TRANSNET

national ports authority

BUNKERING LICENCE

Licence Number: BKNG/RCB/27

Issued in terms of the Port Rules for the commercial ports of South Africa, adopted in terms of the National Port Act No. 12 of 2005 ("the Act")

THIS LICENCE IS NOT TRANSFERABLE

Name of Licensed Operator: LWENDO MINERALS (PTY) LTD

Registered physical address from where principal business is carried on: 10th FLOOR, OFFICE TOWER, 5TH STREET, SANDTON, JOHANNESBURG

Registration Number: 2018/458512/07

V.A.T. Registration Number: 4020289247

("hereinafter referred to as the "Licensee")

The Licensee is hereby licensed by the Authority to undertake the following activities, and none other, in the Port of .....

Bunkering activity (delete non-applicable method):

(a) ~~Bunker barge/ vessel outside breakwater~~
(b) ~~Fixed (Quayside pipelines)~~
(c) Road Tanker
(d) Road Truck

This licence is issued subject to:

1) compliance with the conditions printed on this licence, which list some of the obligations of the Licensee;
2) compliance with the provisions of the Act and all other relevant legislation;
3) compliance with any Regulations adopted in terms of section 80(1) of the Act;
4) compliance with the Port Rules for the commercial ports of the Republic of South Africa, adopted in terms of section 80(2) of the Act, and with the Harbour Master's Written Instructions and the Authority's Written Instructions;
5) compliance with the Authority's Tariff Book, published in terms of section 72(1) of the Act;
6) compliance with the International Ship and Port Security Code ("the ISPS Code") as it applies to all Ports of South Africa; and
7) compliance with all other applicable legislation and generally the requirement to conduct its bunkering activities in accordance with the Law.
8) The licence is subject to the following specific terms & conditions:
    a. The licence is issued for LNG bunkering operations only, consisting of a maximum of 2 LNG bunker barges, unless the Authority, in writing, approves the operation of more bunker barges, with the LNG to be supplied to the bunker barges by means of a floating storage unit (FSU) that will, in turn, receive the LNG for purposes of bunkering from LNG tankers;
    b. The LNG bunker barges shall not be operated until such time as (i) they have been assessed and approved as per the Authority's take-on audit after the bunker barges are available for inspection within the port limits of the Port of Ngqura and (ii) all approvals, licences, authorisations or certificates of whatsoever nature required from all regulatory and other relevant bodies, including but not limited to SAMSA and NERSA, have been attained in respect of the bunker barges and the FSU;
    c. Upon direction, instruction and in accordance with all terms and conditions as prescribed by the Harbour Master subsequent to all regulatory and governance approvals, the FSU will be permitted within port limits but outside of the port breakwater to be utilised as floating storage for LNG;
    d. This bunkering licence permits for LNG bunker discharge from LNG bunker barges to LNG powered vessels, with LNG to be used for the sole purpose of bunkers to power the vessel;
    e. This bunkering licence does not authorise the trading of LNG from the FSU or LNG bunker barges for any commercial purpose other than LNG bunkers to vessels at sea;

f. This bunkering licence does not authorise that the FSU or LNG bunker barges can enter any South African port with the breakwater and that LNG stored in the FSU or LNG in the barges can be commercially traded for imports at any port within South Africa;
g. This bunkering licence prohibits the LNG bunker barge from servicing any vessel that occupies any berth, jetty, mooring structure, repair facility, quay or any Terminal licensed by the TNPA within the South African port system as defined in the National Ports Act 12 of 2005;
h. The LNG bunker operations as described above, conducted within port limits, must comply with any additional terms and conditions, as and when required, imposed by the Harbour Master of the Port of Ngqura in the interests of safe orderly and efficient port working;
i. The bunkering licence does not authorise the erection or construction of any temporary or permanent anchor or mooring facility within port limits which means that the FSU and LNG barges must be able to be safely anchored by means of their own devices;
j. The Licensee shall obtain all necessary regulatory approvals and tax clearances for the importation and supply of LNG to the FSU and for the operation of the FSU, including any relevant regulatory approvals/licences to allow for LNG gas storage in an FSU.

Duration of licence: 09 December 2022 to 08 December 2027.

Licence fee: R25 211.45 [inclusive of VAT.]

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Date: 08 December 2022

THE AUTHORITY'S DELEGATEE

The Licensee accepts that this licence is issued subject compliance with the attached conditions and the statutory and other instruments listed above, as amended or changed from time to time.

