Annex 1

WORK PROGRAMME 2019-2020

Bohunice Programme

CONTENTS

DEFINITIONS, ABBREVIATIONS AND ACRONYMS 3

1. INTRODUCTION 5

1.1. PROGRAM STATUS AND MAIN ACHIEVEMENTS BY 31 DECEMBER 2018 6

1.1.1. DECOMMISSIONING OF V1 NPP - BOHUNICE PROGRAMME 6

1.1.2. GENERAL EVENTS RELATED TO V1 NPP DECOMMISSIONING IN 2018 7

1.2. FINANCIAL OVERVIEW 8

2. V1 NPP DECOMMISSIONING SCHEDULE 11

2.1. BASELINE TIME SCHEDULES (GANTT CHARTS) 11

2.2. MAJOR CHANGES IN SCOPE, TIME OR COST 11

2.3. CRITICAL PATH 12

2.3.1. CRITICAL PATH OF V1 NPP DECOMMISSIONING IN 2019-2025 12

2.3.2. DESCRIPTION OF ACTIVITIES FORMING THE CRITICAL PATH 12

3. ACTIVITIES TO BE PERFORMED IN 2019 AND 2020 AND EXPECTED RESULTS 14

3.1. SPECIFIC OBJECTIVES OF THE BOHUNICE PROGRAMME FOR 2019 AND 2020 14

3.2. SUPPORTING PROJECTS OF V1 NPP DECOMMISSIONING 16

3.3. PLANNED VALUES FOR EVALUATION OF KPIS 19

3.3.1. PLANNED VALUES FOR KPI_SPO2 19

3.3.2. PLANNED VALUES FOR KPI_SPO3 20

3.3.3. PLANNED VALUES FOR KPI_MID – “MAXIMUM INDIVIDUAL DOSE” 21

3.3.4. PLANNED VALUES FOR EARNED VALUE MANAGEMENT 21

3.3.4.1. COST PERFORMANCE INDEX (CPI) 22

3.3.4.2. SCHEDULE PERFORMANCE INDEX (SPI) 22

3.4. CONTRACT COMMITMENT FORECAST IN 2019 AND 2020 23

3.5. ACTIVITIES SUBJECT TO GRANT ALLOCATION IN 2019 AND 2020 24

3.5.1. IMPLEMENTING BODY - EBRD 24

3.5.2. IMPLEMENTING BODY – SIEA 25

3.6. EXCHANGE OF KNOWLEDGE BETWEEN EU-FUNDED PROGRAMMES 26

3.6.1. TRILATERAL KNOWLEDGE-SHARING SEMINAR IN 2019 26

3.6.2. TRANSFER OF EXPERIENCE TO KOZLODUY PROGRAMME 26

3.7. OVERVIEW TABLE: FUNDING BY SECTOR 27

4. APPENDICES 28

DEFINITIONS, ABBREVIATIONS AND ACRONYMS

1H / 2H	First half-year / Second half-year
A1 NPP	A1 Nuclear Power Plant
AC	Actual Cost
Activity	An activity within the implementation phase of a respective project finalized by a milestone
AWP	Annual Work Programme
BIDSF	Bohunice International Decommissioning Support Fund
CB	Civil Building
CPI	Cost Performance Index
D&D	Dismantling & Demolition
DDP	Detailed Decommissioning Plan of V1 NPP
DfD	Decontamination for Decommissioning
draft Commission Implementing Decision	draft Commission Implementing Decision on detailed implementation procedures for the nuclear decommissioning assistance programmes for Bulgaria, Slovakia and Lithuania
DMS	Documentation Management System
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EU	European Union
EV	Earned Value
EVM	Earned Value Management
FTE	Full-time equivalent
GA	Grant Agreement
IAEA	International Atomic Energy Agency
IEC	International Electrotechnical Commission
ILW	Intermediate Level Waste
IPBTS	Integrated Planning Baseline Time Schedule
IS RAW	Interim Storage of Radioactive Waste
ISFS	Interim Spent Fuel Storage
ISO	International Organization for Standardization
JAVYS	Jadrová a vyraďovacia spoločnosť, a.s.
KIDSF	Kozloduy International Decommissioning Support Fund
KNPP	Kozloduy Nuclear Power Plant
KPI	Key Performance Index
LLW	Low-Level Waste
Main activity	BIDSF project / Decommissioning Project
MID	Maximum individual dose
MoE SR	Ministry of Economy of the Slovak Republic
mSv	millisievert

m€	million €
NDAP	Nuclear Decommissioning Assistance Programme
NNF	National Nuclear Fund
No.	number
NPP	Nuclear power plant
NRA SR	Nuclear Regulatory Authority of the Slovak Republic
NRR Mochovce	National Radwaste Repository Mochovce
OHSAS	Occupational Health and Safety Assessment Specification
PHA SR	Public Health Authority of the Slovak Republic
PM	Payment Milestone
PMU	Project Management Unit
Project 55	Project “Support in the Preparation of the Reactor Building for the Decontamination of the Primary Circuit of KNPP Units 1- 4”
PV	Planned Value
RAW	Radioactive Waste
SERAW	The company State Enterprise Radioactive Waste, Bulgaria
SIEA	The Slovak Innovation and Energy Agency
SPI	Schedule Performance Index
SpO	Specific Objective as defined in the Council Regulation No. 1368/2013, Article 2
Technical Study	PMU technical document describing the scope and justification of the objective of the V1 NPP decommissioning project, breakdown of work activities, conditions of implementation, schedule, and cost estimate prepared before submitting the project for grant allocation to the Assembly of Contributors
V1 NPP	V1 Nuclear Power Plant
VLLW	Very Low-Level Waste

1. INTRODUCTION

In the context of accession of Slovakia to the European Union and in compliance with Slovak Energy Policy, Slovakia committed itself to the closure of Unit 1 and Unit 2 of the Bohunice V1 nuclear power plant by 31 December 2006 and 31 December 2008, respectively, and to the subsequent decommissioning of those units.

V1 NPP decommissioning is implemented in two stages, with a final completion date in 2025. The first stage was in progress from 20 July 2011 to 31 December 2014. The second stage commenced on 1 January 2015 and is planned to be completed by 31 December 2025.

The Council Regulation No. 1368/2013 of 13 December 2013 on Union support for the nuclear decommissioning assistance programmes in Bulgaria and Slovakia allocated substantial financial support from the Union for the multi-annual financial framework 2014-2020.

In previous periods, annual work programmes were prepared in compliance with the Commission Implementing Decision No. C(2014)5449 of 7 August 2014 on the rules of application for the nuclear decommissioning assistance programmes, setting out administrative and structural requirements for the respective document.

Based on the conclusions of the mid-term evaluation report, the Commission decided to revise the above rules to benefit from the lessons learnt. This includes, inter alia, streamlining of the procedures to enhance the timeliness and effectiveness of the management cycle and updating of the progress indicators so as to ensure effective monitoring and enhanced comparability between the programmes.

