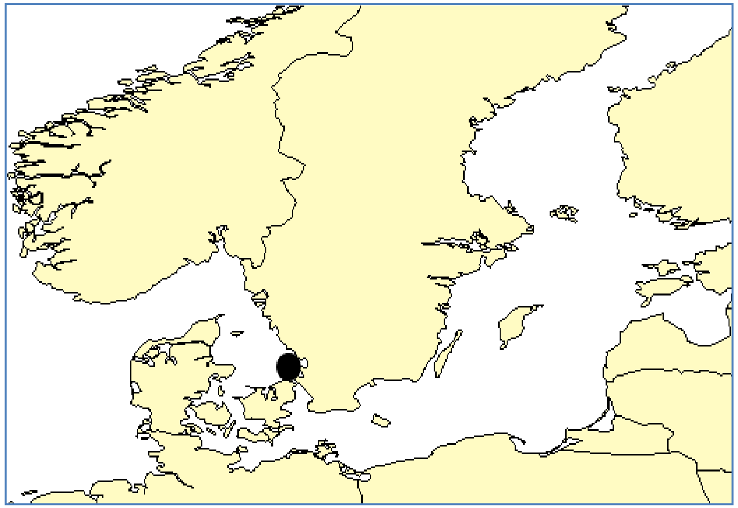
- **Availability of reducers/connections in the facility**
  No
- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**
  Not available
- **Availability of portable oil heating systems in the terminal**
  Not available
- **Other discharging related information**
  No

1.7 Stena Halmstad

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Baltic Sea**
Country	**Sweden**
Port	**Halmstad**
Facility	**Stena Recycling AB**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS



A.1 Location of the facility

Stena Recycling AB Halmstad

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Stena Recycling AB
Telephone Number	+ 46 035 22 08 38
Fax Number	-
Email Address	fredrik.laliberte@stenaoil.com
Address	Box 165 301 05 Halmstad

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	15,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 - -
Long term capacity (m^3)	20,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

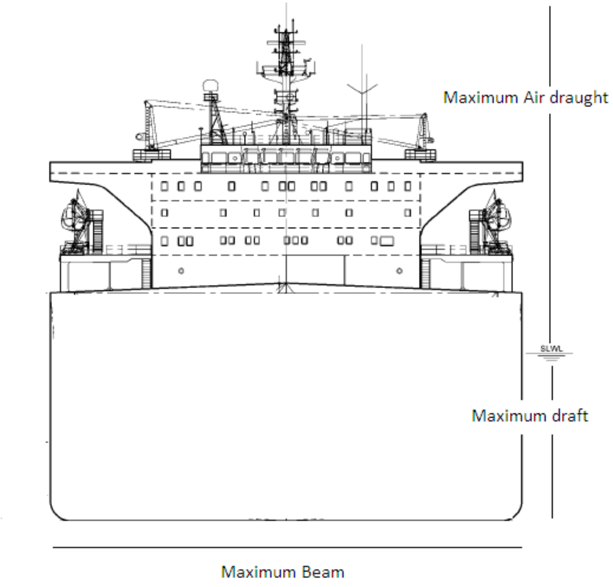
Maximum kinematic viscosity (cSt)	250 at 50°C
Maximum sea water content (%)	90%
Presence of emulsions	Acceptable
Presence of debris	-
Maximum sulphur content (%)	N/A
Other restrictions	No dispersants, surfactants, demulsifiers. Max salt content: 3%

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	0.25
Additional information on oil recovered that must be provided to the facility	Waste declaration, pour point and temperature.

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

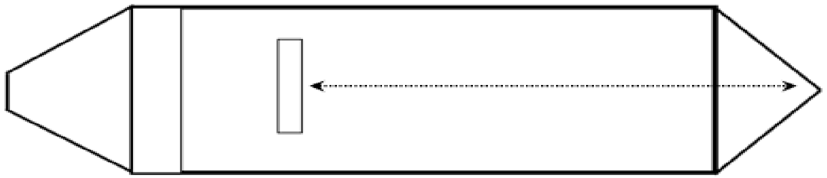
Name/Number of Berth	Stena Halmstad
Depth of water alongside (m)	-
Maximum LOA (m)	215
Minimum LOA (m)	-
Maximum Beam (m)	-
Maximum Draft (m)	9.7
Maximum Displacement (tons)	-
Minimum Displacement (tons)	-
Maximum air draught (m)	-



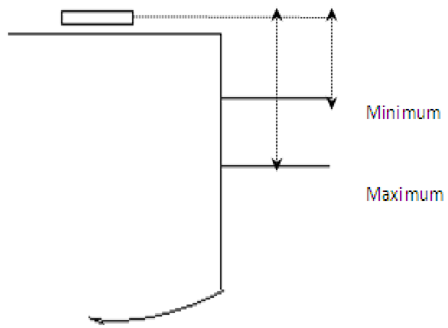
- Maximum allowable wind speed at berthing/approaching to the facility: -
- Existence of a specific Mooring Plan: -
- Other limiting factors: -
- Mooring details: -

C.2 Oil handling operations

Manifold distance to bow Not specified



Allowable manifold height above the waterline



Not specified

Number and diameter of loading arms/hoses through which oil will be handled (inches)	6”
Maximum allowable discharge pressure at hoses/loading arms (bar)	8
Minimum allowable discharge pressure at hoses/loading arms (bar)	-
Normal discharge pressure at hoses/loading arms (bar)	-
Maximum flow rate (m^3/hour)	300
Minimum flow rate (m^3/hour)	-
Maximum temperature of oil during transfer (^{0}C)	-

- Availability of reducers/connections in the facility

-

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

No

1.8 Stena Gothenburg

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Baltic Sea**
Country	**Sweden**
Port	**Gothenburg**
Facility	**Stena Recycling AB**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

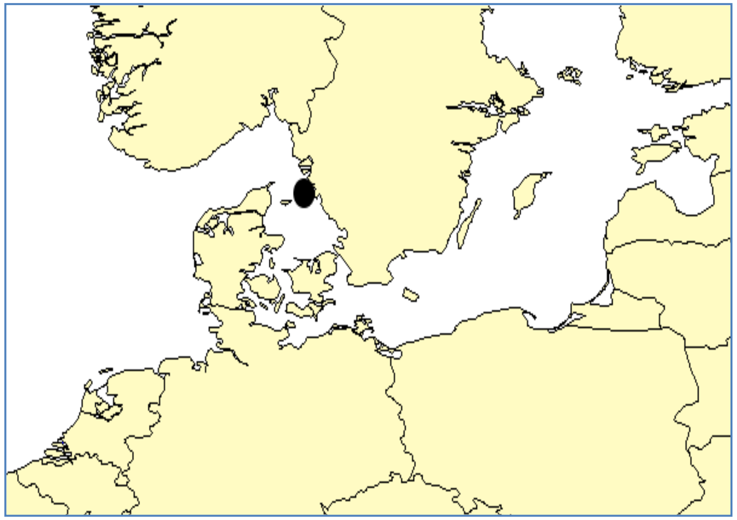
Stena Recycling AB Gothenburg

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Stena Recycling AB
Telephone Number	+ 46 010 445 00 00
Fax Number	-
Email Address	fredrik.laliberte@stenaoil.com
Address	Box 48047 418 21 Gothenburg



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	10,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 - -
Long term capacity (m^3)	15,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

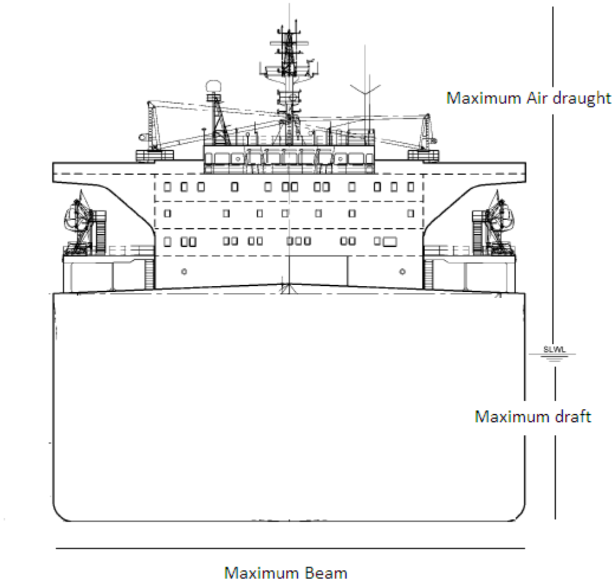
Maximum kinematic viscosity (cSt)	250 at 50°C
Maximum sea water content (%)	90%
Presence of emulsions	Acceptable
Presence of debris	-
Maximum sulphur content (%)	N/A
Other restrictions	No dispersants, surfactants, demulsifiers. Max salt content: 3%

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	0.25
Additional information on oil recovered that must be provided to the facility	Waste declaration, pour point and temperature.

C. TECHNICAL INFORMATION ON THE FACILITY

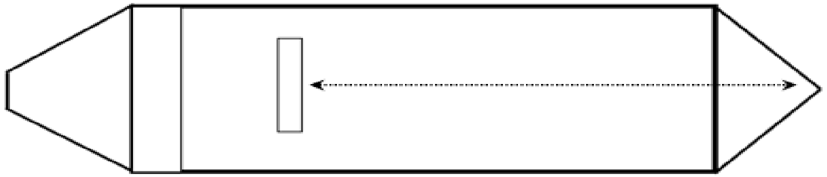
C.1 Berthing and Mooring

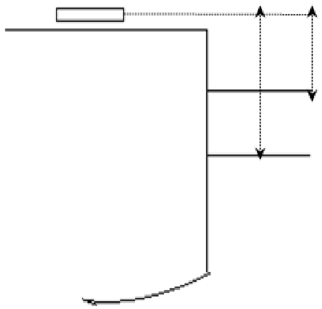
Name/Number of Berth	Stena Gothenburg
Depth of water alongside (m)	-
Maximum LOA (m)	200
Minimum LOA (m)	-
Maximum Beam (m)	-
Maximum Draft (m)	11.5
Maximum Displacement (tons)	-
Minimum Displacement (tons)	-
Maximum air draught (m)	-



- Maximum allowable wind speed at berthing/approaching to the facility: -
- Existence of a specific Mooring Plan: -
- Other limiting factors: -
- Mooring details: -

C.2 Oil handling operations





Number and diameter of loading arms/hoses through which oil will be handled (inches)	6”
Maximum allowable discharge pressure at hoses/loading arms (bar)	7
Minimum allowable discharge pressure at hoses/loading arms (bar)	-
Normal discharge pressure at hoses/loading arms (bar)	-
Maximum flow rate (m^3/hour)	300
Minimum flow rate (m^3/hour)	-
Maximum temperature of oil during transfer (^0C)	-

- **Availability of reducers/connections in the facility**
  -
- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**
  No
- **Availability of portable oil heating systems in the terminal**
  No
- **Other discharging related information**
  No

1.9 Fredericia Marine Terminal

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

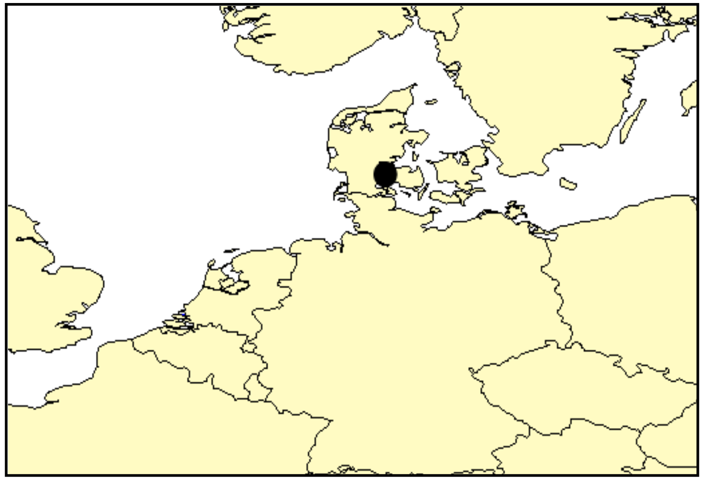
Marine Area	**Baltic Sea**
Country	**Denmark**
Port	**Fredericia**
Facility	**Fredericia Marine Terminal**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 55° 33,3 N   Longitude 09° 46,0 E

Shell Terminal



A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Benny Bladt / A/S Dansk Shell
Telephone Number	+45 7920 3750
Fax Number	N/A
Email Address	Benny.bladt@shell.com
Address	Egeskovvej 265, 7000 Fredericia, Denmark

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	7,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 72 hours 7,000
Long term capacity (m^3)	25,000
Number of vessels that can discharge at the facility at the same time	2

B.2 Restrictions on the composition of the recovered oil

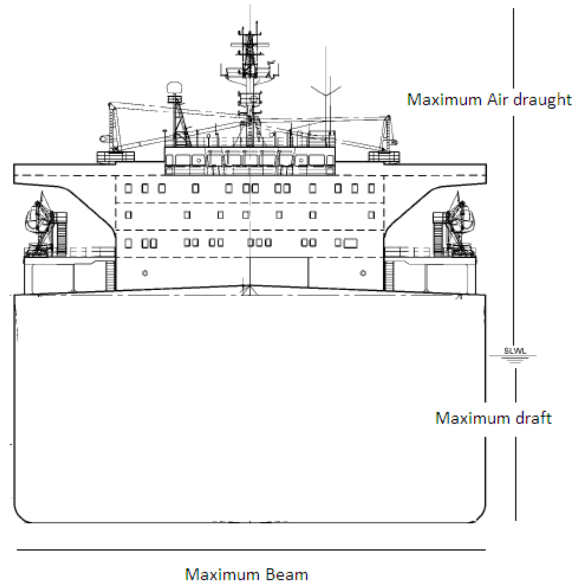
Maximum kinematic viscosity (cSt)	10 cSt @ 20°C
Maximum sea water content (%)	N/A
Presence of emulsions	Not acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	0.5 % W/W
Other restrictions	No chemicals and dispersants

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	5
Additional information on oil recovered that must be provided to the facility	MSDS

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

Name/Number of Berth	Jetty 41	Jetty 42
Depth of water alongside (m)	10.5	15
Maximum LOA (m)	175	275
Minimum LOA (m)	N/A	N/A
Maximum Beam (m)	N/A	50
Maximum Draft (m)	10	14
Maximum Displacement (tons)	30,000	110,000
Minimum Displacement (tons)	N/A	N/A
Maximum air draught (m)	N/A	N/A



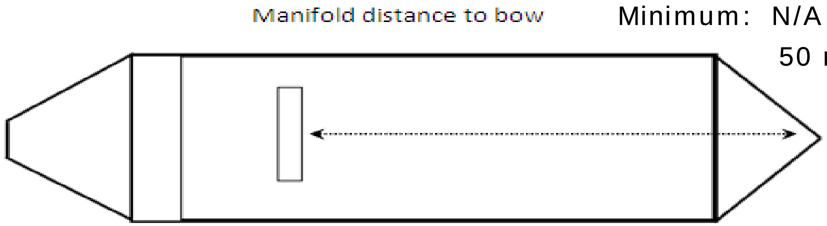
- Maximum allowable wind speed at berthing/approaching to the facility: 22 m/s
- Existence of a specific Mooring Plan
- Other limiting factors: Current < 2-4 knots
- Mooring details

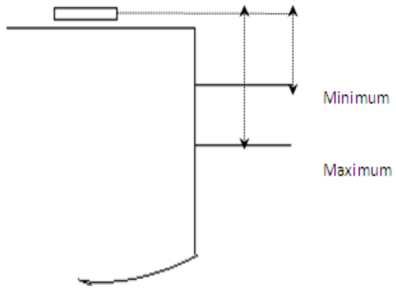
C.2 Oil handling operations

Allowable manifold height above the waterline

Maximum: N/A for both Jetties

Minimum: N/A for Jetty 41
50 m for Jetty 42





Jetty 41: 0.2 m
Jetty 42: 5 m

Jetty 41: 10.6 m
Jetty 42: 17.5 m

Number and diameter of loading arms/hoses through which oil will be handled (inches)	10”
Maximum allowable discharge pressure at hoses/loading arms (bar)	15
Minimum allowable discharge pressure at hoses/loading arms (bar)	3
Normal discharge pressure at hoses/loading arms (bar)	7
Maximum flow rate (m^3/hour)	Different limits
Minimum flow rate (m^3/hour)	N/A
Maximum temperature of oil during transfer (^{0}C)	N/A

- **Availability of reducers/connections in the facility**

  No

- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**

  No

- **Availability of portable oil heating systems in the terminal**

  No

- **Other discharging related information**

  Closed discharging operations are required. Inerting of cargo tanks of the discharging vessel is required (if available).

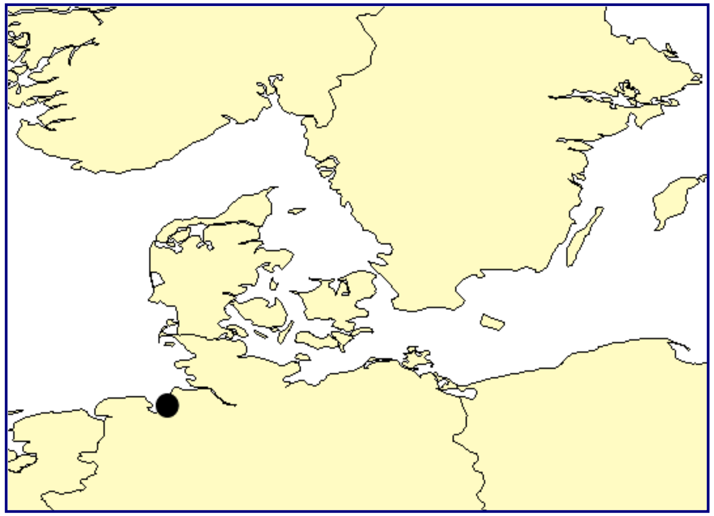
2 North Sea

2.1 Grave - Blexen

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**North Sea**
Country	**Germany**
Port	**Nordenham – Blexen**
Facility	**Grave - Blexen**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS



A.1 Location of the facility

Latitude 53° 31' 10.00'' N Longitude 8° 32' 27.87'' E

The facility is located on the west bank of the mouth of the Weser river on the Butjadingen peninsula on the coast of the North Sea.

A.2 Type of facility

Port installation, the tank farm of which is located in the northern industrial area of the town of Blexen and maintains a shipping connection for the storage of liquid cargoes (gas oil, bitumens and fuel oil) in tanks for transfer to ocean-going vessels and inland ships

A.3 Contact Details

Contact Point Name/Company name	Grave Entsorgungs – UND Bunkergesellschaft
Telephone Number	0049 4731 31330
Fax Number	0049 4731 39545
Email Address	TL-BLEXEN@PETROTANK.DE
Address	AM Deich 21c, 26954 Nordenham – Blexen

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity (m^3)	 20 days 1,000
Long term capacity (m^3)	3,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

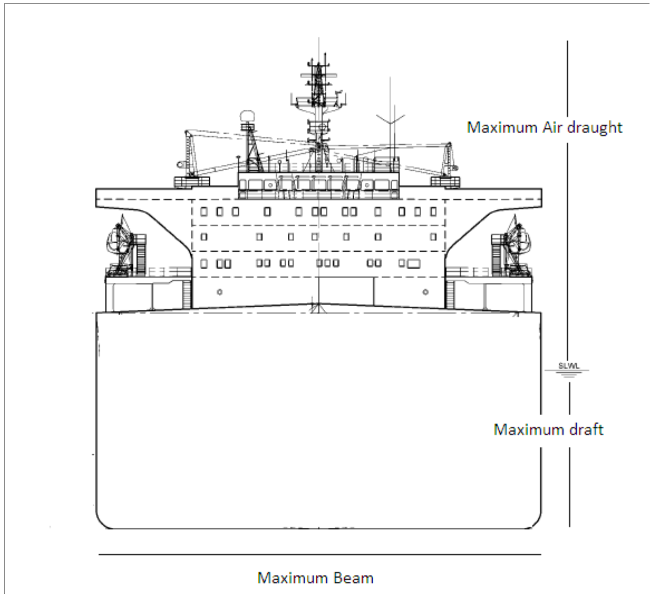
Maximum kinematic viscosity (cSt)	-
Maximum sea water content (%)	-
Presence of emulsions	-
Presence of debris	-
Maximum sulphur content (%)	-
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	5
Additional information on oil recovered that must be provided to the facility	MSDS of the cargo spilled

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

Name/Number of Berth	SEESCHIFFS BRUCKE
Depth of water alongside (m)	7.5
Maximum LOA (m)	170
Minimum LOA (m)	70
Maximum Beam (m)	30
Maximum Draft (m)	6.5
Maximum Displacement (tons)	-
Minimum Displacement (tons)	-



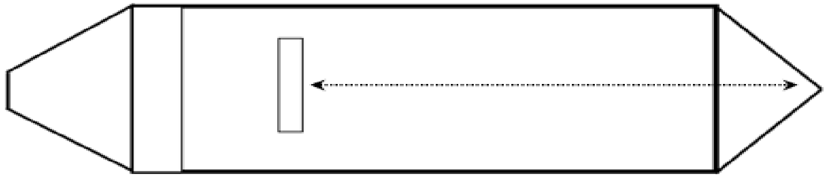
- Maximum allowable wind speed at berthing/approaching to the facility: -
- Other limiting factors that could impact berthing or cause discharge operations to be discontinued: -
- No mooring details are provided.

C.2 Oil handling operations

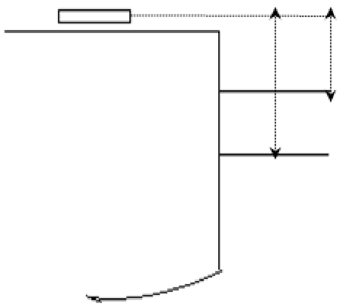
Maximum 85 m

Manifold distance to bow

Minimum 5 m



Allowable manifold height above the waterline



Minimum N/A

Maximum N/A

Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 Hose / 6
Maximum allowable discharge pressure at hoses/loading arms (bar)	5
Minimum allowable discharge pressure at hoses/loading arms (bar)	-
Normal discharge pressure at hoses/loading arms (bar)	5
Maximum flow rate (m^3/hour)	500
Minimum flow rate (m^3/hour)	500
Maximum temperature of oil during transfer (^{0}C)	50

- **Availability of reducers/connections in the facility**

Number	From (inches	To (inches)
1	6	8

- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**

  Not available

- **Availability of portable oil heating systems in the terminal**

  Not available

- **Other discharging related information**

  Closed discharging operations are not required.

  Inerting of cargo tanks of the discharging vessel is not required.

2.2 International Slop Disposal B.V.

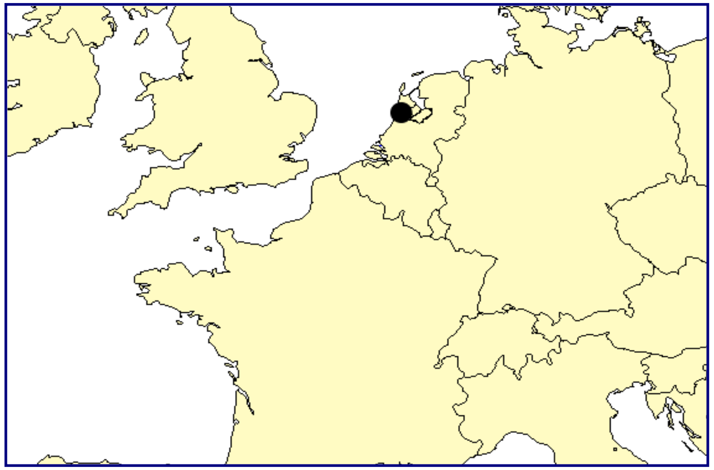
INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**North Sea**
Country	**The Netherlands**
Port	**Rotterdam**
Facility	**International Slop Disposal B.V.**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

In the Service Terminal Rotterdam at the 2nd Werkhaven in the Botlek area of the wider area of the Port of Rotterdam.



A.2 Type of facility

Port installation. In addition, under the company's management, there are 4 barges of reception apacity more than 1,000 m^3.

A.3 Contact Details

Contact Point Name/Company name	International Slop Disposal BV
Telephone Number	+31-181-291144
Fax Number	+31-181-291155
Email Address	isd@ngrp.com
Address	Torontostraat 20, 3197KN Botlek-Rotterdam

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	10,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity (m^3)	24 hours 15,000
Long term capacity (m^3)	25,000
Number of vessels that can discharge at the facility at the same time	4

B.2 Restrictions on the composition of the recovered oil

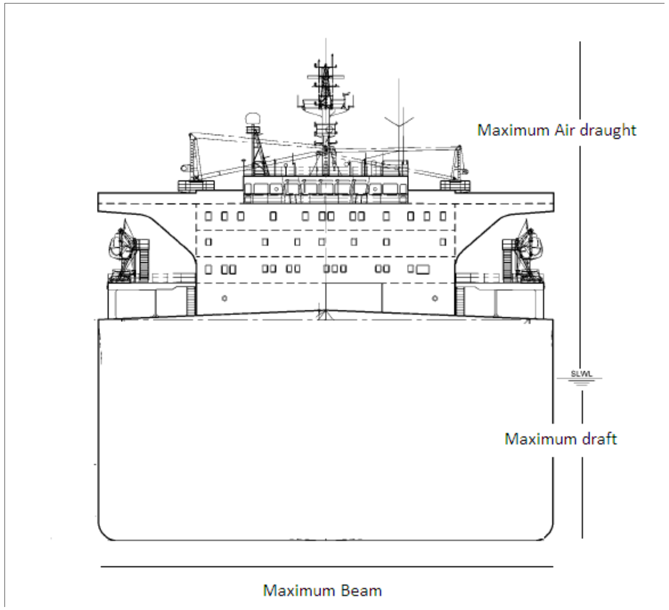
Maximum kinematic viscosity (cSt)	No restrictions
Maximum sea water content (%)	No restrictions
Presence of emulsions	Acceptable
Presence of debris	Acceptable
Maximum sulphur content (%)	No restrictions
Other restrictions	None

Need for sampling and chemical analysis	No
Volume of sample that must be provided for a chemical analysis (liters)	-
Additional information on oil recovered that must be provided to the facility	No

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

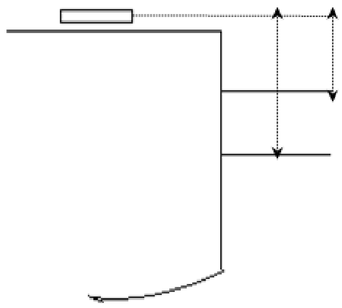
Name/Number of Berth	4
Depth of water alongside (m)	15
Maximum LOA (m)	250
Minimum LOA (m)	Not limited
Maximum Beam (m)	-
Maximum Draft (m)	14.5
Maximum Displacement (tons)	Not limited
Minimum Displacement (tons)	Not limited
Maximum air draught (m)	Not limited

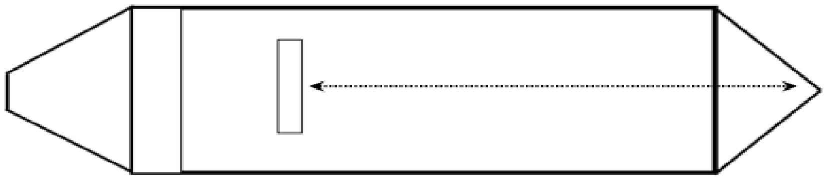


- Maximum allowable wind speed at berthing/approaching to the facility: No restrictions
- No other limiting factors exist that could impact berthing or cause discharge operations to be discontinued.
- A specific Mooring Plan does not exist and not other mooring details are provided.

C.2 Oil handling operations

The facility is equipped with quay-based, flexible connections and reducers to connect at any type of manifold without restrictions to distance from bow or other area of the discharging vessel.





Number and diameter of loading arms/hoses through which oil will be handled (cm/inches)	Flexible hoses are provided ranging from 4 to 10 inches
Maximum allowable discharge pressure at hoses/loading arms (bar)	-
Minimum allowable discharge pressure at hoses/loading arms (bar)	-
Normal discharge pressure at hoses/loading arms (bar)	-
Maximum flow rate (m^3/hour)	900
Minimum flow rate (m^3/hour)	-
Maximum temperature of oil during transfer (^{0}C)	80

- **Availability of reducers/connections in the facility**

An unlimited range of reducers/connections are available in the facility, provided through the sister company Fender Care.

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

There are multiple booster pumps available in the facility with indicative capacity of 450 m^3/hour.

- Availability of portable oil heating systems in the terminal

Portable heating systems of 6500 Kw are available in the facility.

- Other discharging related information

No closed discharging operations as well as no inerting of the cargo tanks of the discharging vessel are required.

2.3 Marpobel

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**North Sea**
Country	**Belgium**
Port	**Antwerp**
Facility	**Marpobel**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

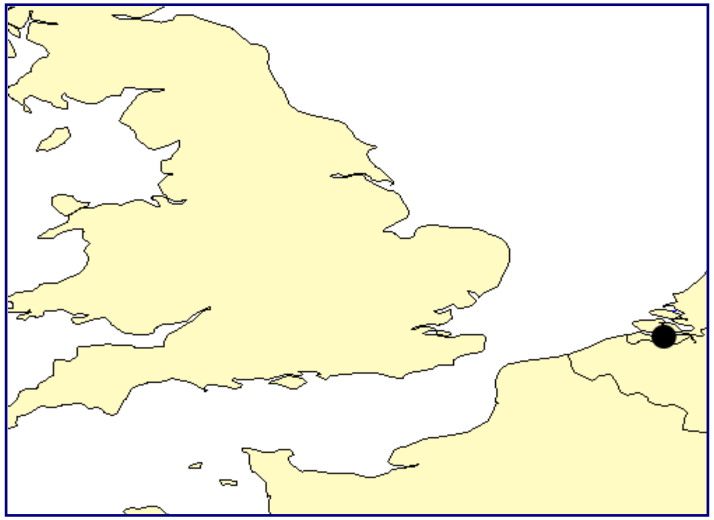
4e Havendok berth 261 – 271 Port of Antwerp

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Marpobel NV
Telephone Number	+320 35435959
Fax Number	+320 35435960
Email Address	sales@marpobel.com
Address	Blauwe Weg 7/Haven 26 B- 2030



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,600
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	24 hrs 1,600
Long term capacity (m^3)	1,000
Number of vessels that can discharge at the facility at the same time	2

B.2 Restrictions on the composition of the recovered oil

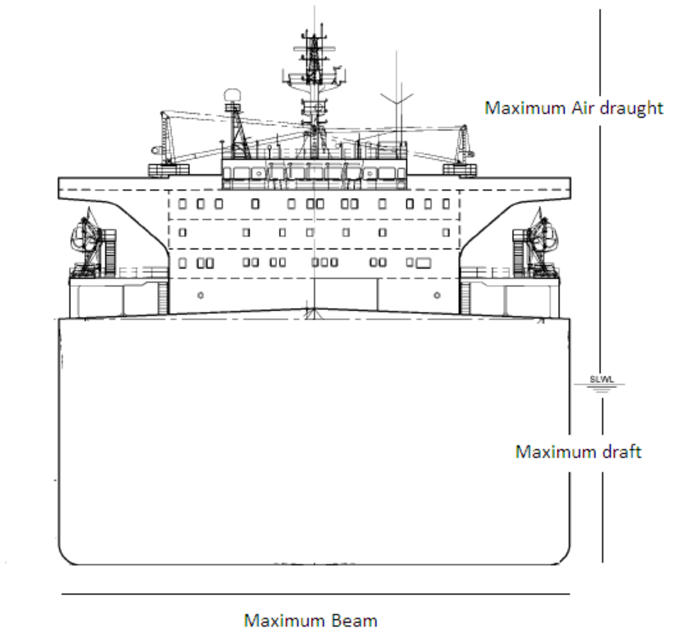
Maximum kinematic viscosity (cSt)	500 at 50°C
Maximum sea water content (%)	100
Presence of emulsions	Acceptable
Presence of debris	Max 3%
Maximum sulphur content	TBN
Other restrictions	No PCBs

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	20
Additional information on oil recovered that must be provided to the facility	An MSDS of the cargo or fuel spilled is sufficient

C. TECHNICAL INFORMATION ON THE FACILITY

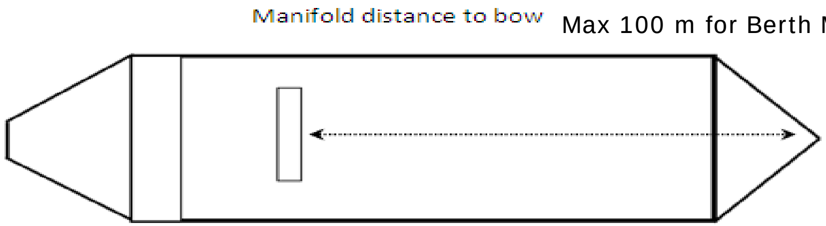
C.1 Berthing and Mooring

Name/Number of Berth	267	MAR N
Depth of water alongside (m)	6.6	8
Maximum LOA (m)	228	200
Minimum LOA (m)	-	-
Maximum Beam (m)	30	32
Maximum Draft (m)	6.6	8
Maximum Displacement (tons)	No restrictions	No restrictions
Minimum Displacement (tons)	No restrictions	No restrictions
Maximum air draught (m)	No restrictions	No restrictions

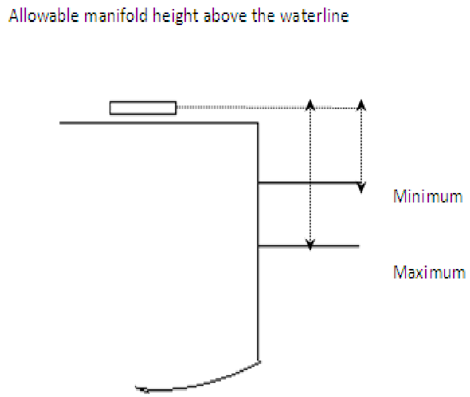


- No restrictions for maximum allowable wind speed at berthing/approaching to the facility
- Non existence of a specific Mooring Plan
- Mooring details: 6 mooring lines of +/-50 m

C.2 Oil handling operations



Max 114 m for Berth 267
Max 100 m for Berth MAR N



Minimum: No restrictions for both Berths

Maximum: No restrictions for both Berths

Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 6
Maximum allowable discharge pressure at hoses/loading arms (bar)	5
Minimum allowable discharge pressure at hoses/loading arms (bar)	1
Normal discharge pressure at hoses/loading arms (bar)	3
Maximum flow rate (m^3/hour)	300
Minimum flow rate (m^3/hour)	50
Maximum temperature of oil during transfer (^0C)	Must be pumpable

- Availability of reducers/connections in the facility

Number	From (inches)	To (inches)
5	8''	6''
5	8''	4''
5	6''	4''

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

Closed discharging operations are required

2.4 Hydropale

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**English Channel**
Country	**France**
Port	**Dunkerque**
Facility	**Hydropale**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 51°03’12”N   Longitude 02°20’30”E

Port 2721, 2721 route de l’ecluse Charles de Gaulle – 59140 Dunkerque

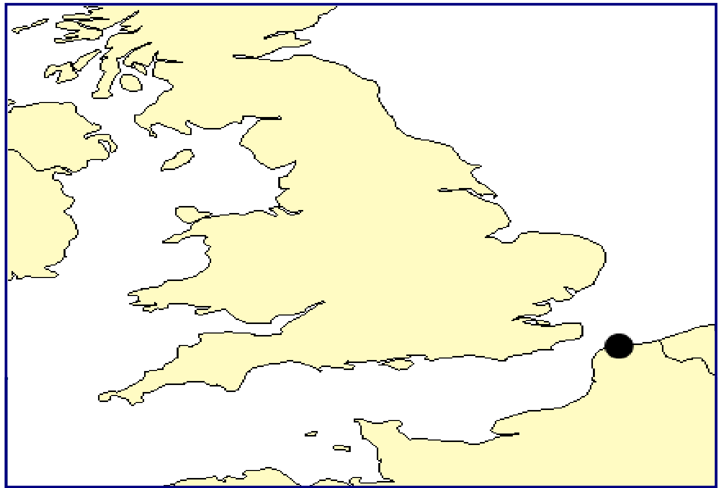
A.2 Type of facility

Port installation

Floating

A.3 Contact Details

Contact Point Name/Company name	Elisabeth Geldof / Hydropale
Telephone Number	+330 328289797
Fax Number	+330 328289798
Email Address	hydropale@sarpindustries.fr
Address	Port 2721, 2721 route de l’ecluse Charles de Gaulle 59140



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 3-5 days 1,000
Long term capacity (m^3)	1,000 every 5 days
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

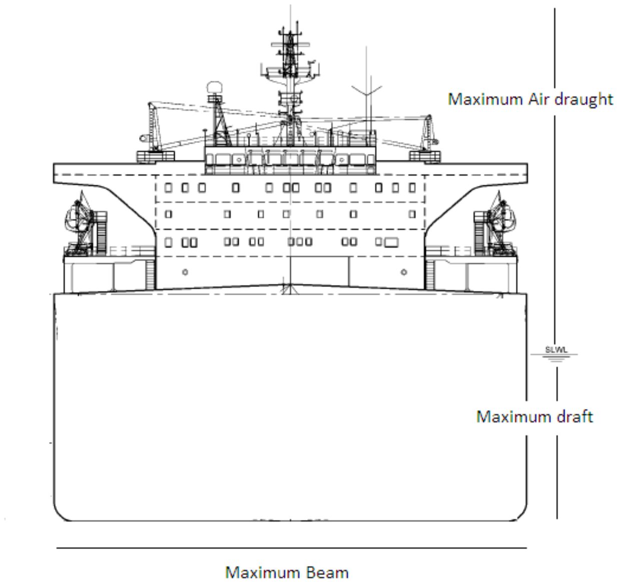
Maximum kinematic viscosity (cSt)	100 at 50°C
Maximum sea water content (%)	0-100%
Presence of emulsions	Acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	1%
Other restrictions	Flash point must not be less than 55°C

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	4
Additional information on oil recovered that must be provided to the facility	An MSDS of the cargo or fuel spilled is sufficient

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

Name/Number of Berth/Floating facility *	HYDROPALE 1	Barge NISSIMUS*
Depth of water alongside (m)	10	-
Maximum LOA (m)	80	57
Minimum LOA (m)	-	5
Maximum Beam (m)	15	-
Maximum Draft (m)	10	2.4
Maximum Displacement (tons)	Not applicable	600
Minimum Displacement (tons)	Not applicable	50
Maximum air draught (m)	Not applicable	-
Minimum Freeboard (m)	-	0.3
Other limiting factors	-	No



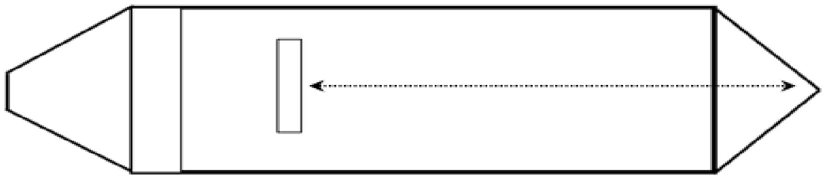
- Maximum allowable wind speed at berthing/approaching to the facility: Beaufort 6
- Non existence of a specific Mooring Plan
- Provision of fenders, hoses, cranes, etc.