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Date: 12 December 2022

LICENSEE OR ITS AUTHORISED REPRESENTATIVE

CONDITIONS OF BUNKERING LICENCE

GENERAL

1. The Licensee shall at all times comply with all the relevant provisions of MARPOL Annex I Regulation 13H (7), ISGOTT Manual and the ISM Code, as they may be amended from time to time and shall ensure that its personnel apply these provisions at all times during bunkering and related activities.
2. The Licensee The Licensee shall comply with all relevant legislation, management systems, policies, procedures and directives, and keep onboard the bunker barge/vessel a copy of:
    a) The Port Rules;
    b) SAMSA Marine Notices;
    c) Updated Chart or ENC;
    d) Valid Pilot Exemption Licence;
    e) Valid Craft Licence;
    f) Environmental Management Plan;
    g) Operations Manual & SOPs
3. The Licensee may not act or purport to act on behalf of the Authority or to represent it in any way. The Licensee is not the mandatory, agent or employee of the Authority arising out of the issue of this Licence. The Authority shall not be liable, vicariously or otherwise, for the acts or omissions of the Licensee.
4. The licensee shall comply with all relevant legislation including the National Ports Act of 2005 & Port Rules, Standard for Safe Handling and Transport of Dangerous Goods and Related Activities in South African Port Areas, The Marine Pollution (Control & Civil Liability) Act 6 of 1981, the Marine Pollution (Prevention of Pollution from Ships) Act 2 of 1986, and the Merchant Shipping Act, as amended.
5. The Licensee acknowledges and agrees that the Authority may disclose any or all of the information provided by the Licensee to law enforcement, government and regulatory agencies and the Licensee releases and indemnifies the Authority from and against all losses, claims, damages, costs, liabilities, actions and causes of action arising out of or in any way connected with the disclosure or release of any information provided by the Licensee to such bodies.
6. Reports on bunker operations will be submitted on a monthly basis to the Port Authority detailing the following:

    a) Keep a record of all Bunker Operations Conducted
    b) Date, Name of Vessel, Type of fuel, Quantity of Fuel, IMO 2020 LSFO Complaint,
    c) Supply of non-compliant fuel - proof vessel had compliant scrubber onboard
    d) All Incidents – safety, pollution, damage to property

7. Vessel receiving bunkers shall have Port Health Clearance before any interaction between the bunker operator & vessel.

SAFETY, HEALTH, ENVIRONMENT AND EFFICIENCY

8. Bunkering operations must be performed diligently, safely and without deliberate or undue delay.
9. During operations, the Licensee shall ensure that all necessary measures are taken to prevent spillage into the waters of the Port, or onto the quayside. An Environmental

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Management Plan covering all spill and pollution control measures must, upon request, be submitted to the Authority.

10. The Licensee shall have written Safety, Health, and Environment management systems in place at all times and shall make these available to the Authority for inspection upon request. Such management systems are to be regularly audited and certified by a body accredited by SANAS
11. The Authority reserves the right to request additional risk assessments, either qualitative, or quantitative, or a combination thereof, based on the initial review of the intricacy of the operation applied for.
12. The Licensee shall undertake annual risk assessments of the bunkering services that it offers within the Port and shall make these available to the Authority for inspection upon request.
13. Any injury on duty (IOD), or fatality, shall be immediately reported to the Authority and to any applicable statutory body within the required time-frame.
14. Any incidents or accidents arising out of the licensed operations that may impact in any way on the environment shall be reported immediately to the Authority by the Licensee. The following information must, as a minimum, be provided:

    a) the location of the spill;
    b) the type of oil of LNG spill;
    c) the approximate quantity;
    d) immediate action taken;
    e) preventative measures put in place; and
    f) Wind Direction & Speed

15. All incidents must be fully investigated by the Licensee and a detailed report submitted to the Authority within seven (7) days of the incident taking place.
16. Only intrinsically safe communication and electronic devices will be used on board the vessels.

BUNKERING BY BARGE

17. SOLAS requires that a SDS for MARPOL Annex I type Cargoes and Marine Fuel Oils shall be provided to the ship by the Operator.
18. The licensee shall ensure that all equipment is maintained to an adequate operational standard.
19. All staff employed in the bunkering operation shall be trained and competent in the operation
20. Only employees with the applicable training as required by the appropriate flag state/ appropriate authorities may be utilized by the Licensee.
21. The Licensee shall undertake annual risk assessments of the bunkering services that it offers within the Port & Port Limits and shall make these available to the Authority for inspection upon request and on renewal of the said licence.
22. The Licensee shall have written Safety, Health, and Environment management systems in place at all times and shall make these available to the Authority for inspection upon request. Such management systems are to be regularly audited and certified by a body accredited by SANAS.
23. The transfer of bunkers will only be permitted if weather and other conditions are considered suitable. The Harbour Master may, at his/her discretion, order the cessation of the operation and this order must be complied with immediately.
24. The Harbour Master or a representative of the Port Authority may board the vessel to inspect the bunker transfer arrangements at any time.
25. Licensees are to carry an Emergency Oil Spill Plan on the vessel.
26. Licensees are to have appropriate insurance in terms of Public Liability and Environmental Pollution.

