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1 PURPOSE AND SCOPE

The purpose of this guide is to provide guidance to the Terminal Management and Masters on visiting vessels in line with industry standard.

The scope of this Guide is to describe Guidance and Requirements for LNG carriers discharging at NRS terminal:

- Terminal Information
- Cargo transfer Organization
- Pre-Arrival Planning
- Arrival
- Berthing,
- Cargo Transfer
- Departure
- Local Requirements

1.1 General Requirement

An LNG Carrier calling for discharging at FSRU Nusantra Regas Satu Terminal shall be capable of safely operating within the limitations of the berth and operate in accordance with all Laws, Decrees, Decisions, Regulations etc of Republic Indonesia and with the International Conventions that Indonesian goverment has ratified.

LNG Users of the Terminal shall apply to the Terminal for an LNG Carrier compatibility study, at least thirty (30) days before Estimated Time of Arrival..

This Manual is available to LNG carriers that intend or plan to call to the terminal, including Agents and Port Authorities and other relevant Govermental Authorities.

LNG Carriers calling at the Terminal shall comply with International Gas Code (IGC) and oeprateted according to Industry Standards.

LNG Carriers shall at all times, comply with the International Code of Signals and display flags, shapes and lights as required by the International Regulations for the Prevention of Collision at Sea.

All LNG Carriers, alongside the Terminal's berth from sunrise to sunset shall put their national flag and the Indonesian flag. LNG Carriers shall have and retain onboard at all times, adequate in terms of quantity and training crew (as required by their flag) with good working knowledge of the written and spoken English language to enable operations to be carried out safely and efficiently, as well as to maintain cargo operations records. Masters of LNG Carriers should be aware that

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their LNG Carrier can be the subject to Port State Control, Port Authority and [PT.PP Equinox](#) inspections to investigate compliance with the requirements of international conventions.. All valid and applicable trading certificates, documents, manuals, publications, and charts as required must be on board the LNG Carrier at all times available for inspection.

2 DEFINITIONS AND ABBREVIATIONS

2.1 ABBREVIATIONS

GMT	Greenwich Mean Time
ISPS	International Ship and Port facility Security code
JOA	Joint Operation Agreement
LNG/C	Liquefied Natural Gas Carrier
MARPOL	International Convention for the Prevention of Pollution From Ships
MLA	Marine Loading Arm
NRS	Nusantara Regas Satu
OCIMF	Oil Companies International Marine Forum
POAC	Person in Overall Advisory Control
SIGTTO	Society of International Gas Tanker and Terminal Operators
SOLAS	International Convention for the Safety Of Life At Sea, 1974
VCM	Vessel Contingency Manual

3 REFERENCE DOCUMENTS

3.1 EXTERNAL DOCUMENTS

- Ship to Ship Transfer Guide 2013 (ICS/OCIMF)
- Safety of life at Sea (SOLAS)
- Marine Pollution (MARPOL 73/78)
- International LNG carrier and Port Facility Security (ISPS)
- International Regulation for Preventing Collision at Sea (1972), (Colregs)
- SIGTTO: LNG Transfer Arms and Manifold Draining, Purging and Disconnection Procedure.
- ISGOTT latest version

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3.2 INTERNAL DOCUMENTS

- STS 400, Joint Operation Agreement
- COM 404- Pre-arrival Declaration
- OCIMF Checklists:
 - STS 305, STS Checklist 6 - Pre-Transfer
 - STS 306, STS Checklist 6a - Checks during transfer
 - STS C/L 307 - Nusantara Pre-berthing Post-berthing STS Checklist

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4 TERMINAL INFORMATION



4.1 DESIGN

Nusantara Regas Satu (NRS) is a conventional LNGC converted to a FSRU terminal

- Length 293.75 meters
- Draft is approximately 11.0m (depending on loaded condition)
- Net storage is approximately 124,000m³ in six spherical tanks.
- Two 16" liquid and one 16" vapour arms.

4.2 LOCATION

The NRS Terminal is located in the vicinity of Pulau Ayer Besar, about 15 km off the northern coast of Jakarta:

- Latitude 05° 58' 28.920" S
- Longitude 106° 47' 57.96" E

4.3 LOCAL TIME

Local time is GMT +7 (use in all correspondence).

4.4 PILOTAGE & BOARDING AREA

- Use of pilot is compulsory
- Arrange pilot via Pertamina agent
- Give minimum 48, 24 and 6 hours' notice of ETA Pilot Boarding Area
- Pilots are available on VHF Channel 16 & 12
- FSRU Terminal available on VHF Channel 13 & 16 (general)

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4.5 ANCHORAGE (WAITING AREA)

Approved anchorage area is:

- o 05° 56'30.0000" S 106° 46'00.0020" E
- o 05° 56'30.0000" S 106° 46'46.2839" E
- o 05° 58'00.0000" S 106° 46'46.2839" E
- o 05° 57'59.9964" S 106° 45'59.9254 E

Anchor area and pipelines are identified on following charts:

- o BA chart no: 933 - Approaches to Tanjung Priok
- o Local Indonesian: No 86, No 86A & No 86B

Holding ground at anchorage is good. Special precautions should be considered by Masters at the anchorage area during Monsoon season (Dec – Feb)

4.6 NAVIGATION AID

A beacon is fitted on the NRS Terminal to aid approach to anchorage area:

Position:	05 58' 31.5" S / 106 47' 57.66 E
Location:	Top of NRS Terminal Aft Mast
Height:	46 meter (above sea level)
Color:	White
Characteristic:	FL. W. 3 sec (fl.1.0 - Ecl. 2.0)
Visibility distance:	10 NM

4.7 WEATHER INFORMATION

Weather conditions are available at: <https://www.windy.com/-5.976/106.800?-6.002,106.841,13,m:dvdai68>

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4.8 WEATHER RESTRICTIONS

Wind (Knot)	Sea (mtr)	Visibility (Nm)	Action
>20	n/a	n/a	Stop use of personnel crane
>20	>1.5	<2.0	No berthing
≥17	>1.5	<2.0	Berthing/unberthing allowed with 4 Tugs
>28 or >34 gusts	>2.0	n/a	Stop cargo operation
>35 or >40 gusts	>2.0	n/a	Disconnect
Lightning	n/a	n/a	Stop cargo operation Cargo lines may be kept cooled by use of a spray pump(s).

If weather forecast (Chapter 4.7 Weather Information) predict wind force above 20 knots during STS operation, the same **shall** be postponed.

4.9 TEMPERATURE

The uniformly warm waters that make up 81% of Indonesia's area ensure that temperatures on land remain fairly constant, with the coastal plains averaging 28 °C. Temperature varies little from season to season, and Indonesia experiences relatively little change in the length of daylight hours from one season to the next; the difference between the longest day and the shortest day of the year is only forty-eight minutes.

