

No. CH/AERB/Kaiga-5&6/2020/39

November 18, 2020

Consent for Siting of Kaiga-5&6

References

- [1] Application for siting consent for proposed KAIGA-5&6 vide NPCIL/Kaiga 5&6/CCE/2018/31 dated 4th December 2018.
- [2] Safety Review Plan for Site evaluation of NPP and other NF sites [AERB/NPSD/LRB/CN /SR/992014/ 2019/00250 dated April 11, 2019]

Consent Number	KAIGA-5&6/ST/0/0/18112020
Stage of Consent	Siting
Applicant	Nuclear Power Corporation of India Limited (NPCIL) Chief Construction Engineer, Kaiga 5&6, NPCIL, (authorised by CMD, NPCIL), submitted an application for consent for siting two units of 700MWe PHWRs (Kaiga-5&6) at existing NPP site at Kaiga, Karnataka [Ref.1].
Brief Description of Nuclear Power Project	Name: KAIGA-5&6 Type of reactor: 700 MWe Pressurized Heavy Water Reactor based Nuclear Power Plant (Repeat Design of GHAVP 1&2) Located at: Kaiga Site, Kaiga, Karwar, (Tehsil) Karwar, (Dist) Uttara Kannada, Karnataka - 581400 New Site or Existing Site: Existing Site Present status of the Project/site in brief: Investigations and analysis towards Siting stage of Kaiga-5&6 have been completed. At the existing NPP site at Kaiga, Karnataka, four units of 220 MWe PHWR reactors (KGS - 1&2 and 3&4) are already operating.
Basis for issuing the Consent	Regulatory requirement as per AERB Codes/Guides, AERB/SC/G (Regulation of Nuclear & radiation facilities), AERB/NPP&RR/SG/G-1 (consenting process for NPP) and AERB/NF/SC/S (Rev-1) (site evaluation of Nuclear Facilities), AERB/NPP-PHWR/SC/D (Rev-1) (Design of PHWR based NPPs), AERB/NPP/SC/QA (Rev-1) (Safety Code 'Quality Assurance in Nuclear Power Plants'), satisfactory compliance to Review Plan for Site Evaluation of Kaiga-5&6 [Ref.2].

परमाणु ऊर्जा नियामक परिषद
Atomic Energy Regulatory Board

Safety Review	Safety review by NPSD Review Groups followed by multi-tier safety reviews viz.: 1 st tier safety review was conducted by the Site Evaluation Committee for Nuclear Facilities (SEC-NF) and 2 nd tier review by Advisory Committee for Project Safety Review of Nuclear Power Plants (ACPSR-NPP). After satisfactory reviews as above, final 3 rd tier safety review was carried out by the Board of AERB in its meeting #131. Review carried out towards grant of consent is briefly given in Annexure-1.
Responsibility for Safety	The Prime responsibility for safety of the facility or activity lies with the Consentee. It is the responsibility of Consentee to comply with safety requirements as specified in Regulations.
Other statutory requirements	Applicant shall ensure that all necessary statutory clearances are obtained and are valid for present stage of consent i.e. Siting
AERB Stipulations and Conditions	AERB Stipulations and conditions for Siting to enable effective regulatory control are appended as Annexure-2.

Based on satisfactory review as brought out above, Consent is hereby granted for Siting of KAIGA-5&6, subject to satisfactory compliance to the stipulations and conditions as brought out in Annexure-2. The Consent will be subjected to review for any non-compliance to the stipulations and conditions.

This Consent is valid till five years from the date of consent.

Encl.: Annexure-1 and 2


18-11-2020
(G. Nageswara Rao)

Chairman and Managing Director
Nuclear Power Corporation of India Limited
NUB, Anushakti Nagar
Mumbai - 400 094.

परमाणु ऊर्जा नियामक परिषद
Atomic Energy Regulatory Board

Copy to:

AERB

Executive Director
Director, NFRG
Director, NSARG
Head, NPSD
Head, DRI
Head, OPSD
Head, NSAD
Head, DRPE
Head, PHWR-PS
Head, SSES

NPCIL

Director (T)
Director (P)
Director (O)
ED (Engineering)
ED (P-PHWR)
ED (QA)

AERB Committees

Chairman & Member Secretaries, ACPSR-NPP
Chairman & Member Secretaries, SEC-NF
Chairman & Member Secretaries, PDSC-PHWR
Chairman & Member Secretary, CESC
Chairman & Member Secretary, CRSA

KAIGA Site

Site Director
Station Director, KAIGA
Project Director, KAIGA-5&6

SAFETY REVIEW FOR SITING CONSENT

Nuclear Power Corporation of India Ltd. (NPCIL) has proposed to construct two 700MWe PHWR based Nuclear Power Plants at Kaiga site where four 220MWe PHWR type reactors are already in operation.

