Keep Discovering

BOREALIS

Havden Stenungsund

Harbour Regulation and Information Guide 2024

To the Master

Safety Requirements

As Master, you are responsible for the safe conduct of operations on your ship while in port. However, port personnel, property and other ships may also suffer serious damage in the event of an accident on your ship, we accordingly request that you show understanding for the safety requirements set out in the ship/shore safety checklist.

These safety requirements are based on the company's procedures, which are accepted by the oil and tanker industries. We accordingly expect you and everyone under your command to adhere to them strictly throughout your stay at this plant.

For our part, we will ensure that our personnel do likewise and cooperate fully with you to our mutual benefit and understanding in ensuring that all operations are performed safety and efficiently.

To assure ourselves of your compliance with these safety requirements, we will send a member of our staff aboard your ship before the start of operations and thereafter from time to time. After reporting to you or your officer of the match, this inspector will join the officer to the match on routine inspection of the ship.

If we observe that any of these safety requirements are being infringed on your ship, we will bring this immediately to the attention of yourself or your deputy for corrective action. If such action is not taken within a responsible time, we will adopt such measures as we consider being the most appropriate to deal with the situation and will notify you accordingly.

If you observe any infringement of these requirements by plants staff, whether on the jetty or on your ship, please bring this immediately to the notice of our representative who has been nominated as your contact during your stay in the port. Should you feel that any immediate threat is posed to the safety of your ship by any action on our part, or by equipment under our control, you are fully entitled to demand an immediate cessation of operations.

The plant representative in duty is: Production Leader, phone +46 (0)303 87280 (Representative of PFSO)

In the event of continued or flagrant disregard by any ship of these safety requirements of the harbour regulations, we reserve the right to stop all operations and to order the ship off the berth until appropriate action is taken by the owner and charterer concerned.

Important notice

Normal operation

The harbor area will be continuously manned when vessel is moored at the jetty. Communication between vessel and quay during cargo operation should be maintained by using portable radio. The radio must be returned to Borealis Loading Master after completed operation. Mobile phones and other electrical communication equipment of a non-approved type shall not be used outdoor within the harbor area including onboard the vessel.

Important telephone numbers:

Borealis Control room Cracker plant	+46 (0)303 87 280 Production Leader
Loading Master	+46 (0)303 87 284, kracker.pirtekniker@borealisgroup.com
Port Facility Security Officer	+46 (0)706 67 34 60
Cracker Plant / Main gate	+46 (0)303 87 179
Havden Jetty Office	+46 (0)303 87 273
Stenungsund Logistics	+46 (0)767 82 09 78, logistic.cr.stenungsund@borealisgroup.com

Emergency

Fire or emergency on ship or jetty

In case of fire or other emergency, activate ship's fire alarm and contact immediately the fire guard on quay via the portable radio.

If not possible, contact Borealis Control room on following phone numbers or radio channel "Driften1". Important: These numbers should only be used in case of emergency.

Alarm number Borealis Control room	+46 (0)303 77 16 43 (from external phone) 7112 (from internal phone Jetty office)

If not possible to reach Control room, alert external rescue service: Rescue service: 112

Signal by series of prolonged blasts on the vessel's whistle. Assembly point in emergencies is at the harbour main gate.

Escape routes: See Appendix 2

Fire on your ship

- Raise alarm
- Fight fire and prevent fire spreading
- Inform harbour office
- Cease all cargo operations and close valves
- Standby to disconnect cargo arms
- Bring engines to standby and crew to standby ready to unberth

Fire on Jetty

Action on shore

- Raise alarm
- Cease all cargo operations and close all valves
- Fight fire and prevent fire spreading
- If required standby to disconnect cargo arms
- Inform all ships
- Harbour emergency procedure is immediate effective

Contents

Pre-arrival information

Without unnecessary delay, and latest 24 hours before arrival, Master shall through his agent inform Borealis of following:

- List of crew members and expected visitors
- Ship's Security Level at arrival to berth. Vessels operating under security level 2 or higher shall explicitly mention this to Borealis.
- Confirmation that vessel is ISPS certified
- List of previous harbours
- List of expected bunker, shop stores, spare parts etc. List shall be completed with copy of ship's/owner's order or other documentation identifying the expected goods
- Any request to pump ashore engine sludge including quantity

General information

Berth position	58,05/11,48
Pilot boarding point	Hätteberget
Water depth in approaches	14,3 m
Minimum under keel clearance in approaches	10% of vessels draught
Maximum draught in approaches	12,8 m
Transit on tide	NA
Water depth alongside berth	14,3 m
Minimum under keel clearance alongside berth	0,5 m
Absolute maximum draught alongside	13 m
Dock water density	1,023
Date of last hydrographical survey	2011
Maximum length overall (LOA)	240 m
Connection	Hard arm
Maximum bow to manifold distance	120 m
Maximum stern to manifold distance	120 m
Type of seabed	Sand, mud, rock
Manifold normally used	Starboard
Ballast/slop reception facilities available	Only sludge
Are Fuel Oil Bunkers available	Via berth only by truck, at anchorage by barge
Are diesel oil bunkers available	Via berth only by truck at anchorage by barge

ISPS Code

Borealis harbour Havden operates according to ISPS code.

Certificate issued by: Swedish Maritime Administration Harbour PFSO:

Lennart Berntsson, tel +46 (0)706 67 34 60
lennart.berntsson@borealisgroup.com

Loading Master on duty acts as PFSO and will on behalf of the PFSO make all arrangement and security coordination's with SSO.

Borealis Harbour Havden currently operates at security level 1 (one)

Pre-arrival information	
Pre-arrival information as listed above shall be sent to Stenungsund Logistics and the Loading Master	Logistics.cr.stenungsund@borealisgroup.com krackern.portvakt@borealisgroup.com kracker.pirtekniker@borealisgroup.com

All personnel in Borealis harbour shall wear a Borealis identity card. The following categories have ISPS information and shall be allowed to enter ship: Habour manager, harbour engineer, Loading Master, jetty operator, cargo surveyor, agent, ship chandler, pilot, marine surveyor.

In case of an ISPS incident Borealis will handle incident contacts with Swedish authority. Loading Master will forward any changes of security level to ship. Communication between ship and shore is by radio. (Supplied to the ship by Borealis).

Borealis is controlling the access to the port facility and monitoring the berthing area. The ship shall control the access to the ship and is responsible for the identity of all persons aboard and shall also monitor the area surrounding the ship.

Approved identification is mandatory for all ship's personnel and visitors in Borealis harbour. All

visitors to the ship shall be preannounced to Borealis Cracker gate (by ship or agent).

All stores to the ship shall be preannounced to Borealis Cracker gate (by ship or agent) and a verification of the stores shall be presented to the gatehouse guard before it is granted access to Borealis harbour. Ships personnel are responsible for inventory controls.

The ship shall inform jetty operator before any stores or garbage is handled from ship to the jetty.

Under normal situations and as long as both parties act at the same security level, a Declaration of Security (DoS) is not needed, unless a security instance is requesting one.

Navigation

Location

Borealis terminal Havden, Stenungsund is located at the East side of Askeröfjorden about 50 km N of Gothenburg. The harbour is owned and operated by Borealis. The harbour is open for arrival and departure day and night, weather permitting and meeting below restrictions for navigation in darkness.

GPS coordinates	58 °	05,22	11°	48,32

Tugs

Vessels shall use escort tug(s) at arrival and departure to the number as requested by the Harbour Master or Pilot. The minimum norms can be found on Sjöfartsverket website:
https://www.sjofartsverket.se/sv/tjanster/lotsning/lotsomrade-marstrand/Hamninformation/Stenungsund/

Use of tugs when moving is compulsory for vessel with any malfunction in its regular maneuvering equipment including but not limited to main engine, steering machinery, bow thruster.
Normally tugs are not available in Stenungsund but have about 5 hours notification time after ordering.

