Multinational Design Evaluation Programme
Generic Common Position
CP-CSWG-01

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MDEP Generic Common Position CP-CSWG-01

Related to: Codes and Standards Working Group acttivities

Common Position on Findings from Code Comparisons and Establishment of a Global Framework towards Pressure-Boundary Code Harmonisation

Participation

Countries involved in the MDEP working group discussions:	Canada, Finland, France, Japan, Republic of Korea, Russian Federation, South Africa, the U.A.E., the U.K., and the U.S.
Countries which support the present technical report	
Countries with no objection:	India, Sweden and China
Countries which disagree	
Compatible with existing IAEA related documents	Yes

FINDINGS FROM CODE COMPARISONS AND ESTABLISHMENT OF A GLOBAL FRAMEWORK TOWARDS PRESSURE-BOUNDARY CODE HARMONISATION

I. INTRODUCTION

This document provides a set of common positions for harmonising codes and standards used in the design and construction of pressure-boundary components in nuclear power plants. It was prepared by the Codes and Standards Working Group (CSWG) of the Multinational Design Evaluation Programme (MDEP).

The document is a compilation of common positions identified by the CSWG in its pursuit of harmonising the requirements in codes and standards governing the design, materials, fabrication, examination, testing and over-pressure protection requirements of pressure-boundary components such as vessels, piping, pumps and valves typically found in large, water-cooled reactor nuclear power plants.

II. BACKGROUND

The CSWG's primary, long-term goal is to achieve international harmonisation of codes and standards for pressure-boundary components in nuclear power plants that are important to reactor safety. The key to achieving harmonisation is to understand the extent of similarities and differences amongst the pressure-boundary codes and standards used in various countries. To assist the CSWG in its long-term goals, several standards development organisations (SDOs) from various countries performed a comparison of their pressure-boundary codes and standards to identify the extent of similarities and differences in code requirements and the reasons for their differences.

The results of the code-comparison project enabled the CSWG to develop a process and long-term strategy for the harmonisation of codes and standards. The CSWG documented its findings and overall conclusions on harmonising pressure-boundary codes and standards in MDEP Technical Report TR-CSWG-02, "Technical Report on Lessons Learnt on Achieving Harmonisation of Codes and Standards for Pressure Boundary components in Nuclear Power Plants" [Ref. 1].

In the process of conducting the SDOs' code comparisons, the CSWG identified many lessons learned that have been documented as common positions in the harmonisation of the codes and standards. These common positions are captured in this document.

Over the 5-year period in which the CSWG pursued harmonisation of codes and standards, the CSWG also identified many other positions common to all MDEP countries that might be useful to others in pursuing harmonisation of codes and standards for other technical areas than the area of pressure-boundary components. These common positions have been extracted and documented in this document as well.

III. COMMON POSITIONS ON THE HARMONISATION OF PRESSURE BOUNDARY CODES AND STANDARDS

III-1 Findings

The followings are the findings identified during the study in the CSWG amongst the MDEP countries as they relate to the harmonisation of pressure-boundary codes and standards:

(1) SDOs have developed different codes in different countries. Codes are living documents that continue to evolve and need to be updated and reviewed in light of operating experience feedback and new developments.
(2) Although each code is different, each code has been determined by each country to result in acceptably safe pressure boundary components when used in conjunction with that country's standard industry practice and regulations.
(3) Mixing different country's code and standards requirements might be detrimental and should be carefully evaluated when attempted.
(4) Codes are also highly dependent on cultural and philosophical factors and should be used within the context intended. Using codes outside this context, for example, using them in different countries, needs to be treated with caution and studied carefully.
(5) MDEP supports industry initiatives for coordination and joint working relationships between SDOs to pursue harmonisation.
(6) A collaborative evaluation of code convergence or reconciliation of different code requirements provides an acceptable approach to enable the use of different code requirements.
(7) Complete convergence of pressure-boundary codes on an international scale would be extremely difficult to achieve because of the vast differences in each country's design and construction practices, regulatory policies, cultural patterns, and the manner in which codes are adopted by regulatory agencies.
(8) Achievement of harmonisation of pressure-boundary codes and standards is a continual, long-term process.
(9) A process should be in place to minimise further divergence between the SDOs' codes as they evolve.

