

ISO 20074:2019-07 (E)

Petroleum and natural gas industry - Pipeline transportation systems - Geological hazard risk management for onshore pipeline

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	2
3	Terms, definitions and abbreviated terms	2
3.1	Terms and definitions	2
3.2	Abbreviated terms	5
4	Pipeline geohazard risk management program	5
4.1	Key principles	5
4.2	Requirements for a PGMP	5
4.3	Elements of a PGMP	6
4.3.1	General	6
4.3.2	Preliminary engineering and route selection phase	7
4.3.3	Detailed design phase	9
4.3.4	Construction phase	10
4.3.5	Operation and maintenance phase	12
5	Risk identification	13
5.1	General	13
5.2	Geohazard inventory	17
5.3	Desktop data analysis	17
5.4	LiDAR and remote sensing imagery analysis	18
5.5	Field investigation	18
5.5.1	Field investigation techniques	18
5.5.2	Field investigation scope	18
5.5.3	Field investigation recommendations	18
5.6	Geotechnical investigation	19
6	Risk assessment	19
6.1	General	19
6.2	Assessment systems and methods	19
6.2.1	Assessment systems	19
6.2.2	Assessment methods	20
6.3	Assessment for regional pipeline geohazard susceptibility	22
6.4	Assessment for individual pipeline geohazard	22
7	Risk mitigation	23
7.1	General	23
7.2	Mitigations	23
7.2.1	Physical and procedural mitigations	23
7.2.2	Short-term and long-term mitigation measures	24
8	Techniques and methods for geohazard risk management	25
9	Data management	28

Annex A (informative) Guidelines for pipeline route selection	29
Annex B (informative) Field investigation recommendations	31
Annex C (informative) Example of classification of geological environmental conditions by complexity level	33
Annex D (informative) Example qualitative assessment method	35
Annex E (informative) Example semi-quantitative assessment method	45
Annex F (informative) Potential methods to mitigate risk	54
Annex G (informative) Some key influencing factors of selected geohazards	61
Bibliography	66