Mooring of tug or any other vessel at the side of ship carrying, unloading or loading dangerous goods is strictly prohibited.

Anchorages

Ships waiting for available berth can anchor at one of following customary anchorages:

- At Askeröfjorden N of Tjörnbron
- At Älgöfjorden between Marstrand Pilot station and Tjörnbron

Anchorage is assigned by pilot in consultation with Borealis/Agent.

Port information

Vessel limitations

Arriving or departing vessels shall meet the following limitations:

L O A:	Max 240.0 m
Draft:	Max 13.0 m

Navigation in darkness

For navigation in darkness, L O A must not exceed 200 meters.

Handled products

Following products are handled at this terminal:

Import of	Export of
Propane	Propane
Butane	Butane
LPG-mix	
Naphta	
Ethane	

Mooring

It is of outmost importance for safe operation that ships are securely moored and maintained in the correct position at all times. Loading arms or hoses shall not be connected until both ship's Master and Loading Master have ensured that vessel is securely and safely moored. The Master is responsible for ensuring that the ship is securely moored at all times, but it is the responsibility of both shore and ship personnel to regularly monitor all the vessel's mooring lines to prevent undue movement of the ship.

Only ropes or wires with rope tail ends with minimum same working strength as the wires are to be used for mooring. All mooring lines working in the same direction shall be of same material and have same elasticity. Use of solely polypropylene lines for mooring is not allowed.

Use of self-tensioning winches in the automatic position is strictly forbidden while vessel is moored. Brakes of self-tensioning winches shall be secured in locked position.

Based on arriving vessel's size and appearance and position of bollards and fenders, mooring shall be in accordance with mooring plans showed in Appendix 3. It is compulsory for the vessel to use boatmen at arrival and departure.

At the outer mooring points ashore, both east and west, light signal is in use (red/green). Vessel is obliged to observe and adhere to lights, and only tighten moorings once green light is visible.

Sensitivity: Internal

Harbour regulation

Harbour Master

Harbour Master is the Area engineer for tank field and jetties or, in the engineer's absence, the Production leader in the Control room of Borealis Cracker plant. At normal conditions, Borealis Loading Master will act as their deputy representative. The Loading Master can be reached using the communication radio or telephone in the watch house on quay.

Harbour Area

The Havden harbour area is defined as the fenced land area between the harbour's guarded entrance gate and the quay and the area inside the seaward safety zone. Within the sea safety zone, which reaches 50 meters from the quay, all ships movements are prohibited unless authorized by Borealis.

Liability

In addition to what is stated in quarantine, pilot, Custom and other maritime legislation, it is the obligation of the ship's Master to understand and comply with the applicable safety and other regulations within the harbour area. If needed, he or she can obtain this information from the Loading Master or ship's agent. It is the ship's Master's responsibility during the full period the vessel is berthed alongside.

Whenever the ship's Master is not in command, the deputy officer is subject to the same obligations and responsibilities as what is imposed upon the Master in these harbour regulations and all other applicable legislations.

Visitors

Latest on arrival, the Master shall provide Borealis a list with names of expected visitor(s) to the ship and the crew member(s) expecting the visitor(s). All visitors must identify themselves with a valid identification document at Borealis Havden gate to be allowed access to the harbour area. Only authorized persons or persons with entry permits issued by Borealis area allowed to pass through or stay within the harbour area and must comply with any restriction imposed upon them. In addition, visitors to the ship berthed alongside must have permission of the ship's Master.

Sensitivity: Internal

Entrance to ship and harbour area

People entering Borealis Harbour Havden as visitor shall at all times be attended by authorised Borealis personnel, harbour personnel or vessels' crew members.

Within the harbour area, it is mandatory to minimum wear:

- Full-coverage clothing
- Protective helmet with chin strap
- Safety googles
- Reflective vest, which is available at the gate house and on the jetty.

All people shall stay on the road between the gate and jetty and shall follow the safest route to the ship/shore gangway. It is strictly forbidden to access the pipeline rack, unless a specific authorization is obtained from Borealis.

Persons seeking access to the harbour area may be searched prior to access being permitted.

Intoxicated persons

Persons appearing to be intoxicated or under influence of drugs will not be allowed into the harbour area and shall not be permitted to participate in the loading/discharge operation.

Prohibition of prostitution

Promotion or exploitation of other human being providing sexual service against payment (trafficking) as well as procurement of an occasional sexual relation against payment is prohibited and, according to Swedish law, to be punished by imprisonment. Furthermore, Borealis emphasize in its ethics policy that Borealis seek to increase awareness of human right and Borealis take seriously any allegation that human rights are not properly protected or respected within our sphere of influence. Failure to comply with this will be reported and may result in reassessment of the vessel's status.

Handling goods and other items to/from the ship

Information of planned deliveries of ship stores, spare parts or other items to the ship shall be pre-advised to Borealis via the ship's agent in good time before vessel's arrival. Such information shall include documentation, e g order-sheet identifying the goods.

Arrival goods shall be identified and accepted by responsible ship's officers in conjunction with Borealis personnel before the goods can be allowed into the harbour area. Goods shall be accompanied by Borealis' personnel during the transport between the harbour's gate and the ship. This procedure also applies for smaller items, e g mail, to the ship. Handling of goods to and from the ship must be handled before or after cargo loading/unloading. Only small hand-carried items may be taken onboard during cargo operation. Use of cranes on board or on quay is prohibited when loading arm is connected.

Sensitivity: Internal

Gangway

Use of the harbour's hydraulic driven gangway tower will be considered in each case.

If not possible to use harbour's hydraulic driven gangway tower, the ship shall provide and tend a safe gangway for passage between the ship and the quay. A safety net shall be installed underneath the gangway extending from the ship's rail to the quay. The gangway shall be well lit during darkness and poor visibility.

Please see Appendix 3 for dimension of the harbour's gangway.

Ship stability

The ship's Master is responsible for maintaining the ship's stability at all times during cargo and ballast operations. Special attention should be paid to trim/list conditions, which could endanger the safe operation of the connected hard arm.

Pre-operative meeting

Before any operation commence, a pre-operative meeting shall take place between Borealis Loading Master and the ship's Master or Cargo officer.

They will jointly:

- Go through, complete and sign the Ship/Shore Safety Check list
- Update and verify pre-arrival information of declared Security level and actions taken in connection therewith
- Discuss the expected visitors and deliveries of goods etc.
  Agree on handling of waste, i.e. garbage, sludge
- Evaluate any deficiencies revealed by the Check list and decide which additional precautions are required. Borealis reserves the right to refuse to load or unload a vessel if such requirements are not met.
- Evaluate and agree on procedure for sampling, ullaging and temperature reading of ship's cargo tanks. Borealis reserves the right to draw any tank samples considered necessary prior to, during and after cargo operation.
- Evaluate and agree on cargo operation procedures including:
  - ✓ Quantity and quality to be discharge/loaded
  - ✓ Loading/discharge rate
  - ✓ Emergency shut-down procedure
  - ✓ Actions to be taken in case of emergency on board or on shore.

Sensitivity: Internal

Cargo operational procedures

Cargo operation shall not commence until all safety checks have been carried out to the satisfaction of Borealis Loading Master and responsible ship's officer.

All doors, valves or openings which lead from the tank deck to accommodation or machinery spaces should be closed. This also applies for valves and openings at any level which overlook the tank deck. Ventilators should be trimmed to prevent the entry of petroleum gas.

Prior to commencement of operation, sufficient fire hoses to cover the deck area and manifold should be run out and connected to the fire main, ready for immediate use.

Sufficient number of crew members shall at all times be kept onboard under the supervision of a responsible and experienced officer to effectively handle routine work and any type of emergency situation that may incur during the vessel's stay.

The sighting and ullage ports of cargo tanks must be kept closed and secured when not used. After permission from Borealis Loading Master, they may be opened temporarily for sampling or ullage/temperature in case of failure of ship's remote operated tank gauging equipment.

