



LNG Truck Loading Services
Technical Requirements & Approval Procedure for
Trucks/LNG Tanks & Drivers

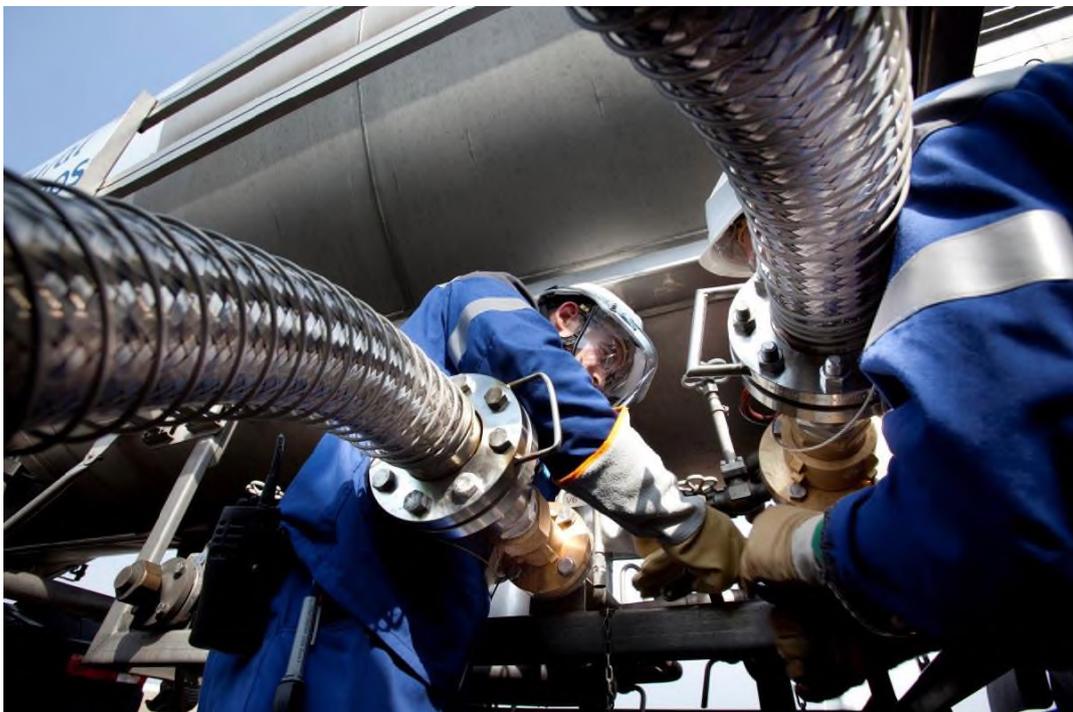


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1. INTRODUCTION

The scope of this document is to provide the technical and legal requirements that Trucks/LNG Tanks & Drivers must meet to be allowed to load LNG in DESFA's Truck Loading Facility (Photo 01) at Revithoussa LNG Terminal.

Furthermore, is described the compatibility procedure for Trucks/LNG Tanks & Drivers and the necessary documents that must be provided by the involved entities.

To allow interoperability between other loading stations in other countries, standards for Trucks and LNG Tanks Semitrailers are according to the latest state of the art and accomplishing every regulation neither local, national, from the EU and the ADR from the UN.



Photo 01: DESFA S.A. LNG Terminal - Truck Loading Facility

2. ABBREVIATIONS

ADR Accord Dangereux Routier (European regulations concerning the international transport of dangerous goods by road)

AISI American Iron and Steel Institute

ANSI American National Standards Institute

ASME American Society of Mechanical Engineers

ASTDG Advisors for Safe Transportation of Dangerous Goods

BF Blind Flange

BOG Boil Off Gas

CBC Cryogenic Breakaway Couplings

DESFA Hellenic Gas Transmission System Operator

EU European Union

EN European Standards

GGI Government Gazette Issue (ΦΕΚ)

IMDG International Maritime Dangerous Goods Code

IMO International Maritime Organization

ISO International Organization of Standardization

LNG Liquefied Natural Gas

MLI Multi-Layer Insulation

P&ID Piping and Instrumentation Diagram

PSTDG Plan for Safe Transport of Dangerous Goods

SORF Slip on Raised Face (Pipe Flanges)

SRV Safety Relief Valve

TI Temperature Indicator

TLF Truck Loading Facility

TLS Truck Loading Service

TPED Transportable Pressure Equipment Directive

UN United Nations

3. CODES AND STANDARDS

The main codes, their requirements must be fulfilled by Trucks/LNG Tanks, are:

- ADR:

Latest adaptation to the Greek legislation ADR – 2021: Common Ministerial Decision
Γ5/145078/2021 – GGI.3202/B/21.07.2021

- TPED, based on ADR provisions:

Latest adaptation to the Greek legislation: Common Ministerial Decision
12436/706/05.09.2011 – GGI.2039/B/13.09.2011

- IMDG code T75 for containers or IMO for semitrailers.

