

DIN EN ISO 19901-5:2022-02 (E)

Petroleum and natural gas industries - Specific requirements for offshore structures - Part 5: Weight management (ISO 19901-5:2021); English version EN ISO 19901-5:2021

| Contents | | Page |
|---------------------|--|-------------|
| Foreword | | vi |
| Introduction | | viii |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms and definitions | 2 |
| 4 | Abbreviations | 6 |
| 5 | Principles of weight management | 7 |
| 5.1 | General | 7 |
| 5.2 | Weight management during project lifecycle phases | 7 |
| 5.3 | Weight management objectives | 7 |
| 5.3.1 | Objectives during conceptual design phase | 7 |
| 5.3.2 | Objectives during FEED, detail engineering and construction phases | 8 |
| 5.3.3 | Objectives during operations and decommissioning phases | 8 |
| 5.4 | Illustration of weight versus time | 8 |
| 5.5 | Loading conditions | 9 |
| 5.5.1 | General | 9 |
| 5.5.2 | Typical loading conditions | 9 |
| 6 | Control Weights | 10 |
| 6.1 | General | 10 |
| 6.2 | Purpose | 11 |
| 6.3 | Budget weights and NTE weights | 11 |
| 6.3.1 | Budget Weights | 11 |
| 6.3.2 | Reserves | 11 |
| 6.3.3 | NTE weights | 12 |
| 6.4 | Loading conditions and parameters | 12 |
| 6.5 | Control weights during operations phase | 12 |
| 7 | Weight management during project execution phases | 12 |
| 7.1 | Conceptual design | 12 |
| 7.1.1 | General | 12 |
| 7.1.2 | Predicted weight | 13 |
| 7.1.3 | Conceptual design weight | 13 |
| 7.1.4 | Upper bound weight constraint | 13 |
| 7.1.5 | Weight estimating | 14 |
| 7.1.6 | Key documentation | 14 |
| 7.1.7 | Estimating principles | 15 |
| 7.1.8 | Deliverables | 17 |
| 7.2 | FEED | 18 |
| 7.2.1 | General | 18 |
| 7.2.2 | Weight management plan | 18 |
| 7.2.3 | Weight management procedure | 19 |
| 7.2.4 | Weight reporting | 19 |
| 7.2.5 | Weight checking and verification | 20 |
| 7.3 | Detail engineering | 21 |
| 7.3.1 | General | 21 |
| 7.3.2 | Weight management plan | 21 |
| 7.3.3 | Weight management procedure | 21 |
| 7.3.4 | Weight reporting | 21 |
| 7.3.5 | Weight checking and verification | 23 |
| 7.4 | Construction | 23 |
| 7.4.1 | General | 23 |
| 7.4.2 | Weight database | 23 |
| 7.4.3 | Weight reporting | 24 |

| | | |
|----------|--|-----------|
| 7.4.4 | Weighing of assemblies | 24 |
| 7.5 | Installation and HUC | 24 |
| 7.6 | Operations | 24 |
| 7.6.1 | General | 24 |
| 7.6.2 | Weight management procedure | 24 |
| 7.6.3 | Weight database | 25 |
| 7.6.4 | Legacy weight databases | 25 |
| 7.6.5 | Laydown and storage drawings | 25 |
| 7.6.6 | Decommissioning | 26 |
| 8 | Requirements for suppliers' weight data and weighing of tagged equipment and assembled discipline bulks | 26 |
| 8.1 | General | 26 |
| 8.2 | Submission of weight data | 26 |
| 8.3 | Weighing requirements | 27 |
| 8.3.1 | Equipment | 27 |
| 8.3.2 | Discipline bulks | 27 |
| 8.4 | Weighing procedure | 27 |
| 8.5 | Weighing devices | 28 |
| 8.5.1 | Type of weighing device | 28 |
| 8.5.2 | Calibration of weighing devices | 28 |
| 8.5.3 | Maximum relative uncertainty for weighing devices | 28 |
| 8.5.4 | Capacity of weighing device | 29 |
| 8.5.5 | Spare weighing devices and ancillaries | 29 |
| 8.6 | Witnessing of weighing | 29 |
| 8.7 | Scheduling of weighings | 29 |
| 8.8 | Environmental conditions during a weighing | 29 |
| 8.9 | Weighing operation | 29 |
| 8.10 | Temporary items present during a weighing | 30 |
| 8.11 | Permanent items not installed during a weighing | 30 |
| 8.12 | Weighing certificate | 30 |
| 9 | Requirements for weighing of major assemblies | 31 |
| 9.1 | General | 31 |
| 9.2 | Weighing procedure | 31 |
| 9.3 | Weighing system | 32 |
| 9.3.1 | Load cells | 32 |
| 9.3.2 | Read-out devices | 32 |
| 9.3.3 | Uncertainty of weighing system | 32 |
| 9.3.4 | Calibration of load cells | 33 |
| 9.3.5 | Capacity of weighing system components | 33 |
| 9.3.6 | Spare load cells and ancillaries | 33 |
| 9.3.7 | Hydraulic jacking system | 33 |
| 9.3.8 | Levelness of the assembly during the weighing | 34 |
| 9.4 | Preparations prior to the weighing | 34 |
| 9.4.1 | Notification and witnessing of weighings | 34 |
| 9.4.2 | Environmental conditions during a weighing | 34 |
| 9.4.3 | Weighing prediction report | 34 |
| 9.4.4 | Temporary items during the weighing | 35 |
| 9.5 | Weighing operation | 35 |
| 9.5.1 | Number of results recorded | 35 |
| 9.5.2 | Readings of load cells and level criteria | 36 |
| 9.5.3 | Consistency of results | 36 |
| 9.5.4 | CoG calculations | 36 |
| 9.5.5 | Weighing report | 36 |
| 9.5.6 | Weighing certificate | 37 |
| | Annex A (informative) Commentary | 38 |
| | Annex B (informative) Weighing certificates | 42 |

| | |
|---|-----------|
| Annex C (informative) Example control weight summary | 46 |
| Annex D (informative) Variable weight | 47 |
| Annex E (informative) Example decision-making RAPID matrix | 51 |
| Annex F (informative) Weighing result uncertainty | 53 |
| Annex G (informative) Weight database structure | 56 |
| Annex H (informative) Weight management guidelines for concrete structures | 57 |
| Annex I (informative) Coordinate systems | 60 |
| Annex J (informative) Weight allowances and reserves | 62 |
| Annex K (informative) Weight management competencies | 64 |
| Bibliography | 65 |