All cargo and bunker connections must be securely blanked and properly and fully bolted when not in use.

Signal while ship is alongside jetty

Vessel carrying cargo of naphtha, LPG or ethane must fly flag "B" of the international signal code by day and, during darkness or low visibility, exhibit a red light that is visible all around the horizon and located above the upper level of the superstructure.

Guard on deck and quay

A responsible crew member, fluent in English and equipped with communication radio, must at all times remain on deck during cargo operation to survey ship's cargo operation equipment and to ensure that unauthorized persons are prevented to enter the ship.

In addition a guard shall, appointed by the terminal, remain on the quay to survey the manifold and connected cargo equipment from shore.

Sensitivity: Internal

Illumination and surveillance of ships offshore side

Ship's personnel shall at all time, considering the declared Security level, keep necessary supervision of the ship's offshore side. This side must be satisfactorily illuminated during darkness.

Weather precaution

Prevailing wind direction in harbour area is south-westerly/westerly. At a wind speed of 20 m/s or higher :

- Vessels are not allowed to go alongside or shift position at the jetty when the wind speed exceeds 20 m/s, unless explicitly instructed by the Loading Master.
- When the vessel is already alongside the jetty :
- The cargo operation should be stopped and disconnection of cargo arms/hoses shall be considered.
- Consider if the ship/shore gangways shall be removed. They can be temporarily replaced for urgent matters if considered safe by the Loading Master
- Mooring lines should be inspected and closely monitored. If necessary, additional mooring lines should be assembled. Parallel mooring lines shall be checked that they are equally tightened.
- If the vessel movements are exceeding the safe margins and it cannot be controlled by tightening mooring lines, two escort tugs to be standby for emergency evacuation or prevent vessel to drift away.
- The terminal can instruct the vessel to vacate the jetty if that is considered the safest option. This shall always be done in close communication and cooperation with the Master, pilots and tugboat personnel

In case of thunder/lightning in the vicinity, the loading or discharging operations shall be stopped and a check shall be made to ensure that all tank openings are gas-tight closed.

Vacation of berth

The vessel shall, after completion of cargo operation, document handling and, if applicable, ballast loading, depart from berth as soon as possible considering applicable restrictions.

Sensitivity: Internal

Safety regulations

Safety and protective equipment

It is the obligation of the ship's Master to ensure that all prescribed safety equipment onboard is in full working order. The vessel's firefighting equipment, including main and emergency fire pumps, must be held ready for immediate use.

Inspection

By Borealis personnel

Borealis personnel shall at all times be entitled to board the vessel alongside the jetty to verify that the Harbour regulations and other applicable regulations are complied with and that cargo equipment in use is in good working order.

By Governmental Port Authority

Duly authorized representatives for the Governmental Port Authority, responsible for the governmental handling of port security issues pursuant to international ISPS Code, have the right to inspect the harbour and to go on board vessel alongside the jetty to verify that the security system and adherent security equipment onboard fully comply with applicable ISPS regulations and are in satisfactory condition for the service in which the ship is used.

Electrical equipment

All electrical equipment on board, fixed and mobile, must be of a type approved by appropriate authority for use in the intended space and maintained in good condition.

Maintenance and repair of electrical equipment is prohibited on board and on quay, if not jointly authorized by the Loading Master and the ship's Master and hot work permit has been issued.

Loading arms and hoses connected to the ship's manifold are fitted with insulation flange. Earthing cable will therefore not be connected.

Use of portable electrical equipment on deck or quay

All use of portable electrical or electronic equipment without ATEX classification, such as mobile phones, radio pagers, electronic calculator, photographic equipment and smart watches is prohibited on tank deck, on quay and in all spaces where flammable vapors may be encountered (e.g. pump room).

Photography is prohibited at Borealis plant unless otherwise agreed with Borealis Loading Master.

Sensitivity: Internal

Repair, Hot work

Any repair or maintenance work requires pre-approval from Borealis. If written permission has been granted to undertake repair, a list specifying the repair works and the names of the persons carrying out the repair shall be submitted to the Loading Master prior commencement of work.

Machinery repair or other repair work that might immobilize the vessel or prevent the vessel from leaving the harbour in an emergency shall not be commenced without prior permission in writing from the Loading Master.

The vessel's propellers berthed alongside jetty must not be set in motion except immediately prior to the vessel's departure and then only at low speed, unless specific permission has been given by the Loading Master. Under no circumstances will running of propellers be permitted while hard arm or hose is connected to the vessel.

Motor vehicles

All motor traffic within the harbour area is prohibited except for following:

Borealis vehicles and emergency vehicles belong to the Rescue service.

A written hot work permit, issued by responsible personnel in Borealis control room, is always and in each case mandatory for driving any motor vehicle in Havden harbour area.

Parking of vehicles shall always be made without blocking roads and/or fire fighting equipment.

Prevention of sparks

Connecting and disconnecting loading arm and hoses and any other operation on deck and quay involving use of metal equipment or tools must be performed in a manner that avoids the generation of sparks. The vessel's funnel(s) must be equipped with efficient spark arresters. Soot blowing and excessive funnel smoke is prohibited and immediate steps must be takes to eliminate sparkling from the funnel(s).

Use of naked flame

All use of naked flame is strictly prohibited except:

- in places designated for hot work under a written permit issued by the Loading Master
- in approved smoking areas

Note! All equipment likely to causes sparkling should be treated as naked flames.

Boilers

Boiler rooms shall be provided with satisfactory ventilation. Doors and other openings facing the cargo deck shall be kept closed.

Sensitivity: Internal

Kitchen

Use of fire in the kitchen or pantry is not permitted. Cooking and other preparation of food must be made on electric or steam driven heating devices.

Smoking

Smoking is strictly prohibited on ship's tank deck and in all other spaces onboard where inflammable vapors may be encountered and within the harbour area ashore.

Smoking is only permitted in approved smoking room onboard selected by the ship's Master. Designated smoking places should be posted with appropriate notices.

Matches and lighters must not be carried outside the smoking rooms to ship's tank deck, to quay or to other spaces onboard where inflammable vapors may be present.

Pollution and Prevention

Wastes

The outmost care must be exercised when handling cargo, ballast and bunkers in order to avoid any kind of spillage into the sea.

Any leakage or spillage must be reported immediately to Borealis and all efforts to limit and recover the spillage must be taken.

All costs for cleaning up after pollution of oil, soot, waste etc., which originates from a ship, is to be paid by the ship/owner/insurance company, irrespective of what or who on board the ship caused the pollution.

According to Swedish law, any pollution including oil spillages from vessel must be reported to the authorities.

Prior to commencement of loading, discharging or bunkering of oil products, all scuppers at main deck level, through which oil could escape in event of spillage, must be effectively plugged.

In the event of leakage from pipeline on board or on quay, the cargo operation must be stopped immediately and shall not be resumed until the leakage is effectively repaired and spilled product has been removed.

According to law, it is prohibited to discharge or throw out fuel or sludge oil, cleaning mass from such oils or any other liquid that could cause fire hazard or pollution of water.

At outboard work, vessel must prevent paint spillage and other pollution of the sea or jetty.

Vessels calling at the Port are not allowed to use Open-loop System for scrubbers.

Tank cleaning, steaming and venting of cargo tanks and abnormal smoke emission including soot blowing are prohibited.

Sensitivity: Internal

Borealis will, free of cost, receive engine sludge and wastes such as:

- Oil from fuel and lubricant oil separators
- Oil contaminates bilge water
- Oil contaminated wastes

The sludge/waste is received via vacuum truck and timing needs to be agreed.

Handling of sludge/wastes shall not be done during cargo operation.

According to law, it is also prohibited to discharge or throw out any kind of waste, liquid or solid that may pollute water or cause other discomfort. Wastes must be retained in suitable receptacles on board.