- Directive 2014/103/EU:

For the 3rd adaptation of Annexes to Directive 2008/68/EC - requirements for pressure vessels

Adaptation to the Greek legislation: Common Ministerial Decision 12436/706/05.09.2011 –
GGI.2039/B/13.09.2011

▪ Directive 2014/68/EU, transportable pressure equipment:

Adaptation to the Greek legislation: Common Ministerial Decision
74124/ΔTBN/1431/12.07.2016 – GGI.2278/B/22.07.2016

▪ EN and compatible to EN International standards for the different components of the vessels

4. TLF MAIN CHARACTERISTICS

Loading Bay	1 Semi-Automated
LNG Maximum Flow Rate	100 m ³ /hour
Operational Flow Rate	80 m ³ /hour
Maximum Working Pressure	10 barg
Operational Pressure	3-5 barg
Weighbridge	Upstream Loading Bay
LNG Interconnection	<ul style="list-style-type: none"> ▪ MannTek CBC Unit 3"-3" ANSI Cl.300 <i>for LNG supply to trailer. Part No: MC462C44</i> ▪ MannTek CBC Unit 2"-2" ANSI Cl.300 <i>for BOG return from trailer. Part No: MC258C44</i>

5. TRUCKS/LNG TANKS

5.1 PRINCIPAL CHARACTERISTICS

Special Trucks/LNG Tanks with maximum working pressure 3 barg and 7 barg are to be used for the transportation of LNG. In the following table are described their main characteristics.

Maximum Working Pressure	3 barg	7 barg
Design Transport	ADR/TPED	
Geometric Capacity (lit)	58.000	
Net Capacity (95%) (lit)	55.100	
Isolation Type	MLI Super insulation + Vacuum	
Semi-Trailer Tare Weight (kg +/- 2%)	12.300	13.450
Payload (kg)	20.200	19.050
Gross Weight (kg)	40.000	
Maximum Semi-Trailer Length	14.040 mm	
Maximum Semi-Trailer Width	2.550 mm	
King Pin Height	1.140	

5.2 INNER TANK

Material	Stainless Steel 304
Inspection by a Certified Entity	According to EN ISO/ IEC 17020 Type A
Design Code	ADR/TPED (CE) EN 13530
Design Temperature	- 196°C
Radiography Extent	100%
Inner Baffles	7
Piping between Inner and Outer Vessel	Stainless Steel Type AISI 304
Security Valves	2+1 Units

5.3 OUTER TANK

Design Code	ADR/TPED (CE)
Isolation	MLI Super Insulation + Vacuum
Material	Carbon Steel or Stainless Steel
Outer Diameter	2.550 mm

5.4 PIPING

Media Pipes	Stainless Steel
Instrument Tubes	Stainless Steel
Tank Safety RV	2 SRV x 1
Safety Line Valves	Between the Valves
Filling/ Discharging Coupling	<ul style="list-style-type: none"> ▪ Flange Liquid Phase 3" SORF 150 lb. ASME B16.5 +BF ▪ Flange Gas Phase 2" SORF 150 lb. ASME B16.5 +BF
Valves (Liquid Loading and Unloading)	According to Directive 2014/68/EU
Valves of Purging and Safety	Conduction to Vapor Lines

Material certificates for the piping parts should be at least according to EN 10204- 3.1

5.5 INSTRUMENTATION

Truck/LNG Tanks shall be equipped with (at least) the instruments depicted in the following table.

Pressure Manometer Range	0-20 barg
Level Gauge Range with Try-cock Valve. (At maximum allowable filling level)	0-100%
Temperature Check	LNG TANK TI*
Vacuum Sensor Range	0.1 m Torr -1000 Torr
Emergency Buttons	3 in total At front, rear, in the cabinet
Earth Connection	Inside the Valve Cabinet or nearby

*Alternatively, submission of a declaration that will state the LNG Tank has been Cooled Down properly.

