



Challenging today.
Reinventing tomorrow.

COMPARISON OF THE RELEASE OF LARGE-SCALE COMPONENTS AND FRAGMENTS OF AUXILIARY EQUIPMENT OF V1 NPP

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Introduction

1. NPP V1 is under decommissioning since 2011,
2. Project Dismantling of large components of the primary circuit is currently main ongoing project
3. Jacobs Slovakia participates as a subcontractor to Westinghouse Electric Spain, which forms a consortium together with Westinghouse Electric Sweden and VUJE. The employer is the company JAVYS, a.s. with support and funding by BIDSF under European Bank for Reconstruction and Development (EBRD).



Westinghouse



European Bank
for Reconstruction and Development

BIDSF
Projekt

Concrete container description

- low usability in operation
- pressure vessel inspections
- 3 segments (bottom, middle, upper)
- 3 materials (concrete, lead, steel)
- + Concrete container stand
- + Transportation traverse



Concrete container description

- Decommissioning database vs. Technical documentation
- 62110 kg vs. 175645 kg
- explore all options to make the process of dismantling Concrete container more effective in order to minimize the increase in material production (both primary and secondary)
- Middle and bottom segments were not used during operation
- Upper segment was used for sampling of Reactor pressure vessel

Free-release of large scale components

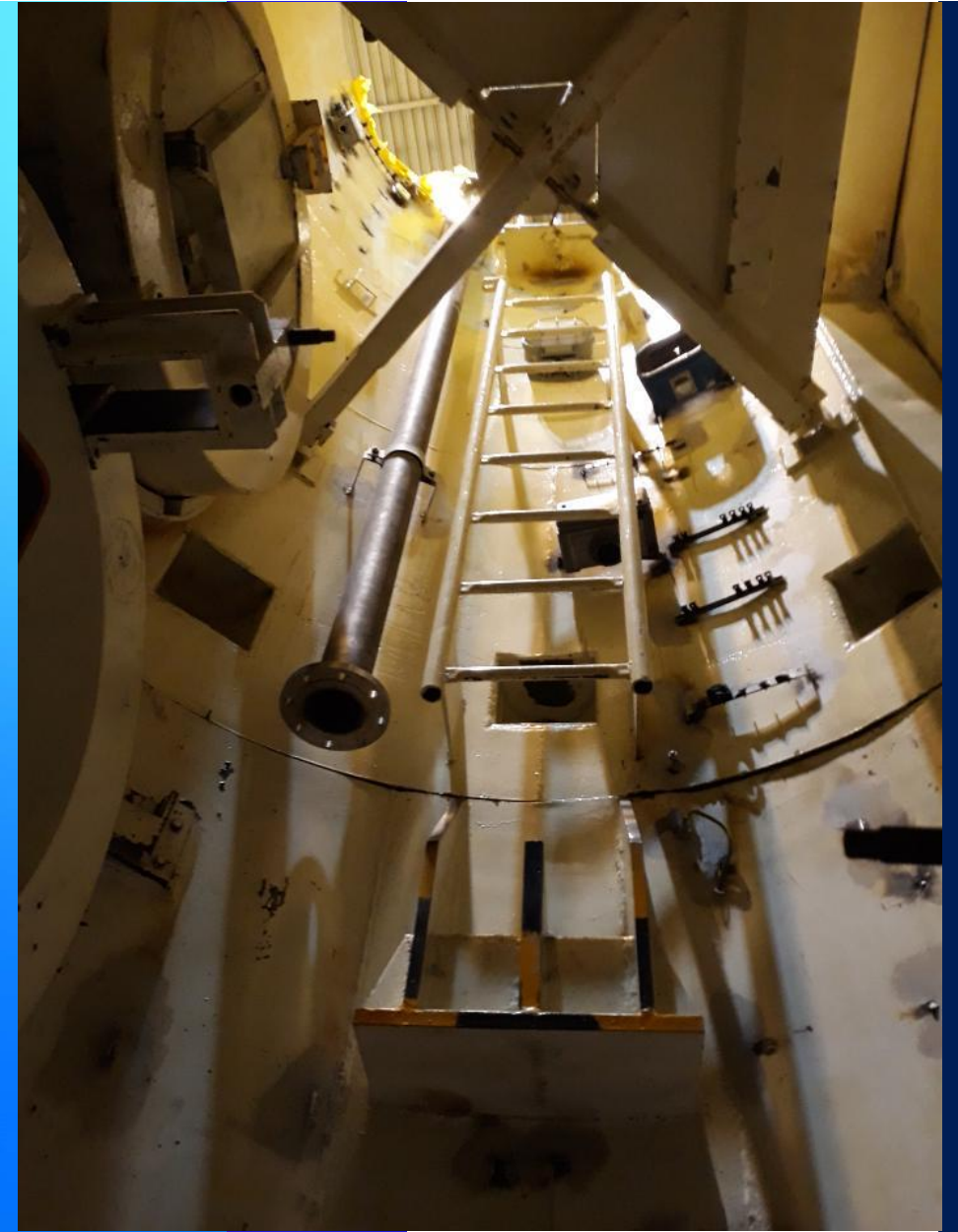
- Details are in Methodology for the release of large-scale components" 5-MTD-022 edition no. 4
- **WORKPLACE FOR MEASURING LARGE-SCALE COMPONENTS**
 - transportation corridor (room R116)
 - measuring surface contamination and In-Situ gamma spectrometry
- material intended for release measurement at this workplace must consist of indivisible technological and structural sections
 - i.e. dismantling of internal structures