Vessel must effectively prevent sewage and/or toilet wastes to be discharged to the jetty or the sea. Containers for disposal of sorted wastes are located on the quay.

It is the obligation of the crew to dispose wastes to the correct container in sealed packages. Failure to sort the waste according to marking will be corrected by the Port or other party and all costs will be upon the Vessel.

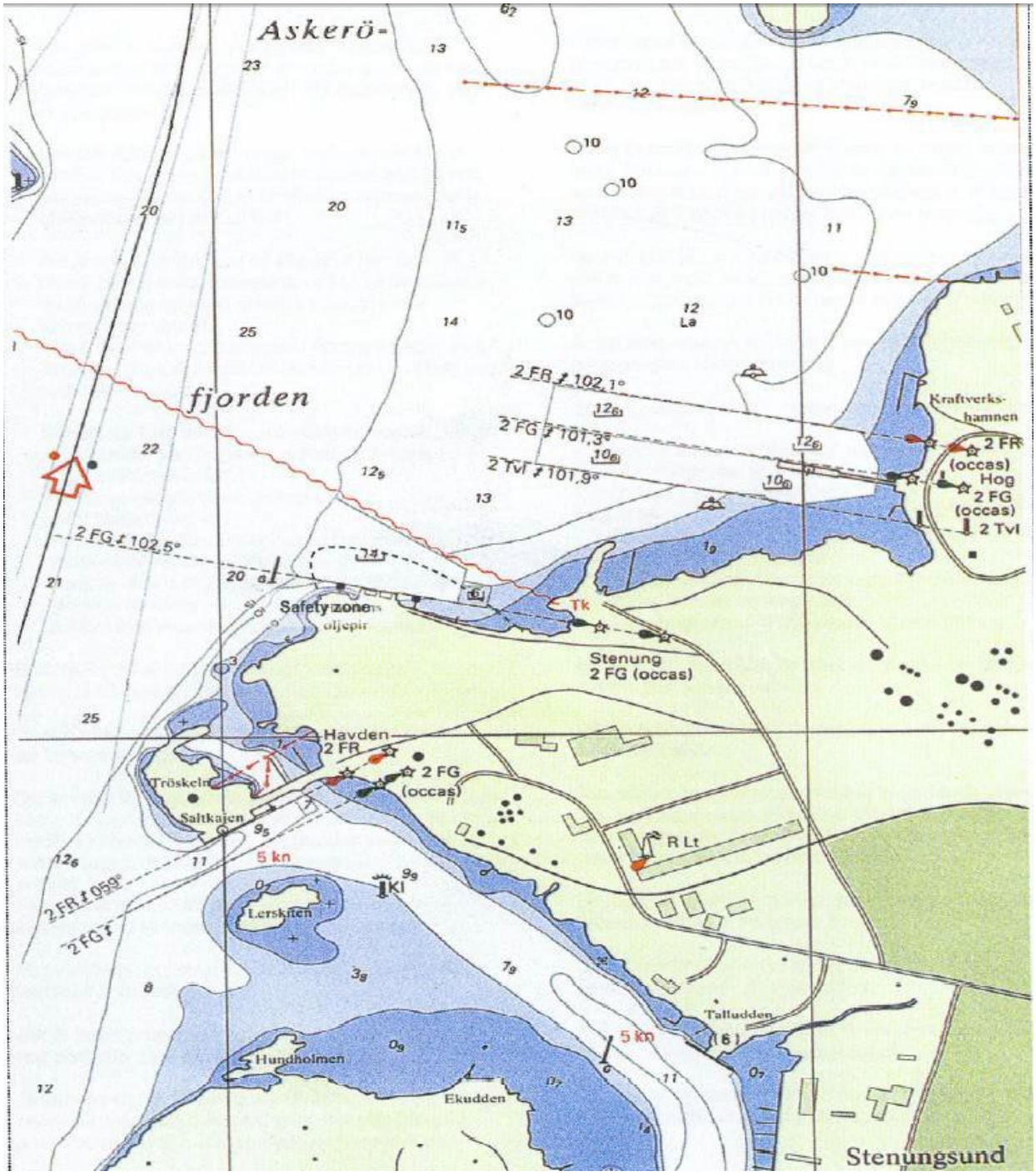
Uncleaned barrels or barrels containing rests of environmentally hazardous substances shall be well marked before they are deposited ashore.

Please see more information about waste handling in Appendix 5.

Sensitivity: Internal

Appendix 1

Map of harbour area with safety zone



Appendix 2

Fire equipment and warning system in harbour and map of escape routes

Fire equipment

The fire water at Havden is connected and supplied by Inovyn through a 400 mm line which is 500 m long. Capacity: fire water pump capacity: 2 x 1350 m^3/h).

Fire pumps can, if needed, be operated from the control room or from Borealis pier:

- ✓ Three fire water hydrants
- ✓ A fixed fire water monitor, located east of the pier, Fire water cannon K-707, capacity 1800 lit/min
- ✓ Two tower mounted foam/water monitor with a capacity of total 6500 l/min. This monitor can be remotely operated.
- ✓ A tower mounted water monitor with a capacity of 4000 lit/min. This monitor can be remotely operated
- ✓ Underneath the pier there are four fixed 400 lit/min medium foam pipes.

There is concentrated foam for both monitors and pipes to last for approximately 30 min.

In the jetty watch house, there are 20 chlorine masks for use in event of a release of chlorine.

Warning system

This includes a gas warning system and a fire warning system. The warning system will start automatically in the event of gas and/or fire detection. It consists of warning lights at the gate and pier, a sound emitter in the harbour and indicating lams in the gate watch house and in the control room.

A PVC plant, which is handling chlorine, is located south of the harbour area.

In case of release of chlorine, a recorded message indicating chlorine danger and actions will be announced in Swedish and English through speakers. The alarm is tested every 1st non-holiday Monday of the month at 09:05.

Sensitivity: Internal

Escape routes

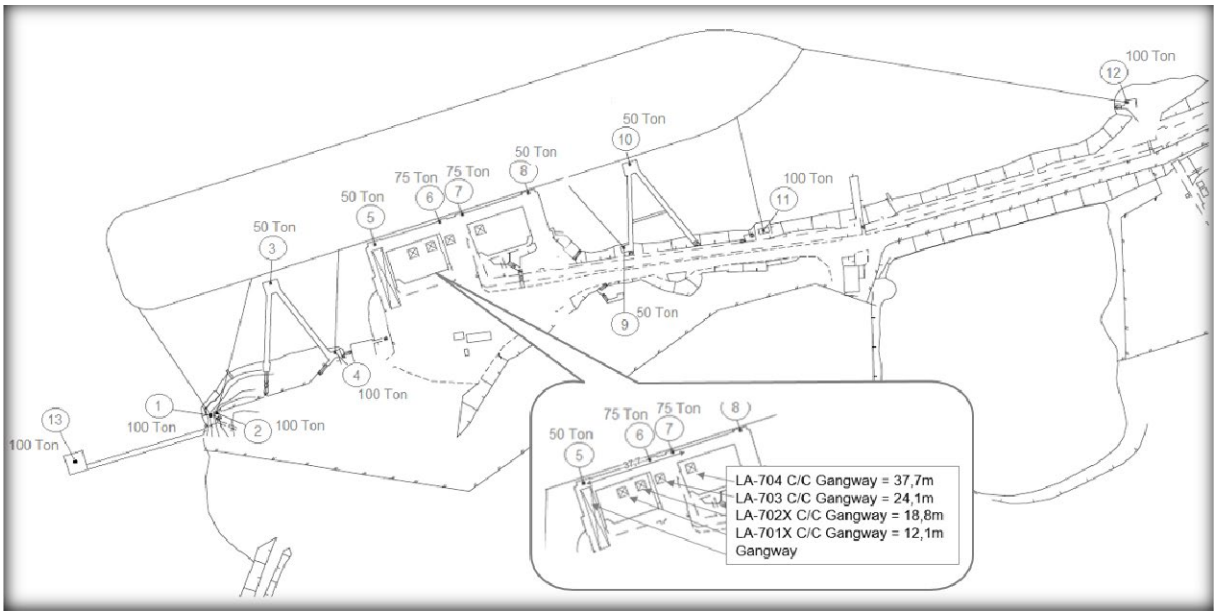
Assembly point

Escape routes

Appendix 3

Working loads of bollards

Illustration and safe working load of bollards.



