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**Method for the safety risk assessment of urban thermal
pipelines**

城市热力管道安全风险评估方法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

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Safety risk assessment method for urban thermal pipelines

1 Scope

GB/T 44548-2024 is the Chinese method for assessing the safety risk of urban district heating pipelines. Chinese cities are heated through thousands of kilometres of buried steam and hot water mains, much of it laid in the eighties and nineties, and a failure is not a leak but an explosion of superheated water through a road surface. The standard gives the framework for deciding which sections are dangerous and in what order they should be dealt with: the identification of the hazards and of the failure modes, corrosion, fatigue, ground movement, third-party damage and design and construction defects, the collection and evaluation of the data on the pipeline's condition and history, the assessment of the likelihood of failure and of the consequences, including the population and the traffic above the line, the risk matrix and the acceptance criteria, the classification of the sections by risk level, and the risk control and mitigation measures that follow. For a heating utility, a municipal authority or an engineering consultancy in China, this is the assessment method.

This document describes the general provisions, assessment methods and processes, data collection, failure probability assessment, and safety risk assessment of urban thermal pipelines. Assessment, failure consequence severity assessment, safety risk level and classification management, and preparation of safety risk assessment reports. This document is applicable to the safety risk assessment of thermal pipelines from the heat source outlet to the heat user's heat inlet, excluding thermal stations and relay pumps. Pipelines inside station buildings such as stations and pressure isolation stations.

2 Normative references

This document has no normative references.

3 Terms, definitions and symbols

3.1 Terms and Definitions The following terms and definitions apply to this document.

3.1.1 Thermal pipeline Pipes and pipe accessories that transport and distribute heating media from heat sources to heat users.

3.1.2 Thermal fittings and accessories A general term for pipe fittings, valves, compensators, supports (frames) and appliances on thermal pipelines.

3.1.3 safety risk assessment To achieve system safety, apply the principles and methods of safety system engineering to analyze the dangerous and harmful factors in the system. Identify and analyze, predict the possibility and severity of accidents and occupational hazards in the system, determine the safety risk level and classify it The activity of making evaluation conclusions.

3.1.4 failure Thermal pipes lose their specified functions.

3.1.5 failure likelihood The probability of failure occurring.

3.1.6 failure consequence severity The severity of the consequences caused by failure, such as personal injury, environmental damage, economic loss and social impact.

3.1.7 analytic hierarchy process Decompose the elements related to decision-making into levels such as goals, criteria, and plans, and conduct qualitative and quantitative analysis on this basis.