

## Decommissioning and Reuse of Facilities for Radioactive Waste Management at the ÚJV Řež, a. s.

Thursday, 26 May 2016 09:00 (4h 30m)

Abstract: After 60 years of activities of the ÚJV Řež, a. s. in the nuclear field, there were obsolete nuclear facilities to be decommissioned. Many of these facilities were used for radioactive waste (RAW) management and some of them were or will be reused after decommissioning. ÚJV Řež, a. s. (further also ÚJV) is a leading institution in all areas of nuclear R&D in the Czech Republic and has had a dominant position in the nuclear programme since it was established in 1955 as the Nuclear Research Institute Řež. The activities of ÚJV encompass nuclear physics, chemistry, nuclear power and many other topics. The main issues addressed at ÚJV in past decades have included research, development and services for NPPs, the fuel cycle and irradiation services for research and development in the industrial sector and medicine. ÚJV also manages most institutional radioactive wastes (RAW) produced in the Czech Republic (approx. 90 %).

1. INTRODUCTION The decommissioned facilities for RAW management comprise:

2. Pipeline system for transport of liquid RAW to a processing facility;
3. Liquid RAW storage tanks;
4. Technology for RAW processing;
5. Facilities for storage of solid RAW, incl. stored RAW.

6. Decay tanks used for storage of solid RAW with higher activity;  
Some of the facilities were or will be reused after decommissioning.

The facilities were put into operation in the sixties of the last century and were equipped with various technologies for RAW management (RAW stores, liquid RAW storage tanks, evaporators, cementation units, bitumination units, etc.). The technologies have changed over the years, but almost no new technology has been installed in the past, and no substantial repairs of the buildings have been performed since they were put into operation.

7. DECOMMISSIONING OF FACILITIES

Preparations for decommissioning began in 1996. Safety analysis report was performed comprising the identification and characterization of potential sources of risk, potentially exposed receptors and exposure pathways, potential chemical compounds, radionuclides and media of concern. The results of the safety analysis report enabled to determine the priorities of the decommissioning, preparation of the decommissioning project as well as the estimation of the expenses. The decommissioning was divided into two phases according to the level of risk and the financing limitations.

The total amount of RAW resulting from decommissioning for processing will be approx. 1500 m<sup>3</sup>, approx. 240 Mg of RAW are expected for release into the environment after decontamination. To meet the legislative requirement, special equipment for measurement is being used. The standard system of solid RAW processing consisting of segmentation and conditioning by cementation into 200 or 216 l drums is combined with disposal of segments of contaminated technological equipment in bigger disposal units; it is advantageous from the point of view of radiation protection because it requires less segmentation operations and it is also less time consuming and many resources are being saved.

The Ministry of Finance of the Czech Republic is financing the decommissioning.

8. REUSE OF FACILITIES

Because of the high cost of constructing new RAW management facilities, it was decided to reuse/reconstruct the existing facilities (financed by ÚJV). Within the reconstruction of the facilities, new RAW management technologies have been, or will be, installed.

Figure 1 shows an example of a decommissioned facility; figure 2 shows a new facility after its installation.

Figure 1. Old evaporation unit. Figure 2. New evaporation unit.

1. CONCLUSIONS Decommissioning of nuclear facilities in ÚJV is the only ongoing decommissioning project in the Czech Republic. Decommissioning started in 2003 and will be finished in 2016. Almost all facilities have already been successfully decommissioned. The decommissioning activities are being carried out on the high level of radiation protection and up to now there was no extraordinary event or accident.

## REFERENCES

- [1] CH2M HILL United Kingdom, CH2M HILL Česká republika, s r.o., KAP spol. s.r.o., Safety Analysis Report –Decommissioning of Old Facilities in UJV Rez (1997).
- [2] UJV Rez, Project of Decommissioning of Old Facilities in the UJV Rez (2002).
- [3] UJV Rez, Update on the Project of Decommissioning of Old Facilities in UJV Rez (2005).
- [4] PODLAHA, J, Decommissioning of Obsolete Nuclear Facilities in the ÚJV ŘEŽ, a. s., Eastern and Central Europe Decommissioning (ECED) Conference, June 18 - 20, 2013, Trnava, Slovakia, (2013).

## Country or International Organization

Czech Republic

## Type "YES" to confirm submission of required <br> Forms A and B via the official channels

YES

**Primary author:** Mr PODLAHA, Josef (UJV Rez, a. s.)

**Presenter:** Mr PODLAHA, Josef (UJV Rez, a. s.)

**Session Classification:** Session 5A - Poster

**Track Classification:** Optimizing Waste and Materials Management in Decommissioning