- Other limiting factors
- Mooring details: 4 Mooring lines

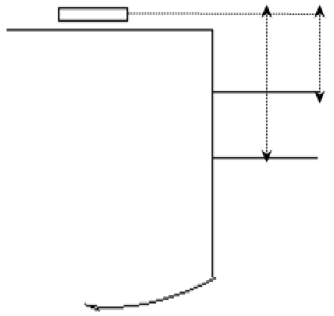
C.2 Oil handling operations

Manifold distance to bow

Hydropale 1
Max 40 m
Min 3 m



Allowable manifold height above the waterline



Minimum

Hydropale 1: 3 m
Barge Nissimus: 20 m

Maximum

Hydropale 1: 3 m
Barge Nissimus : 80 m

Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 4/6
Maximum allowable discharge pressure at hoses/loading arms (bar)	8
Minimum allowable discharge pressure at hoses/loading arms (bar)	2
Normal discharge pressure at hoses/loading arms (bar)	3
Maximum flow rate (m^3/hour)	100
Minimum flow rate (m^3/hour)	10
Maximum temperature of oil during transfer (^{0}C)	60

- **Availability of reducers/connections in the facility**

  No

- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**

  No

- **Availability of portable oil heating systems in the terminal**

  No

- **Other discharging related information**

  No

2.5 Flotta Oil Terminal

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

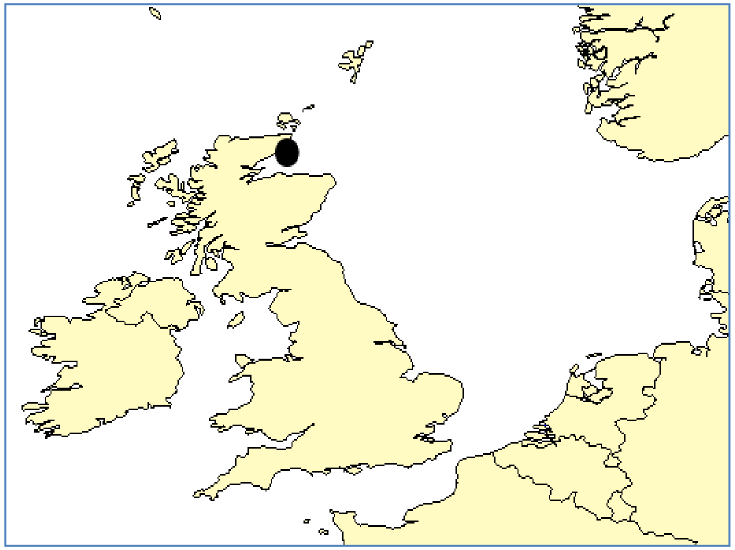
Marine Area	**North Sea**
Country	**United Kingdom**
Port	**Flotta, Orkney**
Facility	**Flotta Oil Terminal**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 58° 50.65 N Longitude 3° 07.00 W

Flotta, Orkney



A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Talisman Energy
Telephone Number	+44 (0) 1856 88 4140 or 4201
Fax Number	+ 44 (0) 1856 88 4222
Email Address	flotsup@talisman-energy.com or flomoor@talisman-energy.com
Address	Flotta Oil Terminal, Flotta, Orkney, KW163NP

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	Unable to confirm Unable to confirm
Long term capacity (m^3)	Depends on tank availability
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

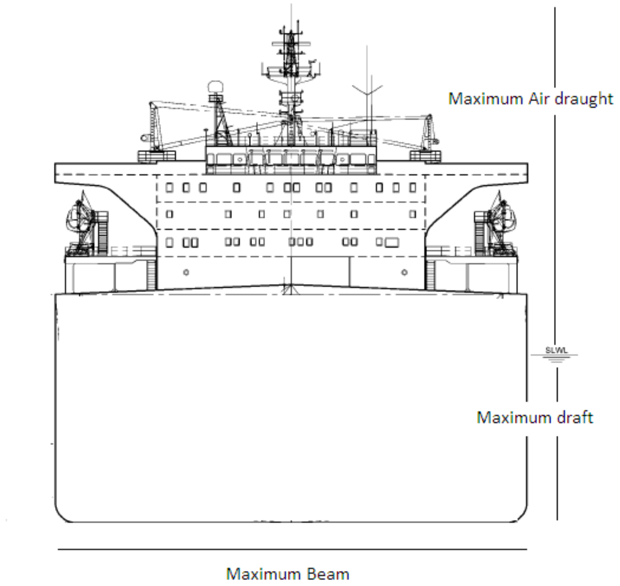
Maximum kinematic viscosity (cSt)	180 at 50°C
Maximum sea water content (%)	N/A
Presence of emulsions	Acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	1 %
Other restrictions	N/A

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	5
Additional information on oil recovered that must be provided to the facility	Material Data sheet and type, origin, density, H_2S, pour point

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

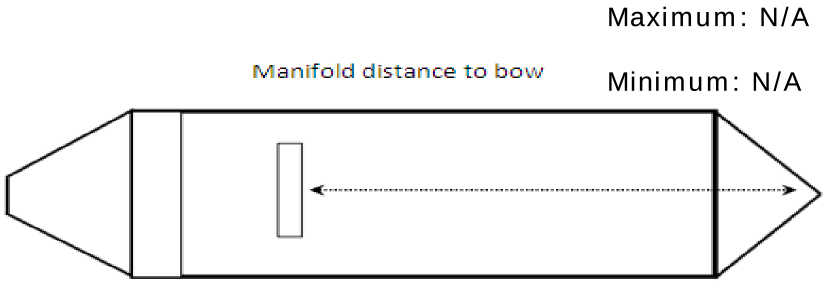
Name/Number of Berth	Jetty
Depth of water alongside (m)	20
Maximum LOA (m)	280
Minimum LOA (m)	50
Maximum Beam (m)	N/A
Maximum Draft (m)	18
Maximum Displacement (tons)	200,000
Minimum Displacement (tons)	N/A
Maximum air draught (m)	N/A

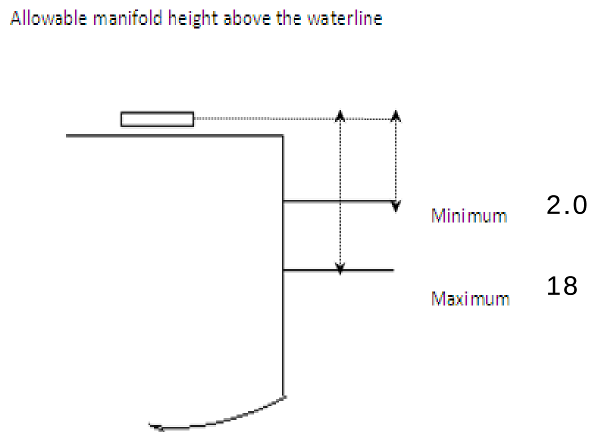


- Maximum allowable wind speed at berthing/approaching to the facility: 40 knots
- Non existence of a specific Mooring Plan

- Other limiting factors: -
- Mooring details: -

C.2 Oil handling operations





Number and diameter of loading arms/hoses through which oil will be handled (inches)	4 x 16”
Maximum allowable discharge pressure at hoses/loading arms (bar)	6
Minimum allowable discharge pressure at hoses/loading arms (bar)	N/A
Normal discharge pressure at hoses/loading arms (bar)	4
Maximum flow rate (m^3/hour)	4000 m^3 per arm
Minimum flow rate (m^3/hour)	N/A
Maximum temperature of oil during transfer (^{0}C)	N/A

- **Availability of reducers/connections in the facility**

  No
- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**

  No
- **Availability of portable oil heating systems in the terminal**

  No
- **Other discharging related information**

  Closed discharging operations are required. Inerting of cargo tanks of the discharging vessel is required.

3 Atlantic Region

3.1 Conoco Phillips Bantry Bay Terminal

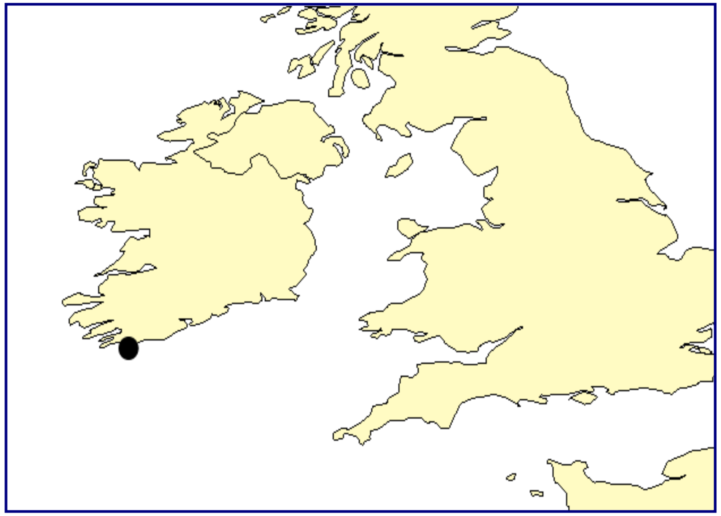
INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Atlantic Region**
Country	**Ireland**
Port	**Bantry Bay**
Facility	**Conoco Phillips Bantry Bay Terminal**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 51^0 40' N Longitude 09^0 32' W



A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Barry O' Driscoll
Telephone Number	+353 2720839
Fax Number	+353 2750282
Email Address	barry.odriscoll@conocophillips.com
Address	ConocoPhillips Bantry Bay Terminal Reenrour, Bantry, Co. Cork, Ireland

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	50,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 - -
Long term capacity (m^3)	50,000 – 100,000
Number of vessels that can discharge at the facility at the same time	2

B.2 Restrictions on the composition of the recovered oil

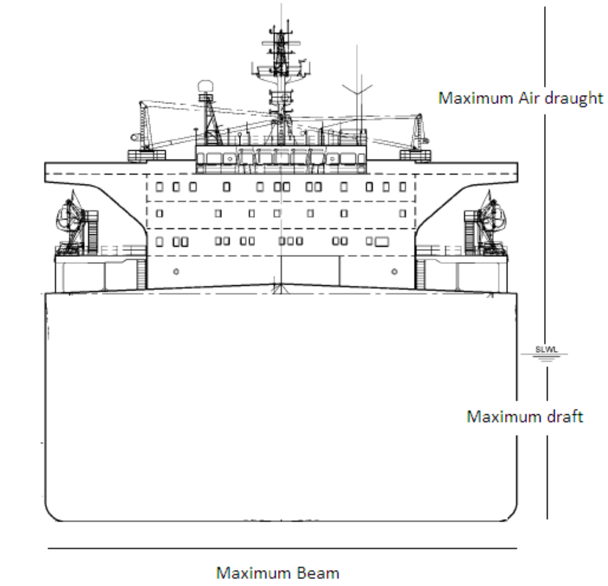
Maximum kinematic viscosity (cSt)	Not specified – oil must be capable of flowing at ambient temperatures
Maximum sea water content (%)	None
Presence of emulsions	Not acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	N/A
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	5
Additional information on oil recovered that must be provided to the facility	An MSDS of the cargo or fuel spilled is sufficient

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

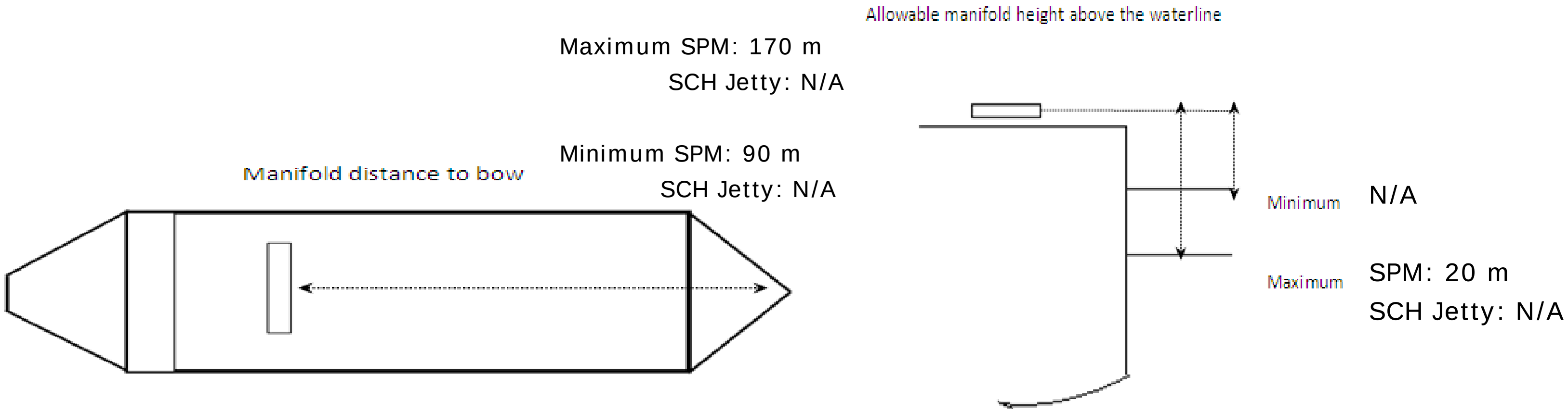
Name/Number of Berth	SPM	SCH Jetty
Depth of water alongside (m	30	7
Maximum LOA (m)	320	95
Minimum LOA (m)	180	N/A
Maximum Beam (m)	N/A	N/A
Maximum Draft (m)	23	6.5
Maximum Displacement (tons)	380,000	6,000
Minimum Displacement (tons)	N/A	N/A
Maximum air draught (m)	N/A	N/A



- Maximum allowable wind speed at berthing/approaching to the facility: 25 knots
- Existence of a specific mooring plan

- Other limiting factors: Heavy Swell

C.2 Oil handling operations



Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 16 at SPM / 2 x 6 at SCH Jetty
Maximum allowable discharge pressure at hoses/loading arms (bar)	7.5
Minimum allowable discharge pressure at hoses/loading arms (bar)	N/A
Normal discharge pressure at hoses/loading arms (bar)	7.5
Maximum flow rate (m^3/hour)	7,500 at SPM / 600 at SCH Jetty
Minimum flow rate (m^3/hour)	N/A
Maximum temperature of oil during transfer (^{0}C)	35

- Availability of reducers/connections in the facility

No

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

Closed discharging operations are required. Inerting of cargo tanks of the discharging vessel is required.

3.2 ConocoPhillips Whitegate Refinery

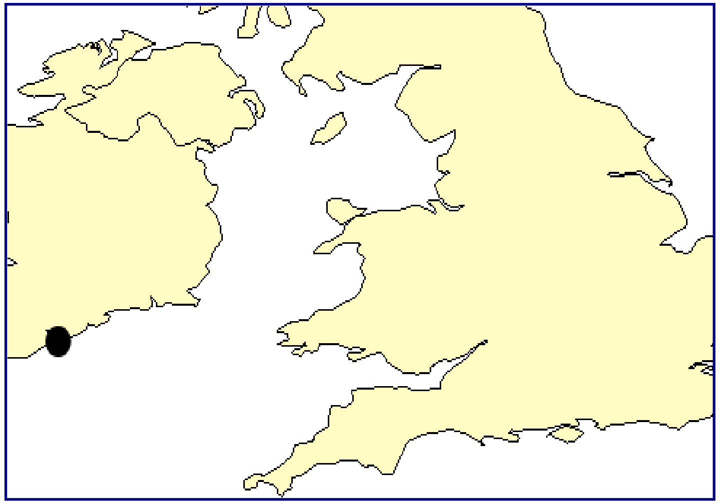
INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Atlantic Region**
Country	**Ireland**
Port	**Cork**
Facility	**ConocoPhillips Whitegate Refinery**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 51°50'N   Longitude 08°16'W



A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	John McCarthy
Telephone Number	+353 (0) 21 4622200
Fax Number	+353 (0) 21 4622222
Email Address	john.mccarthy@conocophillips.com
Address	ConocoPhillips Whitegate Refinery, Whitegate, Co.Cork, Ireland

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	7,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	6 days 7,000
Long term capacity (m^3)	1,500 per day
Number of vessels that can discharge at the facility at the same time	2 may berth at the same time but only 1 may discharge via the "slop receiving" line

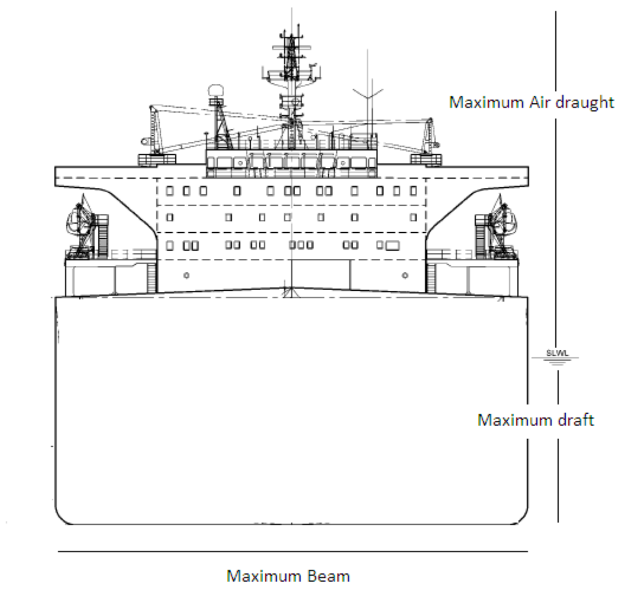
B.2 Restrictions on the composition of the recovered oil

Maximum kinematic viscosity (cSt)	Not specified – oil must be capable of flowing at ambient temperatures
Maximum sea water content (%)	100. No limit for oil-water ratio
Presence of emulsions	Not acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	No limit – will have to be notified of H_2S concentrations
Other restrictions	Notification of any sediments is required. Carbon black is not acceptable.

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	12 hours 5 liter sample
Additional information on oil recovered that must be provided to the facility	Type of oil. Density & flash point of spilled oil

C.1 Berthing and Mooring

Name/Number of Berth	1	2
Depth of water alongside (m)	13.4	9.75 (note depth in approaches 7)
Maximum LOA (m)	259	85.3
Minimum LOA (m)	N/A	N/A
Maximum Beam (m)	45	No max
Maximum Draft (m)	12.5	6.75
Maximum Displacement (tons)	150,000 – but limited by above limits	4,000 deadweight on arrival
Minimum Displacement (tons)	N/A	N/A
Maximum air draught (m)	No limit	No limit

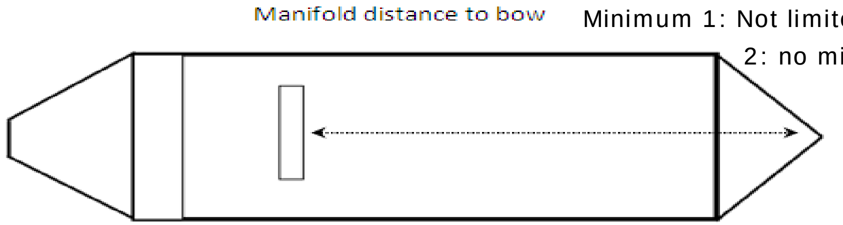


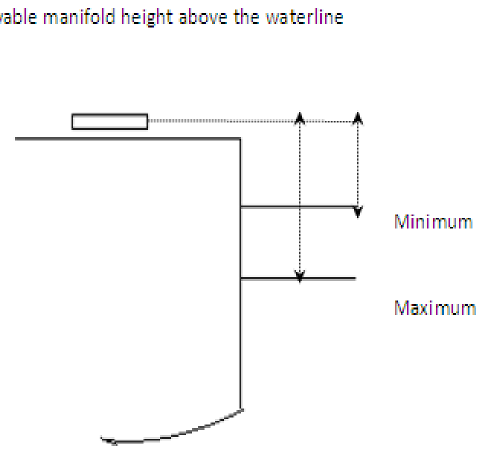
- Maximum allowable wind speed at berthing/approaching to the facility: 35 kts – depending on direction
- Other limiting factors: For No 2 berth – berthing only permitted during flood tide
- Existence of a specific Mooring Plan
- Provision of fenders, hoses, cranes, etc.

C.2 Oil handling operations

Maximum 1: Not limited
2: 47.5 m

Minimum 1: Not limited
2: no min.





Minimum
1: Not limited
2: No min.

Maximum
1: 15.24 m
2: 9 m

Number and diameter of loading arms/hoses through which oil will be handled (inches)	Berth 1: 1 x 6 or 1 x 10 Berth 2: 1 x 6
Maximum allowable discharge pressure at hoses/loading arms (bar)	10
Minimum allowable discharge pressure at hoses/loading arms (bar)	Head pressure of receiving tank
Normal discharge pressure at hoses/loading arms (bar)	-
Maximum flow rate (m^3/hour)	1,000
Minimum flow rate (m^3/hour)	No min
Maximum temperature of oil during transfer (^0C)	30

- Availability of reducers / connections in the facility

Number	From (inches)	To (inches)
4	6''	8''
4	6''	10''
4	6''	12''

Note: other reducers also available, e.g. from 3 or 4 inches to 6 inches

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

Closed discharging operations are required.

3.3 Falmouth Petroleum Ltd

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

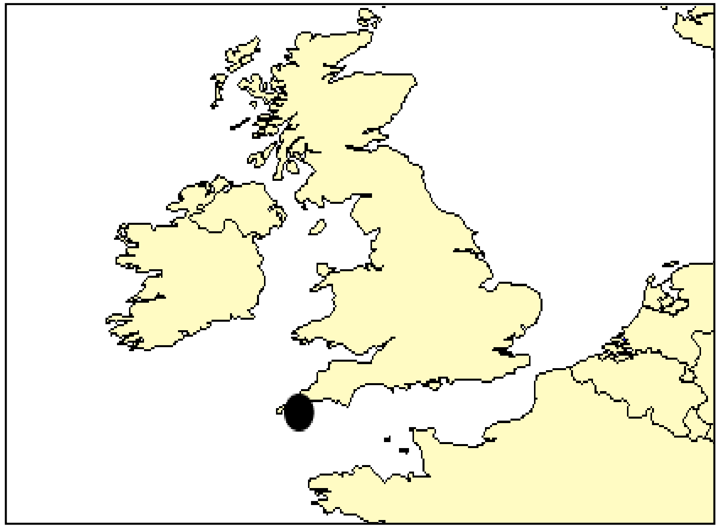
Marine Area	**Atlantic Region**
Country	**United Kingdom**
Port	**Falmouth**
Facility	**Falmouth Petroleum Ltd**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 50° 09.25 N Longitude 05° 03.16 W

Eastern Breakwater



A.2 Type of facilit

Port installation

A.3 Contact Details

Contact Point Name/Company name	Falmouth Petroleum Ltd
Telephone Number	+44 1326 211033
Fax Number	+44 1326 211539
Email Address	pdenmead@wfscorp.com
Address	Falmouth Petroleum Ltd, The Docks, Falmouth TR11 4NR

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 7 days 600
Long term capacity (m^3)	1,600
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

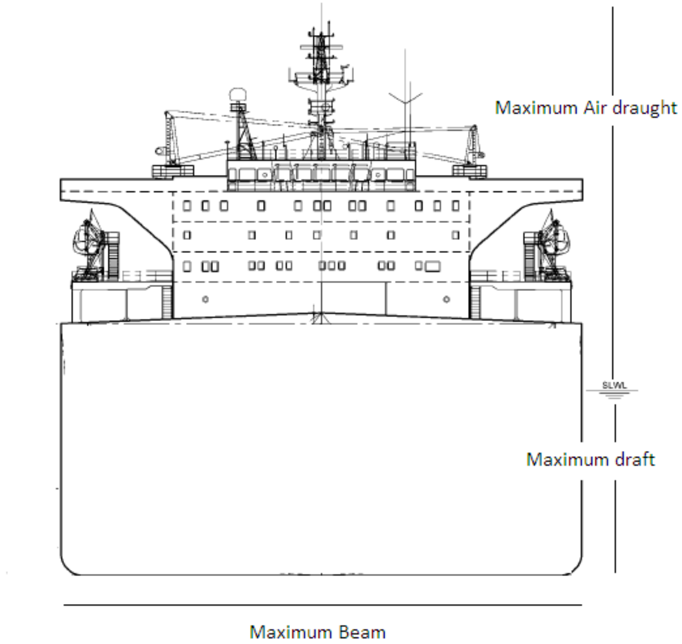
Maximum kinematic viscosity (cSt)	10,000 at 50°C
Maximum sea water content (%)	>90
Presence of emulsions	Acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	3.5
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	2
Additional information on oil recovered that must be provided to the facility	MSDS, flashpoint and pourpoint

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

Name/Number of Berth	Eastern Breakwater
Depth of water alongside (m	8
Maximum LOA (m)	160
Minimum LOA (m)	40
Maximum Beam (m)	N/A
Maximum Draft (m)	8
Maximum Displacement (tons)	28,000
Minimum Displacement (tons)	300
Maximum air draught (m)	N/A

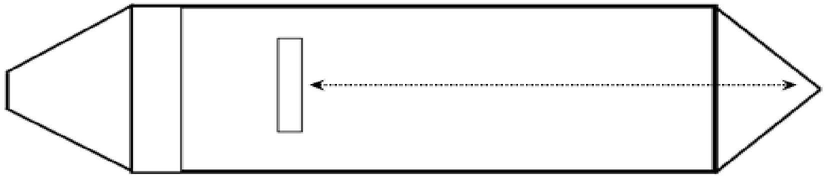


- Maximum allowable wind speed at berthing/approaching to the facility: 28 mph
- Other limiting factors: South easterly gales on Spring Tides
- Non Existence of a specific Mooring Plan

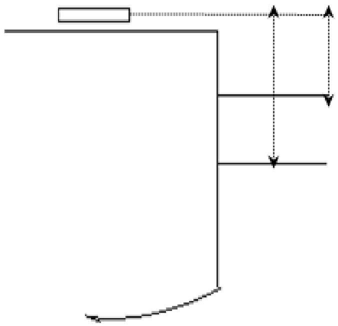
C.2 Oil handling operations

Maximum: 80 m

Manifold distance to bow Minimum: 20 m



Allowable manifold height above the waterline



Minimum N/A

Maximum N/A

Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 6
Maximum allowable discharge pressure at hoses/loading arms (bar)	8
Minimum allowable discharge pressure at hoses/loading arms (bar)	2
Normal discharge pressure at hoses/loading arms (bar)	6
Maximum flow rate (m^3/hour)	150
Minimum flow rate (m^3/hour)	30
Maximum temperature of oil during transfer (^{0}C)	70

- Availability of reducers/connections in the facility

Yes

Number	From (inches)	To (inches)
2	100mm/4''	150mm/6”

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

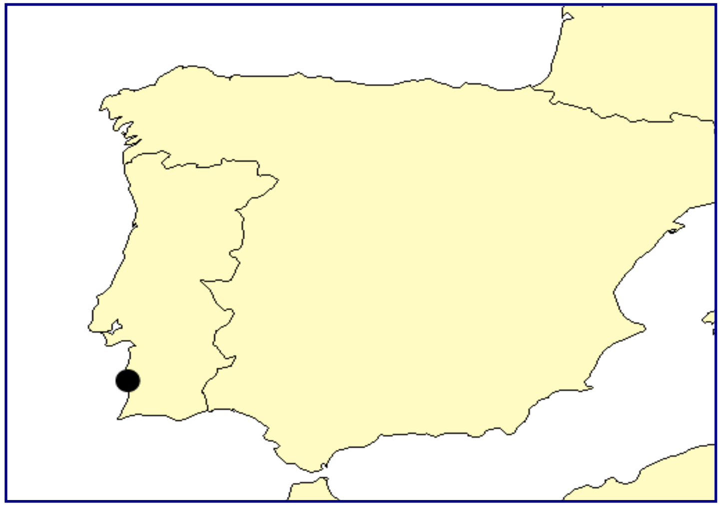
No

3.4 Eco-Oil-Tratamento de Aguas Contaminadas

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Atlantic Region**
Country	**Portugal**
Port	**Setubal**
Facility	**Eco-Oil-Tratamento de Aguas Contaminadas**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS



A.1 Location of the facility

Latitude 38^{0}28'24" N Longitude 08^{0}43'30" W

Terminal Tanquisado I Eco-Oil

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Nuno Matos
Telephone Number	+351 265729670 or +351 213 069 100
Fax Number	+351 265 729 679 or +351 213 069 196
Email Address	eco-oil@eco-oil.pt
Address	Estrada da Mitrena, km 19, Setubal, Portugal

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	2,500
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 24 hrs 1,000
Long term capacity (m^3)	5,000
Number of vessels that can discharge at the facility at the same time	2

B.2 Restrictions on the composition of the recovered oil

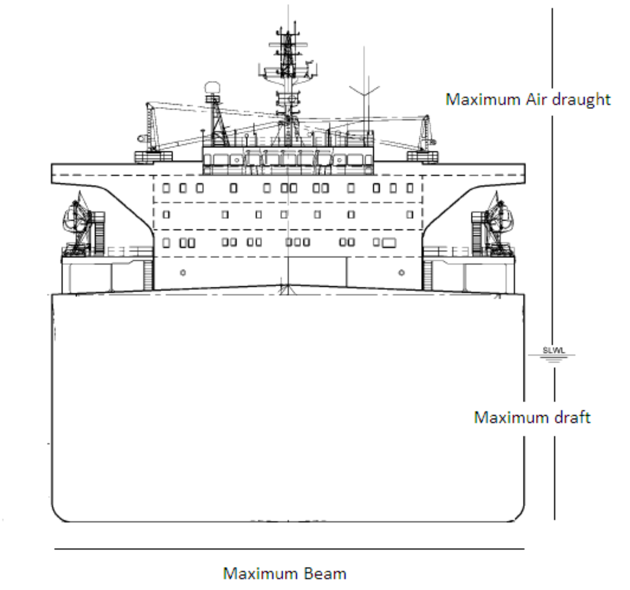
Maximum kinematic viscosity (cSt)	No restrictions
Maximum sea water content (%)	No restrictions
Presence of emulsions	No restrictions
Presence of debris	No restrictions
Maximum sulphur content (%)	No restrictions
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	2
Additional information on oil recovered that must be provided to the facility	-

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

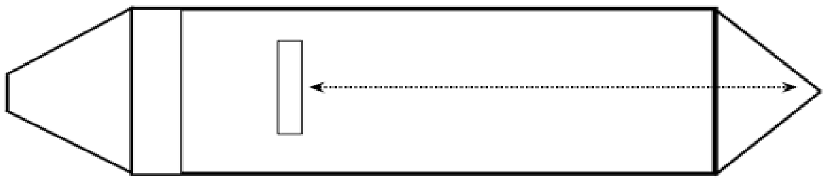
Name/Number of Berth	Eco-Oil
Depth of water alongside (m)	10
Maximum LOA (m)	380
Minimum LOA (m)	90
Maximum Beam (m	60
Maximum Draft (m)	7.5
Maximum Displacement (tons)	-
Minimum Displacement (tons)	-
Maximum air draught (m)	-

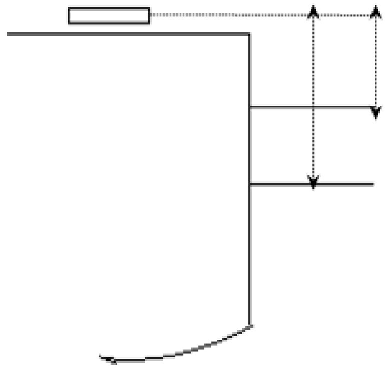


C.2 Oil handling operations

Allowable manifold height above the waterline

Manifold distance to bow Not specified





Minimum Not specified

Maximum Not specified

Number and diameter of loading arms/hoses through which oil will be handled (inches)	2 x 6 or 8
Maximum allowable discharge pressure at hoses/loading arms (bar)	7
Minimum allowable discharge pressure at hoses/loading arms (bar)	1
Normal discharge pressure at hoses/loading arms (bar)	3
Maximum flow rate (m^3/hour)	950
Minimum flow rate (m^3/hour)	-
Maximum temperature of oil during transfer (^{0}C)	60

- Availability of reducers/connections in the facility

Number	From (inches)	To (inches)
1	14''	8''
1	12''	8''
1	10''	8''

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

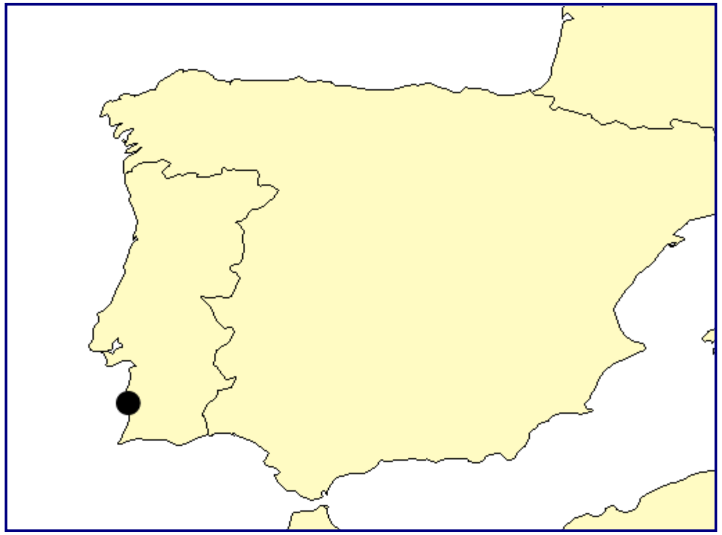
No

3.5 Oil Terminal

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Atlantic Region**
Country	**Portugal**
Port	**Sines**
Facility	**Oil terminal**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS



A.1 Location of the facility

Latitude 37^{0}57'N Longitude 08^{0}52'W

Oil terminal

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	CLT
Telephone Number	+351 1269860840
Fax Number	+351 1269860850
Email Address	Antonio.teixeira@galpenergia.com
Address	Apartado 233 Terminal de Graneis Liquidos de Sines 7520-901 Sines

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	25,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 24 hrs 40,000
Long term capacity (m^3)	40,000
Number of vessels that can discharge at the facility at the same time	1 or 2 depending on the berths availability

B.2 Restrictions on the composition of the recovered oil

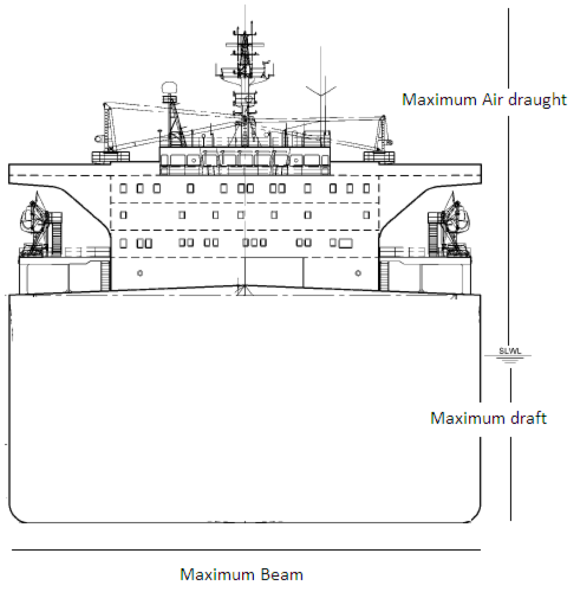
Maximum kinematic viscosity (cSt)	-
Maximum sea water content (%)	Any
Presence of emulsions	Acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	Any
Other restrictions	Without solvents and detergent

Need for sampling and chemical analysis	No
Volume of sample that must be provided for a chemical analysis (liters)	-
Additional information on oil recovered that must be provided to the facility	If possible, an MSDS of the cargo or fuel spilled is sufficient

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

Name/Number of Berth	PIER Nº 2	PIER Nº 3	PIER Nº 4	PIER Nº 5	PIER Nº 6	PIER Nº 7
Depth of water alongside (m)	28	17	18	17	10	10
Maximum LOA (m)	350	282	295	282	106	106
Minimum LOA (m)	240	135	135	110	70	70
Maximum Beam (m)	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Draft (m)	28.00	16.00	16.00	16.00	9.00	9.00
Maximum Displacement (tons)	350,000	135,000	150,000	135,000	-	-
Minimum Displacement (tons)	100,000	10,000	10,000	10,000	-	-
Maximum air draught (m)	28.00	18.00	18.00	18.00	9.00	9.00



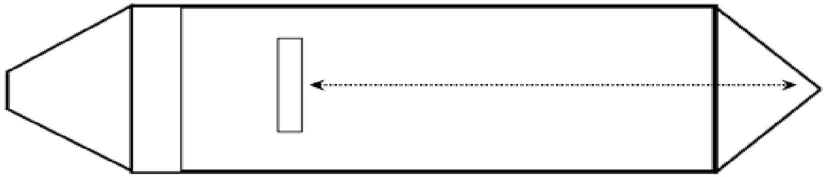
- Maximum allowable wind speed at berthing/approaching to the facility: 40 Km/h
- Other limiting factors: Reference values – wave – high 41.5 mts – Direction SSW to NNW – Wave period 9 sec.
- Existence of a specific mooring plan

C.2 Oil handling operations

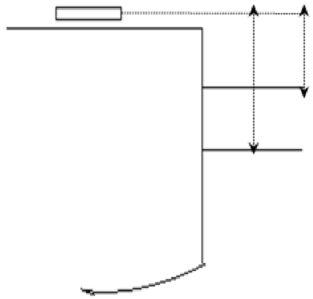
Manifold distance to bow

Max: Midship for piers 2-5
55.00 for piers 6,7

Min: Midship for all piers



Allowable manifold height above the waterline



Minimum
Pier 2: 5.6 m
Piers 3-5: 3.80 m
Piers 6,7: 2.50 m

Maximum
Pier 2: 28.00 m
Piers 3-5: 18.00 m
Piers 6,7: 9.00 m

Number and diameter of loading arms/hoses through which oil will be handled (inches)	16 x 6
Maximum allowable discharge pressure at hoses/loading arms (bar)	Arms 8 Kgs
Minimum allowable discharge pressure at hoses/loading arms (bar)	Back pressure 4/5 Kg/cm^2
Normal discharge pressure at hoses/loading arms (bar)	6 Kgs
Maximum flow rate (m^3/hour)	1,000
Minimum flow rate (m^3/hour)	400
Maximum temperature of oil during transfer (^{0}C)	Ambient

- **Availability of reducers/connections in the facility**
  Yes (not specified number and sizes)
- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**
  No
- **Availability of portable oil heating systems in the terminal**
  No
- **Other discharging related information**
  Cargo tanks of the discharging vessel must be inerted.

