REGASIFICATION TERMINAL SG UDANG INFORMATION AND REGULATION BOOKLET

Revision 10

Rev. No	Date	Description	Revised By	Approved By	Signature
01	24th May 2012	Amendment to Hook Distance to Berthing Line (Page 58, Appendix 5 Berth Arrangement)	Siti Rahayu (Information from M Noor Aizuddin)	Rozali Khamis	
02	28th October 2012	Amendment to Lightning Strike Berthing Hours Deballast/Ballast Activity Gangway Dimensions and Ship Shore Safety Checklist	Siti Rahayu	Rozali Khamis	
03	14th Jan 2013	Amendment to a) Leaks and Spill Prevention b) Night berthing and tide restrictions Addition of LNG Discharge Meeting Checklist (Appendix 16)	Siti Rahayu	Rozali Khamis	
04	14th Feb 2013	a) Re-alignment with RSA definitions b) Items 6.7 and 7.1	Siti Rahayu	Rozali Khamis	
05	15th Feb 2013	a) Change in front page logo	Siti Rahayu	Rozali Khamis	
06	5th April 2013	a) Replacement of LNG Unloading Agreement with LNG Discharge Meeting Checklist b) Revision of Ship/Shore Safety Checklist c) Item 6.1 maximum unloading rate	Siti Rahayu (Information from M Hafeez B Mansor	Rozali Khamis	
07	22nd Dec 2014	a) Amendment for Arriving LNGC with cold cargo line condition item 5.3	Capt M Azri Kamal M Sukri	Rozali Khamis	

		b) Revised on LNGC Displacement item 6.1 c) Amendment on Unloading limit weather precaution,13.15 d) Revised on Appendix 1- Terminal Contact Number e) Revised on Appendix 7- Gangway arrangement f) Revised on Appendix 11- LNG Discharge Meeting Checklist (PGB-Form-01) g) Attached Appendix 16- Terminal Safety Letter h) Revised on Section 13.12 for maximum LNGC Discharge Rate at 7000m3/hr			
08	15th March 2019	a) Change of Contact Personnel for All Notices (Item 5.1) b) Remove phrase "battery to be disconnect" for mobile phone usage prohibition (Item 10.3) c) Change phrase "MPM or Owner" to "Molecule Owner or Shipper" (Item 13.9)	M Asyraf A Ghani	Rozali Khamis	
09	1st Aug 2020	Consolidation of LNG Reloading for bunkering terms and condition	M Asyraf A Ghani	M Azli B Husin	

10	21st Aug 2023	a) Redefinition of LNG Vessel b) Redefinition of RGTSU to RECEIVING FACILITY to align with AA c) Redefinition of TERMINAL OPERATOR d) Change phrase "vetting" to PTS 18.52.27 Maritime Safety (Item 3.4) e) Addition of PGB L3 02.08 Maritime Safety to Item 3.4 f) Change of Contact of Personnel for All Notices (Item 5.1) g) Replacement Item 9.2 Access to Port Facility and Vessel to Item 9.3 h) Amendment on Section 9.2 with Vessel Security Assurance i) Redefinition Appendix 5 – Berth Arrangement to RECEIVING FACILITY Technical Information and Flow Diagram j) Revised new RECEIVING FACILITY Technical Information and Flow Diagram k) Revised new APPENDIX 12 – Ship/Shore Safety Check l) Revised new APPENDIX 13 - Declaration of Security (PGB-FORM-04)	M Asyraf A Ghani	M Isham Isa	

		m) Revised new APPENDIX 15 – Signal to be Displayed at Sg. Udang Port n) Revised new APPENDIX 16 – Terminal Safety Letter			

Table of Contents

1.0 PURPOSE/OBJECTIVE

This booklet defines the information that applies to all operations between the LNG VESSEL and the TERMINAL from the time the LNG VESSEL enters the PORT limit to the terminal, until it leaves the PORT limit. This booklet should be read in conjunction with the Sg. Udang Port Terms and Conditions of Use and Safety Requirements.

2.0 DEFINITIONS

ABBREVIATION / TERM	DESCRIPTION
ALARM	This an audible/visual warning of a problem.
COLD WORK	Work not involving an ignition source or confined space entry that is performed on equipment operated or controlled by someone other than the person doing the work.
CREW	A person actively employed onboard the LNG VESSEL.
DECLARATION OF SECURITY (DOS)	The agreement reached between the PORT FACILITY and the LNG VESSEL with which it interfaces, specifying the security measures each will implement, in accordance with ISPS guidelines.
EARTHED (also refer as 'Grounded')	The electrical connection of equipment to the main body of the earth to ensure that is at earth potential. On board VESSEL, the connection is made to the main metallic structure of the VESSEL, which is at earth potential because of the conductivity of the sea.
ETA	Estimated Time of Arrival, calculated to Sungai Udang Port Pilot Boarding Station.
FSU	The Floating Storage Units (FSU) forming part of the TERMINAL and utilized for the storage of LNG that is received from LNG VESSELS; and are permanently moored at Loading Platform 1 and Loading Platform 2 respectively.
FSU1 & FSU2	Refer to Tenaga Satu & Tenaga Empat respectively.
GAS FREE	A tank, compartment or container is gas-free when sufficient fresh air has been introduced into it to lower the levels of any flammable, toxic or inert gases to those required for a specific purpose, e.g., HOT WORK, entry,

	etc., and gas been certified for that purpose by an authorized person.
HAZARDOUS AREAS	Areas that are graded into hazardous zones depending upon the probability of the presence of a flammable gas mixture and controlled using the PERMIT TO WORK System such as Regasification Unit, Utility Platform, FSUs including LNG Reloading Facility.
HOT WORK	Work involving sources of ignition or temperature sufficiently high to cause the ignition of a flammable gas mix mixture. This includes any work requiring the use of welding, burning or soldering equipment, blow torches, some power driven tools, portable electrical equipment which is not INTRINSICALLY SAFE or contained within an approved explosion-proof housing and internal combustion engines.
IMPA	International Marine Pilots Association
INTRINSICALLY SAFE	An electrical circuit of part of a circuit is intrinsically safe if any spark or thermal effect produced normally (i.e., by breaking or closing the circuit) or accidentally (e.g., by short circuit or earth fault) is incapable, under prescribed test conditions, of ignition a prescribed gas mixture.
ISGOTT	International Safety Guide for Oil Tankers & Terminal
ISM	International Safety Management Code
JRU	Jetty with REGASIFICATION UNIT
LNG BUNKER VESSEL (LBV)	An ocean going bunker vessel suitable for transportation of LNG, which is use for fueling to other vessel.
LNG CARRIER (LNGC)	An ocean going VESSEL suitable for transporting LNG that PETRONAS uses or procures the use of for transportation of LNG to the TERMINAL.
LNG RELOADING FACILITY	Starboard side of FSU1, which consist of reloading hoses and mooring equipment to reload LNG from FSU1 to LNG Bunker Vessel (LBV) mid-size (LOA </=215 meter).
LNG UNLOADING FACILITY	means the LNG unloading line, vapour return line, LNG recirculation line, LNG unloading arms, vapour return arms and all other related equipment.

LNG VESSEL	Either LNG Carrier or LNG Bunker Vessel.
MASTER	The Master is the senior officer in command of a LNG VESSEL and, as such, is fully responsible to the Owners, Charterers, Flag, and Port states for all aspects of the commercial, operational, environmental and safety management onboard. The Master is someone who has been trained and certified to a standard customary for an operator of a first class LNG VESSEL of the type and tonnage of the LNG VESSEL and who is fluent in written and oral English. The Master may delegate his authority, in full to a nominated senior officer in his absence.
NAKED LIGHTS	Open flames or fires, lighted cigarettes, cigars, pipes or similar smoking materials, any other unconfined sources of ignition, electrical and other equipment liable to cause sparking while in use, and unprotected light bulbs.
PERC	Powered Emergency Release Couplings, fitted on all unloading arms and cryogenic hoses.
PERMIT TO WORK	A document that allows for specific work under strict safety guidelines during a specified time period for a given purpose.
PORT	The seaward boundary of the Sungai Udang port limit which Vessels within must comply with the directions of the SUNGAI UDANG PORT SDN BHD.
PORT FACILITY	The facilities in the port of Sungai Udang where the VESSEL/PORT interface.
PORT STATE CONTROL	The inspection of foreign Vessels by the Malaysian Authority (Marine Department of Malaysia or Malaysia Maritime Enforcement Authority) in Malaysian ports to verify that the condition of the VESSEL and its equipment comply with the requirements of international regulations and that the VESSEL is manned and operate in compliance with these rules.
RECEIVING FACILITY	means the facilities which consists of the following: (a) FSUs, (b) the JRU; (c) the connecting pipelines from the JRU to the natural gas delivery point and the associated infrastructure,

	(d) LNG UNLOADING FACILITY, and (e) LNG RELOADING FACILITY
REGAS TERMINAL (SG. UDANG) SDN BHD (RGTSUSB)	The owner of SG. UDANG LNG TERMINAL
REGASIFICATION UNIT	Regasification system consist of LNG storage tank (located at FSU), vaporizer, boil off compressor, re-condenser, send out pump, gas metering, loading arm for LNG transfer to regasification system and associated equipment to support regasification system.
SAFETY/SECURITY ZONE	Area of water and/or land to which access is limited by the SUPSB. A safety/security zone may be stationary and describe by fixed limits or it may designate as "moving" and be described as a zone around a VESSEL in motion.
SEAWORTH	Fit or safe for a sea voyage.
SIGTTO	Society of International Gas Tankers and Terminal Operators.
STANDBY TUG	Tug that remains on station in close proximity to the LNG VESSELS Exclusion Zone, monitoring visually and audibly passing traffic, keeping them clear as instructed by an authorized authority. Tug may also be used for emergency breakaway, firefighting duties or other additional duties as required.
SUNGAI UDANG PORT SDN BHD (SUPSB)	Sungai Udang Port Sdn Bhd is a port operator and pilotage service provider. SUPSB is responsible for the navigation, safety and traffic Regulations of all Vessels navigating within the Sg. Udang Port Limit
TERMINAL OPERATOR	Operator of RECEIVING FACILITY.

3.0 BASIC PRINCIPLES

3.1 OBJECTIVE

The current regulations have been established by RGTSUSB and SUPSB to ensure the safe and efficient cargo operations at RECEIVING FACILITY. The regulations will be reviewed periodically and updated in accordance with the company management system.

3.2 APPLICATION

RECEIVING FACILITY is established within the PORT for the importation, storage and regasification of LNG as per applicable laws.

Terminal regulations apply to all operations from the time the vessel has passed its first line to the berth/FSU1 until the final mooring line is let go from the berth/FSU1 during unberthing and the vessel is safely clear of the berth/FSU1. In addition to the regulations for the Terminal, information is provided for the transit in Sungai Udang port limit. If this information conflicts with the SUPSB, directions or regulations than the SUPSB directions and regulations take precedence. It is the responsibility of the MASTER to ensure that the latest information regarding to the regulations of Sungai Udang port are abided to.

3.3 JURISDICTION

1. Vessel's, their Master's, Crew, and operators are subject to these regulations and the applicable laws.
2. MASTER's are advised to consult the VESSEL's agent in respect to Malaysian laws.
3. MASTER's are advised to consult with RECEIVING FACILITY in respect to the current terminal procedures and the interpretations thereof.

3.4 CODES, REGULATIONS AND PROCEDURES

The MASTER shall ensure that his VESSEL and CREW adhere to the following regulations and Recommendations (including amendments) where applicable:

1. COLREG – International Regulations for Preventing Collisions at Sea
2. SUPSB – Pilot Directions and General Directions
3. Sungai Udang Port Rules 2004 (P.U (A) 81)
4. Sungai Udang LNG Terminal producers
5. SOLAS – International Convention for the Safety of Life at Sea
6. MARPOL – International Convention for the Prevention of Pollution from vessels

7. SIGTTO – Society of International Gas Tankers and Terminal Operators
8. OCIMF – Oil Companies International Marine Forum
9. IMO – International Maritime Organization
10. ISGOTT – International Safety Guide for Oil Tankers & Terminals
11. ILO – International Labour Organization
12. PTS 18.52.27 Maritime Safety
13. PGB L3 02.08 Maritime Safety

Under the Merchant Shipping Ordinance (MSO) 1952, the Sungai Port rules and regulations are subject to the overall authority of the Harbour MASTER of Malaysia Marine Department.

3.5 RESPONSIBILITIES

1. LNG VESSEL

The MASTER is responsible for ensuring the safety of his VESSEL, CREW and for the prevention of accidents and pollution there from. The MASTER and his deputies are responsible to ensure That all operations to be carried out at the terminal are supervised and undertaken to the highest standards.

2. SUPSB

SUPSB is responsible for the statutory marine activity and regulation within the PORT and the immediate sea area bounded by the PORT limits. Included in the broad range of SUPSB functions and responsibilities for the provision of a pilotage service, which is compulsory for all Vessels within Sungai Udang port limit. Pilot will be engaged for all LNGC/LBV movements within the PORT limits.

3.6 TERMS AND CONDITIONS OF USE AND SAFETY REQUIREMENTS

MASTER are to understand and agree to the “Terms and Conditions of Use and Safety Requirements” of the Sungai Udang Port (PMSSB-PTM-POQP01-02). This document is to be signed by the MASTER and a Sungai Udang Port representative prior to berthing.

4.0 VESSEL'S COMPLIANCE WITH REGULATIONS

4.1 RESPONSIBILITY FOR DOCUMENTATION

The VESSEL's operating / management company and the VESSEL's MASTER shall ensure that all Vessels unloading and reloading cargo at RECEIVING FACILITY comply with all international statutory rules for classification, construction, operation, and management.

Vessels are required to have a valid trading and statutory certificate. The MASTER shall make these certificates available to PORT STATE CONTROL and the Terminal upon request.

Deficiencies, observation, or defects that may affect the validity of these certificates should be noted on the pre-arrival message.

The VESSEL shall have on board an up-to-date copy of the following documents:

1. Regasification Terminal Sungai Udang Information and Regulation Booklet
2. Port of Sungai Udang Terms and Conditions of Use and Safety Requirements
3. VESSEL's Emergency Procedures & Contingency Plans
4. VESSEL's General Arrangement Plan
5. VESSEL's Pre-Cargo Operations check records
6. VESSEL's Fire Control and Safety Plan
7. Shipboard Oil Pollution Emergency Response Plan (SMPEP/SOPEP)
8. VESSEL's Cargo & Ballast Operation Plan
9. VESSEL's CREW Hours of Rest Record

Officers having responsibility for cargo operations must be suitable competent/ experienced and shall have a detailed knowledge of these documents.

4.2 PRE-ARRIVAL CHECKS

The LNGC/LBV crew shall perform pre-arrival checks that comply with the recommendations of SIGTTO. Records shall be maintained and made available to the Terminal and PORT STATE CONTROL when required. Confirmation of completion of pre-arrival checks and any deficiencies shall be reported in the Pre-Arrival Information notice or no later than 48 hours prior to arrival. Any defects which may

affect the safety of navigation, berthing or cargo operations must also be reported to Port Control as applicable.

4.3 CREW QUALIFICATIONS

The MASTER shall, upon request by the Terminal or PORT STATE CONTROL, produce valid Certificates of Competency for all personnel in accordance with the law of the State in which the VESSEL is registered. The MASTER and CREW shall be trained and qualified in accordance with the relevant provisions of the International Convention on the Standards of Training, Certificates and Watch-Keeping for Seafarers (STCW 95) and OCIMF experience matrix.

The MASTER and CREW involved in VESSEL shore safety and cargo unloading and reloading shall be able to communicate effectively with the Terminal in both written and spoken English.

The MASTER and CREW shall be aware of the current Terminal Regulations and cargo handling procedures and comply with them. The MASTER shall, at all times, ensure that an adequate number of experienced CREW is maintained onboard the VESSEL and handle emergencies, including immediate departure from the berth.

In addition, the MASTER is responsible for ensuring that all CREW members are suitable rested and that the VESSEL complies with the requirements of the IMO/ILO Hours of Rest Convention.

4.4 NON-COMPLIANCE

Vessels are accepted for calling at RECEIVING FACILITY after they have been vetted by MISC MARINE SERVICES SDN BHD (MMSSB) and accepted by terminal and when they are able to comply with all regulations for the safe containment, monitoring, and transfer of their cargo.

The Terminal reserves the right to, suspend, stop cargo operations, or require the removal of any VESSEL from the berth and the PORT for:

1) Disregard of Terminal, Port, National and International maritime regulations
2) Act of Pollution Originating from the VESSEL

3) Defects in the VESSEL's equipment, manning or operations that in the reasonable opinion of the Terminal present a hazard to the Terminal, its personnel, operations or the environment.

The Terminal is not liable for any costs incurred by the VESSEL, its Owners, Charterer, or Agents: as a result of suspension or removal for the above reasons.

5.0 VESSEL NOTICES TO THE TERMINAL

5.1 ALL NOTICES

All notices shall be sent to RGT Sungai Udang TERMINAL respective by email to:

Attention : M Isham B Isa (Head Regas Terminal, RGT)
Email : misham_isa@petronas.com

Attention : M Asyraf A Ghani A
Email : asyraf.abdulghani@petronas.com.my

5.2 PRE-ARRIVAL NOTICES

A first notice, which shall be sent either upon the departure (for the Discharge Port) of the LNGC/LBV from Loading Port, or as early as reasonably possible and which shall set forth the time and date of departure, and the estimated time of arrival of the LNGC/LBV at the TERMINAL the **"ETA"**. If this ETA changes by more than six (6) hours, the LNGC/LBV MASTER shall promptly give notice of the corrected ETA. MASTER's should also include confirmation of pre-arrival checks and any deficiencies that would affect the safety or hinder the normal cargo unloading of the VESSEL.

Terminal shall revert with Berthing Prospect upon receipt of Pre-Arrival Notice by LNGC/LBV.

5.3 VESSEL ETA

VESSEL ETA shall be sent at the following Intervals:
First notices to be send prior LNGC depart from loading port OR LBV depart from last Ship to Ship Location (STS).

A second notice, updating or confirming the ETA, shall be sent **ninety-six (96) hours** prior to arrival at the RECEIVING FACILITY. If this ETA changes by more than six (6) hours, the MASTER shall promptly give notice of the corrected ETA.

Seventy-two (72) hours before the arrival of the LNGC/LBV at the Terminal, the MASTER of the LNGC/LBV shall give notice to the Terminal confirming or amending the latest ETA notice and giving an actual time during the scheduled day of arrival

that the MASTER reasonably considers that the LNG VESSELS should be ready to berth at LP1/LRF the Jetty. If this ETA subsequently changes by more than six (6) hours, the MASTER shall promptly give notice of the corrected ETA to the terminal.
Forty-eight (48) hours before the arrival of the LNGC/LBV at the Terminal, the MASTER of the LNGC/LBV shall give notice to the Terminal. Confirming or amending the latest ETA notice (including any time of arrival previously submitted. If this ETA subsequently changes by more than six (6) hours the MASTER shall promptly give notice of the corrected ETA to the Terminal.