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27. Employees of the licensee shall be aware of and shall comply with The Maritime Security Regulations of 2004 and the Ship Security Plan.
28. Bunkering shall only take place in areas approved for such activities.
29. Licensees shall comply at all times with all the provisions of the MARPOL Regulations, ISGOTT and the ISM Code. The Licensee shall be familiar with the aforementioned provisions and ensure that their employees and contractors both understand and apply them.
30. Licensees shall ensure that bunker vessels hold the latest version of the ISGOTT manual on board at all times.
31. A Senior Engineer shall always be appointed to co-ordinate and take charge of the bunkering operation, and the loading plan and checklist shall be used by this Officer.
32. The appointed Engineer shall first ensure that all crew members involved in the operation are fully conversant with the following:
    a) specification and quantity of fuel to be lifted
    b) the ship's fuelling and tank sounding arrangements
    c) the alarm systems and the loading sequence.
33. All personnel on board are to be made aware of the intention to bunker so that the vessel's emergency response plan can be activated without delay in the event of a spill.
34. Clear and detailed drawings of the vessel's bunkering system shall be available for use by members of the ship's bunkering team during the operations.
35. A piping diagram shall be posted in a suitable location for easy reference by the bunkering team.
36. When agreeing signaling procedures between the vessel and barge, Masters shall utilize an audible alarm to supplement an emergency stop, recognizable by all parties.
37. Key elements of the bunker plan shall be summarised in writing and signed by both the responsible bunkering officer and the supplier as confirmation of mutual agreement.
38. The Duty Officer should keep in close contact with the bunker team throughout and maintain a continuous watch of traffic in the area & oversight over the operation.
39. Moorings shall be tended to ensure that the movement of the vessel is restricted to a minimum and that the ship, as far as practicable, is kept upright and on an even keel.
40. All Bunkering equipment required for the bunkering operation shall be maintained in good order and condition.
    a) All transfer hoses shall be inspected before each use and shall be tested and certified annually as per the latest version of ISGOTT
    b) Drip trays shall be utilized where necessary.
    c) At any time during operations, the operators must report any spillage (even if no bunker fuel has entered the water) and take appropriate measures to immediately contain and clear the spillage.
    d) In the event of a spillage, the operator must report the incident to Port Control and immediately providing the following information:

        - The nature and type of the liquid released
        - The quantity of the liquid released
        - Quantity of liquid in to the water, and on deck
        - The location of the spill
        - The immediate action taken
        - Preventative measures put in place
        - Name and contact details of the Master
        - Wind direction and speed
41. The Licensee shall also submit a report as per Section 62(5) of the National Ports Act to the Port Authority within 24 hours of the start of the incident.
42. Any spills detected must be cleaned up immediately and disposed of at an appropriate landfill site by the Licensee to the satisfaction of the Port Authority and any other relevant competent authorities.

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43. Bunkering operations must be performed diligently, safely and without deliberate or undue delay.
44. During operations the Licensee shall ensure that all necessary measures are taken to prevent fuel spillage into the waters of the Port, or onto the quayside.
45. A SOPEP detailing all spill and pollution control measures shall be submitted to the Port Authority upon request.
46. The manifold(s) of bunker vessels shall be protected from potential leakages with the use of a save-all to contain any spill. A gutter plate shall also be provided on the main deck to contain any spill on deck.
47. The bunker vessel shall be provided with an adequate fender system which minimizes damage to the receiving vessel during bunkering.
48. The bunker vessel shall carry antipollution equipment, absorbents and approved dispersants at all times. Note: Oil spill dispersant may not be used without the prior approval of the Harbour Master.
49. The bunker vessel shall be of double hulled construction.
50. Bunkering during the hours of darkness may only be undertaken following the receipt of written approval from the Harbour Master.
51. The bunker checklist shall be in accordance with the minimum requirements as stipulated in the latest version of ISGOTT.
52. The responsible person completing the checklist shall be the Officer carrying out the bunkering operation.
53. The vessel's representative shall personally check all considerations lying within the responsibility of the vessel.
54. Similarly, all considerations which are the barge's responsibility shall be personally checked by the barge representative. In fulfilling their responsibilities, representatives shall assure themselves that the standards of safety on both sides of the operation are fully acceptable. This shall be achieved by:

    a) Confirming that a competent person has satisfactorily completed the checklist
    b) Sighting appropriate records
    c) By joint inspection, where deemed appropriate.