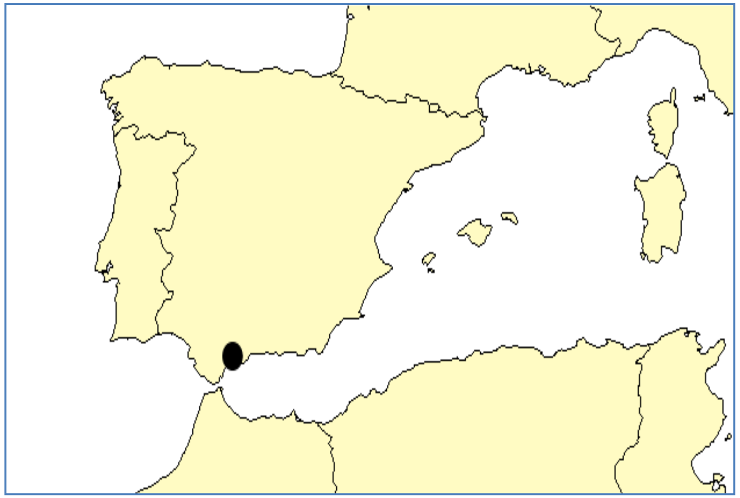
4 Mediterranean Sea

4.1 Cepsa Refineria “Gibraltar San Roque"

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Spain**
Port	**Algeciras**
Facility	**Cepsa Refineria “Gibraltar San Roque"**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS



A.1 Location of the facility

Latitude 36° 10’ 07” N Longitude 005 ° 23’ 09” W

Jetties Cepsa

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Cepsa – Refineria Gibraltar – San Roque
Telephone Number	+34 956023471 (24 hrs)
Fax Number	+34 956 023650
Email Address	capitanes.puerto@cepsa.com
Address	11360 San Roque – Cadiz - Spain

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	5,400
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 24 hours 2,000
Long term capacity (m^3)	14,700
Number of vessels that can discharge at the facility at the same time	2

The water must fulfill with:

- COT: 170 ppm max;
- pH: 5.5 to 9.5;
- Solids in suspension: 375 ppm max;
- Phenol: 15 ppm max;
- Sulfides: 2ppm max;
- Ammonium: 80 ppm max;
- Fluorides: 15 ppm max.

B.2 Restrictions on the composition of the recovered oil

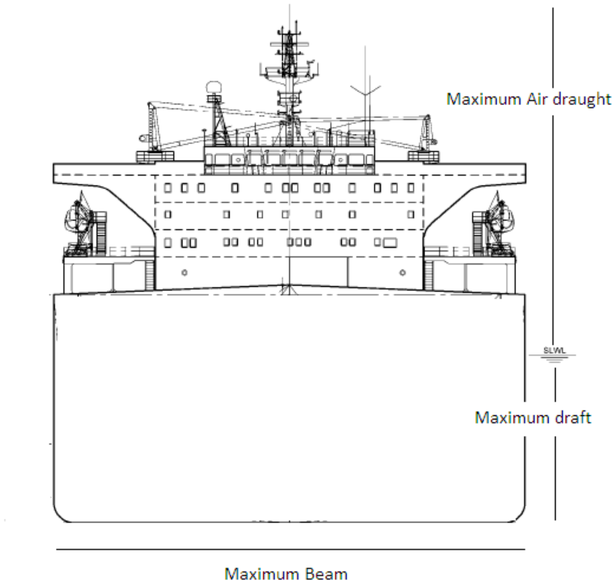
Maximum kinematic viscosity (cSt)	700 at 50°C
Maximum sea water content (%)	50%
Presence of emulsions	1% max
Presence of debris	Not acceptable
Maximum sulphur content (%)	N/A
Other restrictions	No dispersants or detergents

Need for sampling and chemical analysis	Oil & Greases, Hydrocarbons, COT, suspended solids, phenols, sulfides, ammonium, fluorides & sulphur to be analyzed
Volume of sample that must be provided for a chemical analysis (liters)	8
Additional information on oil recovered that must be provided to the facility	MSDS, if possible

C. TECHNICAL INFORMATION ON THE FACILITY

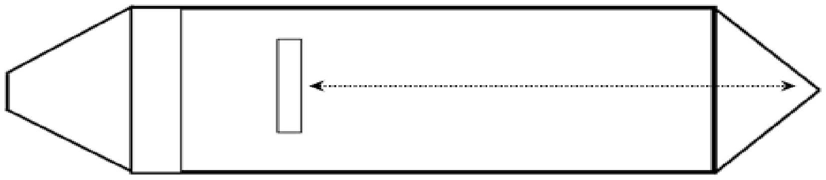
C.1 Berthing and Mooring

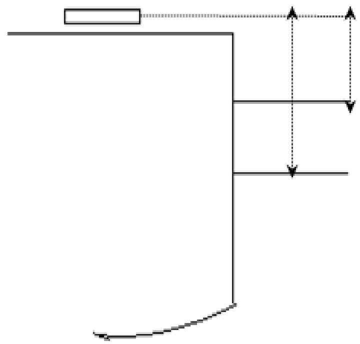
Name/Number of Berth	C	D	E
Depth of water alongside (m)	15	15	10
Maximum LOA (m)	241	125	125
Minimum LOA (m)	65	50	50
Maximum Beam (m)	N/A	N/A	N/A
Maximum Draft (m)	N/A	N/A	N/A
Maximum Displacement (tons)	20,000	10,000	4,000
Minimum Displacement (tons)	N/A	N/A	N/A
Maximum air draught (m)	N/A	N/A	N/A



- Maximum allowable wind speed at berthing/approaching to the facility: Pilot criteria approaching, Approx. max. 35 knots at jetty stay (depends of wind direction).
- Other limiting factors: Sea state
- Non existence of a specific Mooring Plan
- Mooring details: Minimum 8 lines

C.2 Oil handling operations





Number and diameter of loading arms/hoses through which oil will be handled (inches)	Hoses of 6” & 4”
Maximum allowable discharge pressure at hoses/loading arms (bar)	10
Minimum allowable discharge pressure at hoses/loading arms (bar)	2
Normal discharge pressure at hoses/loading arms (bar)	5
Maximum flow rate (m^3/hour)	10 bars
Minimum flow rate (m^3/hour)	N/A
Maximum temperature of oil during transfer (^{0}C)	65^{o}C

- Availability of reducers/connections in the facility

Yes

Number	From (mm/inches)	To (mm/inches)
1	12”	6”
1	10”	6”
1	8”	6”
1	6”	4”

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

Closed discharging operations are required.

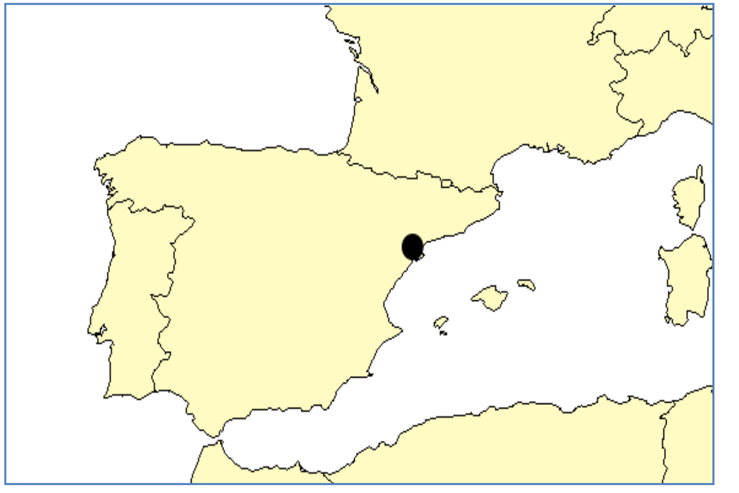
Inerting of cargo tanks of the discharging vessel is required.

4.2 Repsol Tarragona

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Spain**
Port	**Tarragona**
Facility	**Repsol Tarragona**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS



A.1 Location of the facility

Latitude 41° 5' N Longitude 001° 12,4' E

A.2 Type of facility

Fixed

A.3 Contact Details

Contact Point Name/Company name	Vicens Company
Telephone Number	+34 977-559801
Fax Number	+34 977 559807
Email Address	jvicensc@repsol.com
Address	Paseo de la Pineda (La Pineda)

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	5,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	1 week 5,000
Long term capacity (m^3)	N/A
Number of vessels that can discharge at the facility at the same time	Depends on the quantity for recovering

B.2 Restrictions on the composition of the recovered oil

Maximum kinematic viscosity (cSt)	API: 14.26, 1000 cSt (40^{O}C)
Maximum sea water content (%)	NIL
Presence of emulsions	Not acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	N/A
Other restrictions	No chemical products

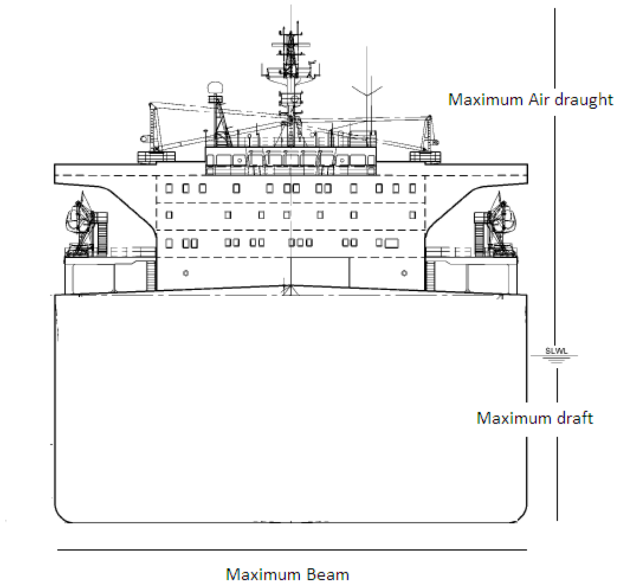
Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	1/discharge tank (e.g. 1ship with 10 cargo tanks=10 samples)
Additional information on oil recovered that must be provided to the facility	Certificate of cargo for discharging

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

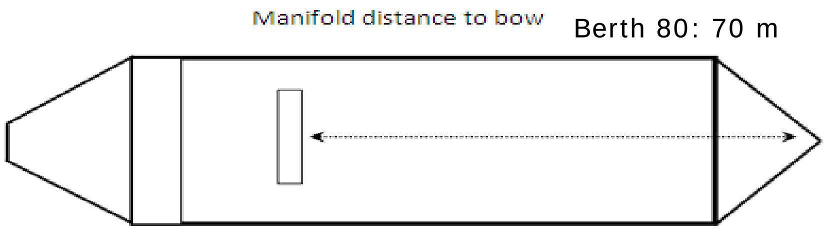
Name/Number of Berth	11	35	80	Tankers*
Depth of water alongside (m)	8.2	11.25	14.75	-
Maximum LOA (m)	155	230	290	290
Minimum LOA (m)	74	85	140	140
Maximum Draft (m)	8.2	11.25	14.75	14.75
Maximum Displacement (tons)	18,700	55,000	135,000	135,000
Minimum Displacement (tons)	-	-	-	18,700
Maximum air draught (m)	11.60	14.30	16.80	-
Minimum Freeboard (m)	-	-	-	1.7 - 1.8

* The abovementioned ship particulars refer to the floating installations of the facility.

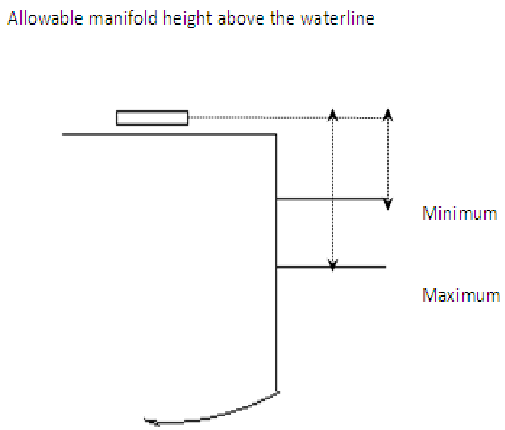


- Maximum allowable wind speed at berthing/approaching to the facility: 30 knots
- Non Existence of a specific Mooring Plan.
- Mooring details: tanker ships: 4-2-2 mooring lines / chemical and barges: 3-2-2 mooring lines
- Other limiting factors: max. wave height: 1.5 mts
- Provision of fenders, hoses, cranes, etc.

C.2 Oil handling operations



Mimimum:
Berth 11: 37 m
Berth 35: 43 m
Berth 80: 70 m



Berth 11, Tankers: 1.40 m
Berth 35: 2.30 m
Berth 80: 3.20 m

Berth 11: 11.60m
Berth 35: 14.30 m
Berth 80: 16.80 m
Tankers: 14.75 m

Number and diameter of loading arms/hoses through which oil will be handled (inches)	12” & 8”
Maximum allowable discharge pressure at hoses/loading arms (bar)	9
Minimum allowable discharge pressure at hoses/loading arms (bar)	3
Normal discharge pressure at hoses/loading arms (bar)	7
Maximum flow rate (m^3/hour)	1000
Minimum flow rate (m^3/hour)	25
Maximum temperature of oil during transfer (^{0}C)	70

- Availability of reducers/connections in the facility

Yes

Number	From (inches)	To (inches)
2	6”	8”
2	8”	12”
2	10”	12”

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

Closed discharging operations are required.

Inerting of cargo tanks of the discharging vessel is required.

4.3 Fos Deballasting Facility

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**France**
Port	**Port of Fos**
Facility	**Fos Deballasting Facility**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 43^{0} 24’46” N Longitude 04^{0} 53’78” E

A.2 Type of facility

Port installation – Deballasting Facility

A.3 Contact Details

Contact Point Name/Company name	FLUXEL SAS
Telephone Number	00 33 (4)42 40 63 19
Fax Number	00 33 (4)42 63 10
Email Address	frederic.fave@fluxel.fr / alexandre.bracaloni@fluxel.fr
Address	FLUXEL SAS rue Gay Lussac BP43 13117 LAVERA - FRANCE

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity (m^3)	 48 hours 1,000
Long term capacity (m^3)	5,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

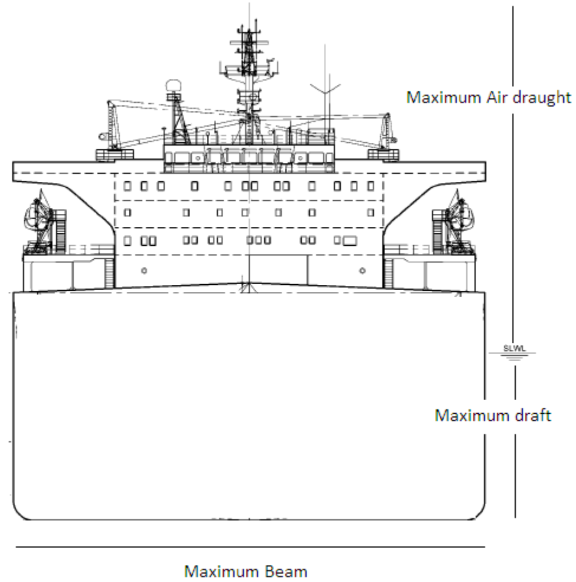
Maximum kinematic viscosity (cSt)	380 at 50°C
Maximum sea water content (%)	100
Presence of emulsions	Not acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	-
Other restrictions	Density < 0.99 No presence of chemical dispersants

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	3 samples for each tank (bottom, middle and top tank)
Additional information on oil recovered that must be provided to the facility	MSDS. Analysis would be advisable to describe how the original oil fated at sea

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

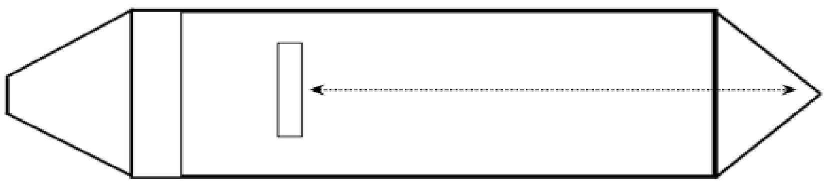
Name/Number of Berth	C2	0	0bis	1	2	5
Maximum LOA (m)	130	250	250	370	350	280
Minimum LOA (m)	-	-	-	-	-	-
Maximum Beam (m)	16	40	40	55	50	40
Maximum Draft (m)	7	13	12,8	20	17	14
Maximum Displacement (tons)	5,000	80,000	80,000	280,000	280,000	150,000
Minimum Displacement (tons)	-	-	-	-	-	-

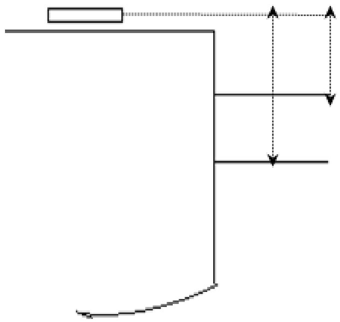


- Maximum allowable wind speed at berthing/approaching to the facility: 55 Knots
- Other limiting factors that could impact berthing or cause discharge operations to be discontinued: Abnormal weather and sea state conditions.
- No dedicated Mooring Plan is available. Berthing at the terminal is usually made starboard side alongside. The mooring arrangement consists of 4 headlines, 2 forward spring lines, 2 forward breast lines, 2 after spring lines, 2 after breast lines and 4 stern lines. In case of bad weather, instructions may be given to the vessel for strengthen the mooring, which remain in any case on Master's responsibility. Ship's gangway or shore accommodation ladder is requested, depending of pier allocated.

C.2 Oil handling operations

Manifold distances from bow and the water line are not specified





C2	0	0bis	1	2	5
-	18	18	25	25	21
-	1	1	3	3	1

Number and diameter of loading arms/hoses through which oil will be handled (inches)	8 to 16
Maximum allowable discharge pressure at hoses/loading arms (bar)	5
Minimum allowable discharge pressure at hoses/loading arms (bar)	1
Normal discharge pressure at hoses/loading arms (bar)	3 - 5
Maximum flow rate (m^3/hour)	500
Maximum temperature of oil during transfer (^{0}C)	55

- Availability of reducers/connections in the facility

No

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

Not available

- Availability of portable oil heating systems in the terminal

Not available

- Other discharging related information

Closed discharging operations are required. Cargo tanks of the discharging vessel must be inerted.

4.4 Port of Lavera

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**France**
Port	**Port of Lavera**
Facility	**Port of Lavera**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 43^0 23'49'' N Longitude 04^0 59'49'' E

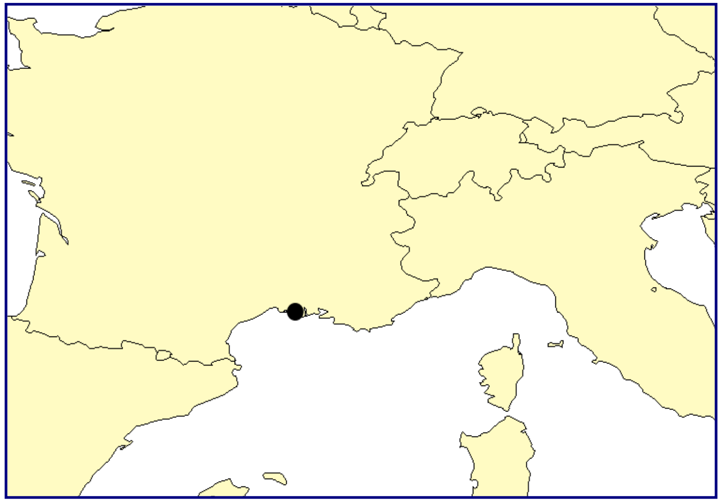
Part of the Marseilles – Fos port complex

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	FLUXEL SAS
Telephone Number	00 33 (4)42 40 63 19
Fax Number	00 33 (4)42 63 10
Email Address	frederic.fave@fluxel.fr / alexandre.bracaloni@fluxel.fr
Address	FLUXEL SAS rue Gay Lussac BP43 13117 LAVERA - FRANCE



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity (m^3)	 48 hours 1,000
Long term capacity (m^3)	2,500
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

Maximum kinematic viscosity (cSt)	380 at 50°C
Maximum sea water content (%)	100
Presence of emulsions	Not acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	-
Other restrictions	Density < 0.99 No presence of chemical dispersants

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	3 samples for each tank (bottom, middle and top tank)
Additional information on oil recovered that must be provided to the facility	MSDS. Analysis would be advisable to describe how the original oil fated at sea

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

Name/Number of Berth	K5	K6	K1	A4	A2	B	C	D	E	F
Maximum LOA (m)	100	100	120	200	120	250	250	250	250	250
Minimum LOA (m)	-	-	-	-	-	-	-	-	-	-
Maximum Beam (m)	12	12	12	35	19	40	40	40	40	40
Maximum Draft (m)	4.6	5.2	5	12	10.1	11.6	11	11.8	11.8	12.5
Maximum Displacement (tons)	4,000	4,000	4,000	40,000	30,000	40,000	40,000	50,000	50,000	70,000
Minimum Displacement (tons)	-	-	-	-	-	-	-	-	-	-

- Maximum allowable wind speed at berthing/approaching to the facility: 55 Knots
- Other limiting factors that could impact berthing or cause discharge operations to be discontinued: Abnormal weather and sea state conditions.

Vessels with LOA between 180 to 220 meters should be moored ‘bow out’ in order to facilitate a safe access to the vessel.

Minimum mooring arrangement required (as far as possible, without ropes):

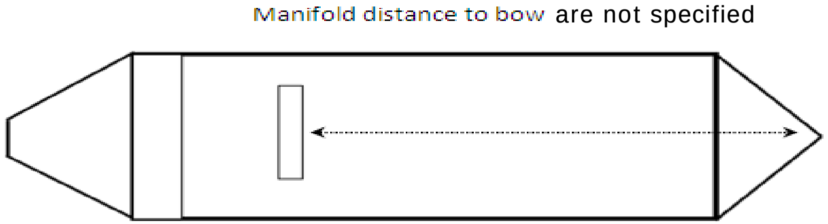
Vessel with LOA < 120 m : 3 headlines, 2 forward spring, 2 after spring and 3 stern lines.

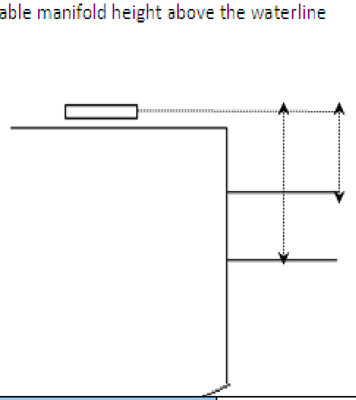
Vessel with LOA > 120 m : 3 headlines, 2 forward spring lines, 2 forward breast lines, 2 after breast lines, 2 after spring and 3 stern lines.

In case of bad weather, instructions may be given to the vessel for strengthen the mooring, which remain in any case on captain responsibility.

C.2 Oil handling operations

Manifold distance/height from bow and the water line are not specified





	K5	K6	K1	A4	A2	B	C	D	E	F
Minimum	0.5	0.5	0	2	2	1	3	1	1	1
Maximum	12	12	12	15	15	17	15.8	18	18	21

Number and diameter of loading arms/hoses through which oil will be handled (inches)	At berths K5 and K6 (6''), at berths K1, A2 and A4 (8''), at all other berths (12'')
Maximum allowable discharge pressure at hoses/loading arms (bar)	5
Minimum allowable discharge pressure at hoses/loading arms (bar)	1.5
Normal discharge pressure at hoses/loading arms (bar)	3 - 5
Maximum flow rate (m^3/hour)	500
Minimum flow rate (m^3/hour)	-
Maximum temperature of oil during transfer (^{0}C)	55

- **Availability of reducers/connections in the facility**

  No

- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**

  Not available

- **Availability of portable oil heating systems in the terminal**

  Not available

- **Other discharging related information**

  Closed discharging operations are required. Cargo tanks of the discharging vessel must be inerted.

4.5 Sepor Water Treatment Plant

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Italy**
Port	**La Spezia**
Facility	**Sepor Water Treatment Plant**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 44°10’ N Longitude 98°29’ E

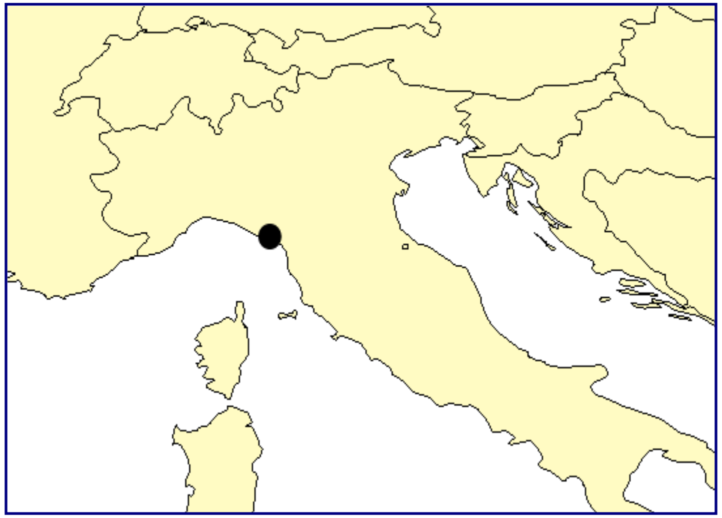
Molo Garibaldi

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Sepor S.p.A.
Telephone Number	+390 187511535
Fax Number	+390 187511545
Email Address	sepor@sepor.it
Address	Via Del Molo 64/b La Spezia (SP) 19126



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,200
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	7 days 600
Long term capacity (m^3)	30,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

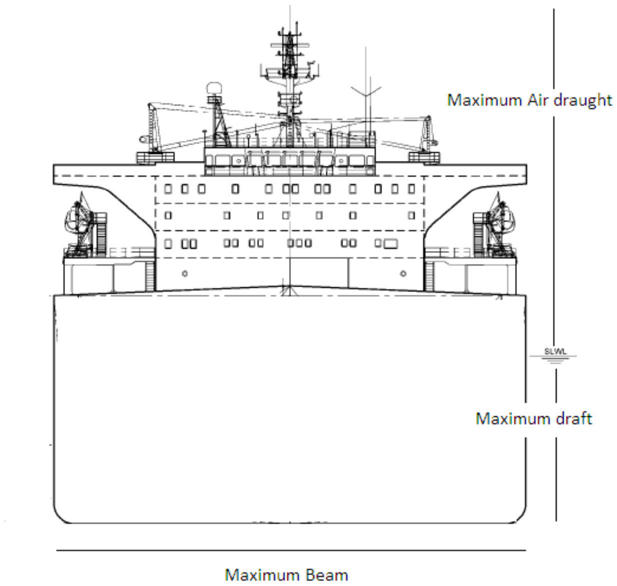
Maximum kinematic viscosity (cSt)	-
Maximum sea water content (%)	-
Presence of emulsions	-
Presence of debris	Max 1%
Maximum sulphur content (%)	-
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	At least 2
Additional information on oil recovered that must be provided to the facility	An MSDS of the cargo or fuel spilled is sufficient

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

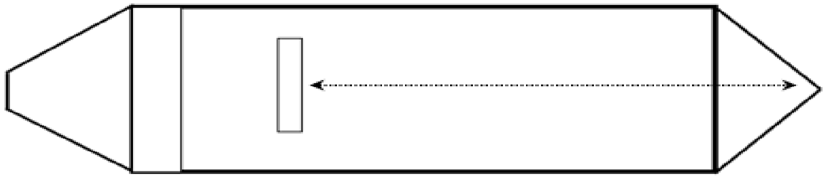
Name/Number of Berth	1
Depth of water alongside (m)	10 approx.
Maximum LOA (m)	80 approx.
Minimum LOA (m)	-
Maximum Beam (m)	-
Maximum Draft (m)	9.5 approx.
Maximum Displacement (tons)	-
Minimum Displacement (tons)	-
Maximum air draught (m)	-

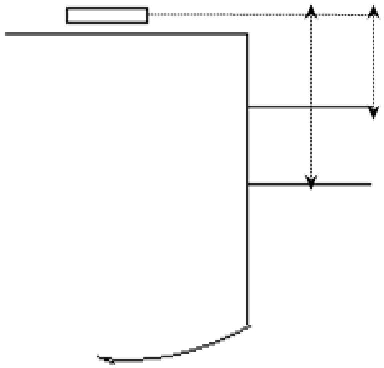


- Maximum allowable wind speed at berthing/approaching to the facility: 15 knots
- Non existence of a specific Mooring Plan
- Provision of fenders, hoses, cranes, etc.
- Other limiting factors: Bad Weather: Wind from SSW

C.2 Oil handling operations

Allowable manifold height above the waterline





Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 6
Maximum allowable discharge pressure at hoses/loading arms (bar)	4
Minimum allowable discharge pressure at hoses/loading arms (bar)	2
Normal discharge pressure at hoses/loading arms (bar)	3
Maximum flow rate (m^3/hour)	150
Minimum flow rate (m^3/hour)	10
Maximum temperature of oil during transfer (^{0}C)	60

- Availability of reducers/connections in the facility

Number	From (inches)	To (inches)
3	4''	6''
3	4''	3''

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

Yes

Type of pump	Volumetric
Capacity (m3/hour)	150
Maximum viscosity of oil that can be handled (cSt)	-
Differential pressure (bar)	-

- Availability of portable oil heating systems in the terminal

Yes

- Other discharging related information

No

4.6 Isab Terminal South Site

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Italy**
Port	**Santa Panagia**
Facility	**Isab Terminal South Site**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude $37^{0}06'36''$ N Longitude $015^{0}15'30''$ E

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Isab Terminal South Site
Telephone Number	+ 39 0931 208361
Fax Number	+ 30 0931 208367
Email Address	Ct-pont@isab.com
Address	Via Stentinello n.9 – 96011 Syracuse

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	5,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity (m^3	 7 days 5,000
Long term capacity (m^3)	5,000
Number of vessels that can discharge at the facility at the same time	4

B.2 Restrictions on the composition of the recovered oil

Maximum kinematic viscosity (cSt)	-
Maximum sea water content (%)	-
Presence of emulsions	-
Presence of debris	-
Maximum sulphur content (%)	-
Other restrictions	-

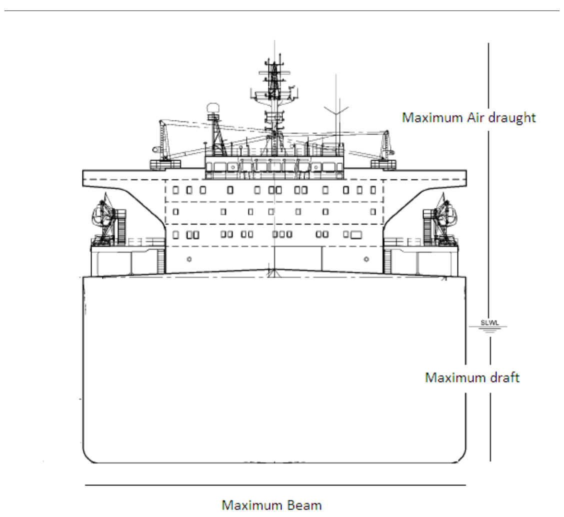
Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	5
Additional information on oil recovered that must be provided to the facility	MSDS – Quality Certificate

C. TECHNICAL INFORMATION ON THE FACILITY

The terminal owns a 1,300 meters long, finger pier consisting of 5 berths (1, 2, 5, 6 and 7) where different oil cargoes can be handled ranging from crude oil to LPG and gasoline. It must be noted that dirty ballast and tank washings from oil tankers can be received via a 28'' line in dedicated tanks. The use of the abovementioned berths for receiving recovered oil depends on the availability and the following information gives the range of limits and ship particulars for all berths.