Twenty-four (24) hours before the arrival of the LNGC/LBV at the Terminal, the MASTER of the LNGC/LBV shall give notice to the Terminal. Confirming or amending the latest ETA notice (including any time of arrival previously submitted). If this ETA subsequently changes by more than two (2) hours the MASTER shall give prompt notice of the corrected ETA to the Terminal.

A final notice shall be sent six (6) hours prior to arrival at RECEIVING FACILITY.

All notices to be given pursuant to this section 5.3 shall be given by e-mail in English, followed by notification by telefax in English. The MASTER should direct all communication directly to the terminal and may copy the Vessels agent as appropriate.

The Terminal will keep the MASTER of the LNGC/LBV updated at all times and shall provide as much notice as is reasonably practicable to the MASTER of any operational difficulties at the Terminal which the Terminal believers, may adversely affect or delay the LNGC/LBV from berthing at the Terminal and discharge its LNG.

LNGC/LBV to confirm that the pre-arrival checks have been carried out and details of any defects in every sent vessel ETA.

LNGC/LBV to provide actual cargo tank's pressure in every sent vessel ETA.

Terminal maximum requirement on ~~and~~ vessels cargo tanks pressure is 100mmBarg which shall be adhere upon arrival of LNG CARRIER. Cargo tank pressure for LBV shall be include in Berthing Prospect which shall be send by terminal prior to Reloading Operation.

The LNGC/LBV shall arrived with cold line condition at RECEIVING FACILITY.

5.4 NOTICE OF READINESS (NOR)

Notice of Readiness (NOR) is tendered to RECEVING FACILITY, when the LNGC/LBV has arrived at the pilot boarding station of Sungai Udang Port.

A notice of readiness (NOR) accepted when the LNGC/LBV is all fast in the berth and is ready to unload LNG in all respects.

The Notice of Readiness should be followed:

1. In written Form
2. In English
3. Be signed by the MASTER for and on behalf of the relevant customer
4. State the time and date at which the Notice of Readiness is being given
5. Be addressed to RECEIVING FACILITY

6.0 SUNGAI UDANG PORT SDN. BHD. (SUPSB) INFORMATION

6.1 GENERAL INFORMATION

The Sungai Udang Port is managed and operated by SUNGAI UDANG PORT SDN BHD (SUPSB), a subsidiary of MISC Marine Service Sdn Bhd (MMSSB). The PORT serves PETRONAS Penapisan (Melaka) Sdn Bhd and RECEIVING FACILITY's in handling crude oil and various petroleum products including liquefied petroleum gas (LPG), LNG and bulk cargo.

The RECEIVING FACILITY was newly developed and owned by RGTSUSB. This island terminal consists of receiving and REGASIFICATION UNIT and located approximately 3 kilometer offshore Sungai Udang Port at water depth 20 meters. Two (2) FSU's permanently moored with each capacity of 130,000 m^3 to store the LNG. The co-ordinate for the centre of the JRU is Latitude 02˚15'20.45513" N Longitude 102˚6'3.107255" E. The imported LNG will be stored in the FSU's and then vaporized by REGASIFICATION UNIT into natural gas and will then be transferred ashore via a submarine gas pipeline.

Size of LNG VESSEL's allowed at the RECEIVING FACILITY:

UNLOADING	MIN	MAX
LNG Vessel Length Overall (Loading Platform 1)	274 meter	324 meter
Beam	41.6 meter	50 meter
Draft	-	12 meter
Cargo Capacity	130,000 m^3	220,000 m^3
Displacement	107,718 t	157,256 t

RELOADING	MIN	MAX
LNG Vessel Length Overall (LNG Reloading Facility)	123 meter	215 meter
Draft	-	12 meter
Cargo Capacity	7,500 m^3	65,000 m^3
Displacement	8,767 t	52,860 t

Terminal Capacities and Relief Settings:

1. UNLOADING OPERATION

RECEIVING FACILITY has two FSU (converted LNG VESSEL) with a storage capacity volume of approximately 130,000 m^3 each. The maximum unloading rate is at **7000 m^3/hr** with 2 liquid arms in used. The vapour return rate, free flow to the LNG VESSEL is 9000 m^3/hr at a temperature of -120˚C at an unloading rate of 7000 m ^{3}/hr. This facility is utilizing FSU's compressor for vapour return to LNGC/LBV.

The LNG storage tanks on board FSU's are designed with a high pressure relief valve of 240mbar. The LNG unloading system is designed with a high-pressure relief valve of 10barg (LNG unloading TSV 18.5 bars). The vapour return system is designed with a high-pressure relief valve of 1 barg (PSV setting at 3.5 bars).

2. RELOADING OPERATION

The LNG Reloading Facility (LRF) are located at starboard side of FSU1 which consist of 2 nos. 10" of liquid manifold and 1 nos. 10"of vapour manifold. Reloading rate shall vary from 700m3/hr to 2,250m3/hr.

LRF are designed with same pressure relief valve setting as FSU1 with a high-pressure relief valve of 240mbar. It is also designed with a high-pressure relief valve of 10barg (LNG unloading TSV 18.5 bars). The vapour return system is designed with a high-pressure relief valve of 1 bar (PSV setting at 3.5 bars).

6.2 METEOROLOGICAL INFORMATION

The seasonal weather patterns are broadly divided into three seasons.

a) Southwest Monsoon (May to September)
   Winds are generally from the south or southwest during this period and can reach gale force in local squalls.

b) Northeast Monsoon (November to March)
   Persistent rain occurs during this monsoon. Sea condition in the Straits of Malacca will be moderate compared to the South China Sea.

c) Transition Periods (April and October)
   Winds are lighter and variable but may freshen in the late afternoon and early evening with sea breeze effect. Occasionally, local gale force squalls may occur but

these are generally of short duration. MASTER's are to refer to Admiralty Sailing Directions for more information.

The following information was obtained from the Met Ocean Report:

a) Tide (Met Ocean Data)

The highest predicted tide is 2.1 m and the lowest is 0.3 m. The variation throughout the year is +0.1m to -0.1m. The highest tide recorded during the 1992/1993 period was 2.86m and the lowest was 0.12m. The variation throughout the months was between +0.1m to-0.1m.

b) Current (Met Ocean Data)

During survey conducted from November to December 2010, the highest recorded speed is 1.2 knots from north-west/south-east direction.

The current at this location were generated by the tidal flows in a NW/SE direction along the coastline with a speed of 0.6-1.8 knots.

c) Wave (Met Ocean Data)

The below table shows the wave data for the Sg. Udang Port.

Recorded Month	Highest Recorded Wave	Direction
October 1992	2.9 m	South and South West

With a variation from August to December when the wave direction predominantly came from the West.

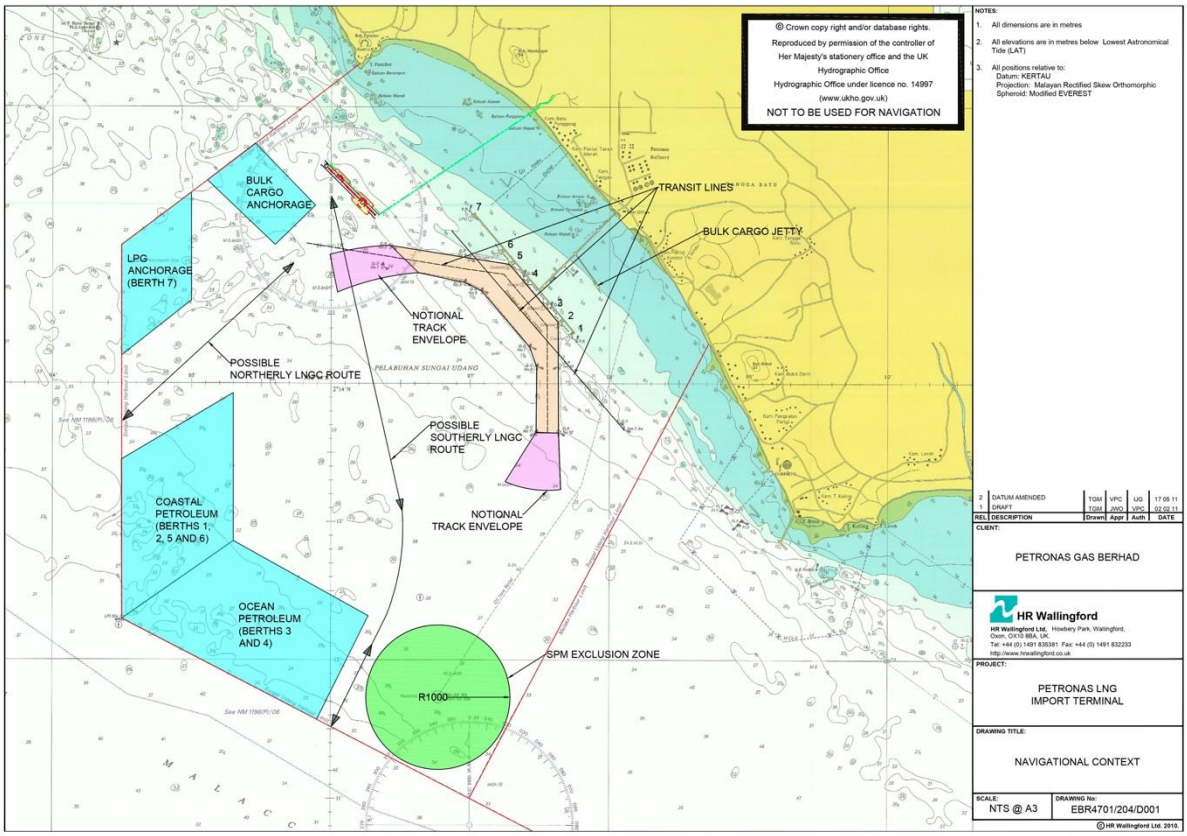
d) Wind (Met Ocean Data)

The below table shows the wind data for the Sg. Udang Port.

Recorded Month	Highest Recorded Wind Speed	Direction
August 1992	34	South-West

However, the terminal is prone to squall up to 50 knots.

6.3 PORT APPROACHES



6.4 PILOTAGE

Pilotage is compulsory within the limit of the Sungai Udang Port. LNG VESSEL's are to advise their agents in advance prior to arrival for pilotage services.

For pilotage purposes, the arrival trim of LNGC/LBV is to be 1.0 meter by stern. A pilot will board a vessel at the pilot boarding ground (at fairway buoy) Lat. 02˚12'.3N Long. 102˚04'.5E or at the anchorage. A pilot ladder or a combination of a pilot ladder and a gangway must be rigged on the leeside and the embarkation and disembarkation of the pilot must be supervised by a responsible officer. A lifebuoy with heaving line must be provided and adequate lighting must be provided at night. Pilot ladders must

comply with SOLAS specification. MASTER's should endeavor to establish contact with the Sungai Udang Port as soon as they are within VHF range. Instructions thereafter will be given for further approach and berthing schedule. Pilots can be contacted on VHF Channel 72.

6.5 Sungai Udang Port Limit

The limit of the Sungai Udang Port Limit is delineated by the following points:

a) From the point on the coast at the tip of Tg Panchor at Latitude 02˚ 16.2'E due South West to
b) Latitude 02˚15.0'N, Longitude 102˚04.5'E thence due South to
c) Latitude 02˚12.3'N, Longitude 102˚04.5'E thence due South East to
d) Latitude 02˚11.0'N, Longitude 102˚07.0'E thence due North East to
e) A point on the coast at Latitude 02˚14.3'N, Longitude 102˚08.7'E including the coastline returning to position (a) and extending to high water mark and fifty yards beyond it, subject to any rights of private property there in.

6.6 Anchorage Areas

Anchoring within the Sungai Udang Port limit is strictly prohibited except with the approval and assistance of the pilots at the designated anchorage areas.

6.6.1 The **Ocean Anchorage** area is bounded by the following coordinates:

Latitude	: 2˚11'.5N	Longitude	: 102˚05'.9E
Latitude	: 2˚ 12'.3E	Longitude	: 102˚06'.2E
Latitude	: 2˚12'.3E	Longitude	: 102˚05'.3E
Latitude	: 2˚12'.3N	Longitude	: 102˚04'.5E

6.6.2 The **Coastal Anchorage** area is bounded by the following coordinates:

Latitude	: 2˚12'.3N	Longitude	: 102˚04'.5E
Latitude	: 2˚12'.8N	Longitude	: 102˚05'.3E
Latitude	: 2˚13'.9N	Longitude	: 102˚04'.3E
Latitude	: 2˚13'.4N	Longitude	: 102˚04'.5E

6.6.3 General Purpose Cargo

Latitude	: 02˚15.0'N	Longitude	: 102˚04.5'E
Latitude	: 02˚15.8'N	Longitude	: 102˚05.0'E
Latitude	: 02˚14.6'N	Longitude	: 102˚05.0'E
Latitude	: 02˚14.2'N	Longitude	: 102˚04.5'E

6.6.4 Gas Tanker Anchorage

Latitude	: 02˚15.4'N	Longitude	: 102˚05.0'E
Latitude	: 02˚15.8'N	Longitude	: 102˚05.5'E
Latitude	: 02˚15.4'N	Longitude	: 102˚05.5'E
Latitude	: 02˚14.6'N	Longitude	: 102˚05.0'

6.7 Authorities

6.7.1 Health

Vessels must obtain health clearance before cargo work can commence. Vessels coming from an infected area are required to fly the international quarantine signal (flag Q.)

Vessels are to notify the PORT health officer through their agent at least 24 hours prior to arrival with the following information: -

a) Name of vessel
b) ETA
c) Last port
d) Ship sanitation control exemption certification (SSCEC)
e) List of port of call of the last 15 days.

When the PORT health officer is onboard he would request to see the following documents:

a) Maritime Declaration of Health
b) List of ports of call for the last 15 days
c) Ship sanitation control exemption certificate (SSCEC)
d) CREW list
e) Vaccination list
f) Cargo Manifest

6.7.2 Immigration

Vessels are required to provide the following to the immigration officers:

a) CREW list stating Seaman Book number
b) Stowaway declaration
c) List of ports of call for the last 15 days
d) Passenger List

CREW members are not allowed for shore leaves.

6.7.3 Customs

Vessels are required to provide the following to the customs officers:

a) Personal effects list
b) Inward manifest (cargo)
c) Outward manifest cargo (if any)
d) General declaration list
e) Bond store list
f) Crew list
g) Arms ammunitions list

Customs will board the vessel on arrival to check and seal the bonded stores. Vessels are advised to prepare the bonded store list and the bonded stores for inspections.

6.7.4 Additional Authority Traffic Control Officer (TCO)

Vessels are required to provide the following to the Traffic Control officers:

a) Personal effects list
b) Inward manifest
c) Outward manifest (if any)
d) General declarations list
e) Bonded store list
f) Crew list
g) Arms and ammunitions list

6.7.5 Port Clearance

Vessels are to advise their agents at least 48 hours prior to arrival for the purposes of PORT clearance. Vessels may be delayed if appropriate notices are not given to the relevant Government agencies

6.8 Towage Requirement

RECEIVING FACILITY is equipped with 4 ASD tugs with capacity of 60 tonnes (2units) and 40 tonnes (2 units) bollard pull to assist in berthing and unberthing operation.

For a vessel's arrival and departure, one (1) harbour tugs will accompany the vessel during its transit of Sungai Udang.

Only tugs towing gear will be used.

The MASTER must ensure that sufficient personnel and that all line handling equipment is tested and ready for use prior to the tugs approaching. All mooring equipment to be used during the towage operation, i.e., messengers, winches, fairleads, bollards etc. must be suitable for its intended use. The use of inappropriate material within "monkey fists" or excessively weighted heaving lines is not permitted.

When the carrier is alongside, the standby/guard tug will be in constant readiness on standby at a nearby location to provide any assistance to the vessel and terminal as deemed necessary, but with the specific duties of:

- To aid in the event of emergency departure
- To provide initial firefighting response
- To provide emergency evacuation of the terminal or VESSEL
- Assist in dealing with harsh weather conditions by reinforcing the mooring or minimizing the LNGC/LBV movement alongside by eventually pushing against the LNGC/LBV hull for maintaining LNGV/LBV in position.
- To provide a temporary / mobile command station in the event of a marine emergency
- Ensuring no unauthorized craft approach, the vessel or terminal
- Assist with ISPS Restricted Area Control

Radio communication between tug, VESSEL, Jetty, and the Terminal Control Room will be open at all times by VHF, or as otherwise specified by the terminal.

7.0 Berthing and Mooring Requirements

7.1 Berthing Schedule (daylight)

The berthing schedule of the vessel is during daylight (7am-6pm), subjected to SUPSB discretion upon arrival. The berthing schedule will be arranged through the vessel's Agent who will coordinate with the SUPSB and the terminal. The berthing side will strictly depend on the pilot discretion when boarding the LNGC/LBV.

7.2 Berthing and Unberthing Limitation

The following are the berthing limit for LNGC/LBV:

	Berthing / Unberthing
Wind Speed	Not more than 20 knots
Wave Height	Not more than 1m
Swell Height	Not more than 1.5m
Current Rate	Not more than 2.0 knots
Visibility	Not less than twice the VESSEL length
Lightning Strike	Sufficiently severe and in accordance with weather standards prescribed in published regulations in effect at the Sungai Udang Port limit or by the order of SUPSB/ the relevant harbour MASTER. Note: Also applies to unloading activities

The maximum angle for a vessel to touch on the breasting dolphin's / FSU1 fenders is 8˚.

The maximum transverse approach speed is 10cm/s (0.2 knots).

7.3 Vessel's Condition

Vessels shall be in a SEAWORTHY condition from arrival to departure. The vessel shall be in a condition that allows for the maneuvering of the VESSEL throughout the stay at the Terminal.

7.4 VESSEL's Moorings

The Terminal and vessel will agree to the vessel being in position. The mooring plan shall be based on a study that is in accordance with OCIMF guidelines and shall be agreed to between the Terminal and the vessel's MASTER. If the vessel cannot comply with the Mooring Plan, the Terminal must be notified immediately, the terminal takes no liability in terms of material damage or delay for any deviation by the vessel from the agreed plan. Any damages sustained by the terminal as a direct result of the above vessel mooring changes without an approved mooring study and terminal consent, shall be the responsibility of the vessel, unless it is due to a failure of the terminals equipment or at the terminals request.

Synthetic tails of a suitable length and minimum-breaking load consistent with OCIMF guidelines shall be used on all mooring wires.

The MASTER is responsible to ensure that the VESSEL is securely moored with due regard to the prevailing weather and the most recent forecast. VESSEL's fitted with self-tension mooring winches must have these on manual control with the self-tensioning mode inhibited, when at the Berth.

