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# Safety Upgradation of Fast Breeder Test Reactor

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Fast Breeder Test Reactor (FBTR) has completed 30 years of operation and is relicensed for further operation up to 2018. FBTR has undertaken major upgradation of systems, components and structures to enhance the safety level, based on the operational feedback, maintenance difficulties and obsolescence. Further, post Fukushima, an extensive retrofitting programme is underway to protect the plant against external events such as flood, Tsunami and seismicity. As per the upgradation programme, several major components have been replaced. These include the Neutronic channels, UPS, computers of the Central Data Processing System, main boiler feed pumps, five control rod drive mechanisms, two control rods, central canal plug, deaerator lift pumps, reheaters of the steam water system, station batteries, DM plant, Nitrogen plant, starting air system of the emergency diesel generators, entire fire water system including pumps and isolation dampers of the reactor containment building. Due to obsolescence, 6.6kV MOCB were replaced with VCB and 415V electro-mechanical relays were replaced with numerical relays. Residual life assessment has been carried out for the nonreplaceable components based on the operational history, the design limits for each component by which their capability for continued operation has been ensured.

As a part of seismic retrofitting programme, the adequacy of the systems to withstand SSE for safe shutdown, decay heat removal and containment integrity have been assessed. Inparticular plant buildings, anchoring of electrical & instrumentation panels and sodium tanks and other capacities were verified and wooden battery stands of UPS and control power supply were replaced with seismically qualified metallic stands.

A new seismically qualified service building is under construction for housing two seismically qualified DG sets and emergency switch gears. Seismic Instrumentation to measure seismic activity in safety structures as well as free-field close to the reactor, is being procured. Supplementary control panel for monitoring the reactor during non-availability of main control room is being implemented.

This paper details the various measures implemented for enhancing the safety of FBTR which includes post Fukushima retrofits also.

## Country/Int. Organization

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