

# Jazan Refinery Marine Terminal

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# Jazan Refinery Marine Terminal

## RULES REGULATIONS AND GENERAL INFORMATION

### 1 General

#### 1.1 Location of Terminal

Located to the NW of Jazan. The Saudi Aramco Refinery Marine Terminal comes within the Jazan City for Primary and Downstream Industries Port Authority boundary.

#### 1.2 Description of Terminal

The Saudi Aramco Jazan City for Primary and Downstream Industries, Refinery Marine Terminal, comprises three (3) tanker berths, one (1) bulk Sulphur berth and one (1) SPM Terminal.

The tanker berths and Sulphur berth share a turning basin with Jazan Primary and Downstream Industries Port, with the SPM Terminal located within the VLCC anchorage area.

The specific gravity of seawater at Jazan Refinery Marine Terminal is 1.025.

Anchoring or fishing within the Terminal areas are prohibited without prior permission Jazan Primary and Downstream Industries Port Authority.

#### 1.3 SPM Terminal

##### 1.3.1 SPM buoy

SPM	Water Depth at LAT
1	23.75M

The CALM SPM Buoy is suitable for Tankers between 150,000 and 320,000 MT DWT. Information on suitable parameters for using the SPMs are listed in the Universal Berth Parameters.

##### 1.3.2 Cargo Hoses

Jazan Marine Terminal, SPM is equipped with two (2) floating hose strings, each string is fitted with a double closure breakaway coupling and a wheel-operated butterfly valve.

The SPM hoses are equipped with one 15-inch circumference, double braided nylon, 85.0 meters (279ft) long mooring hawser.

The tail end hose presented to the ship is 20" fitted with 20" flat face blank flange, a lifting eye and lifting and snubbing chains.

Each hose weighs approx. 6.0 MT and is designed for;

- Maximum throughput 15000 m<sup>3</sup>/hr., 94300 Bbl./hr.
- Normal operating pressure 16 Bar
- Design pressure 19.6 Bar

### 1.3.3 Cargo Hose Strings

The outboard hose string is 305.0m (1000ft) and the inner 293.0m (960ft) long.

### 1.3.4 SPM Marking

The SPM buoy is fitted with a radar reflector and a navigation light.

The navigation light switches on automatically during hours of darkness.

Light character; White 2 FL +1LFL 15-sec.

## 1.4 Tanker Berths #1, #2, #3

The Marine Terminal fixed berths are situated in JPDI Port Harbor.

The harbor is fitted with two breakwaters that create a shelter to the port basin and berth area for three (3) tanker berths and one (1) sulfur berth. Tanker berths #1 and #2 are located on the South Quay, Tanker berth #3 and the Sulphur berth are located on the East Quay. The Tanker berths and sulfur berth are standard conventional alongside berths.

The loading arms connections require a reducer size of 16" for liquid cargo and 10" for vapor and vapor return lines.

## 2 Entering Saudi Aramco Refinery Marine Terminal

### 2.1 Maximum Drafts

Under normal operating conditions with a positive (+) height of tide above LAT, the maximum permitted arrival drafts are as applicable;

If proceeding to Marine Terminal SBM – 22.00m Maximum

If proceeding to Marine Terminal #1, #2, #3, or Sulfur berth – 15.00m Maximum.

If at any time a vessel's under keel clearance is less than 1.5 meters at the berth, operations will be suspended until a rising tide increases the depth of water to safely allow operations to resume.

### 2.2 Draft and Trim including Ballast operations

Under normal operating conditions all vessels should comply with the "Common Rules and Information" Section 11.2 Ballast Operations draft and Trim.

## 2.3 Vessels arriving

Berthing will be planned by the JPDI Port Control Center in coordination with Duty Harbor Pilot and Jazan Refinery Marine Terminal.

For vessels proceeding to any Saudi Aramco Jazan Refinery Marine Terminal berth or the SPM, Harbor Pilots will board at the designated pilot boarding grounds.