Mooring lines used to the same mooring dolphin shall be in good condition and of a similar breaking strength and material. Mixed Moorings are not allowed. Certificates for mooring line and winches shall be made available to the Terminal upon request. The MASTER of the VESSEL must ensure that mooring lines used during the Vessels stay, do not pollute the water within the Terminal.

During mooring operation, it is essential that the VESSEL's officers observe when lines are being made fast to the mooring hooks and not heave up until all personnel are clear of the mooring hooks. Two mooring boats will be provided on

the arrival of the VESSEL at the berth. A maximum of two (2) ropes will be handled by each boat, under the discretion of the Sungai Udang Pilot.

All mooring ropes, including tails, should be fitted with a jockey rope attached in the vicinity of the base of mooring eye splice being presented to the shore mooring hooks. The jockey rope should be of 30mm diameter rope, 3 meters in length and fitted with an eye splice for the attachment of a messenger line. The attachment of the Jockey Rope must in no way restrict the mooring rope from operating as per its design. See Appendix 10.

The largest mooring line size/strength that will be used at the terminal shall comply with the ship shore compatibility study. The normal winch brake settings are assumed as being 60% of the wire rope MBL and maximum winch loads of 80% of the wire rope MBL and nylon (or similar) tails, if used, are assumed to have an MBL of at least 125% of the primary line MBL. Each mooring winch must be clearly marked with the last brake test date and test load and must comply with OCIMF guidelines. Winch brake tests must not exceed 1-year validity.

All mooring equipment, bollards, fairleads, and winches must be clearly marked with the SWL of that equipment.

Save-alls around hydraulically powered mooring equipment must be suitably sized and should be fitted with plugs to prevent oil leakage on to the Vessels deck. Drainage of rainwater may be undertaken as required provided that no traces of pollutants are drained into the sea.

Details of the Berth arrangement at Loading Platform 1 shall be found in Appendix 5.

For reloading operation, Mooring Master from SUPSB shall be on-board of LNGC/LBV to coordinate mooring operation with Loading Master at FSU1 and closely monitor mooring line integrity throughout the cargo operation.

7.5 Tending Moorings

The MASTER shall ensure that sufficient and competent personnel maintain a diligent mooring watch and that lines are not too slack or over-taut. The Terminal is equipped with a mooring tension monitoring system. This information shall be considered when adjusting mooring lines.

Details of the preset ALARMs will be exchanged at the pre-discharge meeting. Generally, mooring lines should be pre-tensioned and should be checked throughout the Vessels stay in PORT, the frequency of checks must be dependent on tide / weather. The Terminal shall be advised before the vessel adjusts any mooring lines.

The vessel must ensure that its position in relation to the terminal is monitored & maintained throughout the Vessels stay in PORT. At no time should the Vessels mooring lines be left slack. Failure to adequately tend the moorings shall be considered a breach of the Terminal Regulations with consequent and appropriate action being taken by the Terminal Management. Any observations of VESSEL movement must be exchanged between both parties.

7.6 Fire Wire

Fire wires should be positioned on the offshore bow and quarter. Fire wires shall be secured to bollards with a minimum of five turns and led directly to a VESSEL side chock with no slack on deck. The outboard end shall have a messenger attached at the eye and be led back to the VESSEL and secured to maintain the eye and wire two (2) meters above the water. The fire wires used must be appropriate sized to the deadweight of the VESSEL, as per OCIMF guidelines. A diagram showing the required method of rigging is contained in Appendix 9.

8.0 COMMUNICATIONS

8.1 Communication between Terminal and VESSEL

The primary communication between Terminal and vessel is the vessel to shore link 6-way fiber optic link.

The primary back-up link will be the electrical “Pyle National 37 pin connector” link, with the option of Pyle National to Miyaki adapter.

The link will allow the following:

- Hot line between the Terminal and VESSEL Bi-directional (Hot phone communication between Terminal and Vessel through Ship to Shore Link System is available in Terminal Control Room)
- ESD VESSEL – Terminal
- ESD Terminal – VESSEL
- Mooring Load Monitor (to be reconfirmed during compatibility study)
- Terminal Telephone Bi-directional
- Public Telephone Bi-directional

A pneumatic link will be provided for the alternate primary back-up link **ONLY FOR UNLOADING CARGO OPERATION.**

All Vessel will also be provided with an INSTRINSICALLY SAFE, portable UHF radio. This radio is for use as communication back up and direct communication to RECEIVING FACILITY, however the primary communication should continue to be the Hot Line.
Additionally, Vessels will be required to monitor designated VHF channels as noted in Appendix 1. The Language that will be used for all communications between the Terminal and VESSEL will be English.

8.2 VESSEL's Communication System

The use of VESSEL's Global Maritime Distress and Safety System (GMDSS) installation for transmitting, except the GMDSS satellite communication and VHF radio on one (1) watt power, is not authorized while the Loading Arms/Hoses are connected. The VESSEL's main transmitting aerials must be disconnected and EARTHED.

The VESSEL's radars shall be switched off while the Loading Arms/Hoses are connected. Additionally, the Vessel AIS unit should also be either switched off at the Terminal or set to a power setting of equal to or less than 1 watt.

8.3 Flags and Signals

When within PORT Limits, from sunrise to sunset, all Vessels shall fly the national flag of Malaysia. In addition, Vessels 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.

9.0 Terminal – Vessel Security and Access

9.1 Terminal- Vessel Security

Terminal -Vessel Security and access is the joint responsibility of the PORT FACILITY and the vessel under the International Vessel and Port Security (ISPS) Code. The Marine Facility Security Officer (MFSO), and the Vessel's MASTER or Vessel Security Officer (SSO) will review and agree to the security measures each will implement. This will be documented by the signing of the Declaration of Security, when appropriate.

Evidence of any serious breach, repeated deficiencies, or significant lack of understanding or implementation of the requirements of ISPS Code by the VESSEL's CREW may result in cessation of cargo operations and rejection of an LNG Tanker and or identified CREW members or visitors. In addition, all visitors and VESSELS CREW are advised that the taking of pictures/video of the Sungai Udang LNG facility is strictly forbidden.

9.2 VESSEL Security Assurance

Any LNGC/LBV engage for service at RECEIVING FACILITY shall be positively vetted by approved vetting company i.e., MISC Marine Services (MSS).

Positive vetting shall consist of, but not limited to the physical inspection of the vessel including assessment of any/all information before the vessel is employed for RECEIVING FACILITY operation. Any vessels that are not positively vetted shall not be utilized.

Following is the defined RACI for offshore vessel during the engagement with RECEIVING FACILITY.

Process	TASK	Sourcing	Contract Holder	End-User	Asset Owner	Approve Vetting Company	Main Contractor
Procurement	Technical Specification Verification		A	R	C/I		
	Invitation to Bid Documents	A	R	I			I
	Letter of Award Issuance	A	R	I	I		I
Vessel Assurance	Vessel Vetting		A	R	I	C	R
	Pre Hire Inspection		A	R	I		R
Mobilization	Vessel Acceptance		A	R	C/I	C	C/I
	Vessel in Service		C	A	R	C/I	R
Demobilization	Vessel Off hire/Termination		A	R	C/I	I	I

9.3 Access to Port Facility and VESSEL

Access to the PORT FACILITY is strictly limited to Terminal personnel, the vessel's CREW and approved visitors or contractors.

The vessel's arrival CREW list, including any embarking personnel must be transmitted to Terminal no later than 72 hours prior to the Vessels arrival. Vessel owner, management personnel, government officers, vendors (unless not specifically approved), and other visitors with a valid reason for entry and who have been pre-approved by both the Owner and the vessel may also be allowed into the PORT FACILITY. The list of visiting personnel should be advised the Terminal at least 48 hours before the arrival of the vessel. Any changes to this list, must be communicated to the Terminal.

The Terminal requires personal photographic identification (seaman's ID or national ID documents) and reserves the right to search all visitors, vehicles and packages entering and leaving the PORT FACILITY. No unaccompanied baggage will be permitted into the facility without it being searched. The Terminal

reserves the right to board the vessel at any time to ensure that vessel Security Plan and applicable regulations are being observed.

Note:
The Terminal reserves the right to refuse entry of personnel, packages vehicles etc. into the PORT FACILITY.

9.3 Shore Leave

No shore leaves for LNGC/LBV CREW.

9.4 Gangway Arrangement

The Terminal gangway will be the designated access between the Terminal and the vessel. All personnel transiting to/from the vessel shall use this access only unless the Terminal and vessel have come to another agreement.

The vessel must be ready to receive the Terminal gangway as soon as berthing has been completed. The Terminal will operate the gangway and land it in the pre-designated area. A non-slip surface must be provided by the vessel at the base of the gangway. The vessel is required to assist the Terminal in the safe and proper positioning of the gangway. The gangway will be inspected by the Terminal and the VESSEL when it is in position and landed. The Terminal and VESSEL will have to agree that the access provided enables the safe transfer of personnel between the Terminal and the vessel. The vessel is required to ensure proper lighting of the gangway area and the vessel's main deck. The Terminal will provide lighting on the Terminal side. The Terminal gangway information is provided in Appendix 7.

For LNG Reloading, personnel transfer shall be done by using crane and Billy Pugh which is installed at Reloading Facility i.e., FSU1.

In case of gangway / billy pugh failure, accommodation ladder shall be use for the access of terminal personnel to be on-board of LNGC/LBV.

9.5 Emergency Escape

An accommodation ladder shall be rigged or positioned on the offshore side of the vessel, ready for immediate lowering in the event of an emergency. The offshore lifeboat, if fitted may be readied for immediate use.

9.6 Fishing, Diving and Swimming

No fishing, diving, or swimming is allowed from the Berth or VESSEL.

10.0 Safety Precautions

10.1 Emergency Procedures

In the event of an emergency arising on the vessel or in the Berth area, the MASTER is required to apply the emergency procedures detailed in the LNGC/LBV Emergency Procedure Manual in conjunction with the Terminals Emergency Procedures. The Terminals emergency signals are found in Appendix 1. LNGC/LBV may periodically be required to participate in emergency drills with the Terminal.

10.2 Weather Precautions

The MASTER is responsible for obtaining all weather data and shall ensure that the LNGC/LBV personnel are aware of the prevailing weather in the PORT and any forecasts provided by the Terminal. In the event of a localized electrical storm, cargo unloading shall be suspended and all cargo valves shall be closed. Care shall be taken to avoid any pressure build up in the tanks. The Vessels tank pressure may be control by releasing pressure to shore, after prior agreement has been sought from the terminal.

The LNGC/LBV is to advise the Terminal of any potential risk that may arise aboard the LNGC/LBV from the prevailing weather.

10.3 Fire Prevention

The following shall be adhered to while the LNGC/LBV is at the Berth:

The LNGC/LBV Damage Control and Safety Plan must be posted adjacent to the gangway, along with a cabin plan and up to date CREW list and must be available to the Terminal in case of an emergency.

The LNGC/LBV water spray system (deluge) must be on standby at all times and capable of being pressurized at short notice. All fire hoses in the area of the cargo tanks and manifold area are to be connected to the Vessels fire main system, fitted with dual jet/spray nozzles and led out, ready for immediate use. The Vessels fire main must be fully pressurized whilst alongside.

The terminal's International Shore Connection (ISC) is located at center of the jetty near to vapour return arm at LNGC berth i.e., LP1 where the vessel must ensure that its connection is also readily available for use in the case of an emergency.

The LNGC/LBV fixed dry-powder systems must also be ready for immediate use. If applicable, hoses shall be led out for those systems used to protect the manifold areas. Portable dry powder fire extinguishers must be available at each side of the unloading manifold. The Vessels fixed DP monitors must be configured and positioned correctly.

All windows and portholes of the LNGC/LBV must remain closed. All external doors except those designated for personnel access must remain closed. Those doors designated for personnel access must be closed immediately after use.

LNGC/LBV will not be accepted at berth if the air conditioning system is not functioning. Air conditioning and ventilator intakes likely to draw in air from the cargo area must be closed. Window type air conditioners are not acceptable. The Vessels accommodation space air conditioning must be on re-circulation and maintain a positive pressure within the structure.

Portable and fixed electric and electronic equipment used in the LNGC/LBV VESSEL's HAZARDOUS AREAS must be of an approved type for such areas and satisfactorily maintained.

The use of NAKED LIGHTS is prohibited on board the LNGC/LBV and in the Terminal.

Smoking in the Terminal is strictly prohibited. Smoking on board the VESSEL may only take place in enclosed spaces that are specifically designated by the MASTER in consultation with the Marine Superintendent or his representative. Smoking areas are to be declared prior to cargo operations commencing.

The use of mobile phones is strictly prohibited in the HAZARDOUS AREAS of the Terminal and onboard the LNGC/LBV. Mobile phones must be switched off. Mobile phones are only to be used in the accommodation area of the LNGC/LBV with the MASTER's permission.

Matches, lighters and any other sources of ignition, including portable electronic equipment, are NOT permitted in the Terminal.

10.4 Leaks and Spill Prevention

An appropriate and alert watch must be maintained aboard the vessel to prevent and detect leaks during cargo unloading.

Unused cargo and bunker connections must be securely blinded.

Deck scuppers, drain holes and drip trays on the vessel within the area of any potential pollution must be suitably plugged and any accumulated water drained off. Any water drained from the vessel must be free from all polluting agents.

Vessel shall make the oil spill kit available during berthing at the terminal.

10.5 Personal Injury Prevention

The following protective equipment shall be worn at all times in the Terminal area, safety helmet, safety shoes, safety glasses and long sleeve coveralls.

The MASTER is required to ensure that VESSEL's personnel / visitors always wear appropriate personal protective equipment at all times on the VESSEL.

10.6 Drugs / Alcohol

At no time will any individual be allowed into the Terminal who is suspected of being under the influence of drugs or alcohol.

If the Terminal detects or suspects members of the VESSEL's CREW are under the influence of drugs or alcohol, the Terminal may suspend all cargo operations until an investigation by the Terminal and VESSEL is completed. If suspended, cargo operations will not resume until the Terminal is satisfied that the operations can be safely resumed. Results of any investigation will be communicated to the Cargo Sellers and the VESSEL's Operating Company.

The use, manufacture, sale, possession, distribution, and promotion of prohibited substances while on the company's premises are strictly prohibited.

"Prohibited Substances" include any alcoholic beverage or any substance which an individual may not sell, possess, use or distribute under the laws of Malaysia.

10.7 Material Safety Data Sheets

Material Safety Data Sheets for the products being unloaded must be displayed in a suitable location on the VESSEL. The MASTER is responsible for ensuring that the VESSEL's CREW are fully aware of all hazards for the products being unloaded and that all applicable precautions are taken in their handling.

11.0 State of Readiness

11.1 Stability

The MASTER is required to ensure the VESSEL maintains sufficient positive stability to ensure the safety of the VESSEL, Terminal, cargo unloading, and taking into account emergency unberthing. The VESSEL shall attempt to maintain zero list while at the Berth and an appropriate trim taking into account the depth of the water available at the Berth.

11.2 Repairs and Maintenance

Any repair or maintenance work (either HOT WORK or Cold Work) which would impair the safety of the cargo unloading operations or the maneuverability of the VESSEL are prohibited. In the event that the VESSEL experiences any incident while alongside which affects the cargo unloading operations or the maneuverability of the VESSEL, the Terminal shall be immediately notified. The Terminal and VESSEL shall agree on appropriate actions to mitigate any dangers to both parties and the safety of cargo operations.

11.3 Crew Readiness

Sufficient CREW must be retained aboard the VESSEL to ensure the safety of cargo operations and to face any emergency that may occur including, departure from the Berth.

All VESSELs CREW must be suitably rested and fit for duty in accordance with the obligations of ILO Convention N. 180 (Seafarers 'Hours of Work and the Manning of VESSELs Convention) and IMO's STCW Convention, 1978, as amended in 1995.

11.4 Engine Readiness

Unless prior written approval has been given by the Terminal, boilers, generators, main engines, steering machinery, and other equipment essential for maneuvering must be maintained in standby mode to enable the VESSEL to use her own engines and steering system at short notice in the event of an emergency unberthing.

11.5 Engine Safety

The Loading Arms/Hoses and gangway will not be connected/ landed on the VESSEL until the VESSEL reports to the Terminal that the main engines / electric motors are secured, and the turning gear is engaged. Similarly, the main engines may not be warmed up until all unloading arms and gangway are clear of the VESSEL.

11.6 Cargo Readiness

All necessary preparations for handing cargo need to be completed prior to docking at Terminal. As a minimum this includes having the proper size manifold reducers rigged, scuppers in place, fire prevention precautions in place (section 9.3) and mooring lines and associated equipment inspected and ready for use.

12.0 Ballast Control and Pollution Control

12.1 Bilge Discharge

The discharge of bilge effluents, oil, or any mixture containing oil or marine pollutants to the sea is prohibited. Overboard valves are to be locked in the closed position.

12.2 Ballast Discharge

Only clean segregated ballast may be discharged from any VESSEL within PORT. When segregated ballast is to be discharged, a copy of the ballast exchange under the ballast water management plan, must be provide to the Loading MASTER. Ballast water other than that contained within segregated ballast tanks must be retained aboard.

12.3 Sewage Discharge

The Discharge of sewage is prohibited.

12.4 Funnel Discharge

The blowing of soot and excessive smoke emissions from the VESSEL's funnel is prohibited. Appropriate measures shall be taken to prevent the emissions of sparks from the funnel. The burning of garbage in the VESSEL's incinerator is prohibited whilst alongside the Terminal and within PORT limits.

12.5 Transferring Oil

While the VESSEL is at the Terminal, the internal transfer of oil or slops is not permitted without prior approval of the Terminal.

12.6 Draining of Rainwater

The VESSEL must ensure that all save-alls and scuppers remain plugged at all times during the PORT stay. Scuppers may be opened occasionally for the draining of rain water, prior to releasing such water; the VESSEL must ensure that the scupper pipe and the water to be drained are free from any traces of marine pollutants. At no time are open scuppers to be left unattended.

12.7 Reporting Pollution

In the event of pollution on land or within the waters of the PORT, the person in charge of the operation must immediately report the incident to the Terminal and the SUPSB. Immediate action must also be taken to stop or minimize further pollution and contain or clean up any spillage in accordance with the Terminal and SUPSB contingency plans.

13.0 Stores, Bunkers and Garbage Handling

13.1 VESSEL Stores

Vessel's stores are not allowed at the Terminal

13.2 Bunkers

Not available at this Terminal

13.3 Garbage Handling

Not available at this Terminal

13.4 Services Provided at the Terminal

SERVICES	YES	NO
Crew shore leave		x
Crew change		X
VESSEL Store		X
Bunker		X
Garbage		X

Barges are not allowed to alongside LNGC/LBV (VESSEL) to transfer bunker, garbage and VESSEL store while LNGC/LBV (VESSEL) berthing at LNG jetty. However, the LNGC/LBV (VESSEL) are allowed to transfer VESSEL store, bunker and garbage, CREW change at anchorage area.