55. The Bunkers Convention 2001 establishes strict liability on ship owners for preventative measures and pollution damage arising from all types of oil used in the operation of propulsion of ships. Owners of ships carrying more than 1,000 tons of persistent oil in bulk which trade into a State Party to this Convention are required to maintain insurance to cover their limit of liability.
56. Vessels are not permitted to enter or leave the Port unless they carry a valid certificate in respect of insurance under the Bunkers Convention. Failure to do so will render the ship liable to detention. Upon request, the Licensee shall produce the stated certificate to the Port Authority.
57. Appropriate Environmental pollution insurance is also to be procured and maintained by the Licensee.
58. All bunker barge operations outside the breakwater will require approval from SAMSA prior to TNPA approval including all other regulatory approvals as required.

59.1 **Risk Assessments**

59.1.1 A risk assessment of the bunkering operation including risk to personnel and the environment shall be conducted in accordance with ISO/TS 18683:2015

59.1.2 The risk assessments shall be carried out by a team of suitably qualified and experienced individuals representing different disciplines including adequate expertise and experience in risk assessment techniques for LNG applications.

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59.1.3 Both qualitative and quantitative risk assessments, as described below, shall be conducted with professional guidance of an external risk assessment expert in order to ensure an appropriate quality and outcome of the risk assessment.

59.1.4 The qualitative risk assessment shall be conducted with regard to risk to personnel and the environment.

59.1.5 The quantitative risk assessment shall be conducted with regard to the risk during operations and is to include relevant engineering processes specific to the bunkering operations.

59.1.6 The main steps in the risk assessment as per ISO/TS 18683:2015 shall be to:

a) identify what can go wrong (hazard identification (HAZID))
b) assess the effect (consequence and impact assessment)
c) assess the likelihood (frequency assessment), and
d) decide if the risk is tolerable, or identifying risk reducing measures.

59.1.7 The main steps in a qualitative risk assessment shall consist of the following:

a) Definition of a study basis (see ISO TS 18683 for reference).
b) Hazard identification (HAZID) review, which shall be performed as a workshop with the purpose of identifying hazards and assess the risks using a risk matrix (see ISO TS18683 for reference)
c) Determination of safety zones and security zones (see ISO TS 18683 for reference)
d) Documentation of the HAZID and qualitative risk assessment in a report (see ISO TS18683 for reference).
e) Risk levels in a qualitative risk assessment are to be estimated in relative terms such as high or low or ranked on a scale, for example from 1 to 5
f) The risk levels are to be shown by a risk matrix which indicates a level of risk associated with a specific combination of probability and consequence.

59.1.8 A QRA is a formalized statistical risk assessment method where risk levels are calculated in absolute quantitative terms. The risk levels are compared with defined risk acceptance criteria as per ISO TS 18683. The risk acceptance criteria is expressed as individual risk (IR), i.e. the probability of being killed (or harmed at a certain level) on an annual basis from all hazards.

59.1.9 The QRA shall demonstrate that the risk is acceptable. In addition, acceptance is required by all parties.

59.1.10 The QRA shall be conducted by usage of recognized modelling tools where frequencies and consequences of each modelled event can be calculated and combined to measure the overall risk.

59.1.11 The main objective in a quantitative risk assessment shall be to:

a) Confirm safety zones
b) Demonstrate that overall safety targets are met
c) Evaluate and select safeguards and risk reducing measures

59. Instructions given in ISO/TS 18683:2015 shall be used for detailed guidance on the requirement and application of risk assessments for LNG bunkering.

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LNG BUNKERING

60. The FSU must comply with all applicable legislation, regulatory and governance approvals and as well as the Harbour Masters Written instruction in this regard.