## 2.4 VHF Communications

Jazan Primary and Downstream Industries (JPDI) Port Control Center maintain a listening watch on VHF Ch. 16 and Ch. 09, which is used as the calling channel.

## 2.5 Anchoring and Restricted Areas

Jazan Primary and Downstream Industries (JPDI) Port is an open roadstead and protection is afforded by shoals and land to an extent where vessels do not normally experience heavy movement. It has seven (7) designated anchorage areas.

1. **Tanker Anchorage (A) and ORE transfer anchorage area**
2. **Tanker Anchorage (B)**
3. **VLCC Anchorage Area**
4. **Working Anchorage (A)**
5. **Working Anchorage (B)**
6. **Special Purpose Anchorage**
7. **Explosives and Dangerous Cargo Anchorage**

Vessels bound for Saudi Aramco, Jazan Refinery Marine Terminal, if required to anchor, will be directed by Jazan Primary and Downstream Industries (JPDI) Port Control Center to a designated anchorage as applicable. Holding ground has been reported as good in all anchorages with depths averaging 25-30M. Detailed descriptions can be found on applicable charts and in sailing directions.

No vessel shall enter any restricted or prohibited area without a Pilot on board. Fishing vessels are prohibited from fishing and/or anchoring in these zones.

Under no circumstances shall anchors be used in these areas due to the existence of submerged pipelines.

## 2.6 Wind limits for Mooring and Unmooring

For vessels in a loaded condition, berthing/unberthing alongside operations at the Marine Terminal, the wind must not be more than 30 knots.

For vessels in a ballast condition, berthing/unberthing alongside operations at the Marine Terminal, the wind must not be more than 25 knots.

## 3 Pilotage

### 3.1 Pilot Boarding

The Harbor Pilot and if assigned Harbor Pilot Assistant, Harbor Pilot Trainee, will board the tanker at the designated Pilot boarding grounds. The Master should provide an adequate lee for embarking the pilot team if they are to board by boat, or orient and prepare his ship as requested by the helicopter dispatcher if they are to board by helicopter.

Pilot boat operations and boarding activities from a launch are limited by the following weather conditions: a wave height of 1.5 meters and/or a wind speed of more than 25 knots.

Harbor Pilots will not attempt to berth vessels bound for or at the SPM unless it is safe for the mooring boat to operate in the prevailing weather conditions.

At all times mooring boats shall operate within their allowable design specifications after a careful evaluation of the existing circumstances and weather conditions, carried out by the Harbor Pilot.

The Pilot / Pilot Assistant, as applicable, will advise the Master on all maneuvers and operations relative to berthing, connecting and disconnecting hoses and unberthing. Moreover, they will also provide communications between ship and shore during cargo operations and be the Saudi Aramco Representative with respect to safety observations and other requirements

### 3.2 Helicopter Operations

Helicopter operations are not carried out routinely at Jazan City for Primary and Downstream Industries port.

In the event that a helicopter may be required as part of an emergency or other procedure, all vessels should be prepared for helicopter operations to be carried out according to the "International Chamber of Shipping (ICS) - Guide to Helicopter/Ship Operations"

All vessels should have a copy of this booklet and the safety checklist relevant to helicopter operations on board.

## 4 Mooring and Operations for SPM Buoys

### 4.1 Preparations for mooring at SPMs

Ships assigned to the SPM buoys must comply with the OCIMF recommendations for equipment employed at Single Point Moorings, (SPMs).

During the approach, while mooring/securing to the SPM, the vessel's anchors must be secured by stoppers to prevent accidental dropping, with subsequent damage to the subsea pipelines and equipment.

Line handling during mooring/unmooring shall be performed by the ship's staff under instructions of the Pilot/Pilot Assistant.

Ship cargo cranes shall be rigged and ready to lift the hose connecting equipment basket from the launch from either side. If available, a trolley may be required to transport this equipment about the vessel's deck.

The vessel shall have the following equipment ready for use on the forecastle head.

- Large crow bar.
- Large intrinsically safe flashlight for night mooring.
- A messenger line 24 to 28 mm diameter, 150 m in length.
- Winch drum or empty spool drum to heave onboard the mooring pick up rope.

