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**NATIONAL STANDARD OF THE
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**Method of ultrasonic inspection for zirconium and zirconium
alloy tubes**

锆及锆合金管材超声检测方法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

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This document was drafted by: China National Nuclear Corporation Baoti Zirconium Industry Co., Ltd., Northwest Zirconium Pipe Co., Ltd., Xi'an Western New Zirconium Technology Co., Ltd.

Co., Ltd., Shanghai Nuclear Engineering Research and Design Institute Co., Ltd., National Standard (Beijing) Inspection and Certification Co., Ltd., Jiangsu Sanhe Sound Source Ultrasonic Technology Co., Ltd.

Co., Ltd., Nonferrous Metals Technology and Economics Research Institute Co., Ltd.

The main drafters of this document are: Yuan Gaihan, Lu Hui, Han Ning, Li Hengyu, Wang Chenyang, Hu Xukun, Yue Qiang, Xie Meng, Lu Junqiang, Zhang Lunzhao, Bao Panhu, Bai Zhihui and Li Xianjun.

Ultrasonic testing method for zirconium and zirconium alloy pipes

1 Scope

This document describes the methods for ultrasonic testing of seamless and welded zirconium and zirconium alloy tubes.

This document is applicable to the ultrasonic testing of zirconium and zirconium alloy pipes with an outer diameter of 6mm~100mm and a wall thickness to outer diameter ratio not greater than 0.2.

Ultrasonic testing of other pipes can be used for reference.

2 Normative references

GB/T 9445-2015

GB/T 12604.1

3 Terms and Definitions

The terms and definitions defined in GB/T 12604.1 and the following apply to this document.

3.1

Used to calibrate testing equipment and assess samples for artificial defects.

3.2 reference sample

A specimen containing artificial standard defects.

3.3

The limit for determining whether the signal amplitude generated by discontinuities in a product is acceptable.

4 Principles

The ultrasonic wave generated by the sound source enters the sample under test through the coupling medium and propagates. When it encounters an interface with different acoustic impedance on both sides, part of the ultrasonic wave is lost.

The wave is reflected, and the reflected ultrasonic wave is received by the detection equipment and then processed, amplified and displayed. The displayed information is consistent with the acceptance standard.

The ultrasonic response signals of known artificial standard defects are compared to evaluate the quality of the inspected samples.

5 Test conditions

5.1 The test site should be clean, free of dust and strong electromagnetic interference, and should be safe, with adequate space and appropriate lighting.

5.2 The testing personnel shall receive technical qualification training and appraisal according to GB/T 9445-2015 or relevant standards, and obtain level 1 or above non-destructive testing qualification.

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