

National Conference on Regulatory Interface (NCRI-2017)

“Siting Review of NPPs”

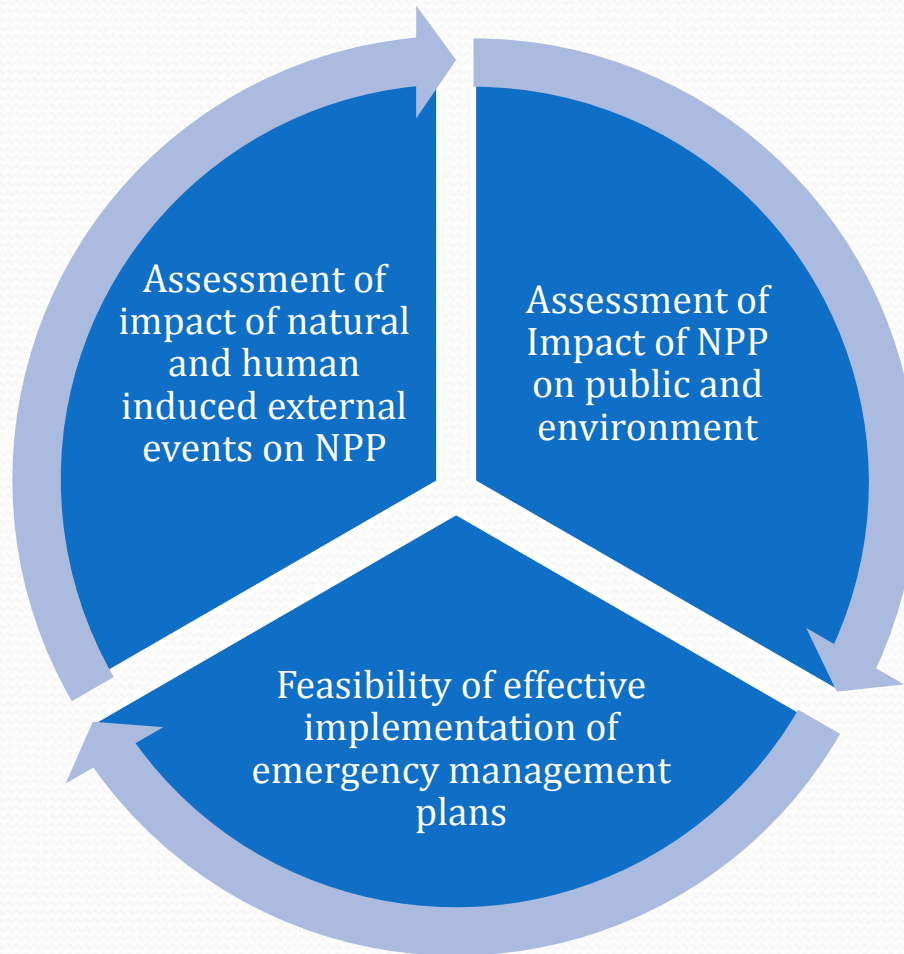
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Siting Process for NPPs



Evolution in Siting Process for NPPs

- Siting review for TAPS 1&2, RAPS 1 to 4, NAPS 1&2, MAPS-1&2, KGS 1 to 4, KAPS 1&2, KKNPP 1&2 has been carried out as per the provisions of IAEA/ international guidelines.
- Siting review of TAPS 3&4, KAPP 3&4, RAPS 5&6, RAPP 7&8, KKNPP 3 to 6 has been carried out as per the safety code “Code of practice on Safety in Nuclear Power Plant Siting” (AERB/SC/S) issued in 1990.
- Siting Review of GHAVP 1 to 4 has been carried out as per the revised safety code “Siting Evaluation of Nuclear Facilities” (AERB/NF/SC/S) issued in 2014. Siting review of JNPP is in progress as per this code.