CARGO UNLOADING/RELOADING

13.5 Terminal / VESSEL Pre-Unloading/Reloading Meeting

The Marine Superintendent or the Senior Operator on Duty and the VESSEL's MASTER or Chief Officer will sign the RECEIVING FACILITY Safety Declaration. The Marine Superintendent or the Senior Operator on Duty and the MASTER's designated person in charge will hold a pre-unloading meeting in the VESSEL's meeting room. The following forms must be discussed, completed, and agreed to, signified by signing prior to cargo unloading:

NO.	FORM	SIGNED BY
MMS-PTM-WCO-PO-QP01-F01	PORT OF SUNGAI UDANG TERMS AND CONDITIONS OF USE AND SAFETY REQUIREMENTS	SUPSB/VESSEL
PGB-FORM-01	LNG Discharge Meeting Checklist	Terminal/VESSEL
RGTSU-OP-WI-01-009-A05	Ship/Shore Safety Checklist	Terminal/VESSEL
PGB-FORM-04	Declaration of Security	Terminal/VESSEL
RGTSU-OP-WI-01-009-A01	Terminal Safety Letter	Terminal/VESSEL

Samples of these forms may be found in Appendix 11,12,13 and 15.

13.6 Control and Supervision

At all times the VESSEL's cargo operations must be supervised on board the VESSEL by a qualified/certified officer appointed by the MASTER. The person so appointed shall maintain communications with the Terminal and the MASTER.

13.7 Cargo Equipment Condition

The MASTER is required to ensure that all the VESSEL's equipment used in or essential to the safe and efficient cargo unloading operation is properly manned and maintained throughout the cargo unloading operation. Any deficiency that impacts the safety or efficiency of the unloading operation must be immediately reported to the Terminal.

13.8 Venting and Gas Freeing

Under normal operating conditions venting cargo vapours to the atmosphere is **not permitted**. The VESSEL shall take all necessary action to prevent such venting. In the event of an emergency situation that requires venting, cargo unloading will be stopped. The Terminal and SUPSB shall be notified of the emergency.

Gas freeing of any of the VESSEL's cargo tanks and fuel oil tanks to the atmosphere is prohibited alongside the Berth or in the PORT area.

13.9 Cargo Unloading Arms Connections

As per ISGOTT and SIGTTO recommendations, bonding cables are not used as the Terminal unloading arms have insulating flanges. The VESSEL shall maintain, as will the Terminal, Impressed Current Cathodic Protection (ICCP) throughout the time alongside (ISGOTT 20.6.2) in order to minimize the flow of current between the two.

Unloading of the LNGC/LBV (VESSEL) will be carried out through two liquid unloading arms and one vapour arm. If the number of liquid unloading arms or vapour arms available is different, the VESSEL will be notified and agreement will be made at the pre-unloading meeting.

The LNGC/LBV (VESSEL) is required to have in line Strainers with an ASTM 60 Mesh (nominal aperture of 0.25mm) for each liquid line unless otherwise agreed by the Terminal.

From the time of Initial Cargo Gauging until Final Cargo Gauging, the burning of vapour in the VESSEL's boilers is prohibited unless agreed to by RECEIVING FACILITY (with approval from Molecule Owner or Shipper). In the event where burning is deemed necessary the burnt gas shall be measured and accounted for in accordance with the Throughput agreement or relevant Sales Purchase Agreement. Gas flow readings are to be recorded prior to and after burning of gas in the Vessels boilers.

Return vapour shall be sent to the VESSEL by the Terminal return gas compressors from its LNG storage tanks. The VESSEL shall control the return vapour pressure it

requires. The VESSEL must ensure that all vapour flow meter readings are recorded prior to and after vapour transfers with the terminal.

The vapour return arm and liquid unloading arms will be connected by RECEIVING FACILITY operators, upon VESSEL's notification of readiness to connect the arms. The VESSEL shall have the onshore manifold ready for connection prior to the completion of berthing. The VESSEL's manifold water curtain shall be started and flow confirmed before the Terminal maneuvers the arms aboard. The water curtain shall remain running continuously until completion of cargo operations & after the final arm has been confirmed GAS FREE and disconnected.

Terminal is responsible for connecting the unloading arms and the VESSEL's staff may be requested to assist as appropriate. The Terminal will provide the gaskets for connecting the unloading arms if deemed required.

13.10 Cargo Reloading Hoses Connection

Reloading of the LBV will be carried out through two liquid reloading hoses (subject to desired rated flowrate) and one vapour hose.

The LBV is required to have in line Strainers with an ASTM 60 Mesh (nominal aperture of 0.25mm) for each liquid line unless otherwise agreed by the Terminal.

During reloading operation, LBV at best capacity to optimize as much as possible vapour return from terminal by utilizing any best available equipment installed on-board.

From the time of Initial Cargo Gauging until Final Cargo Gauging, the burning of vapour in the LBV's shall be measured and accounted for in accordance with the relevant agreement(s). Gas flow readings are to be recorded prior to and after burning of gas in the Vessels boilers.

Upon agreement by Loading Master, vapour can be return to terminal with adequate controlling and monitoring mechanism by LBV and terminal.

The liquid and vapour hoses will be connected by terminal personnel, upon LBV's notification of readiness to connect the hoses. The LBV shall have the ~~onshore~~ manifold ready for connection prior to berthing. The LBV's manifold water curtain shall be started, and flow confirmed before the Terminal maneuvers the hoses aboard. The water curtain shall remain running continuously until completion of cargo operations & after the final hose has been confirmed GAS FREE and disconnected.

Terminal is responsible for connecting the hoses and the LBV's staff may be requested to assist as appropriate. The Terminal will provide the gaskets for connecting the hoses if deemed required.

13.11 Cargo Measurement

The LNGC/LBV is required to conduct initial and final gauging of the cargo tanks prior to the start of and after completion of cargo unloading/reloading. The MASTER shall ensure that the cargo gauging is done in compliance with the LNGC/LBV Custody Transfer Measurement System (CTMS) Manual and Terminal will ensure gauging is in line with the current LNG Sales Agreement. The Terminal will witness the Cargo Gauging and the Marine surveyor will certify the results.

13.12 Loading Arms/Hoses Cool-Down

The LNGC/LBV shall cool-down the terminal loading arms by supplying LNG at a reduced flow. The Terminal will monitor the cool-down and ask the VESSEL to increase or decrease the LNG pressure as required. Unloading arm cool-down takes approximately 60-90 minutes. The VESSEL is required to arrive at Terminal with cold cargo line condition.

For reloading operation, hose cooling down shall be done by terminal supplying LNG at reduced flowrate to LBV. Cooling down period shall be around 90-120 minutes.

13.13 Unloading/Reloading Commencement and Stopping

The commencement of cargo unloading/reloading shall be mutually agreed between the Terminal and LNGC/LBV. The LNGC/LBV shall notify the Terminal of the time it starts the first and subsequent pumps and vice versa. Additional pumps

shall only be started after the Terminal has verified its ability to handle the increased unloading rate and requests the VESSEL to start the additional pumps.

Maximum Discharge Rate from LNG Carrier accepted at 7000m3/Hrs with 2 liquid arms in used. At no time should this rate ever be exceeded by the VESSEL. The maximum bulk discharge rate will be stipulated by the Terminal during the Pre-Discharge Meeting.

Maximum Discharge Rate from LNG Reloading Facility to LBV is in the range of 700m3/hr to 2,250m3/hr which shall be based on the maximum manifold pressure acceptable by particular LBV eg. 5 barg.

The LNGC/LBV and the Terminal will monitor the unloading/reloading rate, temperatures and pressures throughout the cargo unloading operation. The LNGC/LBV is to notify the Terminal hourly of the quantity aboard the LNGC/LBV, the unloading/reloading rate and the estimated time for completion of cargo operation.

Completion of cargo unloading/reloading shall be at the agreed quantity to remain onboard the LNGC/LBV.

In the event that the LNGC is to heel out (e.g., for passage to dry dock) the terminal shall be notified in advance of this requirement detailing the additional time required to undertake the activity. This amount shall be agreed by the Terminal and LNGC/LBV during the pre-unloading meeting, taking into account the remaining terminal inventory.

The LNGC/LBV shall notify the Terminal one hour prior to commencing cargo unloading/reloading ramp-down. The LNGC/LBV shall notify the Terminal of the time it stops a pump and the pump number.

If conditions require that cargo unloading/reloading to be stopped, the Terminal or LNGC/LBV should endeavor to notify the other party beforehand. If this is not practical, they shall stop cargo operations and communicate the situation to the

other as soon as it is practical. Cargo operations must be stopped if there is a failure in communication between the terminal and the LNGC/LBV.

If conditions affect the safety or efficiency of the cargo operations by either side, it shall be communicated immediately to the other.

The Terminal reserves the right to delay or stop the cargo operations due to operational requirements of the Terminal.

13.14 Cargo Unloading Arms Disconnection

Before unloading arms disconnection, the Terminal and LNGC are required to drain and purge the unloading arms. The Terminal is responsible for disconnecting the cargo unloading arms and the LNGC's staff may be requested to assist as appropriate. The LNGC shall ensure that her lines and valves allow for a safe disconnection. The Terminal and LNGC's staff will blind their respective connections after the arms are disconnected.

13.15 Cargo Reloading Hose Disconnection

Before reloading hoses disconnection, the Terminal and LBV are required to drain and purge the reloading hoses. The Terminal is responsible for disconnecting the cargo reloading hoses and the LBV staff may be requested to assist as appropriate. The LBV shall ensure that her lines and valves allow for a safe disconnection. The Terminal and LBV staff will blind their respective connections after the hoses are disconnected.

13.16 Terminal and LNGC/LBV Post Unloading / Reloading Meeting

A post-unloading/reloading meeting will be held in the LNGC/LBV meeting room immediately after the cargo operations completed. The Loading MASTER or the Senior Operator on Duty and the MASTER's designated person in charge shall attend this meeting.

13.17 Cargo Operation Limits

THE SAFETY OF THE TERMINAL AND VESSEL SHALL BE OF PARAMOUNT IMPORTANCE THROUGHOUT THE LNGC/LBV STAY AT THE BERTH.

The Terminal and VESSEL will monitor the weather and the VESSEL's motion throughout the cargo operation. If the weather or the VESSEL's motion endangers the Terminal or the VESSEL, either side shall stop the cargo operation. The following wind limits apply to the cargo operation.

SUSTAINED WIND SPEED	ACTION
• Sustained wind greater than 30 knot • Sustained wind greater than 25 knot	• Stop Unloading Operation • Stop Reloading Operation
• Sustained wind greater than 35 knot • Sustained wind greater than 30 knot	• Disconnect loading arm • Disconnect hose
Wave height exceeding 1.5m	Stop Cargo Operation
Swell height exceeding 2.5m	Stop Cargo Operation
Sufficiency severe of lightning (Detector)	Stop Cargo Operation

If the sustained winds reach 35knots, the cargo transfer operation will be stopped and a meeting will be held to discuss resumption of the cargo operation or unberthing.

If the LNGC/LBV motion endangers the Terminal gangway, it will be removed.
RECEIVING FACILITY is equipped with 2 stage ESD System which is ESD 1 and ESD 2.

ESD 1 will be activated in case of:

i. Low-Low Pressure in the Loading Arm Hydraulic Accumulator
ii. Fuse blown or breaker opens in the logic system at LNGC/LBV (VESSEL's) berth.
iii. Activation of ESD 2
iv. Excess angle of Loading Arms (Alarm Stage 2)
v. Loss of Ship/Shore link
vi. Jetty ESD 1 from JRU
vii. PSD from Floating Storage
viii. Manual Push button

ESD 2 will be activated in case of:

i. Excessive Angle of Loading Arms (Maximum envelope)
ii. Manual Push button from JRU

14.0 UNBERTHING

14.1 Pilots and Tugs

Prior to the commencement of unberthing, the MASTER and Pilot shall exchange information that allows for the safe passage of the LNGC/LBV from the Berth to the pilot station.

Bridge Team Management practices shall be utilized to enhance the safe navigation of the LNGC/LBV.

The MASTER and Pilot shall ensure that the Terminal is aware of the order for releasing mooring lines.

LNGC/LBV agent to request to SUPSB for pilot and tugs at least 3 hours before unberthing.

15.0 ATTACHMENT

Appendix 1 - RGTSUSB Contact Information and Alarms
Appendix 2 - Pre-Arrival Information
Appendix 3 - VESSEL Emergency Contact List
Appendix 4 - General Mooring Information and Systems (FO LP1 only)
Appendix 5 - RECEIVING FACILITY Technical Information and Flow Diagram
Appendix 6 - LNG Unloading Arm Particulars
Appendix 7- Gangway Arrangement
Appendix 8 - Terminal/VESSEL Communication Link
Appendix 9 - Fire Wire Detail
Appendix 10 - Mooring Line Jockey Rope
Appendix 11 - LNG Discharge Meeting Checklist (PGB-FORM-01)
Appendix 12 - Ship/Shore Safety Check-List (RGTSU-OP-WI-01-009-A05)
Appendix 13 - Declaration of Security (PGB-FORM-04)
Appendix 14 - Signal to be Displayed at Sungai Udang Port
Appendix 15 – Terminal Safety Letter (RGTSU-OP-WI-01-009-A01)

Appendix 1 – RGTSUSB Contact Information and Alarms

Port Control VHF Communication

Call	:	SUNGAI UDANG PORT CONTROL on Channel 16, 72
Working channels	:	72
Duration	:	24 hours.

Communication languages are in English and Bahasa Malaysia

LNG Terminal Control Room

a) UHF channel ”3” or other channel designated at pre-unloading meeting.
b) Hotline rings directly to the Unloading Control room when handset is lifted.
c) Terminal Berth Control Room Phone: +606-3526208/3526209
d) VHF Channels 16 & 9 or other channel designated at pre-unloading meeting.
e) JRU to SUPSB – Channel 9 VHF; JRU to LNGC – Channel 16 VHF

Phone Contact

Security (24 hour):	+606-3526206
RGTSU Marine Facilities Security Officer (MFSO):	+606-3526202/016-2384424
Sungai Udang Port Authority (MFSO):	+606-3882020/013-6800484
Sungai Udang Port Control (VTC):	+606-3882121
Marine Transport Security Officer (MTSO):	+606-3510155/013-7224483

In case of any Emergency contact the Terminal Berth Control Room.

The following ALARMs apply throughout the SUNGAI UDANG LNG TERMINAL Facility. Ship to Shore and Shore to Ship ESD signal through Ship to Shore Link System is available.

CONDITION	DESCRIPTION OF SIGNAL
Fire or Emergency	General Platform Alarm GPA – Type : Rinsing & Falling siren in amplitude in 3 sec (cycle audible alarm) Beacon : Red
Evacuation	Prepare for Abandon Platform Alarm PAPA – Type: Pulse audible alarm with equal mark/spec ration (1 to 2 sec ON and 1 to 2 sec OFF) Beacon : Blue

Appendix 2 – Pre-Arrival Information

CODE	INFORMATION
AAA	VESSEL's name, previous name (if any), call Sign and port of registry, year built.
BBB	Expected date of arrival and local ETA
CCC	Master Name and nationality
DDD	GRT, NRT, DWT and Max. Displacement
EEE	Last Port and next port of call
FFF	Number of crew and passengers including nationality
GGG	Arrival draft (Forward and Aft)
HHH	Grade and quality of cargo on arrival, previous cargo and cargo to be loaded/discharged at the Sungai Udang Port.
III	Whether previous cargo or any cargo on board has high H2S content and H2S concentration in tank vapour spaces.
JJJ	Firearms on board
KKK	Confirmation of the VESSEL's ability to load and deballast simultaneously
LLL	Pratique Granted: Place/Date. Sickness/health status on board
MMM	Confirmation that the VESSEL's inert gas system is operational and all cargo tanks are inerted on arrival, if applicable.
NNN	L.O.A, breadth, and distance bow to the manifold
OOO	Confirmation that manifold arrangements comply with OCIMF standard for oil tankers. LPG and LNGC must confirm manifold arrangements and associated equipment, showing liquid and vapour lines disposition.
PPP	Confirmation that a pilot ladder or a combination ladder is ready on arrival. Only pilot ladder is required if freeboard is less than 9 meters. State position of accommodation ladder and whether the lower end is facing forward or aft.
QQQ	if the VESSEL is loading products, is it fitted with 2-valve separation for parcel?
RRR	Is it VESSEL fitted with S.B.T?
SSS	Name of VESSEL per/Charterer?
TTT	Is the VESSEL required vetting?

Additionally, all Vessels are required to fax the below, "ISPS" requirement to the Marine Department, through Agent and "cc" to Sg Udang Port:

1) ETA
2) List of last Ten (10) ports of call with their respective security levels and the next port call.
3) Standard ISPS Security Declaration Form as per ISPS requirement

Updated ETA to be confirmed 72, 48, 24 and 12 hours prior to arrival.