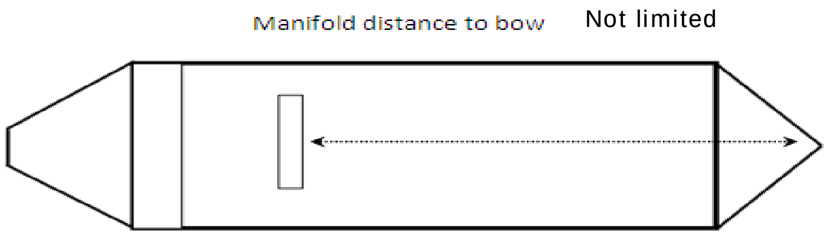
C.1 Berthing and Mooring

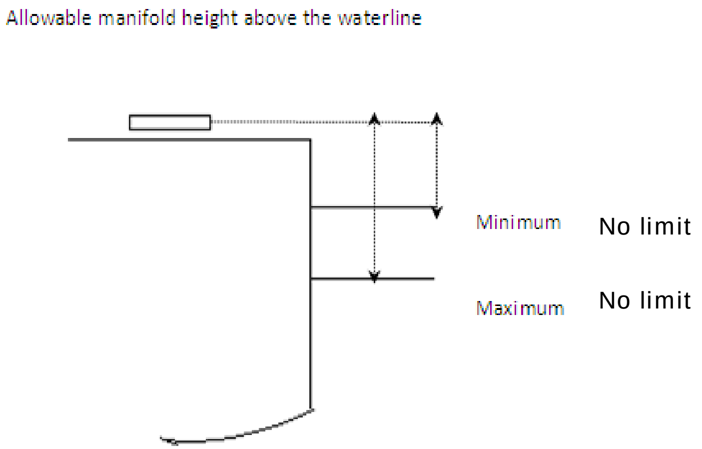
Name/Number of Berth	1, 2, 5, 6, 7
Depth of water alongside (m)	9.6 – 22.5
Maximum LOA (m)	400
Minimum LOA (m)	87
Maximum Draft (m)	22.5
Maximum Displacement (tons)	600,000
Minimum Displacement (tons)	3,000



- Maximum allowable wind speed at berthing/approaching to the facility: 15 Knots North-East
- Other limiting factors that could impact berthing or cause discharge operations to be discontinued: Wave height not exceeding 1 meter.
- No mooring details are provided.

C.2 Oil handling operations





Number and diameter of loading arms/hoses through which oil will be handled (inches)	22 in total / 8 " – 16"
Maximum allowable discharge pressure at hoses/loading arms (bar)	10
Minimum allowable discharge pressure at hoses/loading arms (bar)	7
Normal discharge pressure at hoses/loading arms (bar)	7
Maximum flow rate (m^3/hour)	6,000
Minimum flow rate (m^3/hour)	500
Maximum temperature of oil during transfer (^0C)	60

- Availability of reducers/connections in the facility

Number	From (inches)	To (inches)
14	8	12
7	12	16
1	10	12

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

Not available

- Availability of portable oil heating systems in the terminal

Not available

- Other discharging related information

No closed discharging operations are required.

Cargo tanks of the discharging vessel must be inerted.

4.7 Ricasoli Tank Cleaning LTD

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Malta**
Port	**Valetta**
Facility	**Ricasoli Tank Cleaning LTD**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 35° 53' 50" N Longitude 14° 31' 36" E

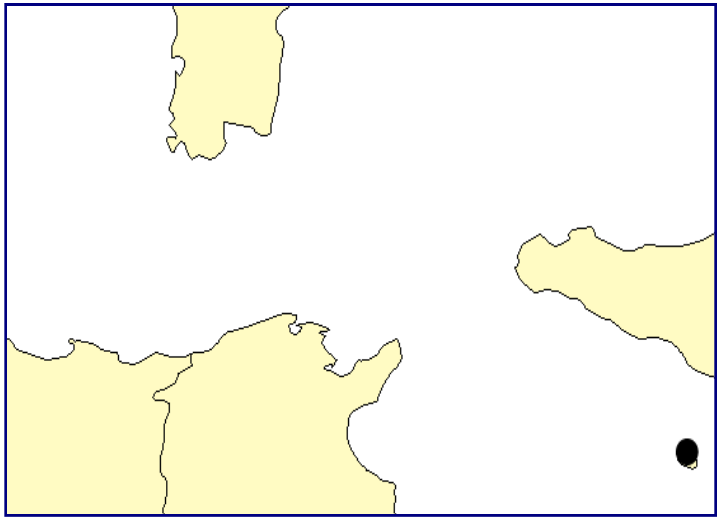
Ricasoli

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Ricasoli Tank Cleaning Ltd
Telephone Number	+356 21231335
Fax Number	+356 21677748
Email Address	info@ricasolitankcleaning.com
Address	Official: Triq Rinella, Kalkara KKR 1231 Mailing: P.O. Box 581, Valetta VLT 000



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 4 - 6 weeks 2,000 – 2,500
Long term capacity (m^3)	2,500*
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

Maximum kinematic viscosity (cSt)	-
Maximum sea water content (%)	90
Presence of emulsions	Preferably none
Presence of debris	Not acceptable
Maximum sulphur content (%)	-
Other restrictions	No naptha, benzene or gasoline washings are accepted due to their low flash point

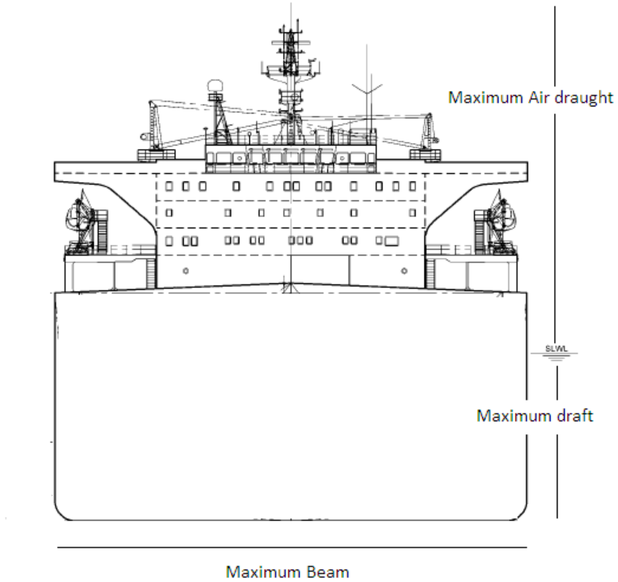
Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	2 samples of 1 liter each
Additional information on oil recovered that must be provided to the facility	An MSDS of the cargo or fuel spilled is sufficient

*The facility is presently undergoing a refurbishment program of its tanks. Consequently, the facility has only one operational tank out of a total of five tanks available within the facility to receive waste oils. Hence, once all five tanks are fully refurbished, the full capacity of the facility would be of at least 12,500 m^3. However, in view of the current restrictions, the facility can only offer one operational tank with a capacity of 2,500 m^3

C. TECHNICAL INFORMATION ON THE FACILITY

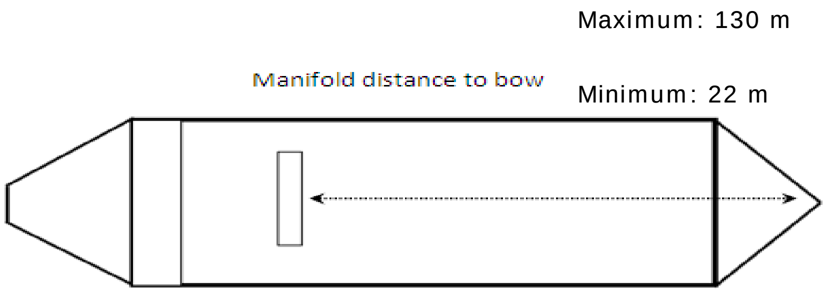
C.1 Berthing and Mooring

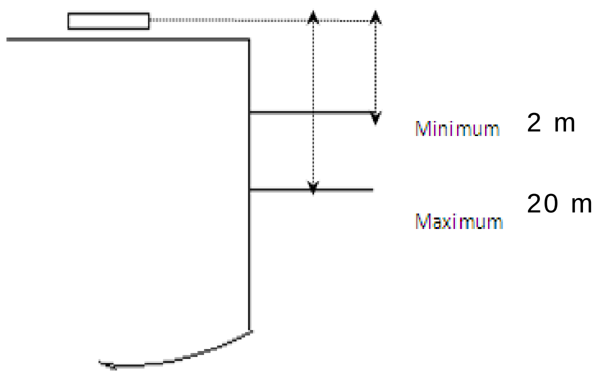
Name/Number of Berth	1
Depth of water alongside (m)	10.3
Maximum LOA (m)	300
Minimum LOA (m)	30
Maximum Beam (m)	45
Maximum Draft (m)	10
Maximum Displacement (tons)	60,000
Minimum Displacement (tons)	No min.
Maximum air draught (m)	18



- Maximum allowable wind speed at berthing/approaching to the facility: Force 7
- Other limiting factors: Strong north eastern force 6-7
- Non existence of a specific Mooring Plan
- Mooring details: 2 mooring bollards forward, 1 mooring bollard aft, 2 abreast bollards

C.2 Oil handling operations





Number and diameter of loading arms/hoses through which oil will be handled (inches)	3 flexible hoses 2 x 10 1 x 8
Maximum allowable discharge pressure at hoses/loading arms (bar)	5
Minimum allowable discharge pressure at hoses/loading arms (bar)	2.5
Normal discharge pressure at hoses/loading arms (bar)	3
Maximum flow rate (m^3/hour)	400
Minimum flow rate (m^3/hour)	100
Maximum temperature of oil during transfer (^{0}C)	60

- Availability of reducers/connections in the facility

Number	From (inches)	To (inches)
1	14''	10''
1	12''	10''
1	10''	8''
1	10''	6''
1	8''	6''

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

No

4.8 San Lucian Oil Company

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Malta**
Port	**Marsaxlokk**
Facility	**San Lucian Oil Company**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 35^{0} 49' 56" N Longitude 014^{0} 32' 25" E

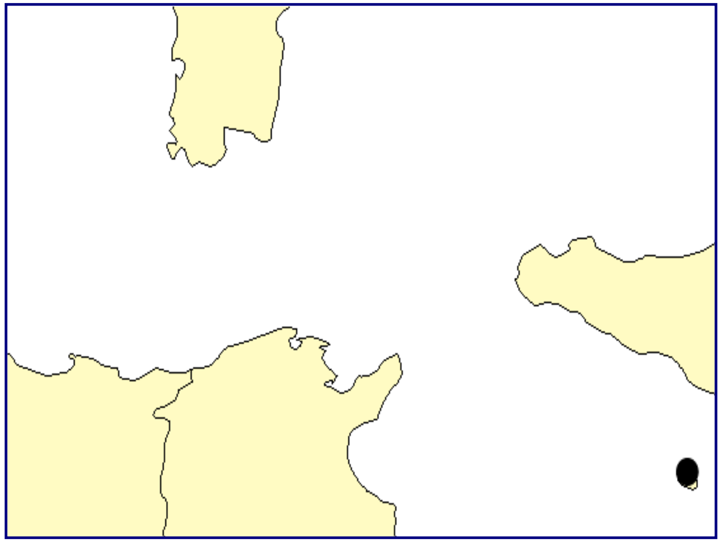
San Lucian Oil Company

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Mr. David Cutajar
Telephone Number	+356 21654654
Fax Number	+356 654652
Email Address	dc@slocbunkers.com
Address	San Lucian Oil Co. Ltd Qajjewza Ro B' Bugia BBG 1283



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,500
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	9 hrs "subject to barges availability" 2,000
Long term capacity (m^3)	-
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

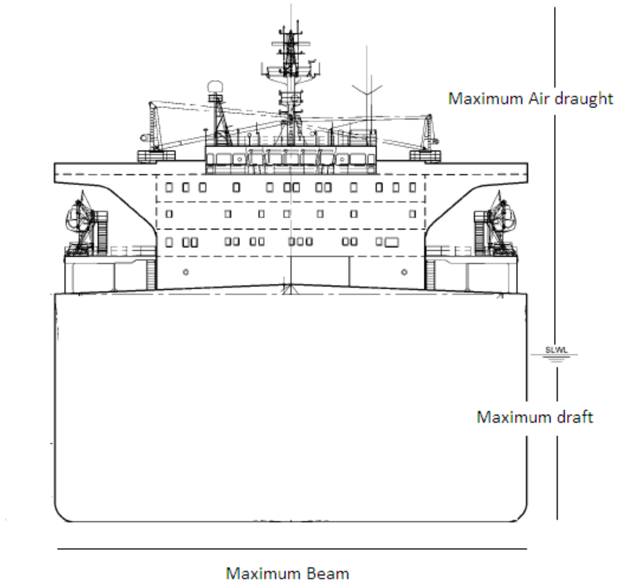
Maximum kinematic viscosity (cSt)	400 at 50°C
Maximum sea water content (%)	-
Presence of emulsions	-
Presence of debris	Not acceptable
Maximum sulphur content (%)	-
Other restrictions	Flash Point not less than 60°C

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	1 x 5lt composite
Additional information on oil recovered that must be provided to the facility	MSDS of the cargo or fuel spilled and Quality Certificate

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

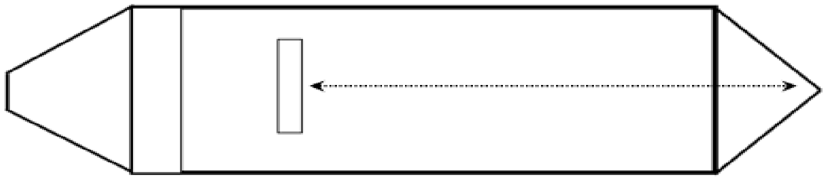
Name/Number of Berth	SLOC BUOYS
Depth of water alongside (m)	15
Maximum LOA (m)	200
Minimum LOA (m)	N/A
Maximum Beam (m)	N/A
Maximum Draft (m)	11.5
Maximum Displacement (tons)	45,000
Minimum Displacement (tons)	350
Maximum air draught (m)	-

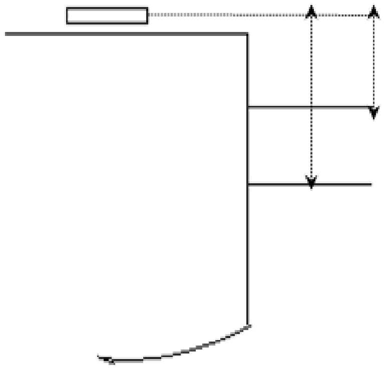


C.2 Oil handling operations

Allowable manifold height above the waterline

Manifold distance to bow Not limited





Minimum Not limited

Maximum Not limited

Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 8
Maximum allowable discharge pressure at hoses/loading arms (bar)	8
Minimum allowable discharge pressure at hoses/loading arms (bar)	2
Normal discharge pressure at hoses/loading arms (bar)	5
Maximum flow rate (m^3/hour)	1000
Minimum flow rate (m^3/hour)	200
Maximum temperature of oil during transfer (^{0}C)	60

- Availability of reducers/connections in the facility

Number	From (inches)	To (inches)
1	4''	6''
1	6''	8''

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

Closed discharging operations are required.

4.9 Waste Oil Company LTD

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Malta**
Port	**Valetta**
Facility	**Waste Oil Company LTD**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 35^0 53' 172" N Longitude 014^0 29' 904" E

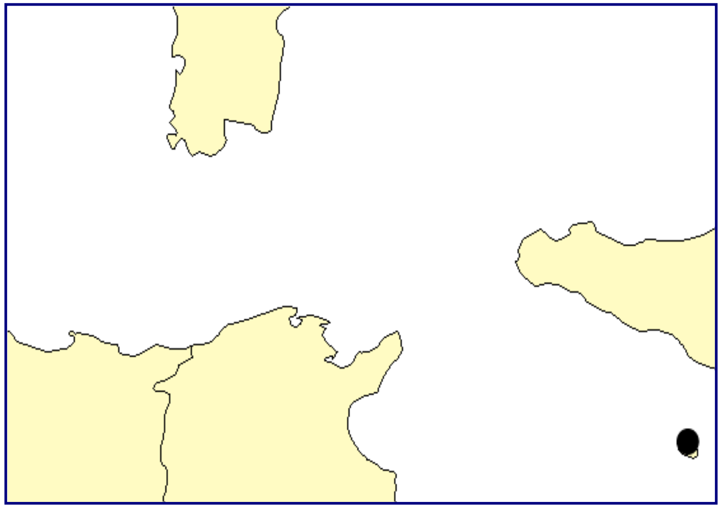
Waste Oil Company LTD

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Mr Oliver Debono / WOCL
Telephone Number	+356 21442763
Fax Number	+356 21248499
Email Address	oliver.debono@wasteoils.com.mt
Address	42, Spencer Hill Marsa



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	300
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	10 hrs 1,300 "subject to barges availability"
Long term capacity (m^3)	2,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

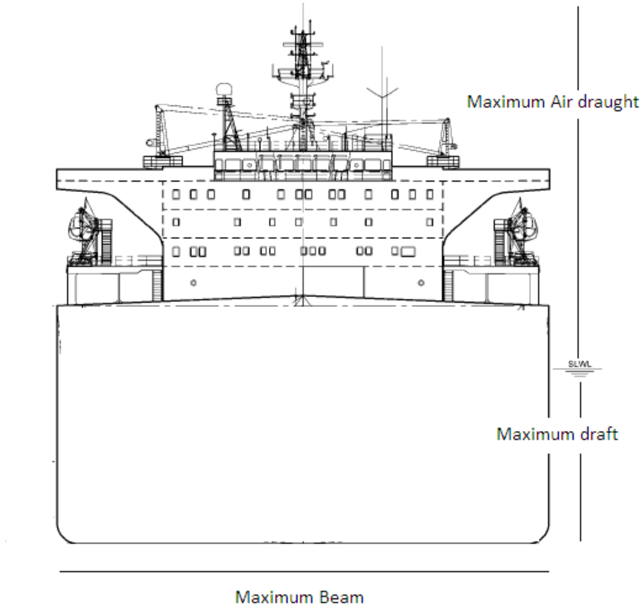
Maximum kinematic viscosity (cSt)	380 at 50°C
Maximum sea water content (%)	-
Presence of emulsions	Acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	-
Other restrictions	Flash Point not less than 60°C

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	1 x 5 lt composite
Additional information on oil recovered that must be provided to the facility	An MSDS of the cargo or fuel spilled and a quality certificate are required

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

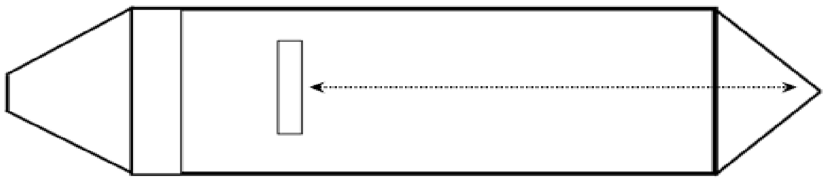
Name/Number of Berth	FLAC STONE
Depth of water alongside (m)	12
Maximum LOA (m)	200
Minimum LOA (m)	40
Maximum Beam (m)	30
Maximum Draft (m)	11.5
Maximum Displacement (tons)	40,000
Minimum Displacement (tons)	200
Maximum air draught (m)	N/A

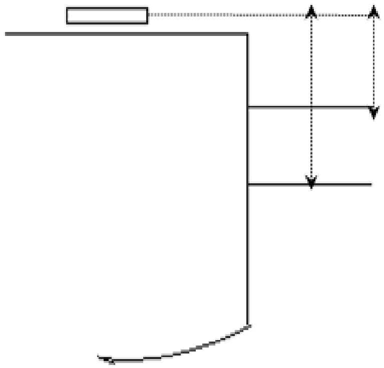


C.2 Oil handling operations

Allowable manifold height above the waterline

Manifold distance to bow Not limited





Minimum Not limited

Maximum Not limited

Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 6
Maximum allowable discharge pressure at hoses/loading arms (bar)	6
Minimum allowable discharge pressure at hoses/loading arms (bar)	2
Normal discharge pressure at hoses/loading arms (bar)	4
Maximum flow rate (m^3/hour)	280
Minimum flow rate (m^3/hour)	20
Maximum temperature of oil during transfer (^{0}C)	60

- Availability of reducers/connections in the facility

Number	From (inches)	To (inches)
2	4''	6''
2	6''	8''

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

Yes

Type of pump	Twin screw positive displacement pump
Capacity (m3/hour)	280
Maximum viscosity of oil that can be handled (cSt)	380
Differential pressure (bar)	2

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

Closed discharging operations are required.

4.10 Crismani Ecologia

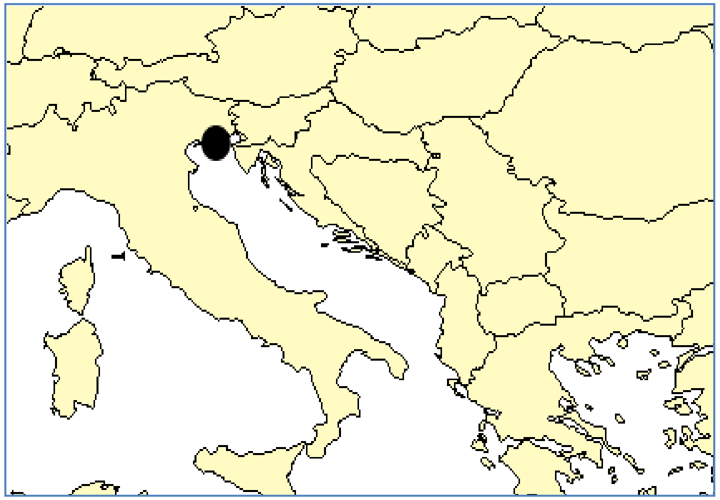
INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Adriatic Sea**
Country	**Italy**
Port	**Trieste**
Facility	**Crismani Ecologia**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 45° 39' N Longitude 13° 47' E



A.2 Type of facility

Floating

A.3 Contact Details

Contact Point Name/Company name	Crismani Ecologia
Telephone Number	+39 (0) 40 - 425252
Fax Number	+39 (0) 40 - 414424
Email Address	info@crismanigroup.it
Address	Via Roma 30 Trieste

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,750
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 24 hours 500
Long term capacity (m^3)	2,000
Number of vessels that can discharge at the facility at the same time	3

B.2 Restrictions on the composition of the recovered oil

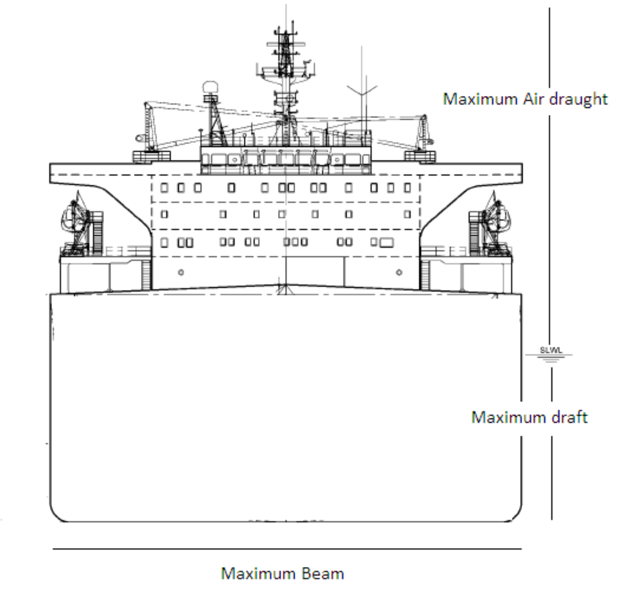
Maximum kinematic viscosity (cSt)	-
Maximum sea water content (%)	No limits
Presence of emulsions	Acceptable
Presence of debris	Acceptable
Maximum sulphur content (%)	-
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	1
Additional information on oil recovered that must be provided to the facility	-

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

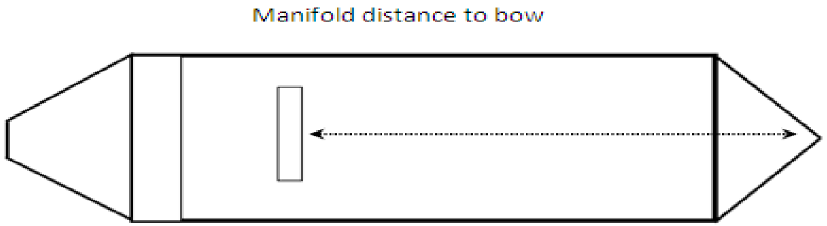
Name of floating facility	Tanker: Lago Magadi
LOA (m)	78.5
Minimum LOA (m)	N/A
Maximum Beam (m)	N/A
Maximum Draft (m)	N/A
Maximum Displacement (tons)	N/A
Minimum Displacement (tons)	N/A
Maximum air draught (m)	N/A

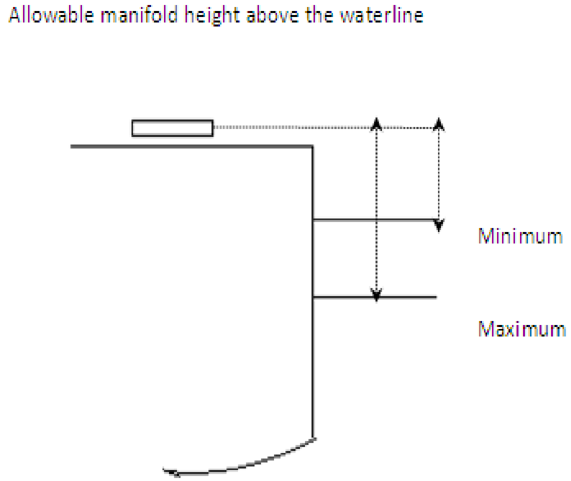


- Maximum allowable wind speed at berthing/approaching to the facility: 25 knots
- Non Existence of a specific Mooring Plan

- Other limiting factors: -
- Provision of fenders, hoses, cranes, etc.

C.2 Oil handling operations





20 m for both barges and tanker

Number and diameter of loading arms/hoses through which oil will be handled (inches)	2 x 16”
Maximum allowable discharge pressure at hoses/loading arms (bar)	8
Minimum allowable discharge pressure at hoses/loading arms (bar)	-
Normal discharge pressure at hoses/loading arms (bar)	4/6
Maximum flow rate (m^3/hour)	150
Minimum flow rate (m^3/hour)	-
Maximum temperature of oil during transfer (^0C)	40

- Availability of reducers/connections in the facility

Yes

Number	From (inches)	To (inches)
1	4''	6''
1	6''	8''
1	6"	10"

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

No

4.11 Floating Separator Ecomaster

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Greece**
Port	**Piraeus**
Facility	**Floating Separator Ecomaster**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 37° 56,9’ N Longitude 23° 33,9’ E

Akti Kynosouras, Piraeus, Greece

A.2 Type of facility

Floating

A.3 Contact Details

Contact Point Name/Company name	Michael Psaromichalakis
Telephone Number	+0030 210 4290 280
Fax Number	+0030 210 4290 286
Email Address	info@hec.gr
Address	10, Akti Kondili, Piraeus, Greece

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	8,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	2 hours 8,000
Long term capacity (m^3)	40,000
Number of vessels that can discharge at the facility at the same time	Up to 2, depending on the L_{OA} of them

B.2 Restrictions on the composition of the recovered oil

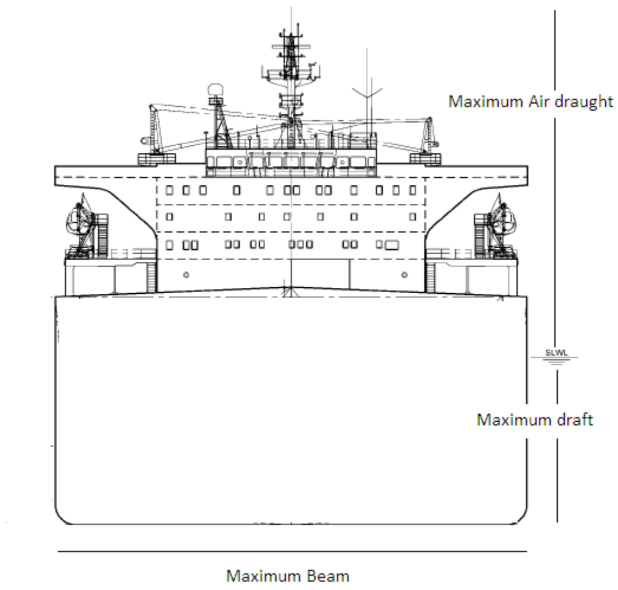
Maximum kinematic viscosity (cSt)	Being pumpable
Maximum sea water content (%)	99%
Presence of emulsions	Acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	N/A
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	1
Additional information on oil recovered that must be provided to the facility	MSDS of oil

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

Name of floating facility	F/S Ecomaster Piraeus
Maximum LOA (m)	272
Minimum LOA (m)	260
Maximum Draft (m)	12
Maximum Displacement (tons)	110,000
Minimum Displacement (tons)	40,000

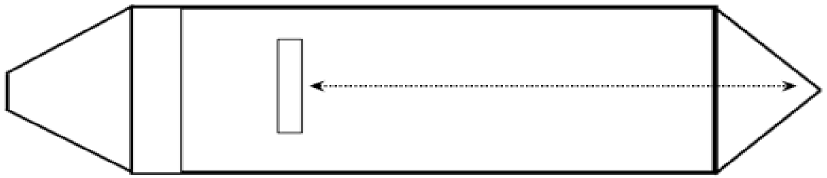


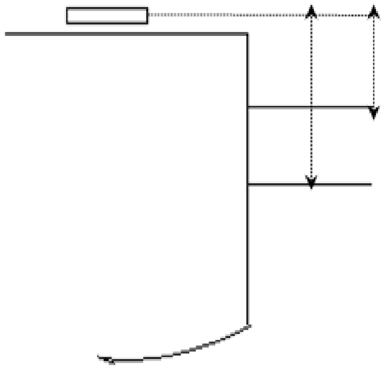
- Maximum allowable wind speed at berthing/approaching to the facility: 20 mph
- Non Existence of a specific Mooring Plan.
- Provision of fenders, hoses, cranes, etc.
- Other limiting factors: -
- Mooring details: 6 mooring lines, 200 meters

C.2 Oil handling operations

Allowable manifold height above the waterline

Manifold distance to bow Not specified





Minimum 5

Maximum 12

Number and diameter of loading arms/hoses through which oil will be handled (inches)	Many hoses with diameters 2”, 3”, 4”, 6” & 8”
Maximum allowable discharge pressure at hoses/loading arms (bar)	6
Minimum allowable discharge pressure at hoses/loading arms (bar)	0
Normal discharge pressure at hoses/loading arms (bar)	2
Maximum flow rate (m^3/hour)	250
Minimum flow rate (m^3/hour)	No limit
Maximum temperature of oil during transfer (^{0}C)	75

- Availability of reducers/connections in the facility

Yes

Number	From (inches)	To (inches)
2	4''	2"
2	6"	4"
2	8"	6"

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

Yes

Type of pump	Hydraulic
Capacity (m3/hour)	150 max
Maximum viscosity of oil that can be handled	380
Differential pressure (bar)	4

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

Closed discharging operations are required.

4.12 North Aegean Slops

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Greece**
Port	**Thessaloniki**
Facility	**North Aegean Slops**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 40° 38’ 24” N Longitude 22° 54’ 15” E

6th Pier

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Helias Orfanidis
Telephone Number	+0030 2310 553473
Fax Number	+0030 2310 554027
Email Address	info@northaegeanslops.gr
Address	42, 26th Oktovriou str., 54627 Thessaloniki

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,500
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	48 hours 1,500
Long term capacity (m^3)	4,500
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

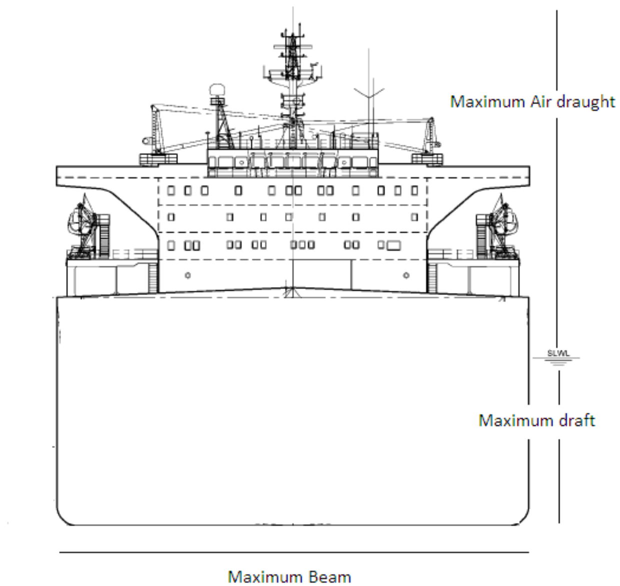
Maximum kinematic viscosity (cSt)	-
Maximum sea water content (%)	-
Presence of emulsions	-
Presence of debris	Not acceptable
Maximum sulphur content (%)	-
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	16 kg
Additional information on oil recovered that must be provided to the facility	MSDS, if available

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

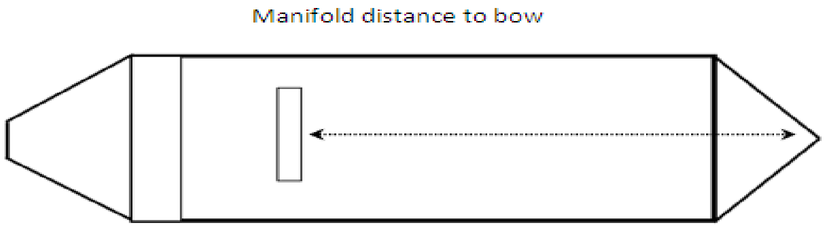
Name/Number of Berth	Port of Thessaloniki/6th Pier/Tanks of North Aegean Slops
Depth of water alongside (m)	12
Maximum LOA (m)	120
Minimum LOA (m)	-
Maximum Beam (m)	-
Maximum Draft (m)	-
Maximum Displacement (tons)	-
Minimum Displacement (tons)	-

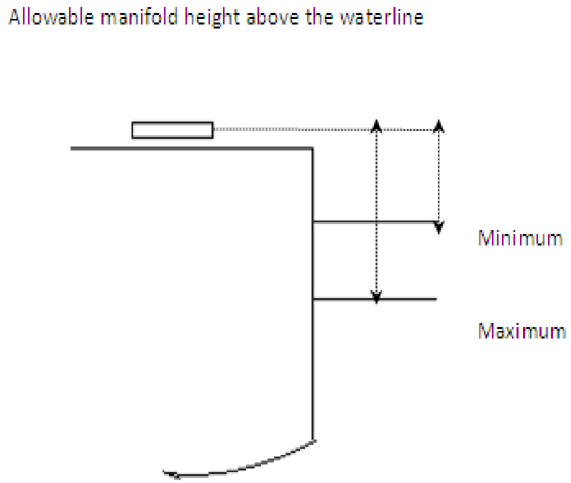


- Maximum allowable wind speed at berthing/approaching to the facility: -
- Existence of a specific Mooring Plan: -
- Provision of fenders, hoses, cranes, etc.

- Other limiting factors:
- Mooring details: -

C.2 Oil handling operations





Not specified

Number and diameter of loading arms/hoses through which oil will be handled (inches)	6”
Maximum allowable discharge pressure at hoses/loading arms (bar)	-
Minimum allowable discharge pressure at hoses/loading arms (bar)	-
Normal discharge pressure at hoses/loading arms (bar)	10
Maximum flow rate (m^3/hour)	250
Minimum flow rate (m^3/hour)	-
Maximum temperature of oil during transfer (^{0}C)	-

- **Availability of reducers/connections in the facility**

  Yes

- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**

  Yes

Type of pump	Sewatec D 300-400
Capacity (m3/hour)	300
Maximum viscosity of oil that can be handled (cSt)	-
Differential pressure (bar)	10

- **Availability of portable oil heating systems in the terminal**

  Yes

  Steam generators, plus appropriate coils and devices (output:200kg/h)

- **Other discharging related information**

  No

4.13 Ecofuel (Cyprus) Ltd

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Cyprus**
Port	**Vasiliko - Limmasol**
Facility	**Ecofuel (Cyprus) Ltd**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

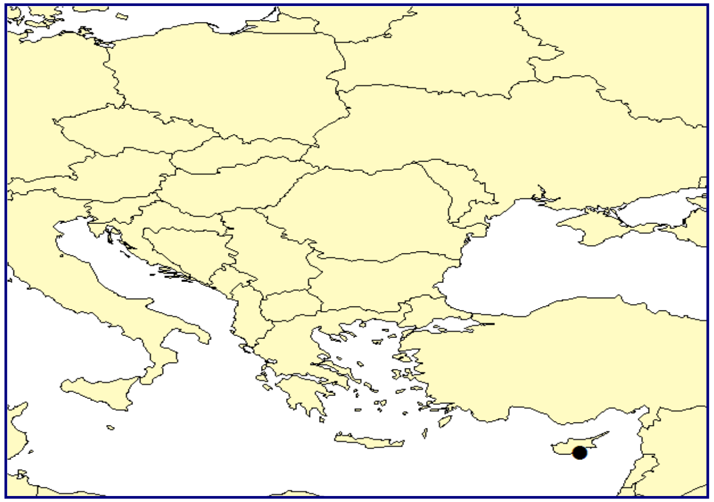
34° 71' N 33° 32' E, Port of Vasiliko – Limassol

A.2 Type of facility

Port installation - Petroleum waste management Plant

A.3 Contact Details

Contact Point Name/Company name	Ecofuel (Cyprus) Ltd
Telephone Number	+357 25 822 552
Fax Number	+ 357 25 822 553
Email Address	ecofuel@cytanet.com.cy
Address	52 Nikou Pattichi Str., 3071 Limassol P.O. Box 51770, CY-3508, Limassol



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	1,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity (m^3)	 15 days 1,000
Long term capacity (m^3)	1,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

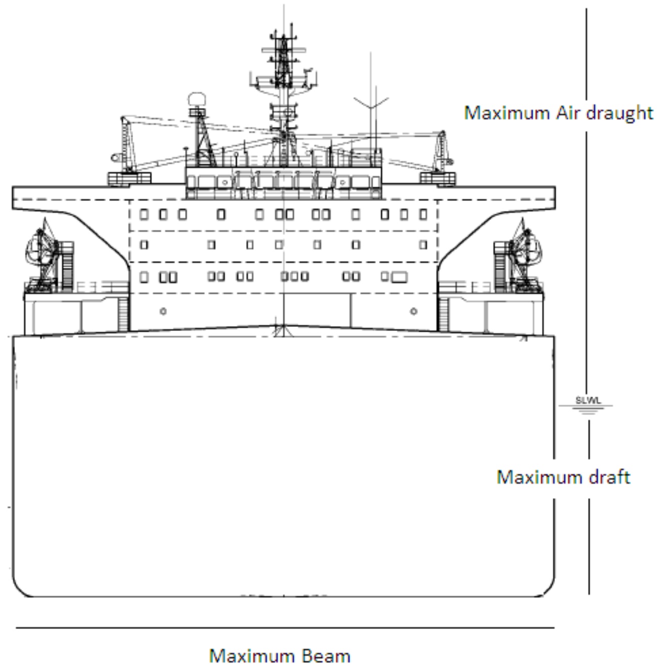
Maximum kinematic viscosity (cSt)	-
Maximum sea water content (%)	100
Presence of emulsions	Acceptable
Presence of debris	Acceptable
Maximum sulphur content (%)	1%
Other restrictions	Presence of PCBs Flash point not less than 60^oC

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	2
Additional information on oil recovered that must be provided to the facility	MSDS or Certificate of Analysis

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

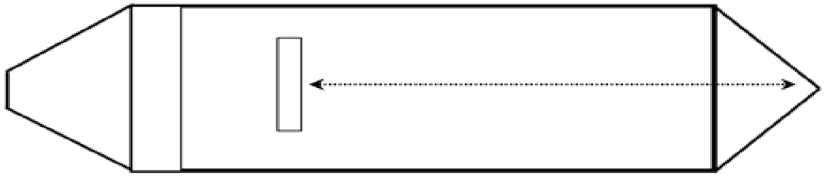
Name/Number of Berth	Ecofuel
Depth of water alongside (m)	9
Maximum LOA (m)	180
Minimum LOA (m)	Not limited
Maximum Beam (m)	Not limited
Maximum Draft (m)	8.6
Minimum Displacement (tons)	Not limited
Maximum air draught (m)	-



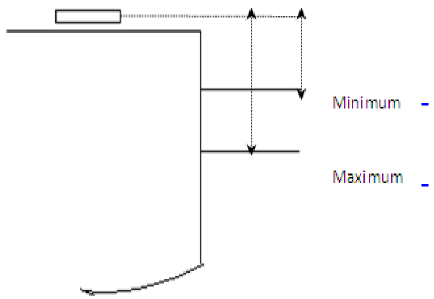
- Maximum allowable wind speed at berthing/approaching to the facility: No information
- Other limiting factors: No information
- Existence of a specific Mooring Plan, mooring details: No Information

C.2 Oil handling operations

Manifold distance to bow No information



Allowable manifold height above the waterline



Number and diameter of loading arms/hoses through which oil will be handled (inches)	1 x 6
Maximum allowable discharge pressure at hoses/loading arms (bar)	10
Minimum allowable discharge pressure at hoses/loading arms (bar)	1
Normal discharge pressure at hoses/loading arms (bar)	4
Maximum flow rate (m^3/hour)	200
Minimum flow rate (m^3/hour)	50
Maximum temperature of oil during transfer (^{0}C)	50

- **Availability of reducers/connections in the facility**

  No

- **Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil**

  No

- **Availability of portable oil heating systems in the terminal**

  No

- **Other discharging related information**

  No closed discharging operations are required. No requirement for inerting the cargo tanks of the discharging vessel.

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

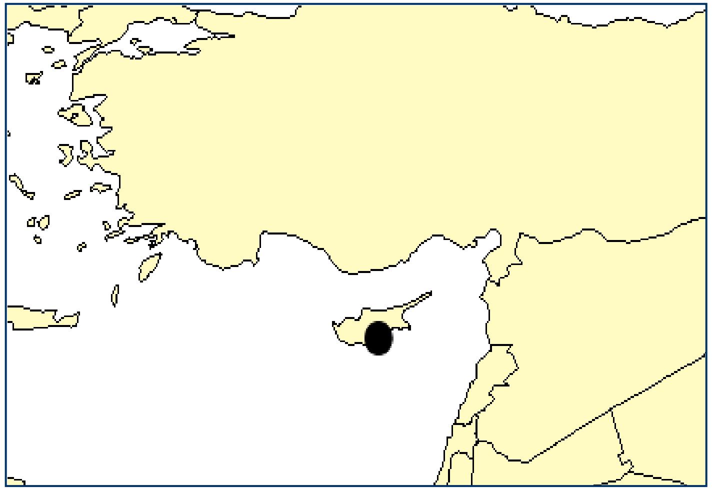
Marine Area	**Mediterranean Sea**
Country	**Cyprus**
Port	**Limassol**
Facility	**VGN Sludge Ltd**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

Latitude 34.647861 N Longitude 33.006599 E

Limassol port



A.2 Type of facility

Floating

A.3 Contact Details

Contact Point Name/Company name	VGN Sludge Ltd
Telephone Number	+35 725351554
Fax Number	+35 725562100
Email Address	vgn.sludge.ltd@cytanet.com.cy
Address	Omonoias Av. 137A Limassol 3046

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	700
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	 24 hours 700
Long term capacity (m^3)	1,500
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

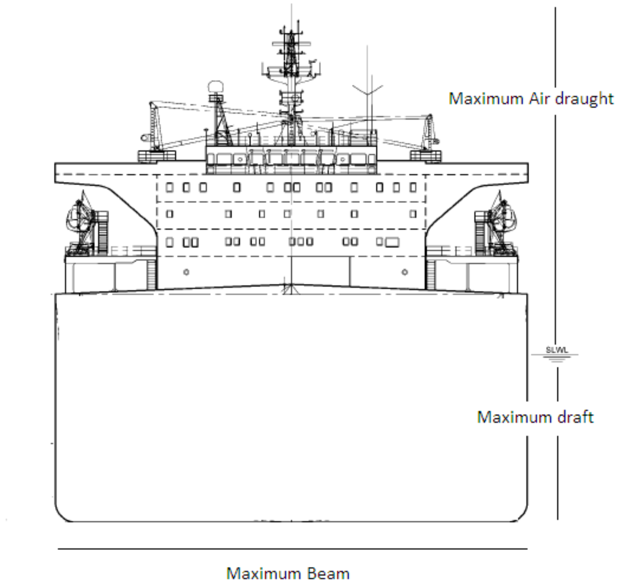
Maximum kinematic viscosity (cSt)	-
Maximum sea water content (%)	-
Presence of emulsions	-
Presence of debris	-
Maximum sulphur content (%)	-
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	-
Additional information on oil recovered that must be provided to the facility	-

C. TECHNICAL INFORMATION ON THE FACILITY

C.1 Berthing and Mooring

Name of floating facilities	Barge (Cyprus 4)	Barge (Capt victoras 4)
Maximum LOA (m)	12.00	29.46
Minimum LOA (m)	-	
Maximum Draft (m)	-	
Maximum Displacement (tons)	20.60	139.00
Minimum Displacement (tons)	-	-
Minimum Freeboard (m)	-	-
Other limiting factors	-	-

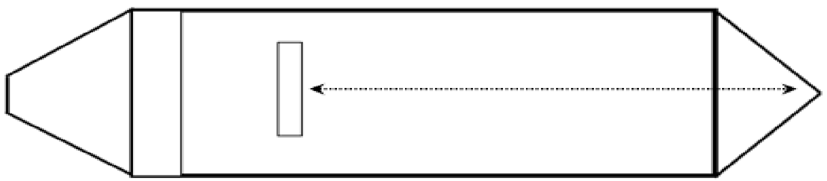


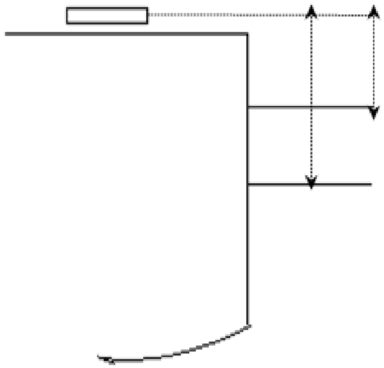
- Maximum allowable wind speed at berthing/approaching to the facility: 5.6 bft
- Existence of a specific Mooring Plan: -
- Provision of fenders, hoses, cranes, etc.
- Other limiting factors: -
- Mooring details: -

C.2 Oil handling operations

Allowable manifold height above the waterline

Manifold distance to bow





Number and diameter of loading arms/hoses through which oil will be handled (inches)	2”, 3”, 4”
Maximum allowable discharge pressure at hoses/loading arms (bar)	4.5
Minimum allowable discharge pressure at hoses/loading arms (bar)	1
Normal discharge pressure at hoses/loading arms (bar)	4
Maximum flow rate (m^3/hour)	70
Minimum flow rate (m^3/hour)	70
Maximum temperature of oil during transfer (^{0}C)	50

- Availability of reducers/connections in the facility

Yes

Number	From (inches)	To (inches)
international	2''	6"

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

Yes

Type of pump	Gear
Capacity (m3/hour)	70
Maximum viscosity of oil that can be handled (cSt)	-
Differential pressure (bar)	4

- Availability of portable oil heating systems in the terminal

No

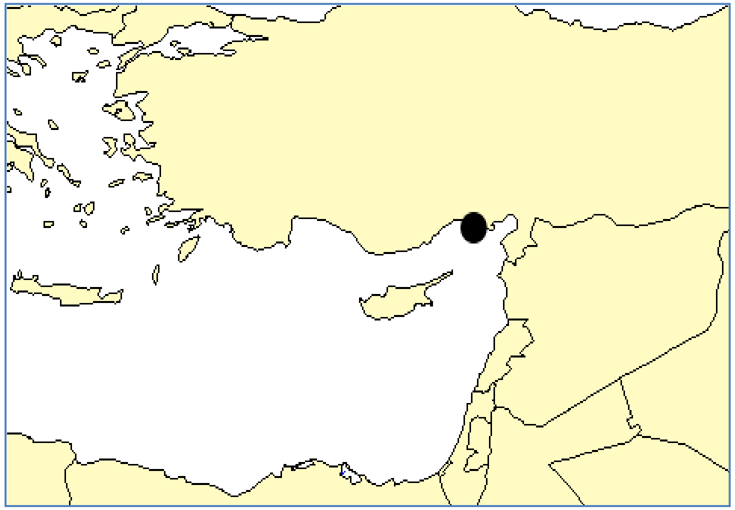
- Other discharging related information

Closed discharging operations are required. Inerting of cargo tanks of the discharging vessel is required.

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Mediterranean Sea**
Country	**Turkey**
Port	**Botas - Ceyhan**
Facility	**Botas Petroleum Facilities**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS



A.1 Location of the facility

Latitude 36° 53.012 N Longitude 035° 55.9 E

Botas Ceyhan

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Botas Petroleum Facilities
Telephone Number	+ 90 322 6392465
Fax Number	+ 90 322 6392463
Email Address	botas.pilot@botas.gov.tr
Address	P.O. Box 01914 Ceyhan - Adana

B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	60,000
Potential for a second discharge - Time needed for accepting a second discharge - Quantity	- 60,000
Long term capacity (m^3)	60,000
Number of vessels that can discharge at the facility at the same time	2

B.2 Restrictions on the composition of the recovered oil

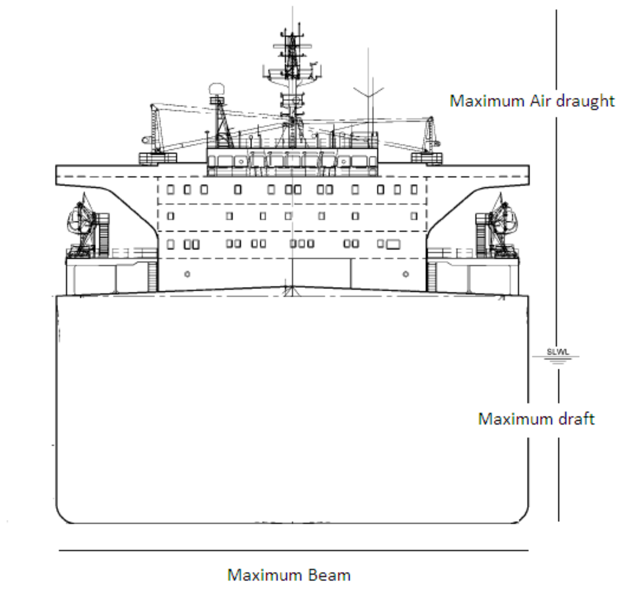
Maximum kinematic viscosity (cSt)	-
Maximum sea water content (%)	-
Presence of emulsions	-
Presence of debris	-
Maximum sulphur content (%)	-
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	1
Additional information on oil recovered that must be provided to the facility	No

C. TECHNICAL INFORMATION ON THE FACILITY

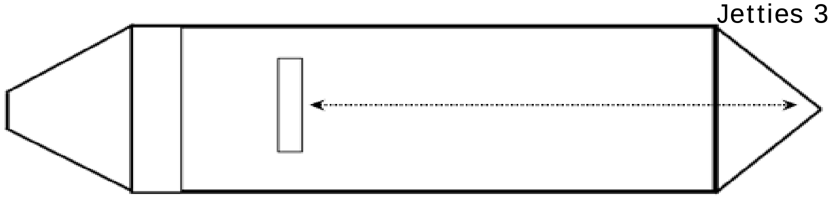
C.1 Berthing and Mooring

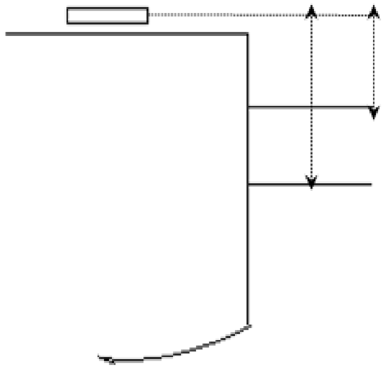
Name/Number of Berth	1	2	3	4
Depth of water alongside (m)	25	25	20	19
Maximum LOA (m)	355	355	300	300
Minimum LOA (m)	200	200	168	168
Maximum Beam (m)	-	-	-	-
Maximum Draft (m)	23	23	18	17
Maximum Displacement (tons)	190,000	190,000	105,000	105,000
Minimum Displacement (tons)	-	-	-	-
Maximum air draught (m)	-	-	-	-



- Maximum allowable wind speed at berthing/approaching to the facility: -
- Existence of a specific Mooring Plan: -
- Other limiting factors: -
- Mooring details: -

C.2 Oil handling operations





Number and diameter of loading arms/hoses through which oil will be handled (inches)	4 loading arms x 16”, 18”, 20” for each jetty
Maximum allowable discharge pressure at hoses/loading arms (bar)	7
Minimum allowable discharge pressure at hoses/loading arms (bar)	-
Normal discharge pressure at hoses/loading arms (bar)	-
Maximum flow rate (m^3/hour)	19,000
Minimum flow rate (m^3/hour)	2,000
Maximum temperature of oil during transfer (^0C)	20 ^oC

- Availability of reducers/connections in the facility

Yes

Number	From (mm/inches)	To (mm/inches)
2	16	18
2	18	20
1	16	16

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

No

- Availability of portable oil heating systems in the terminal

No

- Other discharging related information

Closed discharging operations are required. Inerting of cargo tanks of the discharging vessel is required.

5 Black Sea

5.1 Waste Water Treatment Plant

INVENTORY
OF RECEIVING FACILITIES
OF OIL RECOVERED BY EMSA SPILL RESPONSE VESSELS

Marine Area	**Black Sea**
Country	**Romania**
Port	**Constanta**
Facility	**Waste Water Treatment Plant**

A. LOCATION OF THE FACILITY AND CONTACT DETAILS

A.1 Location of the facility

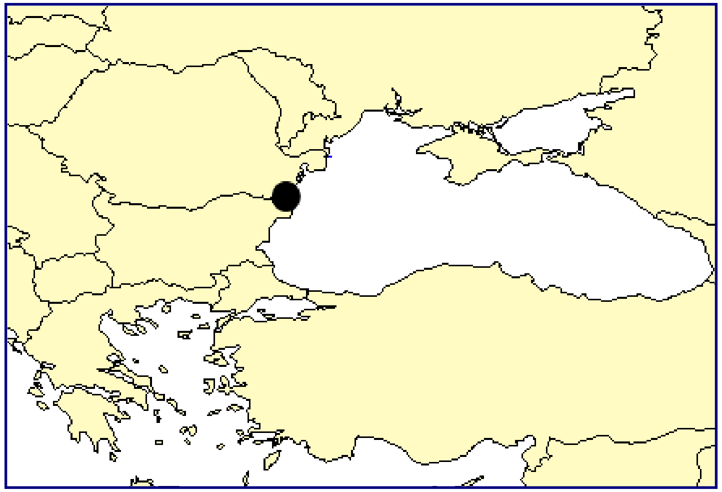
Latitude $44^0$08'48'' N Longitude $28^0$39'32'' E

A.2 Type of facility

Port installation

A.3 Contact Details

Contact Point Name/Company name	Maritime Ports Administration
Telephone Number	040241611540
Fax Number	040241619512
Email Address	apmc@constantza-port.ro
Address	Port Enclosure, Constanta 900900



B. RESTRICTIONS ON THE QUANTITY AND QUALITY OF OIL THAN CAN BE DISCHARGED IN THE FACILITY

B.1 Restrictions on the quantity of the recovered oil

Immediate capacity (m^3)	2,500
Potential for a second discharge - Time needed for accepting a second discharge - Quantity (m^3)	 48 – 72 hours 2,500
Long term capacity (m^3)	5,000
Number of vessels that can discharge at the facility at the same time	1

B.2 Restrictions on the composition of the recovered oil

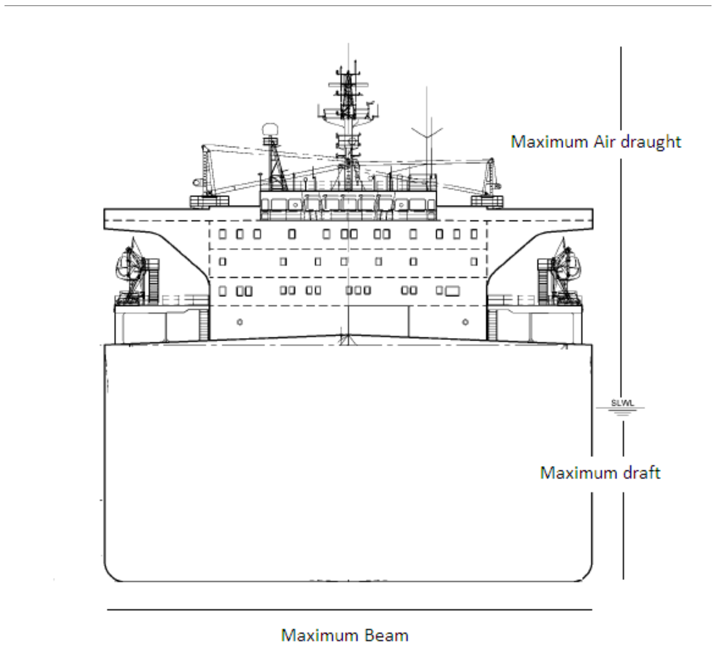
Maximum kinematic viscosity (cSt)	60 at 50^{o}C
Maximum sea water content (%)	50
Presence of emulsions	Acceptable
Presence of debris	Not acceptable
Maximum sulphur content (%)	1
Other restrictions	-

Need for sampling and chemical analysis	Yes
Volume of sample that must be provided for a chemical analysis (liters)	2
Additional information on oil recovered that must be provided to the facility	No

C. TECHNICAL INFORMATION ON THE FACILITY

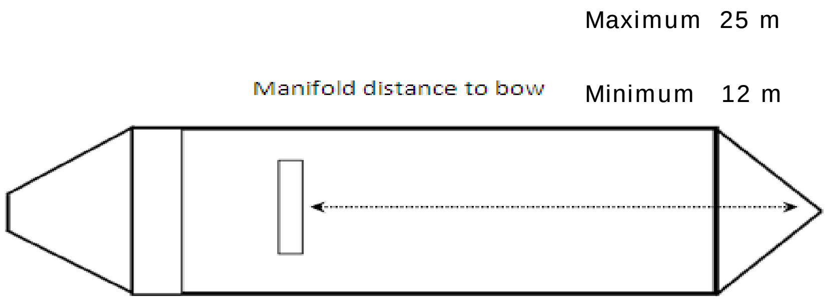
C.1 Berthing and Mooring

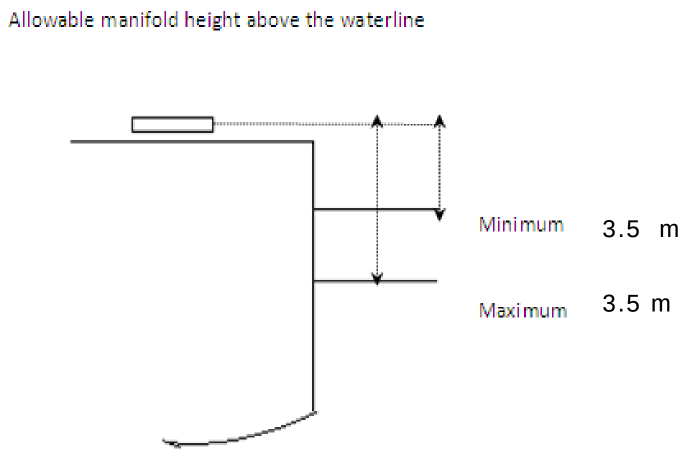
Name/Number of Berth	69
Depth of water alongside (m)	11.80
Maximum LOA (m)	200
Minimum LOA (m)	50
Maximum Beam (m)	No restriction
Maximum Draft (m)	10.5
Maximum Displacement (tons)	50,000
Minimum Displacement (tons)	1,000



- Maximum allowable wind speed at berthing/approaching to the facility: -
- Other limiting factors that could impact berthing or cause discharge operations to be discontinued: -
- No mooring details are provided.

C.2 Oil handling operations





Number and diameter of loading arms/hoses through which oil will be handled (cm)	1 / 8
Maximum allowable discharge pressure at hoses/loading arms (bar)	15
Minimum allowable discharge pressure at hoses/loading arms (bar)	2.5
Normal discharge pressure at hoses/loading arms (bar)	5
Maximum flow rate (m^3/hour)	80
Minimum flow rate (m^3/hour)	30
Maximum temperature of oil during transfer (^{0}C)	60 - 80

- Availability of reducers/connections in the facility

Number	From (mm)	To (mm)
1	80	60

- Availability and details of booster pumps in the facility to enhance the transfer of the recovered oil

Not available

- Availability of portable oil heating systems in the terminal

Not available

- Other discharging related information

Closed discharging operations are required. Cargo tanks of the discharging vessel must be inerted.

8 ANNEX III: List of facilities that were contacted

Port, Name of Port Authority or Any Other Person or Agency
Address
Telephone
Telex / Fax / E-mail

Belgium

1. **Antwerpen / Leysen NV**
   Steenweg op Tielen 68a, 2300 Turnhout
   Tel: +32 14403910
   Fax: +32 14413911
   Email: info@leysen.org
   Website: http://www.leysen.org
2. **Antwerpen / Marpobel NV**
   YES Blauwe weg 7, Haven 261, 2030 Antwerpen
   Tel: +32 35435911
   Fax: +32 35435900
   Email: sales@marpobel.com
   Website: http://www.marpobel.com
3. **Antwerpen / Belgian Oil Services**
   Blauwe weg 7, Haven 261, 2030 Antwerpen
   Tel: +32 35435959
   Fax: +32 35435960
   Email: inform@bosserv.com
   Website: http://www.bos-antwerp.com
4. **Antwerpen / Biffa, Mechelsesteenweg, Vilvoorde**
   Mechelsesteenweg 642, 1800 Vilvoorde
   Tel: +32 22579200
   Email: info@veolia-es.be
5. **Antwerpen / De Bree Cleaning**
   Krommewege 31G, 9990 Maldegem
   Tel: +32 50712792
   Email: info@debree.be
6. **Antwerpen / Edelweiss Smet Jet**
   Hooggeleedstraat 24, 8400 Oostende
   Tel: +32 59339650
   Email: info@edelweissbvba.be
7. **Antwerpen / Hydro Cleaning international**
   Starrenhoflaan 15, 2950 Kapellen
   Tel: +32 36652000
   Email: hydro@hci.be, hydro@hcioost.be
8. **Antwerpen / KAYAK MARITIME SERVICES BVBA**
   Napoleonkaai 17-19, 2000 Antwerp
   Tel: +32 32272650
   Telex: +32 32251741
   Email: info@kayak-maritime.be
   Website: http://kayak-maritime.be
9. **Antwerpen / Liekens NV**
   Noorderlaan 503, haven 528, 2030 Antwerpen
   Tel: +32 35692414
   Email: info@liekens.be
10. **Antwerpen / Maritime Antwerp Cleaning**
   Industrieweg 11, haven 403, 2030 Antwerpen
   Tel: +32 35401440
   Email: info@macantwerpen.be
11. **Antwerpen / MTD Maritime Services**
   Scheldelaan Kaai 373 - Industriedok 2030 Antwerpen
   Tel: +32 3 544 80 67
   Email: info@mtd.be
12. **Antwerpen / Recup Oil**
   De Hoogte 2, 8770 Ingelmunster
   Tel: +32 51457547
   Email: info@recup-oil.be
13. **Antwerpen / Recyc Oil**
   Molenstraat 209, 8710 Wielsbeke
   Tel: +32 56665316
   Email: info@recyc-oil.be
14. **Antwerpen / Romarco**
   Baaikensstraat 17, 9240 Zele
   Tel: +32 52448694
   Email: info@romarco.be
15. **Antwerpen / SGS Ewacs**
   Keetberglaan 4, 9120 Melsele
   Tel: +32 35750330
   Email: joris.verhoeven@sgs.com
   emergency@sgs.com
16. **Antwerpen / Sita**
   Oeverkant 38, 2070 burcht
   Tel: +32 32532204
   Email: info@sita.be
17. **Antwerpen / Smet Jet NV**
   Nijverheidsstraat 3, 2260 Oevel
   Tel: +32 14587571
18. **Antwerpen / Wubben Aflaatolie**
   Bergsebaan 34, 2910 Essen
   Tel: +32 36770347
   Email: ingrid.wubben@belgacom.net
19. **Oostende (Ostend) / Belgian Oil Services**
   Blauwe weg 7, Haven 261, 2030 Antwerpen
   Tel: +32 35435959
   Fax: +32 35435960
   Email: inform@bosserv.com
   Website: http://www.bos-antwerp.com
20. **Oostende (Ostend) / KAYAK MARITIME SERVICES BVBA**
   Napoleonkaai 17-19, 2000 Antwerp
   Tel: +32 32272650

Telex: +32 32251741
Email: info@kayak-maritime.be
Website: http://kayak-maritime.be

21. **Gent (Ghent) / Belgian Oil Services**
Blauwe weg 7, Haven 261, 2030 Antwerpen
Tel: +32 35435959
Fax: +32 35435960
Email: inform@bosserv.com
Website: http://www.bos-antwerp.com

22. **Gent (Ghent) / KAYAK MARITIME SERVICES BVBA**
Napoleonkaai 17-19, 2000 Antwerp
Tel: +32 32272650
Telex: +32 32251741
Email: info@kayak-maritime.be
Website: http://kayak-maritime.be

23. **Zeebrugge / Belgian Oil Services**
Blauwe weg 7, Haven 261, 2030 Antwerpen
Tel: +32 35435959
Fax: +32 35435960
Email: inform@bosserv.com
Website: http://www.bos-antwerp.com

24. **Zeebrugge / Containerdienst Van Heede**
Dullardstraat 11, 8940 Wervik
Email: info@vanheede.be

25. **Zeebrugge / De Bree Cleaning**
Krommewege 31G, 9990 Maldegem
Tel: +32 50712792
Email: info@debree.be

26. **Zeebrugge / Bunkers Dobbelaere**
Noordzeestraat 12, 8380 Zeebrugge
Tel: +32 50544269
Email: dobbelaere@bunkers-nv.be

27. **Zeebrugge / Edelweiss Smet Jet**
Hooggeleedstraat 24, 8400 Oostende
Tel: +32 59339650
Email: info@edelweissbvba.be

28. **Zeebrugge / Marpos**
L. Coiseaukaai 42, 8380 Dudzele
Tel: +32 50598801
Email: info.marpos@shanks.be

29. **Zeebrugge / Maritime Antwerp Cleaning**
Industrieweg 11, haven 403, 2030 Antwerpen
Tel: +32 35401440
Email: info@macantwerpen.be

30. **Zeebrugge / MTD Maritime Services**
Scheldelaan Kaai 373 - Industriedok 2030 Antwerpen
Tel: +32 3 544 80 67
Email: info@mtd.be

31. **Zeebrugge / Recup Oil**
De Hoogte 2, 8770 Ingelmunster
Tel: +32 51457547
Email: info@recup-oil.be

32. **Zeebrugge / Recyc Oil**
Molenstraat 209, 8710 Wielsbeke
Tel: +32 56665316
Email: info@recyc-oil.be

33. **Zeebrugge / Romarco**
Baaikensstraat 17, 9240 Zele
Tel: +32 52448694
Email: info@romarco.be

34. **Zeebrugge / Shanks Vlaanderen**
Regenbeekstraat 7c, 8800 Roeselare
Tel: +32 51226044
Email: info.roeselare@shanks.be

35. **Zeebrugge / Sita**
Oeverkant 38, 2070 burcht
Tel: +32 32532204
Email: info@sita.be

36. **Zeebrugge / Wubben Aflaatolie**
Bergsebaan 34, 2910 Essen
Tel: +32 36770347
Email: ingrid.wubben@belgacom.net

37. **Zeebrugge / KAYAK MARITIME SERVICES BVBA**
Napoleonkaai 17-19, 2000 Antwerp
Tel: +32 32272650
Telex: +32 32251741
Email: info@kayak-maritime.be
Website: http://kayak-maritime.be

38. **Antwerp / Oiltanking Stolthaven oil Terminal**
Haven 623, Scheldelaan 450, 2040 Antwerp, Belgium
Tel: +32-3-5611500
Fax: +32-3-5611501
Email: commerce.belgium@oiltanking.com
Website: http://www.oiltanking.com

39. **Ghent / Oiltanking oil Terminal**
Haven 4650A - Moervaartkaai 12, B-9042 Ghent, Belgium
Tel: +32-9-3422727
Fax: +32-9-3422737
Email: commerce.belgium@oiltanking.com
Website: http://www.oiltanking.com

40. **Antwerp / Antwerp Refinery Petroplus**
Petroplus/Belgina Refining Corporation N.V.
Haven 663, Scheldelaan 490, 2040 Antwerpen, Belgium
Hotline for safety issues (24/7): +41 58 580 1100

Email: info@petroplus.biz
Website: http://www.petroplusholdings.com/bus_ref_brc.php

41. **OVAM / Flemish Public Waste Agency** Stationsstraat 110, B-2800 Mechelen, Belgium
Tel: +32 (0)15 284 284
Fax: +32 (0)15 434 403
Email: info@ovam.be
Website: www.ovam.be

42. **Zeebrugge / Bunkers Dagreda n.v.**
Noordzeestraat 23, Zeebrugge, Belgium
24 uur contact: +32 497/481 481
Email: bunkers@online.be

43. **Zeebrugge / Gardin Cyriel n.v.**
Blankenbergsesteenweg 440, Zeebrugge, Belgium
contact tijdens kantoorunen: + 32 50/31.61.02
Email: info@gardinbeton.be

44. **Zeebrugge / Haeck Jan n.v.**
Pathoekeweg 390, Zeebrugge, Belgium
24 uur contact: +32 50/31.20.20
Email: info@janhaeck.be

45. **Zeebrugge / Port of Zeebrugge**
Port Authority Bruges-Zeebrugge
P. Vandammehuis, Isabellalaan 1, B-8380 Zeebrugge, Belgium
Website: www.portofzeebrugge.be
Email: mbz@zeebruggeport.be

46. **Ostende / Port of Ostende**
AG Haven Ostende, Slijkensesteenweg 2, 8400 Ostende, Belgium
Email: info@portofoostende.be

Bulgaria

47. **Burgas / Marine Antipollution Enterprise JSCo**
21 ,"27 July" Str., Varna
Tel: + 359 52 630 631
Fax: + 359 52 602 661
Email: office@pchmv-bg.com
Website: http://www.pchmv-bg.com

48. **Varna / Marine Antipollution Enterprise JSCo**
21 ,"27 July" Str., Varna
Tel: + 359 52 630 631
Fax: + 359 52 602 661
Email: office@pchmv-bg.com
Website: http://www.pchmv-bg.com

49. **Burgas / Port of Burgas**
Email: headoffice@port-burgas.com
Website: http://www.port-burgas.com

Cyprus

50. **Larnaca / Larnaca Oil terminal Cyprus Oil Terminal Ltd.**
Famagusta Road, P.O.Box 40275, 6302 Larnaca
Tel: +357-24-811600
Email: info@cprl.com.cy or info@cotl.com.cy
Website: http://www.cprl.com.cy

51. **Dhekelia / Dhekelia power station, Electricity Authority of Cyprus (EAC)** Website: www.eac.com.cy
Email: eac@eac.com.cy

52. **Moni power station, EAC**
Website: www.eac.com.cy
Email: eac@eac.com.cy

53. **Vassiliko power station, EAC**
YES Website: www.eac.com.cy
Email: eac@eac.com.cy

54. **Vassilikos cement works**
Website: http://www.vassiliko.com/main/default.aspx?tabid=78
Email: info@vassiliko.com

