

RADIOLOGICAL CHARACTERIZATION OF V1 NPP TECHNOLOGICAL SYSTEMS AND BUILDINGS - ACTIVATION

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V1 NPP at Jaslovské Bohunice site has been finally shutdown after 28 years of successful operation in 2006 (Unit 1) and 2008 (Unit 2). At present, both units are finally shutdown and since July 2011 under decommissioning license. The preparation of V1 NPP decommissioning has been supported and partly financed by the Bohunice International Decommissioning Support Fund (BIDSF), under the administration of the European Bank for Reconstruction and Development. From 06/2008 to 12/2011 AMEC Nuclear Slovakia, together with partners STM Power and EWN GmbH, carried out BIDSF B6.4 project - Decommissioning database development (DDB).

The main purpose of the B6.4 project was to develop a physical and radiological inventory database to support V1 NPP decommissioning process planning and performance. One of the specific deliverable tasks within the B6.4 project was deliverable D12 - Characterization of activated equipment and civil structures based on measurement, sampling and analyses performed on the samples. The scope of deliverable services within D12 task consisted of:

1. Categorization of activated components
2. Development of single working programs for their radiological monitoring and sampling
3. Preparation of sampling device and revision of all handling equipment
4. Dose rate monitoring and sampling of:
 - Civil structures from reactors shaft on both units
 - Components placed in HLW storage, (so called „Mogilnik“) - connection rods, absorbers of control rod assemblies and neutron flux measurement channels
 - Reactor pressure vessel and shielding assemblies at both units of V1 NPP, reactor internals from Unit 2 of V1 NPP
5. Analysis of samples
6. Determination of radiological inventory
7. Import of radiological data for activated components into DDB

During sampling, mainly remotely controlled sampling device and radiation resistant camera with LED lightening for visual checking of all performed activities was used. In total, 125 samples have been taken from all activated components. Subsequently gamma spectrometry and hard-to-detect analyses have been applied.

As a result, detailed radionuclide vectors for all activated components in accordance with requirements for near surface repository at Mochovce site have been determined. Based on radionuclide vectors, the radiological inventory including all radiological parameters for all activated components has been determined. Finally, obtained unique data on activated components, representing in total 1118 DDB items, have been imported into database developed within B6.4 project.