javys
jadrová
a vyřadovacia
spoločnosť, a.s.

Fragmentation of inner structures

- The areas of cutting were pre-wiped with dry or alcohol rags to reduce potential surface contamination
- Produced material was loaded into package forms to be measured for free-release
- Prepared segments were manipulated to Workplace for measuring large-scale components



Identification of material

- Basic requirements for consignment material:
 - The material of the consignment must consist of the same type of material
 - All the required parameters of consignment must be defined
 - Radionuclide structure of activity
 - Radiological class of inventory
 - The component can only be surface contaminated

Measurement and evaluation

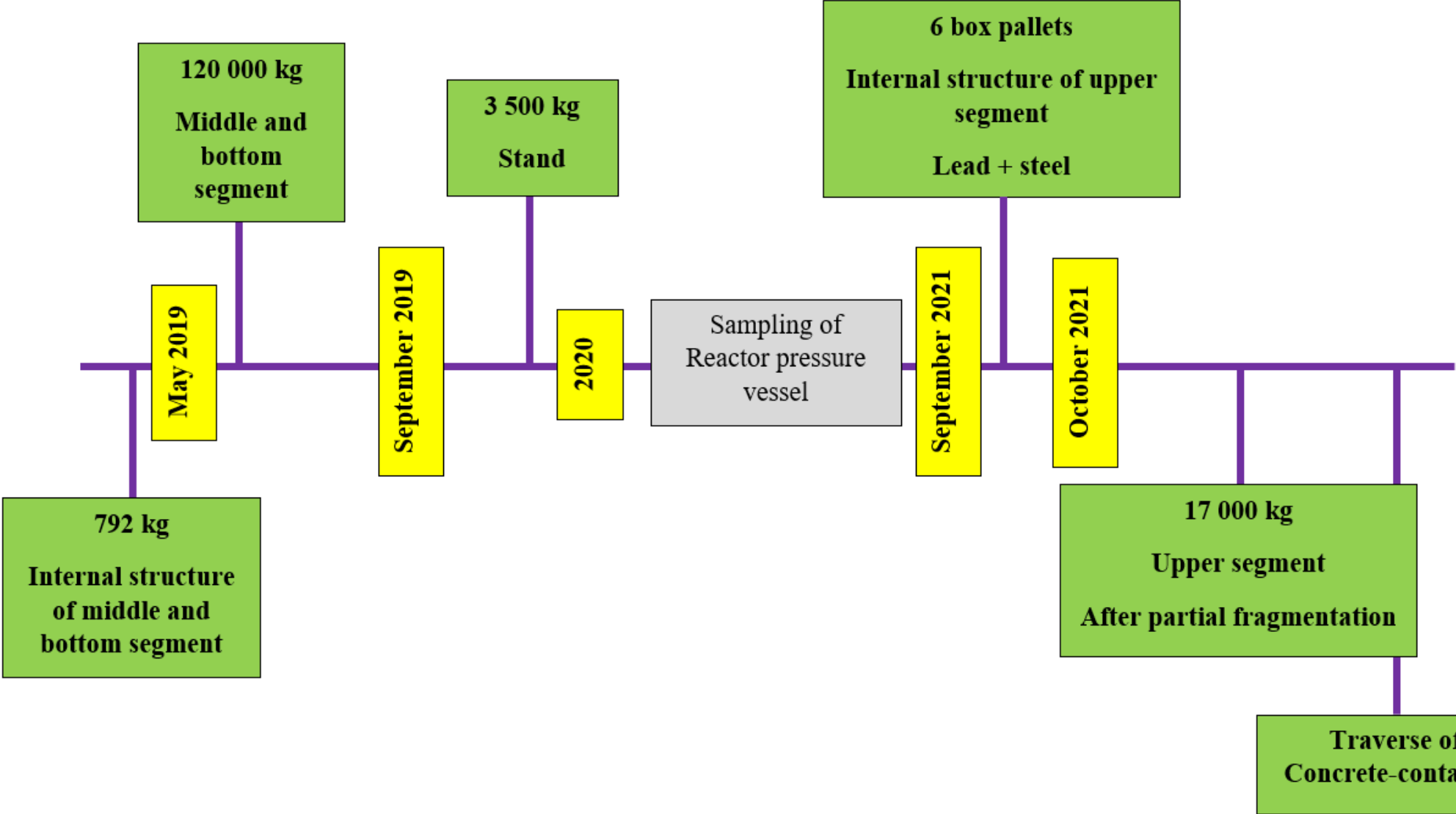
- PAM instrument measuring surface contamination.
- Is calibrated to one of the required nuclide: Co60 (0,4 Bq/cm²)
- Annex No.5 of Act 87/2018 Coll.

