ISO/TS 18683:2015-01 (E)

Guidelines for systems and installations for supply of LNG as fuel to ships

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms,definitions,andabbreviatedterms 2
3.1 Terms and definitions 2
3.2 Abbreviated terms 5

4 Bunkering scenarios 5

5 PropertiesandbehaviourofLNG 7
5.1 General 7
5.2 Description and hazards of LNG 7
5.3 Potential hazardous situations associated with LNG transfer 8
5.4 Composition of LNG as a bunker fuel 8

6 Safety 8
6.1 Objectives 8
6.2 General safety principles 8
6.3 Approach 8

7 Risk assessment 8
7.1 General 8
7.2 Qualitative risk assessment 11
7.2.1 Main steps 11
7.2.2 Study basis 11
7.2.3 HAZID 12
7.2.4 Determination of safety zones 15
7.2.5 Determination of security zones 15
7.2.6 Reporting 16
7.3 Quantitative risk assessment 16
7.3.1 Main steps 16
7.3.2 HAZID 16
7.3.3 Establish study basis 16
7.3.4 Quantitative risk assessment 17
7.3.5 Frequency analysis 17
7.3.6 Risk assessment 17
7.3.7 QRA report 18

8 FunctionalrequirementsforLNGbunkeringsystem 18
8.1 General 18
8.2 Design and operation basis 18
8.3 Compatibility between supplier and ship 19
8.4 Prevention of releases of LNG or natural gas to the atmosphere 19
8.5 Safety 19
8.5.1 General 19
8.5.2 Functional requirements to reduce risk of accidental release of LNG and natural gas 19
8.5.3 Requirements to contain hazardous situations 21

8.5.4 Emergency preparedness 22

9 Requirements to components and systems 22
9.1 General 22
9.2 Available standards for relevant components 22
9.3 Presentation flange and connection 24

10 Training 25

11 Requirements for documentation 26
11.1 General 26
11.2 Compliance statements 26
11.3 Design, fabrication, and commissioning documentation 26
11.4 Operational documentation 26
11.5 Maintenance documentation 27
11.6 Emergency response documentation 27
11.7 Training documentation 27
11.8 Delivery documentation of LNG properties and quantity 28
11.9 Retention of documentation 28

Annex A (normative) Risk acceptance criteria 29

Annex B (informative) Determination of safety zones 31

Annex C (informative) Functional requirements 36

Annex D (informative) Sample ship supplier checklist 38

Annex E (informative) Sample LNG delivery note 44

Annex F (informative) Arrangement and types of presenting connection 45

Annex G (informative) Dry disconnect coupling 46

Bibliography 48