Where possible, the mooring line(s) should lead through a Panama chock in the center of the bow, rather than through a single port or starboard bow fairlead to reduce the possibility of yawing.

Power should be available to the winches (mooring deck equipment) on the forecastle and to the cranes at the ship's manifold to ensure they are ready to lift the ancillary mooring and hose handling equipment. The manifolds shall be prepared for cargo operations, as detailed in 4.1.2.

The Pilot/Pilot Assistant will check that all equipment for mooring and hose connecting operations are on board the launch and in working order prior to departure. Items such as chain hoists, gaskets, wrenches, flange bolt sets, butterfly valve handles, ullaging equipment, sample bottles, etc., may be required and placed on board.

#### **4.1.1 Preparing the Forecastle Head**

Ship's staff will prepare the forecastle head for the mooring operation at the instruction of the Pilot/Pilot Assistant.

#### **4.1.2 Preparing the Port Side Manifold**

All Saudi Aramco SPM terminals have been designed for vessels to use port manifold configuration only.

The cargo crane must be currently certified, tested and ready for use.

Two 20" flange connections to be fitted on cargo manifolds.

To avoid delays, the vessel should have reducers ready at the port side manifold to adapt to any other size requests.

Drip trays, absorbent material and firefighting equipment should be in position.

Saudi Aramco normally supplies the following, but their presence will prevent delays in case of deficiency or malfunction.

- Handy-Billy/Chain block
- Spare spanners.

- Spare wire strops.
- Spare bolts.

#### **4.1.3 OCIMF Standard Manifold Arrangement**

To secure the hoses to the vessel's manifold the manifold arrangement must be as recommended in the OCIMF publication "Recommendations for Oil and Chemical Tanker Manifolds and Associated Equipment."

#### **4.1.4 Equipment Transfer**

Saudi Aramco mooring and hose connecting equipment will be lifted aboard the tanker from the launch on either the port or starboard side by means of the ship's crane.

Normally, the transfer of equipment will be done once the ship is fully secured to SPM. If the ship requires cargo reducers, the transfer will be done as soon after the Pilot boards the vessel as possible. For this purpose, the hose handling crane shall be ready for immediate use and an adequate lee shall be provided.

To prevent injury to personnel and damage to the launch superstructure, the hoisting block must be secured and controlled by a handling line during the entire transfer operation.

### **4.2 Mooring Sequence of Operations**

#### **4.2.1 Mooring/Line Boats**

JPDI, SPM Terminal normally operates with two tugs and a mooring boat. Both tugs are available for mooring assistance at the SPM.

The launches and other terminal facilities are equipped with compatible VHF and UHF two-way radio equipment of adequate power.

#### **4.2.2 Operational Limits**

At all times mooring boats shall operate within their allowable design specifications after a careful evaluation of the existing circumstances and weather conditions, carried out by the Harbor Pilot.

The decision to proceed with the operation should only be made after careful evaluation of the existing circumstances, and agreement with the mooring boats.

#### **4.2.3 Optimum Approach Direction**

Prior to making the final approach to the SPM, it is important that the Master and the Harbor Pilot evaluate and agree, on all conditions and factors that will influence the mooring operation. These conditions and factors include: the tide, current, wind, swell and wave effect, and the direction in which the floating hose strings and hawsers are lying.

The optimum approach to the terminal is into the wind and sea. At times this approach will not be possible, because of the current being at variance with the wind or sea conditions. Accordingly, it is incumbent upon the Master to exercise careful judgment



when approaching the terminal, particularly during the hours of darkness and in poor visibility.

Particular attention must be given to the location of the floating hose string. Normally, the position of the floating hoses will be controlled by the currents, rather than by wind effect.

#### **4.2.4 Approaching the SPM**

When the optimum approach route has been selected, the tanker should proceed toward the terminal at a suitable speed, dependent upon the conditions at that time. Approximately 1,000 m from the berth, the vessel should have only sufficient way on for steerage.