5.6 TRAILER/BOOGY SYSTEM/ACCESSORIES

Vehicle Regulation	ADR/TPED
Electrical Wires and Boxes	IP65 EN 60529, one front, one rear 15 Pin connection ISO 7638
Plates	ADR flow diagram inside
Lights	ADR
PVC Toolbox	2 Units type PVC
Earth Reel	1 Unit 15m self-coiling
Earth Point on Chassis	2 Units
Landing Gear	Capable of supporting the Tank at Full Load (JOST Type)
Fire Extinguisher	2 Units x 6 kg fixed with Supports

SIGNS
Holder Plate at rear position
1 Support for Product Number
3 Diamond Plates, 2 at each side, 1 in rear tank
ADR Plate

5.7 TESTS AND INSPECTION REQUIREMENTS

Inspection requirements for Trucks/LNG Tanks have as follows:

- Trucks/LNG Tanks must provide inspection certificates from a renowned accredited Third-Party Inspection company that covers materials, welding, construction procedures and tests. All certifications should be in accordance with European Regulations.
- ADR certification

The following tests are mandatory subjects to review by DESFA: Vacuum test, hydraulic test and sealing, operating test.

Furthermore, a safety impact analysis report based on the finite element method should be provided analyzing the behavior of both the outer and inner tank in the event of severe accidental impacts in two cases:

- Side impact halfway the length of the Trucks/ISO Tanks or ISO Tank Container by a force of 110 kN with a dynamic effect factor of 1.4, in its weakest area
- Overturning impact: upon impact with the road surface during overturning exposed to a force of 500 kN (50 ton) over its full length and a width of 0.800 m along the whole length of the tank, i.e., the part of the outer tank surface in full contact surface with the flat road surface.

6 DRIVERS

Only Drivers with sufficient experience with ADR transportation of LNG or other cryogenic liquids which are ADR – classified and at least equally hazardous as LNG can be allowed to enter the TLF.

A Driving License and ADR License, in force, must be provided by the driver.

The language used in communication between Driver and TLF Operator will be Hellenic or English.

Prior to the first truck loading operation at the TLF of Revithoussa LNG Terminal, the Driver shall receive a safety briefing (app. 1 hour) to familiarize with the specific features of TLF with special focus on the safety aspects, including the site emergency procedures and the active protection equipment.

7 TRANSPORTATION COMPANIES

The Transportation Company must be an authorized entity for activities in transportation of dangerous goods.

For these activities must have ISO 9001 Quality certificate or equivalent.

Furthermore, in accordance with the relevant legislation must have designated, one or more ADR ASTDG Advisors, responsible for the avoidance of risks inherent in such activities with respect to persons, environment and property and provide a PSTDG.

8 APPROVAL PROCEDURE

Following the conclusion of the Framework Agreement between DESFA and the TLS User, the latest can request an approval for the following entities, necessary for the performance of TLS:

- 1) The Truck/LNG Tanks
- 2) The Driver
- 3) The Transportation companies

The Data/Certificates requested are based on the relevant National/International Directives/Regulations applying in the Transportation of Hazardous Liquids like the LNG as mentioned in Chapter 3 of this document.

The general approval procedure for all the above entities is the same but independent from each other.

TLS User must fill and submit the Compatibility Approval Checklist Declaration (APPENDIX I) sending and uploading all the information and documentation requested, declaring responsibly and accurately the suitability of the specifications of his equipment for entering in the TLF. This is a prerequisite for initial authorization by DESFA LNG Terminal.

The final authorization will take place at the loading bay of the TLF in Revithoussa LNG terminal.

(e-mail to: c.silamianos@desfa.gr, cc: a.nastos@desfa.gr)

DESFA will review and give the final approval. Once DESFA approves the new entity, the latest can be used for a loading slot. The estimated lapse between the request and the approval is 96 hours.

It is common the Trucks and Drivers to have Certifications/Documents with an expiration date. These documents must be renewed before their expiration date and submitted again via the same path to DESFA for approval, otherwise the entity will not be accepted and will be rejected from the list with the relevant eligible entities. In that case, the reassessment of the entity will start from the very beginning.

In details the following documents must be issued for the Approval Procedure:

1) Truck/LNG Tanks

- License Plate
- Owner: The ID of the transporter that owns the truck
- Max. Weight: Maximum Net Weight
- Max. Capacity: Maximum Gross Volume
- Number of Axes
- Official Tare Weight
- Type: (Truck/LNG Tank or ISO Tank Container Semi-Trailers)
- Pictures of the Truck/LNG Tank
- ADR Certificate
- ADR Technical Inspection Certificate
- Insurance Certificate
- Technical Data and P&IDs (e.g., Maximum Volume, Maximum Pressure, Measurement Equipment, Safety System to prevent Overfilling, Set Point of the Relief Valves and Try-

Cocks as a function of the Filling Level, Safety Valves Certification), Vacuum Test, Hydraulic Test and Sealing, Operating Test, Location of the Flanges and Dimensions (pictures), Safety Impact Analysis Report

- Emergency Plan
- LNG Tank Cool-Down procedure with LNG.
- Any other information is deemed helpful for the Compatibility Procedure.

It is in the discretion of TLF Operator to carry out an on – Site Inspection of the Truck/LNG Tank before the approval by appointing an ADR Advisor.