Appendix 3 – VESSEL Emergency Contact List

VESSEL Name							
Cargo Number		Date:		ETA		ETD	

Please include International Dialing and Prefix Number with each contact number

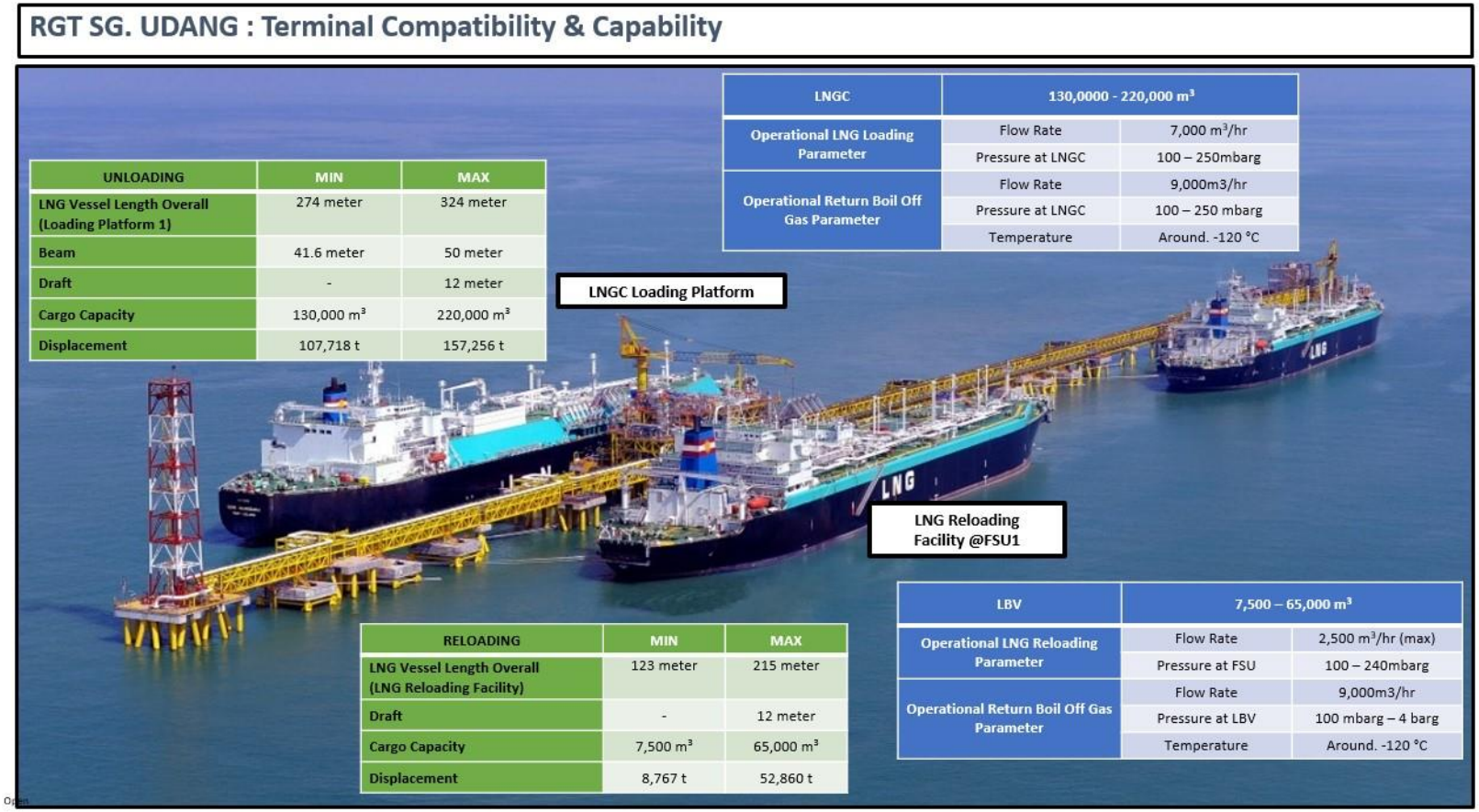
Organization	Name	Contact	Tel.#	Mobile	Fax	AOH	Email
VESSEL							
VESSEL Owner							
VESSEL Managers							
Duty Manager							
Charterer							
Local Agent							
VESSEL's P & I Club							
Other							

Appendix 4 – General Mooring Information and System (FOR LP1 ONLY)

Type of Berth	Island Jetty, Port side – Starboard side Alongside
Maximum Speed of Approach	The maximum transverse approach speed the breasting dolphins were design for is 10 cm/s (0.2 knots).
Maximum Angle when Landing on Fenders	The maximum angle the breasting dolphins are design for a ship to touch on the breasting dolphin's fenders is 8º.
Docking Aid System	2 laser sensors located at berthing dolphin 9 and 10 to measure and track the speed, distance and angle of an approaching vessel. The laser sensor is a pulsed infrared type with range 0-200m and accuracy +/-2cm. 2 main display boards located at PLS 10 and 12 to show bow and stern distance and speed. The display board complete with warning lights of speed limit (red-exceeding high, amber-exceeding high, green below high)
Mooring Load Monitoring System	A laptop complete with software for monitoring mooring tension and present ALARM will be provided to LNGC Ship to Shore Link System to link to the jetty mooring load monitoring system is from Trelleborg Marine System. Hooks are capable of local release (hand lever, max force of 15kg), local electric/hydraulic release, and remote release (one at a time), from the Jetty Control room which is password protected to prevent accidental release.
Weather System	Marine Environmental & Oceanographic Monitoring. System (MEMS) will monitor wind speed/direction, wave tide and current speed/direction. Portable pager unit available for use at the moored LNGC bridge for displaying integrated environmental, mooring and docking data.
All dolphins do have a capstan with 3T start and 1.5T running line pull. The capstans run at a Single Speed of around 25m/min and the directional of the drum is reversible (clockwise/anticlockwise)	

RELOADING FACILITY MOORING DETAIL WILL BE INCLUDE INSIDE TERMINAL CONFIRMATION LIST

Appendix 5 – RECEIVING FACILITY Technical Information and Flow Diagram



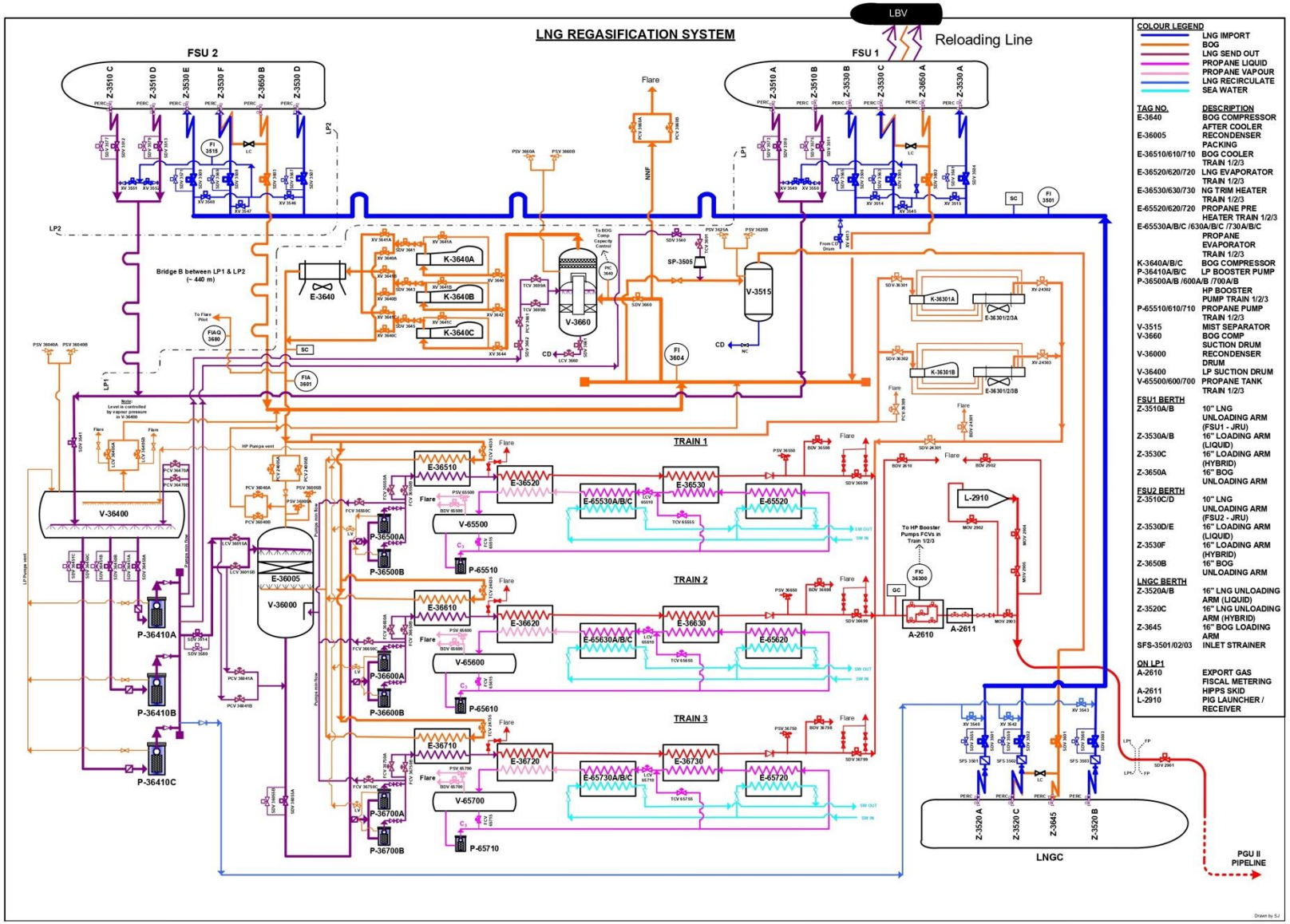
UNLOADING	MIN	MAX
LNG Vessel Length Overall (Loading Platform 1)	274 meter	324 meter
Beam	41.6 meter	50 meter
Draft	-	12 meter
Cargo Capacity	130,000 m^3	220,000 m^3
Displacement	107,718 t	157,256 t

LNGC	130,0000 - 220,000 m^3	
Operational LNG Loading Parameter	Flow Rate	7,000 m^3/hr
	Pressure at LNGC	100 – 250mbarg
Operational Return Boil Off Gas Parameter	Flow Rate	9,000m3/hr
	Pressure at LNGC	100 – 250 mbarg
	Temperature	Around. -120 °C

RELOADING	MIN	MAX
LNG Vessel Length Overall (LNG Reloading Facility)	123 meter	215 meter
Draft	-	12 meter
Cargo Capacity	7,500 m^3	65,000 m^3
Displacement	8,767 t	52,860 t

LBV	7,500 – 65,000 m^3	
Operational LNG Reloading Parameter	Flow Rate	2,500 m^3/hr (max)
	Pressure at FSU	100 – 240mbarg
Operational Return Boil Off Gas Parameter	Flow Rate	9,000m3/hr
	Pressure at LBV	100 mbarg – 4 barg
	Temperature	Around. -120 °C

****RELOADING FACILITY BERTHING ARRANGEMENT WILL BE INCLUDE INSIDE TERMINAL CONFIRMATION LIST**


LNG REGASIFICATION SYSTEM
LBV
Reloading Line
FSU 2
FSU 1
Flare
LP1
LP2
Bridge B between LP1 & LP2 (~ 440 m)
E-3640
K-3640A
K-3640B
K-3640C
V-3660
V-3515
SP-3505
V-36400
E-36005
V-36000
P-36410A
P-36410B
P-36410C
P-36500A
P-36500B
P-36600A
P-36600B
P-36700A
P-36700B
TRAIN 1
TRAIN 2
TRAIN 3
E-36510
E-36520
E-36530
E-65520
E-65530A/B/C
V-65500
P-65510
E-36610
E-36620
E-36630
E-65620
E-65630A/B/C
V-65600
P-65610
E-36710
E-36720
E-36730
E-65720
E-65730A/B/C
V-65700
P-65710
K-36301A
K-36301B
E-36301/2/3A
E-36301/2/3B
L-2910
A-2610
A-2611
LNGC
PGU II PIPELINE
COLOUR LEGEND
LNG IMPORT
BOG
LNG SEND OUT
PROPANE LIQUID
PROPANE VAPOUR
LNG RECIRCULATE
SEA WATER
TAG NO. DESCRIPTION
E-3640 BOG COMPRESSOR AFTER COOLER
E-36005 RECONDENSER PACKING
E-36510/610/710 BOG COOLER TRAIN 1/2/3
E-36520/620/720 LNG EVAPORATOR TRAIN 1/2/3
E-36530/630/730 NG TRIM HEATER TRAIN 1/2/3
E-65520/620/720 PROPANE PRE HEATER TRAIN 1/2/3
E-65530A/B/C /630A/B/C /730A/B/C PROPANE EVAPORATOR TRAIN 1/2/3
K-3640A/B/C BOG COMPRESSOR
P-36410A/B/C LP BOOSTER PUMP
P-36500A/B /600A/B /700A/B HP BOOSTER PUMP TRAIN 1/2/3
P-65510/610/710 PROPANE PUMP TRAIN 1/2/3
V-3515 MIST SEPARATOR
V-3660 BOG COMP SUCTION DRUM
V-36000 RECONDENSER DRUM
V-36400 LP SUCTION DRUM
V-65500/600/700 PROPANE TANK TRAIN 1/2/3
FSU1 BERTH
Z-3510A/B 10" LNG UNLOADING ARM (FSU1 - JRU)
Z-3530A/B 16" LOADING ARM (LIQUID)
Z-3530C 16" LOADING ARM (HYBRID)
Z-3650A 16" BOG UNLOADING ARM
FSU2 BERTH
Z-3510C/D 10" LNG UNLOADING ARM (FSU2 - JRU)
Z-3530D/E 16" LOADING ARM (LIQUID)
Z-3530F 16" LOADING ARM (HYBRID)
Z-3650B 16" BOG UNLOADING ARM
LNGC BERTH
Z-3520A/B 16" LNG UNLOADING ARM (LIQUID)
Z-3520C 16" LNG UNLOADING ARM (HYBRID)
Z-3645 16" BOG LOADING ARM
SFS-3501/02/03 INLET STRAINER
ON LP1
A-2610 EXPORT GAS FISCAL METERING
A-2611 HIPPS SKID
L-2910 PIG LAUNCHER / RECEIVER

Reloading Facility Berthing Details

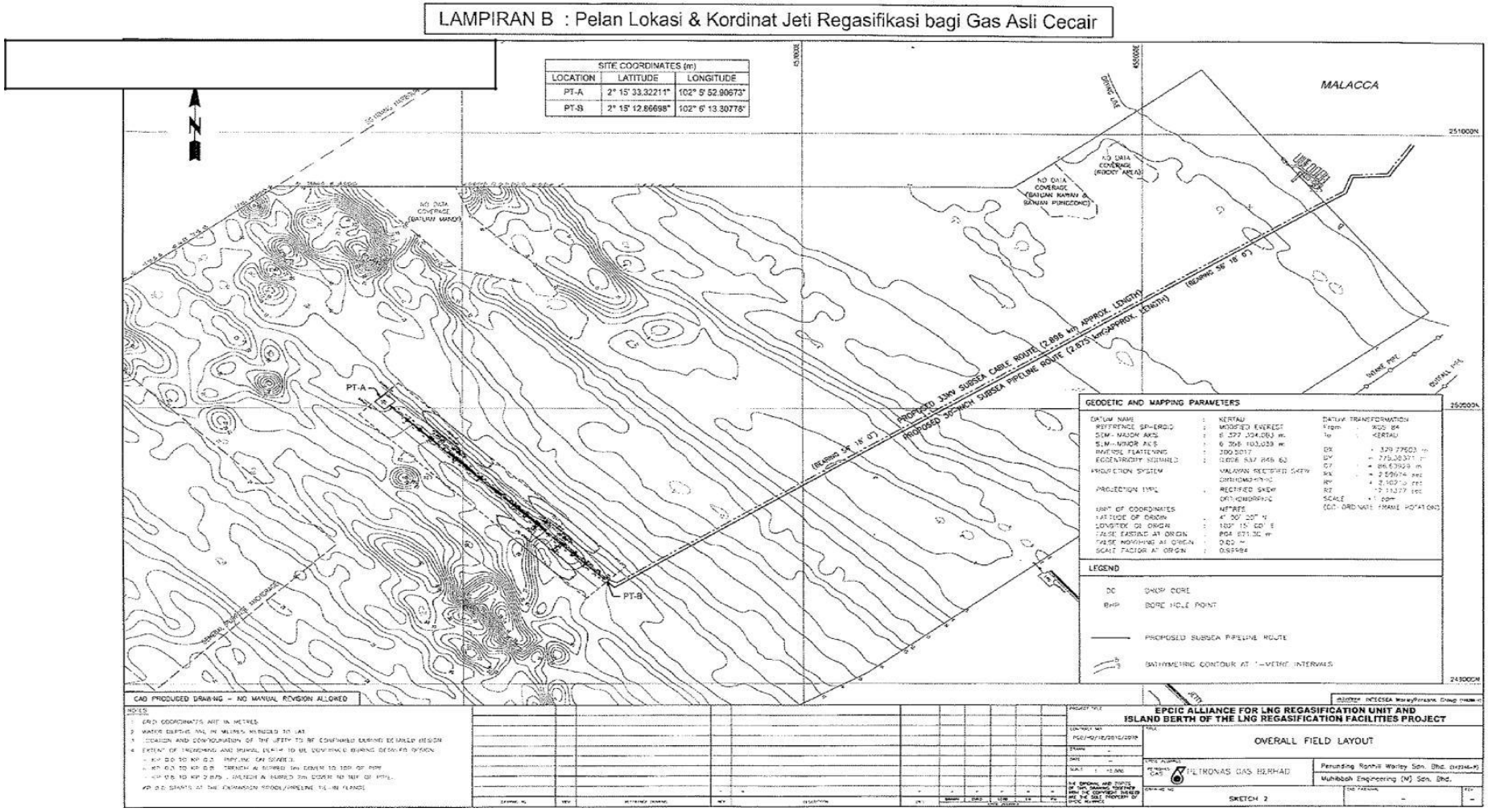
Port or Starboard Side alongside	Port & Starboard Side
Berth Heading toward seaward	315 Degree
Centerline of cone fender	+3.0m CD
Loading platform above LAT	9.5m CD
Unloading Platform from berthing line	2.5m
Fender minimum energy absorption (Emin)	3800kNm (subject to 10% manufacturing tolerance)
Fender reaction (Rmax)	3680 kN (subject to 10% manufacturing tolerance)
Maximum compression	72%
Difference between MWL and HAT/LAT	+1.46m / -1.19m

Unloading Facility Berthing Details

Dolphin	MD8	MD9	BD9	BD9a	BD10a	BD10	MD10	MD11
Distance to Manifold C/L	165m	135m	55m	30m	30m	55m	135m	165m
Hook Distance to Berthing Line	29.5m	29.5m	5.5m	5.5m	5.5m	5.5m	29.5m	29.5m
Top of Fender Panel	NA	NA	+6.3m	+6.3m	+6.3m	+6.3m	NA	NA
C/L of Cone Fender			+3.0m	+3.0m	+3.0m	+3.0m		
Fender Dimensions	NA	NA	Fenders 4.5m x 6.0m so not to exceed 140 kN/ m² on vessels hull	Fenders 4.5m x 6.0m so not to exceed 140 kN/ m² on vessels hull	Fenders 4.5m x 6.0m so not to exceed 140 kN/ m² on vessels hull	Fenders 4.5m x 6.0m so not to exceed 140 kN/ m² on vessels hull	NA	NA

Hooks @ 150 t Minimum Breaking Load MBL	3	3	2	NA	NA	2	3	3
Berth Limit for Hooks Vertical Angle	-5° to 45°	-5° to 45°	-5° to 45°	-5° to 45°	-5° to 45°	-5° to 45°	-5° to 45°	-5° to 45°
Inner Hooks Horizontal Angle	45°	45°	NA	NA	NA	NA	45°	45°
Outer Hooks Horizontal Angle	90°	90°	90°	NA	NA	90°	90°	90°