4.10 RAINFALL

The area's relative humidity ranges between 70 and 90%. Dry season is June to October and a rainy season November to March

4.11 WINDS

Winds are moderate and generally predictable, with monsoons usually blowing in from the south and east in June through September and from the northwest in December through March. Typhoons and large-scale storms pose little hazard to mariners in Indonesia waters.

4.12 RELATIVE HUMIDITY

The relative humidity ranges from about 13% in April to 89% in December.

4.13 TERMINAL SAFETY AND EXCLUSION ZONES

- 500m radius exclusion zone
- 1250m radius safety zone

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4.14 BERTHING

Berthing and un-berthing operations possible 24 hours (no night time restriction)

LNGC's must berth with starboard side to the Terminal.

4.15 TUGS

Three tugs are always on standby close to the terminal.

Prior to commence the mooring-operation to the FSRU, three tugboats will be made fast.

One tug will be made fast forward and one tug will be made fast aft. The other tug will be Stand By midship. The most forward and most aft tug will be using a tow line sent from the tugboat and will be made fast to the mooring-bit of the LNG/C. The LNG/C must have made ready a heaving line and have a messenger st.by for making the tug lines fast. The LNGC will also have a mooring rope available which will be used as a tow line in case of a failure to the tugs tow line.

Before each mooring/unmooring operation ,Tug Owner to confirm readiness in all respect -any malfunction to be reported without delay.

Additional tug is compulsory for berthing operation if actual or predicted wind gusting during STS operation is equal or more than 17 knots.

4.16 TIDES

Highest Astronomical Tide (HAT):	1.2 m
Mean Highest High Water (MHHW):	0.9 m
Mean Sea Level (MSL):	0.6 m
Mean Lowest Low Water (MLLW):	0.3 m
Lowest Astronomical Tide (LAT):	0.1 m
Chart Datum (CD):	0.0 m

4.17 WATER DEPTHS & MINIMUM UKC

Water depth alongside at terminal is 23m at Lowest Astronomical Tide.

Minimum UKC for visiting carriers:

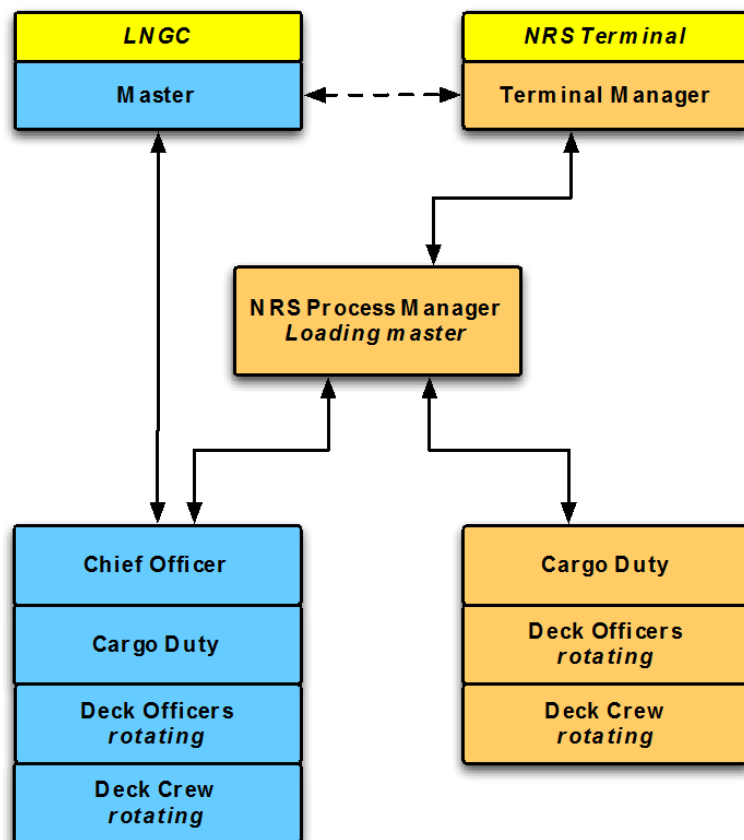
- Whilst maneuvering to and from the terminal limits: 15% of the vessel's deepest navigational draft.
- Whilst moored, including STS mooring: minimum 1m. UKC calculation at berth must be done, added to load/discharge plan to ensure that the visiting vessels keep minimum 1m UKC at all time

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5 ORGANIZATION

Cargo Operation will be under overall advisory by the NRS Terminal Manager The Process Manager on NRS Terminal is in charge of the Cargo transfer.

5.1 CARGO TRANSFER RESPONSIBILITY



5.2 PERSON IN OVERALL ADVISORY CONTROL (POAC)

The Person in Overall Advisory Control is the NRS Terminal Manager. His role is not to relieve the LNGC Master of his duties or responsibilities, but to provide professional advice and guidance.

The LNGC Master is always in overall command of his vessel, crew and cargo. Safety must under no circumstances be jeopardized by actions of others.

Before cargo operations start, the POAC and the LNGC Master must discuss each key component of the operation. The purpose of this discussion is to ensure that key personnel clearly understand and agree on details in the JOA.

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6 OPERATIONS GENERAL

Phase 1: Pre-Arrival Planning: The Pre-Arrival Planning must be carried out before any cargo operations start. The Terminal Manager and LNGC operators must plan the operation together.

Phase 2: Arrival: During the Arrival stage of the LNGC, radio communication must be established, and all operational details confirmed.

Phase 3: Berthing: The Berthing phase consists of the manoeuvring and mooring of the LNGC. For the manoeuvring operation a contingency plan must be in place to deal with any emergency situation.

Phase 4: Cargo Transfer: The Cargo transfer phase must only start when the LNGC is securely moored alongside of the Terminal according to Optimoor study. The Master must ensure that all the recommended safety procedures and relevant checklists in this plan are followed. Each vessel has a contingency plan in place to deal with any emergency situations during cargo transfer.

Phase 5: Departure: Departure is the last phase of the Cargo operation, or emergency departure according contingency plan.

7 PRE-ARRIVAL PLANNING

- Prior to any operations OCIMF Checklist Pre-fixture Information, (Vessel, Ownership, Operation, and Management Particulars must be completed by both parties.)
- A STS Joint Operation Agreement (JOA) and COM 404- Pre-arrival Declaration shall be completed

7.1 CONDITIONS AND REQUIREMENTS

7.1.1 Risk Assessments

Prior to any operation the Risk assessments for that specific operation should be reviewed and amended as required, any revisions to the Risk assessments should be shared amongst all parties.

7.1.2 OCIMF Checklists

Checklists used on the FSRU.

- Checklist 6 - Pre-Transfer Checklist
- Checklist 6a – Checks During Transfer
- COM 404- Pre-arrival Declaration
- STS C/L 307 - Nusantara Pre-berthing Post-berthing STS Checklist

7.1.3 Ship compatibility

Detailed ship compatibility study for each arriving vessel must be completed and approved by PT Nusantara Regas and [PT.PP Equinox](#) Operations in cooperation with Terminal Management.

