Chennai-11

13.6.2024

1. The Site Director

Kudankulam Nuclear Power Project,

Kudankulam PO, Radhapuram Taluk,

Tirunelveli District,

Tamilnadu - 627106

2. The Chief Secretary,

Government of Tamil Nadu,

Secretariat,

Chennai-600009.

Sub:POST-FUKUSHIMA SAFETY ENHANCEMENTS of KKNP

On March 11, 2011, a 9.0-magnitude earthquake, followed by a 45-foot tsunami, heavily damaged the nuclear power reactors at Japan's Fukushima Daiichi facility. The events in Japan triggered a socio-political debate regarding the future use of nuclear energy. In June 2011, the German Bundestag decided by a broad majority to phase out nuclear power. Extensive safety reviews were carried out for all nuclear facilities.

Following this accident, the NRC, USA required significant enhancements to U.S. commercial nuclear power plants (Reference: *SAFETY ENHANCEMENTS, POST-FUKUSHIMA, USNRC, pp.1-11*.) Instead of speculating on which events might happen, the order focused on improving plant flexibility and diversity in responding to extreme natural phenomena, such as severe flooding and earthquakes. The enhancements included: adding capabilities to maintain key plant safety functions following a large-scale natural disaster; updating evaluations on the potential impact from seismic and flooding events; new equipment to better handle potential reactor core damage events; and strengthening emergency preparedness capabilities. Examples of flooding protection features include:

1. **Sandbags and/or Inflatable Berms:** Temporary watertight barriers that would be installed in advance of a flood, designed to keep the site dry.

2. **Pumps:** Temporary and permanent pumps can alleviate the effects of flooding by removing water from the site. For example, Standby Pumps of battery driven and dieselgen set driven - both temporary and permanent pumps 2 each
3. **Site Drainage:** A site's design can reduce or even prevent flooding by directing floodwaters away from vital power plant areas. Drainage systems can be either man-made (drains) or natural (grading).
4. **Permanent Flood Walls:** Man-made structures primarily designed to prevent floodwaters from entering a power plant site.
5. **Plant Elevation:** Permanently increasing the elevation of a nuclear power plant's site during construction helps to ensure potential flooding sources are less likely to affect the site.
6. **Watertight Doors:** Specially-designed doors, similar to those found on ships

The above suggestions are depicted in Figure 1.

In India, one such reactor that needs possible enhancement of safety features against flood and tsunami is Kudankulam Nuclear Power Plant, KNPP. KNPP is allegedly located in a tsunami-prone area, and more than one million people residing within a 30km radius of the nuclear power plant-they cannot be evacuated safely in the occurrence of any nuclear disaster. There are few dams and major water reservoirs upstream the nuclear plant-any breach can flood the plant; also nowadays due to climate change, 20-30-40 cm rain fall over night is common. Hence most of the NRC's suggestion are applicable to KKNP. The safety features implemented in KKNP against tsunami and heavy flooding is not known to the public. Most of the suggestions of NRC are common sense in nature and similar suggestions are implemented by Manager-, and Occupier of the Factory as per Factory Act against natural disasters in India.

At present the compound wall of the KKNP plant adjoining the gulf of Mannar is about 5m; The height of tsunami can easily approach 10-15m and hence the present compound wall height should be raised to minimum 10m and it should withstand wave/tidal energy of tsunami.

Role of TN Govt

TN State Govt is requested to advise KKNP authority to implement the above suggestions wherever applicable. KKNP has to list the measures taken against tsunami or excess flood water surrounding the compound wall and avoiding inflow into the reactor area or spent fuel area and advise TN Govt. NRC recommends to fit water tight door as in ships for all doors fitted in the compound wall.

TN Govt shall improve the drainage system upstream area of KKNP. Authorities of KKNP and TN Govt shall install and provide hot line between KKNP and all the authorities who control dams and water reservoirs in and around/upstream of KKNP to inform KKNP

whenever excess water is discharged and with IMD to advise likely heavy downpour/cloud burst in that area.

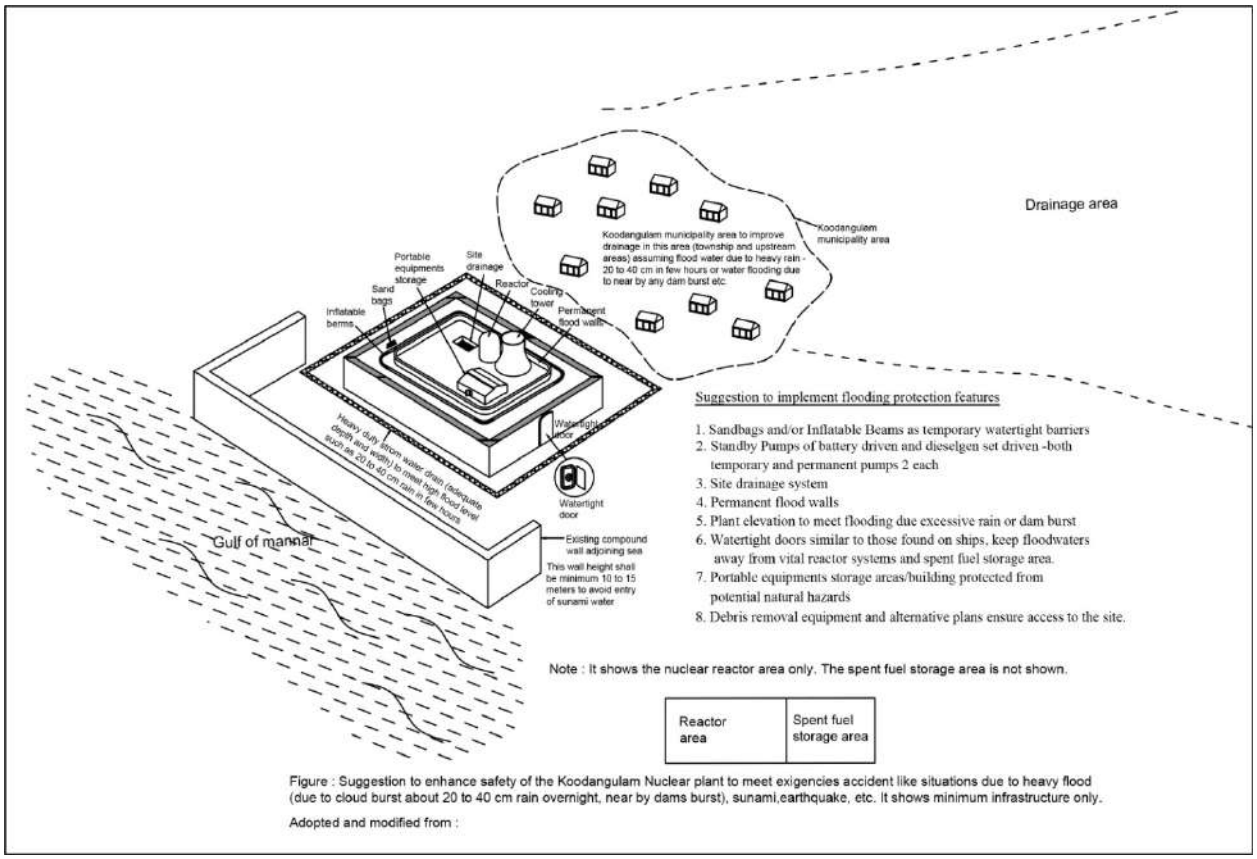

Figure 1

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