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

GB/T 12726.4-2013

Replacing GB/T 12726.4-1995

**Nuclear power plants -- Instrumentation important to safety -- Radiation
monitoring for accident and post-accident conditions -- Part 4: Equipment for
continuous in-line or on-line monitoring of radioactivity in process streams**

核电厂安全重要仪表 事故及事故后辐射监测 第4部分：工艺流管内或管旁放射性
连续监测设备

(English Translation)

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Table of Contents

Preface

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 1 Design Principles

4.1 Overview

4.2 Basic functional requirements

4.3 Measuring range

Mechanical properties of the detector within 4.4

5 Functional Test

5.1 Overview

5.2 Environmental Performance Test

Supplementary Table 2 GB/T 12726.1-2013 test specified Additional Tests

Foreword

GB/T 12726 "after the nuclear power plant safety is important instruments accident and radiation monitoring" is divided into four parts.

--- Part 1. General requirements;

--- Part 2. gaseous effluents and ventilation equipment for continuous monitoring of radioactivity in the offline;

--- Part 3. High range area gamma continuous monitoring equipment;

--- Part 4. Process flow tube or inner tube beside continuous radioactivity monitor.

This section GB/T Part of 412,726.

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

This Part replaces GB/T 12726.4-1995 "after a nuclear power plant accident and radiation monitoring equipment - Part 4. Process stream radiation monitoring Tester ", compared with the GB/T 12726.4-1995 The main changes are as follows.

--- The process radiation monitor are divided into two basic types. next to the inner tube and the tube;

- Deleted "5 test process stream," the description;
 - Increased material requirements;
 - The standard test condition has been modified;
 - Test requirements under standard test conditions made a comprehensive revision.
- This section uses the translation method is equivalent to using IEC 60951-4. Radiation monitoring after 2009 "Instrumentation important to safety of nuclear power plants for accident and Part 4. inner process tube or pipe beside continuous radioactivity monitoring equipment. " for ease of use, this section made the following editorial changes.
- Delete the original preface to the international standards;
 - With a decimal point instead of the original international standard as a decimal point ",",
",",
 - Will be in "2 Normative references" have been corresponding national standards with international standards to our standards;
 - Increase in IEC 60768 "normative references" on.

This part of the National Nuclear Instrument Standardization Technical Committee (SAC/TC30) and focal points.

This section is drafted. Shanghai Nuclear Engineering Research and Design Institute.

Introduction

a) standard technical background, major publications and organizations this section focuses specifically on accident and after the accident radiation monitoring system in use.

The series of standards for user to a specific plant radiation monitoring system technical requirements, the manufacturer may be used in the series of standards Determine the product characteristics required for the development of accident conditions of the system. Some detailed characteristics of the instrument, such as measuring range, in response to the energy and environmental conditions Pieces shall be determined according to the specific application. In this case, the standard specifies only specific request, but does not claim itself will be described.

This section is important to safety after the accident radiation monitoring instruments in a standard series of standards. This series of standards consists of the following components.

- GB/T 12726.1 important instrument for nuclear power plants accident and after the accident radiation monitoring - Part 1. General requirements (GB/T 12726.1-2013, IEC 60951-1:2009, IDT)
- GB/T 12726.2 important to safety of nuclear power plants after the accident and

radiation monitoring instrumentation - Part 2. gaseous exhaust stream and pass Wind Equipment for continuous monitoring of radioactivity in the offline (GB/T 12726.2-2013, IEC 60951-2:2009, IDT)

--- GB/T 12726.3 important to safety of nuclear power plants after the accident and radiation monitoring instruments - Part 3. High range area gamma even Continued monitoring device (GB/T 12726.3-2013, IEC 60951-3:2009, IDT)

--- GB/T 12726.4 important to safety of nuclear power plants after the accident and radiation monitoring instrumentation - Part 4. inner tube or pipe flow process

b) in the SAC/TC30/SC2/SC3 standard structure in the current standard status GB/T 12726 series of standards is in the third level in SC2 standard hierarchy. GB/T 12726 series of standards for use in accident and design and test conditions - radiation monitoring equipment to provide guidance after the accident. SC2 and SC3 other standards developed for use in normal operating Radiation monitoring instruments under the conditions provided guidance. GB/T 7165 series of standards for the off-line continuous monitoring of radioactivity in gaseous effluents under normal conditions it specifies the requirements for equipment. GB/T 10253 is a continuous off-line monitoring normal conditions of liquid radioactive effluents device specifies the requirements.

