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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

JB 4730-1994

Replacing JB 4730-1994

**Nondestructive testing of pressure equipments. Part 1: General
requirements
(English Translation)**

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Table of Contents

Foreword	3
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Foreword

This Standard JB/f 4730.1 - 4730.6-2005 (Nondestructive testing for pressure equipment) replaces JB 4730-1994 (Nondestructive testing of pressure vessels) from the issue date, and is applicable to pressure equipment.

This Standard specifies the nondestructive testing (NDT) methods for pressure equipment and the quality classification of testing results. But, how to select the proper NOT method in a specific case, and how to determine the quality level shall be per the corresponding provisions of relevant regulations and product standards respectively.

The JBff 4730.1 - 4730.6-2005 (Nondestructive testing for pressure equipment) contains the following six Parts.

- Part 1. General requirements;
- Part 2. Radiographic testing;
- Part 3. Ultrasonic testing;
- Part 4. Magnetic particle testing;
- Part 5. Penetrant testing;
- Part 6...Eddy current testing.

'Ibis Standard is mainly formulated with reference to the corresponding requirements of Section V , ASME (Boiler and pressure vessel code) and ns Standard, and in coordination with the actual domestic situations. The contents in comparison with JB 4730-1994 are changed as follows.

1. The applicable scope is extended to metallic pressure equipment.
2. The technical requirements for the NDT for pressure equipment in-service are added.
3. In radiographic testing, the test scope of butt welded joint in .copper/copper alloy and nickeV nickel alloy pressure equipment, and the test scope of circumferential butt welded joint in· steel, nickel, copper/copper alloy, aluminium/aluminium alloy and titanium/ alloy pressure piping are added.
4. In radiographic testing, the examination thickness range of steel butt welded joint is extended to 2mm - 400mm, the contents of the industrial radiation film series, the

densitometer, the application of Se-75 ray source, and the exposure curve are added; and the requirement for illuminance of radiograph reading light is modified.

5. In ultrasonic testing, the test scopes of austenitic stainless steel plate, duplex stainless steel plate, aluminium/aluminium alloy plate, and titanium/titanium alloy plate used for pressure equipment are added; and the testing requirements for explosive and rolled clad steel plates are regulated.

6. In ultrasonic testing, the examination thickness range of steel butt welded joint is extended to 6mm -400mm; the technical grade classification of steel butt welded joint, and the test scopes of T-weld and austenitic stainless steel butt welded joint are added.

7. In ultrasonic testing, the test scopes of circumferential butt welded joint in steel pressure piping with JB/T 4730.1 -4730.6-2005 thickness greater than or equal to 4mm and outside diameter 32mm - 15~ or thickness 4mm -6mm and outside diameter greater than or equal to 159mm are added; and the test scopes of circumferential butt welded joint in aluminium/aluminium alloy pipe/tube connection of thickness greater than or equal to 5mm and outside diameter 80mm - 159mm, or thickness 5mm - 8mm and outside diameter greater than or equal to 159mm are also added.

8. In fluorescent magnetic particle testing or fluorescent penetrant testing, the test scope of the high strength steel and crack-sensitive material is added.

9. The full-field eddy current testing used for ferromagnetic steel tube in-service and the eddy current testing for non-ferromagnetic tube in-service are added.

This Standard is proposed by the China Standardization Committee on Boilers and Pressure Vessels (SAC/TC 262).

This Standard is under the jurisdiction of the China Standardization Committee on Boilers and Pressure Vessels (SAC/TC 262).

This Standard is responsibly drafted by the Hefei General Machinery Research Institute.

The organizations participating for the formulation of this Standard are as follows.

Economics and Development Research Institute, SINOPEC; China Special Equipment Inspection and Research Centre; Special Equipment Inspector Qualification Committee of China; Harbin Boiler Co., Ltd.;

Jiangsu Province Special Equipment Safety Supervision Inspection Center, Boiler & Pressure vessel; Anhui Province Special Equipment Inspection Center; Shanghai Boiler Works, Ltd.. Dalian Boiler Inspection Institute; Nanjing Chemical Industrial Chemical Machinery Works; Beijing Yanshan Petro-Chemical Corp.;

Second Institute of China Aerospace; Beijing Aeronautical Material Research Institute; North China Electric Power Research Institute; Xian Airplane Manufacturing Corp. etc.

