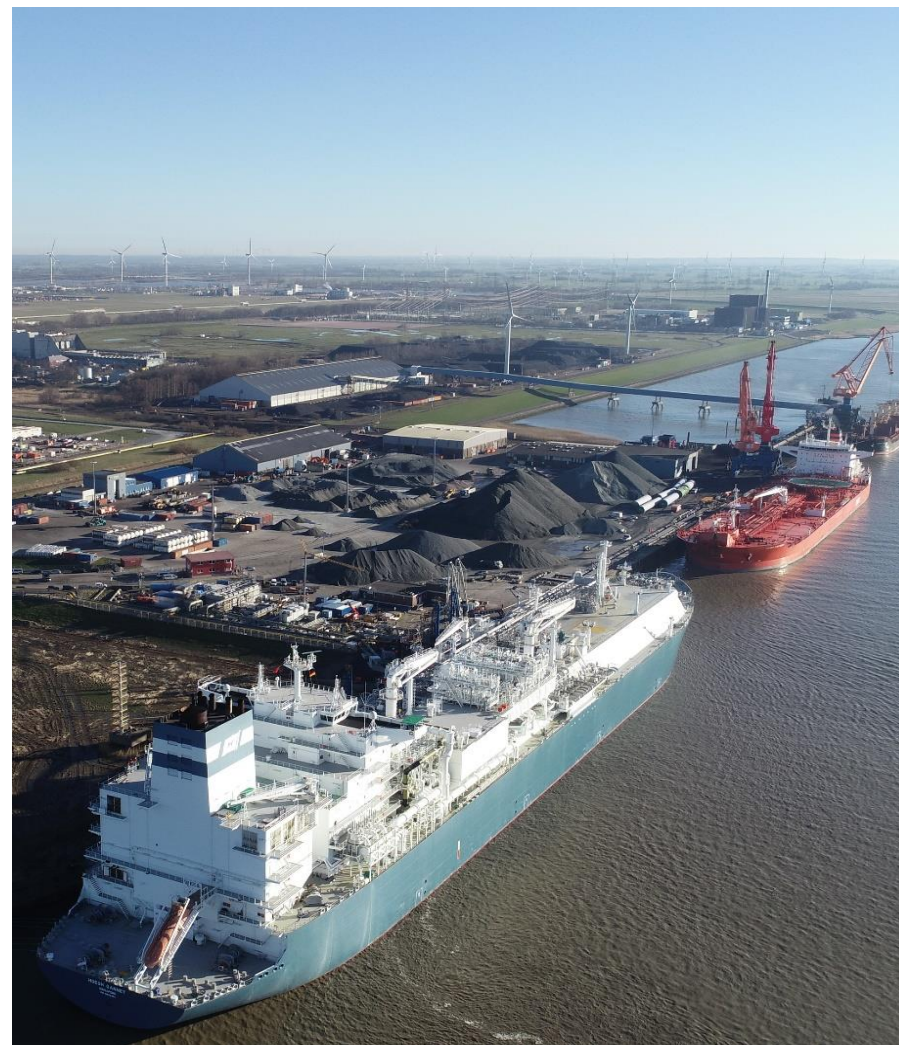


NORTH SEA



Brunsbüttel Ports center berth
(Left side FSRU Hoegh Gannet and center berth M/T Ingrid Knutsen))

Jetty Information

General Information	Berth 1	Remarks
Berth Name	center berth	IMO Port facility number: DEBRB-0001
Berth Operator	Brunsbüttel Ports	In charge of Heide refinery
Berth Position	center	053°53'15" N, 009°10'34" E
Berth Type	quay	Heading W-E
Type of Bottom	Sand, mud	
Dock Water Density	1005-1010	Seawater only
Tidal	yes	Ebbtide up 3,9 kts, floodtide up to 3,5 kts Tide is running in parallel to the berth
Water Depth Approaches	All berths	Remarks
water depth in approach	16,00 mtr.	Taken at chart datum (LAT)
Minimum under keel clearance	10 % of actual draught or 1 mtr. + ship`s squat at 6 knots	Squat according to ship`s squat table
Maximum Draught in Approaches	14,60 m (varies due to water depth)	
Transit on Tide (High Water)	Draught 14,60 m on high tide only	Varies due to actual water depth
Water Depth Alongside	Berth 1	Remarks
Water Depth Alongside Berth	17.5 m	At chart datum (LAT)
<u>Minimum</u> Under Keel Clearance Alongside Berth	10 % of draught at LW	
Absolute <u>Maximum</u> Draught Alongside	14,60 mtr. FW	Maximum draught at any time.
Are Tides used to Calculate Draught	no	No apply of positive low water tides to increase maximum draught
Water depth survey interval	6 months	Fairway each month (port authority)