The review must include:

- Ships particulars and type of containment
- The mooring system (type, number and location of mooring lines.)

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- Mooring appliances and deck fittings
- Parallel mid-bodies to establish the appropriate fender system.
- Means of suspending and securing secondary fenders.
- Ships draughts, freeboards, manifold heights and distances.
- Number of crew carried to conduct the operation including the number of officers to maintain a bridge and cargo watch throughout the transfer, without exceeding work hour restrictions. This is to take into account there is a requirement for a bridge watch to be maintained on the LNGC.
- Bridge wing clearance fore and aft as well as longitudinal offsets.
- General arrangements of the LNGC
- Emergency shut down and communication systems and the compatibility of the ESDS system between the ships.
- Nitrogen availability.
- Manifold deluge-water curtain and water bath availability
- Vessel Compatibility Pre-Acceptance Confirmation Letter ADM 408

Vessel acceptance and FSRU screening of incoming vessel COM

The acceptance of LNG carriers at FSRU Nusantara Regas Satu is required to promote safe operation during ship to ship activity which includes berthing/un-berthing process and safety during cargo discharging to the Terminal.

- Have no outstanding inspection deficiencies that would affect marine or environmental safety.
(LNG carrier with only minor outstanding issues may be accepted after verified by the Loading master that the deficiencies considered will not jeopardize safety of STS operation and the environment)
- Appropriately configured for safe cargo transfer

On behalf of the [PT.PP Equinox](#) operated FSRUs the [PT.PP Equinox](#) Vetting Team to initiate an assurance process for the incoming vessels to own units. This to assess the risk the incoming vessel poses and advice on acceptance or rejection in accordance with this procedure.

The assessment will be based on the following documentation:

- Class status report supplied from Manager of the incoming vessel
- OCIMF database
 - a. All SIRE reports
 - b. HVPQ
 - c. Officer matrix
 - d. Incident reports
 - e. PSC reports
- Older SIRE reports in our system from earlier calls, in the [PT.PP Equinox](#) Assurance files
- Equasis PSC inspection data
- Other sources
- Additional required information, if needed

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7.1.4 Light conditions

The LNGC must have adequate lighting to ensure safe operation at main deck, mooring stations and cargo manifolds at time of darkness.

7.1.5 Equipment inspection check (ship/Shore Safety Checklists part 1)

This inspection must cover all equipment that will be use during the Cargo operation.

7.1.6 Vessel inspection check

Terminal personnel may inspect the LNGC prior to or during the cargo operation. This includes, but is not limited to inspection of mooring equipment, firefighting equipment, manifold area and cargo equipment. Responsible officers on the LNGC must do it before the cargo operation start.

The POAC must be informed of any defects discovered during the inspection(s).

7.1.7 Liquid line cool down

To be detailed in the JOA for each operation.

7.1.8 Cargo tank vapor pressure control

1. LNGC
 - Arrive with as low tank pressure as possible
 - NBO burning during discharge
 - Liquefaction plant running during cargo transfer if applicable
2. NRS TERMINAL
 - NBO burning during operation
 - Maximize BOG compressor re-liquefaction to Regas skid
 - Gas return to LNGC will be adjusted according to LNGC request

7.2 COMMUNICATIONS

7.2.1 Language

English is the common communication language.

7.2.2 Communications during Operations

The NRS Terminal will provide handheld radios to the LNGC.

Operations must not start before stable communication is established.

7.2.3 Communication Failure

If Primary and Secondary communications are lost during cargo transfer, operation must be suspended immediately and start only when reliable communications is re-established

7.2.4 Navigational Warnings

NRS is an integrated part of Jakarta port ISPS, continuously covered/supported by 3 tug boats that also control and regulate potential third party traffic.

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7.3 EMERGENCY

7.3.1 Emergency Signal

Signals to be used in the event of an emergency must be included in the JOA.

7.3.2 Emergency Situations

The Master of the LNGC together with the Terminal manager must assess the situation and agree on necessary actions. In addition, they must decide jointly, particularly in the case of fire, whether it is to their mutual advantage for the vessels to remain alongside each other.

In the event of emergency the port control and emergency services should be contacted

7.3.3 Emergencies during maneuvering

The LNG Master must always be prepared to abort the berthing. A decision must be taken in good time while the situation is still under control. The LNG Master must without delay inform the Terminal of his intended actions.

7.3.4 Procedures in the event of gas accumulation on deck

The transfer operation must be suspended if excessive cargo Vapours are detected around the decks or manifolds. Operation shall not continue until the situation is secured and safe.

7.3.5 Accidental Cargo Release

Leaks, spillage or venting (controlled or uncontrolled) must be reported immediately to the duty officer who must stop the cargo transfer and advice the person in overall advisory control. The transfer must remain suspended until confirmation/agreed between the relevant persons/authorities that it is safe to continue.

7.3.6 State of Readiness for an Emergency

The following arrangements must be made on the LNGC:

1. Main engine and steering gear ready for immediate use (safeguard to be provided to prevent accidental start of turbine)
2. Cargo pump and all other equipment trips relevant to the transfer to be tested prior to the operation
3. Crew available and systems prepared to drain and disconnect MLA at short notice
4. Mooring equipment ready for immediate use and extra mooring lines ready at mooring stations as replacements in case of breakage
5. Firefighting equipment ready for immediate use.

All emergency situations must be described in the LNGC's Contingency Plan.

7.4 CONTINGENCY PLAN (VESSEL SPECIFIC)

Relevant sections of contingency plans must be included in the JOA.

7.5 SAFETY

7.5.1 Manning & Fatigue

The Master must ensure sufficient manning is available and a fatigue-free watch is maintained on

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deck and in the engine room throughout the operation. The Master should consider the expected duration of the operation when planning manning and watch levels.

Vessels must comply with rest period requirements of relevant ILO, IMO and national regulations.

7.5.2 Helicopter Operations

Helicopter operations are not allowed alongside the Terminal

7.6 ISPS

The NRS Terminal is an ISPS compliant part of the Port of Kepulauan Seribu.

7.6.1 Requirements:

- Arriving vessels must advise NRS Terminal Manager of ship security level through pre-arrival notification.
- A valid photo ID is required to enter the port.
- Visitors and crew must report to security checking point in the port.
- Visitors must deposit their ID at the security gate where a visitor badge will be issued.
- Visitors to the NRS Terminal must apply for permission minimum 1 week before the intended visit.

7.6.2 Incidents

Breach of ISPS must be reported to Port Facility Security Officer without delay.

Contact details in References: EMERGENCY CONTACT DETAILS

7.7 PREPARATION

Preparations of the both units must be according to the JOA as well as the Pre-arrival checklists. Each unit is responsible for own mooring equipment.