GENERAL LAYOUT OF SUNGAI UDANG LNG TERMINAL



Appendix 6 – LNG Loading Arms Particular

ARRANGEMENTS AND OPERATING LIMITS

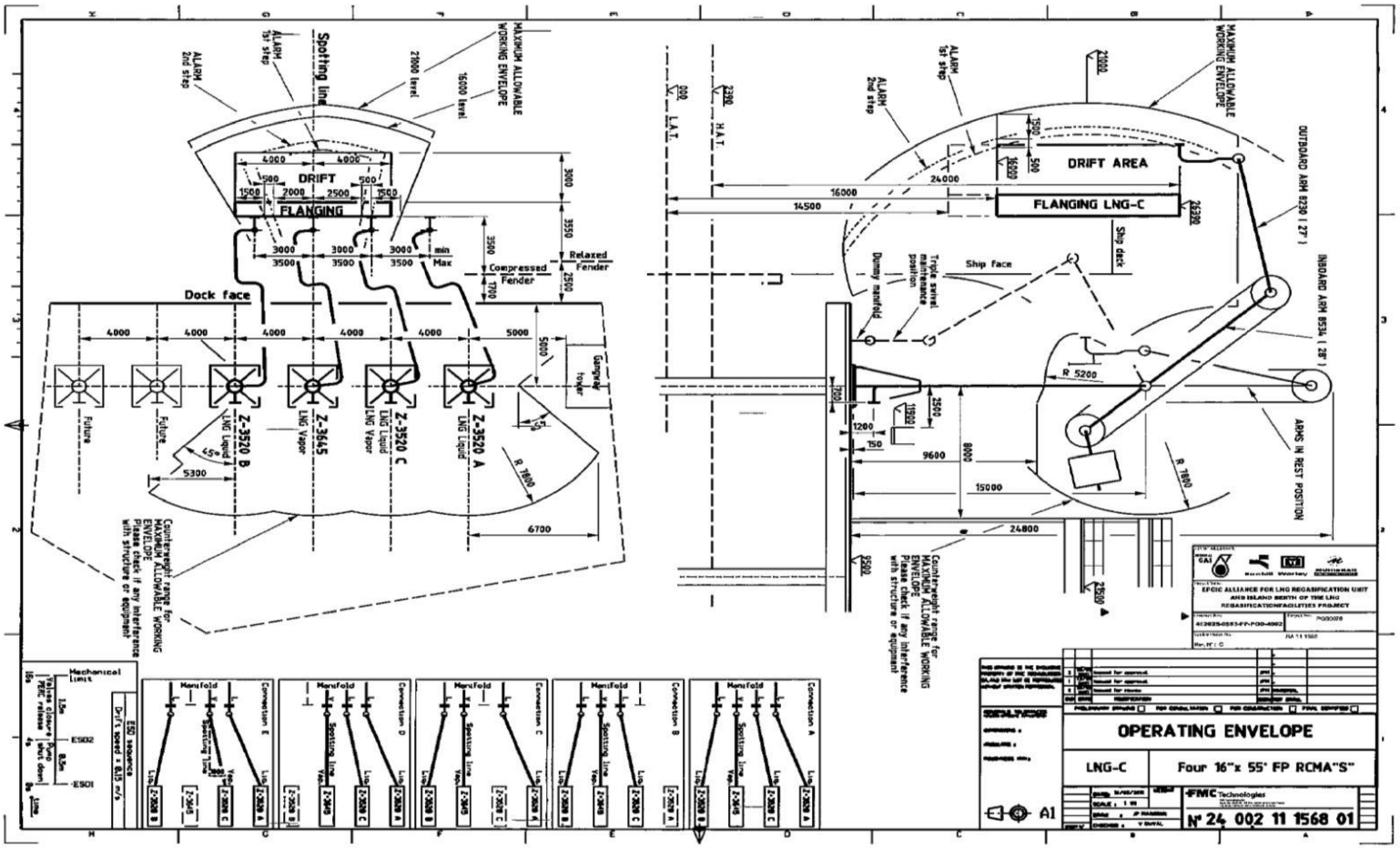
The Loading arms have the following details:

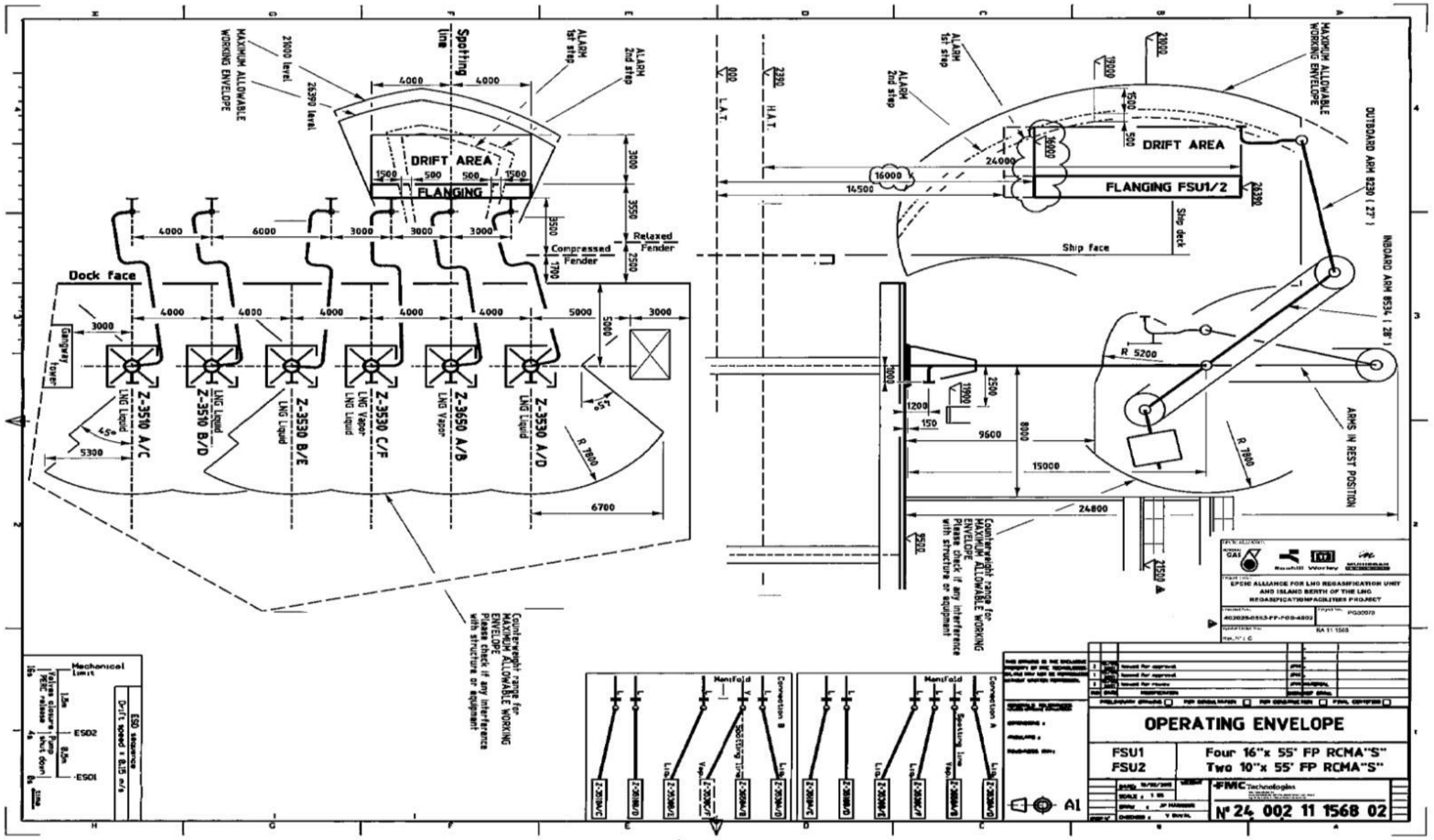
Loading Arm Number	Flange Size	MAWP	Product
Z 3520B	16 inch raised face	18.5 barg	LNG
Z 3645	16 inch raised face	18.5 barg	GNG (Vapour)
Z 3520C	16 inch raised face	18.5 barg	LNG (hybrid)
Z 3520A	16 inch raised face	18.5 barg	LNG

The VESSEL is in position when the Terminal vapour arm is in line with the VESSEL's Vapour manifold connection. The Terminal Loading arms are all fitted with PERC's and Hydraulic Quick Connect/Disconnect Coupler

Liquid unloading arm Z 3520C can be crossover and used as a vapour arm in case any liquid arm is out of service. In this situation no vapour return will be available to the VESSEL. The Terminal unloading arms have the following design characteristics and operating envelope:

DESCRIPTION	VALUE	UNIT
Unloading arm characteristics		
Height of unloading arm jetty above (LAT)	9.50	m
Height of unloading arm valve platform above (LAT)	10.70	m
Height of unloading arm inlet flange above (LAT)	10.70	m
Length of outboard arm	8.23	m
Length of inboard arm	8.53	m
Horizontal distance between unloading arms	4.00	m
Unloading arm envelope		
Total drift perpendicular to VESSEL centreline	3.00	m
Drift fore and aft parallel to VESSEL centreline	3.50	m
VESSEL manifold pipe centreline to LLW– minimum	14.50	m
VESSEL manifold pipe centreline to LLW – maximum	26.39	m
Distance ESD1 –ESD-2 perpendicular/parallel to berth	1.50	m
Distance ESD1 – ESD2 minimum/maximum height	1.50	m
VESSEL limitations		
VESSEL manifold flange face to side of VESSEL (min/max)	3.20-3.50	m
Spacing of manifold centrelines on VESSEL manifold	From VESSEL	m


Spotting line
DRIFT
FLANGING
Dock face
Z-3520 B
Z-3645
Z-3520 C
Z-3520 A
DRIFT AREA
FLANGING LNG-C
Ship face
Ship deck
OPERATING ENVELOPE
LNG-C
Four 16"x 55' FP RCMA"S"
N° 24 002 11 1568 01


DRIFT AREA
FLANGING
Spotting line
ALARM 1st step
ALARM 2nd step
MAXIMUM ALLOWABLE WORKING ENVELOPE
Dock face
Gangway tower
Z-3510 A/C
Z-3510 B/D
Z-3530 B/E
Z-3530 C/F
Z-3650 A/B
Z-3530 A/D
LNG Liquid
LNG Vapor
Compressed Fender
Relaxed Fender
DRIFT AREA
FLANGING FSU1/2
Ship face
Ship deck
OUTBOARD ARM 8230 (27')
INBOARD ARM 8534 (28')
ARMS IN REST POSITION
Counterweight range for MAXIMUM ALLOWABLE WORKING ENVELOPE Please Check if any interference with structure or equipment
Manifold
Mechanical limit
ESD sequence
ESD2
ESD1
OPERATING ENVELOPE
FSU1
FSU2
Four 16"x 55' FP RCMA"S"
Two 10"x 55' FP RCMA"S"
FMC Technologies
N° 24 002 11 1568 02
A1

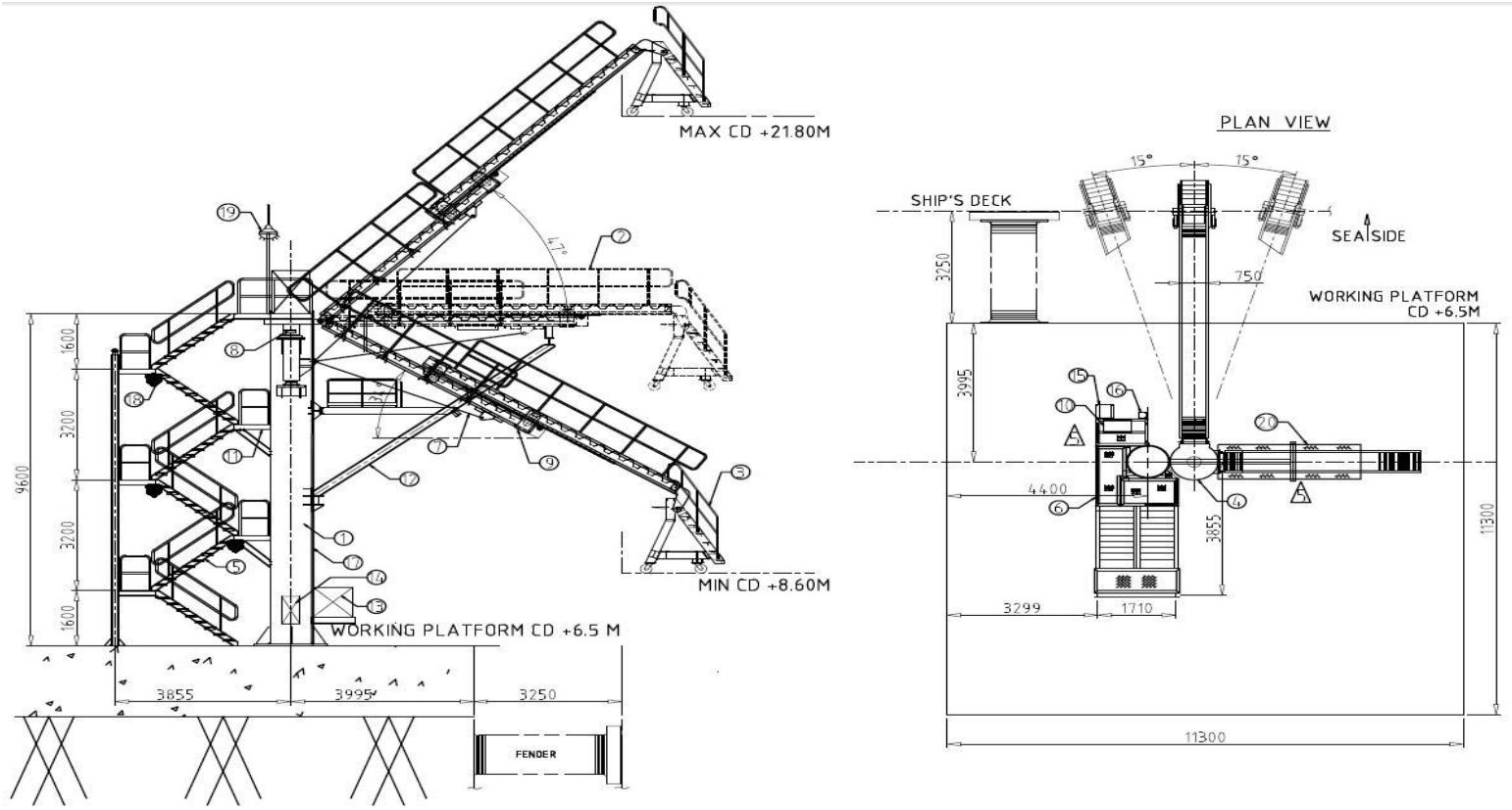
Appendix 7 – Gangway Arrangement

Type of gangway: The gangway consists of a stair with column, turn table, electric driven winch, hydraulic equipment, electric control system, ALARM & other ancillary equipment.

Manufacturer / Supplier: STK Engineering Pte. Ltd.

It has the following operating ranges and characteristics:

Characteristic Gangway	PRIMARY	
Ship deck elevation at LAT (minimum)	8.60	Metres
Ship deck elevation at LAT (highest)	21.80	Metres
Elevation angle, working (referenced to horizontal)	+/- 15	Degree
Elevation angle, stored (referenced to horizontal)	90	Degree
Slewing angle, working (referenced to perpendicular)	81	Degree
Slewing angle, stored (referenced to perpendicular)	0	Degree
Extended length, working	10.503	Metres
Retracted length, working	7.085	Metres
Berth elevation at gangway tower	+ 6.5	Metres
Gangway landing position, portside towards, aft of the ship's vapour	32	Metres
Gangway landing position, starboard side towards, fore of the ship's vapour	32	Metres
Gangway landing area footprint	1.9 x 1.1	Metres
Tower distance from Berth face	3.995	Metres
Width of gangway	1	Metres
Width of gangway pedestal	0.75	Metres
Height of gangway pedestal	9.6	Metres


MAX CD +21.80M
MIN CD +8.60M
WORKING PLATFORM CD +6.5 M
FENDER
3855
3995
3250
9600
1600
3200
3200
1600
PLAN VIEW
SHIP'S DECK
SEASIDE
15°
15°
750
WORKING PLATFORM
CD +6.5M
4400
3299
1710
11300
11300

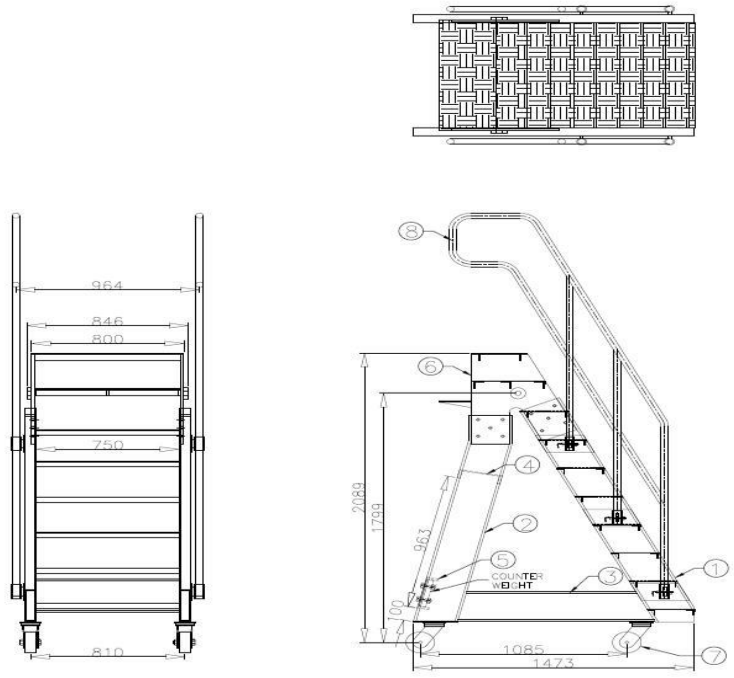


Figure 1: GANGWAY BULKWALK

Appendix 8 – Terminal / VESSEL Communication Link

The primary communication between Terminal and VESSEL is the VESSEL to shore link 6-way fiber optic link.

The primary back-up link will be the electrical "Pyle National 37 pin connector" link, with the option of Pyle National to Miyaki adapter.

A pneumatic link will be provided for the alternate primary back-up link.
The link will allow the following:

- Hot line between the Terminal and VESSEL Bi-directional
- ESD VESSEL – Terminal
- ESD Terminal – VESSEL
- Mooring Load Monitor (optional)
- Terminal Telephone Bi-directional
- Public Telephone Bi-directional

ESD PHILOSOPY

The following table lists the ESD levels in order of critically.

Level 1	ESD2	Total JRU, FSU and LNGC shutdown in preparation for possible evacuation. Second stage emergency shutdown with unloading arms disconnected.
Level 2	JESD1	First stage emergency shutdown with FSU/LNGC/JRU interface closed and facility blowdown activated.
Level 3	ESD1	Emergency shutdown from LNGC which stop unloading operation only.
Level 4	PSD	Process shutdown with no interruption to unloading operations. Unloading operations will be interrupted if PSD is activated at FSU in unloading mode.
Level 5	USD1	One Regasification Train Shutdown
Level 6	USD2	Equipment Shutdown

Level 1: Total Facility Shutdown (ESD2)

ESD2 is the ultimate shutdown level and serve two functions:

a) To uncouple the loading arm when the vessel drifts out of the operating envelope. This will be automatically initiated by sensors on the loading arm.
b) To shutdown total facility in preparation for evacuation. This will be initiated manually by activation of the ESD2 pushbutton. This manual ESD2 activation can only be initiated from the JRU and not from the FSU or the LNGC.