Details of the shore gangway

Distance C/C between shore gangway and loading arms.

LA-704 C/C Gangway = 37,7m

LA-703 C/C Gangway = 24,1m

LA-702X C/C Gangway = 18,8m

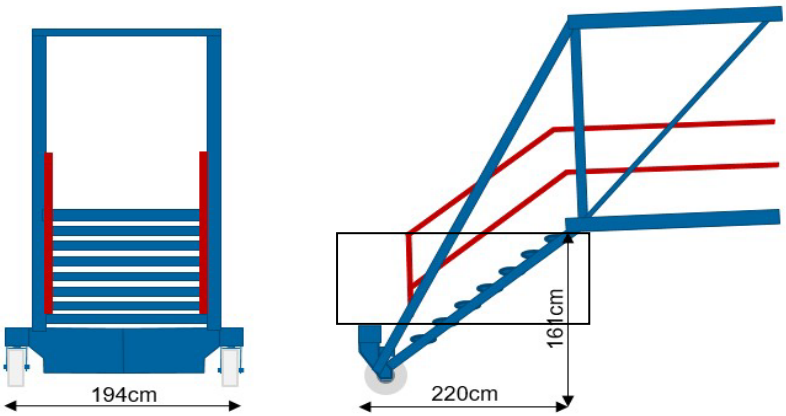
LA-701X C/C Gangway = 12,1m

Shore Gangway

The shore gangway should be the preferred way to pass between the ship and shore. The ship should also if possible choose the appropriate manifold in order to moor/line up considering the ability to use of the shore gangway.

The gangway cannot be adjusted horizontally.

Gangway measurements



Sensitivity: Internal

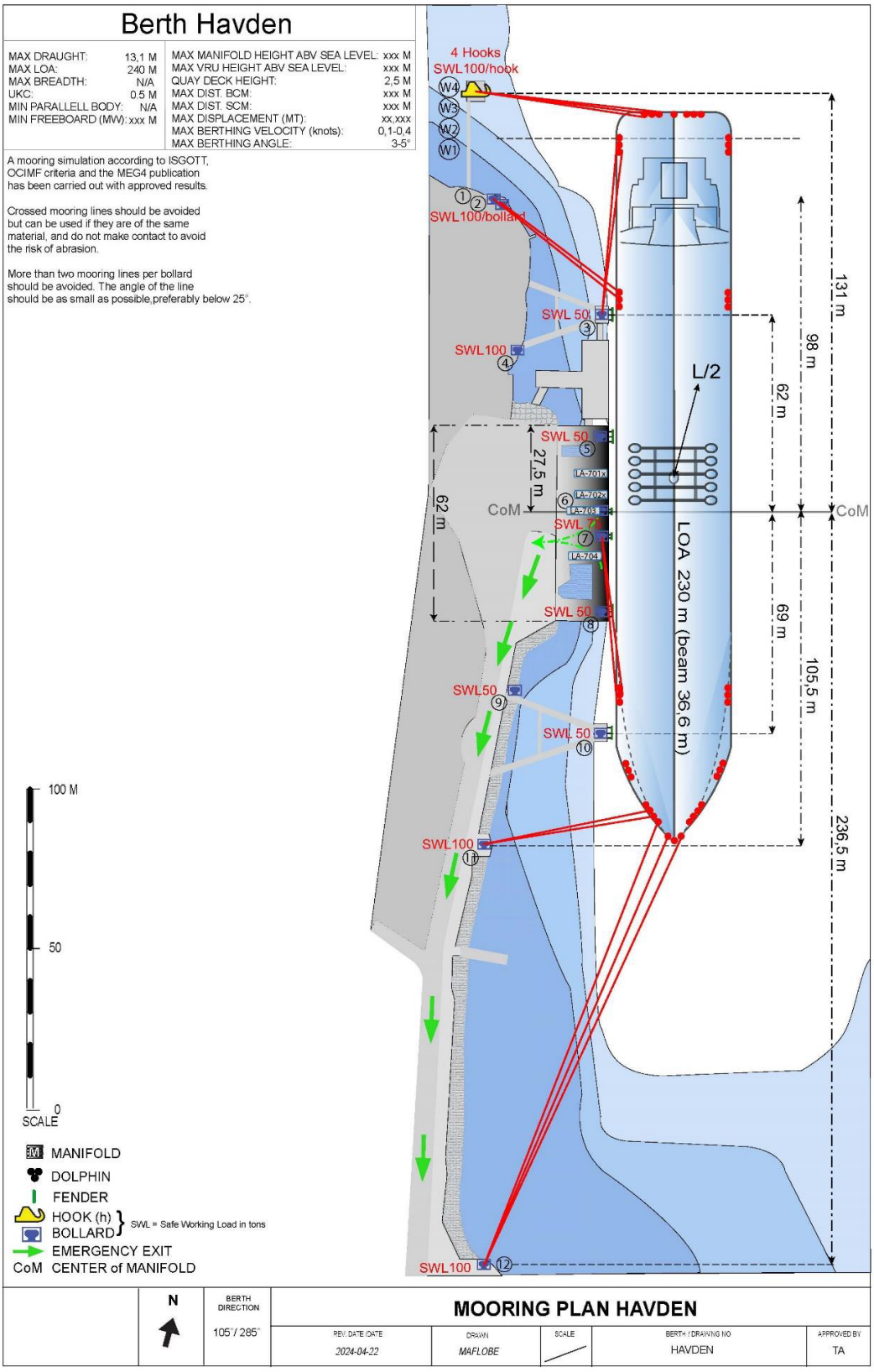
Mooring plan

Mooring simulations has been done for three sizes of vessels according to OCIMF standard environmental criteria as the initial scenario. The vessels main dimensions are presented in the table below

