accorded in principle approval by the Government after a detailed evaluation in accordance to the criteria laid down in Atomic Energy Regulatory Board (AERB) code on siting and recommendation thereof by the site selection committee of the Government. The Chhaya Mithi Virdi site in Gujarat has been evaluated for possible natural extreme events including Tsunami and found suitable. Further, the design and engineering features of the proposed plant and shore protection measures at site would ensure its capability to withstand the extreme natural events probable at the site.

(b) and (c) The safety of existing nuclear power reactors in operation and under construction in the country has been reviewed by specially constituted task forces for each technology in operation and reactors under construction in the context of Fukushima incident in Japan. These reviews have found that there are sufficient margins in designs of Indian nuclear power plants to withstand the extreme, natural events-earthquake and Tsunami. However, to further enhance safety, recommendations made by the task forces are being implemented after due process of approval. These *inter alia* include:—

- Automatic reactor shutdown on sensing seismic activity
- Augmentation of cooling water inventories and provisions for additional hook up arrangements through external sources and provision of mobile diesel driven pump sets.
- Increasing the duration of the availability of auxiliary power sources/battery operated devices for monitoring important parameters when the grid power is not available.
- Additional Shore protections measures at coastal stations.

Availability of thorium

1242. SHRI SANJAY RAUT:
SHRI GOVINDRAO ADIK:

Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that there is much availability of thorium in the country and the country has the potential to serve as feedstock for an ambitious nuclear power programme;

(b) if so, the details thereof; and

(c) the details of steps taken or proposed be taken to discover thorium and to utilize this for our nuclear power programme in the country?

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.

(c) 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.

It is proposed to set up a large power generation capacity based on fast reactors before getting into the third stage. Thorium in itself cannot produce electricity and it has to be first converted to Uranium-233 in a nuclear reactor. A comprehensive three-stage nuclear power programme is, therefore, being implemented sequentially.

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 Kamini now in operation at Indira Gandhi Centre for Atomic Research (IGCAR), a constituent Unit of the Department of Atomic Energy (DAE). Thorium based fuel has been manufactured and placed in the Advanced Heavy Water Reactor (AHWR) 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.

Opposition to nuclear power plant at Jaitapur

†1243. SHRIMATI HEMA MALINI:
SHRI PRABHAT JHA:

Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that local people have protested against Jaitapur Nuclear Power Plant Project in Maharashtra; and

(b) if so, the details thereof and the decision taken by Government in view of this protest?

†Original notice of the question was received in Hindi.