At the NDAP Committee meeting of 8 November 2018, the Commission introduced draft "Commission Implementing Decision on detailed implementation procedures for the nuclear decommissioning assistance programmes for Bulgaria, Slovakia and Lithuania" which will enter into force at the beginning of 2019, and which will repeal and replace the Commission Implementing Decision of 7 August 2014. This draft document has established new requirements for preparation of a Work Programme which will serve as a basis for the programming of action and financial assistance under the Bohunice programme; and which will be annexed to the corresponding Commission's financing decision in the respective year.

This Work Programme 2019 - 2020 was drafted in the transition period before the official adoption of updated Commission Implementing Decision; however, it was prepared accordingly. In this regard, all activities planned herein are consistent with the Detailed Decommissioning Plan 2017 and are set out by six-month periods for the next two calendar years, in accordance with Article 11 'Work Programmes', paragraph 2 and 3 of draft "Commission Implementing Decision".

Detailed guidelines and template for elaboration of draft Work Programme shall be proposed by the Commission and adopted by the Monitoring Committee in 2019.

1.1. PROGRAM STATUS AND MAIN ACHIEVEMENTS BY 31 DECEMBER 2018

1.1.1. DECOMMISSIONING OF V1 NPP - BOHUNICE PROGRAMME

The decommissioning of a nuclear power plant is a complex process and is, in many aspects, different from dismantling of non-nuclear facilities. During the operation of the nuclear power plant, as well as during the process of decommissioning, with the reactor being shut down and nuclear fuel being removed, discipline, systematic approach to work, quality and control of the entire process and high level of safety culture in project management must be maintained.

The year 2018 is associated with a good progress in the implementation of ongoing V1 NPP decommissioning projects. Special attention is being paid to the project D4.2 “Dismantling of Reactor Coolant System Large Components” due to its complex nature with regard to scope of works, project duration (62 months) and labour involved. A Senior Management Steering Committee comprising JAVYS, the Consortium Westinghouse-VUJE and the EBRD closely monitors the implementation of the project and addresses any issues that may affect outcome, cost or schedule by evaluating a number of alternatives to optimise the work processes and schedule. The project is progressing well, with the first physical works commenced in June 2018 slightly ahead of schedule.

Five contracts were successfully completed in 2018. The first project completed was “Decontamination of Spent Fuel Pools and Other Contaminated Tanks in the V1 NPP – Part 1” (D2.1), the implementation of which has greatly contributed to reducing the radiation burden of the personnel involved in the follow-up decommissioning activities. In May 2018, the project A5-A3 “Optimisation of Electric Scheme” came to the end. During its implementation, the successful optimisation and reduction of electric scheme of the shutdown V1 NPP was verified, while maintaining the full functionality of the remaining devices. In June 2018, the project C15-A “Integrated Computer System for V1 NPP Decommissioning Logistic System” was completed. The system software is in full operation mode, managing and monitoring all materials generated in the process of V1 NPP decommissioning. Implementation of the project D4.4A “Auxiliary Buildings System Removal – Stage 1” lasted until July 2018. Following successful dismantling and removal of the technology in the controlled area, the premises are ready for establishment of a buffer storage for VLLW, including interim RAW. The last project completed was “Dismantling and Demolition of V1 NPP Cooling Towers (D3.1B). Demolition of four cooling towers attracted widespread attention of the public since it was a visible demonstration of the site's progress towards clean-up.

Another achievement is related to enlargement of RAW disposal decommissioning infrastructure. Activities in the frame of the project C9.4 “Design and Erection of New Disposal Facilities for LLW and VLLW from V1 NPP Decommissioning at NRR Mochovce” are progressing well. Construction of the VLLW repository was finalized last year; erection of the LLW repository was completed at the end of 2018.

With regard to the PMU consultancy services (Project A1.8) being ensured by the Italian company Sogin S.p.A., these have been positively assessed and JAVYS is interested in the continuation of cooperation during the years 2019 and 2020.

“Dismantling of Systems in V1 NPP Controlled Area – Part 2, D4.4C.01 Subproject”, the first project to be implemented through the national agency, is in the procurement phase.

With regard to the “optimization strategy”, the PMU Consultant, in cooperation with JAVYS specialists, finalised the Technical Study for Subproject D4.7.01 “*Decontamination and Demolition of V1 NPP Buildings and Site Restoration.* The study supports the preliminary conclusion that a redistribution of the activities of the final decommissioning projects can help maintain the end of 2025 as the final date for V1 NPP decommissioning.

In order to support knowledge-sharing activities, which is the desired outcome of the EU-funded decommissioning assistance programmes under the Council Regulation No. 1368/2013 and 1369/2013, respectively, and in order to benefit from JAVYS’s experience already gained during the decontamination of the primary circuit which was successfully completed in December 2017, JAVYS participated in tender for the Project 55 “Support in the Preparation of the Reactor Building for the Decontamination of the Primary Circuit of KNPP Units 1- 4”.

All decommissioning projects being implemented during the calendar year 2018 are listed in APPENDIX No. 1 hereof.

1.1.2. GENERAL EVENTS RELATED TO V1 NPP DECOMMISSIONING IN 2018

a) 2nd periodic audit of the JAVYS Information technologies - Services management according to requirements of ISO/IEC 20000-1:2011 standards by the certification company DNV-GL Business Assurance Slovakia, s.r.o. was performed in April 2018. After successful completion of the certification audit, certificate in accordance with ISO/IEC 20000-1:2011 was confirmed for the next period.

b) Assessment of the eligibility of the cost as identified in Grant Agreement No.021C and Grant Agreement No.021D and claimed for JAVYS's human resources services for the implementation of the decommissioning of V1 NPP Bohunice for the year 2016: The audit started on 4 May 2018 and was executed by the company Deloitte Audit, s.r.o.

c) Recertification audit of the JAVYS Integrated Management System according to requirements of ISO 9001:2015, ISO 14001:2015 and OHSAS 18001:2007 standards by the certification company DNV-GL Business Assurance Slovakia, s.r.o. was performed at the beginning of December 2018. After successful completion of the certification audit, certificates in accordance with ISO 9001:2015, ISO 14001:2015 and OHSAS 18001:2007 will be confirmed for the next period.

1.2. FINANCIAL OVERVIEW

1.2.1. PLANNED FUNDING FROM ALL RESOURCES TO THE BOHUNICE PROGRAMME FOR THE BUDGETARY YEARS 2019 AND 2020

The table below provides information on the scheduled disbursement of decommissioning funds, including national co-financing, for the years 2019 and 2020 in line with Annex No. 3 of draft Commission Implementing Decision. The administration fees of both implementing bodies are included.