7.8 NAVIGATIONAL SIGNALS

The lights and shapes to be shown, and the sound signals made are those required by the *International Regulations for Preventing Collisions at Sea* (COLREGS) [8], and local regulations. These lights and shapes must be checked and rigged ready for display prior to the cargo transfer operation.

8 BERTHING

8.1 BASIC BERTHING PRINCIPLES

The final approach angle of the LNGC must be as slight as possible and the transverse closing speed less than 0.3 knots. Transverse speed is directly related to the energy absorption of each fender (particularly the forward fender). The greater the transverse speed the greater the energy absorption required by the fenders.

9 MOORING

9.1 TUGS

Three tugs with totally 125mt bollard pull are available for mooring operations.

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Three tugs are:

1. TB Patra Tunda 4201
2. TB Aqua Harbour
3. TB Dalia VIII

Two tugboats will be made fast to the LNGC using tug lines.

When four tugs are utilized, arrangement shall be made related to actual weather condition in order to maintain transverse closing speed according to chapter 8.1.

9.2 MOORING RESTRICTIONS

LNGC is moored with starboard side alongside terminal.

9.3 MOORING EQUIPMENT

LNGC mooring rope tails must be 11m for all arriving LNG Carriers

Four 150m 40mm diameter buoyant messengers is required to transfer mooring lines.

One mooring rope must be prepared at each end in case of tug line failure.

9.4 MOORING PREPARATIONS

The approach and methodology of mooring are explained in the OCIMF STS GUIDE.

The sequence of mooring, the selection of leads and the importance of avoiding wires and ropes passing through the same lead all play an important part in the pre planning of the operation.

It is essential that both vessels prepare good messengers for mooring. Standard STS messengers are 40 mm UV stabilized plaited polypropylene rope, usually approximately 200 meters in length.

Closed leads must be utilized for all moorings.

Wire mooring ropes must be fitted with suitable rope pennants.

It is the responsibility of the POAC to coordinate information exchange between ships prior to mooring.

The Optimoor carried out prior to operations will determine the required fender and mooring arrangement.

Mooring equipment must be inspected, on both vessels, before use.

Vessels must only be moored according to an approved mooring plan.

Mooring lines must be monitored during entire operation.

9.5 TENSION IN MOORING LINES

Excessive or uneven tension in mooring lines must be avoided. Attention must be given to mooring lines tension to make sure changes in the relative freeboard does not create excessive strain in moorings lines.

9.6 VESSEL LINE-UP

Spring lines will be used to bring the LNGC into position (align cargo manifolds).

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To avoid damage to fender lines the approaching vessels must not rest on the fenders until manifolds line-up is less than two meters from final position.

The LNGC will use its mooring lines aligned with the cargo manifold. Once in position, moorings shall be pre-tensioned to 10-15 tones on spring lines and 5-10 tones on breast and head/stem lines.

9.7 FENDERS

The Yokohama Fenders moored to NRS Terminal are divided into two categories:

Primary Fenders are positioned along the parallel body of NRS Terminal to afford the maximum possible protection while the LNGC is alongside.

Secondary Fenders are used to protect bow & stern plating from inadvertent contact if the LNGC gets out of alignment during mooring and un-mooring.

The point(s) where such contact is likely to occur should be identified in advance of the operation and the secondary fenders positioned accordingly, depending of the size of the arriving LNGC.

9.8 MOORING SEQUENCE

Mooring configuration must be according to Optimoor study only.

Line sequence:

1. Forward and aft spring lines
2. Forward and aft breast lines
3. Head and stern lines

Precautions must be taken to ensure that the messenger or the mooring lines do not get entangled with the mooring lines of the Fenders.

9.9 TRANSFER OF PERSONNEL

Transfer of personnel shall be kept to absolute minimum.

9.10 PRE OPERATIONS MEETING

A Pre-Transfer meeting with representation of both vessels shall be done prior to commencing cargo operations (normally on board the Terminal). As a minimum the LNGC Chief Officer (or Cargo Officer where applicable) must be present. The "Pre-Transfer Meeting Document" contains the key elements to be discussed.

All aspects of the Cargo operation are to be discussed and an "OCIMF STS transfer checklist" is to be completed. The JOA must be used as a basis to conduct this meeting,

10 CARGO TRANSFER

10.1 GENERAL

Cargo transfer must be according to the JOA. Throughout cargo transfer operations, the NRS Terminal and the LNGC must designate a responsible person at the vicinity of the cargo manifold area to observe the MLA's and to check for leaks.

Environmental condition such as weather condition, sea-state, light condition etc. may change during

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the operation. Monitoring environment condition is vital to keep the safe Cargo transfer operation. If conditions exceed the limits in the operation plan, determinate in the Weather Condition section of this document, cargo transfer must be suspended.

Cargo transfer must begin at the agreed slow rate to enable the LNGC vessel to check that the cargo pipeline system is correctly set. The transfer rate must also be reduced to an agreed topping off rate when the Terminal tanks are reaching their filling limits. Throughout the transfer, as a minimum hourly transfer rate checks and comparisons must be made between the two vessels, and the results logged. Any differences or anomalies must be carefully checked and if necessary cargo operations must be suspended until the differences are resolved.

Consideration must be given to the prevention of pressure surges by careful planning and control of pump speeds and the operation of valves.

When the LNGC is safely moored and connected, the water curtain shall be started on both units.

The Fire main must remain pressurized at all times.

During cargo transfer, appropriate ballast operations must be performed in order to minimize the differences in freeboard between the two vessels, and to avoid excessive trim by the stem. Listing of either vessel must be avoided, except as required for cargo tank draining on the discharging vessel.

Any national or local regulations controlling discharge of vessels' ballast water must be complied with as detailed in the vessel's Class approved Ballast Water Management Manual.

10.2 ADDITIONAL SAFETY PRECAUTIONS DURING OPERATIONS

1. Constant attention must be paid to mooring lines and fenders to avoid chafing and undo stress, particularly that caused by changes in relative freeboard. If at any time mooring lines need to be re-positioned or adjusted this must only be done under strictly controlled conditions.
2. Nitrogen plant must be ready for at all times during the cargo transfer
3. Measures must be taken to minimize the amount of vapour generated during the cargo transfer. This is to be realized through proper cargo temperature management and adequate piping cool down before the cargo operation, and reduced transfer rates during cargo operations. Where possible, both ships must consume generated vapour within their capacities.
4. Safety and monitoring systems in operational condition during the transfer operations.
5. Crew must conduct routine and frequent deck rounds to monitor the condition of the moorings as they lead through the chocks and apply grease, if necessary, to minimize the risk of chafing. The frequency of deck rounds must be increased if deemed necessary.
6. A bridge watch must be maintained on the LNGC in addition to required cargo watch. This will have an impact upon the workload of the crew and will require addressing and procedures put in place prior to arrival.
7. During cargo transfer, the hull protection water curtain and additional under manifold water spray system must be in use at the cargo manifolds on both vessels.
8. Automated Identification System (AIS) to be operated on lowest power setting possible for the entire operation.
9. UHF and VHF handheld radios must be operated at lowest power
10. Smoking regulations are to be strictly enforced. Warning notices must be displayed and

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smoking designated rooms must be clearly marked.