HAZARDOUS AREAS

61. Hazardous area, are to be classified in accordance to IEC 60079-10-1:2015, which are a three-dimensional area in which an explosive gas atmosphere is or may be expected to be present in quantities such as to require special precautions for the construction, installation and use of equipment.
62. Hazardous areas are classified into three zones based upon the frequency of the occurrence and duration of an explosive gas atmosphere, as per below:

    a. Zone 0 – an area in which an explosive gas atmosphere is present continuously or for long periods or frequently
    b. Zone 1 – an area in which an explosive gas atmosphere is likely to occur in normal operation
    c. Zone 2 – an area in which an explosive gas atmosphere is not likely to occur in normal operation but, if it does occur, it will exist for a short period only.

63. The hazardous area zones are defined for:

    a. The receiving ship in accordance with the IGF Code
    b. The bunkering ship in accordance with the IGC Code and where gas may be present as a result of the bunkering operation

SAFETY ZONES AND SECURITY ZONES

64. In accordance with to ISO/TS 18683:2015 a safety zone and security zone shall be established around the bunkering station/facilities. These zones are in addition to the hazardous areas. Both the safety and security zones shall be enforced and monitored at all times during bunkering.
65. Prior to all LNG bunkering operations, a safety zone shall be established around the bunkering station/facilities to control ignition sources and ensure that only essential personnel and activities are allowed in the area that could be exposed to a flammable gas in the event of an accidental release of LNG or natural gas during bunkering
66. The safety zone shall never be zero and never be less than the hazardous areas and/or the minimum distance defined by authorities from any part of the bunkering installation.
67. In ISO/TS 18683:2015 there are two different approaches to determine the safety zone distance:

    a. deterministic approach - calculating the distance to LFL based on a maximum credible release
    b. risk-based approach (also referred to as probabilistic approach).

68. If using a deterministic approach, the safety zone, as per ISO/TS 18683:2015, is to be defined as the area within the distance to LFL as determined by a recognised and validated dispersion model for the maximum credible release
69. The maximum credible release scenario shall take into account at least the following:

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a. the characteristics of the bunkering facility
b. factors specific to the bunkering operation such as transfer rate and inventory in the bunkering facilities, properties of the LNG in the bunkering system (temperature, pressure), weather conditions etc.
c. mitigation measures that are implemented.

70. If using the probabilistic approach by performing a quantitative risk assessment (QRA) as per ISO/TS 18683:2015, a smaller safety zone may be the result compared to using the deterministic approach. The risk assessment shall address all hazard and release scenarios.
71. Appropriate risk acceptance criteria are to be utilized
72. The Following restrictions apply during the bunkering operations in the safety zone if not otherwise agreed with the Port Authority:

    a. Smoking is strictly prohibited
    b. Ignition sources including naked lights, mobile phones, cameras and other non-certified portable electrical equipment are strictly prohibited
    c. Cranes and other lifting appliances not essential to the bunkering operation are not to be operated
    d. Other possible sources of ignition shall be eliminated
    e. No ship or craft shall enter the safety zone, except if authorized by the Port Authority
    f. Only authorized personnel shall have access to the safety zone, provided they are fitted with appropriate personal protective equipment (PPE) and portable gas detectors.

73. The security zone is site dependent and is set based upon ship/port specific operations. The size and location of the security zone is to established based on the findings from the risk assessment
74. The security zone, as per ISO/TS 18683:2015, is an area where movement such as ship traffic and other activities such as shore-side operations need to be monitored and controlled during bunkering to prevent possible incidents. The security zone shall always be larger than the safety zone. The security zone may also be referred to as the "exclusion zone".

HANDLING OF LNG WITHIN PORT LIMITS – OUTSIDE THE BREAKWATER

75. Notification of LNG bunkering to the Port shall be performed prior to any LNG bunkering operation by the LNG bunker vessel.
76. The pre-notification time is to be determined and agreed on, on a case by case basis. The notification shall at least include:

    a. The location where the LNG bunkering will take place
    b. The quantity of LNG which will be bunkered
    c. The time of commencement of the LNG bunkering

77. During LNG bunkering, the receiving vessel shall fly the international signal flag "B" between sunrise and sunset, and an all-round red light between sunset and sunrise.
78. Applicable Safety signage, including that smoking, naked flame and access by unauthorised persons are prohibited shall be clearly visible when LNG transfer operations are in progress.
79. The safety distance at sea side for passing vessels during LNG bunkering operation is to be determined and agreed on, on a case by case basis. LNG bunkering shall be stopped if a vessel or craft interferes with the safety distance, the safe distances shall not be less than 500m

