

## **Regulatory Clearance for 'First Pour of Concrete' for Rajasthan Atomic Power Project Units-7&8**

AERB has granted Clearance for the First Pour of Concrete (FPC) of Rajasthan Atomic Power Project 7&8 (RAPP-7&8) on July 16, 2011. Nuclear Power Corporation of India Limited (NPCIL) has commenced FPC on July 18, 2011.

AERB has established regulatory consenting process for issuing consents/ clearances for Nuclear Power Projects and Plants. These requirements are specified in the AERB Safety Code on "Regulation of Nuclear and Radiation Facilities" and are elaborated in associated Safety Guides. As per this Code, the major stages of consent for Nuclear Power Plants are: Siting approval, Start of Construction, Commissioning and Operation and eventual Decommissioning. A comprehensive safety assessment is carried out for all the consenting stages based on a well established review process. The AERB Guide on "Consenting Process for NPPs and Research Reactors" (AERB/SG/NPP&RR/G-1) provides more details in this regard.

AERB performs a multi-tier safety review for nuclear power projects and plants for all the major consenting stages. For the Siting stage, the first tier review is by the Site Evaluation Committee and associated Expert Groups. The second tier review is by the Advisory Committee for Project Safety Review (ACPSR). The final review is by the Board of AERB. For the Construction consent, first tier review is performed by Project design Safety committee and Civil Engineering Safety Committee and associated experts Groups. The second tier review is by the Advisory Committee for Project Safety Review (ACPSR). The final review is by the Board of AERB.

As per AERB/SG/G-1, the 'Construction consent' may be given in a single stage or in three sub-stages, namely i) Excavation, ii) First Pour of Concrete and iii) Erection of Major Equipment, if the Applicant desires so.

The review process is very comprehensive and highly technical and has proven to be effective in enhancing the safety of nuclear power projects implemented in our country over the last two decades. The review process encompasses various aspects like plant design, plant technology, safety of the plant during normal and abnormal conditions, generation points and release of radioactivity, disposal of low and intermediate radioactive waste, radiological impact on environment, security interfacing safety, etc.

AERB has developed Safety Codes, Safety Guides, and supporting documents in the areas of governmental organization, siting, quality assurance, design, operation, civil and structural engineering, industrial and fire safety for nuclear power projects and plants. For a project with new design, international safety documents including those of IAEA are also used, when necessary.

NPCIL has developed design of 700 MWe Pressurized Heavy Water Reactor (PHWR) based NPPs utilizing earlier experience of designing, construction, commissioning and Operation of 220 and 540 MWe PHWRs in our country. The design of 700 MWe PHWR has a number of First Of A Kind systems/features such as containment with Carbon Steel liner, containment spray system, passive decay heat removal system (PDHRS), partial boiling at the outlet of coolant channels, regional over power protection system, interleaving feeder layout, mobile fuel transfer machine, etc. Further, hook-up arrangements are contemplated in design for direct cold water injection to Primary Heat Transport system, Steam Generators, PDHRS, End Shields, Moderator, Calandria Vault to cater to various postulated initiating events including natural external events.

AERB has granted FPC Clearance for first twin-unit station of 700 MWe PHWR based NPPs, Kakrapar Atomic Power Project (KAPP-3&4), being set-up in the state of Gujarat, on November 20, 2010 after satisfactory completion of required safety review as per the process.

The Rajasthan Atomic Power Project units 7&8 (RAPP-7&8) is the second twin-unit station of series of 700 MWe PHWR based NPPs planned to be set up at Rawatbhata Site, Rajasthan. For RAPP-7&8, AERB granted Siting Consent on May 24, 2010. During this stage, compliance with the requirements of IAEA NS-R-3 "Site Evaluation for Nuclear Installations" was also checked in detail in addition to compliance with requirements specified in AERB Code AERB/SC/S on "Siting of NPPs" and associated Safety Guides. Subsequently, Regulatory clearance for 'Site Excavation' for the RAPP-7 & 8 was granted on August 18, 2010.

For the construction sub-stage of 'First Pour of Concrete' (FPC) for RAPP-7 & 8, NPCIL application dated October 7, 2010, along with associated submissions, were reviewed in multi-tier review committees as per established process. In addition, design provisions made and those additionally planned by NPCIL in the light of events at Fukushima NPPs at Japan were also deliberated upon.

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