

Multi-National Design Evaluation Programme (MDEP)  
Water-Water Energetic Reactor Working Group (VVERWG)

Programme Plan  
2020-2021

RELATED TO: VVER WORKING GROUP ACTIVITIES

**VVERWG Programme Plan**  
**2020-2021**

**Multi-National Design Evaluation Programme (MDEP)  
Water-Water Energetic Reactor Working Group (VVERWG)**

**1. VVERWG Goals**

- Leverage national regulatory resources by sharing information and experience on the regulatory safety design reviews of the VVER with the purposes of enhancing the safety of the design and enabling regulators to make timely licensing decisions to ensure safe designs:
  - Exchange experience on licensing process and design reviews, lessons learned, and design-related construction, commissioning and initial 2 year phase of operation experience
  - Work to understand the differences in regulatory safety review approaches in each country to support potential use of other regulators safety design evaluations, where appropriate
  - Look for opportunities to provide input to design-specific and issue-specific working groups on potential topics of significant interest
- Promote safety of designs through cooperation (consideration should be given to promoting harmonization of regulatory practices where there may be a safety benefit):
  - Document common MDEP positions on aspects of the review to enhance safety and standardization of designs (and coordinate communications) as requested
  - Communicate MDEP views and common positions to vendor and operators regarding the basis of safety evaluations and standardization
  - Identify design differences originating from regulatory requirements and document reasons for differences in regulatory requirements
  - Use experience gained in learning about similarities and differences in licensing frameworks to identify potential paths forward to harmonize licensing approaches and practices when there is a safety benefit.

**2. Intermediate Objectives**

- Share information including evaluations among VVERWG members to leverage resources and focus design reviews on safety issues, commissioning and initial operation activities in areas that are critical to take licensing decisions including Fukushima-related issues
- Encourage improvement of designs through design safety review cooperation when there is a clear safety benefit
- Document the activities of the technical expert subgroups through technical reports and common positions

**3. 2020-2021 MDEP VVERWG Work Plan**

- Continue to communicate timelines for sharing regulatory design evaluations of the VVERs among all working group member countries
- Update Fukushima-related CP when design specific information will be available in member-countries
- Exchange information on important regulatory findings of the safety review and assessment

- Exchange lessons learned and commendable practices of regulatory review management
- Observe important construction and commissioning steps and share the construction experience and operational events within the WG
- Continue to share information among VVERWG members in the areas in which technical expert subgroups (TESGs) have been formed for design related issues of interest to the members. Areas of current consideration for subgroup activities are:
  - Fukushima lessons learned,
  - Severe accidents,
  - Reactor pressure vessel and primary circuit,
  - Transients and accidents analysis.

Potential topic for future consideration includes Safety systems.

These subgroups should perform the following:

- Meet regularly to exchange information on relevant aspects of the design review status. Meetings may be accomplished through tele/videoconferences
- The technical expert subgroups should provide a work plan including description and scope of issues to be addressed to the VVERWG and report on the status at every VVERWG meeting
- Share relevant evaluations when they become available and important inspection findings
- Produce technical reports on subject that the subgroups deem important to safety to identify and document similarities and differences among designs, regulatory safety review approaches and resulting evaluations
- Produce common positions, especially on important safety evaluation findings
- Post evaluations, positions, reports, etc. in the MDEP library
- Consider issues related to the Vienna Declaration in subgroups activities
- Address important ad hoc issues to support design safety review decision making including the following possible areas:
  - System design issues including passive safety systems
  - Radiation protection
  - Spent fuel pool
  - Construction oversight
  - Civil construction approaches
  - Management systems
  - FOAK systems and equipment
  - Other areas as applicable

Note: Ad hoc groups may be established to consider above mentioned issues.

- When necessary, plan, conduct design-related technical site visits or participate in inspections as observers to ensure adequate design configuration control, quality assurance, and acceptability of structures, systems, and components of the VVER (appropriate coordination with VICWG)

- Provide recommendations, when appropriate, to the STC for considering possible items as topics to address generically

#### **4. Planning outputs of the VVER WG during 2020-2021**

- Common Position on Reactor pressure vessel and primary components reliability for AES-2006 designs (TESG RPV&PC), September 2020
- Technical report on additional technical issues related to reactor pressure vessel and primary components reliability for AES-2006 designs (TESG RPV&PC), (TBC) 2021
- Technical report on ex-vessel melt retention in core catcher (TESG SA), October 2020

2<sup>nd</sup> Workshop with the industry on such topics as supply chain, utilizing PRA/PSA in design, and FOAK equipment validation and qualification – postponed to 2021.

- Common Position addressing ex-vessel melt retention in core catcher (TESG SA), October 2020
- Technical report on hydrogen recombiners (TESG SA), October 2020.
- Technical reports for VVER-1000 and VVER-1200 to identify and document similarities and differences among designs, regulatory safety review approaches and resulting evaluations, as appropriate (VVERWG) – 2021.
- Technical note on «Uncertainty evaluation of A&T analysis» and (TESG AT) - 2021.
- Technical note on «Equipment tests» (TESG AT) - 2021.
- Common Position addressing the Vienna Declaration on Nuclear Safety (TESG FUKU) to date.
- Document lessons learned from design reviews and design issues faced during construction and commissioning and early phases of operation (VVERWG).
- Recommendations and inputs to other MDEP working groups regarding potential generic issues and harmonization opportunities (VVERWG, coordination with VICWG or to the EPRWG, AP1000, APR1400, HPR1000 and CNRA/WGDIC, WGCS, WGRNR as appropriate).

#### **5. Key Stakeholders with whom the VVER WG members will interact**

- Other MDEP working groups
- Other non-VVERWG regulators when appropriate (care taken to NOT share proprietary or sensitive info inappropriately)
- CNRA (WGRNR, WGCS, WGDIC)
- CSNI (WGRISK)
- IAEA, VVER regulators forum
- Design owner
  - SC “Rosatom” and its organizations
- Main design organizations and R&D institutes
  - JSC ASE EC (JSC “Atomenergoproekt”, JSC “Atomproekt”), OKB “GIDROPRESS”, NRC “Kurchatov Institute”, RASU, Alstom, CNPE

- Vendors
  - RAOS Project Oy, JSC ASE EC
- Utilities/Licensees/Operators, as applicable
  - JSC “Concern Rosenergoatom”, Akkuyu Nuclear JSC, NPCIL, Fennovoima Oy, Jiangsu Nuclear Power Co., Ltd., Paks II NPP Ltd.  
General constructors:  
TITAN-2, CNPE
- Other Groups as appropriate to further MDEP goals

#### **6. VVERWG documents published**

- CP-VVERWG-01: VVERWG Common Position addressing Fukushima-Related Issues, version 2, May 2017
- TR-VVERWG-01: Technical report on Severe accident analysis and management, version 1.1, November 2017
- TR-VVERWG-02: Technical report on regulatory approaches and oversight practices related to RPV and primary components, version 1, May 2017

Technical report on Regulatory approaches related to accidents and transients analyses (TESG AT), September 2020.