Highly efficient decontamination concept for minimum activity inventory and reduced waste generation - based on long-term experience

Maximum safety is top priority in all phases of the life cycle of nuclear power plants. Therefore, decontamination prior to decommissioning is imperative. It minimizes the personnel dose exposure and reduces radwaste volumes considerably.

With more than 30 years of experience in the field of decontamination in both operating and permanently shut-down plants for decommissioning, AREVA applies the Full System Decontamination (FSD) – the chemical decontamination of the primary cooling circuit, in conjunction with the main auxiliary systems. The benefits for the subsequent dismantling process are obvious:

- Minimization of activity inventory
- Metallically clean surfaces
- Optimum gamma / alpha ratio
- Reduced waste generation
- No base metal attack initiated if required
- Controlled decontamination process with proven material compatibility

Since dose rates are lowered, the collective radiation exposure is minimized during planning and work activities. Moreover, lower dose and contamination levels help to reduce costs as the need for special and expensive dismantling techniques is reduced.

AREVA has performed more than 500 decontaminations worldwide in all major reactor supplier designs. Since 1986, fifteen of these projects were carried out prior to decommissioning - all with great success.
Cutting-edge technology
The AREVA FSD concept uses methods from the inhouse-developed CORD® Family (Chemical Oxidation Reduction Decontamination), which is the most flexible decontamination technology to date. It adapts easily to any specific NPP requirements.

CORD® technology is applied using the in-house designed decontamination equipment AMDA® (Automated Modular Decontamination Appliance)

Oxide/Activity Removal
HP/CORD® UV

Activity Removal in Base Metal
HP/CORD® D UV

Alpha Removal
Increase γ/α ratio
CORD® Alpha

resulting in

Very low level waste/free release

HP/CORD® UV = Soft decontamination process to remove the internal oxide layer, along with most of the activity and contaminants

HP/CORD® D UV = Hard decontamination process to remove the base metal in a controlled manner to the desired depth and to conform to minimum waste goals

CORD® ALPHA = Process utilized to improve gamma to alpha ratios and remove actinides with a low total waste output, can be applied as needed at any time during the decontamination

The three steps to AREVA’s Full System Decontamination

Benefits at a glance

• AREVA’s FSD concept is extensively tested, highly advanced and features a high degree of material compatibility

• With the AREVA technology, decontaminations can be performed even after 20 years of safe enclosure

• The CORD® Family Concept and the AMDA® technology are the results of continuous and sustainable development that makes AREVA one of the leading decontamination suppliers in the world.

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