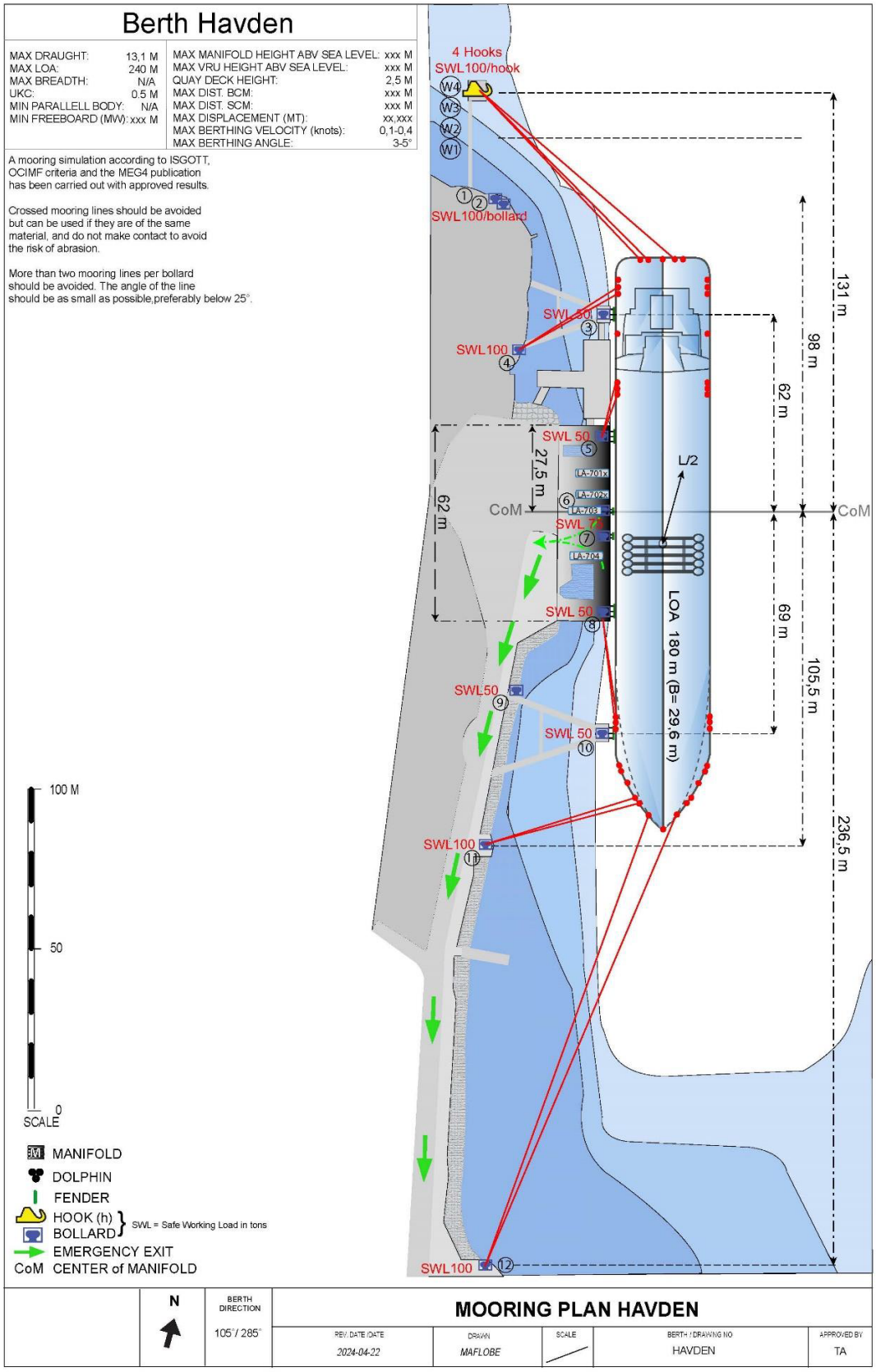
Main dimensions for simulated vessels			
Data	**Vessel 1**	**Vessel 2**	**Vessel 3**
LOA:	230 m	179,9 m	147 m
LBP:	223 m	176 m	144,3 m
Breadth:	36,6 m	29,6 m	22 m
Moulded Depth:	23,6 m	19,4 m	11,7 m
Ballast draft of:	7,1 m with trim aft of 0,7 m	8,0 m with trim aft of 0,5 m	6,0 m with trim aft of 0,5 m
End-on projected windage area:	331 m^2 above deck level	331 m^2 above deck level	367 m2 above deck level
Side projected windage area	657 m^2 above deck level	857 m^2 above deck level	1204 m2 above deck level
Current drag data based on:	OCIMF MEG-4 Tanker.	OCIMF MEG-4 Tanker.	OPTIMOOR (Generic Data)
Wind drag data based on:	OCIMF MEG-4 Gas Carrier (Prismatic)	OCIMF MEG-4 Gas Carrier (Prismatic)	OCIMF Tanker (V-shaped Bow)

Sensitivity: Internal

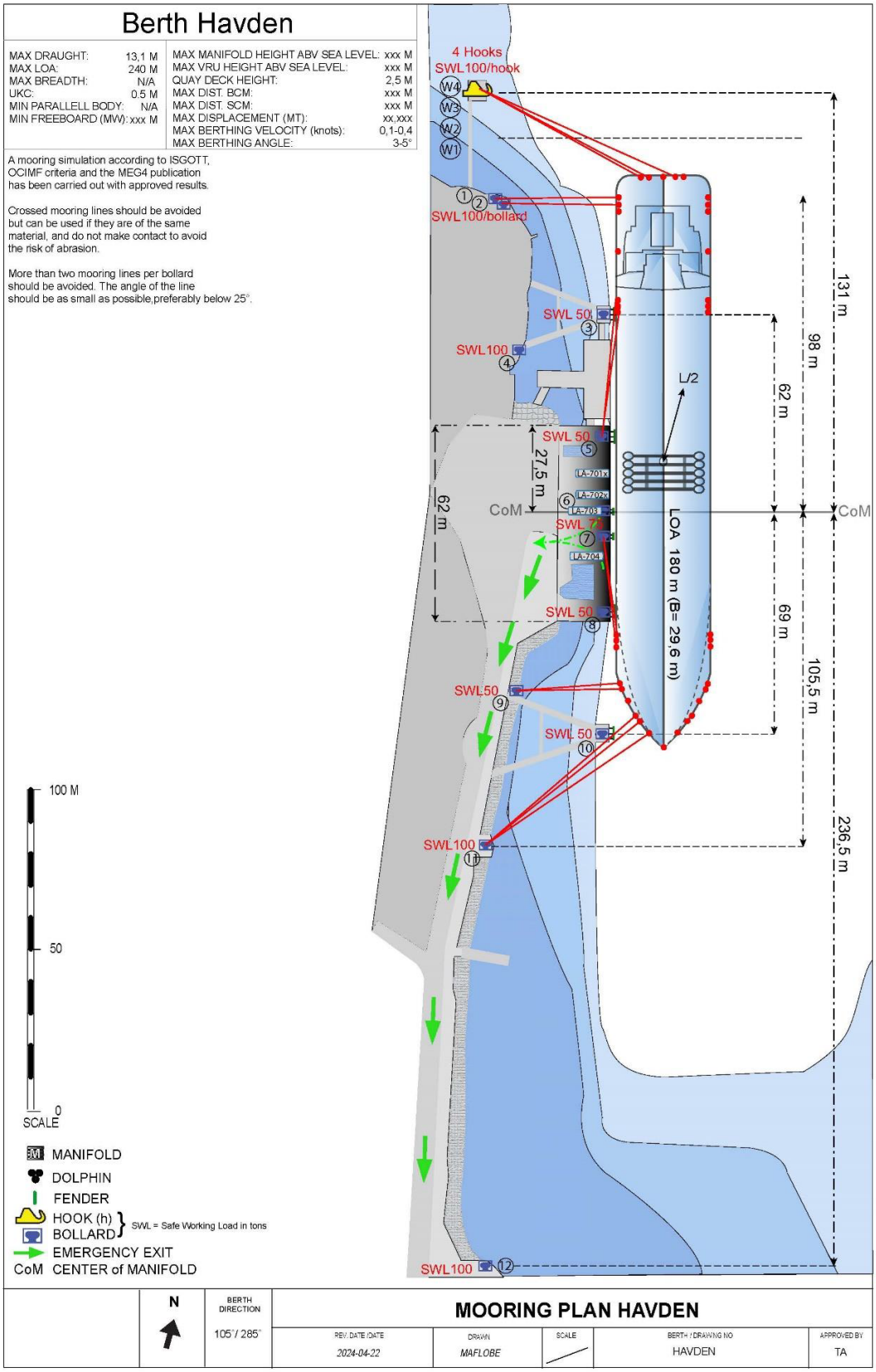
Mooring plan “Vessel 1”



Mooring plan “Vessel 2”



Mooring plan “Vessel 3”