Level 2: JRU Emergency Shutdown (JESD1)

JESD1 will be initiated automatically in the case of: -

a) Activation of ESD2 by cascading effect
b) Confirmed fire on JRU
c) Confirm gas detected on utility platform
d) ESD signal from FSU

The initiation of JESD1 will close ESD1 valve on the JRU to FSU1, FSU2and LNGC. It will also close all the ship's manifold valve on FSU and LNGC. All unloading pumps on LNGC will stop.

JESD1 can also be initiated manually via pushbutton located at the JRU main control room and at loading platform 1.

Level 3: Emergency Shutdown from LNGC

Activation ESD from LNGC will activate ESD1 on the JRU. The initiation of ESD1 will: -

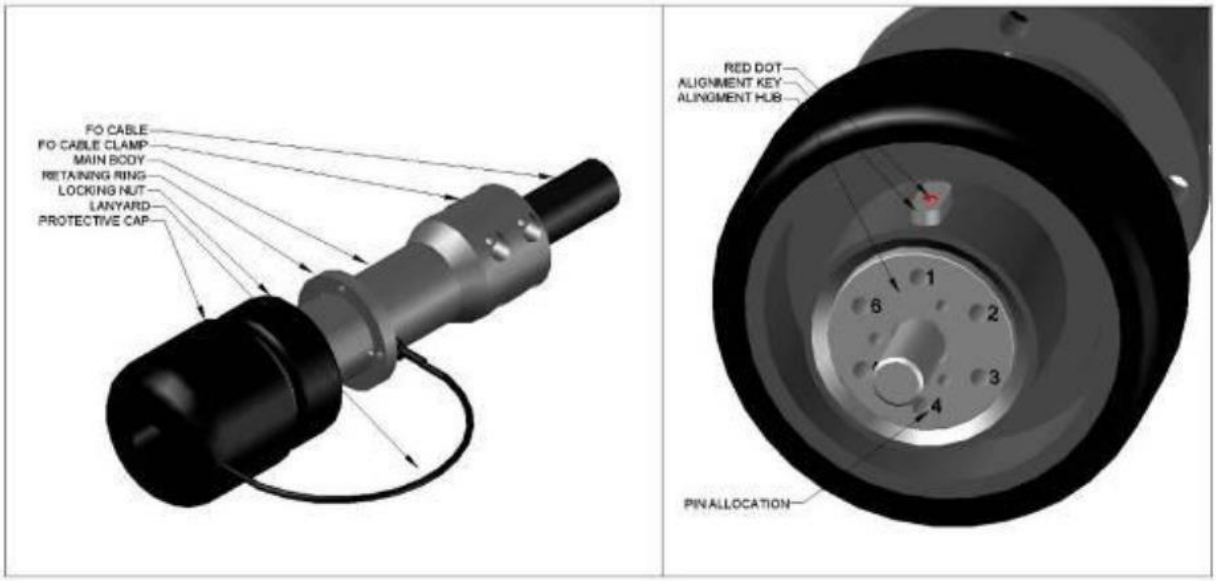
a) Close all ESD valves on the JRU to FSU1, FSU2 and LNGC.
b) Close all the ships and FSU's manifold valves
c) Stop all LNGC unloading pumps
d) Activate ESD on FSU in loading mode

ESD1 will be initiated automatically in the case of: -

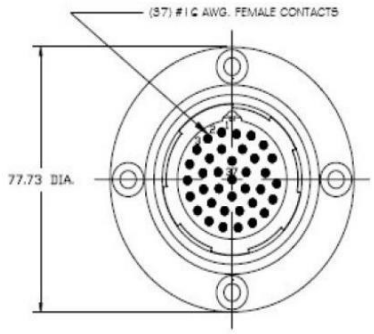
a) Activation of ESD2
b) Excess angle of loading arms at LNGC berth
c) Loss of ship to shore link
d) JESD1 from JRU
e) PSD signal from FSU in loading mode

ESD1 can also be initiated manually via pushbutton at LNGC. It can also be initiated from JRU main control room and at loading platform 1.

11.1. FIBRE OPTIC 6 CORE CONNECTOR



View on receptacle
Type Pyle National Compatible receptacle Contacts numbered in spiral arrangement

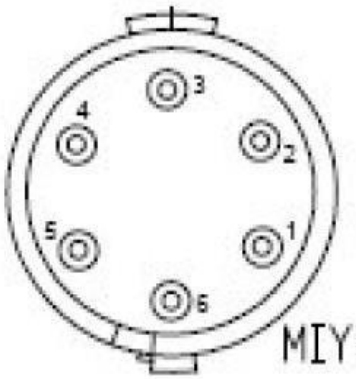


Pyle National 37 Pin

yle National Connectors, type A, manufactured to National Electric Flameproof standards for Class 1 Division 1 Group C & D hazardous areas carrying FM approval. The Pyle National product was designated AF-B1716-621 SL-AG (receptacle) and AF-1016-621PL-37 (Plug). Manufacture of Pyle compatible Product continued in 1997 by EEC, Chicago USA. From August 2003, assembly certification is held by SeaTechnik for ATEX approval. There are many idiosyncratic pin configurations in use at many terminals, both old and recent.

The picture on the right shows a typical 37-Way Electrical Plug (Pins) fitted at both ends of the umbilical cable.

Electric Miyaki Adaptor



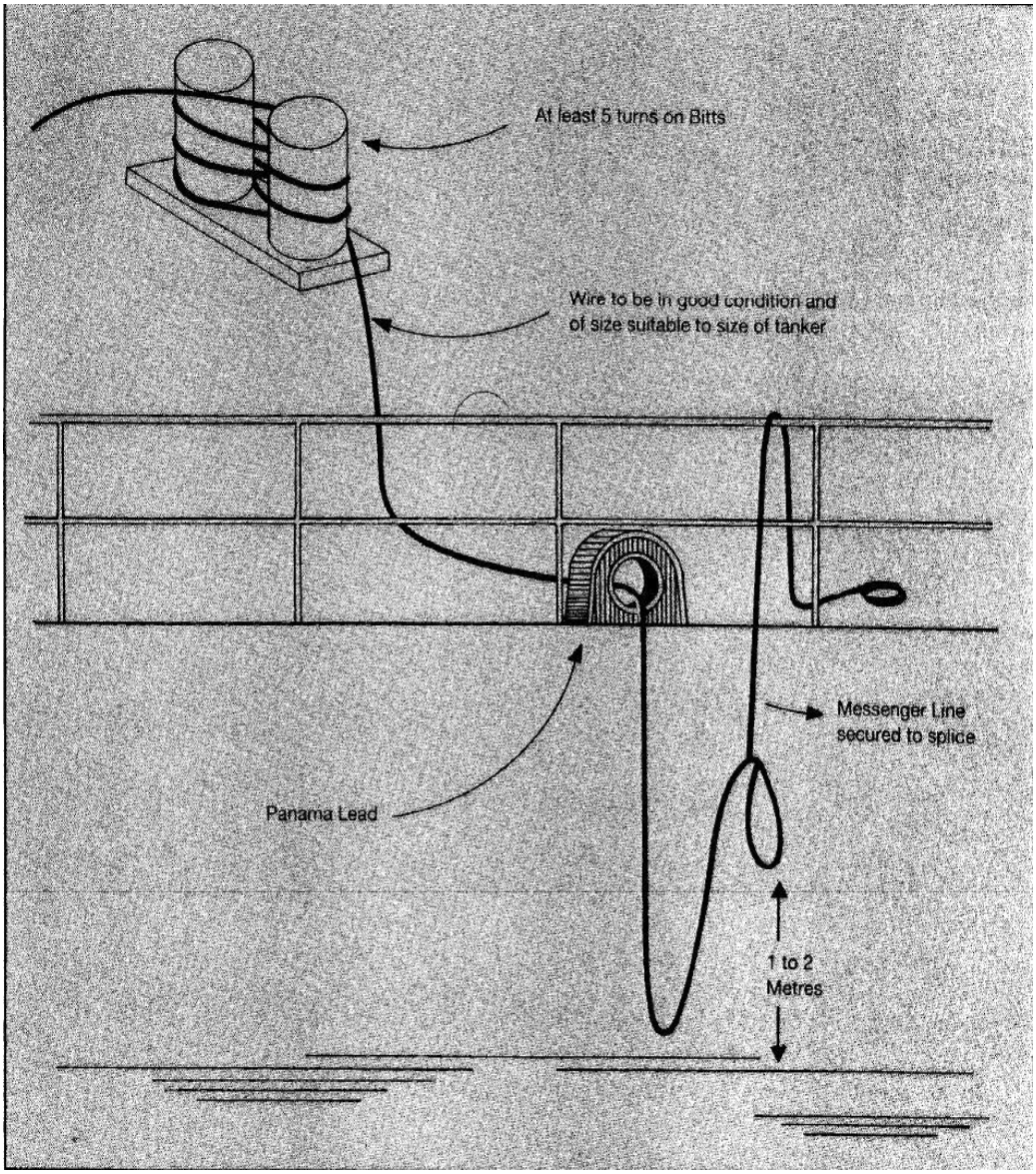
MIYAKI - 6-WAY

Miyaki Adaptor

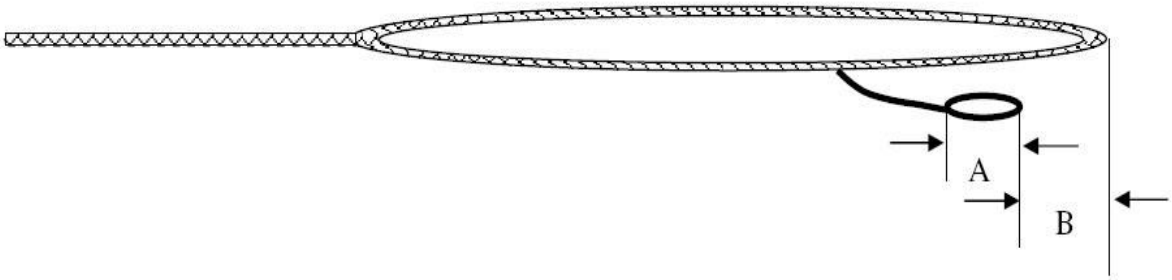
A Pyle National-to-Miyaki portable Adapter can be supplied to support the very few ships which are fitted only with Miyaki connectors. The Miyaki system uses certified 6 pin connector; one for ESD and one for telecommunications (hotline and 2 exchange lines)

The portable adapter on board connects the two shipboard receptacles to a single Pyle National receptacle type connector into which the normal shore system can be connected. the functions are patched together within the Ex'd' enclosure and these can be reconfigured after removing the lid in a safe area.

Appendix 9-Fire Wire Detail



Appendix 10 – Mooring Line Jockey Rope



Jockey Rope Diameter	24mm
Eye Diameter (A)	300mm
Set back distance (B)	300mm

Appendix 11 – LNG Discharge Meeting Checklist (PGB-FORM-01)

Name of the Vessel:					**Date:**	
Time of All Fast:						
The following checklist needs to be filled by RGT representative attending the pre-unloading meeting with the ship prior discharge. Handover the Terminal Estimated of unloading schedule.						
1	LNG to be discharged (m^3)		5	Average temperature of the cargo (^oC)		
2	LNG Tank Pressure (mbarg)		6	Density of the Cargo (kg/m^3)		
3	FSU Tank Press/Temp (mbarg/ ^oC)		7	LNG tank PSV set point (mbarg)		
4	Heel to remain on board (m^3)		8	Strainer on Liquid lines		Mesh Size
9	Whether the LNGC lines have come in cold condition				Yes / No	
10	Temperature of the LNGC common discharge header? (^oC) *During cool down of shore arms, ship lines to be maintained in cold condition*					
11	Whether the cool down has been limited to the upstream of double shut valve?				Yes / No	
12	ESD system used				Optical / Electrical / Pneumatic	
13	Number of main pumps and capacity of each pump					
14	Number of spray pumps and capacity of each pump					
15	Is vapour return flow measurement possible?				Yes / No	
16	Is there any loading port sample available with LNGC				Yes / No	
Agreement					**Remarks**	
1	Steam off main Engines at: _____ Arms can be brought aboard and connected					
2	Terminal to provide Hot line and vessel to provide portable UHF.					
3	Terminal to provide dongle for marine line monitoring (MLM) to vessel or Laptop.					
4	Vapour arm to be inerted with nitrogen until 3% or less Oxygen is achieved and leak tested at 1.0 Barg with soap solution.					
5	Liquid arms to be inerted with nitrogen until 3% or less Oxygen is achieved and then leak tested at the VESSEL/shore flange connection to 5.0 Barg with soap solution.					

6	Opening cargo gauging to be done in accordance with Vessels Custody Transfer Manual and calculations to be made as per Sales Agreement. The Terminal will witness the gauging and the Cargo Inspector will certify the results.	
7	VESSEL's vapour valve may be opened immediately after gauging	
8	Initial cooldown will be done at 40 – 60m3/hr with 30 % opening of by-pass DSV. Flow will be increased only after instructions from the Terminal. Liquid arms to be cooled down via VESSEL's liquid, approximately 90 minutes in duration	
9	VESSEL to ensure equal distribution of flow between both unloading arms.	
10	In case of delay in starting discharge and the arms getting warmer than (-120°C), cool down will be required again.	
11	VESSEL's cargo unloading pumps started at Terminals request. Rate to be increased only after instruction from Terminal.	
12	Return vapour is free flowed from the Terminal. Any closing and opening of vapour valve need to inform Terminal.	
13	First FSU to be loaded. FSU 1 _____ m3 FSU 2_____m3	FSU1 / FSU2
14	Two ESD1 test to be conducted, 1st from VESSEL and 2nd from Terminal.	
15	VESSEL to notify Terminal the time of full cargo unloading rate. Rate estimated at _____	
16	VESSEL to inform Terminal before starting each and every cargo pump.	
17	VESSEL to maintain tank pressure 90 mbarg – 120 mbarg during bulk unloading.	
18	VESSEL to notify Terminal of cargo aboard, unloading rate and manifold pressure time hourly to JRU control room. VESSEL to inform Terminal 1 hour notice prior complete discharging.	
19	Terminal to notify VESSEL of the time and designation of VESSEL pump that need to be shutdown	For 1st FSU
20	VESSEL to fully recycle Main Cargo Pump (MCP) prior switching to next FSU	
21	VESSEL to notify Terminal of the time and designation of each pump that is shutdown.	For 2nd FSU
22	Terminal to drain LNG unloading arms and inert with nitrogen until less than 2% methane by volume in a nitrogen atmosphere is achieved.	
23	Closing cargo gauging to be done in accordance with Vessels Custody Transfer Manual and calculations to be made as per Sales Agreement. The Terminal will witness the gauging and the Cargo Inspector will certify the results.	

24	Terminal to inert Vapour arm with nitrogen until less than 2% methane by volume in a nitrogen atmosphere is achieved	
25	Terminal to disconnect liquid and vapour arm. Liguid strainers to be visually inspected and condition noted.	
26	Terminal to install blanks on arms and maneuver to stowed position and secure.	
27	Terminal to note time arm clear. VESSEL can start main engine warm-up	
28	VESSEL to install blanks on its liquid and vapour arm	
General Information		
1	Ship/Shore Safety check list will be signed by Terminal and VESSEL	
2	Pre-unloading CTMS measurement will be done prior to Loading Arm cooling down or opening of vapour return valve and after Gas Burning Stop.	
3	Post unloading CTMS measurement will be done after the arms are drained and vapour valve is closed	
4	Inform VESSEL if we going to change over from FSU1 to FSU2 or vice versa during unloading.	
5	Dedicated Manifold person identification	
6	Mechanical jacks will be placed after cooling down completed	
7	During bulk unloading, only dedicated personnel is allowed at manifold for routine check.	
8	De-icing of QCDC and DBV flange to be done by fresh/portable water supply by LNGC.	