IEC 60768 for the continuous monitoring of the normal operation and anticipated operational occurrences within the process stream or a bypass pipe radioactive device specifies the requirements. most After, ISO 2889 provides guidance for the gas and particle sampling. Table 1 shows the relationship between these different standards of radiation monitoring.

Table 1 SAC/TC30/SC2/SC3 standard series

Making organization ISO SC2 --- process and safety monitoring After sampling circuit and a range of methods for accident and normal conditions and anticipated operational occurrences SC3 --- radiation protection and Effluent monitors Zone sampling gases, particulates and Iodine monitoring (offline) ISO 2889 GB/T 12726.1 and GB/T 12726.2 GB/T 7165 series of standards Monitor with a liquid sample (from line) NA NA GB/T 10253 Without sampling (gaseous discharge Flow, steam or liquid) process Flow monitor (next to the pipe or tube) not applicable GB/T 12726.1 and GB/T 12726.4 IEC 60768 is not applicable Regional monitoring does not apply GB/T 12726.1 and GB/T 12726.3 GB/T 14054 the central control system is not applicable IEC 61504 IEC 61559 series of standards for details, see d SC2 series standard configuration).

c) The application of this series of standards and recommendations restrictions Special attention in this series of standards does not establish additional functional requirements for the safety systems.

Relations d) SC2/SC3 standard describe the structure of the series and with other

standards and other bodies (IAEA, ISO) file Top standard SC2 standard series is NB/T 20026. It is important for the implementation of nuclear power plant safety functions and instrumentation and control systems set up Preparation of the provisions of the general requirements. NB/T 20026 standard series built SC2.

NB/T 20026 standard SC2 direct reference to the other, to the functional classification and grading systems, qualification, system isolation, Common Cause Fault defense, computer-based software systems, hardware-based computer systems and control room design and other aspects. Should be considered in the second layer Face direct reference to these standards and with the NB/T 20026 together as a reference document.

In the third level, not NB/T 20026 directly referenced SC2/SC3 standard relates to special equipment, technical methods, or specific living Moving standard. In general, it refers to the second-level files These files can be its own reference.

Expanded technical report SC2/SC3 standard series, the fourth dimension is not part of the scope of standardization.

NB/T 20026 and basic safety publications have adopted similar representation formats.

Including the overall security architecture and life cycle system life cycle framework of IEC 61508 series of standards provide for the nuclear power plant sector it describes the general requirements (IEC 61508.1, IEC 61508.2 and IEC 61508.4). Since the nuclear industry has to explain, in line with NB/T 20026 will facilitate the IEC 61508 series of standards consistent with the requirements. In this framework, nuclear applications sector and IEC 60880 IEC 62138 correspond to IEC 61508.3.

NB/T 20026 quality assurance (QA) aspects of reference GB/T 19000-2008, GB/T 19001-2008 and HAF003 (Corresponding to IAEA50-C-QA, IAEA50-C-QA now IAEAGS-R-3-substituted).

SC2 and consistent implementation of the standard series detailing the principles and basic safety considerations for nuclear safety and nuclear safety regulations guide nuclear power plant, Especially HAF102 requirements, the establishment of nuclear power plant design and safety guide HAD102/14 relates to the safety of nuclear power plants and important instrument Control systems related to safety requirements. SC2 standard uses of nuclear safety regulations and nuclear safety guidelines consistent terminology and definitions.

Nuclear power plant safety important instrument for accident and post accident Radiation monitoring Part 4. Process stream or canal Equipment for continuously monitoring radioactivity adjacent tube

1 Scope

GB/T 12726 provisions of this section within the general after the nuclear power plant accident and the process flow tube or pipe beside continuous radioactivity monitoring