

# ISO 19905-1:2012-08 (E)

## Petroleum and natural gas industries - Site-specific assessment of mobile offshore units - Part 1: Jack-ups

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vii
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>2</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>2</b>
<b>4</b>	<b>Symbols and abbreviated terms .....</b>	<b>13</b>
4.1	Symbols .....	13
4.2	Abbreviated terms .....	14
<b>5</b>	<b>Overall considerations .....</b>	<b>15</b>
5.1	General .....	15
5.2	Assessment approach .....	16
5.3	Selection of limit states .....	18
5.4	Determination of assessment situations .....	18
5.5	Exposure levels .....	20
5.6	Analytical tools .....	23
<b>6</b>	<b>Data to assemble for each site .....</b>	<b>24</b>
6.1	Applicability .....	24
6.2	Jack-up data .....	24
6.3	Site and operational data .....	24
6.4	Metocean data .....	24
6.5	Geophysical and geotechnical data .....	25
6.6	Earthquake data .....	26
<b>7</b>	<b>Actions .....</b>	<b>26</b>
7.1	Applicability .....	26
7.2	General .....	26
7.3	Metocean actions .....	27
7.4	Functional actions .....	28
7.5	Displacement dependent effects .....	28
7.6	Dynamic effects .....	28
7.7	Earthquakes .....	28
7.8	Other actions .....	28
<b>8</b>	<b>Structural modelling .....</b>	<b>28</b>
8.1	Applicability .....	28
8.2	Overall considerations .....	28
8.3	Modelling the leg .....	29
8.4	Modelling the hull .....	30
8.5	Modelling the leg-to-hull connection .....	30
8.6	Modelling the spudcan and foundation .....	31
8.7	Mass modelling .....	32
8.8	Application of actions .....	32
<b>9</b>	<b>Foundations .....</b>	<b>35</b>

9.1	Applicability .....	35
9.2	General .....	35
9.3	Geotechnical analysis of independent leg foundations .....	36
9.4	Other considerations .....	39
10	Structural response .....	41
10.1	Applicability .....	41
10.2	General considerations .....	41
10.3	Types of analyses and associated methods .....	41
10.4	Common parameters .....	42
10.5	Storm analysis .....	44
10.6	Fatigue analysis .....	47
10.7	Earthquake analysis .....	47
10.8	Accidental situations .....	47
10.9	Alternative analysis methods .....	48
11	Long-term applications .....	48
11.1	Applicability .....	48
11.2	Assessment data .....	48
11.3	Special requirements .....	49
11.4	Survey requirements .....	50
12	Structural strength .....	50
12.1	Applicability .....	50
12.2	Classification of member cross-sections .....	51
12.3	Section properties of non-circular prismatic members .....	52
12.4	Effects of axial force on bending moment .....	53
12.5	Strength of tubular members .....	53
12.6	Strength of non-circular prismatic members .....	53
12.7	Assessment of joints .....	53
13	Acceptance criteria .....	54
13.1	Applicability .....	54
13.2	General formulation of the assessment check .....	55
13.3	Leg strength assessment .....	55
13.4	Spudcan strength assessment .....	56
13.5	Holding system strength assessment .....	56
13.6	Hull elevation assessment .....	56
13.7	Leg length reserve assessment .....	56
13.8	Overturning stability assessment .....	57
13.9	Foundation integrity assessment .....	57
13.10	Interaction with adjacent infrastructure .....	58
13.11	Temperatures .....	59
Annex A (informative) Additional information and guidance .....		60
Annex B (normative) Summary of partial action and partial resistance factors .....		238
Annex C (informative) Additional information on structural modelling and response analysis .....		240
Annex D (informative) Foundations -- Recommendations for the acquisition of site-specific geotechnical data .....		250
Annex E (informative) Foundations -- Additional information and alternative approaches .....		256
Annex F (informative) Informative annex on Clause A.12 -- Structural strength .....		269
Annex G (informative) Contents list for typical site-specific assessment report .....		283
Annex H (informative) Regional information .....		290
Bibliography .....		299