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80. It is the responsibility of the Master(s) to ensure that the vessel(s) is/are securely moored in accordance with agreed mooring plans.
81. It is forbidden to have more than one LNG bunker vessel alongside the receiving vessel
82. LNG shall be bunkered without release of LNG or natural gas in normal operation. As per the IGF Code, the bunkering system shall be arranged so that no gas is discharged to the atmosphere during filling of storage tanks.
83. Appropriate PPE for the LNG bunkering operation shall be used by all involved personnel
84. No Simultaneous operations are allowed without the express permission of the Harbour Master and in conjunction with the appropriate risk assessments
85. Weather conditions (including wind force, sea state, and lightning) are to be closely monitored by both the bunker barge and the receiving vessel. If the weather conditions exceed the agreed weather restrictions as per the operations manual, the hoses and arms shall be drained, purged and disconnected.
86. LNG bunker operations shall immediately be suspended and all systems secured on the approach of an electrical storm.
87. All personnel involved in handling of LNG and cryogenic equipment shall use appropriate personal protective equipment (PPE) for the LNG bunkering operation. All personnel shall be trained in the proper use of PPE.

88. The PPE shall include, but is not limited to:

    a. Protective cryogenic gloves
    b. Tightly fitting safety googles and safety face shield with side protection
    c. Clothing shall be fully body comprehensive, flame resistant, cryogenic retardant and have visibility markings
    d. Safety shoes
    e. Safety helmet
    f. Life jacket must be worn when working on berths or piers or where there is a risk of falling into the water
    g. Hearing protection (to be easily accessible)
    h. Other PPE as required for health reasons – Covid19

EMERGENCY SHUT-DOWN SYSTEM (ESD SYSTEM)

89. The functions of the emergency shutdown system (ESD system) shall be to stop liquid and vapour transfer in the event of an emergency and to bring the cargo/bunker transfer system to a safe condition.
90. The emergency shutdown process is to be divided into two stages as per SIGTTO requirements:

    a) **ESD-1** emergency shutdown stage 1 - shuts down the transfer operation in a quick controlled manner by closing the shutdown valves and stopping the transfer pumps and other relevant equipment in ship and shore systems. The activation of ESD-1 shall give both visual and audible alarms.
    b) **ESD-2** emergency shutdown stage 2 – shuts down the transfer operation (ESD-1) and uncouples the bunker hose/loading arms after closure of both the emergency release system (ERS) isolation valves.

91. A **linked ESD system** transmits ESD signals from the receiver to the supplier or vice versa via a compatible system. As per SIGTTO (2009), the primary function of a linked ESD system

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is that the receiving party can shut down the transfer process in a safe and controlled manner, avoiding the risk of ending up in a situation where the only option is to shut valves against an incoming flow of liquid.

92. Both the bunkering bunker vessel and the receiving vessel shall be equipped with an emergency release system (ERS) and a linked ESD system, as per ISO 20519:2017, in order to perform LNG bunkering operations
93. The Master of the receiving ship retains control for the safe operation of the ship throughout the bunkering operation. The master has the right to terminate the process if the bunkering operation deviates from the planned and agreed process.
94. It is required that a designated person is appointed, in charge of the bunkering operation (PIC) to be agreed by the receiving ship and the bunkering facility
95. The appointed PIC shall be adequately trained and have an appropriate level of competence to ensure safe bunkering operations.
96. The PIC shall be responsible for the bunkering operation and the personnel involved, ensuring that agreed bunkering operating procedures are followed and that operations comply with all applicable regulatory requirements.
97. The PIC shall be present at all times during the bunkering operation
98. The functional requirements for LNG bunkering systems as defined in ISO/TS 18683:2015 shall be adhered to.
99. The bunkering operations shall be conducted under the control of a recognised Safety, Health and Environment Management System
100. The Licensee shall have written safety, health, and environment management systems in place at all times and shall make these available to the Authority for inspection upon request. Such management systems are to be regularly audited and certified by a body accredited by SANAS

BEFORE BUNKERING

101. A compatibility assessment which takes into account the compatibility of the physical connections as well as bunker control and safety systems, of the bunkering vessel and receiving ship shall be performed prior to the bunkering operation in order to identify any aspect that requires particular attention and management.

102. As per ISO/TS 18683:2015 the compatibility between the operator and ship shall be checked and documented prior to bunkering operations. The check shall include the following:

    a) agreement on quantity and properties of supplied LNG
    b) compatibility of ESD and communication systems
    c) compatibility of manifold flanges
    d) operational window (motions, weather, visibility)
    e) compatibility of hazard zoning and ventilation
    f) spill protection systems
    g) compatibility of safety, health and environment management systems
    h) compatibility of communication procedures and protocols.