Table No. 1: Funding Resources for V1 NPP Decommissioning planned for 2019 and 2020

Funding resources		**Funding in 2019 [M€]**	**Funding in 2020 [M€]**
EU resources (Bohunice Programme)	BIDSF	69.428	43.597
	SIEA	13.437	18.481
National resources		33.563	38.958
TOTAL		**116.428**	**101.036**

Contingency	15.233	14.843

1.2.2. ACTUAL AND PLANNED CONTRIBUTIONS FROM ALL RESOURCES TO THE BOHUNICE PROGRAMME INCLUDING FINANCIAL GAP

Bohunice V1 NPP decommissioning is financed from the following resources:

1. Bohunice Programme (EU assistance administrated by the EBRD and the SIEA);
2. Resources of the Slovak Republic (i.e. resources from the National Nuclear Fund and JAVYS own resources).

According to DDP 2014, the overall cost of V1 NPP decommissioning was estimated in the amount of 1,245 M€. Following the review in 2015, the estimate was reduced to 1,239 M€.

In 2015, the Slovak Republic increased its national co-financing contribution to the overall estimated cost of V1 NPP decommissioning from 372 M€ (AWP 2015) to 476 M€ (AWP 2016, AWP 2017, AWP 2018).

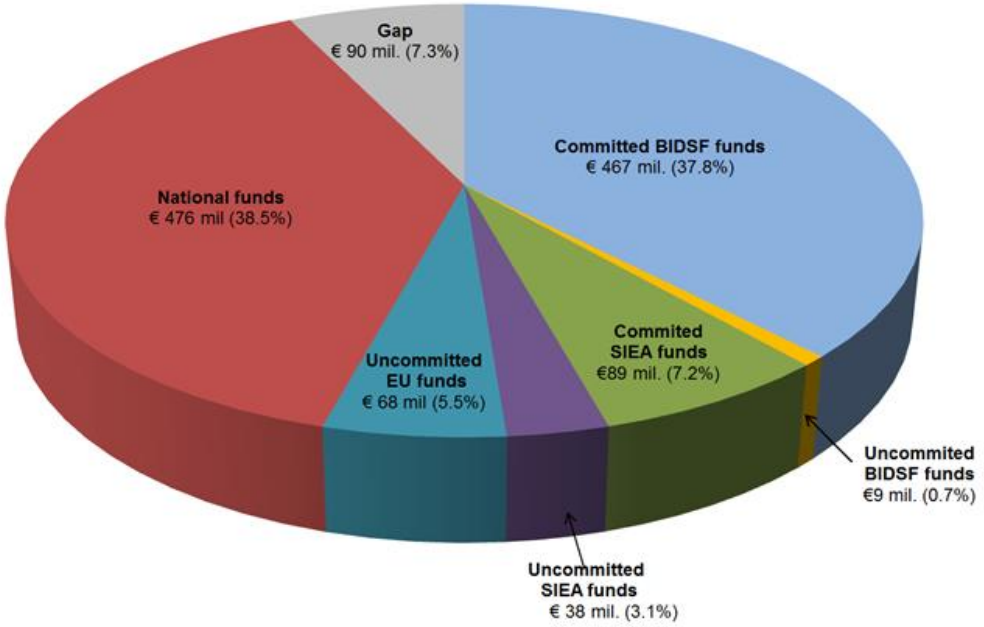
In December 2017, with regard to preparation of an updated DDP 2014, financial data were recalculated as well. Financial gap was reduced by 2 M€, which is also reflected in the overall cost of V1 NPP decommissioning, which is currently in the amount of 1,237 M€.

The figure below provides an overview of V1 NPP decommissioning funds, including the share of the Slovak funds (incurred and planned). The pie chart reflects the situation as of the end of 2018, taking into consideration actions of 2018; i.e. financing decision adopted by the EU as well as

granting of Phase 1 by the SIEA for D4.7.01 Decontamination and Demolition of V1 NPP Buildings and Site Restoration, D4.7.01 Subproject.

All values in this chapter are expressed in current prices, considering a fixed value for future inflation, where appropriate.

Figure 1: Bohunice V1 NPP Decommissioning Funds as of the end of 2018 (1,237 M€)



The Slovak Republic Contribution to Bohunice V1 NPP Decommissioning

The Slovak Republic contributes financially to Bohunice V1 NPP decommissioning via National Nuclear Fund and via own funds of JAVYS. These Slovak resources were used during the termination of V1 NPP operation, during the 1st stage of V1 NPP decommissioning and are also used for the needs of the 2nd stage of V1 NPP decommissioning. The contribution to V1 NPP decommissioning on the national level is provided in the following forms:

- **Co-financing** of respective decommissioning projects (specified as “Slovak Resources” in Grant Agreements);
- **Financing of utility expenses** for respective decommissioning projects (specified as “Slovak Resources” in Grant Agreements);
- **Financing of activities supporting** the process of V1 NPP decommissioning. These activities are represented by overhead costs such as: maintenance and repair costs, consumption of power, heat and other media, salaries and social costs (except those financed through the BIDSF project “D0” Implementation of the Decommissioning Programme Using the Human Resources Available at Bohunice V1 Nuclear Power Plant), taxes, insurance, fees, costs for services (V1 NPP area security, cleaning, etc.), cost for RAW management (except those financed through BIDSF), etc. It should be pointed out that the overhead costs cannot be directly linked to the costs of the individual V1 NPP decommissioning projects. Nevertheless, the implementation of decommissioning projects would not be feasible without the above supporting activities.

In JAVYS, the overhead costs are allocated to the three main processes: (i) decommissioning of V1 NPP, (ii) decommissioning of A1 NPP, (iii) RAW management. The overhead costs are split into the above three categories using relevant allocation methods. The integrated management system in company JAVYS is executed in compliance with ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 and ISO/IEC 20000-1:2001 standards, being regularly reviewed by the international certification company DNV GL.

Another important fact is that the infrastructure necessary for the needs of V1 NPP decommissioning was funded from the Slovak resources, and these costs are not included in total costs of V1 NPP decommissioning (1,237 M€). It includes the construction of RAW management and the Spent Nuclear Fuel management infrastructures (Radioactive Waste Treatment Centre in Bohunice area, Interim Spent Fuel Storage in Bohunice area, National Radwaste Repository at Mochovce, Liquid RAW Processing Facility at Mochovce) in the total amount of approx. 310 M€ (in prices of 2015).

The national route of Bohunice V1 NPP decommissioning

The process of national route establishment started in 2014 and was finalized by signing the Delegation Agreement between the EC and SIEA in August 2016. The SIEA has been fully operational since then and assumed its role of the Implementing Body (next to the EBRD). By the end of 2018, 127 M€ have been allocated from the EU resources to the SIEA. The first project to be implemented by the national agency is the project D4.4C.01 Dismantling of Systems in V1 NPP Controlled Area - Part 2, D4.4C.01 Subproject".

A working group consisting of the EC, EBRD, JAVYS, SIEA, MoE SR, PHA SR, NNF and NRA SR was established in 2017 in order to decide on the most suitable solution to the technical, organisational, and financial issues of final activities of V1 NPP decommissioning. Based on the outcomes of the final report of the working group, the SIEA will take the role of the Implementing Body for D4.7.01 "Decontamination and demolition of V1 NPP buildings and site restoration, D4.7.01 Subproject". By the end of 2018, SIEA shall grant to JAVYS funds in the amount of 63.292 M€ for Phase 1 of Subproject D4.7.01.

