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Method for the ultrasonic testing of rails

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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: Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document was proposed by the China Iron and Steel Association: This document is under the jurisdiction of the National Technical Committee on Steel Standardization (SAC/TC183): This document was drafted by: Panzhihua Steel and Vanadium Co., Ltd: of Panzhihua Iron and Steel Group, Metal and Chemical Research Institute of China Academy of Railway Sciences Group Co., Ltd: Institute, Cangxin Nondestructive Testing Equipment Suzhou Co., Ltd., Sichuan Yaocheng Nondestructive Testing Technology Co., Ltd., Gangyan Nake Testing Technology Co., Ltd: Company, Pabo Testing Technology Service Co., Ltd., Chengdu Advanced Metal Materials Industry Technology Research Institute Co., Ltd., Metallurgical Industry Information Standard Quasi-research institute: The main drafters of this document are: Zeng Fu, Gao Donghai, Zhang Ying, Liu Changqing, Zhang Jianwei, Zeng Qingxing, Sun Ying, Dong Li, Lü Panfeng, Tu Zhankuan, Hou Yongqing, Yuan Gangqiang, Wang Yongfeng, Wang Pantao, Xue Jianzhong, Zhou Kaizhu, Huang Fengying, Xing Yaoqi, Zhu Guoqing, Chen Yan, Chen Xiao, Shi Qishuai, Liu Guanglei, Xu Lei: Rail Ultrasonic Testing Method

1 Scope

China's national method for the ultrasonic testing of rails. A rail fails from internal defects that are invisible from the surface: the transverse fissure growing from a shell in the head,

the horizontal split web, the bolt hole crack, and the defects that develop at welds. A broken rail under a train is one of the few remaining causes of derailment on a well-maintained railway, so the whole network is inspected continuously - by ultrasonic test cars running at speed with fluid-coupled wheel probes, and by hand-pushed trolleys and manual probes for detailed examination and for verification of what the car found. The method has to fix the probe angles, since each defect orientation reflects to a different angle and a rail is inspected with several simultaneously, and the evaluation, since the rail's own geometry - the bolt holes, the weld, the foot - produces indications that must be distinguished from defects.

This document specifies the test methods, general requirements, comparison test blocks, test equipment, test procedures, result judgment and standardization of rail ultrasonic testing: Records, test records and test reports: This document is applicable to the ultrasonic testing of railway rails: The ultrasonic testing of other rails shall be carried out in accordance with this document:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document:

GB/T 9445 Qualification and certification of non-destructive testing personnel

GB/T 11259 Method for making and controlling steel reference test blocks for non-destructive testing and ultrasonic testing GB/T 12604:

3 Terms and definitions

The terms and definitions defined in GB/T 12604:1 and GB/T 20737 and the following apply to this document: 3:

1 Any point on the longitudinal symmetry axis of the lower surface of the rail: 3:

2 Stability The actual sensitivity variation during rail inspection: 3:

3 Test blocks are made according to the specified method and artificial defects required by the technical conditions of rails: 3:4 dynamic sample rail dynamicsamplerail Used for dynamic adjustment, with the same shape as the rail being tested and without natural defects, made according to the specified artificial defects, and with a length of not less than 6m Sample track: 3:

5 Reference sensitivity The artificial defect wave height reaches the sensitivity value of the specified alarm gate: