

**GOVERNMENT OF INDIA  
ATOMIC ENERGY  
LOK SABHA**

UNSTARRED QUESTION NO:2441

ANSWERED ON:11.03.2015

LIGHT WATER REACTORS

Gavit Dr. Heena Vijaykumar;Mahadik Shri Dhananjay Bhimrao;Patil Shri Vijaysinh Mohite;Radhakrishnan Shri T.;Satav Shri Rajeev  
Shankarrao;Sule Smt. Supriya Sadanand

**Will the Minister of ATOMIC ENERGY be pleased to state:**

- (a) whether the Government has started work on fabricating a Light Water Reactor for electricity generation using reactor technology as reported in the media and if so, the details thereof;
- (b) whether the use of reactor technology differs from the heavy water reactors that form the mainstay of the country's nuclear power programme currently and if so, the details thereof;
- (c) whether the Government is in the process of preparing a detailed design of the 900 MW pressurized water reactors for approval by the regulatory authority and if so, the details hereof;
- (d) the cost to be incurred on the development of this reactor;
- (e) the time by which the light water reactor will be operational; and
- (f) the steps taken/being taken by the Government to boost nuclear power generation in the country?

**Answer**

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

- (a) India has indigenously developed a Light Water Reactor of small size, operational for the last eight years.
- (b) Yes, Sir. Reactor technology is significantly different for Light Water Reactors as compared to Heavy Water Reactors. Some of the salient differences are:-
  - i) Light Water Reactors employ pressure vessel technology for housing the reactor core while heavy water reactors use pressure tube technology.
  - ii) The Light Water Reactors require large diameter high strength vessels made of low alloy steels. The heavy water reactors use zirconium alloy tubes of diameter of ~100mm for construction of reactor vessel assembly along with other structural components.
  - iii) Light Water Reactors use enriched uranium as fuel and light water as moderator/coolant. While Heavy Water Reactors use natural uranium as fuel and heavy water as coolant/moderator.
- (c) Yes, Sir. Work has been initiated for design and development of a pressurised water reactor with a capacity of approximately 900 MW with participation from Bhabha Atomic Research Centre (BARC) and Nuclear Power Corporation of India Limited (NPCIL). The work envisaged is as follows:
  - i) Design of primary system and containment
  - ii) Design of secondary system
  - iii) Design of balance of plant
  - iv) Finalising suitable site and performing site related analysis
  - v) Detailed safety analysis and preparation of Preliminary Safety Analysis Report.
- (d) Internationally, the current cost for Pressurised Water Reactors (PWRs) is between Rs.15-20 Crore/MWe. This cost is typical for the PWRs of standardised design. On account of our existing experience with the design and development of small PWRs the cost of development of this reactor will be modest.
- (e) Efforts are being put in to work out the design of the reactor in 2 to 3 years. Considering the development efforts involved, final unit is likely to be ready in 10-12 years for now.
- (f) The efforts being made to increase nuclear generation in the country include addition of new capacity and ensuring availability of adequate quantity of fuel.