55. **Larnaca / Port of Larnaca**
Cyprus Port Authority
Larnaca Port, 6017 Larnaca, Cyprus
Email: cpa@cpa.gov.cy
Website: http://www.cpa.gov.cy

56. **Limassol / Port of Limassol**
YES Cyprus Port Authority
Omonoia Str., New Port, Cyprus Port Authority, 3052 Limassol
Email: cpa@cpa.gov.cy
Website: http://www.cpa.gov.cy

Denmark

57. **Horsens / Horsens Havn**
Ove Jensens Alle 35
8700 Horsens
Denmark
Tel: 7562 1014
Fax: 7562 1457
Email: horsens.havn@horsens.dk
Website: http://www.horsenshavn.dk

58. **Kolding / Kolding Havn**
Jens Holms Vej 1
6000 Kolding
Denmark
Tel: (+0045)7550 2066
Fax: (+0045)7550 2058
Email: koldingport@kolding.dk

59. **Statoil-Havnen / Statoil Refinery Harbour, Kalundborg**
Melbyvej 17

4400 Kalundborg
Denmark
Tel: 5957 4521
Fax: 5951 6298
Email: kalupier@statoilhydro.com
Website: http://www.statoil.dk

60. **Port of Nyborg / Port of Nyborg**
Lindholm Havnevej 27
DK-5800 Nyborg
Tel: +45 7921 5082
Email: trafik-nh@adp-as.dk
Website: http://www.adp-as.com

61. **Faaborg Harbour / Faaborg Harbour**
Kanalvej 19
5600 Faaborg
Tel: +4572530260
Fax: 6261657
Email: faaborghavn@faaborgmidtfyn.dk
Website: http://faaborghavn.dk/

62. **Faaborg / Falsled Havn**
Fiskerstræde 3
5642 Millinge
Tel: 21284960
Email: birthelei@dbmail.dk

63. **Svendborg / Svendborg Havn**
Jessens Mole 9
5700 Svendborg
Denmark
Tel: 6221 0657
Fax: 6222 0679
Email: havn@svendborg-kom.dk

64. **Kommunekemi a/s / Nyborg & Copenhagen**
Lindholmvej 3, DK-5800 Nyborg
Denmark
Tel: +45 6331 7100
Fax: +45 8031 7300
Telefax: 6331 7300 (adm.)
Email: kk@kommunekemi.dk

65. **Fredericia Refinery and Terminal**
YES **Refinery:**
Dansk Shell A/S, Egeskovvej 265, P.O. Box 106, DK-7000 Fredericia, Denmark
Tel: +45 7920 3522
Fax: +45 7920 3544
Oil Terminal:
Dansk Shell A/S, Kongensgade 113, DK-7000 Fredericia , Denmark
Contacts:
RPL/T - Terminal Shiftleader
Tel: +45 7920 3771
Email: peter.solberg@shell.com

66. **Aarhus H20 Liquid Waste / Port of Grenaa, close to Aarhus**
Sverigesgade 46, DK-8000 Aarhus C
Email: info@h20waste.com
Website: www.h20waste.com

67. **Hantsholm oil Terminal (Shell) / Hantsholm**
Hantsholm Havns Olieforsyning V/Per Skovmose
Havremarken 11, 7730 Hanstholm, Danmark
Email: shellmarinehansthom@mail.dk
Website:
http://www.hanstholmhavn.dk

68. **Port of Frederikshaven / Frederikshavn Port Authority, Oliepieren 7, DK-9900 Frederikshavn, Denmark**
Tel: +45 96 20 47 00
Fax: + 45 96 20 47 11
Email: info@frederikshavnhavn.dk
Website: www.frederikshavnhavn.dk

69. **Port of Alborg / Aalborg East**
Tel: + 45 99 30 15 00
+ 45 99 30 15 30 (direct)
Fax: + 45 96 20 47 11
Email: info@aalborghavn.dk
pip@aalborghavn.dk

70. **Port of Aarhus / Aarhus C**
Mindet 2, Postboks 130, DK-8100 Aarhus C
Email: port@aarhus.dk
Website: http://www.aarhushavn.dk

71. **Port of Esbjerg / Port Administration Esbjerg**
Dokvej 3, DK-6700 Esbjerg, Denmark
Tel: + 45 75 12 41 44
Fax: +45 75 13 40 50
Email: adm@portesbjerg.dk
Port Control-24 hour watch
Auktionsgade 30, DK-6700 Esbjerg, Denmark

72. **Port of Odense / Odense C**
Londongade 1, DK-5000 Odense C, Denmark
Tel: (+45) 66 12 07 92
Fax: (+45) 65 91 47 74
Email: info@odensehavn.dk

73. **Port of Copenhagen / Copenhagen**
Copenhagen Malmo Port AB
Containervej 9, P.O. Box 900, DK-2100 Copenhagen O, Denmark
Tel: + 45 3546 1111
Fax: + 45 3546 1164
Email: cmport@cmport.com

74. **Maersk Broker / Aalborg**
Tel: +45 96 32 31 00
Email: agency.dk@maerskbroker.com

Estonia

75. **Eos, Muuga harbour / port of Tallinn**
EOS (Estonian Oil Service), AS Turmoil
Regati pat 1, 11911 Tallinn, Estonia
Tel: +3726266100
Fax: +3726313093
Email: info@eos.com.ee
Website: http://www.eos.com.ee/
76. **Eurodek, Muuga harbour, port of Tallinn**
Joe 3, 10151 Tallinn, Estonia
Tel: +3726137500
Fax: +3726137510
Email: eurodek@eurodek.ee
Website: http://www.eurodek.com
77. **Neste Eesti AS, Muuga harbour, port of Tallinn**
Sopruse pst 155, 13417 Tallinn
Neste A24 jaamade klienditugi 24 h - 1424
Tel: +3726285500
Fax: +3726285507
Email: neste.eesti@nesteoil.com
Website: http://www.neste.ee/
78. **Nybit, Muuga harbour, port of Tallinn**
Nybit AS
Tel: (372) 631 9422, (372) 631 9423
Email: info@nybit.ee
79. **Oiltanking, Muuga harbour, port of Tallinn Oiltanking Tallinn AS**
Port of Muuga, Oli tn. 7, 74115 Tallinn, Estonia
Tel: +372-6-319 403
Fax: +372-6-319 406
Email: tallinn@oiltanking.com
80. **PakTerminal, Muuga harbour, port of Tallinn**
PakTerminal Ltd.
Lasti Road 20, 74115 Maardu, Estonia
Tel: +372 6319 820
Fax: +372 6319 801
Email: pakTerminal@pakTerminal.ee
Website: http://www.pakTerminal.ee/
81. **Trendgate, Muuga harbour, port of Tallinn**
AS Trendgate
Peterburi Str. 105, 74114, Maardu, Estonia
Tel: +372 6805 800
Fax: +372 6805 801
Email: info@trendgate.ee
Website: http://www.trendgate.ee/
82. **Petromarks Stividori AS, Paljassaare harbour, port of Tallinn**
Petromarks Stividori AS 9A Nylva Str., 10416 Tellinn, Estonia
Tel: + 372 6 507 777
Fax: + 372 6 507 700
Email: stividori@pmg.ee
83. **OU BLRT EKO, Tallinn**
Kopli 103, 11712 Tallinn, Estonia
Email: blrt@blrt.ee
Website: www.bsr.ee
84. **Ecorpo AS, Tallinn**
Ravala 8, 10143 Tallinn, Estonia
Email: ecopro@ecopro.ee
Website: www.ecopro.ee
85. **Bominflot Estonia**
Mr Anatoli Belov
Tel: +372 681 1550
Email: abelov@bominflot.ee
86. **NT Marine**
Mr Einar Kukk
Tel: +372 668 4333
Email: einar.kukk@ntmarine.ee
Mr Valeri Kostjuk
Tel: +372 6684345
Email: valeri.kostjuk@ntmarine.ee
87. **Oiliken Bunkering**
Mr Risto Liinat
Tel: +372 631 4183
Email: risto@oil.ee
Mr Vladimir Koginov
Email: koginov@oil.ee

Finland

88. **Rauma / Harbour Office (Rauma)**
Hakunintie 19 26100 Rauma 10
Tel: (938) 13006
Email: harbour.office@portofrauma.com
89. **Finland Mussalo Vopak Terminal**
YES Vopak Chemicals Logistics Finland Oy Mussalo Terminal
48310 Kotka
Finland
Email: riitta.luhtala@vopak.com
ngrigorieva@vopak.ru (commercial contacts from Website)
90. **Mussalo oil Terminal, Oitanking**
Oiltanking Sonmarin Oy
Insinoorinkatu 3 B, 00880 Helsinki, Finland Oiltanking Sonmarin Oy
Mussalo Terminal Port of Mussalo, 48310 Kotka, Finland
Tel: +358-5-2109-781
Fax: +358-5-2604-678
Email: kotka@oiltanking.com
91. **Porvoo Refinery (Neste)**
Neste Oil Refining - Porvoo Refinery
POB 310, 06101 PORVOO Finland

Website: www.nesteoil.com
www.nesteoil.fi
Email: simo.kolehmainen@nesteoil.com

92. **Naantali Refinery (Neste)**
Refinery HSE
Website: www.nesteoil.com
www.nesteoil.fi
Email: caj.karlsson@nesteoil.com

93. **Ekokem Oy Ab, Riihimaki**
P.O. Box 181, FIN-11101 Riihimaki, Finland
Website: http://www.ekokem.fi/
Email: export@ekokem.fi

94. **Port of Kemi**
Ajoksentie 748, FIN-94900 Kemi, Finland Tel: +358 (0) 16215 1600
Fax: +358 (0) 16 215 1620
Website: http://www.portofkemi.fi/
Email: reijo.viitala@kemi.fi

95. **Port of Oulu**
Visiting address: Poikkimaantie 16, 90400 Oulu
Postal address: P.O. Box 23, 90015 Oulun kaupunki, Finland
Website: http://www.ouluport.com/
Email: oulunsatama@ouka.fi

96. **Port of Kokkola (Ykspihlaja)** YES
Satamakatu 53, 67900 Kokkola, Finland
Tel: +358 (0)6 8242 400
Fax: +358 (0)6 8242 444
Website: www.port.of.kokkola.fi/
Email: satama@kokkola.fi
torbjorn.witting@kokkola.fi

97. **Port of jakobstad-Pietarsaari**
Pietarsaaren Satamakonttori
Laukontie 1, 68600 Jakobstad, Finland
Website:
http://www.portofpietarsaari.fi/
Email: satama@pietarsaari.fi
satamavalvojat@pietarsaari.fi
kristian.hallis@pietarsaari.fi

98. **Port of Vaasa**
Laivanvarustajankatu 3, FIN-65170 Vaasa Box 2, FIN-65101 Vaasa, Finland
Website: http://www.vaasa.fi/
Email: port@vaasa.fi

99. **Port of Kristinestad**
Kristinestad Port Authority
PL 13, Technical Office, 64120 Kristiinankaupunki, Finland
Tel: 358 6 221 6200
Fax: 358 6 221 6285
Email: sven.soderlund@krs.fi

100. **Port of Pori**
Merisatamantie 13, 28880 Pori, Finland
Tel: +358 2 621 2618
Website:
http://www.pori.fi/port/english/
Email: info.port@pori.fi

101. **Port of Turku**
Port Administration
Linnankatu 90, FIN-20100 Turku, Finland Website:
http://www.port.turku.fi/
Email: turkuport@port.turku.fi

France

102. **Bayonne/SANITRA FOURRIER (40)**
2861 Route de Northon
40390 SAINT MARTIN DE SEIGNANX
Tel: 0033 5 59 56 11 53
Fax: 0033 5 59 56 12 06
Email: maria.pretot@sita.fr
Website:
http://www.sanitrafourrier.com/

103. **Brest/SANI OUEST (29 BREST)**
Rue monjaret de kerjegu 29200 BREST
Tel: 0033 2 98 44 28 77
Fax: 0033 2 98 44 89 15
Email: gaelle.quintin@sita.fr
Website: http://www.sita.fr

104. **Brest/NPI Nettoyage Pétrolier Industriel (29)**
36 rue Gérard de Nerval 29200 BREST
Tel: 0033 2 98 05 31 17
Fax: 0033 2 98 05 39 27
Email: franck.rolland7@wanadoo.fr
Website: http://www.npi-ouest.com

105. **Roscoff/SANI OUEST (29 BREST)**
Rue monjaret de kerjegu 29200 BREST
Tel: 0033 2 98 44 28 77
Fax: 0033 2 98 44 89 15
Email: gaelle.quintin@sita.fr
Website: http://www.sita.fr

106. **Roscoff/CHIMIREC (35)**
ZI de Mezoubert 35133 JAVENE
Tel: 0033 2 99 94 86 00
Fax: 0033 2 99 94 18 07
Email: chimirec-javene@chimirec.fr
Website: http://www.chimirec.fr

107. **St Malo/SARP OUEST (22)**
Rue Boisillon 22440 PLOUFARGAN
Tel: 0033 2 96 76 64 64
Fax: 0033 2 96 76 60 66
Email: sarpouest-stbriec@veolia-proprete.fr
Website: http://www.veolia-proprete.fr

108. **St Malo/EVTV Entreprise Vidange des Trois Villes (35)**
18 rue du Clos Baron ZI Sud 35400 SAINT-MALO

Tel: 0033 2 99 81 21 57
Fax: 0033 2 99 82 19 68
Email: contact@evtv.fr
Website: http://www.evtv.fr

109. **Vannes/CHIMIREC (35)**
ZI de Mezoubert 35133 JAVENE
Tel: 0033 2 99 94 86 00
Fax: 0033 2 99 94 18 07
Email: chimirec-javene@chimirec.fr
Website: http://www.chimirec.fr

110. **Basse-Indre/ORTEC ENVIRONNEMENT (44)**
ZI de Brais 11 rue Denis Papin 44600 SAINT NAZAIRE
oe.st-nazaire@ortec.fr
62 quai Emile Cormerais 44800 SAINT HERBLAIN
Email: oe.nantes@ortec.fr
Tel: 0033 2 40 22 00 20 / 0033 2 40 58 22 02
Fax: 0033 2 28 54 03 40 / 0033 2 40 58 00 81
Website: http://www.ortec.fr

111. **Basse-Indre/DUCAMP - SNAM (44)**
Parc Industriel Tabari 7 rue des Ajoncs 44190 CLISSON
Tel: 0033 2 40 54 01 25
Fax: 0033 2 40 54 44 02
Email: courrier@snam.net
Website: http://www.groupe-ducamp.com

112. **Donges/ORTEC ENVIRONNEMENT (44)**
ZI de Brais 11 rue Denis Papin 44600 SAINT NAZAIRE
oe.st-nazaire@ortec.fr
62 quai Emile Cormerais 44800 SAINT HERBLAIN
Email: oe.nantes@ortec.fr
Tel: 0033 2 40 22 00 20 / 0033 2 40 58 22 02
Fax: 0033 2 28 54 03 40 / 0033 2 40 58 00 81
Website: http://www.ortec.fr

113. **Donges/DUCAMP - SNAM (44)**
Parc Industriel Tabari 7 rue des Ajoncs 44190 CLISSON
Tel: 0033 2 40 54 01 25
Fax: 0033 2 40 54 44 02
Email: courrier@snam.net
Website: http://www.groupe-ducamp.com

114. **Paimboeuf/ORTEC ENVIRONNEMENT (44)**
ZI de Brais 11 rue Denis Papin 44600 SAINT NAZAIRE
oe.st-nazaire@ortec.fr
62 quai Emile Cormerais 44800 SAINT HERBLAIN
Email: oe.nantes@ortec.fr
Tel: 0033 2 40 22 00 20 / 0033 2 40 58 22 02
Fax: 0033 2 28 54 03 40 / 0033 2 40 58 00 81
Website: http://www.ortec.fr

115. **Paimboeuf/DUCAMP - SNAM (44)**
Parc Industriel Tabari 7 rue des Ajoncs 44190 CLISSON
Tel: 0033 2 40 54 01 25
Fax: 0033 2 40 54 44 02
Email: courrier@snam.net
Website: http://www.groupe-ducamp.com

116. **Nantes/ORTEC ENVIRONNEMENT (44)**
ZI de Brais 11 rue Denis Papin 44600 SAINT NAZAIRE
Email: oe.st-nazaire@ortec.fr
62 quai Emile Cormerais 44800 SAINT HERBLAIN
oe.nantes@ortec.fr
Tel: 0033 2 40 22 00 20 / 0033 2 40 58 22 02
Fax: 0033 2 28 54 03 40 / 0033 2 40 58 00 81
Website: http://www.ortec.fr

117. **Nantes/DUCAMP - SNAM (44)**
Parc Industriel Tabari 7 rue des Ajoncs 44190 CLISSON
Tel: 0033 2 40 54 01 25
Fax: 0033 2 40 54 44 02
Email: courrier@snam.net
Website: http://www.groupe-ducamp.com

118. **St Nazaire/ORTEC ENVIRONNEMENT (44)**
ZI de Brais 11 rue Denis Papin 44600 SAINT NAZAIRE
oe.st-nazaire@ortec.fr
62 quai Emile Cormerais 44800 SAINT HERBLAIN
Email: oe.nantes@ortec.fr
Tel: 0033 2 40 22 00 20 / 0033 2 40 58 22 02
Fax: 0033 2 28 54 03 40 / 0033 2 40 58 00 81
Website: http://www.ortec.fr

119. **St Nazaire/DUCAMP - SNAM (44)**
Parc Industriel Tabari 7 rue des Ajoncs 44190 CLISSON
Tel: 0033 2 40 54 01 25
Fax: 0033 2 40 54 44 02

Email: courrier@snam.net
Website: http://www.groupe-ducamp.com

120. **La Pallice / VEOLIA PROPRETE DELFAU (17)**
Route de Chatelaillon ZA BP3 17220 LA JARNE
Tel: 0033 5 46 56 64 44
Fax: 0033 5 46 56 66 75
Email: virginie.lozano@veolia-proprete.fr
Website: http://www.veolia-proprete.fr

121. **La Pallice / SANITRA FOURRIER (16)** ZE Ma Campagne 16000 ANGOULEME
Tel: 0033 5 45 61 25 11
Fax: 0033 5 45 61 40 24
Website: http://www.sanitrafourrier.com

122. **La Pallice / DUCAMP - SNAM (79)**
ZI St Florent Rue du Sud 79000 NIORT
Tel: 0033 5 49 79 64 44
Fax: 0033 5 49 73 23 69
Email: oriam@groupe-ducamp.com
Website: http://www.groupe-ducamp.com

123. **La Rochelle / VEOLIA PROPRETE DELFAU (17)**
Route de Chatelaillon ZA BP3 17220 LA JARNE
Tel: 0033 5 46 56 64 44
Fax: 0033 5 46 56 66 75
Email: virginie.lozano@veolia-proprete.fr
Website: http://www.veolia-proprete.fr

124. **La Rochelle / SANITRA FOURRIER (16)**
ZE Ma Campagne 16000 ANGOULEME
Tel: 0033 5 45 61 25 11
Fax: 0033 5 45 61 40 24
Website: http://www.sanitrafourrier.com

125. **La Rochelle / DUCAMP - SNAM (79)**
ZI St Florent Rue du Sud 79000 NIORT
Tel: 0033 5 49 79 64 44
Fax: 0033 5 49 73 23 69
Email: oriam@groupe-ducamp.com
Website: http://www.groupe-ducamp.com

126. **Tonnay-Charente / VEOLIA PROPRETE DELFAU (17)**
Route de Chatelaillon ZA BP3 17220 LA JARNE
Tel: 0033 5 46 56 64 44
Fax: 0033 5 46 56 66 75
Email: virginie.lozano@veolia-proprete.fr Website: http://www.veolia-proprete.fr

127. **Rochefort / VEOLIA PROPRETE DELFAU (17)**
Route de Chatelaillon ZA BP3 17220 LA JARNE
Tel: 0033 5 46 56 64 44
Fax: 0033 5 46 56 66 75
Email: virginie.lozano@veolia-proprete.fr Website: http://www.veolia-proprete.fr

128. **Bassens / SARP SUD OUEST (33)**
1 RUE Goya 33530 BASSENS
Tel: 0033 5 56 38 62 38
Fax: 0033 5 56 77 66 20
Email: sarpso.bordeaux@veolia-proprete.fr
Website: http://www.veolia-proprete.fr

129. **Bassens / ONET SERVICES INDUSTRIE (33)**
25 avenue du Général de Gaulle 33530 BASSENS
Tel: 0033 5 56 74 99 10
Email: onet-serv-ind-bord@onet.fr
Website: http://www.onet-propretemultiservices.com

130. **Bassens / PENA ENVIRONNEMENT (33)**
4773 route de Pierroton 33127 ST JEAN D'ILLAC
Tel: 0033 5 57 97 37 77
Fax: 0033 5 57 97 37 73
Email: adonis-pena@wanadoo.fr
Website: http://www.pena.fr

131. **Bec d'Ambès / SARP SUD OUEST (33)** 1 RUE Goya 33530 BASSENS
Tel: 0033 5 56 38 62 38
Fax: 0033 5 56 77 66 20
Email: sarpso.bordeaux@veolia-proprete.fr Website: http://www.veolia-proprete.fr

132. **Bec d'Ambès / ONET SERVICES INDUSTRIE (33)**
25 avenue du Général de Gaulle 33530 BASSENS
Tel: 0033 5 56 74 99 10
Email: onet-serv-ind-bord@onet.fr
Website: http://www.onet-propretemultiservices.com

133. **Bec d'Ambès / PENA ENVIRONNEMENT (33)**
4773 route de Pierroton 33127 ST JEAN D'ILLAC
Tel: 0033 5 57 97 37 77
Email: adonis-pena@wanadoo.fr
Website: http://www.pena.fr

134. **Blaye / SARP SUD OUEST (33)**
1 RUE Goya 33530 BASSENS
Tel: 0033 5 56 38 62 38
Fax: 0033 5 56 77 66 20
Email: sarpso.bordeaux@veolia-proprete.fr
Website: http://www.veolia-proprete.fr

135. **Blaye / ONET SERVICES INDUSTRIE (33)**
25 avenue du Général de Gaulle
33530 BASSENS
Tel: 0033 5 56 74 99 10
Email: onet-serv-ind-bord@onet.fr
Website: http://www.onet-propretemultiservices.com

136. **Blaye / PENA ENVIRONNEMENT (33)**
4773 route de Pierroton 33127 ST JEAN D'ILLAC
Tel: 0033 5 57 97 37 77
Fax: 0033 5 57 97 37 73
Email: adonis-pena@wanadoo.fr
Website: http://www.pena.fr

137. **Bordeaux / SARP SUD OUEST (33)**
1 RUE Goya 33530 BASSENS
Tel: 0033 5 56 38 62 38
Fax: 0033 5 56 77 66 20
Email: sarpso.bordeaux@veolia-proprete.fr
Website: http://www.veolia-proprete.fr

138. **Bordeaux / ONET SERVICES INDUSTRIE (33)**
25 avenue du Général de Gaulle
33530 BASSENS
Tel: 0033 5 56 74 99 10
Email: onet-serv-ind-bord@onet.fr
Website: http://www.onet-propretemultiservices.com

139. **Bordeaux / PENA ENVIRONNEMENT (33)**
4773 route de Pierroton 33127 ST JEAN D'ILLAC
Tel: 0033 5 57 97 37 77
Fax: 0033 5 57 97 37 73
Email: adonis-pena@wanadoo.fr
Website: http://www.pena.fr

140. **Le Verdon-sur-Mer / SARP SUD OUEST (33)**
1 RUE Goya 33530 BASSENS
Tel: 0033 5 56 38 62 38
Fax: 0033 5 56 77 66 20
Email: sarpso.bordeaux@veolia-proprete.fr
Website: http://www.veolia-proprete.fr

141. **Le Verdon-sur-Mer / ONET SERVICES INDUSTRIE (33)**
25 avenue du Général de Gaulle
33530 BASSENS
Tel: 0033 5 56 74 99 10
Email: onet-serv-ind-bord@onet.fr
Website: http://www.onet-propretemultiservices.com

142. **Le Verdon-sur-Mer / PENA ENVIRONNEMENT (33)**
4773 route de Pierroton 33127 ST JEAN D'ILLAC
Tel: 0033 5 57 97 37 77
Fax: 0033 5 57 97 37 73
Email: adonis-pena@wanadoo.fr
Website: http://www.pena.fr

143. **Pauillac / SARP SUD OUEST (33)**
1 RUE Goya 33530 BASSENS
Tel: 0033 5 56 38 62 38
Fax: 0033 5 56 77 66 20
Email: sarpso.bordeaux@veolia-proprete.fr
Website: http://www.veolia-proprete.fr

144. **Pauillac / ONET SERVICES INDUSTRIE (33)**
25 avenue du Général de Gaulle
33530 BASSENS
Tel: 0033 5 56 74 99 10
Email: onet-serv-ind-bord@onet.fr
Website: http://www.onet-propretemultiservices.com

145. **Pauillac / PENA ENVIRONNEMENT (33)**
4773 route de Pierroton 33127 ST JEAN D'ILLAC
Tel: 0033 5 57 97 37 77
Fax: 0033 5 57 97 37 73
Email: adonis-pena@wanadoo.fr
Website: http://www.pena.fr

146. **Port-la-Nouvelle / SITA SRA SAVAC SEARMIP (11)**
9 RUE DE LA Coustoune ZI La Bouriette
11000 CARCASSONNE
Tel: 0033 4 68 47 25 59
Fax: 0033 4 68 71 28 31
Email: francis.verrier@sita.fr
Website: http://www.sra-savac.com

147. **Port-la-Nouvelle / SARP MEDITERANNEE (30)**
ZI Corata
30250 SOMMIERES
Tel: 0033 4 66 80 67 28
Fax: 0033 4 66 77 76 75
Email: jean-louis.scherrer2@veolia-proprete.fr
Website: http://www.veolia-proprete.fr

148. **Toulon / SERMAP (13)**
17 avenue Lascos

13500 MARTIGUES
Tel: 0033 4 42 07 05 60
Fax: 0033 4 42 81 81 82
Email: sermap@sermap-group.com
Website: http://www.sermap-group.com

149. **La Seyne-sur-Mer / SERMAP (13)**
17 avenue Lascos
13500 MARTIGUES
Tel: 0033 4 42 07 05 60
Fax: 0033 4 42 81 81 82
Email: sermap@sermap-group.com
Website: http://www.sermap-group.com

150. **Sète / SITA SRA SAVAC SEARMIP (34)**
74 rue Maurice le Boucher ZAC de Tournezy
34070 MONTPELLIER
Tel: 0033 4 67 74 00 75
Fax: 0033 4 67 27 78 82
Email: francis.verrier@sita.fr
Website: http://www.sra-savac.com

151. **Sète / VEOLIA PROPRETE ONYX MEDITERRANEE (34)**
595 Rue Mas St Pierre ZI Marché Gare
34070 MONTPELLIER
Tel: 0033 4 67 06 16 16
Fax: 0033 4 67 06 16 19
Email: anthony.bouguen@veolia-proprete.fr
Website: http://www.veolia-proprete.fr

152. **Berre / SERMAP (13)**
17 avenue Lascos
13500 MARTIGUES
Tel: 0033 4 42 07 05 60
Fax: 0033 4 42 81 81 82
Email: sermap@sermap-group.com
Website: http://www.sermap-group.com

153. **Berre / TPA (13)**
Enceinte portuaire Porte 145 BP9
13467 MARSEILLE Cedex 16
Tel: 0033 4 91 03 17 15
Fax: 0033 4 91 69 93 18
Email: cebejer@sarpindustries.fr
Website: http://www.sarpiweb.com

154. **Berre / VEOLIA PROPRETE ONYX MEDITERRANEE (83)**
783 avenue Robert Brun
83500 LA SEYNE SUR MER
Tel: 0033 4 94 11 14 00
Fax: 0033 4 94 30 65 36
Email: sdeshayes@cgea.fr
Website: http://www.veolia-proprete.fr

155. **Berre-l'Étang / SERMAP (13)**
17 avenue Lascos
13500 MARTIGUES
Tel: 0033 4 42 07 05 60
Fax: 0033 4 42 81 81 82
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Website: http://www.sermap-group.com

156. **Berre-l'Étang / TPA (13)**
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Tel: 0033 4 91 03 17 15
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Website: http://www.sarpiweb.com

157. **Berre-l'Étang / VEOLIA PROPRETE ONYX MEDITERRANEE (83)**
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Fax: 0033 4 94 30 65 36
Email: sdeshayes@cgea.fr
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158. **Caronte / SERMAP (13)**
17 avenue Lascos
13500 MARTIGUES
Tel: 0033 4 42 07 05 60
Fax: 0033 4 42 81 81 82
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Website: http://www.sermap-group.com

159. **Caronte / TPA (13)**
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160. **Caronte / VEOLIA PROPRETE ONYX MEDITERRANEE (83)**
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Fax: 0033 4 94 30 65 36
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161. **La Mède / SERMAP (13)**
17 avenue Lascos
13500 MARTIGUES
Tel: 0033 4 42 07 05 60
Fax: 0033 4 42 81 81 82
Email: sermap@sermap-group.com
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162. **La Mède / TPA (13)**
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Fax: 0033 4 91 69 93 18
Email: cebejer@sarpindustries.fr
Website: http://www.sarpiweb.com

163. **La Mède / VEOLIA PROPRETE ONYX MEDITERRANEE (83)**
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Tel: 0033 4 94 11 14 00
Fax: 0033 4 94 30 65 36
Email: sdeshayes@cgea.fr
Website: http://www.veolia-proprete.fr

164. **Lavéra / SERMAP (13)**
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13500 MARTIGUES
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Fax: 0033 4 42 81 81 82
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Website: http://www.sermap-group.com

165. **Lavéra / TPA (13)**
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Website: http://www.sarpiweb.com

166. **Lavéra / VEOLIA PROPRETE ONYX MEDITERRANEE (83)**
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Fax: 0033 4 94 30 65 36
Email: sdeshayes@cgea.fr
Website: http://www.veolia-proprete.fr

167. **Port-de-Bouc / SERMAP (13)**
17 avenue Lascos
13500 MARTIGUES
Tel: 0033 4 42 07 05 60
Fax: 0033 4 42 81 81 82
Email: sermap@sermap-group.com
Website: http://www.sermap-group.com

168. **Port-de-Bouc / TPA (13)**
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Website: http://www.sarpiweb.com

169. **Port-de-Bouc / VEOLIA PROPRETE ONYX MEDITERRANEE (83)**
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170. **Fos-sur-Mer / SERMAP (13)**
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171. **Fos-sur-Mer / TPA (13)**
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172. **Fos-sur-Mer / VEOLIA PROPRETE ONYX MEDITERRANEE (83)**
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Fax: 0033 4 94 30 65 36
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173. **Marseille / SERMAP (13)**
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Fax: 0033 4 42 81 81 82
Email: sermap@sermap-group.com
Website: http://www.sermap-group.com

174. **Marseille / TPA (13)**
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Website: http://www.sarpiweb.com

175. **Marseille / VEOLIA PROPRETE ONYX MEDITERRANEE (83)**
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Tel: 0033 4 94 11 14 00
Fax: 0033 4 94 30 65 36
Email: sdeshayes@cgea.fr
Website: http://www.veolia-proprete.fr

176. **Berre / ORTEC ENVIRONNEMENT (13)**
386 Boulevard Henri Barnier
13016 MARSEILLE
Tel: 0033 4 96 15 19 19
Fax: 0033 4 96 15 19 20

Email: oe.marseille@ortec.fr
Website: http://www.ortec.fr

177. **Berre-l'Étang / ORTEC ENVIRONNEMENT (13)**
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Fax: 0033 4 96 15 19 20
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178. **Caronte / ORTEC ENVIRONNEMENT (13)**
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179. **Fos-sur-Mer / ORTEC ENVIRONNEMENT (13)**
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Website: http://www.ortec.fr

180. **La Mède / ORTEC ENVIRONNEMENT (13)**
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Website: http://www.ortec.fr

181. **Lavéra / ORTEC ENVIRONNEMENT (13)**
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Fax: 0033 4 96 15 19 20
Email: oe.marseille@ortec.fr
Website: http://www.ortec.fr

182. **Marseille / ORTEC ENVIRONNEMENT (13)**
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Fax: 0033 4 96 15 19 20
Email: oe.marseille@ortec.fr
Website: http://www.ortec.fr

183. **Port-de-Bouc / ORTEC ENVIRONNEMENT (13)**
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13016 MARSEILLE
Tel: 0033 4 96 15 19 19
Fax: 0033 4 96 15 19 20
Email: oe.marseille@ortec.fr
Website: http://www.ortec.fr

184. **Port-Saint-Louis-du-Rhône / SERMAP (13)**
17 avenue Lascos
13500 MARTIGUES
Tel: 0033 4 42 07 05 60
Fax: 0033 4 42 81 81 82
Email: sermap@sermap-group.com
Website: http://www.sermap-group.com

185. **Port-Saint-Louis-du-Rhône / TPA (13)**
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13467 MARSEILLE Cedex 16
Tel: 0033 4 91 03 17 15
Fax: 0033 4 91 69 93 18
Email: cebejer@sarpindustries.fr
Website: http://www.sarpiweb.com

186. **Port-Saint-Louis-du-Rhône / VEOLIA PROPRETE ONYX MEDITERRANEE (83)**
783 avenue Robert Brun
83500 LA SEYNE SUR MER
Tel: 0033 4 94 11 14 00
Fax: 0033 4 94 30 65 36
Email: sdeshayes@cgea.fr
Website: http://www.veolia-proprete.fr

187. **Port-Saint-Louis-du-Rhône / ORTEC ENVIRONNEMENT (13)**
386 Boulevard Henri Barnier
13016 MARSEILLE
Tel: 0033 4 96 15 19 19
Fax: 0033 4 96 15 19 20
Email: oe.marseille@ortec.fr
Website: http://www.ortec.fr

188. **Calais / SANINORD (59)**
ZA Leurette
BP 11
59820 Gravelines
Tel: 0033 3 28 65 93 00
Fax: 0033 3 28 65 93 10
Email: gregory.gorski@sita.fr
Website: http://www.saninord.com

189. **Calais / CHIMIREC NOREC (62)**
ZA de Mussent
62129 ECQUES
Tel: 0033 3 21 93 00 73
Fax: 0033 3 21 93 40 41
Email: chimirec-norec@chimirec.fr
Website: http://www.chimirec.fr

190. **Dunkerque / SANINORD (59)**
ZA Leurette
BP 11
59820 Gravelines
Tel: 0033 3 28 65 93 00

Fax: 0033 3 28 65 93 10
Email: gregory.gorski@sita.fr
Website: http://www.saninord.com

191. **Dunkerque / Hydropale**
YES
2721 route de l'ecluse Charles de Gaulle
Tel: 0033 3 28 97 97
Fax: 0033 3 28 97 98
Email: hydropale@sarpindustries.fr

192. **Dunkerque / MARPOS (BELGIQUE)**
L. Coiseaukaai 43
B-8380 Dudzele
BELGIQUE
Tel: 0032 50 59 88 01
Fax: 0032 50 59 88 02
Email: info.marpos@shanks.be
Website:
http://www.cab.sss.be/marpos.htm

193. **Ajaccio / CHIMIREC APROCHIM (2A)**
ZA de Folelli
20213 PENTA DE CASINCA
Tel: 0033 4 95 58 43 13
Fax: 0033 4 95 38 52 58
Email: contact@aprochim.fr
Website: http://www.chimirec.fr

194. **Petit Couronne / ORTEC ENVIRONNEMENT (76)**
125 bis, rue de Paris
76800 SAINT ÉTIENNE-DU-ROUVRAY
Tel: 0033 2 32 91 60 60
Fax: 0033 2 32 91 60 61
Email: oe.rouen@ortec.fr
Website: http://www.ortec.fr

195. **Port-Jérôme / ORTEC ENVIRONNEMENT (76)**
125 bis, rue de Paris
76800 SAINT ÉTIENNE-DU-ROUVRAY
Tel: 0033 2 32 91 60 60
Fax: 0033 2 32 91 60 61
Email: oe.rouen@ortec.fr
Website: http://www.ortec.fr