Appendix 12 – Ship/Shore Safety Check List (RGTSU-OP-W1-01-009-A05)

Date and Time of Arrival:	
Port and Berth:	
Tanker:	
Terminal:	
Product to transferred:	

PART 1A. Tanker: Checks Pre-Arrival			
Item	**Check**	**Status**	**Remarks**
1	Pre-arrival information is exchanged (6.5, 21.2)	□ Yes	
2	International shore fire connection is available (5.5, 19.4.3.1)	□ Yes	
3	Transfer hoses are of suitable construction (18.2)	□ Yes	
4	Terminal information booklet reviewed (15.2.2)	□ Yes	
5	Pre-berthing information is exchanged (21.3, 22.3)	□ Yes	
6	Pressure/vacuum valves and/or high velocity vents are operational (11.1.8)	□ Yes	
7	Fixed and portable oxygen analyzers are operational (2.4)	□ Yes	

PART 1B. Tanker: Checks Pre-Arrival if using an inert gas system			
Item	**Check**	**Status**	**Remarks**
8	Inert gas system pressure and oxygen recorders are operational (11.1.5.2, 11.1.11)	□ Yes	
9	Inert gas system and associated equipment are operational (11.1.5.2, 11.1.11)	□ Yes	
10	Cargo tank atmospheres' oxygen content is less than 8%	□ Yes	
11	Cargo tank atmospheres are at positive pressure (11.1.3)	□ Yes	

PART 2. Terminal: Checks Pre-Arrival			
Item	**Check**	**Status**	**Remarks**
12	Pre-arrival information is exchanged (6.5, 21.2)	□ Yes	
13	International shore fire connection is available (5.5, 19.4.3.1, 19.4.3.5)	□ Yes	
14	Transfer equipment is of suitable construction (18.1, 18.2)	□ Yes	
15	Terminal information booklet transmitted to tanker (15.2.2)	□ Yes	
16	Pre-berthing information is exchanged (21.3, 22.3)	□ Yes	

PART 3. Tanker: Checks After Mooring			
Item	**Check**	**Status**	**Remarks**
17	Fendering is effective (22.4.1)	□ Yes	
18	Mooring arrangement is effective (22.2, 22.4.3)	□ Yes	
19	Access to and from the tanker is safe (16.4)	□ Yes	
20	Scuppers and save-alls are plugged (23.7.4, 23.7.5)	□ Yes	
21	Cargo system sea connections and overboard discharged (23.7.3)	□ Yes	
22	Very high frequency and ultra high frequency transceivers are set to low power mode (4.11.6, 4.13.2.2)	□ Yes	
23	External openings in super structures are controlled (23.1)	□ Yes	
24	Pumproom ventilation is effective (10.12.2)	□ Yes	
25	Medium frequency/high frequency radio antennae are isolated (4.11.4, 4.13.2.1)	□ Yes	
26	Accommodation spaces are at positive pressure (23.2)	□ Yes	
27	Fire control plans are readily available (9.11.2.5)	□ Yes	

PART 4. Terminal: Checks After Mooring			
Item	**Check**	**Status**	**Remarks**
28	Fendering is effective (22.4.1)	□ Yes	
29	Tanker is moored according to the terminal mooring plan (22.2, 22.4.3)	□ Yes	
30	Access to and from the terminal is safe (16.4)	□ Yes	
31	Spill containment and sumps are secure (18.4.2, 18.4.3, 23.7.4, 23.7.5)	□ Yes	

PART 5A. Tanker and Terminal: Pre-Transfer Conference				
Item	**Check**	**Tanker Status**	**Terminal Status**	**Remarks**
32	Tanker is ready to move at agreed notice period (9.11, 21.7.1.1, 22.5.4)	□ Yes	□ Yes	
33	Effective tanker and terminal communications are established (21.1.1, 21.1.2)	□ Yes	□ Yes	
34	Transfer equipment is in safe condition (isolated, drained and de-pressurized) (18.4.1)	□ Yes	□ Yes	
35	Operation supervision and watch keeping is adequate (7.9, 23.11)	□ Yes	□ Yes	
36	There are sufficient personnel to deal with an emergency (9.11.2.2, 23.11)	□ Yes	□ Yes	
37	Smoking restrictions and designated smoking areas are established (4.10, 23.10)	□ Yes	□ Yes	
38	Naked light restrictions are established (4.10.1)	□ Yes	□ Yes	
39	Control of electrical and electronic devices is agreed (4.11, 4.12)	□ Yes	□ Yes	
40	Means of emergency escape from both tanker and terminal are established (20.5)	□ Yes	□ Yes	
41	Firefighting equipment is ready for use (5, 19.4, 23.8)	□ Yes	□ Yes	
42	Oil spill clean-up material is available (20.4)	□ Yes	□ Yes	
43	Manifolds are properly connected (23.6.1)	□ Yes	□ Yes	
44	Sampling and gauging protocols are agreed (23.5.3.2, 23.7.7.5)	□ Yes	□ Yes	
45	Procedures for cargo, bunkers and ballast handling operations are agreed (21.4, 21.5, 21.6)	□ Yes	□ Yes	
46	Cargo transfer management controls are agreed (12.1)	□ Yes	□ Yes	
47	Cargo tank cleaning requirements, including crude oil washing are agreed (12.3, 12.5, 21.4.1)	□ Yes	□ Yes	See also parts 7B/7C as applicable
48	Cargo tank gas freeing arrangements agreed (12.4)	□ Yes	□ Yes	See also part 7C

49	Cargo and bunker slop handling requirements agreed (12.1, 21.2, 21.4)	□ Yes	□ Yes	See also part 7C
50	Routine for regular checks on cargo transferred are agreed (23.7.2)	□ Yes	□ Yes	
51	Emergency signals and shutdown procedures are agreed (12.1.6.3, 18.5, 21.1.2)	□ Yes	□ Yes	
52	Safety data sheets are available (1.4.4, 20.1, 21.4)	□ Yes	□ Yes	
53	Hazardous properties of the products to be are discussed (1.2, 1.4)	□ Yes	□ Yes	
54	Electrical insulation of the tanker/terminal interface is effective (12.9.5, 17.4, 18.2.14)	□ Yes	□ Yes	
55	Tank venting system and closed operation procedures are agreed (11.3.3.1, 21.4, 21.5, 23.3.3)	□ Yes	□ Yes	
56	Vapour return line operational parameters are agreed (11.5, 18.3, 23.7.7)	□ Yes	□ Yes	
57	Measures to avoid back-filling are agreed (12.1.13.7)	□ Yes	□ Yes	
58	Status of unused cargo and bunker connection is satisfactory (23.7.1,	□ Yes	□ Yes	
59	Portable very high frequency and ultrahigh frequency radios are intrinsically safe (4.12.4, 21.1.1)	□ Yes	□ Yes	
60	Procedures for receiving nitrogen from terminal to cargo tank are agreed (12.1.14.8)	□ Yes	□ Yes	

Additional for Chemical Tankers – Checks pre-transfer

PART 5B. Tanker and Terminal: Bulk Liquid Chemicals. Check Pre-Transfer				
Item	**Check**	**Tanker Status**	**Terminal Status**	**Remarks**
61	Inhibition certificate received (if required) from manufacturer	□ Yes	□ Yes	
62	Appropriate personal protective equipment is identified and available (4.8.1)	□ Yes	□ Yes	
63	Counter measures against personal contact with cargo are agreed (1.4)	□ Yes	□ Yes	
64	Cargo handling rate and relationship with valve closure times and automatic shutdown systems is agreed (16.8, 21.4, 21.5, 21.6)	□ Yes	□ Yes	
65	Cargo system gauge operation and alarm set points are confirmed (12.1.6.6.1)	□ Yes	□ Yes	
66	Adequate portable vapour detection instruments are in use (2.4)	□ Yes	□ Yes	
67	Information on fire fighting media and procedures is exchanged (5, 19)	□ Yes	□ Yes	
68	Transfer hoses confirmed suitable for the product being handled (18.2)	□ Yes	□ Yes	
69	Confirm cargo handling is only by a permanent installed pipeline system	□ Yes	□ Yes	
70	Procedures are in place to receive nitrogen from the terminal for inerting or purging (12.1.14.8)	□ Yes	□ Yes	

Additional for Gas Tankers – Check pre-transfer

PART 5C. Tanker and Terminal: Liquified Gas. Check Pre-Transfer				
Item	**Check**	**Tanker Status**	**Terminal Status**	**Remarks**
71	Inhibition certificate received (if required) from manufacturer	□ Yes	□ Yes	
72	Water spray system is operational (5.3.1, 19.4.3)	□ Yes	□ Yes	
73	Appropriate personal protective equipment is identified and available (4.8.1)	□ Yes	□ Yes	
74	Remote control valves are operational	□ Yes	□ Yes	
75	Cargo pump and compressor are operational	□ Yes	□ Yes	
76	Maximum working pressures are agreed between tanker and terimanl (21.4, 21.5, 21.6)	□ Yes	□ Yes	
77	Reliquefication or boil-off control equipment is operational	□ Yes	□ Yes	
78	Gas detection equipment is appropriately set for the cargo (2.4)	□ Yes	□ Yes	
79	Cargo system gauge operation and alarm set points are confirmed (12.1.6.6.1)	□ Yes	□ Yes	
80	Emergency shutdown systems are tested and operational (18.5)	□ Yes	□ Yes	
81	Cargo handling rate and relationship with valve closure times and automatic shutdown systems is agreed (16.8, 21.4, 21.5, 21.6)	□ Yes	□ Yes	
82	Maximum/minimum temperatures/pressures of the cargo to be transferred are agreed (21.4, 21.5, 21.6)	□ Yes	□ Yes	
83	Cargo tank relief valve settings are confirmed (12.11, 21.2, 21.4)	□ Yes	□ Yes	

PART 6. Tanker and Terminal: Agreements Pre-Transfer				
Part 5 Item	**Agreement**	**Details**	**Tanker Initials**	**Terminal Initials**
32	Tanker maneuvering readiness	Notice period (maximum) for full readiness to maneuver: Period of disablement (if permitted):		
33	Security protocols	Security level: Local requirements:		
33	Effective tanker/terminal communications	Primary system: Backup system:		
35	Operational supervision and watchkeeping	Tanker: Terminal:		
37 38	Dedicated smoking areas and naked lights restrictions	Tanker: Terminal:		
45	Maximum wind, current and sea/swell criteria, or other environmental factors	Stop cargo transfer: Disconnect: Unberth:		
45 46	Limits for cargo, bunkers and ballast handling	Maximum transfer rates: Topping-off rates: Maximum manifold pressure: Cargo temperature: Other limitations:		
45 46	Pressure surge control	Minimum number of cargo tanks open:		

		Tank switching protocols: Minimum number of cargo tanks open: Tank switching protocols: Full load rate: Topping off rate: Closing time of automatic valves:		
46	Cargo transfer management procedures	Action notice periods: Transfer stop protocols:		
50	Routine for regular checks on cargo transferred are agreed	Routine transferred quantity checks:		
51	Emergency signals	Tanker: Terminal:		
55	Tank venting system	Procedure:		
55	Closed operations	Requirements:		
56	Vapour return line	Operational parameters: Maximum flow rate:		
60	Nitrogen supply from terminal	Procedures to receive: Maximum pressure: Flow rate:		

PART 6. Tanker and Terminal: Agreements Pre-Transfer (cont.)				
Part 5 Item ref	**Agreement**	**Details**	**Tanker Initials**	**Terminal Initials**
83	For gas tanker only	Tank 1: Tank 2: Tank 3: Tank 4: Tank 5: Tank 6: Tank 7: Tank 8: Tank 9: Tank 10:		
xx	Exceptions and additions	Special issues that both parties should be aware of:		

PART 7A. General Tanker: Checks Pre-Transfer			
Item	**Check**	**Status**	**Remarks**
84	Portable drip trays are correctly positioned and empty (23.7.5)	□ Yes	
85	Individual cargo tank inert gas supply valves are secured for cargo plan (12.1.13.4)	□ Yes	
86	Inert gas system delivering inert gas with oxygen content not more than 5% (11.1.3)	□ Yes	
87	Cargo tank high level alarms are operational (12.1.6.6.1)	□ Yes	
88	All cargo, ballast and bunker tanks openings are secured (23.3)	□ Yes	

Part 7C. Tanker: Checks prior to tank cleaning and/or gas freeing			
Item	**Check**	**Status**	**Remarks**
89	The completed pre-arrival crude oil washing checklist, as contained in the approved crude oil washing manual, is copied to terminal (12.5.2, 21.2.3)	□ Yes	N/A
90	Crude oil washing checklists for use before, during and after crude oil washing are in place ready to complete, as contained in the approved crude oil washing manual (12.5.2, 21.6)	□ Yes	N/A

For tankers that will perform tank cleaning alongside and/or gas freeing alongside

Part 7C. Tanker: Checks prior to tank cleaning and/or gas freeing			
Item	**Check**	**Status**	**Remarks**
91	Permission for tank cleaning operations is confirmed (21.2.3, 21.4, 25.4.3)	□ Yes	N/A
92	Permission for gas freeing operations is confirmed (12.4.3)	□ Yes	N/A
93	Tank cleaning procedures are agreed (12.3.2, 21.4, 21.6)	□ Yes	N/A
94	If cargo tank entry is required, procedures for entry have been agreed with the terminal (10.5)	□ Yes	N/A
95	Slop reception facilities and requirements are confirmed (12.1, 21.2, 21.4)	□ Yes	N/A

Declaration

We the undersigned have checked the items in the applicable parts 1 to 7 as marked and signed below:

	Tanker	Terminal
PART 1A. Tanker: Checks Pre-Arrival	☐	☐
PART 1B. Tanker: Checks Pre-Arrival if using an inert gas system	☐	☐
PART 2. Terminal: Checks Pre-Arrival	☐	☐
PART 3. Tanker: Checks After Mooring	☐	☐
PART 4. Terminal: Checks After Mooring	☐	☐
PART 5A. Tanker AND Terminal: Pre-Transfer Conference	☐	☐
PART 5B. Tanker and Terminal: Bulk Liquid Chemicals. Check Pre-Transfer	☐	☐
PART 5C. Tanker and Terminal: Liquified Gas. Check Pre-Transfer	☐	☐
PART 6. Tanker and Terminal: Agreements Pre-Transfer	☐	☐
PART 7A. General Tanker: Checks Pre-Transfer	☐	☐
Part 7B. Tanker: Checks pre-transfer if crude oil washing is planned	☐	☐
Part 7C. Tanker: Checks prior to tank cleaning and/or gas freeing	☐	☐

In accordance with the guidance in chapter 25 of ISGOTT, we have satisfied ourselves that the entries we have made are correct to the best of our knowledge and that the tanker and terminal are in agreement to undertake the transfer operation.

We have also agreed to carry out the repetitive checks noted in parts 8 and part 9 of the ISGOTT, which should occur at intervals of not more _____ hours for the tanker and not more than _____ hours for the terminal.

If, to our knowledge, the status of any item changes, we will immediately inform the other party.

Tanker	Terminal
Name	Name
Rank	Rank
Signature	Signature
Date	Date
Time	Time

Part 8. Tanker: Repetitive Checks During and After Transfer								
Item ref	**Checks**	**Time**	**Time**	**Time**	**Time**	**Time**	**Time**	**Remarks**
Interval time: …… hrs		☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
8	Inert gas system pressure and oxygen recording operational	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
9	Inert gas system and all associated equipment are operational	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
11	Cargo tank atmospheres are at positive pressure	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
18	Mooring arrangement is effective	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
19	Access to and from the tanker is safe	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
20	Scuppers and save-alls are plugged	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
23	External openings in superstructures are controlled	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	

24	Pumproom ventilation is effective	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
28	Tanker is ready to move at agreed notice period	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
29	Fendering is effective	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
33	Communications are effective	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
35	Supervision and watchkeeping is adequate	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
36	Sufficient personnel are available to deal with an emergency	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
37	Smoking restrictions and designated smoking areas are complied with	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
38	Naked light restrictions are complied with	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
39	Control of electrical devices and equipment in hazardous zoned is complied with	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
40 41 42 51	Emergency response preparedness is satisfactory	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
54	Electrical insulation of the tanker/terminal interface is effective	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	

55	Tank venting system and closed operation procedures are as agreed	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
85	Individual cargo tank inert gas valves settings are as agreed	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
86	Inert gas delivery maintained at not more than 5% oxygen	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
87	Cargo tank high level alarms are operational	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
Initials		☐	☐	☐	☐	☐	☐	

Part 9. Terminal: Repetitive Checks During and After Transfer								
Item ref	**Checks**	**Time**	**Time**	**Time**	**Time**	**Time**	**Time**	**Remarks**
Interval time: …… hrs		☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
18	Mooring arrangement is effective	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
19	Access to and from the tanker is safe	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
29	Fendering is effective	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
32	Spill containment and sumps are secure	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
33	Communications are effective	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
35	Supervision and watchkeeping is adequate	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
36	Sufficient personnel are available to deal with an emergency	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
37	Smoking restrictions and designated smoking areas are complied with	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
38	Naked light restrictions are complied with	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
39	Control of electrical devices and equipment in hazardous zoned is complied with	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
40 41	Emergency response	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	

47 51	preparedness is satisfactory							
54	Electrical insulation of the tanker/terminal interface is effective	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
55	Tank venting system and closed operation procedures are as agreed	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	☐ Yes	
Initials								

Appendix 13 – Declaration of Security (PGB-FORM-04)

Name of Ship:	
Port of Registry:	
IMO Number:	
Name of Port Facility:	LNG Regas Terminal (Sg Udang) Sdn Bhd

This Declaration of Security is valid from …… until ……, for the following activities ……..... *(List the activities with relevant details)*

Under the following security levels:

Security level(s) for the ship:	
Security level(s) for the port facility:	

The port facility and ship agree to the following security measures and responsibilities to ensure compliance with the requirements of ISPS Code and local legislation / directives.

	The affixing of the initials of the SSO or MFSO under these columns indicates that the activity will be done, in accordance with relevant approved plan by	
Activity	**The port facility:**	**The ship:**
Ensuring the performance of all security duties		
Monitoring restricted areas to ensure that only authorised personnel have access		
Controlling access to port facility		
Controlling access to the ship		
Monitoring of port facility, including berthing areas and areas surrounding the ship		
Monitoring of the ship, including berthing areas and areas surrounding the ship		
Handling of cargo		
Delivery of ship's stores		
Handling unaccompanied baggage		
Controlling the embarkation of persons and their effects		
Ensuring that security communication is readily available between the ship and port facility		

The signatories to this agreement certify that security measures and arrangements for both the port facility and the ship during the specified activities meet the provisions of ISPS Code and local legislation / directives will be implemented in accordance with the provisions already stipulated in their approved plan(s) or the specific arrangements agreed to and set out in the attached annex.

Dated at …… on the ……

Signed for and on behalf of	
the port facility:	the ship:
(Signature of Marine Facility Security Officer)	*(Signature of Master or Ship Security Officer)*

Name and title of person who signed	
Name:	Name:
Title:	Title:

Contact Details	
MFSO Mobile Phone No.:	
VHF Ch.	
for the port facility:	for the ship:

Marine Facility	Master .....
Marine Facility Security Officer	Ship Security Officer .....
	Company .....
	Company Security Officer .....

Appendix 14 – Signal to be Displayed at Sungai Udang Port

a) Transiting inside port limit area

DAY SIGNAL:

1. Flag: "Quebec" for Health Authority,
2. Numeral Flag: "2" above "5" for immigration,
3. Flag: "Hotel" for pilot (if PILOT is onboard),
4. Flag: "Bravo" for Dangerous Cargo

LIGHT SIGNAL:

1. Pilot signal (if PILOT is onboard)
2. Dangerous cargo light (“red flashing light”)

b) Alongside

DAY SIGNAL:
Flag: "Bravo" for Dangerous Cargo

LIGHT SIGNAL:
Dangerous cargo light (“red flashing light”)

Appendix 15 – Terminal Safety Letter

Company : _____

Terminal : _____

Date : _____

The Master SS/MV : _____

Port : _____

Dear Sir,

Responsibility for the safe conduct of operations while your ship is at this terminal rests jointly with you, as Master of the ship, and with the responsible Terminal Representative. We wish, therefore, before operations start, to seek your full co-operation and understanding on the safety requirements set out in the Ship/Shore Safety Check-List, which are based on safe practices that are widely accepted by the oil and tanker industries.

We expect you, and all under your command, to adhere strictly to these requirements throughout your ship's stay alongside this terminal and we, for our part, will ensure that our personnel do likewise, and co-operate fully with you in the mutual interest of safe and efficient operations.

Before the start of operations, and from time to time thereafter, for our mutual safety, a member of the terminal staff, where appropriate together with a Responsible Officer, will make a routine inspection of your ship to ensure that elements addressed within the scope of the Ship/Shore Safety Check-List are being managed in an acceptable manner. Where corrective action is needed, we will not agree to operations commencing or, should they have been started, we will require them to be stopped.

Similarly, if you consider that safety is being endangered by any action on the part of our staff or by any equipment under our control, you should demand immediate cessation of operations.

There can be no compromise with safety

Please acknowledge receipt of this letter by countersigning and returning the attached copy.

Signed: _____

Terminal Representative

Terminal Representative on Duty is : _____
Position or Title : _____
Contact Details : _____

Signed : _____

Master

SS/MV : _____

Date/Time : _____