The floating hose string should be on the port side. The tanker should make the final approach with the buoy on the port bow, rather than dead ahead. This permits the Pilot/Pilot Assistant on the bridge to observe the buoy at all times, and in the event of any misjudgment of the approach speed, there is no danger of overrunning the buoy.

It is extremely dangerous for small boats to lie in the path of large vessels, particularly when the larger vessel has a bulbous bow. Therefore, the ship's crew must carry the messenger line to a safe location aft of the bow, along the flat side of the hull before lowering the messenger line, thereby making it unnecessary for the boat to position itself right ahead or under the flare of the vessels bow.

The tanker's approach speed must be reduced to a minimum, but sufficient to keep the ship's maneuverability.

A tugboat may be secured right astern throughout the ships approach to the SPM as deemed necessary by the Harbor Pilot.

#### **4.2.5 Mooring Hawser Hookup**

As the vessel approaches the berth, the floating hoses are towed away from the path of the approaching tanker.

When the vessel is approximately 300 to 460 m (1,000 to 1,500ft) from the buoy, and still making way, the mooring boat will bring the port hawser pickup rope (80 mm diameter) and make it fast to the messenger. At the boat's signal, the pickup rope is heaved on deck.

Under no circumstances must any load be put on the pickup rope as this may lead to the failure of the rope.

The tanker should be brought to a dead stop between 45 and 60 m (150 and 200ft) from the buoy. At this point, the chafing chain is lifted into the bow chock and then to the bow chain stopper to be secured under the direction of the pilot. Ease back on the pickup rope until the weight is taken up.

Care must be taken to gradually transfer the load to the hawser, to avoid any shock loading that can result from a freely drifting tanker taking up hawser slack.

Repeat the operation for the starboard chain.

### 4.3 Connecting the Cargo Hoses

Connecting cargo hoses is to be carried out by the ship's staff under instruction and supervised by the terminal representative:

Due to possible vessel induced movement to the crane wire/hook, the vessel must use guide ropes to reduce/control the hook movement at all times during raising and lowering operations.

1. **Lower crane hook to the mooring boat, which will connect it first of all to the forward hose.**
2. **Heave up until the blank flange is level with the hose rail.**
3. **Unshackle hose snubbing chain from the flange.**
4. **Continue heaving up the hose as directed by the Pilot Assistant.**
5. **Secure the snubbing chain as suitable.**
6. **Lower the hose to bring the hose flange to the manifold and check the alignment of the flanges.**
7. **Lower the hose onto the drip tray and removed the blank flange.**
8. **Lift the hose and connect it to the manifold. The hose flange is fitted with camlock connections. Never use a wire stop around cargo hoses.**
9. **The second cargo hose should be connected in the same way.**
10. **After cargo hoses are connected, they must be supported in way of the vessel's side rail by means of nylon belly bands hooked up to ship's crane. Be advised that the hoses cannot touch the saddle rail at any time.**

### 4.4 Cargo and Ballast Procedure at SPM

Cargo rates will be set by the Harbor Pilot in coordination with the terminal and as agreed with the vessel.

All cargo and ballast operations will be controlled by the ships' Officers.

Radio communications with the Terminal will be designated by the Pilot.

In the event of failure of radio communication systems, the vessel will sound five long blasts on the vessel's whistle. Loading operations will be stopped and will not be resumed until communications have been restored.

Ballast and Slop Reception is not available at Jazan Refinery SPM Terminal.

A need for emergency shutdown of cargo operations aboard the vessel must be communicated as soon as possible to the Harbor Pilot and/or Terminal.

### 4.5 Use of Tug/Engine at Berth

After securing both chains, a tug may be placed on a towline at the stern of the vessel, using a vessel's line of suitable length and strength. The line will be kept taut at all times except during high wind periods.

Vessels that are only able to run their engines astern for short periods should maintain them in a state of readiness at short notice, and use them as required to maintain position off the SPM. At such times, the Pilot may direct the operation from the forecastle with a vessel's Officer and with the bridge manned by the Master.