103. The compatibility check shall be signed off by both parties prior to the operation
104. Before LNG bunker operations commence, the Master(s) shall:

    a) Agree in writing on the transfer procedures, including the maximum loading or unloading rates
    b) Agree in writing on the action to be taken in the event of an emergency, and
    c) Complete and sign the IAPH LNG Bunker Checklists

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d) Part A ("Pre Operations Checklist") shall be completed during the planning stage of the LNG bunker operations, i.e. before the LNG fuelled ship arrives at the bunker location
e) Once the pre-bunker checklists are completed and signed, they are considered to be a permit to commence the bunkering operation
f) The operation may need to be suspended or stopped if conditions change.

DURING BUNKER TRANSFER

105. Agreements on items to be re-checked at appropriate intervals in the bunker checklists shall be followed by all parties and the record of repetitive checks shall be signed accordingly.
106. The bunker operation shall be safely and continuously monitored by supervision of dedicated personnel, including but not limited to:

a) Mooring arrangement
b) Transfer rate, topping up rate, vapour management
c) Tank conditions (temperature, pressure, level)
d) Leaks
e) Hose connections
f) Safety and security zone (only essential authorised personnel to be allowed in the safety zone during bunkering)

107. If any issues are detected during the bunker transfer, the transfer shall be stopped immediately and not resumed until satisfactory checks and any necessary corrective actions have been completed.

AFTER BUNKER TRANSFER

108. The final part of the LNG Bunker Checklist, contains the considerations to be made after the LNG bunker operations for the disconnecting of the bunker connections and finishing the total operations.

LNG BUNKER SUPPLIER ACCREDITATION SYSTEM

109. All bunkering operations within the port area are subject to the Port Rules and shall be aligned with the Ports Environmental requirements.

GENERAL REQUIREMENTS

110. The Port Authority shall approve each site where LNG bunkering is performed.
111. An application for a bunkering location must include a risk analysis for the intended location, with surrounding areas, and the types of ships referred to be bunkered.
112. Risk assessment for the LNG bunker operation must be performed according to ISO/TS 18683:2015 or equivalent, and is to be approved by the Port Authority.
113. All equipment and systems used for the LNG transfer shall fulfil the requirements of ISO 20519:2017, or equivalent, to be approved by the Port Authority.

BUNKER VESSEL CRITERIA

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114. In order for an LNG bunker vessel to be approved to perform LNG bunkering, the following conditions must be met:

a) The bunker vessel shall be designed and built according to the IGC Code
b) Equipped with a linked ESD system designed to conform to the requirements specified in the arrangements and Linked Ship/Shore Systems for Liquefied Gas Carriers, as per ISO 20519:2017.
c) The vessel shall have a safe bunkering procedure, which is carried out according to the approved International Safety Management (ISM) manual on-board.
d) The bunkering vessel shall have defined hazardous zone(s).
e) Training of personnel is to be in accordance with ISO 20519:2017.
f) The vessel shall be inspected in accordance with the OCIMF SIRE program at least every six months and have no large deviations.
g) All safety, construction and manning certificates will be kept valid at all times.

RECEIVING VESSEL CRITERIA

115. To approve an LNG fueled vessel for LNG bunkering the following requirements shall be met:

a) The vessel shall fully comply with the IGF Code
b) Ships with keel laid before 1 July 2017 to be approved by the flag state and the Port Authority
c) Equipped with a linked ESD system designed to conform to the requirements specified as per the ESD Arrangements & Linked Ship/Shore Systems for Liquefied Gas Carriers, as per ISO 20519:2017
d) The vessel shall have a safe bunkering procedure, which is carried out according to the approved ISM manual on-board.
e) The receiving vessel shall have defined hazardous zone(s).
f) Training of personnel is to be in accordance with ISO 20519:2017.

EMERGENCY PROCEDURES

116. In the event of an emergency during bunkering, emergency communication shall take place by contacting Port control. The following information shall be included in the emergency call:

a) The name of the ship(s)
b) What has happened
c) Where it has happened
d) The number of persons injured and the nature of the injuries
e) The type of assistance required

117. Measures to be taken in case of fire or emergency on board:

a) Make an emergency call immediately
b) Cease all cargo/bunker operations
c) Start firefighting measures
d) Disconnect loading arms/bunker connections

118. Measures to be taken in case of fire or emergency on another vessel:

a) Make an emergency call
b) Stand by to cease all cargo/bunker operations

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c) Wait for additional instruction from Port Authorities

