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ATOMIC ENERGY REGULATORY BOARD

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Update on Investigations on incident of leakage from the coolant channel in KAPS unit-1 on March 11, 2016.

Investigations related to the incident of leak from a coolant channel in Kakrapar Atomic Power Station (KAPS) unit-1 on March 11, 2016 are in progress. During investigations, the failed coolant channel is seen to have three cracks.

As indicated in the earlier updates from AERB on the March 11, 2016 incident, the safety systems of the plant including back up cooling system have functioned automatically as intended. The safety systems have worked well during the incident and there was no hazard to the operators and the public.

Incidents of leakages from the coolant channels are not unexpected events and in fact there have been over 70 cases of leaks / defects of coolant channels reported internationally from similar reactors. These reactors incorporate sensitive leak detection systems for early detection and corrective actions in case of any leaks. In fact unit-2 of KAPS, which had been in operation for more than 20 years, a minor leak occurred in one of the coolant channels could be detected by this system at a very early stage, following which the reactor was shut down for investigations earlier.

The standards for manufacturing, construction, operation and life management of coolant channels in Indian reactors have been developed, taking account of all the available experience on operation of coolant channels in the Pressurised Heavy Water Reactors around the world. Adherence to these standards has worked well for safe operation of a large number of coolant channels (about 5000) in the 17 Indian PHWRs for many years.

However the incident of leak from a coolant channel at KAPS unit-1 at an early stage of its life has raised some concerns. In the light of the event at KAPS-1, as a first priority, AERB had ordered the recheck of the sensitivity of the leak detection systems

at all the operating PHWR reactors in India and improvements where necessary. This has been completed by NPCIL.

The leaky coolant channel is yet to be removed from the reactor for detailed failure analysis and establishing the causes. Preparatory work for removal of the channel from the reactor is currently in progress. Removal of this failed channel requires careful planning and preparedness as vital information on nature and causes of failure is not lost during removal. Considering that information from failure analysis of this channel is critical for safety and life management of coolant channels in all the reactors, AERB is closely reviewing every step of these procedures, before clearances are given.

During the ongoing inspections in KAPS units, unusual indications of local corrosion spots was noticed on the coolant channels. How these have been formed and whether these are linked to the failure is being checked and may not be established fully till the failed channel is removed and examined. AERB's regulatory focus is again on operating units to assure their safety on priority, for which AERB asked for inspection of coolant channels of other units to rule out the possibility of similar corrosion. These inspections done so far in different reactors indicate that presence of local corrosion spots on coolant channels is specific to KAPS units alone and no evidence of this phenomenon is seen in other reactors inspected so far.

In short, the regulatory priority of AERB is about safety of other operating units, which is being satisfactorily addressed. Exact reasons for the failure at KAPS 1 can be established after completion of the failure analysis, which is expected to take considerable time.

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