2. V1 NPP DECOMMISSIONING SCHEDULE

2.1. BASELINE TIME SCHEDULES (GANTT CHARTS)

The following time schedules are attached to this "Work Programme 2019 - 2020":

a) Time schedule (Gantt chart) for the period 2019–2025

The time schedule covering the period 2019–2025 is attached to this document as APPENDIX No. 2. The Gantt chart provides information on the start, end and duration of implementation phases of respective decommissioning projects as planned in the baseline (DDP 2017) until the end of V1 NPP decommissioning in 2025. The Gantt chart also shows the current time schedule* (status as of the end of 2018).

Note (*): The start and duration of project implementation phases is indicative for projects, where contract signature is foreseen during or after 2019. For D6.2, data are from DDP 2017 (The time schedule does not take into account the mitigation measures suggested by JAVYS – see subchapter 2.3.2).

b) Time schedule (Gantt chart) for the years 2019 and 2020

The time schedule attached to this document as APPENDIX No. 3 provides information on decommissioning milestones within respective projects as scheduled in the baseline (DDP 2017) for the years 2019 and 2020.

2.2. MAJOR CHANGES IN SCOPE, TIME OR COST

In 2018, nine amendments to existing contracts were signed; however, **no major changes to scope, time or cost have been identified**.

Table No. 2: Overview of amendments concluded in 2018

Activity		**Impact on:**		
Code	**Title**	**Scope**	**Time**	**Cost**
A1.9	PMU Consultant – Phase 9*	✓	✓	✓
B6.6A	Decommissioning Support Surveys	✓	✗	✗
C7-A4	Metallic RAW Melting Facility**	✗	✓	✗
C9.4	Design and Erection of New Disposal Facilities for LLW and VLLW from V1 NPP Decommissioning at NRR Mochovce	✗	✗	✗
D4.1	Modification of the Plant and Installation of New Equipment	✗	✗	✗
D4.2	Dismantling of Reactor Coolant System Large Components	✓	✗	✗
D4.4A1	Modification of Facilities in the AKOBOJE System	✗	✗	✗
D4.4B	Dismantling of systems in V1 NPP Controlled Area - Part 1	✗	✗	✗
D19.1	Upgrade of PMU Hardware Equipment	✗	✗	✗

Notes:

(*) Continuation of the consultancy services in the year 2019 within the project A1.9 “PMU Consultant – Phase 9” will be realized by amending the existing contract with the company Sogin S.p.A. The main scope of services provided will be assistance in contract management with increased involvement of key experts in the implementation of dismantling projects. The project will be funded from savings from the previous grant agreements for consultancy services.

(**) Extension of Time for Completion by six months within the project C7-A4 “Metallic RAW Melting Facility” does not have any impact on the critical path activities or final completion date of V1 NPP decommissioning.

2.3. CRITICAL PATH

2.3.1. CRITICAL PATH OF V1 NPP DECOMMISSIONING IN 2019-2025

Critical path for the whole process of V1 NPP decommissioning is an important element of project risk management process. The critical path is represented by succession of main activities (decommissioning projects) and activities within respective projects, timely completion of which ensures compliance with the scheduled completion date of V1 NPP decommissioning. All activities on the critical path are interdependent. The decommissioning milestones which belong to projects on the critical path are highlighted in red colour in APPENDIX No. 3 hereof. Implementation of V1 NPP decommissioning projects is managed and monitored using the planning tool IPBTS.

The critical path analysis forecasts the following projects as a part of critical path for the period 2019-2025:

1) **D4.2** “Dismantling of Reactor Coolant System Large Components”
2) **D4.4C.01** “Dismantling of Systems in V1 NPP Controlled Area - Part 2, D4.4C.01 Subproject”
3) **D4.7.01** “Decontamination and Demolition of V1 NPP Buildings and Site Restoration, D4.7.01 Subproject”, formed by the scopes of the former projects:
    i. **D4.5** “Buildings Decontamination”
    ii. **D4.6** “Buildings Demolition and Backfilling”
    iii. **D6.1** “Site Restoration”
4) **D6.2** “Final Survey and Site Release”

2.3.2. DESCRIPTION OF ACTIVITIES FORMING THE CRITICAL PATH OF V1 NPP DECOMMISSIONING

The critical path analysis described in DDP 2017, Section 5.2.2.1 Identification and Description of Critical Path shows the project D4.2 “Dismantling of Reactor Coolant System Large Components” as the only project with critical activities to be implemented during the years 2019 – 2020.

The project D4.2 “Dismantling of Reactor Coolant System Large Components” is technically the most challenging and crucial project of V1 NPP decommissioning with implementation phase of

more than 5 years. Any delay in implementation of its critical tasks may have impact on the successor decommissioning activities. The final critical activity of the project D4.2 will be drainage of 2,600 m^3 of demineralized water from the wet workshops and consequent processing of liquid RAW by JAVYS on the existing evaporator.

The critical path will then continue with the activities of Subproject D4.4C.01 "Dismantling of Systems in V1 NPP Controlled Area – Part 2", starting with dismantling of the liquid waste treatment system (including evaporator) and related equipment. In general, the critical aspect of the latter project is dismantling of the last V1 NPP systems and equipment, which may be affected in the event of a delay of D4.2. Any delay in completing the works within Subproject D4.4C.01 may possibly negatively affect the final activities of V1 NPP decommissioning.

Then, the critical path will continue with critical tasks of Subproject D4.7.01"Decontamination and Demolition of V1 NPP Buildings and Site Restoration". Demolition of civil buildings within the Set No. 5 is the most complex and time-consuming, since it contains the civil buildings with the highest level of radiological contamination within the V1 NPP site, because the controlled area is inside of them. Therefore; it is considered as an activity forming the critical path of V1 NPP decommissioning.

Subproject D4.7.01 originated as an effort to mitigate delays after later performed decontamination of the primary circuit, which was the activity forming the critical path at that time. The reason for delay was non-performance by the then-contractor, which resulted in the termination of the contract (Project D2 "Decontamination of the Primary Circuit") and a new tendering procedure (Project D2-A "Decontamination of the Primary Circuit – 2nd Stage"). However, the D4.7.01 optimization strategy has merged the scopes of three projects (D4.5, D4.6, D6.1) into one and showed that completing V1 NPP decommissioning by the end of 2025 is possible.

The final critical activity planned is within the project D6.2 "Final Survey and Site Release". Its scope is to perform the final radiological survey to demonstrate compliance with the regulatory clearance levels and to release the V1 NPP site from regulatory control.

However; since the tender for Subproject D4.4C.01 was cancelled and relaunched, a new date for submission of tenders was scheduled for 20 December 2018. As a consequence, the contract will not be signed in February 2019 as originally planned, but at the earliest in April 2019. Since this project contains activities forming the critical path, all dependencies between the succeeding activities were evaluated. As a mitigation measure to keep 2025 as the final completion date of V1 NPP decommissioning, JAVYS suggested transferring part of the D6.2 scope to the contractor of Subproject D4.7.01 and part will rest on JAVYS. The V1 NPP site will be released gradually, as the individual sets will be implemented by the D4.7.01 contractor. JAVYS will review all protocols and verify the status of site conditions. In the end, a final survey will be conducted in accordance with Act No. 541/2004 (Atomic Act) by the D4.7.01 contractor.

