

2nd MDEP Conference
on New Reactor Design Activities

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MDEP Code Comparison - JSME Perspective -



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JSME Main Committee on Power Generation Codes

Code Comparison Effort



Participating SDOs:



ASME/USA



AFCEN/France



JSME/Japan



KEA/Korea



CSA/Canada



NIKIET/Russia

Scope of Code Comparison:

- ✓ Class 1 component (vessel, pipe, pump and valve)
- ✓ Material, Fabrication, Design, Examination, Testing and Overpressure protection
- ✓ Detailed Line by line comparison → Comparison table

Meetings:

- ✓ CSWG meetings
..... April 2010, November 2010, April 2011,
- ✓ SDO meetings in conjunction with ASME Boiler Code Week
February, May, August, December in every year (Four times a year)

Status:

Draft SDO report nearly complete, expected to be presented to CSWG for review within this year

JSME / ASME Comparison



General conclusions of comparison

- ✓ Key technical requirements in JSME code are essentially the same as those in ASME Section III NB, especially for design (NB-3000)
- ✓ Typical difference include;
 - ✓ No stamping, no accreditation system, or no design report in JSME
- ✓ Differences are classified into;
 - ✓ Different requirement
 - ✓ Not addressed in JSME
 - ✓ JSME unique

← *Most of the differences fall into this category*
- ✓ Major sources of differences include;
 - ✓ Origin of JSME code is technical standard by regulatory authority
 - ✓ Industry's practice
- ✓ QA requirements are quite different:
 - ✓ ISO9001 and "Performance-base QA" in Japan vs. NQA/NCA and "Compliance QA" of ASME

Lessons Learned:

Code comparison effort produced significant knowledge and insights about each SDOs' codes; philosophy, structure, similarities, and differences.....

- ➔ *JSME has started a program for convergence of identified differences as appropriate.*
 - Short-term: mainly technical issues (e.g., issues not addressed in current JSME)*
 - Long term: mainly administrative issues (e.g., general requirements)*

Next Step:

- Toward harmonization of existing codes
 - ✓ In-depth discussion and trial harmonization of specific technical issue examples
 - ✓ CORDEL proposal
 - ✓ SDO proposal
- Precluding further divergence
 - ✓ Code comparison project provided a good opportunity for SDOs to meet and discuss and know each other, mainly in conjunction with CSWG and ASME Boiler Code Week.
 - ➔ Continuation of these meeting activities is a first step.
- Harmonization of future codes
 - ✓ Collaboration for Gen IV high temp. reactor code might be a possibility.....

Thank you for your attention !



About JSME Code Committee



Main Committee on Power Generation Codes

Subcommittee on
Thermal Power

Subcommittee on
Nuclear Power

Subcommittee on
Fusion Power

Subcommittee on
Materials

Subgroup on Materials

Subgroup on Design

Subgroup on Welding

Subgroup on Fitness for Service

Subgroup on Elevated Temperature Design

Subgroup on Concrete Containment

Subgroup on Protection Design against
Postulated Pipe Rupture

Subgroup on Environmental Fatigue

Subgroup on Spent Fuel Storage Facilities

Codes for Nuclear Power Generation Facilities

- Rules on Materials for Nuclear Facilities (*under preparation*)
- Rules on Design and Construction for NPPs, Div. 1 LWRs
- Rules on Design and Construction for NPPs, Div. 2 FBRs
- Rules on Concrete Containment Vessels for NPPs
- Rules on Welding for NPPs
- Rules on Fitness-for-Service for NPPs
- Rules on Protection Design against Postulated Pipe Rupture for NPPs (LBB)
- Environmental Fatigue Evaluation Method for Nuclear Power Plants

Codes for Construction of Spent Nuclear Fuel Storage Facilities

- Rules on Transport/Storage Packagings for Spent Nuclear Fuel
- Rules on Concrete Casks, Canister Transfer Machines and Canister Transport Casks for Spent Nuclear Fuel

Codes for Nuclear Fuel Reprocessing Facilities

- Rules on Design for Nuclear Fuel Reprocessing Facilities

Codes for Fusion Facilities

- Rules on Superconducting Magnet Structures



JSME current programs and future efforts include:

1) Enhance Code Scope

- Rules on Welding for Nuclear Fuel Reprocessing Facilities (under prep.)
- Rules on Fitness-for-Service for Nuclear Fuel Reprocessing Facilities (under study)

2) Development of QA Related Codes for Conformity Assessment

- Code of General Requirements (draft completed)
- Code of QA Requirements for Code Item Construction (ditto.)

3) Development of Codes for Severe Accident Management

- “Design Guideline for SA Management” (preliminary draft completed)
- “Structural Integrity Guideline” (under concept study)
- “Plant & Equipment Design Guideline for Nuclear Safety” (start study of concept design soon)

4) Code Restructuring with Reflecting MDEP Study Results

- Total reform of “Welding Code” (under discussion)
- Establishment of individual “Inspection Code” (ditto.)