III-2 Establishment of a Global Framework towards Harmonisation of Different Codes and Standards

The code comparison report [Reference 4] made by SDOs has enabled the CSWG to recognise that similarities and differences varied considerably amongst different codes. However, there are many commonalities in fundamental and essential areas, although differences exist in individual code requirements. The CSWG believes that the harmonisation involves efforts to enlarge the areas of similarity in individual code requirements. Based on the CSWG findings

and the results of SDOs' work, the CSWG proposes to establish a global framework of a hierarchy structure for the common areas of the different codes as a basis for harmonisation.

At the top of the hierarchy, the fundamental attributes provide fundamental concepts governing the design and construction of pressure-boundary components. At the middle level, the essential performance guidelines provide performance-based guidelines for nuclear pressure-boundary codes. At the bottom level, the pressure boundary codes of each country provide specific rules (See Figure 1).

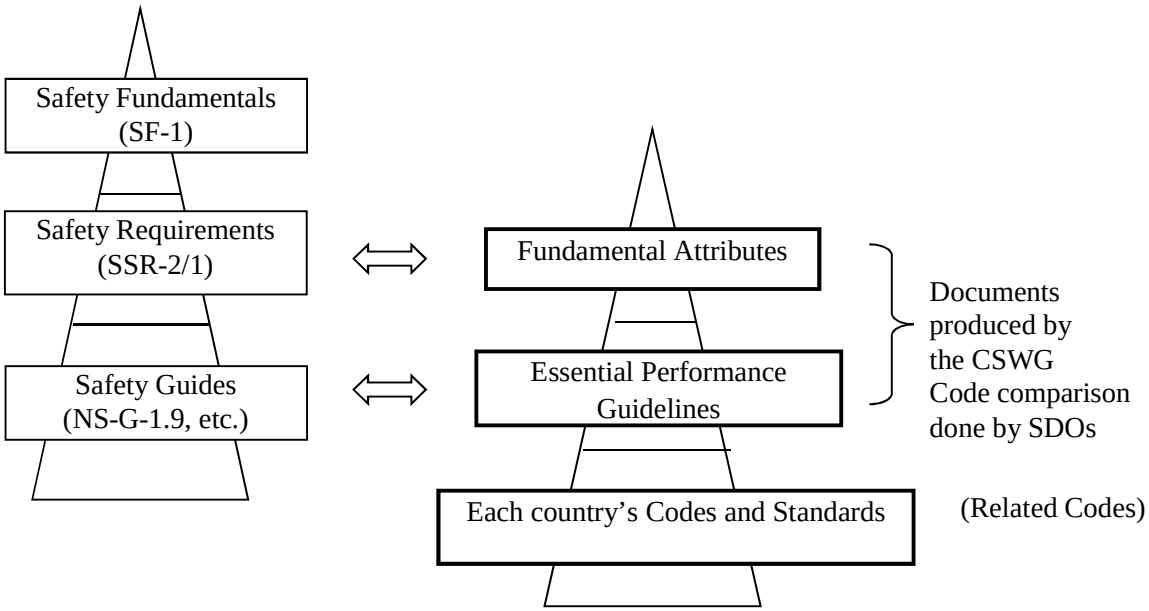

Fig.1 Document Structure / Relationship between the IAEA Safety Standards and MDEP/CSWG documents

The future harmonisation efforts can be continued on the basis of this global framework.

IV. REFERENCES

1. Multinational Design Evaluation Programme, "Technical Report on Lessons Learnt on Achieving Harmonisation of Codes and Standards for Pressure Boundary Components in Nuclear Power Plants," MDEP Technical Report TR-CSWG-02, OECD Nuclear Energy Agency, Paris, France.

2. Multinational Design Evaluation Programme,"Technical Report on The Fundamental Attributes for the Design and Construction of Pressure Boundary Components," MDEP Technical Report TR-CSWG-03, OECD Nuclear Energy Agency, Paris, France.

3. Multinational Design Evaluation Programme, "Technical Report on The Essential Performance Guidelines for the Design and Construction of Pressure Boundary Components," MDEP Technical Report TR-CSWG-04, OECD Nuclear Energy Agency, Paris, France.

4. ASME Report STP-NU-051-1, “Code Comparison Report for Class 1 Nuclear Power Plant Components,” December 31, 2012, American Society of Mechanical Engineers Standards Technology, LLC, New York, USA.