196. **Radicatel / ORTEC ENVIRONNEMENT (76)**
125 bis, rue de Paris
76800 SAINT ÉTIENNE-DU-ROUVRAY
Tel: 0033 2 32 91 60 60
Fax: 0033 2 32 91 60 61
Email: oe.rouen@ortec.fr
Website: http://www.ortec.fr

197. **Port of Bastia, Corsica**
Capitainerie du Port de Bastia - Commandant
Quai du 1er bataillon de choc, 20200 Bastia
Website: http://www.port-de-bastia.net
Tel: 04 95 34 42 72
Fax: 04 95 34 42 88
Email: cap.smas.ddea-2b@equipement-agriculture.gouv.fr

198. **Port of Marseille**
YES Port Autonome de Marseille 23, place de la Joliette, BP 81 965, 13 226 Marseille Cedex 02 Tel: (33) 4 91 39 40 00
Fax: (33) 4 91 39 57 00
Email: sabine.qhomaty@marseille-port.fr gpmm@marseille-port.fr
Website: http://www.marseille-port.fr/

199. **Port of Caen-Ouistreham**
Bassin d'Herouville - 14 200 Herouville Saint-Clair
Tel: + 33 2 31 35 63 00
Email: port.commerce@caen.cci.fr
info@caen.port.fr

200. **Port of Cherbourg**
CCI Cherbourg Cotentin
Hotel Atlantique - Bvd Felix Amiot - BP 839 - 50,108 Cherbourg-Octeville cedex
Tel: +33 2 33 23 32 25
Email: port@cherbourg-cotentin.cci.fr

201. **Port of Calais**
Service maritime du port de Calais
Place de l' Europe, 62 226 Calais cedex
Tel: +33 3 21 00 68 00
Email: ccic@calais.cci.fr

Germany

202. **Brake / Nieders. Hafenamt Brake**
Brommystr. 2
26919 Brake
Tel: (04401) 925-0
Fax: (04401) 3272
Email: mbrueggemann@nports.de

203. **Büsum / Amt für ländliche Räume Heide (Busum)**
Berliner Straße 19
25746 Heide
Tel: (0481) 92323 or (04834) 3607
Email: rainer.wallhof@lkn.landsh.de

204. **Emden / Nieders. Hafenamt Emden**
Friedrich-Naumann-Str. 7-9
26700 Emden
Tel: (04921) 897120
Fax: (04921) 897137
Email: hafenmeister-emd@nports.de

205. **Greifswald / Greifswalder Hafengesellschaft (Griefswald)**

Thomas-Müntzer-Strasse
17493 Greifswald
Tel: (03834) 843968
Email:
Joachim.gramkow@hegemann.de

206. **Nordenham - Blexen / Grave Blexen YES**
Nordenham Blexen
Tel: 0049 4731 31330
Fax: 0049 4731 39545
Email: TL-Blexen@petrotank.de

207. **Lübeck / Port Authority Lübeck**
Hafenamt
An der Untertrave 107
23552 Lübeck
Tel: (0451) 1228620 or (0451) 1228611
Email: marcuskossiski@web.de

208. **Neustadt in Holstein / Port Authority Neustadt (Neustadt i. H.)**
Stadtwerke Neustadt
Ziegelhof 6-8
23730 Neustadt
Tel: (04561) 51100 or (04561) 61236
Email: info@swnh.de

209. **Papenburg / Stadt Papenburg-Hafenamt (Papenburg)**
Seeschleuse
26871 Papenburg
Tel: (04961) 2640 or 82261
Fax: (04961) 82315
Email: info@papenburg.de

210. **Stralsund / Hafen-und Seemannsamt Stralsund**
Hafenstr. 50
18439 Stralsund
Tel: (03831) 260130
Fax: (03831) 260135
Email: hafenamt@stralsund.de

211. **Wilhelmshaven / Nieders. Hafenamt (Wilhelmshaven)**
Neckarstr. 10
26360 Wilhelmshaven
Tel: (04421) 4800-0
Fax: (04421) 480099
Email: lwilhelm@nports.de

212. **Maasholm / Port Authority Maasholm**
24404 Maasholm
Tel: (04642) 6021 or (04642) 6571
Email: maasholm@t-online.de

213. **NWO oil Terminal, Wilhelmshaven**
Nord-West Oelleitung GmbH i.A.
Zum Olhafen 207
26384 Wilhelmshaven
Tel: + 49.4421.62-314
Fax: + 49.4421.62-214
Email: t.getrost@nwowhv.de

214. **HOG Hamburg**
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Tel: + 49 40 752 4620
Fax: + 49 40 752 46220
Email: info@hoeg-hamburg.de

215. **Bominflot Hamburg**
Bominflot Tanklager GmbH
Tankweg 1, 21129 Hamburg, Germany
Tel: + 49 40 740 00 70
Fax: + 49 40 74 00 07 51 (+49 40 740007-32)
Email: tanklager-hamburg@bominflot.de
Website: http://www.bominflot.de/

216. **DUPEG oil Terminal, Hamburg**
DUPEG Tank-Terminal
Deutsch-Ueberseeische Petroleum GmbH & Co.
Tankweg 4, D-21129 Hamburg
Tel: + 49 (0) 40 74044-114
Fax: + 49 (0) 40 74044-140 (+49 (0) 40 7401-703
Email: TankTerminal@Dupeg.de
Website: http://www.dupeg.de/

217. **AVG Hamburg**
AVG Abfall-Verwetungs-Gesellschaft mbH
Borsigstrabe 2
22113 Hamburg
Germany
Tel: + 49 (0) 40 73351-0
Fax: + 49 (0) 40 73251-64
e-mail: info@avg-hamburg.de
Website: http://www.avg-hamburg.de/

218. **SAVA Sonderabfallverbrennungsanlagen GmbH**
Ostertweute 1
D-25541 Brunsbuttel
Tel: + 49 (0)4852/8308-0
Fax: + 49 (0)4852/8308-12
Email: info.sava@remondis.de

219. **P+B Olrecycling Bremerhaven**
P+B Ol Recycling GmbH
Barkhausenstrabe 35-43
D-27568 Bremerhaven
Tel: +49 (0) 471 94690-0
Fax: +49 (0) 471 94690-90
Email: kontakt@pundb-oelrecycling.de

Greece

220. **Thessaloniki / North Aegean Slops-Ilias Orfanidis**

YES 42 26th October str.
54627 Thessaloniki
Tel: +302310 553473
Fax: +302310 554027
Email: info@northaegeanslops.gr
Website: http://www.northaegeanslops.gr

221. **Agioi Theodori / Seka Ltd.**
(Motor Oil Installation)
Agioi Theodori Post Office
Akti Miaouli
53 55 Piraeus*
or Dock Master Motor Oil
Motor Oil (Hellas) Ltd.
Corinth Refineries**
Tel: 4522911* / Corinth 25521
Telex: 232141 MOTO GR*
Email: contact@moh.gr

222. **Chalkis / Chalkis Port Authority**
Chalkis Shipyard
P.O. Box 19237
34100 Chalkis2
Tel: +3022210 30386-30385-30376-30379
Fax: +3022210 30374-32009
Email: halk@yen.gr

223. **Skaramangas / Hellenic Shipyards S.A.**
P.O. Box 3480
10233 Athens
Tel: +30 2105578315
Telex: 215396 HSYS GR
Fax: +30 2105570700
Email: ssarvanidis@hellenic-shipyards.gr

224. **Piraeus / Hellenic Environmental Center S.A** YES
42, Hatzikiriakou Ave.
18538, Piraeus, Greece
Tel: +30-210-4290280
Telex: +30210-4290286
Email: info@hec.gr
Website: http://www.hec.gr

225. **Patras / Hellenic Environmental Center S.A**
42, Hatzikiriakou Ave.
18538, Piraeus, Greece
Tel: +30-210-4290280
Telex: +30210-4290286
Email: info@hec.gr
Website: http://www.hec.gr

226. **Kavala / Kavala Port SA**
Averof 3, Kavala
Tel: +302510 223716
Telex: 0452140
Email: info@portkavala.gr

227. **Kavala / Kavala Oil**
Address: Kavala
Tel: +302510 317201
Fax: +302510 317204
Email: plant.operations@kavalaoil.gr

228. **Corinth / Lamda Shipyards and Marine Services S.A.**
27th Km Athens-Corinth
Old National Road
Tel: +30210 5545100
Fax: +30210 5548750
Email: shipyards@lamda-development.net

229. **Elefsis / Hellenic Environmental Center S.A**
42, Hatzikiriakou Ave.
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Telex: +30210-4290286
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230. **Corinth / Hellenic Environmental Center S.A**
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231. **Elefsis / Hellenic Shipyards S.A.**
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Fax: +302105570700
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232. **Rio / Hellenic Environmental Center S.A**
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Tel: +30-210-4290280
Telex: +30210-4290286
Email: info@hec.gr
Website: http://www.hec.gr

233. **Alexandroupolis / HATZILOUKAS ABETE**
1 Kifisias Avenue,
151 23 Marousi
GREECE
Tel: +302106897361-3
Fax: 2106897646
Email: info@xlukas.gr

234. **Syros / Neorion Shipyards**
1 Neoriou str.
84100 Syros
Tel: +3022810-96000
Telex: 293103 NSS GR
Fax: +3022810-82008
Email: sec@neorion-shipyards.gr

235. **Thessaloniki / Hellenic Petroleum SA** 54110 Thessaloniki
Tel: +302310 750000
Telex: +302310 750001
Email:
a.skarlatoudis@hellenicpetroleum.gr

236. **Port of Patras**
Patras Port Authority
Email: info@patrasport.gr
Website: http://www.patrasport.gr/

Ireland

237. **Cork / Greenstar Waste Management** Glanmire,
Co Cork
Tel: 021 4822488
Fax: 021 4821107
Email: barry.oneill@greenstar.ie
Website:
http://www.greenstar.ie/htm/contact/index.htm

238. **Cork / Private Operator in Conoco Philips Refinery**
YES
Private Operator in Conoco Philips Refinery
Whitegate, Co. Cork
Tel: +353 (0) 21 4622200
Fax: +353 (0) 21 4622222
Telephone: 353 21 462 2245
Email:
john.mccarthy@conocophillips.com

239. **Rosslare / MSM Recycling Ltd**
41 Cookstown Industrial Estate
Tallaght
Dublin 24
Tel: 01-4610077
Fax: 01-4526236
Email: info@msmrecycling.com
Website:
http://www.msmrecycling.com/home.html

240. **Cork / Bantry Bay Refinery**
YES ConocoPhilips Bantry Bay Terminal, Bantry, Co Cork, Ireland
Latitude: 51° 41' N, Longitude: 09° 32' W Tel: + 353 (0) 27 50380
Fax: + 353 (0) 27 50282

241. **Shannon Estuary / Port of Shannon Foynes**
Shannon Foynes port company,
Shannon Estuary, Ireland
Email: marineops@sfpc.ie

242. **Londonderry (Topaz) oil Terminal, Northern Ireland**
Topaz Energy
Topaz House, Beech Hill, Clonskeagh, Dublin 4
Tel: +353 (0) 1 202 8888
Fax: +353 (0) 1 2838320
Email: corporate@topazenergy.ie
Website: http://www.topazenergy.ie/

243. **Londonderry (LSS) oil Terminal, Northern Ireland**
LSS Limited
Carrakeel Industrial Park, Maydown, Londonderry
Northern Ireland BT47 6SZ
Website: http://www.lsslimited.com/
Tel: ++44 (0) 28 71 861 451
E-mail: alan.kerr@lsslimited.com

244. **Great Island Generating Station, Electricity Supply Board (ESB)**
Campile, New Ross, County Wexford, Ireland
Website: http://www.esb.ie/
Electric Ireland:
E-mail: service@electricireland.ie
Tel: +353 1 852 9534
ESB Networks Ltd:
Email: esbnetworks@esb.ie
Tel: +353 21 494 7260

245. **Tarbert Generating Station (ESB)**
Tarbert Generating Station
Tarbert, County Kerry, Ireland

246. **Poolbeg Generating Station (ESB)**
Poolbeg Generating Station
Pigeon House Harbour, Dublin 4, Ireland

247. **Port of Waterford**
Port of Waterford Company
Belview Port, Slieverue, Waterford, Ireland
Tel: + 353 (0)51 301400
Fax: + 353 (0)51 301488
Email: info@portofwaterford.com
Website:
http://www.portofwaterford.com/

248. **Port of Belfast**
Harbour Office, Corporation Square, Belfast, N Ireland BT1 3AL
Tel: +353 28 9055 4422
Fax: +353 28 9055 4420
Email: commercial@belfast-

harbour.co.uk Website:
http://www.belfast-harbour.co.uk

Italy

249. **Marghera / Capitaneria di Porto di Venezia (Guardie ai Fuochi)**
Soc. Coop Guardie ai Fuochi del Porto di Venezia
Via Rizzardi n. 50/52
Marghera (VE)
Tel: 041 920224 / 920100
E-mail: venezia@guardiacostiera.it
cpvenezia@mit.gov.it
Via Fratelli Bandiera n.55/6,
30175 Marghera, Venezia,
Tel: + 39 041 920100
Fax: + 39 041 2529350
Email: presidenza@guardieaifuochi.it
info@guardieaifuochi.it
amministrazione@guardieaifuochi.it
Autorita Portuale di Venezia
Zattere, 1401-30123, Venezia
Tel: + 39 041 533 4111
Fax: + 39 041 533 4254
Email: apv@port.venice.it

250. **Santa Panagia / Isab terminal south site**
YES
Tel: +39 0931 208361
Fax: +39 0931 208367
Email: ct-point@isab.com

251. **Trapani / Capitaneria di Porto (Trapani)**
Via Torrearsa, 2
Tel: 0923 28900
Telex: 910942
Email: trapani@guardiacostiera.it

252. **Ancona / garbage service srl**
molo sud 60125 ANCONA
Tel: 0039 071 2073094
Fax: 0039 071 206957
Email: info@garbageservice.it
Website:
http://www.garbageservice.biz

253. **Augusta / Gestione Pontoni**
via M. di Ponente n. 15
96011 AUGUSTA (SR)
Tel: 0039 0931 971205
Fax: 0039 0931 971205
Email: gpontonisrl@virgilio.it
Website:
http://www.pontoniponzio.com

254. **Ravenna / Ambiente Mare S.p.A.**
Via del Marchesato, 35
48023 - Marina di Ravenna
Tel: 0039 0544 530152
Fax: 0039 0544 531072
Email: ambientemare@libero.it

255. **Napoli / Soc. Coop. a r.l. SERVIZI LAMPO**
Piazzale Molo Carmine Interno Porto
80133 - NAPOLI -
Tel: 0039 081 284007
Fax: 0039 081 288020
Email: servizi.lampo@email.it

256. **Napoli / Gruppo Riunito Sbarco Ceneri s.n.c.**
Testata Molo Carmine
80133 - Porto di Napoli
Tel: 0039 081 268521
Fax: 0039 081 289059
Email: grsc@email.it

257. **Napoli / SARDA BUNKERS S.p.A.**
Via Alcide De Gasperi n. 55
80133 - Napoli
Tel: 0039 081 2514121
Fax: 0039 081 5524712
Email: info@sardabunkers.it
Website: http://www.sardabunkers.it

258. **Monfalcone / SEA SERVICE Srl**
Legal & Administrative Office
Via Roma, 30
34132 - TRIESTE
Operational Office - h 24
Punto Franco Vecchio Molo 0
34135 - TRIESTE -
Tel: 0039 040 7606138
Fax: 0039 040 7606017
Email: info@crismanigroup.it
Website: http://www.crismanigroup.it

259. **Porto Nogaro / SEA SERVICE Srl**
Legal & Administrative Office
Via Roma, 30
34132 TRIESTE
Operational office
Punto Franco Vecchio Molo 0
34135 - TRIESTE
Tel: 0039 0407606138
Fax: 0039 040 7606017
Email: info@crismanigroup.it
Website: http://www.crismanigroup.it

260. **La Spezia / SEPOR S.p.A.**
YES Via del Molo 64/b
19126 - LA SPEZIA
Tel: 0039 0187 511535
Fax: 0039 0187 511545
Email: sepor@sepor.it
Website: http://www.sepor.it

261. **Chioggia / Guardie Ai Fuochi S.C.P.A.**
Via Fratelli Bandiera, 55/6
30175 - MARGHERA (VE)

Tel: 0039 041 920100
Fax: 0039 041 2529350
Email: amministrazione@guardieaifuochi.it
Website: http://www.guardieaifuochi.it

262. **Cagliari / ECO TRAVEL S.r.l.**
Via Caduti di Nassiriya - Località Aeroporto
09030 - ELMAS (CA)
Tel: 0039 070 240790
Fax: 0039 070 240792
Email: ecotravelporto@tiscali.it

263. **Genoa / A.O.C. Srl**
Calata Oli Minerali
GENOVA
Tel: 0039 010 2476870
Fax: 0039 010 2476841
Email: info@grupposantoro.it
Website: http://www.grupposantoro.it

264. **Genoa / Costruzioni Marittime S.r.l.**
Via Carlo Barbino, 26/1
16129 - Genova
Tel: 0039 010 2476847 - 0039 010 2476870 Fax: 0039 010 2476841
Email: Info@costruzionimarittime.it
Website: http://wwwcostruzionimarittime.it

265. **Genoa / OROMARE S.p.A.**
Ponte Andrea Doria
Genova Porto
Tel: 0039 010 2464003
Fax: 0039 010 261245
Email: oromare@tin.it
Website: http://www.oromare.it

266. **Genoa / Rimorchiatori Riuniti Porto di Genova**
Via Ponte Reale, 2/4
Genova porto
Tel: 0039 010 2498408
Fax: 0039 010 2498400
Email:traverso.alessandro@rimorchiatori.it

267. **Catania / Soc. Coop. LA PORTUALE II**
Piazzale radice porto nuovo
Tel: 0039 095 538578361
Fax: 0039 095 7461846
Email: laportuale@tiscali.it

268. **Trieste / Ocean Srl**
via F. Venezian 1/ Via Von Bruck 32
Tel: 040305026
Fax: 040305557
Email: modugno@ocean-team.com
Website: http://www.ocean-team.com

269. **Portoferraio / A.T.I. - A.S.I.U.**
Viale Regina Margherita, 153/A
57025 - PIOMBINO (LI)
Tel: 0039 0565 225578
Fax: 0039 0565 227276
Email: mail@permaresrl.com
Website: http://permaresrl.com

270. **Augusta / Priolo Servizi - Società Consortile A.R.L.**
SP Ex SS 114 Litoranea Priolese - Km 9,5
MELILLI (SR)
Tel: 0039 0931 209020
Fax: 0039 0931 209120
Email: pmunno@prioloservizi.com

271. **Augusta / Raffineria Esso di Augusta** C.P. 101
96011 AUGUSTA (SR)
Tel: 0039 0931 987310
Fax: 0039 0931 987661
Email: teresa.grillo@exxonmobil.com
Website: www.esso.it

272. **Savona / ECOSERVIZI SRL**
Via Aurelia, 322
17100 - SAVONA
Tel: 0039 019 886062
Fax: 0039 019 886062
Email: egconn@in.it

273. **Genoa / Multedo oil Terminal**
Porto Petroli di Genova s.p.a.
Radice pontile Alfa Porto Petroli 16155 Genova
Email: info@portopetroli.com
Website: http://www.portopetroli.com

274. **Falconara Refinery (API Oil)**
"api Raffineria di Ancona" S.p.A.
Via Flaminia n. 685 - 60015 Falconara Marittima AN
Tel: 071-91671
Fax: 071-9167346
Website:http://www.apioil.com/ita/polo_energetico.asp
Email: api-raffineria@apioil.com
Sede secondaria: Corso d'Italia n.6 - 00198 Roma RM
client assistance 800-860033
Tel: 06 - 84931
Fax: 06 – 8493758

275. **Livorno Refinery (ENI)**
ENI S.p.A. Divisione Refining & Marketing Stabilimento GPL di Livorno: Via Aurelia, 33, loc. Stagno, Collesalvetti, Livorno, Pontile n. 13 Via Mogadiscio 1, Calata del Marzocco, Porto Industriale, 57123 Livorno, Italy
Website: http://www.porto.li.it
Email: info@porto.livorno.it

276. **Sarroch Refinery / marine Terminal, Sardinia (SARAS)**
SARAS Refinery marine Terminal
Control Room
Tel: + 39 (0) 70.9091.345
+39 (0) 070.9091.458
Fax: 070.9091.715
Email: terminal@saras.it
Website:
http://www.raffineriasaras.it/index.shtml

277. **Castalia Ecolmar, Rome**
YES Via Ostiense 131 L, 00154
Roma, Italy Tel: + 39 065 70 221
Email:
castaliaecolmar@castaliaecolmar.com

278. **Port of Brindisi**
P.zza Vittorio Emanuele II, 7
via Autorita Portuale, Brindisi, Puglia
7200 Tel: +39 (0831) 562649-562
Fax: +39 (0831) 562225
Email: autorita.portuale.br@libero.it
Website: http://www.porto.br.it/

279. **Port of Taranto**
Taranto Port Authority
Porto Mercantile 74100 Taranto Italy
Tel: + 39 099 4711 611
Fax: + 39 099 470 6877
Email: authority@port.taranto.it
Website: http://www.port.taranto.it/

280. **Port of Catania**
Autorita Portuale
Via Dusmet 2
Tel: +39-095535888
Fax: +39-095536031
Email: portoct.ufficiotecnico@tin.it

281. **Port of Gela**
Capitaneria di porto/Harbour master - Coast Guard
Viale Fenerico II di Svevia 156 - 93012 CL
Email: guardiacostieragela@virgilio.it

282. **Port of Naples**
Harbour station
Tel: + 39 081 2283 291
Email:
stazionemarittima@porto.napoli.it
Technical department
Tel: + 39 081 2283 222
Email: tecnico@porto.napoli.it
Website: http://www.porto.napoli.it

283. **Port of Rome (includes Civitavecchia, Fiumicino and Gaeta)**
Autorita Portuale Civitavecchia
Molo Vespucci, 00053 Civitavecchia - Italy Tel: + 39 0766 366201
Email: civitavecchia@portidiroma.it
Autorita Portuale Fiumicino
Via del Pesce del Volante, 00054 Fiumicino - Italy
Tel: + 39 06 65047931
Email: fiumicino@portidiroma.it
Autorita Portuale Gaeta
Lungomare Caboto, 04024 Gaeta - Italy
Tel: + 39 0771 471096
Email: gaeta@portidiroma.it
Website: http://www.port-of-rome.org/

284. **Port of La Spezia**
Autorita Portuale della Spezia
Via del molo, 1
19126 La Spezia
Tel: + 39 018 754 6320
Fax: + 39 018 759 9664
Email: info@porto.laspezia.it
Website: www.portolaspezia.it

285. **Port of Cagliari**
Autorita Portuale di Cagliari
Molo Sanita Porto di Cagliari
09123 Cagliari
Tel: + 39 070 679531
Fax: + 39 070 67953345
Website: http://www.porto.cagliari.it/
Email: info@pec.porto.cagliari.it
autorita.portuale@tiscali.it

286. **Bunkering Plant, Port of Palermo**
Commissionaria Petroli S.R.L.
Via Bologni, 12, 90136 Boccadifalco - Palermo
Tel: + 39/916680788
Fax: +39/916680809
Bunkeraggio Naviglio Minore
Nautilus s.r.l. Depostio
Email: nautilus@tnet.it
Website: http://www.autport.pa.it

287. **Genova / Santoro**
A.O.C. S.R.L. (Gruppo Santoro) - Calata Oli Minerali, 16126 Genova (porto) Italy
Email: aoc@grupposantoro.it

288. **Livorno / Labromare**
Labromare S.R.L. - Calata addis abeba
57123 Livorno (Italy)
Labromare S.R.L. - Via Quaglierini 10/B
57123 Livorno (Italy)
Email: info@labromare.it
m.bonifazio@labromare.it

289. **I. Mar.S. SRL., Port of Savona Vado**
Piazza Salineri, 2/2 -17100 Savona
Website: http://www.porto.sv.it/
Email: authority@porto.sv.it
autoritaportuale@porto.sv.legalmail.it

290. **Transmare SNC., Port of Savona Vado**
Via Aurelia, 322 - 17047 Vado Ligure (SV)
Website: http://www.porto.sv.it

291. **Petrone SAS di Fernanda Operti & C., Port of savona Vado**
Testata Porto 7/8 - 17100 Savona
Website: http://www.porto.sv.it

Latvia

292. **Riga/*"EKO osta" Ltd.(Service provider);**Freeport of Riga Authority(Responsible organization)**
Services ensured by:
* "Eko Osta" Ltd.
Tvaika iela 39,
Riga, LV-1034
Latvia
**Freeport of Riga Authority (Responsible organization)
O. Kalpaka Blvd. 12
Riga, LV-1050,
LATVIA
Tel: *+371 67393860; **+371 6703080 Fax: *+371 67393067; **+371 7030835
Email: ekoosta@ekoosta.lv
Website: http://www.ekoosta.lv

293. **Ventspils/JSC "Ventbunkers"**
YES
Reception facilities of JSC "Ventbunkers"
Dzintaru iela 90,
Ventspils, LV-3602,
LATVIA
Tel: +371 636 02501
Fax: +371 636 02504
Email: ventbunkers@ventbunkers.lv
Website: http://www.ventbunkers.lv/

294. **Liepaja/Ltd "Bunkering Liepāja"**
Roņu iela 4
Liepāja, LV - 3401
Latvia
Tel: +371 63427628 (office);
+371 29283643 (barge).
Fax: +371 63426833
Email: bbl@apollo.lv

295. **Ventspils oil Terminal**
Ventspils Nafta Terminals, LTD
75 Talsu Str., Ventspils LV-3600
Tel: + 371 36 64090, 36 63860
Fax: + 371 3624341
Email: Terminals@vn.vnt.lv
office@vnafta.lv
Website: www.vnt.lv

296. **Port of Liepaja/Latvia**
Tel: + 371 634 07097
+371 292 12339
Fax: + 371 634 27003
Email: info@liepajaport.lv
Website: http://www.liepajaport.lv/ (site)

297. **Port of Ventspils/Latvia**
Ventspils Free Port Authority,
19, Jana str.
Ventspils, LV-3601,
Latvia
Tel: +37163622586
Fax: +37163621297
Email: info@vbp.lv
Barge "Uzava" tel: +37129558802

Lithuania

298. **Klaipeda/Klaipeda State Seaport Authority**
J. Janonio st. 24
LT 92251 Klaipeda
Tel: +370 46 499799
Fax: +370 46 499777
Email: info@port.lt
Website: http://www.portofklaipeda.lt

299. **Klaipeda/SC "Klaipedos nafta"**
YES
Buriu st. 19
LT 91003 Klaipeda
Lithuania
Tel: +370 46 391772: +370 46 391700
Fax: +370 46 311399
Email: info@oil.lt
Website: http://www.oil.lt

300. **AB Mazeikiu Nafta Refinery and Butinge oil Terminal**
AB Mazeikiu Nafta
Joudeikai, LT-89467, Mazeikiu District, Lithuania
Tel: +370 443 921 21
Fax: + 370 443 925 25
Email: info@nafta.lt
post@nafta.lt
terminal@nafta.lt
AB Mazeikiu Nafta Butinge oil Terminal
Tel: + 370 46 396420, +370 46 396405
Fax: + 370 46 396429
Email: Terminal@nafta.lt
Website: http://www.nafta.lt/

301. **JSC Klaipeda Terminal**
JSC "Klaipeda passenger and cargo

terminal"
Tel: +370 46 313137
Fax: +370 46 313136
Nemuno st. 24, LT-92228 Klaipeda, Lithuania
Email: info@kkkt.lt

Malta

302. **Malta (Valletta) / Malta Dry Docks**
The Docks
Malta
Tel: 822451/91, Ext. 200
Telex: 1310 or 1211 DRY DKS MW
Email: info@maltadrydocks.com.mt

303. **Malta San Lucian Oils Company**
YES
San Lucian Oil co.Ltd
Marsaxlokk, Malta
Email: info@slocbunkers.com

304. **Oiltanking Malta Ltd.**
Port of Marsaxlokk
Kalafrana
Malta
BBG 3011 Birzebbugia
Tel: +356-21-650-230
Fax: +356-21-650-237
Email: malta@oiltanking.com

305. **Waste Oils Company Limited, Marsa, Malta**
YES Falzon Group of Companies
42 Spencer Hill, Marsa MRS 1955 Malta
Tel: (+356) 2201 7100
Fax: (+356) 2144 6508
Email: info@wasteoils.com.mt

306. **Ricasoli Tank Cleaning Ltd.** **YES**
Triq ir-Rinella
Kalkara
KKR 1731
Malta
Tel: (+356) 25689120
Email: info@ricasolitankcleaning.com

Netherlands

307. **Moerdijk / Afvalstoffen Terminal Moerdijk**
Vlasweg 12 (P.B. 30)
4780 AA Moerdijk
Tel: 0168 389289
Telex: 54468
Fax: 0168 389270
Email: jack.droog@atmmoerdijk.nl

308. **Dordrecht / DrechtTank Cleaning B.V.** Postbus 3120
3301 DC Dordrecht
Tel: 078-6120976
Fax: 078-6511478
Email: info@dtcdordt.nl

309. **Rotterdam / Martignoni Slops Disposal B.V.**
Postbus 178
3330 AD Zwijndrecht
Tel: 06-53166456
Email: info@martignoni.nl

310. **Rotterdam / Stroom & Visser B.V.**
Veerplaat 80
3313 LC Dordrecht
Tel: 078-6213500 /6213933
Email: info@stroomenvisser.nl

311. **Rotterdam / Ships Waste Oil Collector (SWOC)**
Chemiestraat 20
3197 KH Botlek Rotterdam
Tel: 010-2957154
Fax: 010-416 29 96
Email: info@shipswaste.nl

312. **Rotterdam / International Slop Disposal (ISD)**
YES Torontostraat 20
3197 KN Rotterdam-Botlek
Tel: 0181-291144
Email: info@slopdisposal.net

313. **Delfzijl / MAIN b.v. Den Helder**
Het Nieuwe Diep 34/DD
1781 AD Den Helder
Tel: 0223 632177
Fax: 0223 631290
Website: www.main-bv.nl
E-mail: th.smit@main-bv.nl

314. **Rotterdam / B.V. Vacuüm-Reiniging (Vacuum Cleaning)**
Houtkopersstraat 22
3334 KD Zwijndrecht
Tel: 078-6295949/ 078-6295940
Email: p.v.gurp@brooms.nl

315. **Rotterdam / Martens Havenontvangstinstallatie B.V.**
Spanjeweg 2
4455 TW Nieuwdorp
Tel: 0113-672210
Email: info@martenscleaning.nl

316. **Rotterdam / Belgium Oil Services B.V.**
Blauwe Weg 7
Haven 261
2020 Antwerpen
Tel: 0032-(0)35435925
Email: inform@bosserv.be

317. **Eemshaven / MAIN b.v. Den Helder**
Het Nieuwe Diep 34/DD
1781 AD Den Helder

Tel: 0223 632177
Fax: 0223 631290

318. **Delfzijl Terminal**
T.O.D. (Tank Opslag Delfzijl) B.V.
Heresingel 1-3, 9711 EP Groningen
Tel: + 31 50 3 125 125
Fax: + 31 50 3 135 660
Email: tod@northseagroup.nl
Storage - Terminal Delfzijl
Koperweg 16/20, 9936 BS Delfzijl
Website: http://www.northseagroup.nl/

319. **Vopak Terminal Europoort**
Moezelweg 75, 3198 LS Europoort
Rotterdam (Harbor no. 5530)
Tel: + 31 181 240911
Fax: + 31 181 240276
Website:
http://oilrotterdam.vopak.com/
Email: boudewijn.siemons@vopak.com
europoort.pfso@vopak.com

320. **Vopak Terminal Maaslakte, Rotterdam**
Maasvlakte Olie Terminal
Europaweg 975 (Harbor no 8490)
Website:
http://oilrotterdam.vopak.com/

321. **Vopak Terminal Laurenshaven, Rotterdam**
Vopak Terminal Laurenshaven
Montrealweg 25 (Harbor no 4316)
3197 KH Rotterdam-Botlek
Website:
http://oilrotterdam.vopak.com/

322. **Kuwait Petroleum Europoort (KPE) Refinery**
Kuwait Petroleum Nederland
Moezelweg 251/255
NL-3198 LS Europoort, Rotterdam
Tel: +31(0)181 25 19 11
Fax: + 31(0)181 26 29 26
Website: http://www.q8.nl/
Email: info@Q8.nl

323. **Rotterdam Refinery (Shell)**
Shell Nederland Raffinaderij B.V.
Vondelingenweg 601, 3196 KK
Rotterdam Postbus 3000, 3190 GA
Hoogvliet (Rotterdam)
Tel: + 31 10 431 9111
Fax: + 31 10 431 3982
Email: infopernismoerdijk@shell.com
Website: http://www.shell.com/

324. **Vlissingen Refinery (Total)**
Total Raffinaderij Nederland N.V.
Luxemberweg 1, 4455 TM Nieuwdorp
Industriegebied Vlissingen-Oost,
(Havennummer 6501)
Tel: + 31 113 619 000
Fax: + 31 113 613 644
Email: communicatie@TRN.nl
Website: http://www.trn.nl

Poland

325. **Gdansk/Comal Ltd.**
Bałtycka 5 str.
Gdańsk 80-341
Tel: +48 58 511 90 90
Fax: +48 58 511 90 94
Email: office@comal.com.pl
Website: http://www.comal.com.pl

326. **Gdansk Naftoport Ltd, Gdansk**
1 Kpt. z. w. Witolda Poinca Str., 80-561
Gdansk, Poland
Tel: +(48) 58 737 74 25
Fax: +(48) 58 737 76 06
Email: naftoport@naftoport.pl
Website: http://www.naftoport.pl/

327. **Gdansk/Port Polnocny Co. Ltd PPS**
23 Budowniczych Portu Polnocnego
Str., 80-601 Gdansk, Poland
Tel: +(48) 58 737 60 03
Fax: +(48) 58 737 68 87
Email: polnocny@portgdansk.pl

328. **Gdansk/Gaspol SA LPG Terminal**
51 Mjr. H. Sucharskiego Str., 80-601
Gdansk, Poland
Tel: +(48) 58 737 96 48
Fax: + (48) 58 737 96 49
Email: sekretariat.gdansk@gaspol.pl
Website: http://www.gaspol.pl/

329. **Siarkopol Gdansk SA**
12 Mjr. H. Sucharskiego Str., 80-958
Gdansk, Poland
Tel: + (48) 58 555 24 00
Fax: + (48) 58 555 24 23
Website: http://www.siarkopol.gda.pl/
Email: zarzad@siarkopol.gda.pl (site)

330. **Siark - Port Sp. Z.o.o. PPU, Gdansk**
7 Pokladowa Str., 80-561 Gdansk,
Poland
Tel: + (48) 58 737 70 77
Fax: + (48) 58 737 62 23
Email: siarkport@portgdansk.pl
http://www.portgdansk.pl/addresses/?aid=17

331. **Gdansk Refinery, Lotos**
Grupa Lotos S.A. Gdansk Refinery
ul. Elblaska 135, 80-718 Gdansk
Tel: 058 308 71 11
Email: lotos@grupalotos.pl
Website: http://www.lotos.pl/

332. **Port Service Gdansk**
Port Service Sp. Z o.o., 80-601

Gdansk, ul. Mjr. H. Sucharskiego 75, Poland
Tel: 58 343 79 77
Fax: 58 343 74 02
E-mail: portservice@portservice.com.pl

333. **Clean Ship Service, Szczecin**
Ship-Service SA Environmental Department Main Office
ul. Debogorska 19-22, 70-717 Szczecin
Email: clean@ship-service.pl
Website: http://www.ship-service.pl

334. **Spolka Wodna "Miedzyodrze", Szczecin**
Management Office
Email: info@miedzyodrze.pl
"Ostrow Grabowski" Wastewater Treatment Plant
Website: http://www.miedzyodrze.pl

335. **Port of Gdynia**
Zarzad Morskiego Portu Gdynia S.A.
Ulica Rotterdamska 9, 81-337 Gdynia, skrzynka pocztowa 225
Harbour Masters Office
Polska 2, 81-339 Gdynia, Poland
Website: http://www.port.gdynia.pl/
Email: euprojects@port.gdynia.pl