\- - -

In addition to critical path analysis, the company's principal interest is also successful and active management of interfaces through process monitoring. Moreover, JAVYS pays careful attention to ensuring effective intercommunication between all project managers by implementing regular meetings so that they can continuously monitor and improve the existing or future inter-project processes (e.g. D4.2 → D4.7.01), as well as between JAVYS and NRA SR by implementing quarterly meetings in order to monitor the fulfilment of the V1 NPP Decommissioning 2nd Stage Plan.

3. ACTIVITIES TO BE PERFORMED IN 2019 and 2020 AND EXPECTED RESULTS

3.1. SPECIFIC OBJECTIVES OF THE BOHUNICE PROGRAMME FOR 2019 AND 2020

This subchapter presents programme targets categorized into respective Specific Objectives for the Bohunice Programme in accordance with the Council Regulation No. 1368/2013, Article 2. These targets are in line with Annex 1 of the draft Commission Implementing Decision, which serves as a basis for planning of all activities scheduled for the years 2019 and 2020. Specific Objective 1 & 2 show cumulative percentage of already dismantled systems in secondary and primary circuits, Specific Objective 3 indicates cumulative quantity of all produced waste in tonnes.

SPECIFIC OBJECTIVE 1:

"Performing dismantling in the turbine hall and auxiliary buildings of reactor V1, to be measured by the number and type of systems dismantled"

Table No. 3: Planned values for Specific Objective 1 by the end of 2020

Expected result and target date	**Dismantling in the turbine hall and auxiliary buildings of reactor V1 completed by 2020**						
Performance indicators	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Type of systems dismantled	Auxiliary Circuit System for Secondary Circuit - Phase 2	Electricity production system Auxiliary Circuit System for Secondary Circuit – Phase 1. Electric Power Supply System and Emergency Electric Power Supply System	Secondary Circuit Cooling System		Control System for Consumption of Electricity		
Number of systems dismantled (cumulative)	8%	44%	63.9%	63.9%	**100%**		

The cumulative value (in %) in the table above represents the progress towards fulfilling the SpO1, after succesful dismanting of systems when the relevant V1 NPP decomissioning project under the Bohunice Programme has been completed.

Cummulative fulfilment of Specific Objective 1 is **100%.** All systems in turbine hall and auxiliary buildings of reactor V1 had been dismantled by the end of 2018.

SPECIFIC OBJECTIVE 2:

Dismantling of large components and equipment in V1 reactor buildings, to be measured by the number and type of systems and equipment dismantled

Table No. 4: Planned values for Specific Objective 2 by the end of 2020

Expected result and target date	**Dismantling of large components and equipment in V1 reactor buildings completed by 2020**						
Performance indicators	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Type of systems dismantled			Primary Circuit Equipment Insulation		Auxiliary Building Systems/Parts of Spent Fuel Pools and Other Contaminated Tanks–Part 1		External Pipeline Systems
Number of systems dismantled (cumulative)	0%	0%	3%	3%	5%	5%	5.015%

Dismantling of individual systems under the SpO2 is implemented by the following projects of V1 NPP decommissioning:

- **D4.3A** "Dismantling of Insulation in the V1 NPP Controlled Area" (complete)
- **D4.4A** "Auxiliary Buildings System Removal – Stage 1" (complete)
- **D2.1** "Decontamination of Spent Fuel Pools and Other Contaminated Tanks in the V1 NPP – Part 1" (complete)
- **D4.1** "Modification of the Plant and Installation of New Equipment"
- **D4.4B** "Dismantling of Systems in V1 NPP Controlled Area – Part 1"
- **D4.2** "Dismantling of Reactor Coolant System Large Components"
- **D4.4C.01** "Dismantling of Systems in V1 NPP Controlled Area – Part 2, D4.4C.01 Subproject"
- **D4.7.01** "Decontamination and Demolition of V1 NPP Buildings and Site Restoration, D4.7.01 Subproject"

The cumulative value (in %) in the table above represents the progress towards fulfilling the SpO2, after succesful dismanting of radiologically contaminated systems when the relevant V1 NPP decomissioning project under the Bohunice Programme has been completed.

By the end of 2018, primary circuit equipment insulation (D4.3A), auxiliary building systems (D4.4A) and spent fuel pool and other contaminated tanks (D2.1) were fully dismantled. These systems represent 5% of all systems to be dismantled within the SpO2. Since the project associated with dismantling of the next system - external pipeline system (D4.1) will be completed only in 2020, cummulative value of 5% will be also valid for 2019. After completion of the project D4.1 in 2020, cummulative fulfilment will raise up to 5.015%. However, partial dismantling of the systems will be in progress in 2019 and 2020 as part of ongoing projects (see Table No. 9 for 2019 and Table No. 10 for 2020). These partial activities will be monitored on a half-year basis and outputs of this monitoring shall serve for calculation of the key performance index KPI_SPO2 (see subchapter 3.3.1)

SPECIFIC OBJECTIVE 3:

Safely managing the decommissioning waste in accordance with a detailed waste management plan, to be measured by the quantity and type of conditioned waste

Table No. 5: Planned values for Specific Objective 3 by the end of 2020

Expected result and target date	**All waste safely processed by 2020 (cumulative)**						
Performance indicators	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Dismantled conventional materials (tonne)	23,151	74,632	74,752	86,298	146,152	147,617	149,297
Dismantled hazardous materials (tonne)	54	180	183	4,608	4,611	4,618	4,813
Dismantled radioactively contaminated materials (tonne)	387	909	1,440	1,608	2,003	4,026	6,474

Waste produced during the process of V1 NPP decommissioing is divided into three groups: conventional, hazardous and radioactive. The values in the above table represent the planned cumulative quantities of all dismantled material within the individual V1 NPP decommissioning projects based on the type of waste produced up to the end of a respective year in line with Annex 1 of the draft Commission Implementing Decision. Planned values of waste production will be evaluated by the key performance index KPI_SpO3 on a half-year basis (see subchapter 3.3.2).

Note: Dismantled radioactively contaminated material is managed using the JAVYS own processing facilities. Costs for such processing is/will be monitored by EVM for all RAW processing projects (i.e. D2-A_R, D4.3A_R, D4.4A_R, D4.4B_R, D4.2_R, D4.4C.02, D4.4C.03, D4.7.02 , D4.7.03).

3.2. SUPPORTING PROJECTS OF V1 NPP DECOMMISSIONING

In addition to dismantling of systems, supporting projects of V1 NPP decommissioning that by their nature do not belong to any specific objective will also be implemented in 2019 and 2020. These projects have *no impact* on the critical path of V1 NPP decommissioning. Their progress will be evaluated using EVM, with regard to time and financial performance. Individual project milestones, as planned in DDP 2017, are detailed in APPENDIX No. 3 hereof.

