(d) Indian Industry is currently having a capacity to build two 700 MWe reactors annually.

Deposits of thorium in country

†474. SHRI RAVI SHANKAR PRASAD:

SHRI RAM JETHMALANI:

Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that rich deposits of thorium have been found in the country;

(b) if so, the total quantity of thorium presently available in the country and the power generation capacity that the processing of it could yield; and

(c) whether the technology required for generating power using thorium has been developed in the country and if so, the details thereof?

THE MINISTER OF STATE IN THE PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY): (a) Yes, Sir.

(b) The Atomic Minerals Directorate for Exploration and Research (AMD), a constituent Unit of the Department of Atomic Energy has established 10.70 million tonnes of Monazite in the country, which contains 9,63,000 tonnes of Thorium Oxide (ThO_2). Indian Monazite contains about 9-10% of ThO_2 and about 8,46,477 tonnes of Thorium Metal can be obtained from 9,63,000 tonnes of ThO_2 which will be used for future programmes of DAE.

India is pursuing a three stage nuclear power generation programme aimed at long term energy independence based on use of our abundant Thorium resources. The programme is to use Thorium for electricity generation in the long-term. In order to realize this goal, we are well into the first stage based on our modest domestic Uranium resources. This will be followed by second stage comprising of fast reactors which can support a large power generation capacity before getting into the third stage.

Thorium being a fertile material cannot produce fission energy unless it is converted to Uranium 233. Most effective conversion of thorium to Uranium 233 can be done in fast reactors several of which will be set up in the second stage of Indian nuclear programme. A comprehensive three-stage nuclear power programme is therefore being implemented sequentially.

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†Original notice of the question was received in Hindi.

(c) Yes, Sir. India has been working on the development of technologies for Utilisation of Thorium for Nuclear Power Generation since the inception of the Indian Nuclear Programme. As a part of this work, thorium has been irradiated in our Research Reactors and also in Pressurised Heavy Water Reactors. Technologies for reprocessing of irradiated thorium fuel for the separation of Uranium-233 have also been developed on a pilot plant scale. Uranium-233 thus separated has been used as fuel in research reactor Purnima-II and later in the 30 kw Research Reactor Kamni now in operation at Indira Gandhi Centre for Atomic Research (IGCAR), a constituent Unit of the Department of Atomic Energy (DAE). Experimental thorium based fuel has been manufactured and used in the critical facility for Reactor Physics experiments as well. Further development of technologies for large scale commercial level manufacture and reprocessing of Uranium-233 bearing fuel is underway. The Indian Advanced Heavy Water Reactor (AHWR) is the only large scale reactor that has been designed and developed to produce a large fraction, nearly 2/3rd of its power from the fission of Uranium-233 in the equilibrium state of this reactor core.

Transfer of nuclear technology to India

†475. SHRI RAMCHANDRA PRASAD SINGH:

SHRI RAVI SHANKAR PRASAD:

Will the Minister of EXTERNAL AFFAIRS be pleased to state:

(a) whether it is a fact that a group of 46 countries known as Nuclear Suppliers Group (NSG), has banned the transfer of enrichment and reprocessing technology to India;

(b) if so, the details thereof; and

(c) the reaction of Government to the ban and whether protest against this ban has been registered with certain countries and if so, the names of the countries?

THE MINISTER OF STATE IN THE MINISTRY OF EXTERNAL AFFAIRS (SHRI E. AHAMED): (a) to (c) Nuclear Suppliers Group (NSG) agreed on new guidelines on the transfer of enrichment and reprocessing (ENR) technologies during its plenary in the Netherlands on 23-24 June 2011. As per new guidelines, suppliers should not authorise the transfer of enrichment and reprocessing facilities, and equipment and technology therefor, if the recipient does not meet various criteria, *inter*

†Original notice of the question was received in Hindi.