Appendix 4

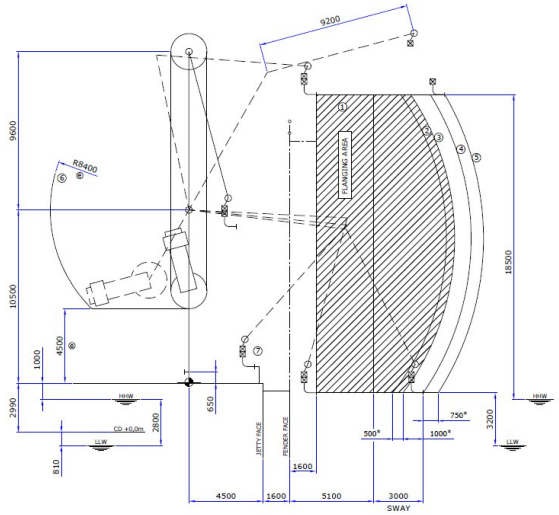
Remote operated valves

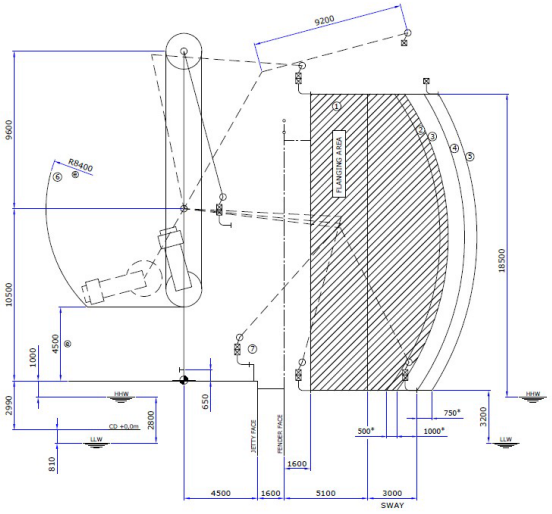
There are four remote operated valves in the pipe system connecting to the loading arms. One in the LPG pipeline (ROV-731), one in the butane pipeline (RBV-944) and one in the naphtha pipeline (RBV- 762) and one in the Ethane pipeline (EBV-744)**.** The valves are located on the quay. These emergency shutdown valves can be operated at the quay, at a control panel located by the road between harbour gate and the quay and from the cracker control room.

Details of loading arms at Havden jetty

Loading-arms	Product	Max/Min Manifold height	Size	Max Flow	Max Bar	Min/Max °C
LA-701X	Butane	18,5m HHW/3,2m LLW	10" / 300#	1900 m3	10,4	-46/+38°C (-105/+65°C)
LA-702X	C3°/LPG	18,5m HHW /3,2m LLW	10" / 300#	1900 m3	10,4	-46/+38°C (-105/+65°C)
LA-703	Naphtha	14m HHW /3,5m LLW	8" / 150#	900 m3	10,0	-10/+38°C
LA-704	Ethane	14,1m HHW /4,5m LLW	10" / 300#	2200 m3	10,0	-105/+65°C

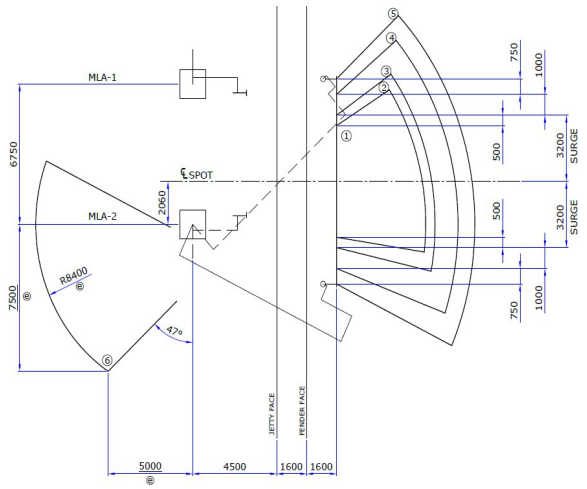
LA-701X Butane



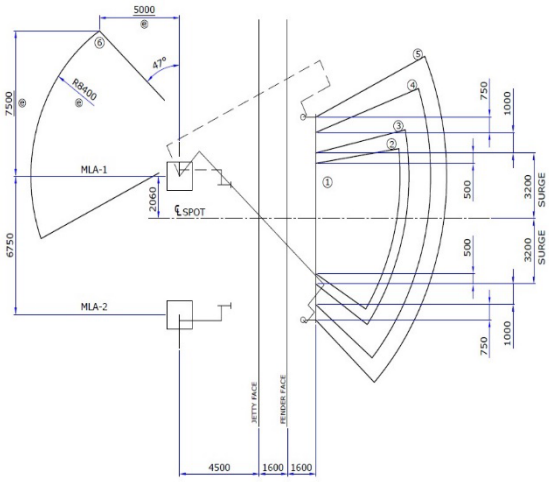


LA-702X C3°/LPG

COMPOSITE OPERATING ENVELOPE @LLW +3200mm
SINGLE CONNECTION MLA-2

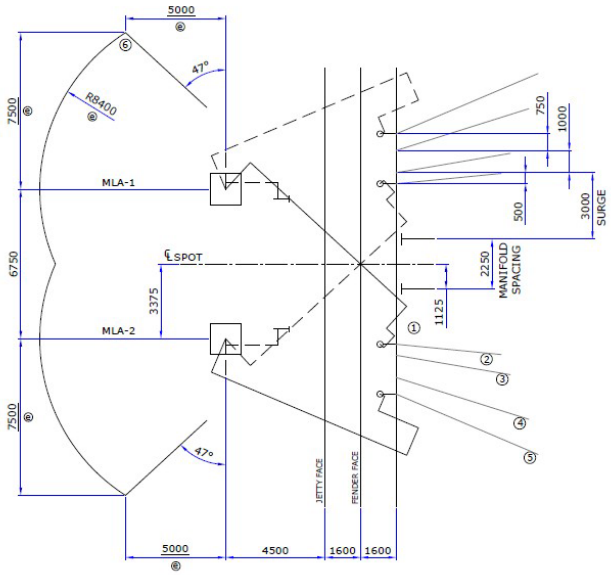


COMPOSITE OPERATING ENVELOPE @LLW +3200mm
SINGLE CONNECTION MLA-1

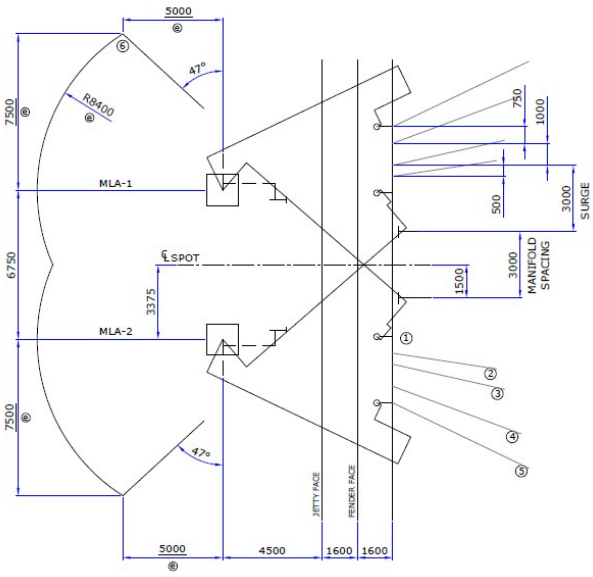


LA-701X, LA-702X Simultaneous connection

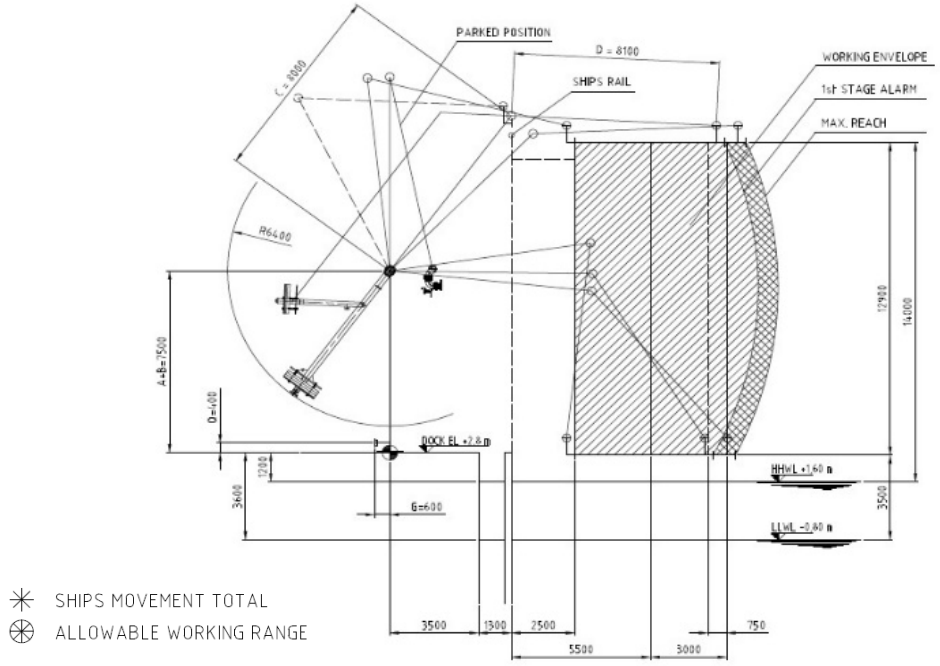
SIMULTANEOUS CONNECTION @LLW +3200mm
MANIFOLD SPACING 2250mm

