ISO 20312:2011-10 (E)

Petroleum and natural gas industries - Design and operating limits of drill strings with aluminium alloy components

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms, definitions, symbols and abbreviated terms 1
3.1 Terms and definitions 1
3.2 Symbols 3
3.3 Abbreviated terms 7

4 Properties of ADP and tool joints 8
4.1 General 8
4.2 New pipes and tool joints data 8
4.3 Buoyant weight 8
4.4 Mechanical properties 8
4.5 ADP with integral tool joint and heavy wall ADP 11

5 Considerations and limitations of drill string design using ADP 15
5.1 Application aspects of aluminium alloy drill pipe 15
5.2 General principles of aluminium drill string assembly design 16
5.3 Influence of temperature on choice of material for drill pipe 17
5.4 Resistance to hydroabrasive and corrosive damage 23
5.5 Buckling 24

6 Basic requirements for calculation of drill strings containing ADP 26

7 Drill pipe operation 27
7.1 Operations management 27
7.2 General drill pipe operating recommendations 27
7.3 Fatigue strength limitations 31
7.4 Combined load capacity limitation 32

8 Wear-based inspection, identification and classification of aluminium drill pipe 36
8.1 Inspection 36
8.2 Wear-based marking and identification of pipe and tool joints 38
8.3 Wear-based pipe classification 39
8.4 Wear-based tool joints classification 40
8.5 Pipe repairing and discarding 40

9 Transportation and storage of pipe 41
9.1 Transportation of pipe 41
9.2 Storage of pipe 41

Annex A (informative) Drill pipe design, range and technical properties of integral tool joint ADP and heavy wall ADP 42

Annex B (normative) Calculations 47

Annex C (informative) Conversion of SI units to USC units 58

Bibliography 59