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**Petroleum and natural gas industries -- Pipeline transportation
systems -- Reliability-based limit state methods**

石油天然气工业 管道输送系统 基于可靠性的极限状态方法

(English Translation)

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules.

This standard uses the translation method identical with ISO 16708:2006 "Petroleum and natural gas industries - Pipeline transportation systems based on highly reliable Limit state

method. " this standard made the following editorial changes.

- Remove the ISO 16708:2006 Foreword and Introduction;
- Increasing the foreword and introduction of this standard;
- Use the "standard" instead of "this International Standard." this standard by the National Standardization Technical Committee of Oil and Gas (SAC/TC355) and focal points.

This standard was drafted. China National Petroleum Pipeline Company Limited, China Petroleum Pipeline Engineering Co., Ltd.

China National Petroleum Corporation Beijing Natural Gas Pipeline Company Limited, China Oilfield Services Limited Geophysical Exploration Division.

Introduction

This standard is based on GB/T 24259-2009 "oil and gas industry pipeline transportation systems" as the core pipeline industry standards series one. As long as GB/T 24259-2009 minimum requirements of this standard allows the use of innovative technologies and process methods, such as those based reliability Limit state methods.

The standard application probability method --- "Reliability-based limit state" and is given in recommended practices, designated party framework and principles Face of GB/T 24259-2009 provides a supplement.

Pipeline Integrity Management during the design and operation of the following two methods limit state.

- Deterministic method, application load and resistance factor of safety features;
- Probabilistic approach to the relevant limit state reliability analysis application based on the structure, for example, based on the reliability of the limit state method.

Generally deterministic method (pre-school through the safety factor), but also specifically require the use of probabilistic methods (in the actual security level of direct Check). Both methods meet safety requirements, as shown in Figure 1.

Oil and natural gas industries - Pipeline transportation systems Reliability - based limit state methods

1 Scope

This standard specifies the oil and gas industry for the use of GB/T 24259-2009 permitted reliability-based limit state methods the pipes to the design, function and re-run the assessment needed requirements and principles. Reliability - based limit state methods for the design and operation Security line provides a method to predict the pipeline system.

This standard applies to the oil and gas industry, both onshore and offshore rigid metal pipe.

This standard is a supplement to GB/T 24259-2009, and did not provide a very clearly defined and can be applied in GB/T 24259-2009 Method in the case of using limit state, such as the following (but not limited to).

- Assessment of new concepts, such as the use of new technologies for the industry or lack of experience in the design;
- Reassessment of the pipeline due to design and carry out basic changes, such as the extension of the service period, which may include changes due integrity monitoring Uncertainty reduction of intake and increasing operating experience brought;
- Buckling under external pressure of deep water;
- Extreme loads, such as seismic loads (such as a fault by the Department), ice loads (such as from large ice impact);
- Strain criterion can be applied based on the occasion.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 24259-2009 Petroleum and natural gas industries - Pipeline transportation systems (ISO 13623:2000, MOD)

3 Terms and Definitions

The following terms and definitions apply to this document.

Basic variables basicvariable the introduction of the limit state function of the load or resistance variables, including the explanatory variables limit state function itself model uncertainty.

Characteristic load for determining the nominal value of the load effects of the load.

NOTE: characteristic loads are generally based on a quantile load distribution function definition side determined.

Characteristic resistance Nominal values \u200b\u200bfor determining the strength parameters withstand capability.

Note: a quantile characteristic resistance is generally defined in terms of a function of the lower side of the distribution of determined resistance.