Jetty Information

Dimensions	Berth 1	Remarks
Maximum Summer Deadweight (t)	240.000	*Figure above require a permit by port authority
Minimum Summer Deadweight (t)	—	
Maximum Displacement (t)	200.000	
Maximum Length Over All (m)	285	*Figures above require a permit by waterway authority
Minimum Length Over All (m)	---	
Max Beam (m)	55	*Figures above require a permit by waterway authority
Fender Type	fentek fender plates	every 15 mtr.
Minimum Parallel Body Length (m)	—	quay
Minimum PBL Forward of Manifold (m)	—	quay
Minimum PBL Aft of Manifold (m)	—	quay
Minimum Draught	—	quay
Max-/Minimum Bow to Manifold Distance	max. 145 mtr.	Terminal expects that nearly BCM ≈ SCM
Max-/Minimum Stern to Manifold Distance	---	Terminal expects that nearly BCM ≈ SCM
Maximum Manifold Height Above Water (m)	22,0 mtr.	Above waterline
Minimum Manifold Height Above Water (m)	—	---
Maximum Air Draught	---	Not applicable, no obstructions
Minimum Distance Ship to Ship	45 mtr.	
Number & Size of Cargo hoses	4 x 8"	4 x Elaflex hoses 200 mm (working pressure:10,4 bar – test pressure 16 bar) reducer 8" – 12"// 8" - 16" are available from shore side

Jetty Information

Extra Information and Facilities	Berth 1	Remarks
Manifold Normally Used	both sides	See page 9
Max. Discharge Rate crude import	5.000 m³/h	5.000 m³/h by using 4 hoses
Expected Load Rate	4.000 m³/h	
Capable of Feedstock Import*	---	
Max. Cargo Temperature	+/-60 °C	
Shoreline Dimension	24"	
Vapour Recovery System Fitted	no	Vapour recovery requirements for load operations see page 10
Ballast / Slop Reception Facilities Available	no	Slop can be discharged by truck. (Via agency)
Shore Side Gangway Available	no	Vessel must use own gangway
Distance Gangway Position from Centre Manifold	≈70 m	
Tugs available for berthing/unberthing	yes	See page 8
Minimum Mooring Arrangement	**	** Vessel must comply with Elbehafen Brunsbüttel Mooring Regulation, see page 9
Double Banking or STS Operation via Jetty	no	Not permitted by authorities / terminal
Over Tide Operations	no	not permitted by authorities / terminal

Terminal Information Booklet

Environmental Restrictions	Approaches / All berths	Remarks
Poor Visibility	<p>Traffic for laden tankers is stopped by waterway authority (VTS) on the river Elbe if the visibility is less than 1000 m. Vessel must abandon the approach to the fairway and must stay at roads German Bight or alongside jetty.</p> <ul style="list-style-type: none"> - Not applicable if vessel is proceeding within the buoyed fairway - Not applicable for inerted, unloaded tank vessel in ballast condition <p>Pilot on board will be guided by shore-based radar (VTS).</p>	German legislation
Storm	<p>For wind force above Beaufort 8 terminal will delay the approach until improvement of weather condition. Vessel must stay at German Bight, weather permitted, master's decision. Please refer to information regarding roads/ anchorage (see page 7).</p> <p>Unberth vessel due to storm: N/A.</p> <p>Discharge or loading operation including bunker operation will be ceased at a wind speed above 20 m/s (40 knot). Hoses will be disconnected if possible. Use of tugs and/or additional moorings to secure the vessel alongside jetty in severe wind conditions is on the discretion of the master, port authority or terminal.</p>	Terminal's regulation
Tide	<p>Terminal is affected by tide. For high water the tide is running easterly into the river Elbe, for low water back to the west. Tidal current is up to 3,9 knots, tidal range app. 2,9 m. Due to strong current a berthing window (during slack tide) for arriving vessel is compulsory! (see page 8).</p> <p>Departure maneuver is unaffected by tide for vessel in ballast condition.</p> <p>Prior arrival agent will provide actual times for low/high water for the port stay. Terminal is operating a tide level gauge.</p>	Terminal's regulation
Storm Flood	<p>With the prediction on a severe storm flood (> 2m above high-water level) terminal will delay the approach until tide level improves.</p>	Terminal's regulation
Negative Tide Level	<p>Tide level below chart datum (LAT) may occur due to strong, long-lasting easterly winds combined with low water spring tide. Pilots and VTS are continuously monitoring tidal situation. Depending on vessels draught transit will be scheduled for high water only or if necessary, the port call will be delayed until conditions improves.</p>	Seldom, typically in the winter season

