Refurbishment of Handling Equipments in A Maintenance Cell of Phenix

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PHENIX is a French fast breeder nuclear power plant which went critical in 1973 and turn off power operation in 2009. The decommissioning project started in 2005, in order to start immediately after the final shutdown and achieve the dismantling operations as soon as possible in accordance to the French Safety Authorities principals. The critical path of the plant dismantling is the evacuation of the fuel elements and after the evacuation of the Lateral Neutron Shielding Assemblies.

The “Commissariat à l’Energie Atomique et aux Energies Alternatives“ (CEA) is the PHENIX operator.

The decommissioning project is headed by the CEA.

Statement

The way of evacuation of the fuel elements from the plant called handling route, needs the availability of several equipments, mainly handling equipments.

This handling route is only at half of its life because the evacuation of the fuel elements and of the lateral neutron shielding assemblies uses the same route to get out of the plant. The analysis of the handling route and the roadmap to increase the reliability of each equipment has been presented in HOTLAB 2015.

The refurbishment of handling equipments in the maintenance cell located on the upper part of the Irradiated Fuel Cell is the first step to increase the reliability of the handling route.

Roadmap

The two main handling equipements in the maintenance cell are the overhead crane and the biological shield plug gantry crane. The aim is to ensure at all times to close the biological shield plug. When opened, direct intervention on equipments would be forbidden, due to the irradiation level.

The actions that condition the closure of the biological shield plug are:

- The handling back of a load or the hook of the crane to the maintenance cell during a handling in the fuel cell,
- The movement of translation and put back into place of the plug with the gantry crane.