Improvements in Siting Process of NPPs

- As per the revised siting code the minimum radius of Exclusion Zone (EZ) from the centres of reactors has been reduced to 1.0 km from 1.6 km.
- Under seismic environment, alluvial soil at shallow depths in GHAVP-1 to 4 site, with high ground water table, is liquefiable. As per the revised siting code, **feasibility to improve ground to prevent liquefaction of soil has been established.**

Improvements in Siting Process of NPPs

- **Revised siting code calls for decrease in Mean Annual Frequency of Exceedance (Increase in Mean Recurrence Interval from 1000 years to 10000 years)** for some of the major natural events for rain, wind etc. for NPPs for enhanced safety. This requirement for rain has been met by rising the finished grade level for safety related structures of GHAVP-1to4 by about 4 m from the Existing Ground Level.
- **Screening Distance Values (SDVs)** of some of the characteristics (Major Airports, Military installations etc.) of NPP sites have been increased for enhanced safety. These requirements have been met in GHAVP-1to4.

Feedback on Siting Review Process

- Overall, the siting review process for NPP sites is professional.
- To have an environmental friendly review process, the dependence on hard copy submissions should be minimised with emphasis on soft copy submissions.

Proposed Improvements

- Meeting the requirement of prescribed dose limits during normal operation, acceptable dose limits during design basis accidental conditions, dose criteria during design extension conditions and the security requirements could be the criteria for finalizing the size of EZ.
- In the absence of AERB guidelines for assessment of liquefaction potential and acceptance criteria, extensive literature survey was to be carried out and finally USNRC guidelines issued in March 2000 were followed for GHAVP-1to4. As new soil sites are under consideration for setting up NPPs, it is suggested to come out with guidelines for addressing these aspects.

Proposed Improvements

- Further the AERB safety guide on “Geotechnical Aspects and Safety of Foundation For Buildings and Structures Important to Safety of Nuclear Power Plants” do not specifically cover the type & extent of geophysical & geotechnical investigations required to be carried out at siting stage. Guide lines may be issued addressing these aspects.
- AERB safety guide on “Extreme values of Meteorological parameters” needs to be revised taking in to account the recent developments in probability distribution functions, treatment of missing data, etc.

Proposed Improvements

- Post Closure Safety Assessment (PCSA) study for Near Surface Disposal Facility (NSDF) is carried out to assess the public dose at EZ boundary through terrestrial route and to check the compliance with respect to the requirement of allowable public dose of 0.05 mSv/year.
- For PCSA studies, site specific data including Ground water velocity covering all the three seasons and Distribution coefficient of soil (k_d) are required, collection/determination of which is time consuming.
- Engineering measures are available to meet the dose limits prescribed for NSDF. Hence, PCSA study need not be completed at site reviewing stage and the same can be taken up at the construction stage review.

Proposed Improvements

- Main Out Falls (MOF) for liquid waste discharge are outside the Exclusion Zone boundary for some of the new sites.
- In such cases, considering continuous consumption of water at MOF by a public representative person is not a practical approach.
- Measures taken near the receiving water body shall be given due credit while accounting for secondary dilution.

Proposed Improvements

- With revised AERB siting code in place, verifying, compliance to other international documents may be dispensed with since the requirements of the same are taken into account in the revised code.
- Expert groups for various fields viz. Geology, Seismo tectonic , Geotechnical may be constituted in advance to advise safety committees as and when required by them.
- Early Siting consent may be issued once it is demonstrated that the site is meeting the non rejection criteria to enable NPCIL to obtain environmental clearance from MoEF.

Challenges & way forward

- Land acquisition, Rehabilitation and Resettlement
- Physical accessibility to new sites for conducting site specific investigations.
- Collection of adequate relevant meteorological data at new sites for carrying out Extreme Value Analysis.
- Limited number of expert agencies available for conducting specialised investigations for multiple sites in a short span of time

Challenges & way forward

- Considering the time required for land acquisition and physical accessibility to site, proper planning is required for activities between site selection and site assessment for confirmation
- Topographic sheets prepared using the satellite imageries may have to be used for finalising the plant layout at site evaluation stage.
- In view of non accessibility of site and unavailability of site specific data, near by data/studies may be considered acceptable at siting review stage for conducting RIA studies.



THANK YOU