Terminal Information Booklet

Environmental Restrictions	Approaches / All berths	Remarks
State of Sea / Swell	Moored vessels at the terminal will be typically not affected by sea or swell. High seas or swell may hamper tugboat assistance and/or safe operation for mooring line boats. At wave heights above 1,5 m around the terminal within the river Elbe, vessel's port call or departure will be delayed until conditions improve. Bunker or store supply by barge might be affected by high sea or swell as well. If a safe stay alongside the tank vessel is not granted, operations will be not permitted by terminal.	Seldom, terminal is sheltered as inland terminal. High seas and swell will be generated by strong wind from westerly direction and current running against.
Thunderstorm / Lightning	Discharge or loading operation will be ceased during the time of lightning.	Terminal's regulation
Weather Forecast	Terminal will not pass weather forecast to the vessel regularly. Terminal expects that master/officers can receive relevant information during port stay. Please ask the loading master if a weather forecast is requested.	VTS broadcasts weather forecast for the Elbe area each full hour + 5 minutes VHF CH 68
VTS River Information	VTS broadcasts weather forecast, tidal information and notice to mariners for the river Elbe on VHF CH 68 every full hour + 5 minutes.	English language used
Passing Traffic	Moored tank vessels at the terminal are impacted by passing traffic.	a guard vessel is in charge and monitoring the safety zones
Ice Restriction	Port/terminal is normally not affected by ice.	Very seldom in the winter season
Day Light Restriction	There is no day light restriction.	Terminal is operating 24/7

Terminal Information Booklet

Emergency Response German Bight

For emergency response two seagoing salvage tugs are on standby at the inner basin of the Elbehafen. The tugs with 70 t bollard pull each can operate in dangerous atmosphere (FIFI I). Additional two seagoing multi-purpose emergency response vessel "**Mellum**" and "**Neuwerk**" (tow, FIFI, oil recovery) are in service within GB, operated by Waterway Authority.

The German Lifeboat Institution has based at Helgoland the large (46 m) seagoing rescue/salvage boat "**Herrmann Marwede**".

In any emergency like fire, explosion, collision, grounding, loss of propulsion/steering, call VTS "**German Bight**" on VHF CH 16/80. For SAR operations, e.g. -man overboard, emergency medical aid-, call the German MRCC "**Bremen Rescue**" on VHF CH 16.

Anchorage / Roadstead

The designated roadstead for vessel calling Brunsbüttel Elbehafen is the *German Bight Deep Water Anchorage*.

Please contact VTS *German Bight* to confirm exact anchor position. Attention: The road is affected by tidal current, waves and swell. It is an open roadstead and not a sheltered area. Please keep your anchor limitations in mind and monitor weather forecasts.

Prior adverse weather- and sea conditions comes in, vessel should escape the anchorage to ride a storm at a safe drifting area in the North Sea.

Pilotage

Pilotage is compulsory for all tank vessels calling Brunsbüttel Elbehafen. Vessels must board the sea pilot at the pilot station "buoy E3". ETA of the tanker must be reported 24-, 12-, 6- and 2-hours prior arrival to: ETA.Elbe@Elbe-pilot.de by the tanker.

The sea pilot will normally embark by tender. For communication call "Elbe Pilot" on VHF marine channel, the helicopter is using VHF marine channels "**HELIPLOT**".

A helicopter will be used if tender service is suspended (bad weather, high swell etc.). Two sea pilots will board if vessels length \geq 220 mtr.

For handy size tanker please ask your agent for the sea pilot boarding station, special for vessel in transit via Kiel Canal.

- the sea pilot is also the docking pilot.

Terminal Information Booklet

Guard Vessel / Harbour Towage / Standby Tug

A guard vessel (tow, FiFi, oil recovery) is on scene for tank vessels during the port stay.

Tug must be arranged/ordered by vessels agent.

Tug's are awaiting the vessel at buoy nr. 57

Use of Harbor Towage and minimum number of assistant tugs is compulsory, specified by terminals port regulation. (Number of tugs can be reduced if tank vessel is equipped with maneuvering aids. Maneuvering aids are bow thruster in conjunction with pitch propeller or bow thruster and stern thruster with suitable thrust for vessel's size. Prior arrival master must confirm that maneuvering aids are operational. Depending on the actual situation at the berth – port captain's decision. Voith Schneider-, ASD- and Rotor Tugs are operating in Elbehafen; bollard pull differs from 30 t up to 70 t. Tugs use their own tow line. Master should inform the docking pilot about vessel's bollard capability (SWL) used for tow line and about tug push locations at ship walls. Pilots will advise the tugs.

accordingly. During berthing maneuver pushing tugs will only be released when all mooring lines are made fast.