Conditional release and transport

- notification to the Public Health Authority of Slovak republic (PHA SR)
- 3 working days for review

- The consignment does not meet the measurement conditions (same type of material, equally distributed weight)
- The consignment does not meet the release conditions (high activity, RNV non-compliance)
- The consignment is released from within administrative control

Timeline of free-releasing of Concrete-container segments



Bottom and middle segment

Data of free-released middle and bottom segment with dismantled internal structures.

ID	Description	Package type	Material description	Material weight [kg]	RT	RNV
10000 18125	D4.2-NJF-Steel parts of Concrete-container	015	Iron and steel	792	RT1	RNV2
10000 18673	D4.2-NJF-Concrete- container: steel- reinforced concrete	005	Concrete mixtures	120 000	RT1	RNV2



ID	Description	Package type	Material description	Material weight [kg]	RT	RNV
10000 33858	D4.2-NJF-Lead from Concrete-container	15	Lead	882	RT2	RNV2 018/2
10000 34892	D4.2-NJF-Lead from Concrete-container	15	Lead	793	RT2	RNV2 018/2
10000 35349	D4.2-NJF-Lead from Concrete-container	15	Iron and steel	864	RT2	RNV2 018/2
10000 35350	D4.2-NJF-Lead from Concrete-container	15	Lead	878	RT2	RNV2 018/2
10000 37459	D4.2-NJF-Lead from Concrete-container	15	Lead	869	RT2	RNV2 018/2
10000 37460	D4.2-NJF-Lead from Concrete-container	15	Lead	903	RT2	RNV2 018/2
10000 33858	D4.2-NJF-Lead from Concrete-container	15	Lead	882	RT2	RNV2 018/2

Upper segment

The consignment did not meet the release conditions - the surface contamination was higher than $0,4 \text{ Bq/cm}^2$: from $3 - 10 \text{ Bq/cm}^2$.

The bottom section of the segment (up to a height of approximately 1 m) should be cut off.

During
fragmentation
within
Controlled area



After
fragmentation
outside
Controlled area



The estimated amount of separated section is approximately 3100 kg. Section contained lead (approximately 4000 kg).

ID	Description	Package type	Material description	Material weight [kg]	RT	RNV
10000D4.2-NJF-38087	Concrete-container	17	Iron and steel	17000	RT2	RNV2018/2
10000D4.2-NJF-38045	DEKO C7-A3 Traverse of Concrete-container	17	Iron and steel	3980	RT1	RNV2018/2

The traverse was manipulated to the DKP3 decontamination workplace, where surface contamination by blasting was removed.

Conclusion

- 15 package forms produced of dismantling the upper segment
- 1 package form produced of dismantling both the bottom and middle segment
- The process of free-releasing materials from Concrete-container dismantling is not yet fully completed
- Estimation of the final production of secondary waste: fifteen times higher
- Assumption of repeated decontamination of residual box pallets

Thank you for attention

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