

CODE COMPARISON REPORT

for

Class 1 Nuclear Power Plant Components



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CODE COMPARISON REPORT

for

Class 1 Nuclear Power Plant Components

Prepared for:

Multinational Design Evaluation Programme
Codes and Standards Working Group

ASME STANDARDS
TECHNOLOGY, LLC

Date of Issuance: January 27, 2012

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ASME Standards Technology, LLC
Three Park Avenue, New York, NY 10016-5990

ISBN No. 978-0-7918-3419-0

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FOREWORD

ASME Standards Technology, LLC (ASME ST-LLC) appreciates the collaborative effort put forth by all those involved in the development of this report. The report is the result of a multi-national effort by Standards Development Organizations (SDOs) from the United States of America, France, Japan, Korea and Canada. We also acknowledge the nuclear regulatory authorities who supported this work, which was initiated with a global vision of codes and standards consistency.

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ABSTRACT

The Multinational Design Evaluation Programme (MDEP) Code Comparison Project was initiated in late 2006 in response to a request by the MDEP Codes and Standards Working Group (CSWG) formerly known as the Working Group on Component Manufacturing Oversight (WGCMO). The CSWG invited the organizations responsible for development of major nuclear component construction codes and standards, Standards Development Organizations (SDOs), to make presentations regarding the requirements of their respective codes and standards pertaining to light water cooled nuclear power plants along with comparisons between those respective codes and standards.

In an effort to facilitate consistent design and manufacturing processes for Nuclear Power Plant Class 1 components among the ten MDEP countries, the CSWG requested the various SDOs to develop a comparison of the requirements of their respective codes and standards and those of the others.

The SDOs from the USA, France, Japan, Korea and Canada (ASME, AFCEN, JSME, KEA, and CSA, respectively) agreed to participate in this code comparison project and develop comparisons of the requirements for Class 1 vessels, piping, pumps and valves.

The objective of this report is to identify and summarize the differences between major international nuclear codes and standards for Class 1 equipment; namely those of AFCEN (RCC-M), ASME (Section III), CSA (N-285), JSME (S NC1) and KEA (KEPIC-MN).

The reader is reminded that each of the codes is a set of consistent rules. The requirements of one area may be, and often are, dependent on the requirements in other sections. Since a line-by-line comparison has been done, it may be tempting to judge the entire code based on the differences between these individual points, but this may not lead to a correct conclusion. This exercise identifies the different requirements of the different codes. It was not within the scope of this report to provide conclusions relative to the full implementation of the various Codes.

1 INTRODUCTION

1.1 Background and Scope

The Multinational Design Evaluation Programme (MDEP) Code Comparison Project was initiated in late 2006 in response to a request by the MDEP Codes and Standards Working Group (CSWG) formerly known as the Working Group on Component Manufacturing Oversight (WGCMO). The CSWG invited the organizations responsible for development of major nuclear component construction codes and standards, Standards Development Organizations (SDOs), to make presentations regarding the requirements of their respective codes and standards pertaining to light water cooled nuclear power plants along with comparisons between those respective codes and standards.

In an effort to facilitate consistent design and manufacturing processes among the 10 MDEP countries for Class 1 Nuclear Power Plant components, the CSWG requested the various SDOs to develop a comparison of the requirements of their respective codes and standards and those of the others.

The SDOs from the USA, France, Japan, Korea and Canada (ASME, AFCEN, JSME, KEA, and CSA, respectively) agreed to participate in this code comparison project and develop comparisons of the requirements for Class 1 vessels, piping, pumps and valves. The SDO from Russia (NIKIET) has since also joined in this effort, and is developing comparisons of the NIKIET PNAE-G-7 requirements to those of ASME Section III for Class 1 components.

As the project was initiated, the SDOs determined that development of comparisons between every code and each of the others would be very complicated. Recognizing that the CSA, JSME, KEA and AFCEN Codes were all originally developed based on ASME Section III, the SDOs agreed to define ASME Section III as the baseline for the comparison and compare each of the other Codes to ASME Section III and also to base the comparisons on the 2007 editions of each of the Codes.

1.2 Objectives

The objective of this report is to identify and summarize the differences between major international nuclear codes and standards for Class 1 equipment; namely those of AFCEN (RCC-M), ASME (Section III), CSA (N-285), JSME (S NC1) and KEA (KEPIC-MN).

The results of this work are intended for use by regulatory bodies, component designers and component manufacturers.

The reader is reminded that each of the codes is a set of consistent rules. The requirements of one area may be, and often are, dependent on the requirements in other sections. Since a line-by-line comparison has been done, it may be tempting to judge the entire code based on the differences between these individual points; but, this may not lead to a correct conclusion.

This exercise in summarizing the differences between major international nuclear codes and standards for Class 1 equipment identifies the different requirements of the different codes. It was not within the scope of this report to provide conclusions relative to the full implementation of the various Codes.

1.3 Contents of the Report

The report is organized into 8 sections. Section 1 provides a general Introduction. The main body of the report begins with Section 2, which provides a general presentation of the background for each code along with a description of the organizations responsible for administering the Codes. A summary list of the standards applied within each respective code is also provided. Section 3 provides a comparison of the general layout for each of the Codes relative to ASME Section III.