#### **4.6 Bow Watchman**

At all times when at berth, there shall be an experienced crewmember on duty at the bow of the vessel. He shall be issued with a means of immediate communication with the Deck Officer on duty.

He shall observe the configuration of the hoses and mooring hawsers, and the proximity of the SPM and hoses to the tanker. He shall be alert to oil leaks or spills, unattached oil slicks in the vicinity and deteriorating weather conditions. He shall immediately report any abnormal event or deteriorating weather to the Deck Officer on duty.

#### **4.7 Manifold Watchman**

At all times, when at berth and when cargo hoses are connected, there shall be a watchman on duty at the manifold. He shall observe the configuration of the hoses and the manifold connections. He shall be alert to oil leaks or spills, stress or chafing on the hoses or ancillary equipment and deteriorating weather conditions. He shall report any abnormality to the Deck Officer on duty.

#### **4.8 The Deck Officer on Duty**

The Deck Officer shall immediately report any abnormal events, deteriorating weather or other situations coming to his attention to the Pilot or Pilot Assistant on duty.

#### **4.9 Gangways**

The gangway is to be rigged and ready on the starboard side of the vessel, maintained at deck level.

#### **4.10 Boarding vessels at SPM**

Small craft are not allowed in the vicinity of the vessel and no one is permitted to board or leave a vessel while cargo operations are in progress.

Should it become urgent for personnel to board or leave a vessel for any reason during the cargo operation, the Pilot must be contacted to request permission to shut down the cargo operation while the small craft is alongside.

#### **4.11 Care of SPM Berth Equipment**

In bad weather, maintenance work is extremely difficult and involves possible danger to personnel. For this reason, vessels are requested to give as much assistance as possible by taking proper care of the mooring and hose equipment.

Saudi Aramco will hold the vessel responsible for all costs and/or losses resulting from damage to the mooring and hose equipment where they consider that the vessel has been negligent in taking proper care of them.

## 4.12 Disconnecting the Cargo Hoses

Disconnecting cargo hoses is to be carried out by the ship's staff under instruction and supervised by the terminal representative:

Due to possible vessel induced movement to the crane wire/hook, the vessel must use guide ropes to reduce/control the hook movement at all times during raising and lowering operations.

1. **Connect the after-hose stop to the crane hook, take the weight and disconnect the flange.**
2. **Replace the blank flange using the camlocks and a new gasket.**
3. **Lower hose to deck and secure.**
4. **Repeat with forward hose.**
5. **Secure the crane hook to the lifting hook of the after hose and raise the hose until the weight is taken off the snubbing chains.**
6. **Release the snubbing chain, lower the hose to rail level and shackle the snubbing chain to the flanges.**
7. **Lower the hose end into the water and trip the hook to release.**
8. **Repeat for the forward hose.**

Return all Saudi Aramco tools and equipment to the steel basket, stow it in a seaman like manner, and prepare for lowering to the mooring boat on either the port or starboard side, dependent on weather conditions.

## 4.13 Unmooring from SPM Procedure

1. **Take the weight of the chain and hawser on the pickup rope using the windlass.**
2. **Disconnect chafing chain from the bow chain stopper.**
3. **Slowly slack the pickup rope until the support buoy is in the water and taking all of the weight of the chain.**
4. **Pay out the pickup line either to the mooring boat or as the ship clears the berth.**

## 5 Mooring and Operations for Tanker and Sulfur Berths

### 5.1 Mooring/Line Boats

JPDI Port, SPM Terminal normally operates with two tugs and a mooring boat. Both tugs are available for berthing assistance at the SPM.

The launches and other terminal facilities are equipped with compatible VHF and UHF two-way radio equipment of adequate power.

### 5.2 Operational Limits

At all times mooring boats shall operate within their allowable design specifications after a careful evaluation of the existing circumstances and weather conditions, carried out by the Harbor Pilot.

The decision to proceed with the operation should only be made after careful evaluation of the existing circumstances, and agreement with the mooring boats.

### 5.3 Mooring Lines

The mooring arrangements will require the ship to prepare 3 headlines and stern lines, 3 breast lines forward and aft and 2 spring lines forward and aft.