AN EMERGENCY RESPONSE PLAN MUST BE IN PLACE AS PER ISO TS 18683:2015

119. Emergency response planning shall include provisions to ensure that local authorities and emergency services are aware of the potential risks associated with LNG bunkering.
120. In accordance with ISO/TS 18683:2015, a contingency plan shall be in place outlining the requirements for the following:
    a) evacuation of personnel and third parties
    b) mobilising fire-fighting
    c) mobilising first aid, hospitals and ambulances
    d) communication to authorities and third parties.
121. In addition to the above, the following emergency situations shall be covered:

    a) LNG leakage and spill
    b) Emergency evacuation of LNG in tanks and system
    c) Gas detection
    d) Fire in the bunkering area
    e) Unexpected movement of the vessel(s)
    f) Unexpected venting on the receiving ship or on the bunkering facility
    g) Loss of power

122. The contingency plan shall be communicated to all parties involved in the bunkering operation including the planned emergency response team
123. The role and responsibility of the respective actors shall be clearly stated
124. Practice drills shall be carried out at regular intervals with the participation of all actors involved.
125. Relevant personnel shall have undergone training in fighting gas fires, treatment of cryogenic burns etc.
126. All personnel involved with LNG Bunkering must receive the appropriate. Training as per the IGF code or flag state requirements, ISO TS 18683:2015 minimum requirements to be in the training.

LNG BUNKER CHECKLISTS – IAPH

127. It is required that the LNG Bunker Checklists developed by the "International Association for Ports and Harbours is utilized as the minimum requirement.
128. Before LNG bunkering commences, it shall be ensured by the LNG receiving ship and the LNG bunker ship, that the LNG bunker checklist has been completed fully, positively and truthfully, and signed by the persons responsible for the LNG bunkering of the involved parties.
129. The parties involved in the LNG bunkering operation shall comply with the provisions of the LNG bunkering checklist.
130. The LNG bunkering operation shall be stopped immediately if the provisions in the LNG bunkering checklist for each party involved in the LNG bunkering are not observed.
131. The LNG bunker checklist shall be kept on board the ships involved in the LNG bunkering during and up to 12 months after the end of the LNG bunkering operation.
132. LNG bunker weather restrictions – Weather, environment, traffic density if outside the breakwater within port limits to be detailed in operations manual.

AMENDMENT, SUSPENSION, WITHDRAWAL OR CANCELLATION

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133. The Authority may on good cause shown, including the breach of any one or more of these conditions, at any time suspend, withdraw or cancel this licence provided it follows a fair procedure before such a decision is taken. The Authority may also on good cause shown temporarily suspend any operation due to any unsafe acts.

134. The Authority may also amend the conditions contained in this licence provided that, prior to making a decision to amend, the Authority does indicate the reasons why it considers it necessary to amend the conditions and affords the licensee a reasonable opportunity to make representations as to why the conditions should not be amended.

135. The Licensee shall have no claim against the Authority arising out of the suspension, withdrawal or cancellation of the licence or the amendment of the conditions, but shall be entitled to receive written reasons from the Authority in terms of the law.

ABBREVIATIONS

1. ESD – Emergency Shut Down
2. HAZID – Hazard Identification
3. IAPH – International Association of Ports and Harbours
4. IGC Code – International Code for the Construction and Equipment of Ships carrying Liquefied Gases in Bulk
5. IGF Code – International Code of Safety for Ships using Gases or other Low Flashpoint Fuels
6. ISM – International Safety Management Code
7. LFL – Lower Flammability Limit
8. PIC – Person In Charge
9. PPE – Personal Protective Equipment
10. QualRA – Qualitative Risk Assessment
11. QRA – Quantitative Risk Assessment
12. SMS – Safety Management System
13. STCW – The International Convention on Standards of Training, Certification and Watch keeping for Seafarers
14. ISGOTT – International Safety Guide for Oil Tankers and Terminals
15. ISPS – International Ship and Port Facility Security Code
16. SANAS – South African National Accreditation System
17. SDS – Safety Data Sheet
18. MARPOL – The International Convention for the Prevention of Pollution from Ships
19. SIGTTO – The Society of International Gas Tankers and Terminal Operators
20. ISO/TS 18683:2015 – Guidelines for Systems and Installations for Supply of LNG as Fuel to Ships

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21. IEC 60079-10-1:2015 – International Electro-Technical Commission - Explosive Gas Atmospheres
22. LNG – Liquefied Natural Gas
23. FSRU – A special type of ship used for LNG transfer which is capable of transporting, storing, and regasifying LNG onboard.

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