11. Faulty circuits indicated by an Earth indicator light must be traced and isolated immediately to avoid the risk of arcing.
12. Soot blowing must be performed prior to arrival at terminal. Ships must not perform this task during cargo operation or whilst alongside.
13. Cargo transfers will be stopped in the event of a LNG leak on either unit and not continued until the vapour has dispersed, the leak identified, repaired or isolated.
14. All access doors to the accommodation must be kept closed during the cargo operation. The master must designate the doors that will be used to enter and leave the accommodation. Additionally air conditioning must be switched to re-circulation mode.
15. Unauthorized crafts are not allowed alongside the LNGC during the cargo operations. Only those vessels who are directly involved in the cargo operation may come alongside either ship.
16. Firefighting equipment must be set out and prepared for use in the vicinity of the cargo manifold during cargo transfer operations.
17. Impressed current cathode protection must be shut down prior to arrival at transfer area/terminal.
18. It is of utmost importance that the work and rest periods are carefully planned beforehand. A matrix showing work/rest periods for each crewmember is to be produced and made available by each vessel. This should be produced at the pre-transfer meeting. Crew observing operations out of personal interest should remain well clear of the area. Resting periods should not be used for training purposes.
19. Any hand-held VHF and UHF radios, as used for mooring and cargo operations, must be certified intrinsically safe.
20. Attention should be paid to the use of Mobile Phones, Pagers and other Non-intrinsically safe items, these should never be used outside of the vessels safe accommodation areas. Any personal transiting the vessels should ensure that these items are switched off when doing so.
21. Emergency arrangements for quick unmooring, "fire wire" to be maintained 2 m above sea water level continuously
22. All environmental protective equipment to be ready for immediate use. Scupper plugs mounted & monitored continuously.
23. All life safety appliances to be tested and ready for immediate use. Emergency escape and disembarkation routes to be clear of obstructions.
24. Dedicated Lifeboat must ready for use.

10.3 USE OF RADARS

Use of radars is prohibited within a radius of 100m around the Terminal.

10.4 HOT WORK

All kind of "Hot Work", including work that involves hammering, chipping or the use of power tools is strictly prohibited alongside the Terminal

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10.5 BUNKERING

Bunkering is not allowed alongside the Terminal. Bunker to be arranged by the LNGC agent in the approved anchorage area.

10.6 BUNKER TRANSFER

Internal transfer of bunkers is strictly prohibited.

10.7 FISHING

Fishing is prohibited.

10.8 STORES AND SPARES (SIMOPS)

Barges or crafts carrying stores or spare parts are NOT allowed alongside the LNGC while alongside the Terminal. Deliveries must be arranged by the agent in the approved anchorage area.

10.9 FIRE-FIGHTING EQUIPMENT

Fire-fighting equipment must be ready for immediate use on both vessels. Dry powder monitors on each vessel must be pointed towards the cargo manifold in use and left in a suitable condition for hands-off operation. Additional fire-fighting equipment must be immediately available for use on deck. Fire safety ring and fire hoses should be pressurized during cargo transfer.

10.10 UNAUTHORIZED CRAFT

Unauthorized crafts are not allowed alongside during cargo operations.

10.11 SUSPENSION OF CARGO TRANSFER

Both units must be prepared to rapidly discontinue the transfer operation, disconnect Cargo arms and to unmoor if necessary. The operation must be suspended when:

1. Movement of the vessels alongside reaches the maximum permissible and may cause loss of strength or excessive strain on MLA's,
2. Weather and/or sea conditions exceed limitations as per 4.8 weather restriction,
3. Either vessel experiences a power failure,
4. There is a failure of the primary and secondary communications between the vessels.
5. There is an unexplained pressure drop in the cargo system,
6. Fire danger is discovered,
7. Any gas leakage is discovered from MLA's, couplings, or the vessel's deck piping,
8. There is a significant, unexplained difference between the quantities of cargo delivered and received,
9. There is any failure of the fender system,
10. Working hours are exceeded on either vessel,
11. High-High-level ESD activation in cargo tanks of any vessel.

10.12 PLANNING PRECAUTIONS

Separation plans should take into account the time required by both vessels to return to an acceptable condition.

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10.13 VAPOR MANAGEMENT

Vapour management must be according to the JOA.

Close liaison between the vessels must be maintained with regard to vapour management and a methodology must be agreed prior to the start of the transfer, on Pre-loading Safety Meeting to ensure no vapour is released to the atmosphere. The overall vapour load during the cool down of the cargo transfer system can be reduced by pre-cooling the vessels' liquid headers prior to mooring, provided that the manifolds on the vessels are isolated by double block valves

10.14 EMERGENCY SHUT DOWN SYSTEMS (ESDS)

This will be addressed in compatibility study and JOA.

10.15 LINKED EMERGENCY SHUT DOWN SYSTEM AND TESTING

The shutting down procedure shall be detailed and agreed in the JOA.

The LNGC ESD system shall be tested prior to arrival. Closing time and sequencing of ESD valves should be set to minimum 15 and maximum 30 seconds. Terminal valves are set to close between 30 and 60 seconds.

The ESD will be tested when MLA Arms are connected and purged. It is important that the ESD valves are not operated before purging is completed.

The ERC actuation system shall be tested prior to starting the cool down.

10.16 MLA (LOADING ARMS) COOLING DOWN

The cool down procedure shall be agreed in the JOA.

Cool down is considered complete when agreed temperature is reached.

10.17 CARGO TRANSFER

Loading rate and starting sequence shall be agreed in the JOA.

During the transfer an hourly exchange of information shall be done. This is to include (but not limited to) transfer rates, cargo ROB quantities, mooring line status etc.

Ramping up and down rates must be detailed and agreed in the JOA. Normal ramp up is expected to take 1 hour.

The possibility of rollover must be taken into consideration prior to the transfer.

10.18 TOPPING OFF

Rate must be reduced when topping cargo tanks (rate agreed in JOA).

10.19 CARGO TRANSFER COMPLETED MLA DRAINING AND PURGING

Once the transfer is completed the manifold ESD valves on the LNGC must be closed. On the LNGC the manual double shut valves are to be closed while the ESD v/v's will remain open allowing the draining of the vertical riser. MLA's must be drained from the discharging vessel to the Terminal.

Draining must be done by repeatedly pressurizing the MLA's using nitrogen until the pressure reaches

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4 to 5 bar and then opening the LNGC manifold ESD bypass v/v until the MLA's are liquid free. During this operation a seawater spray is to be directed onto the MLA's bight to speed up de-icing. As the LNG boils off it will aid in pressure increase for displacing liquid in the lines. Both vessels will conduct this operation together.