Table No. 6: The list of supporting projects of V1 NPP decommissioning

Activity		**Implementation (DDP 2017)**
Code	**Title**	
B6.6A	Decommissioning Support Surveys	03/2017 - 03/2022
A1.9	PMU Consultant - Phase 9	01/2019 - 12/2020
D0 (Project 11)	Implementation of the Decommissioning Programme using the Human Resources available at Bohunice V1 Nuclear Power Plant: Project 11	01/2019 – 12/2019
D0 (Project 12)	Implementation of the Decommissioning Programme using the Human Resources available at Bohunice V1 Nuclear Power Plant: Project 12	01/2020 – 12/2020
DMS*	Documentation Management System	04/2018 – 03/2022
C8-B**	Interim Storage of RAW for Special Wastes	06/2020 – 06/2023

Activity		Implementation (DDP 2017)
Code	Title	
C9.4	Design and Erection of New Disposal Facilities for LLW and VLLW from V1 NPP Decommissioning at NRR Mochovce	01/2016 – 05/2019
C12.2**	Laboratory Equipment necessary in the process of V1 NPP Decommissioning Stage II	10/2019 – 12/2020
D4.4A1	Modification of Facilities in the AKOBOJE System	04/2017 – 04/2019

* DMS – Not implemented (see subchapter 3.4)
** At present, implementation of these projects is not expected.

D0 "Implementation of the decommissioning programme using the human resources available at Bohunice V1 Nuclear Power Plant"

The aim of the project is to finance salary costs (including remuneration costs in accordance with valid company collective agreement) and levies enforced by law of JAVYS personnel taking part in V1 NPP decommissioning. One of the main V1 NPP decommissioning aspects is to utilize the knowledge and experience of current personnel that may be used effectively in the next V1 NPP decommissioning tasks. Planning of human resources in JAVYS for the BIDSF project D0 is prepared based on the Annual Planning Document and IPBTS for the relevant period. The total equivalent of full-time employees (FTE) taking part in the process of the V1 NPP decommissioning **in 2019**, which represents 235 employees, is listed in the table below.

Table No. 7: JAVYS employees participating in V1 NPP decommissioning (BIDSF Project D0) in 2019 (Full-time equivalent)

Code	V1 NPP Decommissioning Projects/Activities	Core	ent & Human Resource	Overheads	Safety & Environment	RAW	Total
A1.8	PMU Consultant - Phase 8	1.5					1.5
A1.9	PMU Consultant - Phase 9	4.2					4.2
A5-A2a	Correction of the JAVYS Power Supply System	5.2					5.2
B6.6A	Decommissioning Support Surveys	6.7					6.7
C7-A4	Metallic RAW Melting Facility	4.8					4.8
C8-B	Interim Storage RAW for Special Wastes	2.2					2.2
C9.4	Design and Erection of New Disposal Facilities for LLW and VLLW from V1 NPP Decommissioning at NRR Mochovce	8.0					8.0
C12.2	Laboratory Equipment Necessary for the Process of V1 NPP Decommissioning – Stage 2	2.8					2.8
D0	Implementation of the Decommissioning Programme Using the Human Resources Available at Bohunice V1 Nuclear Power Plant: Project 11	4.7					4.7
D0	Implementation of the Decommissioning Programme Using the Human Resources Available at Bohunice V1 Nuclear Power Plant: Project 12	2.1					2.1
D3.1B	Dismantling and Demolition of V1 NPP Cooling Towers	2.9					2.9
D4.1	Modification of the Plant and Installation of New Equipment	8.1					8.1
D4.2	Dismantling of Reactor Coolant System Large Components	19.9					19.9
D4.4A	Auxiliary Buildings System Removal - Stage 1	1.5					1.5
D4.4A1	Modification of Facilities in the AKOBOJE System	5.0					5.0
D4.4B	Dismantling of Systems in V1 NPP Controlled Area – Part 1	7.6					7.6
D4.4C.01	Dismantling of Systems in V1 NPP Controlled Area – Part 2	9.4					9.4
D4.7.01	Decontamination and Demolition of V1 NPP Buildings and Site Restoration	27.0					27.0
D6.2	Final survey and site release	2.0					2.0
D19.1	Upgrade of the PMU Hardware Equipment	1.0					1.0
	General Activities of V1 NPP Decommissioning Projects		9.6	42.6	55.2	2.3	109.7
Total		**125.3**	**9.6**	**42.6**	**55.2**	**2.3**	**235.0**

Note: The table above shall be of informative nature only and shall not be subject to the BIDSF project D0 progress evaluation for the year 2019. The reporting, evaluation and invoicing of the BIDSF project D0 will be performed in accordance with respective stipulations of the relevant Grant Agreement No. 021E.

In 2020, the total equivalent of full-time employees (FTE), taking part in the process of the V1 NPP decommissioning is preliminary planned for 230 employees. The basis for the relevant activities related to the V1 NPP decommissioning in year 2020 will be the organizational structure of the company JAVYS valid in the year 2020. JAVYS will review its decommissioning organization structure in comparison with the current decommissioning Project objectives and it is expected that this organizational structure will be reviewed in order to be finalized and provided to the NRA SR for its approval during 2019. Therefore; the below mentioned table of the total equivalent of full-time employees (FTE), taking part in the process of the V1 NPP decommissioning in year 2020, is only preliminary and will be exactly specified in the Project Documentation and Project Identification Sheet of the BIDSF project D0 "Implementation of the Decommissioning Programme Using the Human Resources Available at Bohunice V1 Nuclear Power Plant: Project 12" according to the relevant Annual Planning Documents elaborated by JAVYS divisions/departments in year 2019 and IPBTS for the specific period.

Table No. 8: JAVYS employees participating in V1 NPP decommissioning (BIDSF Project D0) in 2020 (Full-time equivalent)

Code	V1 NPP Decommissioning Projects/Activities	Core	Management & Human Resources	Overheads	Safety & Environment	RAW	Total
A1.9	PMU Consultant - Phase 9	4.2					4.2
A1.10	PMU Consultant - Phase 10	2.3					2.3
A5-A2a	Correction of the JAVYS Power Supply System	7.4					7.4
B6.6A	Decommissioning Support Surveys	6.7					6.7
C7-A4	Metallic RAW Melting Facility	1.5					1.5
C8-B	Interim Storage RAW for Special Wastes	2.2					2.2
C12.2	Laboratory Equipment Necessary for the Process of V1 NPP Decommissioning – Stage 2	2.8					2.8
D0	Implementation of the Decommissioning Programme Using the Human Resources Available at Bohunice V1 Nuclear Power Plant: Project 11	1.5					1.5
D0	Implementation of the Decommissioning Programme Using the Human Resources Available at Bohunice V1 Nuclear Power Plant: Project 12	4.7					4.7
D0	Implementation of the Decommissioning Programme Using the Human Resources Available at Bohunice V1 Nuclear Power Plant: Project 13	2.0					2.0
D4.1	Modification of the Plant and Installation of New Equipment	5.8					5.8
D4.2	Dismantling of Reactor Coolant System Large Components	22.1					22.1
D4.4B	Dismantling of Systems in V1 NPP Controlled Area – Part 1	8.0					8.0
D4.4C.01	Dismantling of Systems in V1 NPP Controlled Area – Part 2	15.7					15.7
D4.7.01	Decontamination and Demolition of V1 NPP Buildings and Site Restoration	28.0					28.0
D6.2	Final survey and site release	5.6					5.6
	General Activities of V1 NPP Decommissioning Projects		9.3	41.3	55.2	3.7	109.5
Total		**116.9**	**9.3**	**41.3**	**55.2**	**3.7**	**230.0**