Two firefighting tugs will be on standby at the inner basin of the Elbehafen during port stay of a tanker.

Berthing Maneuver

Vessel will berth bow heading against tide. Shore site will be starboard site (turning maneuver on arrival)

on arrival:

All vessel's

Slack Highwater at the berth

Departure:

low water until one hour after high water (limited due to strong ebbtide conditions – 3,9 kts)

The sea pilot will start the passage and adjust the speed accordingly. Time for the river passage up to the meeting point harbor tugs will be ca. 4 h, depending on tide. Time for berthing and mooring until all fast needs app. 2 hours.

Only one maneuver (berthing/unberthing) is permitted at the same time, vessel arriving is first in line prior a sailing vessel.

There is a risk to bend and deform the fender whilst contacting with a high approaching speed. The speed and distance of ships wall and fender is measured by a laser docking system. The approaching speed is measured by the pilots.

Maximum acceptable speed is $\leq 0,1$ m/sec to contact the fender.

Docking angel should be parallel in line with fender direction, heading $90^\circ/270^\circ$. The docking pilots are instructed to adjust vessels heading and approaching speed accordingly.

Terminal Information Booklet

Mooring

Mooring equipment, mooring lines must comply with valid OCIMF guidelines and recommendations. Mixed mooring is prohibited. Wires must be provided with corresponding synthetic tails and must be carried on drums. Synthetic lines from an approved type "HMPE" complying OCIMF guidelines are acceptable instead of wires. HMPE lines must be provided with synthetic tails and carried on splitted drums.

→ Mooring analysis according to OCIMF guidelines

Vessel up to 40.000 dwt	4-0-2 fwd / 3-2-2 aft
40.001 dwt – 120.000 dwt	3-3-2 fwd / 3-2-3 aft
Above 120.000 dwt	2-3-2 fwd / 3-3-2 aft

Mooring layouts are shown on page 17 - 19.

Mooring company will use mooring line boats as well as shore personnel for mooring operation; no heaving line/messengers are required.

Terminal is fitted with manual operated quick release mooring hooks (no. 15 + 16) and bollards (no. 17 – 25). Safety working load of mooring hooks and bollards is 125 t.

Hoses & Ships Manifold

Terminal is operating 4 x 200mm flexible hoses. Each loading arm is fitted with an insulating flange and with a powered emergency release coupling. Hoses are in empty condition weight free balanced; they are supported by shore crane. Flange connection is manually done by jetty operator. A position monitoring system recognize vessels movement. Vessel must keep position alongside jetty within a range of 1,5 m. A plate on the jetty head indicates the zero-spotting line. If vessel moves out of position, cargo operation must be stopped immediately!

Vessel's manifold must comply with latest edition of OCIMF *'Recommendation for Oil and Chemical Tanker Manifolds'*. Ship's manifold must be capable of withstanding at least the loads at the presentation flange as outlined in the OCIMF Recommendation for connection diameter 300 mm (Table 3.2, page 17). Presentation flange must be at least 8" for vessel calling jetty center berth. Reducer 12"-8"// 16"- 8" are available from terminal.

After completion of discharging operation hoses must be drained back by gravity to shore pipeline. Vessel must drain each line of the system up to the manifold. This must be done in a closed system, without using the manifold drip tray.

Terminal Information Booklet

Discharge-/ Load Operation

- General

Discharge-/Load Operation will be mutual agreed in the pre-transfer conference between responsible officer in charge and Loading Master prior begin of operation. With the start of discharge operation, a line displacement will be executed by cargo surveyor. Ship/Shore quantities will be compared, shorelines are always filled with oil. During operation terminals control room is continuously monitoring the discharge rate (flow meter), cargo temperature and pressure. Terminal will not regular exchange the discharge quantities with the tank vessel, only on request. Terminal is operating an automatic inline sampler.

- Inertgas

Discharge/Load operations are only accepted with inerted cargo tanks, independent of vessels size. Oxygen content in cargo tanks must be always less than 8%.

- Back Pressure

Shore tanks are located below sea level, distance app. 3000 m from the jetty to the tank farm. Max. pressure at manifold is 14,5 bar. No booster pumps used ashore. Typically, vessel will achieve full discharge rate with 8 bar back pressure at manifold. Max. discharge rate per hose is 1300 m³/h for crude cargoes.