Purging the MLA's with Nitrogen must continue until an atmosphere of less than 2% Methane by volume is achieved. MLA's then may be disconnected and blind flanges installed.

11 DEPARTURE

11.1 DISCONNECTION OF COMMUNICATION LINK

The communication link must be disconnected and returned, just before departure of LNGC Vessel.

11.2 DELIVERY DOCUMENT

One signed document is to be kept on board the delivering vessel and the other document on board both vessels for 5 years.

11.3 UNMOORING

11.3.1 Guidance notes:

After transferring documents, the unmooring sequence can begin. The mooring lines are loosened, drawn back and stored, under supervision of the responsible officer while taking wind and current conditions into account. The radar should be tested and activated before departure.

Engine testing by the departing vessel can only be done once MLA's and equipment is safely stored on both vessels. The stern of the vessel must be checked visually to ensure that no obstructions are present prior to testing.

If actual or predicted wind gusting prior unmooring equal or more than 17 knots, four tugs must be provided to assist un-berthing process.

11.3.2 Unmooring Checks.

Sufficient crew must be allocated to unmooring stations, and consideration must be given to the following points:

- The cargo transfer side of the vessel must be cleared of obstructions including derricks or cranes,
- The method of disengagement and letting go of mooring lines must be agreed,
- Fenders, including their towing and securing lines, must be checked to be in good order,
- Winches and winch lasses must be ready for immediate use,
- Rope messengers and rope stoppers must be ready at all mooring stations,
- Sharp fire axes or other suitable cutting equipment must be available at each mooring station,
- Communications must be confirmed between vessels,
- Communications must be established with mooring personnel,
- Mooring personnel must be instructed to let go mooring lines only when directed,
- Shipping traffic in the vicinity must be checked.

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11.4 MANEUVERING

The departing vessel must have constant monitoring of surrounding traffic positions during unmooring and departure.

12 POLLUTION AND ENVIRONMENT

12.1 GENERAL

The NRS Terminal is located close to several islands off the coast of Jakarta City. The Preservation of the environment is of utmost importance to the government and local authorities to ensure quality of marine and clean beaches.

All LNGCs unloading at the terminal must be in compliance with the latest MARPOL requirements. LNGC Masters are warned that pollution of any kind and irrespective of quantity is viewed as extremely serious and must be reported immediately to port authorities. Offenders may be prosecuted.

12.2 POLLUTION PREVENTION

- Oil or material containing oil must not be discharged overboard.
- Garbage or other materials, either liquid or solid, must not be discharged overboard.
- Internal transfer of oil, slops or bunker is not allowed.

In the event of any leakage or spillage of oil or oil contaminated liquids on board, the Harbour Master and NRS Terminal Master must be advised immediately so operations can be stopped until the spill has been cleaned up.

- Sorbent, swabs or sawdust used for mopping up spills must be collected and sent ashore for disposal.

During cargo operation scuppers should be closed, however a careful watch should be maintained to ensure that any build-up of water on deck is drained off with the necessary precautions taken.

Prior to start and at regular intervals throughout unloading, regular checks are to be made around the vessel to ensure that oil or oily water is not escaping through sea valves. Overboard discharge valves through which oil could escape must be lashed in the shut position during the vessel's stay alongside. Where lashing is not practical, a suitable means of marking the valves should be used to clearly indicate that the valves are to remain closed.

Unused cargo and bunker connections must be closed and blanked. Blank flanges must be fully bolted with gaskets in place and other types of fittings, if used, properly secured.

12.3 BALLAST

For the purpose of safe manoeuvring, the Harbour Master requires all vessels to maintain a reasonable ballast condition. Vessel should carry sufficient ballast so that the propeller can have maximum immersion while maintaining an acceptable stern trim.

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12.4 AIR POLLUTION

The Port of Jakarta has strict limits for the emission levels of hydrocarbon. It is recognized that some LNG carrier operations (in extreme cases) must involve the emission of hydrocarbon vapours to atmosphere during loading, we therefore seek co-operation of the LNGC vessel's Master in ensuring that such emissions are kept to the absolute minimum.

12.5 WASTE MANAGEMENT

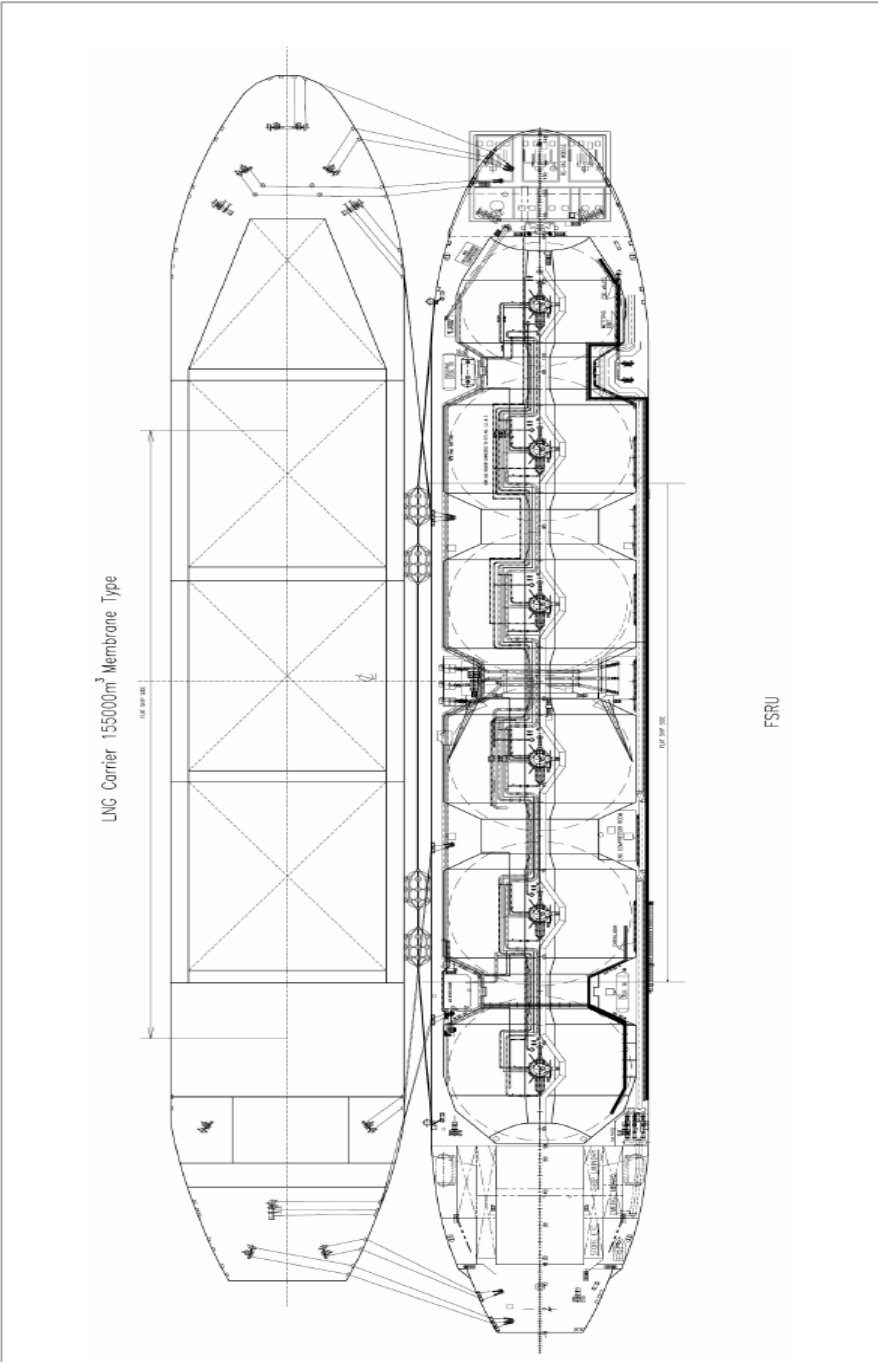
As an offshore facility, NRS Terminal has absolutely no waste handling capabilities. It is important to the LNGC's that advance arrangements for waste disposal is done prior to arriving at NRS Terminal. Under extenuating circumstances where a LNGC absolutely must dispose of its domestic waste at Jakarta, arrangements must be made well in advance of arrival through the LNGC's Agents.