As per the 'Code for regulation of Nuclear and Radiation facilities', AERB/SC/G there are five stages of consenting viz. Siting, Construction, Commissioning, Operation and Decommissioning in the life time of a NPP. Consent has to be obtained at each of these stages from AERB after detailed safety review to ensure safety. In compliance to this requirement, NPCIL had submitted an application seeking consent for siting two additional units of 700MWe PHWRs (Kaiga-5&6) at the existing site of Kaiga, following the guidance as given in the guide 'Safety guide on consenting process for Nuclear Power Plants and Research Reactors' AERB/NPP&RR/SG/G-1. AERB carried out multi-tier review of the application and associated submissions.

Review of the application for siting consent along with Site Evaluation Report and other supporting documents was undertaken on the basis of requirements specified in AERB Safety Code 'Site Evaluation of Nuclear Facilities' (AERB/NF/SC/S (Rev-1)), as applicable, and guidance in the associated Safety Guides. Guidance for management of safety review viz. information/document submission requirements for the siting consent stage was based on AERB Safety Guide 'Consenting Process for Nuclear Power Plants and Research Reactors' (AERB/NPP&RR/SG/G-1). Other relevant documents such as Safety Code 'Quality Assurance in Nuclear Power Plants' (AERB/NPP/SC/QA (Rev-1)), 'Design of PHWR based NPPs' AERB/NPP-PHWR/SC/D (Rev-1), Report of the AERB task force on RIA (TF-RIA), Report of AERB Expert Committee for Public Dose Computation and Dose Apportionment (ECPDA) were also used for review of the application. The review also examined status of compliance, by the Applicant, to the stipulations of Ministry of Environment, Forest and Climate Change (MoEF & CC), as relevant to AERB (e.g. items related to radiological impact, emergency preparedness, etc.).

The basic criteria for evaluation of a site for locating a particular NPP is to ensure that site-plant interaction does not result in radiological impact beyond the prescribed criteria by AERB and site is engineerable with regard to external hazards at the proposed site. The proposed NPPs at Kaiga 5&6 are similar to the standard 700 MWe PHWR projects at GHAVP-1&2, except certain site specific changes. Hence, review was focused on safety assessment feedback, exception (if any), lessons learnt, differences / changes and site specific aspects, as applicable to siting. All the phenomena/ criteria that could result in rejection of the site were reviewed in detail. Site-specific natural and human-induced events were reviewed with respect to their impact on the plant engineerability. Detailed review of the aspects related to impact of plant on site covered Radiological Impact Assessment (RIA) due to postulated releases under normal operation and accident conditions, radioactive waste management, etc. These were reviewed against AERB prescribed dose criteria.

Review with regard to Nuclear Security was carried out by Committee for the Review of Security Aspects (CRSA) and it was confirmed that the security requirements relevant to this stage is complied with.



**AERB STIPULATIONS AND CONDITIONS DURING
SITING CONSENT**

- S.1.1. Modification, which affect Site parameters in the site or location of exclusion zone boundary shall not be carried out without prior approval of the AERB.
- S.1.2. AERB/NPP&RR/SG/G-1 brings out information to be submitted and reviewed at different consenting stages. The review recommendations/observations by AERB during the course of multi-tier review shall be adhered to/addressed by NPCIL suitably, and status of compliance to the same should be submitted to AERB, as part of submissions for subsequent consenting stages.
- S.1.3. Consentee shall implement the Quality Assurance Programme laid down as per requirements of the Quality Assurance Code and any other requirements stipulated by AERB in this regard from time to time and adhere to commitments made as part of Licensee submissions to AERB.
- S.1.4. The Consent shall be subject to revocation, suspension, modification or amendment, for causes as provided in the Atomic Energy Act and rules made thereunder, in accordance with the procedures laid down in the Act.
- S.1.5. The stipulations and conditions of the Consent can be amended, revised, or modified as considered necessary by AERB in the interest of safety.
- S.1.6. All safety significant changes/observations shall be proactively reported to AERB as per Significant Event/Change Reporting Criteria (SECRC).
- S.1.7. Consentee shall provide for the development, revision, implementation, and maintenance of its emergency preparedness plan including adequate interfaces with state and local governments.
- S.1.8. This consent shall be suspended or revoked, if any declaration made or information given in Form A of the application is found to be false or if any undertaking given in such application is not carried out.
- S.1.9. No activity or operation shall be carried out for purposes other than those mentioned in the application.
- S.1.10. Full access to facilities/activities shall be accorded to any authorised representative of the AERB.
- S.1.11. The Consentee shall appoint authorised persons who are qualified to perform functions under the Consent.



परमाणु ऊर्जा नियामक परिषद
Atomic Energy Regulatory Board

S.1.12. The Consentee shall take such steps as may be necessary to prevent unauthorised persons from entering the site or such part thereof as AERB may stipulate.

S.1.13. The Consentee shall provide suitable access restrictions and/or fences on the site and shall ensure that these are properly maintained;

S.1.14. Consentee shall obtain all necessary statutory clearances including land acquisition records.