- COW / tank cleaning / gas freeing

COW operations are permitted by terminal providing that guidance from vessel's approved operations and equipment manual and ISGOTT recommendations are followed. Port Authority is not involved for authorization COW operations. Extensive COW operations should be agreed by cargo surveyor. Tank cleaning with water and gas freeing operations and release of Inert Gas are not permitted during port stay.

- Vapor recovery – only applicable for load operation –

Terminal has no vapour return line/installation!

Approved recovery/reduction systems are accepted for offshore loadings in Norwegian oilfields or similar systems. For health reasons (H₂S, benzene) cargo tanks to be loaded must be presented in a gas free (CH₄ ≤ 2%; H₂S ≤ 10 ppm), inerted condition if the recovery system onboard is not able to recover the emissions (e.g., KVOC).

- Water Ballast – load operation –

Terminal will take samples from ballast water prior to be discharged to the sea.

- Over Tide Operation

Discharge operations "over HW-tide" or "pumping against tide" are not permitted by authority/terminal.

- Pressurized Liquid VOC -carried in an external VOC tank-

Discharge of pressurized liquid VOC vapours with the crude oil is not accepted by terminal. VOC will evaporate in not pressurized floating roof shore tanks.

Terminal Information Booklet

Cargo Gauging, Temperature Measurement, Water Dip, Sampling

Cargo gauging, temperature measurement, water dip and sampling is only acceptable if vapour locks are used. It must be done always in a closed system. If H₂S content in the vapour phase from the cargo tank is above 10 ppm or benzene content > 1% sampling is not permitted. Cargo surveyors are advised accordingly. Terminal is operating an inline sampler and will provide samples for the cargo surveyor on request. No samples will be taken by inline sampler for heated Fuel Oil cargos and Gas Condensate with benzene content > 1%.

H₂S and Benzene Restriction

Grades with high H₂S content in the vapour phase are accepted to discharge at Elbehafen Terminal. Appropriate measures are in place to mitigate the risk with high level H₂S-grades (ppm, permit to work, no release of Inert Gas and no sampling permitted, H₂S tank farm tracking)
Terminal expects that officers and crew are aware about associated risks. Loading Master and jetty operator are carrying personal H₂S warn devices. Jetty operator will measure H₂S content in the vapour phase only if measurements by vessel staff is not available. Visitors must carry EEBD if H₂S level is higher than 10 ppm.

ISPS Related Information / IMO Port facility number: **DEBRB0001**

Terminal has an approved port facility security plan and is certified for compliance regarding the provisions of the ISPS Code. Oil tanker calling the terminal must have an approved and valid ship security plan. A completed Security Report form must be sent 24 hours before arrival German territorial waters via email (agent) to point of contact and terminal. Name and rank from ship's security officer must be announced with the pre arrival exchange of information. Terminal is operating at security level 1. DOS exchange is requested by terminal even if terminal and the oil tanker are operating at security level 1. Terminal's PFSO will immediately advise any subsequent change in security level to each vessel calling. Providing a DOS for bunker barge operations is on vessel's SSO discretion.
Crew and passenger list, all visitors, crew change, service technicians, supplies, stores etc. must be announced to the terminal in advance by the agent. Terminal will not accept/handle unaccompanied baggage. Each person entering the terminal or visiting/ shore leave the vessel must identify themselves by passport or seaman book (photo identification required).
Port Facility Security Officer: Lars Sell

Terminal Information Booklet

Communication, Escape Routes, Fire Brigade, Medical Aid, Vessel Outbreak, Oil Spill

During safety meeting Elbehafen operator will explain and hand over a plan with terminals contact details, escape routes, bus call, tidal situation and schedule for other vessel's calling the terminal. For communication purpose terminals handheld VHF will be placed in the CCR. The VHF is dedicated for terminal communication and is not using marine channels.

Escape Routes and terminals muster station: See page 15. Vessel is requested to prepare a second escape way by vessels waterside gangway.

Medical Aid: Ambulance and emergency doctor will arrive within 10 minutes. Terminal is providing a safety cage to land a person on a stretcher by shore crane. A hospital is available in the town.

Fire: Terminal's firefighting system at the jetty (water & foam) is immediately available (summer & winter). Fire Brigade is in place and regarding the operation as a **Fire watch**. FIFI-tugs are on standby at the inner basin of the Elbehafen.

Vessel Outbreak: Terminal monitors vessel's position. If vessel moves out of discharging position or if only one mooring rope parts, discharge operation will be stopped immediately, hoses will be disconnected. If there is a risk for an outbreak guard vessel and stand by tug will be ordered by terminal to push the vessel back alongside jetty. Hoses are equipped with ERC's.