It is important to note that the waste cannot be sent via NRS Terminal, therefore the LNGC and the LNGC Agent must make prior arrangements for an approved method to safely remove the waste from the vessel and onto a garbage boat for transport to shore. LNGC Masters must be aware that support craft are not allowed to enter the 250m safety zone without the prior permission of NRS Terminal Manager.

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APPENDIX I - TYPICAL MOORING (ILLUSTRATIONS ONLY)

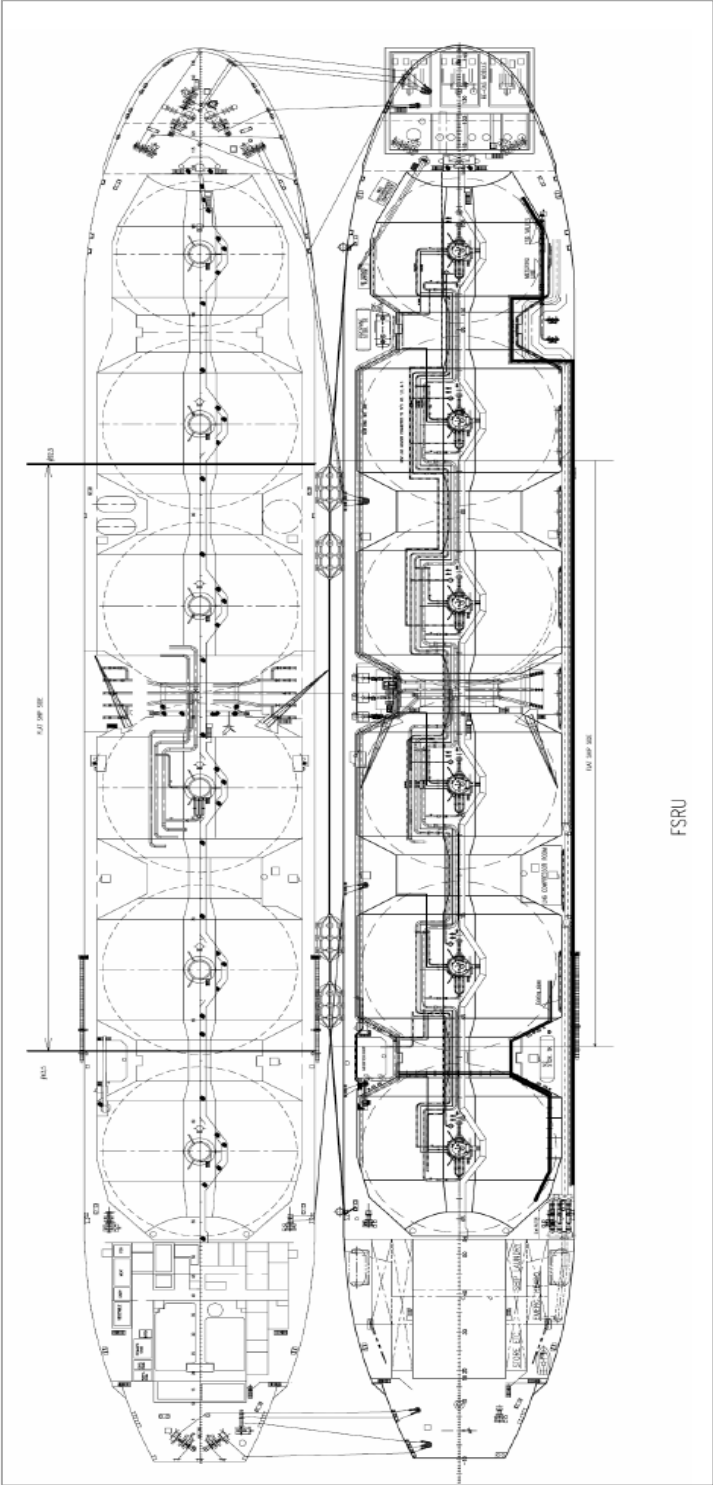
LNG Carrier 155 000m³ Membrane type:



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LNG carrier 125000m3 Moss Type:



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APPENDIX II - EMERGENCY CONTACT NUMBERS

PRINT AND DISPLAY THIS PAGE

ISPS		
Mr. Opan Sopandi - PFSO	Phn. +62-21-315-9543	Phn. +62-21-315-9544
(Out of Office)	Cell. +62 81384443662	
Kepulauan Seribu Port Jl. Raya Ancol Baru No. 1 Tanjung Priok Jakarta - Indonesia		
Port Administrator	Phn. +62 21 4357439	VHF Channel 16
Pilot	Phn. +62 812 8096 0907	VHF Channel 12
Port Medical	Phn. +62 21 1800 1801	RS.Mitra Kemayoran
Police	Phn. +62 21 29459802	
Fire Brigade	Phn. +62 21 4301080 ext 2633	
Pelabuhan Hospital	Phn. +62 21 4412451 ext 241	
Oil Pollution Control	Phn. +62-21-345 6614	
Oil Pollution Response	Phn. +62 21 350 6207	Fax. +62 21 350 6207
The Directorate General of Sea Communication Gedung Karya, 4 th Floor Jl. Medan Merdeka Barat No. 8, Jakarta - Indonesia		
Oil Pollution Response	Phn. +62 21 350 6207	Fax. +62 21 350 6207
Casualty Investigation	Phn. +62 21 384 0788	Fax. +62 21 350 5681
Tugboats Phone		
AQUA HARBOUR	Phn. +62 815 3279 1297	Number Phone Change Following Captain On duty
PATRA TUNDA 4201	Phn. +62 821 4704 4428	Number Phone Change Following Captain On duty
DALIA VIII	Phn. +62 821 9276 9857	Number Phone Change Following Captain On duty

