ISO 15589-1:2003-11 (E)

Petroleum and natural gas industries - Cathodic protection of pipeline transportation systems - Part 1: On-land pipelines

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms and definitions 2

4 Symbols and abbreviations 4

5 Design requirements 4
5.1 General 4
5.2 Design information 4
5.3 Criteria for CP 5
5.4 Predesign investigations 6
5.5 Electrical isolation 7
5.6 Electrical earthing 8
5.7 Electrical continuity 8
5.8 Current requirements 8
5.9 Type of CP system and selection of sites 9

6 Impressed-current systems 10
6.1 Power supply 10
6.2 Groundbeds 11
6.3 Current output control and distribution 13

7 Galvanic-anode systems 14
7.1 General 14
7.2 Zinc anodes 14
7.3 Magnesium anodes 15
7.4 Anode backfill 16
7.5 Cables and cable connections 16

8 Monitoring facilities 16
8.1 General 16
8.2 Monitoring stations (test posts) 16
8.3 Bonding to other pipelines 17
8.4 Test facilities at cased crossings 17
8.5 Test facilities at isolating joints 17
8.6 Drain-point test facilities 17
8.7 Miscellaneous monitoring facilities 17

9 Special facilities 17
9.1 Temporary protection 17
9.2 Protective casings 17
9.3 Parallel power lines or a.c. traction systems 18
9.4 Lightning protection 18
9.5 Surge arrestors 18
9.6 CP cables and cable connections 18

9.7 Monitoring stations and distribution boxes 19

10 Commissioning 20
10.1 General 20
10.2 Equipment tests 20
10.3 System tests 21

11 Inspection and monitoring 21
11.1 General 21
11.2 Frequencies of inspection 21
11.3 Monitoring plan 22
11.4 Monitoring equipment 23
11.5 Specialized surveys 23

12 Maintenance and repair 23

13 Documentation 24
13.1 Design documentation 24
13.2 Commissioning documentation 25
13.3 Inspection and monitoring documentation 25
13.4 Operating and maintenance documentation 25
13.5 Maintenance records 26

Annex A (normative) CP measurements 27

Annex B (normative) Electrical interference 31

Annex C (informative) Fault detection of impressed-current systems during operation 35

Annex D (informative) Description of specialized surveys 37

Bibliography 40