

ISO 19901-7:2013-05 (E)

Petroleum and natural gas industries - Specific requirements for offshore structures - Part 7: Stationkeeping systems for floating offshore structures and mobile offshore units

| Contents | | Page |
|--------------------|---|-------------|
| Foreword | | v |
| Introduction | | vii |
| 1 | Scope | 1 |
| 2 | Normative references | 2 |
| 3 | Terms and definitions | 2 |
| 4 | Symbols and abbreviated terms | 7 |
| 4.1 | Symbols | 7 |
| 4.2 | Abbreviated terms | 8 |
| 5 | Overall considerations | 9 |
| 5.1 | Functional requirements | 9 |
| 5.2 | Safety requirements | 9 |
| 5.3 | Planning requirements | 10 |
| 5.4 | Inspection and maintenance requirements | 10 |
| 5.5 | Analytical tools | 10 |
| 6 | Design requirements | 10 |
| 6.1 | Exposure levels | 10 |
| 6.2 | Limit states | 11 |
| 6.3 | Defining design situations | 11 |
| 6.4 | Design situations | 12 |
| 7 | Actions | 14 |
| 7.1 | General | 14 |
| 7.2 | Site-specific data requirements | 14 |
| 7.3 | Environmental actions on mooring lines | 15 |
| 7.4 | Indirect actions | 16 |
| 8 | Mooring analysis | 18 |
| 8.1 | Basic considerations | 18 |
| 8.2 | Floating structure offset | 19 |
| 8.3 | Floating structure response | 20 |
| 8.4 | Mooring line response | 25 |
| 8.5 | Line tension | 26 |
| 8.6 | Line length and geometry constraints | 26 |
| 8.7 | Anchor forces | 27 |
| 8.8 | Typical mooring configuration analysis and assessment | 27 |
| 8.9 | Thruster-assisted moorings | 28 |
| 8.10 | Transient analysis of floating structure motions | 29 |
| 9 | Fatigue analysis | 30 |
| 9.1 | Basic considerations | 30 |
| 9.2 | Fatigue resistance | 30 |
| 9.3 | Fatigue analysis procedure | 32 |

| | | |
|--|--|------------|
| 10 | Design criteria | 37 |
| 10.1 | Floating structure offset | 37 |
| 10.2 | Line tension limit | 38 |
| 10.3 | Grounded line length | 38 |
| 10.4 | Anchoring systems | 38 |
| 10.5 | Fatigue safety factor | 41 |
| 10.6 | Corrosion and wear | 41 |
| 10.7 | Clearances | 42 |
| 10.8 | Supporting structures | 42 |
| 11 | Mooring hardware | 42 |
| 11.1 | Mooring line components | 42 |
| 11.2 | Winching equipment | 43 |
| 11.3 | Monitoring equipment | 43 |
| 12 | In-service inspection, monitoring and maintenance | 44 |
| 12.1 | General | 44 |
| 12.2 | Mobile moorings | 44 |
| 12.3 | Permanent moorings | 44 |
| 13 | Dynamic positioning system | 46 |
| 13.1 | Basic considerations | 46 |
| 13.2 | Design and analysis | 47 |
| 13.3 | Design, test and maintenance | 48 |
| 13.4 | Operating personnel | 48 |
| 13.5 | Determination of stationkeeping capability | 48 |
| 14 | Synthetic fibre rope mooring | 48 |
| 14.1 | Basic considerations | 48 |
| 14.2 | Fibre rope mooring analysis | 49 |
| 14.3 | Fatigue analysis | 50 |
| 14.4 | Creep analysis | 50 |
| 14.5 | Design criteria | 50 |
| 14.6 | Model testing | 51 |
| Annex A (informative) Additional information and guidance | | 52 |
| Annex B (informative) Regional information | | 169 |
| Bibliography | | 176 |