



# Design Appraisal Document

Lloyd's Register EMEA  
Technical Support Office - UK&I Offshore  
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Date  
**23 January 2023**

Quote this reference on all future communications

CLIENT: SFZ S.A.S  
SUBJECT: GENERAL APPROVAL OF EXPANSION JOINT DN250, DN300, DN400, DN450, DN 550  
PRODUCTION: RATTAY DK IN ESBJERG

1. The Documents listed in paragraph 1 of the appendix has been examined for compliance with the design requirements of **Lloyd's Register Rules and Regulations for the Construction and Classification of Ships for the Carriage of Liquefied Gasses in Bulk: July 2018, Lloyd's Register Rules and Regulations for the Classification of Ships, Part 5, Chapter 11, Class 1: July 2018 and ASME Code, Section VIII Division 1:2017**, for the design conditions stated on the plans and are assigned an appraisal status as indicated, subject to the following matters:

## 2. Design Information

Design Pressure	10 bar(g)
Test Pressure	15 bar(g)
Design Temperature	minus 196°C to 250°C
Class	1
Axial movement	12 mm
Fatigue design	Yes - 8000 cycles

## 3. Comments

3.1 It is noted that ASME standards and grade materials are proposed. All pressure retaining materials are to be equivalent to those listed in LR Rules for the Manufacture, Testing and Certification of Materials, Chapter 3, Section 4 for Rolled Steel Plates (or Chapter 5, Sections 7 and 8 for Steel Forgings, or Chapter 6, Sections 2 and 3 for steel pipes), be manufactured at works approved by LR for the equivalent grade and be supplied with LR test certificates as required by LR Rules Part 5, Chapter 1, sub-Section 1.2 and Part 5, Chapter 11, paragraph 1.7.1. AQS

3.2 Should the manufacturer change the design or materials; Lloyd's Register must be advised. Failure to do so will render this General Approval invalid. AQS

3.3 The items referred to in this document is approved for installation on ships classed by Lloyd's Register insofar as the above rules remain applicable and are not amended and subject to the comments made in this design appraisal document. AQS

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3.4 The design pressure is the maximum permissible working pressure and the highest set pressure of any safety valve / over-pressure protection device shall not be more than the design pressure. AQS

3.9 This Marine Design Appraisal Document is valid for a period of 5 years from the date of issue or until a change of the Rules, whichever comes first.

3.10 The Design Appraisal Document supersedes the DAD PRJ1109987728-1 issue 01, issued on 28<sup>th</sup> February 2019. The DAD has been up-revved because of a change in the production facility only and the date of renewal of the DAD is to be considered from the issue date of the original DAD i.e., DAD PRJ1109987728-1 issue 01.

In preparing this report, the undersigned surveyor is acting as an independent person in accordance with the applicable policy on conflict of interests.

**MOHAMMAD FARHAN**

Senior Specialist - Piping and Pressure System  
Technical Support Office  
UK&I Offshore

## Appendix

1. The documents listed below have been examined:

Document No.	Rev.	Title	Status	Date
PC_LTM_0302AAB04206	F	COMPENSATEUR DN250 - EXPANSION JOINT ND 10"	AQ	28 FEB 2019
PC_LTM_0472AAB04215	F	COMPENSATEUR DN450 - EXPANSION JOINT ND 18"	AQ	28 FEB 2019
PC_LTM_0606AAB04215	F	COMPENSATEUR DN550 - EXPANSION JOINT ND 22"	AQ	28 FEB 2019
PC_LTM_0352AAB04215	E	COMPENSATEUR DN300 - EXPANSION JOINT ND 12"	AQ	28 FEB 2019
PC_LTM_0418AAB04215	F	COMPENSATEUR DN400 - EXPANSION JOINT ND 16"	AQ	28 FEB 2019
NC_LTM_0302AAB04206	B	CALCULATION SHEET –DN250	SI	28 FEB 2019
NC_LTM_0352AAB04215	B	CALCULATION SHEET –DN300	SI	28 FEB 2019
NC_LTM_0418AAB04215	B	CALCULATION SHEET –DN400	SI	28 FEB 2019
NC_LTM_0472AAB04215	B	CALCULATION SHEET –DN450	SI	28 FEB 2019
NC_LTM_0606AAB04215	B	CALCULATION SHEET –DN550	SI	28 FEB 2019

2. Documents not mentioned above are not required for appraisal or as supporting documentation and have not been retained.

### Appraisal Status Key

AQ	Approved subject to the matters raised that require resolution - and provided the arrangements are to the surveyor's satisfaction
AQS	Details to be submitted by the client to the local surveyor's Office responsible for surveying the building and the arrangements verified in accordance with the Rule/Regulations requirements by the surveyor.
SI	Retained as supporting documentation for information only