Note: The table above shall be of informative nature only and shall not be subject to the BIDSF project D0 progress evaluation for the year 2020. The reporting, evaluation and invoicing of the BIDSF project D0 will be performed in accordance with respective stipulations of the future Grant Agreement No. 021F, which will ensure the funding of the implementation of the decommissioning programme using the human resources available at Bohunice V1 Nuclear Power Plant in year 2020.

3.3. PLANNED VALUES FOR EVALUATION OF KPIs

3.3.1. PLANNED VALUES FOR KPI_SpO2

In 2019, no system within the SpO2 will be fully dismantled (i.e. no project within the SpO2 will be completed in 2019); therefore, the SpO2 cumulative fulfilment of 5 % from the previous period will be also valid for the year 2019. However, partial dismantling of the systems will be in progress as part of ongoing projects, as shown in the table below:

Table No. 9: The list of dismantling milestones for evaluation of the progress achieved in frame of SpO2 during the year 2019

Type of systems dismantled	Period for dismantling of systems	Detail description of systems to be dismantled	Planned Target
External Pipeline Systems (D4.1)	1H/2019	Dismantling of non-necessary components in frame of installation of the new pipeline of demineralised water from building 590:V1 into ISFS	1
	2H/2019	Dismantling of non-needed components in frame of installation of new pipe for pumping of contaminated water from ISFS	2
		Dismantling of non-necessary components in frame of installation of new pipeline routes and connection points for pumping of regeneration and decontamination solutions	
Nuclear Steam Supply System (D4.2)	1H/2019	Complete Pressurizer dismantling (Unit 2)	4
		Complete Bubble tank dismantling (Unit 2)	
		Complete dismantling of the reactor vessel lid extension with fuel assemblies drives (Unit 1)	
		Complete dismantling of the reactor vessel lid extension with fuel assemblies drives (Unit 2)	
	2H/2019	Complete Pressurizer dismantling (Unit 1)	1

The table below lists partial dismantling activities to be completed by the end 2020 in line with DDP 2017:

Table No. 10: The list of dismantling milestones for evaluation of the progress achieved in frame of SpO2 during the year 2020

Type of systems dismantled	Period for dismantling of systems	Detail description of systems to be dismantled	Planned Target
External Pipeline Systems (D4.1)	1H/2020	Dismantling of existing pipeline channels APK-M and SPK-M leading from CB801:V1 into CB840M (ISFS), including dismantling of pipelines	1
Nuclear Steam Supply System (D4.2)	1H/2020	Complete Primary Circuit Piping dismantling (Unit 1)	10
		Complete Main Isolation Valves dismantling (Unit 1)	
		Complete Main Coolant Pumps dismantling (Unit 1)	
		Complete Bubble tank dismantling (Unit 1)	
		Complete Reactor Shielding Assemblies dismantling	
		Complete Annular Water Tank dismantling (Unit 1)	
		Complete Annular Water Tank dismantling (Unit 2)	
		Complete Main Coolant Pumps dismantling (Unit 2)	
		Complete dismantling of the Active water treatment system (Unit1)	
		Complete dismantling of the Active water treatment system (Unit2)	

Type of systems dismantled	Period for dismantling of systems	Detail description of systems to be dismantled	Planned Target
	2H/2020	Complete Reactor Internal Structures dismantling (Unit 1) Complete Primary Circuit Piping dismantling (Unit 2) Complete Main Isolation Valves dismantling (Unit 2)	3
Auxiliary Circuit systems for Primary Circuit - Phase 1 (D4.4B)	2H/2020	Completion of the dismantling of remaining equipment and material within the Auxiliary Building Completion of the dismantling of remaining equipment and material within the Reactor Building and in other buildings and areas	2
Auxiliary Circuit systems for Primary Circuit - Phase 2 (D4.4C.01)	1H/2020	Dismantling of certified dosimetrical systems, system for deactivation in SK 201, dismantling of tanks in CB 801:V1: SK013/3, SK013/4, SK013/5	1

These partial dismantling activities partake in dismantling of main systems and their successful completion contributes to achieve main targets in the future periods until SpO2 is 100% complete in the year 2025.

Fulfilment of individual targets will be monitored on a half-year basis by calculation of the key performance index KPI_SpO2:

$$KPI\_SpO2 = \frac{Achieved\ target}{Planned\ target}$$

where:
Achieved target is the number of completed dismantling milestones in the respective half-year;
Planned target is the planned number of dismantling milestones to be achieved in the respective half-year.

3.3.2. PLANNED VALUES FOR KPI_SpO3

The basis for calculating KPI_SpO3 for each half of 2019 and 2020 is the cumulative quantity of waste produced in the process of V1 NPP decommissioning for each type of waste. The planned values are in line with Annex 1 of the draft Commission Implementing Decision and will be evaluated biannually.

Table No. 11: Planned values for calculation of KPI_SpO3 for 2019 and 2020

Expected result and target date	All waste safely processed by 2020 (cumulative)			
Performance indicators	**1H_2019**	**2H_2019**	**1H_2020**	**2H_2020**
Dismantled conventional materials (tons)	146,679	147,617	148,140	149,297
Dismantled hazardous materials (tons)	4,614	4,618	4,679	4,813
Dismantled radioactively contaminated materials (tons)	2,730	4,026	4,788	6,474

KPI_SpO3 will be calculated as the ratio of the achieved cumulative quantity of waste produced as of the end of a respective half-year and the planned cumulative quantity of waste to be produced in line with DDP 2017:

$$KPI\_SpO3 = \frac{Achieved\ cumulative\ waste\ quantity}{Planned\ cumulative\ waste\ quantity}$$

3.3.3. PLANNED VALUES FOR KPI_MID – "MAXIMUM INDIVIDUAL DOSE"

The requirement for a high level of safety during V1 NPP decommissioning is one of the main priorities of the company JAVYS. The index KPI_MID monitors compliance with the maximum individual dose, thus fulfilling the safety-related requirement of the Council Regulation No. 1368/2013. The value of the "Maximum Individual Dose" may not exceed 13 mSv/year (internal limit in JAVYS).

