

Questions related to Proposed mitigation measures for the planned nuclear power plants Khmel'nitski Units 3 and 4 (KhNPP) – Ukraine

Design safety

1. Whether equipment qualification requirements have been established covering the worst case conditions? What are the worst environment conditions considered? Whether detailed methodologies have been developed for any unusual environmental conditions? Which unusual environmental conditions are considered?
2. Whether milestones have been agreed between Energoatom and the regulatory authority – SNRCU – for supervising the equipment qualification programmes? Does the regulator assured sufficient human and financial resources to manage this process?
3. For this type of reactors severe accident scenarios were not considered during design phase. Whether Energoatom is considering to develop severe accident scenarios and the following severe accident management guidelines (SAMG) before the start up of the units? What severe accident scenarios are considered for these units? What design changes in comparison with the original WWER 1000 will be introduced to mitigate and cope with severe accidents?
4. Whether provisions are part of the design for maintaining the functionality of the containment in the event of severe accident? Whether these provisions include inter alia preserving the integrity of the containment and its internal structures, control of leakages, airlocks functionality, heat removal, reliability of isolation devices, hydrogen management etc.
5. Whether passive autocatalytic hydrogen recombiners will be installed . Does Energoatom consider to install in addition hydrogen igniters? If yes at which concentration the igniters will be activated? Which computer code was used by to calculate hydrogen release and recombination capability?
6. The present units in Ukraine specifies for a seismic design bases for a SL-2 level earthquake a peak ground acceleration of 0.06g. The IAEA Safety guides NS-G-3.3 and 2.13 recommend a site specific seismic hazard assessment and a peak ground acceleration of 0,10g and a new proposal is under discussion to increase this value to 0,15g. Whether site reevaluation has been made or is planned to make? In light of this IAEA acceleration values whether Energoatom is working on a safety reevaluation of structures, systems and components using appropriate and recognised criteria and methodologies? Which criteria and methodologies are planned to be used?
7. Whether instruments and systems are provided (designed) for post-accident monitoring including severe accidents?
8. Whether a complete set of deterministic and probabilistic (Level 1 and 2, full power and shut down, seismic PSA)safety assessments will be available for the units before their start up in compliance with NS-R-1?

Operational safety

9. Several OSART missions took place at Ukrainian NPPs in the past which identified a significant number of recommendations and suggestions. How these identified recommendations and suggestions will be implemented at the KhNPP 3 & 4? Whether an action plan for their implementation at KhNPP have been adopted ?
10. Whether a sufficient predictive maintenance program is developed to monitor the vibration of internal reactor components and the existence of foreign material in the primary circuit system ?
11. Whether an up to date fire risk assessment will be developed and a program for fire mitigation will be developed .

Decommissioning

Whether a general methodology (guidance) is available in Ukraine for the preparation of a waste management and decommissioning plan.

Radiation protection

12. The draft IAEA document on International Basic Safety Standards for Protection against Ionizing Radiation requires a dose limit for planned situations for public exposure an effective dose of 1mSv in a year. Whether this new limit is considered and what design features (measures) are planned and implemented to fulfil this requirement?