DIN EN ISO 20074:2020-05 (E)

Petroleum and natural gas industry - Pipeline transportation systems - Geological hazards risk management for onshore pipeline (ISO 20074:2019)

Contents

Page

European foreword ... **4**

Foreword ... **5**

Introduction ... **6**

1 Scope ... **7**

2 Normative references ... **8**

3 Terms, definitions and abbreviated terms ... **8**
3.1 Terms and definitions ... 8
3.2 Abbreviated terms ... 11

4 Pipeline geohazard risk management program ... **11**
4.1 Key principles ... 11
4.2 Requirements for a PGMP ... 11
4.3 Elements of a PGMP ... 12
4.3.1 General ... 12
4.3.2 Preliminary engineering and route selection phase ... 13
4.3.3 Detailed design phase ... 15
4.3.4 Construction phase ... 16
4.3.5 Operation and maintenance phase ... 18

5 Risk identification ... **19**
5.1 General ... 19
5.2 Geohazard inventory ... 23
5.3 Desktop data analysis ... 23
5.4 LiDAR and remote sensing imagery analysis ... 24
5.5 Field investigation ... 24
5.5.1 Field investigation techniques ... 24
5.5.2 Field investigation scope ... 24
5.5.3 Field investigation recommendations ... 24
5.6 Geotechnical investigation ... 25

6 Risk assessment ... **25**
6.1 General ... 25
6.2 Assessment systems and methods ... 25
6.2.1 Assessment systems ... 25
6.2.2 Assessment methods ... 26
6.3 Assessment for regional pipeline geohazard susceptibility ... 28
6.4 Assessment for individual pipeline geohazard ... 28

7 Risk mitigation ... **29**
7.1 General ... 29
7.2 Mitigations ... 29
7.2.1 Physical and procedural mitigations ... 29
7.2.2 Short-term and long-term mitigation measures ... 30

8 Techniques and methods for geohazard risk management ... **31**

9 Data management ... **34**

Annex A (informative) **Guidelines for pipeline route selection** ... **35**

Annex B (informative) **Field investigation recommendations** ... **36**

Annex C (informative) **Example of classification of geological environmental conditions by complexity level** **38**
Annex D (informative) **Example qualitative assessment method** **40**
Annex E (informative) **Example semi-quantitative assessment method** **50**
Annex F (informative) **Potential methods to mitigate risk** **59**
Annex G (informative) **Some key influencing factors of selected geohazards** **66**
Bibliography **71**