Oil Spill: Oil spill must be reported immediately to the terminal. Relevant authorities will be informed by terminal. If oil spilled overboard on the water, oil recovery operations will be activated according to authorities' contingency plan.

MARPOL Disposal and Supply of Bunker- /Ship Stores

Notification of ship generated waste must be announced at least 24 hours prior arrival via agent. 5 m³ are free of charge, included in lump sum fee. (Domestic waste/MARPOL V) On request your agent will inform about costs for the disposal of additional garbage.

Garbage must be collected in bags, able to be handled by one person. For handling large quantities terminal will ask vessels staff for assistance

For delivering food waste, please contact your agent, he will arrange the disposal.

Terminal does not accept solvents, drums with liquid paint, chemicals, pyrotechnics, expired medicine, scrap, insulation material, lube oil drums, mooring ropes, wires, tails. The disposal for this special garbage must be arranged by your agent.

Sewage disposal ashore is not possible. discharge of grey water overboard is strictly forbidden.

MARPOL I must be transferred to a truck. Please ask your agency for the tariff.

If bilge water and sludge is transferred via vessels cargo manifold, cargo discharge operations must be stopped or must be completed. Simultaneous operation is not accepted by terminal. There are no facilities to receive any cargo associated slops or tank wash water.

Bunker operation (HFO, MGO, LUB) is accepted during discharge operation. Bunkering is only permitted from shore side by truck. Ship-Stores and provisions must be supplied by truck from shore side.

Terminal Information Booklet

Anti-Pollution Regulations and Environmental Care

Please keep in mind that the terminal is located at the river Elbe, one of the highest frequent sth. waterways worldwide.

Any oil spill to the water will seriously endanger the area.

Terminal expects that discharge/port operations are done in the most energy efficient way to minimize carbon emissions and environmental impact!

- Use of 0,1% sulfur fuel is compulsory during port stay (Federal legislation)
- Use of scrubbers with HSFO is prohibited during port stay (Federal legislation)
- Use of shipboard incinerator is prohibited (Federal legislation)
- Discharge of sewage/grey water overboard is strictly forbidden (untreated or even treated)
- Release of Inert Gas from cargo tanks is not acceptable
- Exhaust gas from engines and boilers should be colorless (Terminal's expectation)
- Inert gas wash/cooling water discharge must be colorless and free of soot
- Discharge of ballast water must be fully compliant with certified ballast water management plan and international rules

Protective Clothing / Shore Leave

Terminal expects that vessel's staff is using appropriate protective clothing during work and that crew members and officers assigned to the cargo operations will be provided with individual protection instruments and monitoring systems (e.g., regarding H2S).

For shore leave or crew change persons must wear at least sturdy shoes and clothes covering legs and arms. Use of a bus shuttle by the seaman's mission is preferred. Smoking, drinking alcohol, use of naked lights, use of not ex-proof electrical equipment (mobile phone, camera, tablet, etc.) is strictly forbidden on the terminal. For shore leave person must carry passport/seaman book.

Terminal Fees (charged by terminal)

Terminals general marine services and MARPOL disposal will be charged separately by a lump sum fee for each vessel (independent of vessel's size) and each call. Further services will be charged by terminal only if used/required by vessel/master. Please ask your agency for the tariff.

- Supply of freshwater (connection fee & costs for each m³ delivered, service not offered during freezing period)
- Use of jetty crane (e.g., ship stores up to 500 kg, live rafts) including one jetty operator
- MARPOL I disposal
- MARPOL V disposal above 5 m³ or special garbage
- Lay time: Only applicable if not caused by terminal or if discharge operation exceeds 40h or on vessel's request after completion of discharge operation (additional lay time must be permitted by terminal in advance).

Terminal Information Booklet

Extra Information Not Covered Above

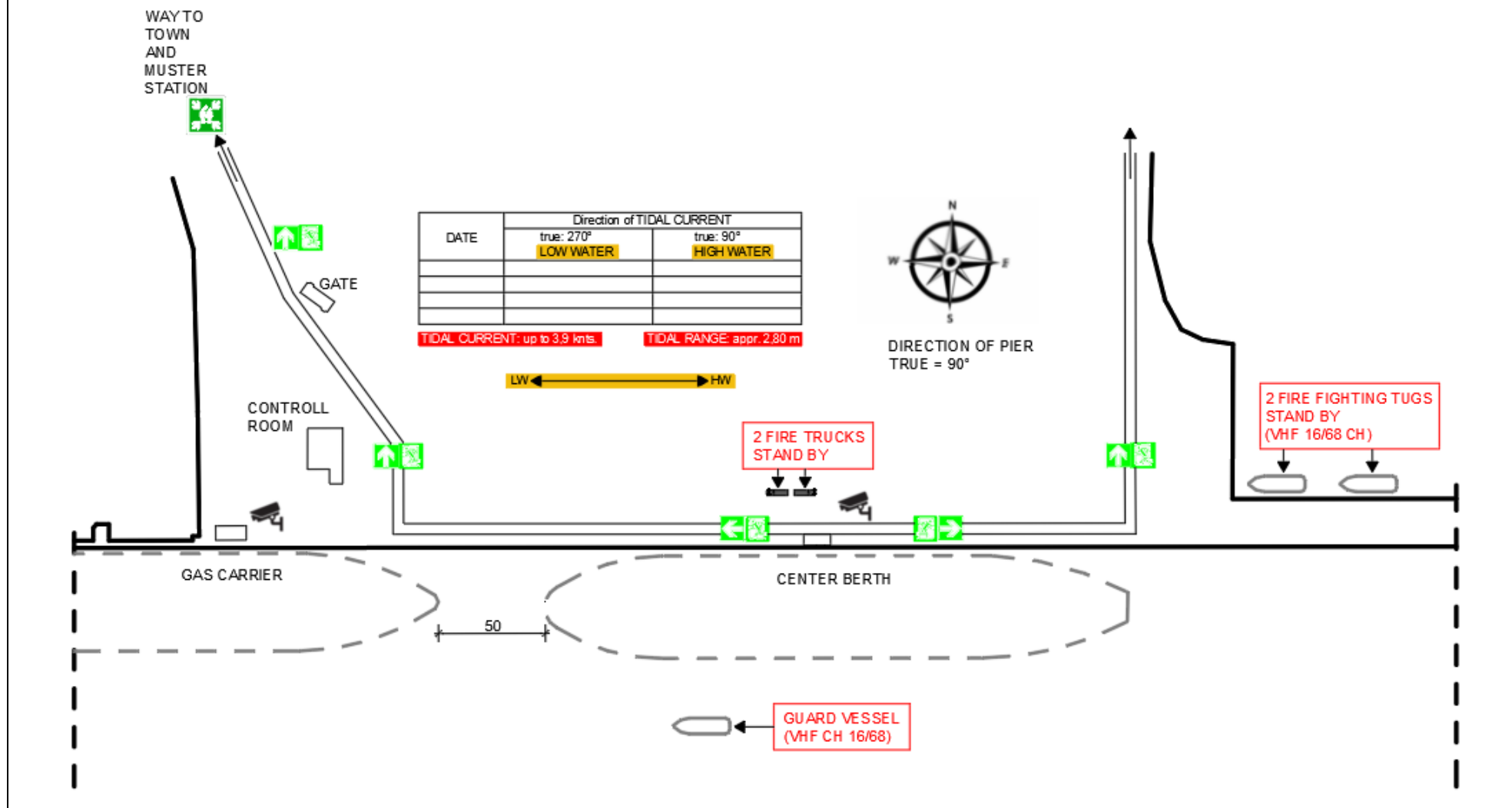
- Emergency Towing-Off Pennants (fire wires) are requested by terminal/authorities
- AIS transponder must be in operation (at least on low power) during port stay (German legislation).
- During night one red fixed light must be switched on (dangerous cargo), not a red flashlight
- Entry enclosed spaces (except pump room, trunk deck) are only permitted on request
- Lifeboat practice/water borne is not permitted (due to strong current)
- Under water work/propeller polishing/survey by divers is not permitted (due to strong current and bad visibility)
- Terminal's Conditions of Use (COU) are laid down in terminal's port area regulation (provided by agent)

Terminal Contact

Name	Lars Sell Port Captain/PFSO
Telephone Number	+ 49-485288448 / harbormaster - port operator on duty + 49-485288441
E-mail Address / Website Terminal	l.sell@schrammgroup.de ; www.brunsbuettel-ports.de