2) Driver

- Identification Documents
- Driving License
- ADR Certificate
- Training Certificate
- Professional Curriculum demonstrating sufficient experience or certification in SS LNG Facilities and ADR Transportation of LNG or other Cryogenic Liquids which are ADR-Classified and at least equally hazardous as LNG.

The first successful LNG Truck Loading Service Operation of a user at TLF shall be considered as a Truck Loading Certification Test of the Truck/LNG Tank & Driver.

Personal data of Truck/LNG Tank Drivers are processed in compliance with the applicable data protection laws. Those are sent to internal and external recipients only for the purposes described herein and to the extent necessary. DESFA SA takes appropriate technical and organizational measures to ensure the security of the processing of such personal data. Further information is provided to the drivers through the respective private notices (APPENDIX II).

3) Transportation companies

- ISO certificate
- Plan for Safe Transportation of Dangerous Goods (PSTDG), elaborated by an appointed ADR Advisor

After examination of the aforementioned information, the LNG (TLF) Terminal Representative will draft an interface study or checklist to pronounce the approval of the compatibility submission of Truck/LNG Tanks, Drivers & Transportation companies.

Any technical change that may occur to the LNG Truck/Tank due to damage or repair should be necessarily notified to the LNG Terminal TLF Representative to review the compatibility study.

10 APPENDIX II - TLS PRIVACY NOTICE

This notice is about the processing of your personal data by DESFA, a Société Anonyme, with headquarters at 357-359 Messogion Avenue 152 31 – Halandri, Greece, Tel.: (+30) 213 0884000, Email: desfa@desfa.gr (“Company” or “We”) in the context of truck loading service (TLS) management at the truck loading facility (TLF) in Revithoussa LNG Terminal. It explains what information we collect about you and for which purposes, how we will use that information, who we will share it with, and what steps we will take to make sure it remains private and secure.

1. WHAT DATA WE COLLECT

CATEGORIES OF PERSONAL DATA	INDICATIVE EXAMPLES
Personal Details	Name / Surname
Communication Data	Telephone Number / Address
Identification Data&	Personal Identification Card
Certification Data	Small Scale LNG & ADR Training Certificates, CV.

2. HOW WE WILL USE YOUR INFORMATION AND WHY

FOR LEGAL BASIS PURPOSES	YES/NO
Legal Obligations	YES – According to ISPS code (International Ship and Port Facility Security)
Legitimate Interest	YES – for HSSE issues (Health Safety Security & Environment)

3. WHO WE MAY SHARE YOUR INFORMATION WITH

Your personal data may be transferred to the following data recipients:

- Service Providers for HSSE issues.
- Public Authorities (Coast Guard & Port Authorities)
- DESFA Commercial Services Division (Driver Name/Surname)

4. SECURITY MEASURES

We have taken appropriate technical and organizational measures to ensure the security of the processing of your personal data and that we keep complying with the applicable data protection laws.

5. HOW LONG WE WILL KEEP YOUR DATA

We will retain and process your personal data only for the period required to pursue the purposes described in this Notice. In this respect, your data will be retained by our Company for 5 years from the end of the year of the last entry control in the terminal.

We may retain your data for a longer period, if this is necessary to defend our rights and lawful interests before any competent court and any other public authority, up to the limitation period of the relevant claims.

6. DATA TRANSFERS OF YOUR DATA

As a rule, we will not process your data outside of the European Economic Area. Should we do so, we will ensure that either derogations or appropriate safeguards of articles 44-50 of the GDPR for the protection of your personal data are in place, especially the standard contractual clauses of the European Commission. We may provide you with a copy of these safeguards upon your request.

7. YOUR RIGHTS

Subject to applicable law, you have the following rights in relation to your personal data we keep:

- **Right to Access** regarding the information we keep about you and process.
- **Right to Rectify** your personal data if they are not accurate or incomplete.
- **The right to Erasure** of your personal data if there is no longer a reason to process them. However, we may continue to process your data if required by law.
- **Right of Objection**, i.e., you can object to any further processing of your personal data if there is no legal reason for such a processing.
- **Right to Restrict** the processing of your personal data by us.
- **Right to Data Portability**, i.e., you can request to send of your personal data to another controller.
- **Right to Object to Automatic Decision Making**, including profiling, which produces legal effects concerning you or similarly significantly affects you.
- **Right to Lodge a Complaint** with the Data Protection Authority (1-3 Kifissia Ave, 11523, Athens, phone: +30 210 -6475600, contact@dpa.gr).

8. CONTACT US

For more information regarding the processing of your personal data as well as to exercise your rights, you can contact the Data Protection Officer ("DPO") of our Company via the following contact email dpo@desfa.gr.