The main writers of this Standard are.

JB/f 4730.1 (General requirements) - Shou Binan, Shen Gang, Yuan Rong, Qiang Tianpeng, Kang Jiqian, He Zeyun, Hu Jun, Yang Guoyi;

JB/f 4730.2 (Radiographic testing) - Qiang Tianpeng, Yuan Rong, Zheng Shicai, Li Wei, Chen Wenhui, Li Yan, He Zeyun;

JB/f 4730.3 (Ultrasonic testing) - Tuan Rong, Yao Zbizhong, Kang Jiqian, Yan Changzhou, Xiao Jiawei, Xu Zunyan, Pan Rongbao, Chen Chengyu;

JB/f 4730.4 (Magnetic particle testing) - Pan Rongbao, Fan Yu, Song Zhizbe, Chen Jianjun, Zhou Zbiwei;

JB/f 4730.5 (Penetrant testing) - F~ Yu, Xing Zbaohui, Sun Diansbou, Chen Yongjian;

JB/f 4730.6 (Eddy current testing) - Guan Weihe, Shen Gongtian, Hu Xianlong, Lin Junming, Xu Kebei.

The issued Standard of all various editions replaced by this Standard is. JB 4730--1994.

Professional Standard of the People's Republic of China JBff 4730.1-2005 Replace part of JB 473~1994 Nondestructive testing for pressure equipment Part 1 . General requirements Issued on 2005-07-26 Enforced on 2005-11-01 Issued by National Development and Reform Commission of the People's Republic of China JBff 4730.1-2005 CONTENTS Foreword ...-- - - - ... - ... ----- - - - - ... - ... - ... 8

1 Sco-pe ... ,... 11

2 Normative References ... 11

3 Terms and Definitions ... 11

4 Application Princip1es - ... - - - ... - ... - - - - - ... - - - - - ... - . - - - - ... - 16

5 General Requirements ... - ... - - - ... - - - - - ... - - - - - ... 18

Annex A (informative) Corresponding Standard and Document List on Nondestructive Testing for Pressure Equipment -- ...- - - - - ...- - - - - 21 FORBVORD the JB/T 4730.1 - 4730.6--2005 . (Nondestructive testing for pressure equipment) contains following six Parts.

-- Part 1. General requirements;

-- Part 2. Radiographic testing;

-- Part 3. Ultrasonic testing;

-- Part 4. Magnetic particle testing;

-- Part 5. Penetrant testing;

-- Part 6. Eddy current testing.

This Part is the Part 1 of JB/T 4730.1 - 4730.6-2005. General requirements. This Part is mainly formulated with reference to the corresponding requirements of Section V, ASME (Boiler and pressure vessel code} and ns Standard, and in coordination with the domestic actual situations. The contents of this Part in comparison with the corresponding part of JB 4730- 1994 are changed as follows.

1. The application scope is extended.

(a) Five mainly used nondestructive testing (NOT) methods, i.e. radiographic testing (RT) , ultrasonic testing (UT), magnetic particle testing (MT), penetrant testing (PT) and eddy current testing (ET), and their relevant quality level evaluations are specified;

(b) This Standard is applicable to the NDT for metallic pressure equipment;

(c) The technical requirements of NDT for pressure equipment in-service are added;

(d) The technical requirements of NDT for support part and structure part of pressure equipment are added.

2. The corresponding stipulations for application principles of NDT methods are added.

(a) A proper NDT method shall be selected in accordance with the material, fabrication method, operating medium, application condition and failure mode of the pressure equipment;

(b) The !!T and UT are mainly used to examine the internal flaws in material of pressure equipment;

(c) The MT is mainly used to examine either open to the surface or slightly subsurface flaws of pressure equipment made of ferromagnetic material; and the Er is mainly used to examine either open to the surface or slightly subsurface flaws of pressure equipment made of electric-conductive material;

(d) The PT is used to examine the flaws open to the surface of pressure equipment...