Terminal Information Booklet

Jetties and Escape Routes



Terminal Information Booklet

Terminal's General Safety Regulations

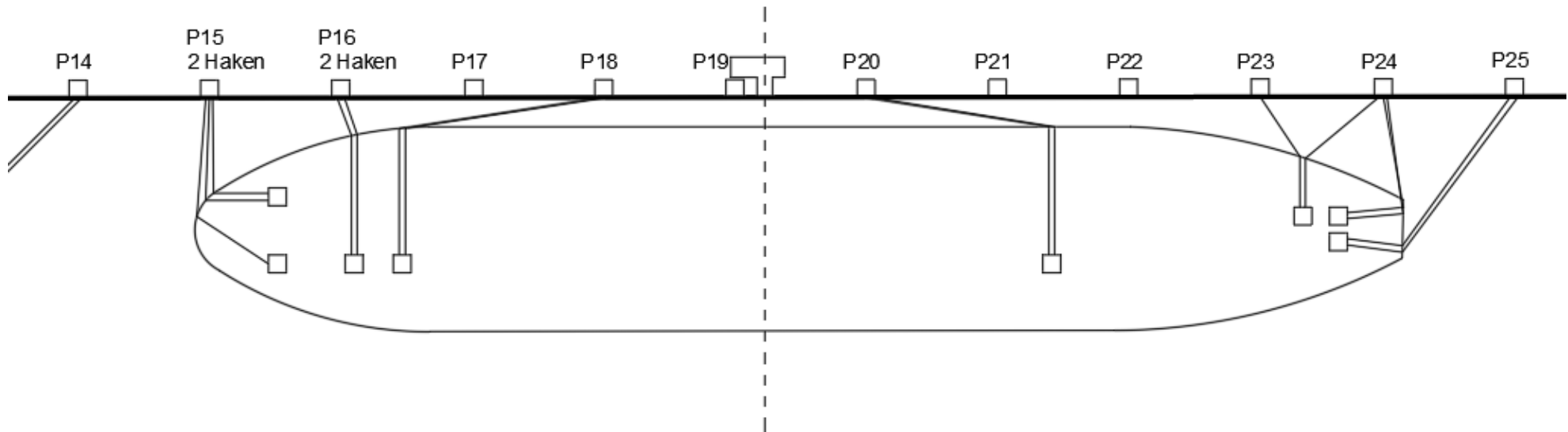


* For shore leave, off signer and visitor: You must wear at least sturdy shoes and clothes covering legs and arms. Use of seaman's bus is preferred.



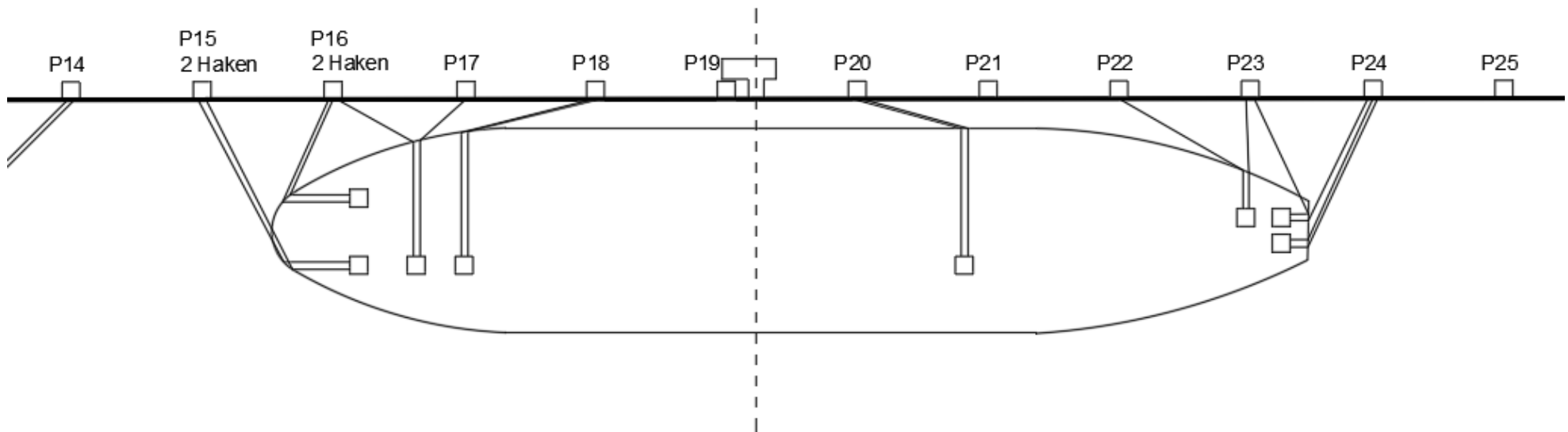
Center Berth Mooring Layout Suezmax-Tanker
~ 240.000 tdw - ~ 275 m Länge (BCM/SCM = 138/137 mtr.)

→ Mooring analysis according to OCIMF guidelines



Center Berth Mooring Layout Aframax-Tanker
~ 120.000 tdw - ~ 245 m Länge (BCM/SCM = 123/122 mtr.)

→ Mooring analysis according to OCIMF guidelines



Center Berth Mooring Layout Handysize-Tanker
~ 40.000 tdw - ~ 190 m Länge (BCM/SCM = 95/94 mtr.)

→ Mooring analysis according to OCIMF guidelines

