GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
LOK SABHA
UNSTARRED QUESTION NO–786
ANSWERED ON 04.02.2026

SMALL MODULAR REACTORS FOR CLEAN AND LOW-CARBON ENERGY

786. SHRI GANESH SINGH

Will the PRIME MINISTER be pleased to state:-

(a) whether the Government is proposing to include Small Modular Reactors (SMRs) in country's long-term energy policy in view of the goals of clean and low-carbon energy and if so, the details of initiatives taken so far in this direction;

(b) whether the Government is studying the possibility of setting up a first-of-its kind SMR pilot projects in industrial and energy-prospective areas like Madhya Pradesh or Satna considering the passive safety, modular design and potential for industrial applications of SMRs and if so, the details thereof; and

(c) the details of the action taken/being taken by the Government for adopting standardised regulatory framework, techno-economic assessment, safeguards by design with International Atomic Energy Agency (IAEA) and innovative financial mechanisms for safe and timely development of SMRs?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND PRIME MINISTER'S OFFICE (DR. JITENDRA SINGH)

(a) BARC has taken-up design, development and establishment of Small Modular Reactors (SMRs) suitable for deployment as captive power plants for the energy intensive sectors, repurposing of retiring fossil fuel based power plants, and deployment in remote location with no grid connectivity. Under the Nuclear Energy Mission, funds have also been allocated for Research & Development of indigenous SMRs by 2033.

The Department has recently initiated design and development of SMRs namely,

1. 220 MWe Bharat Small Modular Reactor (BSMR-200). Lead unit proposed at Tarapur Atomic Power station site, Maharashtra.

2. 55 MWe Small Modular Reactor (SMR-55). Lead unit proposed to be constructed at Tarapur.

Additionally, up to 5 MWth high temperature gas cooled reactor has also been planned for hydrogen generation. This reactor is proposed to be constructed at BARC Vizag, Andhra Pradesh.

(b) The matter is presently not under consideration within this Department.

(c) Government of India has provisioned funds towards research, design, development and deployment of SMRs under the Nuclear Energy Mission. In view of this Bhabha Atomic Research Centre has undertaken design and development of SMRs with main focus on construction of lead units at DAE site for technology demonstration. The tentative cost of demonstration unit of BSMR-200 is around 27 Cr/ MWe. Subsequent to successful demonstration of technology, the cost of the reactor is likely to reduce on account of standardisation of design and economy of scale.

Atomic Energy Regulatory Board (AERB) has been constituted by a statutory order (S.O. 4772) under the provisions of Section 27 of the Atomic Energy Act, 1962 to enforce certain safety and regulatory provisions of the Act under Section 16, 17 and 18. AERB is responsible for safety regulation of Nuclear Power Plants (NPPs), which is done through its regulatory processes of licensing / consenting, safety review and periodic regulatory inspections. AERB is empowered to lay down safety codes, standards and guides as well as enforce safety requirements. AERB has established requirements for nuclear & radiation safety of NPPs which takes into account the safety standards of International Atomic Energy Agency (IAEA) and international best practices.

Different types / designs of Nuclear Power Plants (NPPs) in India are designed, constructed, commissioned & operated complying with the regulatory requirements of AERB. AERB carries out safety review of NPPs during their consenting stages, viz. siting, construction, commissioning, operation and decommissioning. After satisfactory review during siting, construction and commissioning stages, AERB issues license for operation to NPP, valid for a period of up to five years. During the license period, safety performance of an operating NPP is monitored in compliance with regulatory requirements, through safety reviews and regulatory inspections. Further, during operation, all plants are required to undergo a comprehensive Periodic Safety Review (PSR), every

ten years, as per the regulatory requirements. During PSR, the safety of the plant is assessed considering cumulative effects of ageing, plant modifications, operating experience as well as comparison with the current safety requirements / practices, and necessary safety upgrades are identified and implemented.

AERB safety and regulatory requirements for licensing of NPPs are mostly technology neutral. In light of the evolving developments in the field of SMRs, AERB has conducted review of its existing regulatory requirements and concluded that the same regulatory framework can generally be applied for safety regulation of advanced reactors such as SMRs, except a few technology specific aspects for which review may be required when details of proposed sites and design of specific SMR is submitted to AERB. AERB also participates in various international forums to keep itself abreast about the developments in regulation of SMRs and suitably adopt them when required.

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