ISO/TR 19905-2:2012-12 (E)

Petroleum and natural gas industries - Site-specific assessment of mobile offshore units - Part 2: Jack-ups co mmentary and detailed sample calculation

Contents

Page

Foreword v

Introduction vii

1 Scope 1

2 References 1

3 Terms and definitions 1

4 Symbols 1
4.1 Symbols for Clause 6 1
4.2 Symbols for Clause 7 3
4.3 Symbols for Clause 8 5
4.4 Symbols for Clause 9 6
4.5 Symbols for Clause 10 6
4.6 Symbols for Clause 12 8

5 Commentary on ISO 19905-1:2012, Clauses 5 and A.5 8

6 Commentary on ISO 19905-1:2012, Clauses 6 and A.6 8

TR.6.4.1 Metocean data -- General 8

TR.6.4.2 Waves 8

TR.6.4.3 Current 20

TR.6.4.4 Water depths 20

TR.6.4.5 Wind 21

7 Commentary to ISO 19905-1:2012, Clauses 7 and A.7 24

TR.7.1 Scope 24

TR.7.3.2 Hydrodynamic model 24

TR.7.3.2.1.1 Length of members 24

TR.7.3.2.1.2 Spudcan 24

TR.7.3.2.1.3 Shielding and solidification 24

TR.7.3.2.2 "Detailed" leg model 25

TR.7.3.2.3 "Equivalent" leg model 25

TR.7.3.2.3.1 Equivalent drag coefficient 25

TR.7.3.2.3.2 Equivalent inertia coefficient 26

TR.7.3.3 Wave and current actions 48

TR.7.3.4 Wind actions 57

TR.7.8 Other considerations 57

APPENDIX TR.7.A : Example of equivalent model computations 58

APPENDIX TR.7.B: Comparison cases to assess implications of the ISO 19905-1 formulation 63

APPENDIX TR.7.C: Comparison of test results for chords 67

8 Commentary to ISO 19905-1:2012, Clauses 8 and A.8 70

TR A.8.8.6 Derivation of the alternative simplified negative stiffness correction term for P- effects .. 70

9 Commentary to ISO 19905-1:2012, Clauses 9 and A.9 77

TR.9.3.6.2 Derivation of the limiting horizontal reaction given in ISO 19905-1:2012, Table A.9.3.7 77

10 Commentary to ISO 19905-1:2012, Clauses 10 and A.10 79

TR.10.4.2.1 Natural period -- General 79

TR.10.4.2.2 Derivation of Ke, effective stiffness used to calculate the jack-up natural period 82

TR.10.4.3.3 Hysteretic damping 95

TR.10.4.3.4 Vertical radiation damping in earthquake analysis 96

TR.10.5.3.4 / C.2.4 Guidance on the fourth method of ISO 19905-1:2012, Table A.10.5.1 -- Application of the drag-inertia method 96

11 Commentary to ISO 19905-1:2012, Clauses 11 and A.11 96

12 Commentary to ISO 19905-1:2012, Clauses 12 and A.12 96

TR.12.6.2.2 Nominal bending strength 96

TR.12.6.2.2.1 Example 96

TR.12.6.3.2 Background for in interaction equation approach 97

13 Commentary to ISO 19905-1:2012, Annex C 98

TR.C.2.4 Guidance on the fourth method of ISO 19905-1:2012, Table A.10.5.1 -- Application of the drag-inertia method 98

Annex A (informative) Detailed example calculation 99

Annex B (informative) SIPM "drag-inertia method" for dynamic analysis and estimation of extreme response for jack-ups 266

Bibliography 295