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APPENDIX III- TUG PARTICULAR



SHIP PARTICULAR MODA-HOLDINGS

GENERAL

Vessel Name	TB. Aqua Harbour
Type	Azimuth Stern Drive
Owner	PT. Moda Global Maritim
Year Build	2015
Flag	Indonesia
Classification	BKI
Call Sign	YDC4094
Port Of Registry	Tg. Priok

NAVIGATION

Echo Sounder	Samyung NF-430
Radar	Anritsu RDS2AR9
Radio VHF	ICOM IC-M200 & Anritsu RU 224A
GPS	Furuno GP-39 & Furuno GP-1850D
Compass	Nunotani Seiki KN-R 165
Wind Indicator	Marine Vane FV-201
A.I.S	ICOM MA-500TR

MEASUREMENT

L.O.A	32.28 meters
Breadth	08.80 meters
Depth	03.48 meters
Draft	02.61 meters
GRT / NRT	298 / 90
FW Tank Cap.	17 m ³
FO Tank Cap.	38 KL

ADDITIONAL EQUIPMENT

Fire Fighting	3 Unit Cannon Gun 1 Unit Tower Gun Total 600 m3/hour
Bollard Pull	45 Tons
Anchore Winch	1 Set
Towing Hook	1 Set

MACHINERY

Main Engine	Fuji 6L 27,5X 4000 HP
Auxiliary Engine	Yanmar 5 KDL 1 x 113 HP Yanmar 3 KDL 1 x 69 HP
O.W.S	0.5m ³ /hour

MODA-HOLDINGS

Address	GRAHA BOULEVARD, Blok C18 Jl. Boulevard Raya, Kelapa Gading Jakarta, Indonesia 14240
Phone	021-24520471, 021-22453535
Fax	021-29375242
Website	www.moda-holding.com

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SHIP'S PARTICULARS



TB. PATRA TUNDA 4201

General Data

Name : TB. PATRA TUNDA 4201
 Status : Aktif
 Port Of Register : Jakarta
 Flag : Indonesia
 Dual Class : BKI
 Call Sign : YHCA
 Class of Hull : **A100P**
 - Tug Boat
 IMO No. : 9160140

Dimensions

LOA : 34.02 Meters
 LBP : 31.53 Meters
 BMLD : 10.6 Meters
 HMLD : 4.96 Meters
 DWT : 422 MT
 GRT / NRT : 413/124 Tons
 LT : 805 Milimeters
 Draft : 4.98 M
 Draft (Max) : 4.10 M
 Speed : 12 knots, towing 5 Knots
 Bollard Pull : 48 Tons at 965 RPM

Capacities

Fuel Oil : 215.3 M³
 Potable Water : 79.69 M³
 Deterjent : 11.5 M³
 Foam : 14.5 M³

Navigation / Communication

SSB Radio : Furuno FS-1562
 VHF Marine Radio : Furuno FM-8000
 All Wave Receive : Furuno Rv-107
 Handy Talky (3 set) : FM-77
 Radar : Furuno FR-1510 Mark-2
 Wind Indicator : Furuno FW-200
 GPS Navigator : Furuno GP-70 Mark-2

Accommodations

Captain & Officer : 7 single berth Aircondition cabin
 Crew : 6 berth Aircondition cabin

Machinery

Main Engines : 2 unit Watsilla 9 L 20,
 1165 KW/ 1000 RPM
 Propuision : Aquamaster US1410/2700
 2300mmx267 RPM
 at 1800 RPM
 Auxiliary Engine: 2 unit, Caterpillar 3306,
 182 KWx1800 RPM
 Generator : 2 unit, 170 kwx3 phase,
 440V.AC x 60 Hz, Pf 08 RPM
 1800

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SHIP'S PARTICULARS



TB. PATRA TUNDA 4201

Fuel Consumption

Main Engine : Free Running 9.6 M/t per day
& Towing 10.6 M/t per day

Auxiliary Engine : 0.45 M/t per day

Deck Equipment

Windlass : Shipneeds, Cap.6 MT x
9 m/min, brake 17.6 MT

Towing Winch : Shipneeds, pull at
1 st layer 10 MT,

Drum Capacity : 500 x 38 mm dia

Brake Holding : 85 MT combined with
Ratchet

Outboard Engine : Yamaha 40 GKL, Kerosene

Self Inflatable : 2 sets, for 20 person
each

Work Boat : 1 set, complete with
outboard engine

Life Buoys : 8 pcs

Life Jacket : 20 pcs

Fire Fighting & G.S Pump

Fire Pump : 1 set, Naniwa type. SHR-100
Cap. 60 M³/Hr

Spare Pump : 1 set fire Emergency portable Fire
Pump

Capacity : 1200M³/Hr, 120 m Total head

Monitor : 2 Sets, Kvaerner, type.H93-4-14/
56 Water Jet 50 M

Engine Driven : Detroit Diesel 12V92TA, 1800 RPM

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SHIP'S PARTICULAR

NAMA OF VESSEL	: TB. DALIA VIII	EKS. KOKATSU MARU
KIND OF VESSEL	: TUG BOAT	
OWNER	: PT. MAMMIRI LINE	
PORT OF REGISTRY	: MAKASSAR	
FLAG	: INDONESIA	
IMO NO.	: 9209582	
CALL SIGN	: Y D 7 0 4 0	
SHIP BUILDER	: TACHIBANA SHIPBUILDING	
COUNTRY OF BUILDER	: JAPAN	
YEAR OF BUILD	: 1999	
CLASSIFICATION	: BKI CLASS	
GROSS TONNAGE	: 372 TON	
NET TONNAGE	: 111 TON	
DEAD WEIGHT	: 196.77 TON	
LENGTH OVER ALL (LOA)	: 39.50 METRES	
LBP	: 34.54 METRES	
BREADTH	: 9.80 METRES	
DEPTH	: 4.80 METRES	
DRAUGHT OF MOULDED	: 3.32 METRES	
MODEL AND NO. OF MAIN ENGINE	: YANMAR, 6N280-SN	
OUTPUT OF MAIN ENGINE	: 2100 PS X 2 = TOTAL 4.200 PS ¹	
NAME OF BUILDER	: K.K TACHIBANA SENPAKU TEKKO	
TYPE AND NUMBER OF PROPELLER	: KAWASAKI REXPELLER. KST-180Z C/A, TWO (2) UNIT	
SPEED TRIAL MAX / SERVICE	: 12.50 / 10.00 KNOT	
CREW	: 9 PERSON	