Ships assigned to the Marine Terminal berths must comply with the OCIMF Mooring Equipment Guidelines.

Vessels should have heaving lines ready. After landing alongside a heaving line should be passed to shore. When the heaving line is received by the shore it will be attached to the shore messenger. The messenger will be attached to the ship's lines and the shore mooring gang will heave the ship mooring lines ashore. It is normal for heavy wires to be sent ashore one at a time and ropes may be sent 2 at a time.

Only jetty personnel are to handle mooring lines ashore.

### 5.4 Ship/Shore Connections

Jetty crews are on duty continuously to handle cargo hoses/arms and will make all connections/disconnections.

All cargo connections are equipped with electrical insulating flanges; therefore, ship to shore bonding cables must not be rigged.

### 5.5 Cargo

Each berth suitability for cargo is itemized on the Saudi Aramco Universal Berth Parameters table.

Berths #1 and #2 are suitable for Chemical, Chemical Vapor (Paraxylene and Benzene), Product, Fuel Oil and Crude Oil.

Berth #3 is suitable for RLPG (C3, C4), Chemical, Chemical Vapor (Paraxylene and Benzene), Fuel Oil and Product.

Vessels involved in the transfer of RLPG at Berth #3 should follow all applicable procedures as documented in Saudi Aramco, Port and Terminals, Rules, Regulations and General Information, Section 8 Gasrul.

Maximum and minimum cargo rates including topping off rates are specific to each loading arm.

The rates and parameters for each cargo operation will be discussed and agreed between the vessel and a terminal representative during the pre-cargo operations meeting.

While at berth, ship will maintain communication with the PCC on the VHF and with the Marine Terminal Operations on Bravo radios that will be provided by the Terminal Operator.

In the event of failure of radio communication systems, the vessel will sound five long blasts on the vessel's whistle. Loading operations will be stopped and will not be resumed until communications have been restored.

## 5.6 Gangways/Access Ladders

The Terminal will provide a shore gangway during the ship stay, however ships are required to prepare a ship gangway on the seaside / offshore side to be utilized as a secondary means of access.

# 6 Completion and Departure

## 6.1 Cargo calculations on arrival and departure

The Cargo Officer in coordination with the attending cargo surveyor and if necessary Harbor Pilot assistance, will supply the ship's cargo figures on arrival and prior to departure in U.S. (i.e., Gross) Barrels. The Terminal Representative will not accept the figures until they are presented in writing on the Saudi Aramco ullage report form.

Results of ship/shore comparison take time and Masters are urged to prioritize the cargo calculations and completion of the ullage report form to avoid delay.

If the vessel is released, the Harbor Pilot will leave after unmooring is completed and the ship is clear of the berth. If the ship/shore difference is large and the vessel is not released, the Cargo Officer in coordination with the attending cargo surveyor and if necessary Harbor Pilot assistance, will survey any cargo to Saudi Aramco inspection procedures and report the findings to Saudi Aramco Terminal Planners.

Refer also to "Common Rules and Information," Section 11.3 "Cargo Calculations and Release"

## 6.2 Sailing Drafts

Under normal operating conditions with a positive (+) height of tide above LAT, the maximum permitted sailing drafts are as applicable:

If departing Marine Terminal SBM – 22.00m Maximum

If departing Marine Terminal #1, #2, #3, or Sulfur berth – 15.00m Maximum.

If at any time a vessel under keel clearance is under 1.5 meters at the berth, operations will be suspended until a rising tide increases the under-keel clearance.

## 6.3 Sailing Trim

Under normal operating conditions all vessels should comply with the “Common Rules and Information” Section 11.2 Ballast Operations Draft and Trim.

## 6.4 Departure

Upon completion of unmooring, if required the vessel will make a lee for any mooring/hose connecting equipment to be discharged onto a launch, on either port or starboard side.

The Pilot/Pilot Assistant will normally leave by Pilot launch.

All vessels using the Jazan facilities should then proceed outwards via the appropriate departure route/channel