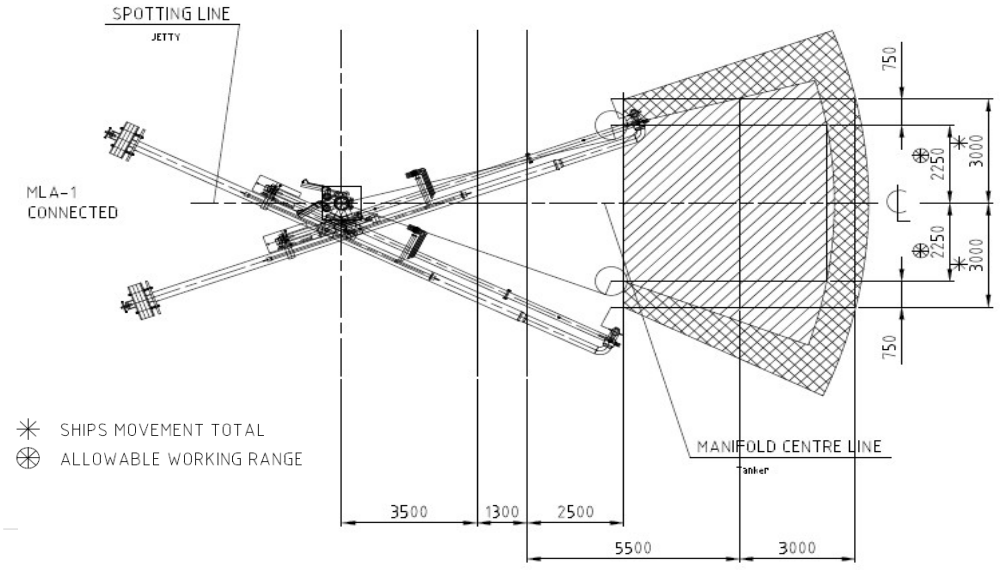


SIMULTANEOUS CONNECTION @LLW +3200mm
MANIFOLD SPACING 3000mm

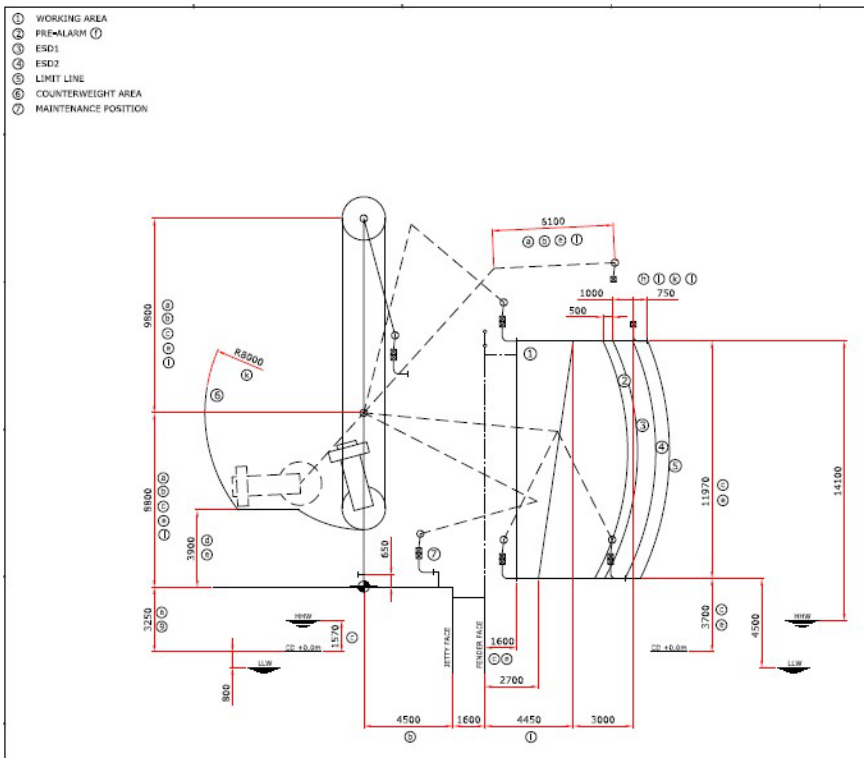


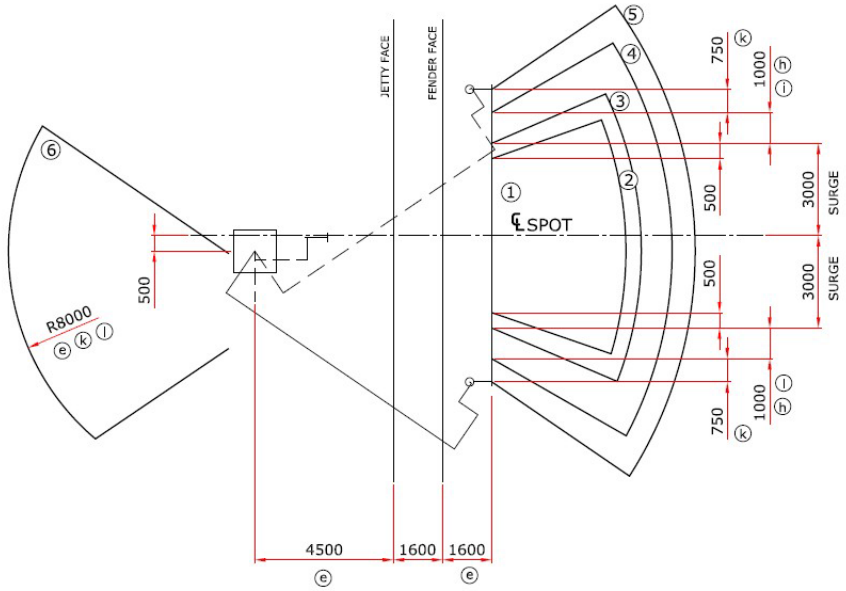
LA-703 Naphta





LA-704 Ethane





Appendix 5

Waste

Five waste handling containers for garbage are available:

1. Waste from food

Everything that has been in contact with food, even after being cleaned:

- Rest of food
- Glass – all type of glass
- Tin cans
- Soft drink cans
- Plastic packing
- Other packing material that has been in contact with food.

2. Wood

- Wooden pallets
- Wooden packaging

3. Steel and metal scrap

- This is NOT for thin cans that have been in contact with food or thin cans that have contained soft drinks.
- Paint cans are not allowed to be here.

4. Container for hazardous waste

- Paint/Varnish/Glue
- Spray Cans
- Oil filter, empty
- Electronic waste including electrical tools
- Batteries
- Fluorescents and other light sources
- Other hazardous waste.

5. Combustible

- Cardboard/Paper
- Plastic
- Clothes
- Rubber

Any other combustible waste that does not belong in other containers.

Sensitivity: Internal