336. **Szczecin-Swinoujscie Sea Ports Authority**
Bytomska 7 St, 70-603 Szczecin, Poland Tel: +48 91 430 8542
Fax: +48 91 462 4145
Website: http://www.port.szczecin.pl/
Email: info@port.szczecin.pl

337. **Port of Szczecin**
Harbour Master's Office Szczecin
9 Jana z Kolna Str., 71-603 Szczecin, Poland
Tel: +4891433-66-57
Fax: +4891434-46-56
Email: sekretariat_kpe@umsl.gov.pl
Website: http://www.port.szczecin.pl/

338. **Port of Ustka**
Harbour Master ustka
1 Marynarki Polskiej Str., 76-270 Ustka, Poland
Tel: +48598144430
Fax: +48598146204
Email: kpustka@umsl.gov.pl

339. **Port of Leba**
Harbour Master Leba
1 Kosciuszki Str., 84-360 Leba, Poland
Tel: +48598661460
Fax: +48598661308
Email: kpleba@umsl.gov.pl

340. **Port of Hel**
Harbour Master Hel
4 Wiejska Str., 84-150 Hel, Poland
Tel./Fax: +48586750618
Email: kphel@umgdy.gov.pl

341. **Port of Wladyslawowo**
Harbour Master Wladyslawowo
2 Hryniewickiego Str., 84-120 Wladyslawowo Poland
Tel./Fax: +48586740486
Email: kpwla@umgdy.gov.pl

Portugal

342. **Leixões / APDL-Adm.dos Portos do Douro e Leixões, SA**
Av. da Liberdade
4451-851 Leça da Palmeira
Portugal
Tel: +351 22 9990700
Fax: +351 22 9955062
Email: correio@apdl.pt
Website: http://www.apdl.pt

343. **Lisboa / APL-Administração do Porto de Lisboa, SA**
Rua da Junqueira,94
1349-026 Lisboa
Tel: +351 21 361 1000
Email: geral@portodelisboa.pt
Website: http://www.portodelisboa.com

344. **Setúbal / APSS-Adm.dos Portos de Setúbal e Sesimbra SA**
Praça da República
2904-508 Setúbal
Portugal
Tel: +351 265 542 000
Fax: +351 265 230 992
Email: geral@portodesetubal.pt
Website: http://www.portodesetubal.pt

345. **Sines / Administracao do Porto de Sines**
YES Apartado 16
7521 Sines, Codex
Tel: 625001
Telex: 12027 SINMAR P
Port Authority:
Administracao do Porto de Sines, SA
Apartado 16, 7520-953 Sines, Portugal
Safety, Security and Environment
Tel: +351269860659
Fax: +351269860694/+351269860697
Email: ambiente@portodesines.pt/ sequranca@portodesines.pt
Facility operator:
Administracao do Porto de Sines, SA
Apartado 16, 7520-953 Sines, Portugal
Port and Maritime Operations

Tel: +351269860675/+351269860740
Fax: +351269862114
Email: operacoes@portodesines.pt

346. **Portugal Eco Oil Setubal**
YES Eco-Oil, Tratamento de aguas Contaminadas, S.A.
Estrada da Mitrena, 2910-738 Setubal, Portugal
Email: eco-oil@eco-oil.pt
Website: www.eco-oil.pt

347. **Portugal Polnato LX Lisboa**
Rua Infante D. Henrique, 67
S. Joao da Caparica
2825-456 Costa da Caparica
Email: polnato.lisb.di@netcabo.pt

Romania

348. **Constanta / National Company CONSTANTZA PORT ADMINISTRATION S.A.**
YES Incinta Port, Gara Maritima, 900900, Constanta, Romania
Tel: +40 241 611540
Fax: +40 241 619512
Email: apmc@constantza-port.ro
Website: http://www.portofconstantza.com

349. **Navodari Refinery**
Rompetrol Rafinare
8736 Navodari, DJ 226, Km. 23, Romania Tel: +(40) 41 506 000
Fax: +(40) 41 506 930
Email: office.rafinare@rompetrol.com
Website: http://www.rompetrol-rafinare.ro/

350. **Costanta oil Terminal, Rompetrol Logistics**
Rompetrol logistics SA Bucuresti
Calei Victoriei nr. 222, Sector 1, Bucuresti Secondary address: Drumul Judetean 226, km 23, Costanta
Website: www.rompetrol-logistics.ro
Email: office.petrochemicals@rompetrol.com

351. **SC Ecomaster - Ecological Services SA**
DJ 226, Km 23 - Navodari
Romania
Brinzoi Daniel-branch manager
Tel: 0740-102929, 0241-506080
Fax: 0241-506997
Email: daniel.brinzoi@rompetrol.com
Georgescu Elena - head of section
Tel: 0745-349173, 0241-506646
Fax: 0241-506944
Email: elena.d.georgescu@rompetrol.com
Stanciu Daniel: chemist engineer
Tel: 0747-273236, 0241-506385
Fax: 0241-506944
Email: daniel.stanciu@rompetrol.com

352. **Oil Terminal S.A. Constanta**
Constanta Port
Oil Terminal S.A. Constanta
Str. Caraiman nr. 2, 900117; Constanta, Romania
Contact person: Gabriel Daraban - Commercial Director
Tel: 0040-241-702638
Fax: 0040-241-702688
Email: dircom@oil-terminal.com

Slovenia

353. **Koper / Port of Koper**
Hidro Koper
Obrtniška ulica 15
Tel: +38 6621330
Fax: +38 6633592
Email: portkoper@luka-kp.si

Spain

354. **Bilbao / Petronor Oil Tankers Terminal**
Somorrostro (Vizcaya)
Tel: 34-4-636 52 91
Fax: 34-4-636 5332
Email: petronor_port@repsol.com

355. **Ferrol / Oil Terminal Forestal del Atlántico**
Punta Promontorio s/n
15620-Mugardos (La Coruña)
Tel: 34-81-470750/2150
Fax: 34-81-470161
Email: correo@forestaldelatlantico.com

356. **Huelva / Oil Tankers Terminal Ertoil**
P.O. Box 289
La Rábida (Huelva)
Tel: 34-59-220-250/350100
Fax: 34-59-530123
Email:comunicacion@huelva.cepsa.es

357. **Algeciras / Oil Tankers Terminal Cepsa**
Poligono Guadarranque
P.O. Box 31
11360 San Roque (Cadiz)
Tel: 34-56-104060
Fax: 34-56-106753
Email: comunicacion@algeciras.cepsa.es

358. **Santa Cruz de Tenerife / Oil Tankers Terminal Cepsa (Tenerife)**
Avenida de America, 32

28028-Madrid
Tel: 34-1-3376000 (Madrid),
34-22-211515 (Tenerife)
Fax: 34-1-7244116 (Madrid),
34-22-218803 (Tenerife)
Email:comunicacion.tenerife@cepsa.com

359. **Cartagena / Cartago Marpol, S.L. (Cartagena)**
Muralla de Mar, 26-27
5º Dcha
30202-Cartegena (Murcia)
Tel: 34-68-501724
Fax: 34-68-505849
Email: marpol@cartagomarpol.com

360. **La Coruña / Oil Tankers Terminal Repsol Petróleo**
Muelle de S. Diego
La Coruña
Tel: 34-81-289222/9111
Fax: 34-81-276071
Email:repsolpetroleocoruna@repsolypf.com, bunkerspain@repsolypf.com

361. **Gibraltar San Roque** YES
CEPSA Compania Espanola de Petroleos S.A.
Refineria "Gibraltar-San Roque"
11313 San Roque - Cadiz Spain
Tel: 956 023 471
Email:
capitanes.puerto@algeciras.cepsa.es

362. **Tarragona Refinery & Terminal**
YES Repsol Petroleo Terminal
La pineda.tarragona
Loading masters: + 34 977559811
Refinery chief on duty: +34 977758327
Email: rptjefeffabrica@repsol.com

363. **Limpiezas Nervion, S.A., Bilbao**
Las Vinas, 24, 48980 Santurce (Vizcaya) Tel: 34944836726
Fax: 34944833159
Email: infolinersa@tradebe.com

364. **Sanemar, S.L. Pasajes**
Pza. Del Cedro, 2. 9o C, 20016 San Sebastian (Guipuzcoa)
Tel: 34943400881
Fax: 34 943 394 851
Email: alex.barvier@tradebe.com

365. **Lunagua, S.L., Santander**
Espigon Central de Raos, s/n, Puerto de Raos, 39011-Santander (Cantabria)
Tel: 34-942-352684
Fax: 34-942-352693
Email: veronicasanchez@tradebe.com

366. **Lubricantes Vigon, Gijon**
Alburquerque, 15. 5o A, 33204-Gijon
Tel: 34-696-943017
Fax: 34-985-887665
Email:
lubricantes_vigonxsl@asturias.com

367. **Dramar Andalucia U.T.E., Huelva-Cadiz-Algeciras-Almeria-Sevilla-Motri**
Muelle de Isla Verde, s/n., 11207 Algeciras
Tel: 34-956-573733
Fax: 34-956-600934
Email: pmhorcajada@urbaser.com

368. **Planta Desgasificacion, Cadiz**
Dique de Levante, s/n, 11007-Cadiz
Tel: 34-956-299229
Fax: 34-956-274769
Email: llechuga@navantia.es

369. **La Esponja del Teide, S.L., Las Palmas**
Guinchete s/n, 35008-Las Palmas de Gran Canaria
Tel: 34-928-469851
Fax: 34-928-465604
Email: rrhhrps@laesponjadelteide.com

370. **Boteros y Amarradores de Barcelona, S.A., Tarragona**
Gravina, 5, 43004-Tarragona
Tel: 34-977-252-544
Fax: 34-977-243413
Email: batfl@batfl.net

Sweden

371. **Falkenberg / Falkenbergs Hamn**
Hamnkontoret, Box 144
31101 Falkenberg
Tel: 0346 80610
Telex: 38057 FORWARD
Email: info@falkenbergs-terminal.se

372. **Falkenberg / Falkenberg Shipyard AB**
Box 233 S 31101 Falkenberg
Tel: 0346 14150
Telex: 38066 VARVET S
Email: info@falkvarv.se
Website: www.falkvarv.se

373. **Göteborg / Götaverken Cityvarvet**
Ciclean AB, Smorjoljegatan
41734 Göteborg
Tel: 031 502000
Email: gotaverken@cityvarvet.se

374. **Halmstad / Halmstads Hamn or Boliden Intertrade Oil AB**
Box 165
30130 Halmstad
Tel: 035 118450

Telex: 38107
Email: bk@halmstadhamn.se

375. **Helsingborg / Helsingborgs Hamn**
Box 1434
25114 Helsingborg
Tel: 042 106300
Telex: 72215 HAMMEM
Email: info@port.helsingborg.se
Website:http://www.port.helsingborg.se/

376. **Karlskrona / Karlskrona Hamn**
Box 120
37122 Karlskrona
Tel: 0455 83000
Email: tekniskaforvaltningen@karlskrona.se
Website: http://www.karlskrona.se/

377. **Karlstad / Karlstad Hamn**
Sjöfartshuset, Box 5030,
65005 Karlstad
Tel: 054 195000
Email: goran.lidstrom@vanerhamn.se

378. **Luleå / Lulea Hamn**
Varvsgatan 41
95134 Lulea
Tel: 0920 93000
Email: lulea.hamn@lulea.se
Website: http://www.lulea.se/hamnen

379. **Norrköping / Norrköpings Hamn**
60181 Norrköping
Tel: 011 151866
Telex: 64433 NRKHAMN S
Email: info@norrkoping-port.se

380. **Nynäshamn / Nynäshamns Hamn**
Hamnkontoret
14900 Nynäshamn
Tel: 0752 10615
Email: nynas.hamn@stoports.com

381. **Nynäshamn / Nynäshamns Oljehamn** AB Nynäs Petroleum
14901 Nynäshamn
Tel: 0752 14260
Telex: 19261 NYPETRO
Email: info@nynas.com

382. **Otterbäcken / Otterbäckens Hamn AB**
Box 65
54702 Otterbäcken
Tel: 0551 22250
Telex: 66088 OTBSPED S
Email:maria.gustafsson@vanerhamn.se

383. **Oxelösund / Oxelösunds Hamn - Olje Kajen**
YES Box 1200
61301 Oxelösund
Tel: 0155 31940
Telex: 64025 PORTOX
Website: http://www.oxhamn.se/

384. **Skellefteå / Skelleftea Hamn**
Hamnförvaltningen
Hamngatan 35
93200 Skelleftehamn
Tel: 0910 31006
Email: kundtjanst@skelleftea.se
Website: http://www.skelleftea.se/

385. **Stenungsund / Stenungsunds Hamn - Statoil AB**
44401 Stenungsunds
Tel: 0303 87000
Email: anders.froberg@borealis.se

386. **Karlshamn & Kolo Terminal**
Karlshamn Kraft AB
Kolo Oil Terminal
Box 65, SE 374 21 Karlshamn, Sweden
Email: anders.wiberg@karlshamnshamn.se
Website: www.karlshamnshamn.se

387. **Reci Industry / Gothenburg** **YES**
Box 48047
418 21 Goteborg
Email: info@stenarecycling.se

388. **Reci Halmstad**
YES Reci Industri AB
Box 165
301 05 Halmstad

389. **Reci Industry Loudden** YES
Reci industri AB
Oljehamnen
Loudden
115 27 Stockholm

390. **Gothenburg Refinery (Preem)**
Preem Petroleum AB
Sandhamnsgatan 51, S-115 90 Stockholm, Sweden
Tel: +46 10 450 10 00
Email: info@preem.se
Website: http://www.preem.se/

391. **Gothenburg Refinery (Nynas)**
AB Nynas Petroleum (Head Office)
P.O. Box 10700, SE-121 29 Stockholm, Sweden
Tel: +46-8-602 12 00
Fax: +46-8-91 34 27
Email: info@nynas.com

392. **Lysekil Refinery (Preem)**
Preem Petroleum AB
Sandhamnsgatan 51, S-115 90 Stockholm, Sweden
Tel: +46 10 450 10 00
Email: info@preem.se
453 81 Lysekil
Website: http://www.preem.se/

393. **Sysav Kemi (Malmo, Trelleborg, Ystad)**
Postadress: Box 50344, 202 13 Malmo
Website: http://www.sysav.se/
Email: epost@sysav.se

394. **Eurodek Oil Terminal, Copenhagen**
Ostergade 60, 4
DK-1100 Copenhagen C, Denmark
Tel: +45 33 153 600
Fax: +45 33 153 648
Email: eurodek@eurodek.dk
Website: http://www.eurodek.com/

395. **Vopak oil Terminal, Gothenburg**
Brannoljgatan 12, Skarvikshamnen (Oil harbour)
SE-418 34 Gothenburg
Website: http://nordic.vopak.com/
Email: vopak.nordic@vopak.com
Tel: + 46 31 648300
Fax: + 46 31 549095

396. **Vopak oil terminal, Gavle**
Frederiksskans
Tel: +46 31 648321
Fax: +46 31 548095
Salescontact and website (as for Gothenburg above)

397. **Vopak oil Terminal, Sodertalje**
Sodertalje harbour
Tel: +46 8 550 600 50
Fax: +46 8 550 105 14
Salescontact and website (as above)

398. **Vopak oil Terminal, Malmo**
Malmo oil harbour
Oljevagen 18, SE-211 24 Malmo
Tel: +46 40 290 090
Fax: +46 40 186 721
Salescontact and website (as above)

399. **Borealis Petrokemi AB**
Uddevallavagen, 444 86 Stenungssund
Website:
http://www.borealisgroup.com/
Email:
Stenungsund.reception@borealisgroup.com

400. **Copenhagen Malmo Port AB**
Terminalgatan 18
Box 566, S-201 25 Malmo
Sweden
Website: http://www.cmport.com/
Tel. +46 (0) 40 680 41 00
Fax +46 (0) 40 18 05 01
Email: cmport@cmport.com

401. **Gavle Hamn AB**
Fredriksskans, 805 95 Gavle
Website: http://www.gavle.se/hamn
Phone: +46 (0) 26- 17 88 43
Fax: +46 (0) 26- 17 91 60
Email: info@gavlehamn.se

402. **Goteborgs Hamn AB**
SE - 403 38 Goteborg
Tel: +46 31 731 2000
Fax: +46 31 731 2251
Email: info@portgot.se
oilharbour@portgot.se

403. **Halmastad Hamn & Stuveri AB**
PO Box 1S-301 02 Halmstad
Tel: +46 35 15 53 00
Fax: +46 35 14 05 93
Email: info@halmstadhamn.se
bk@halmstadhamn.se (environmental & safety manager)

404. **Stockholms Hamn AB**
Box 27314, 102 54 Stockholm
E-mail:
alan.berry@stockholmshamnar.se (site)
Website:
http://www.stockholmshamn.se

405. **Sundsvalls Hamn AB**
Box 805, 851 23 Sundsvall
E-mail:
anders.nordstrom@sundsvallshamn.se
Website:
http://www.sundsvallshamn.se/

406. **Sveriges Hamnar**
Box 1621, 111 86 Stockholm
Email: ports@transportgruppen.se
Website:
http://www.transportgruppen.se/sweports

407. **Sodertalje Hamn**
Box 2016, 151 02 Sodertalje
E-mail: info@soeport.se
Website: http://www.soeport.se

408. **Trelleborgs Hamn AB**
Box 51, 231 21 Trelleborg
Email:
trelleborgs.hamn@port.trelleborg.se
Website:
http://www.trelleborgshamn.se

409. **Umea Hamn AB**
Box 83, 913 22 Holmsund
Email: umeahamn@umea.se
Website: http://www.umeahamn.se

410. **Vanerhamn AB**
Stuvaregatan 1, 652 21 Karlstad
Email:
hanselof.bryntesson@vanerhamn.se
Website: http://www.vanerhamn.se

United Kingdom

411. **Aberdeen/Aberdeen Harbour Office**

16 Regent Quay
Aberdeen AB11 5SS
Tel: 01244 597000
Fax: 01224 571507
Email: info@aberdeen-harbour.co.uk

412. **Ayr / Ayr - ABP**
Port Office
Ayr KA8 8AH
Tel: 01292 281687
Fax: 01292 287787
Email: scresswell@abports.co.uk

413. **Bristol / Bristol Port Company**
St. Andrews House
St. Andews Road, Avonmouth
Bristol BS11 9DQ
Tel: 0117 9820000
Fax: 017 9820698
Email: enquiries@bristolport.co.uk

414. **Caernarfon / Caernafon Harbour Trust** Harbour Office, Slate Quay
Caernarfon
Gwynedd LL55 2PB
Tel: 01286 672118
Fax: 01286 678729
Email: enquiries@caernarfonharbour.co.uk

415. **Clydeport / European Metal Recycling Ltd.**
739 South Street
Whiteinch
Glasgow G14 0AH
Tel: 0141 954 9371
Fax: 0141 958 0266
Email: info@clydeport.co.uk

416. **Clydeport / Clydeport Operations Ltd.**
16 Robertson Street
Glasgow G2 8DS
Tel: 0141 221 8733
Fax: 0141 248 3167
Email: info@clydeport.co.uk

417. **Clydeport / Christie & Son (Metal Merchants) Ltd. (Clyde)**
Lobnitz Dock, Meadowside
Ind. Estate
Renfrew PA4 8SY
Tel: 0141 885 1253
Fax: 0141 884 1937
Email: info@christieandson.com

418. **Clydeport / Marconi Marine (YSL) Ltd. (Clyde)**
South Street, Scotstoun
Glasgow G14 OXN
Tel: 0141 959 1207
Fax: 0141 958 0642
Email: boatyard@clydeport.co.uk

419. **Cromarty / Cromarty Firth Port Authority**
Port Office, Shore Road
Invergordon IV18 OHD
Tel: 01349 852308
Fax: 01349 854172
Email: cfpa@cfpa.co.uk

420. **Falmouth / Falmouth Dockyard**
A & P Falmouth
The Docks, Falmouth
Cornwall TR11 4NR
Tel: 01326 312761
Fax: 01326 319399
Email: info@ap-group.co.uk

421. **Falmouth / Falmouth - ABP (Truro and Penryn)**
Carrick District Council
Harbour Office, Town Quay
Truro, Cornwall TR1 2HJ
Tel: 01872 78131
Fax: 01872 225346
Email: headoffice@ap-group.co.uk **YES**

422. **Flotta / Flotta Oil Terminal – Orkney YES**
Elf Exploration UK PLC
Flotta Oil Terminal
Flotta, Orkney
Tel: 01856 884000
Email: flotta.shipping@talisman.co.uk

423. **Grangemouth / Forth Ports PLC**
Grangemouth Docks
Grangemouth FK3 8UE
Tel: 01324 498565
Fax: 01324 666510
Email: ftns@forthports.co.uk

424. **Glasgow / Glasgow Riverside Berth**
K.G. Ltd.
John R. Adam & Sons Ltd.
Riverside Berth
K.G.V., Renfrew Road
Glasgow G51 4SD
Tel: 0141 440 0424
Fax: 0141 440 0874
Email: sales@jradam.co.uk

425. **Great Yarmouth / Great Yarmouth Port Authority**
Harbour Master
20-21 South Quay
Gt. Yarmouth
Norfolk NR30 2RE
Email: harbouroffice@eastportuk.co.uk

426. **Greenock / Riskend Quarry Co. Ltd.**
Burnside Industrial Estate
Kilsyth G65 9JY
Tel: 01236 823015

Fax: 01236 823356
Email: enquiries@riskend.co.uk

427. **Grimsby / Associated British Ports (Grimsby)**
Cleethorpe Road
Grimsby DN31 3LL
Tel: 01472 359181
Fax: 01472 242488
Email: grimsby@abports.co.uk

428. **Harwich / Harwich International Port**
Email: enquiries@harwich.co.uk

429. **Hull / Associated British Ports (Hull)** Tel: +44(0)1482 327 171
Email: arsmith@abports.co.uk

430. **Barking / London PLA - Docklands Wharf**
Dockgrange Ltd.
72-76 River Road
Barking, Essex IG11 0YA
Tel: 020 8 591 2020
Fax: 020 8 591 1010
Email: docklindswhirs@msn.com

431. **London / London PLA - GATX Grays**
St Services Ltd., West Thurrock
Grays, Essex RM17 5YU
Tel: 01375 374775
Fax: 01375 390174
Email:
frank.macklin@NuStarEnergy.com

432. **Tilbury / London PLA - Red Lion Wharf**
Powell Duffryn House
Tilbury Docks, Tilbury
Essex RM18 7JT
Tel: 01375 857890
Fax: 01375 857456
Email: enquiries@stemauk.co.uk

433. **London / London PLA - Vopak Terminal-Purfleet & W.Thurrock**
Vopak Terminal Ltd.
Oliver Road, West Thurrock
Grays, Essex RM20 3EY
Tel: 01708 863399
Fax: 01708 683700
Email: Derek.brown@vopak.com

434. **Mallaig / Malliag Harbour Authority**
Harbour Office, Mallaig
Invernesshire PH41 4QB
Tel: 01687 462154
Fax: 01687 462172
Email:
info@malliagharbourauthority.com

435. **Manchester / Manchester Ship Canal - Stanlow Oil Jetty**
Administration Building
Queen Elizabeth II Dock
Eastham, Wirral
Merseyside L62 OBB
Tel: 0151 327 1242/3
Fax: 0151 327 6278
Email: mail@shipcanal.co.uk

436. **Manchester / Manchester Ship Canal - Stanlow Layby Jetty**
Administration Building
Queen Elizabeth II Dock
Eastham, Wirral
Merseyside L62 OBB
Tel: 0151 327 1242/3
Fax: 0151 327 6278
Email: alan.feast@peelports.co.uk

437. **Milford Haven / Milford Haven - Elf Terminal**
Email:
murco_milford@murphyoilcorp.com

438. **Milford Haven / Milford Haven - Texaco Ltd.**
MHR refinery - PO box 10 - SA73 3JD
Milford Haven
Email:
kirelandcustomercare@Valero.com

439. **Mossmora / Mostyn: Mostyn Docks**
Mostyn, Holywell
Flintshire CH8 9HE
Tel: 01745 560335
Fax: 01745 560324
Email:
will.calderbank@portofmostyn.com

440. **Montrose / Harbour Office, South Quay**
Ferryden
Montrose DD10 9SL
Tel: 01674 672302
Fax: 01674 675530
Email: info@montroseport.co.uk

441. **Aberaeron / Peterhead Harbour**
Harbour Office, West Pier
Peterhead, Grampian AB42 6DZ
Tel: 01779 483600
Fax: 01779 475715
Email:
capt.hemingway@peterheadport.co.uk

442. **Plymouth / Plymouth - Sutton Harbour**
Email: reception@sutton-harbour.co.uk

443. **Portland / Portland**
Email: marine@portland-port.co.uk

444. **Sharpness / Sharpness Shipyard and Drydock**
Sharpness Dock
Berkeley, Gloucester
Glos. GL13 9UD

Tel: 01453 811261
Fax: 01453 822423
Email: info@sharpnessshipyard.com

445. **Hartlepool / Teesport Container Terminal**
Tees & Hartlepool - Containerships
Tees Dock, Grangetown
Middlesbrough TS6 6UD
Tel: 01642 468592
Email: enquiries@pdports.co.uk

446. **Hartlepool / Tees Wharf, Tees Dock**
Tees & Hartlepool - Cory Towage
Grangetown
Middlesbrough TS6 UD
Tel: 01642 247273
Email: Operations@pdports.co.uk

447. **Hartlepool / Hartlepool Marina, Tees Dock**
Tees & Hartlepool
Grangetown
Middlesbrough TS6 6UD
Tel: 01429 865744
Email: wateractivities@hartlepool-marina.com

448. **Wivenhoe / Thames and Colne River Aggregates Ltd**
Colchester Borough Council
Harbour Office
Walter Ratcliffe Way, Wivenhoe
Essex CO7 9JR
Tel: 01206 827316
Fax: 01206 282266
Email: enquiries@jjprior.co.uk

449. **Ayr / Associated British Ports**
Port Office, Ayr KA8 8AH
Tel: 01292 281687
Fax: 01292 287787
Email: scresswell@abports.co.uk

450. **North Shields / Tyne - North Shields Fish Quay**
4th Floor, Neville House
Bell Street
North Shields NE30 1LJ
Tel: 0191 257 0407/8
Fax: 0191 258 3238
Email: enquiries@portoftyne.co.uk

451. **Workington / Harbour Office, Prince of Wales Dock**
Workington
Cumbria CA14 2JH
Tel: 01900 602301
Fax: 01900 604696
Emaill:
workington.port@cumbriacc.gov.uk

452. **Sunderland / General Manager, Port of Sunderland**
Barrack Street
Sunderland SR1 2BU
Tel: 0191 553 2100
Fax: 0191 553 2120
Email:
matthew.hunt@sunderland.gov.uk

453. **Sunderland / Sunderland - No.1 Berth (European Metal Recycling)**
Tel: 0191 564 0350
Fax: 0191 564 0360
Email: info@emrltd.com

454. **Hartlepool / TERRC Facilities and Able Wharf**
(Tees & Hartlepool - Able UK Ltd.)
Tees Dock, Grangetown
Middlesbrough TS6 6UD
Tel: 01642 806080
Email: info@ableuk.com

455. **Hartlepool / Tees Dock Terminal**
Tees Hartlepool - Cleveland Potash Ltd.
Grangetown
Middlesbrough TS6 6UD
Tel: 01642 457131
Email:
enquiries@clevelandpotash.co.uk

456. **Hartlepool / Vulcan Quay W, Centre**
(Tees & Hartlepool - SLP Engineering Ltd.)
Central, Dock Point East
Tees Dock, Grangetown
Middlesbrough TS6 6UD
Tel: 01642 463078
Fax: 01642 466007
Email: info@slp-eng.com

457. **Dysart / Dysart Sailing Club**
Dysart
Forth and Tay
Tel: 01592 651720
Email: clubs@noblemarine.co.uk

458. **Ardmaleish / Ardmaleish Boatbuilding Co. Ltd. (Port Bannatyne)**
Ardmaleish, Port Bannatyne
Isle of Bute PA20 0QY
Tel: 01700 502007
Fax: 01700 502257
Email:
info@ardmaleishboatbuilding.co.uk

459. **Medway / Medway - Medway Council**
Gillingham Pier, Sun Pier and Rochester Pier
Email: info@medway.gov.uk

460. **Immingham / Associated British Ports (Immingham)**
ABP Port Office

Cleethorpe Road
Grimsby DN31 3LL
Tel: 01472 359181
Fax: 01472 242488
Email: ghodge@abports.co.uk

Croatia

461. Rijeka/Petroleum Port Bakar (INA-Oil)
Refinery Rijeka
51221 Kostrena
Email: ina-besplatni.telefon@ina.hr

462. Rijeka/INA d.d. Rafinerija nafte
Rijeka, 51221
Kostrena Urinj b.b.
Tel: 00-385-51-203-011
Fax: 00-385-51-203-00
Email: ines.nenadic@ina.hr

463. Rijeka/Port Authority of Rijeka
51000 Rijeka, Riva 1
Fax: +38551213112 / +38551212974
Email: rijeka.gateway@portauthority.hr

Iceland

464. Reykjavík/Reykjavik Harbour
Hafnarhus v/Tryggvagötu
Tel: 91 28211
Email: hofnin@rvk.is

465. Isafjørdur - høfn/Isafjördur Harbour
Tel: 94 3295
Email: port@isafjordur.is

466. Reykjavík/Keflavik-Njar_vik
Tel: 92 14575
Email: petur@hass.is

467. Oliudreifing ehf. POC: Gestur Gudjonsson
Tel: +354-550-9900
email: gestur@odr.is

468. Skeljungur hf. POC: Olafur Jonsson
Tel: +354-444-3000
email: oj@skeljungur.is

Turkey

469. Giresun/Turkish Maritime Organization (Giresun)
Tel: 0-454-216 11 06
Fax: 0-454 216 66 71
Email: info@oib.gov.tr

470. Trabzon/Turkish Maritime Organization (Trabzon)
Tel: 0-462 321 10 71
Fax: 0-462 326 27 82
Email: transbas@transbas.com

471. Botas/Botaş Petroleum Pipeline Corp.
Ceyhan District Management
Tel: 0-322 613 58 59
Telex: 638 38
Email: ferruh.demirci@botas.gov.tr

472. Izmit/TÜPRAŞ Refinery /Izmit
Izmit Refinery Management
Tel: 0-262 527 06 00 (21 lines)
Fax: 0-262 527 06 58
Email: izmir.info@tupras.com.tr

473. Nemrut Bay/Aliağa Port Authority (Nemrut)
Aliağa/Izmir
Tel: 0-232 616 19 93
Fax: 0-232 616 41 06
Email: aliaga@denizcilik.gov.tr

474. Aliaga/TÜPRAŞ İZMİRREFINERY
Aliağa/Izmir
Tel: +90 232 616 12 50 / 1005
Fax: 0-232 616 12 48
Email:mkarakaya@izmir.tupras.com.tr

475. Gemlik/Port of Gemlik/Bursa
BP Gemport, Borusan, Gübre Fabrikasi
Municipality and Comp.
Tel: 0-224-513 45 21-27
Fax: 0-224 513 45 28
Email: gemport@gemport.com.tr

476. Toros/Toros Port Institution
Tel: 0-322 613 50 01
Fax: 0-322 613 50 04
Email: ertem.arslantay@toros.com.tr

477. Mersin/POAŞ MERSİN PORT
Petrol Ofisi Mersin Terminal Müdürlüğü-MERSİN
Tel: (+90) 324 237 44 50
Fax: (+90) 324 237 91 44
Email: engury@poas.com.tr
Website: http://www.poas.com.tr

478. Aliaga/PETKİM PETROKİMYA HOLDİNG A.Ş. PETKİM PORT
P.K.12 35801 ALİAĞA/İZMİR
Tel: (+90) 232 616 12 40
Fax: (+90) 232 616 12 48
Email: herenoglu@petkim.com.tr

479. Aliaga/PETROL OFİSİ A.Ş. ALİAĞA PORT
ALİAĞA /İZMİR
Tel: (+90) 232 497 55 00
Fax: (+90) 232 497 55 66
Email: gokhans@poas.com.tr
Website: http://www.poas.com.tr

480. Haydarpasa/TCDD HAYDARPAŞA PORT
HAYDARPAŞA PORT HAREM/ÜSKÜDAR

Tel: (+90) 216 337 99 98
Fax: (+90) 216 345 17 05
Email: haydarpasaliman@tcdd.gov.tr

481. **Derince/PETROL OFİSİ A.Ş. DERİNCE TERMİNAL MANAGEMENT PORT** PETROL OFİSİ A.Ş. DERİNCE TERMİNAL MÜDÜRLÜĞÜ LİMANI DENİZ MAH. PETROL CAD. DERİNCE/KOCAELİ
Tel: (+90) 262 229 06 60
Fax: (+90) 262 229 06 99
Email: abdulbakit@poas.com.tr
Website: http://www.poas.com.tr

482. **Yarimca/GÜBRE FABRİKALARI T.A.Ş. PORT**
GÜBRE FABRİKALARI T.A.Ş. LİMANI YARIMCA/KOCAELİ
Tel: (+90) 262 582 46 40
Fax: (+90) 262 528 21 31
Email: foreigntrade@gubretas.com.tr

483. **Aliaga/TOTAL OİL A.Ş. LİMANI**
ALİAĞA TERMİNALİ ATATÜRK MAHALLESİ KARAAĞAÇ CADDESİ NO:9 ALİAĞA/ İZMİR
Tel: 0232 618 20 44-55-56
Fax: 0232 618 20 45
Email: cihan.cengen@total.com.tr

484. **Çanakkale/Çanakkale Liman İşletmesi A.Ş.**
Cumhuriyet Mah. Sahil Yolu Cad. Kepez / ÇANAKKALE
Tel: (+90) 286 263 55 00
Fax: (+90) 286 263 08 08
Email: evrenbeceren@portofcanakkale.com

485. **Marmara Ereğlisi/OPET Petrolcülük A.Ş. Marmara Ereğlisi Terminali**
Sultanköy Beldesi Marmara Ereğlisi 59750 Tekirdağ
Tel: 0 282 611 60 00
Fax: 0 282 611 60 10
Email: umay.kurtici@oket.com.tr

486. **Ceyhan/TOROS TARIM SANAYİ VE TİCARET A.Ş.**
ORDU KARAYOLU 14 KM TEKKEKÖY MEVKİİ TEKKEKÖY/SAMSUN
Tel: 0 362 256 09 80
Fax: 0 362 256 09 56
Email: ertem.arslantay@toros.com.tr

487. **Ceyhan/BOTAŞ PETROL YES İŞLETMELERİ MÜDÜRLÜĞÜ PORT**
BOTAŞ PETROL İŞLETMELERİ MÜDÜRLÜĞÜ PORT YUMURTALIK YOLU CEYHAN 01921 ADANA
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Fax: (+9) 0322 6392480
Email: umit.ertok@botas.gov.tr

Norway

488. **Grieg Transport / Slagen**
Email: clearance.slagen@grieg.no

489. **ESSO NORGE A/S / Slagen**
Email: slagen.harbour@exxonmobil.com

490. **Ports: Stavanger & Tananger & Mekjarvik**
Email: agency@jacob-falck.no

491. **Bergen Renholds AS / Bergen Area**
5059 Bergen
Tel: 55348051
Website: http://www.bergenrenhold.no
Email: post@bergenhold.no

492. **Ole R. Olsen / Bergen Area**
Email: orob@oro.noa

493. **Wilhelmsen Agencies AS, Porsgrun / Heroya**
Email: wa.porsgrun@wilhelmsen.com

494. **StatoilHydro / Mongstad**
Email: moskptlx@statoilhydro.com

495. **StatoilHydro / Sture**
Email: stuskift@statoilhydro.com

EMSA

About EMSA

The European Maritime Safety Agency is one of the European Union's decentralised agencies. Based in Lisbon, the Agency provides technical assistance and support to the European Commission and Member States in the development and implementation of EU legislation on maritime safety, pollution by ships and maritime security. It has also been given operational tasks in the field of oil pollution response, vessel monitoring and in long-range identification and tracking of vessels.

http://www.emsa.europa.eu

EUROPEAN MARITIME SAFETY AGENCY