Table No. 12: Planned values for calculation of KPI_MID for 2019 and 2020

	1H/2019	2H/2019	1H/2020	2H/2020
Planned value of the "Maximum Individual Dose"	0 exceeding	0 exceeding	0 exceeding	0 exceeding

3.3.4. PLANNED VALUES FOR EARNED VALUE MANAGEMENT (SCHEDULE AND COST)

Earned Value Management is a project management methodology for objectively measuring project performance using an integrated schedule and budget based on the project milestones. This technique helps to control the time and cost performance of a project; therefore, it is also used to evaluate the progress of V1 NPP decommissioning.

3.3.4.1. Cost Performance Index (CPI)

The Cost Performance Index helps to analyse the efficiency of the cost utilized by the project. It measures the value of the work completed compared to the actual cost spent on the project, expressed as a ratio of earned value to actual cost:

$$CPI = \frac{Earned\ Value}{Actual\ Cost}$$

where:
Earned Value (EV) is the cost of work completed (including contingency) in the respective half-year (in line with DDP 2017);
Actual Costs (AC) is the actually disbursed amount for completed work in the respective half-year.

Data for calculation of CPI for the year 2019 and 2020 are listed in the tables below.

Table No. 13: Planned values for calculation of EVM in 2019 (contingency included)

Cumulative value including 2019	Value for 2019	2019	
		1H 2019	2H 2019
179,099,646 €	104,390,490 €	47,182,520 €	57,207,969 €

Table No. 14: Planned cumulative values for calculation of EVM in 2020 (contingency included)

Cumulative value including 2020	Value for 2020	2020	
		1H 2020	2H 2020
266,870,422 €	87,770,775 €	29,295,191 €	58,475,584 €

3.3.4.2. Schedule Performance Index (SPI)

The Schedule Performance Index gives information about the schedule performance of the project. It is the efficiency of the time utilized on the project. It indicates how efficiently the project actually progresses compared to the planned project schedule, expressed as the ratio of earned value to planned value:

$$SPI = \frac{Earned\ Value}{Planned\ Value}$$

where:
Earned Value (EV) is the cost of work performed (excl. contingency) in the respective half-year;
Planned Value (PV) is the budgeted cost of work scheduled for the respective half-year (excluding contingency) taken from DDP 2017.

Data for calculation of **SPI** for the year 2019 and 2020 are listed in the tables below.

Table No. 15: Planned cumulative values for calculation of EVM in 2019 (contingency excluded)

Cumulative value including 2019	Value for 2019	2019	
		1H 2019	2H 2019
153,126,534 €	89,157,096 €	41,070,580 €	48,086,515 €

Table No. 16: Planned cumulative values for calculation of EVM in 2020 (contingency excluded)

Cumulative value including 2020	Value for 2020	2020	
		1H 2020	2H 2020
226,054,373 €	72,927,839 €	24,462,534 €	48,465,306 €

3.4. CONTRACT COMMITMENT FORECAST IN 2019 AND 2020

Table No. 17: The list of projects to be contracted in 2019 and 2020

Main Activity		Implementing Body
Code	Title	
A5-A2a	Correction of the JAVYS Power Supply System	EBRD
D4.4C.01	Dismantling of Systems in V1 NPP Controlled Area – Part 2, D4.4C.01 Subproject	SIEA
D4.7.01	Decontamination and Demolition of V1 NPP Buildings and Site Restoration, D4.7.01 Subproject	SIEA

Note to A5-A2a: Concerning remediation of water leakage in cable ducts as a deficiency of the project A5-A2 "Modification of the JAVYS power supply scheme after V1 final shutdown*",* an amicable settlement regarding financial compensation was signed between JAVYS and the company Efacec Engenharia e sistemas S.A in July 2018. These funds were returned to the BIDSF and will be used to implement the project A5-A2a "Correction of the JAVYS Power Supply System". The project A5-A2a was not planned in DDP 2017.

- - -

Having re-evaluated the estimated time schedule for development and implementation of the project "Documentation Management System", a decision has been made not to implement the project. Upon approval of the future Assembly of Contributors, the BIDSF resources intended for financing of the DMS project will be allocated to the project – A1.9 "PMU Consultant – Phase 9".

3.5. DECOMMISSIONING ACTIVITIES SUBJECT TO GRANT ALLOCATION IN 2019 AND 2020

The EU funds for V1 NPP decommissioning may be granted to JAVYS by two implementing bodies: the EBRD and the national agency SIEA.

3.5.1. IMPLEMENTING BODY - EBRD

In 2019, the following projects are expected to request grant allocation by the EBRD:

A1.9 PMU Consultant – Phase 9

In 2018, upon approval of the Assembly of Contributors, a decision was made to continue in cooperation with the PMU Consultant, the Italian company SO.G.I.N, Società Gestione Impianti Nucleari S.p.A., for additional two years, covering the period 2019 – 2020. The PMU Consultancy services to be provided in Phase 9 (Project A1.9) include the provision of support to JAVYS in contract management of projects related to the V1 NPP decommissioning. In 2018, the EBRD granted 0.8 M€ to JAVYS to extend the existing contract with the PMU Consultant for the year 2019. In 2019, remaining funds from the completed Phase 8 will be re-allocated within the GA 022B for the Phase 9 along with unused resources of GA 017E so that it is possible to conclude the Amendment for provision of the Consultants' services in 2020. Therefore, the amount of 0.8 M€ is expected to be granted by the EBRD at Assembly of Contributors in 2019 for the project A1.9 “PMU Consultant – Phase 9” for the year 2020.

A1.10 PMU Consultant – Phase 10

If there are enough uncommitted funds available in BIDSF in 2020, these resources will be used to grant the funds for continuation of the PMU Consultant in the Phase 10. Based on such grant agreement, the consultancy services would be provided in 2021. The estimated project cost is 0.8 M€.

D0 Implementation of the Decommissioning Programme Using the Human Resources Available at Bohunice V1 Nuclear Power Plant for the year 2020

The programme for financing of JAVYS staff involved in the V1 NPP decommissioning is foreseen to be financed from the BIDSF sources by means of grant allocation at the Assembly of Contributors in 2019 with an estimated cost of 6.675 M€.

D0 Implementation of the Decommissioning Programme Using the Human Resources Available at Bohunice V1 Nuclear Power Plant for the year 2021

The programme for financing of JAVYS staff involved in the V1 NPP decommissioning is foreseen to be financed from the BIDSF sources by means of grant allocation at the Assembly of Contributors in 2020 with an estimated cost of 6.675 M€.

- - -

In the event that the grant agreements will be closed out and unused funds returned to BIDSF in 2019 and 2020, JAVYS will seek approval to use these funds to cover the costs of waste treatment.

3.5.2. IMPLEMENTING BODY – SIEA

D4.7.01 "Decontamination and demolition of V1 NPP buildings and site restoration, D4.7.01 Subproject"

This project will complete the process of decommissioning of all remaining and unnecessary technology not removed by preceding dismantling projects; demolition of unnecessary civil buildings; and remediation of the V1 NPP site so that it is possible to perform the final survey and release the site of the V1 NPP from administrative control of the Slovak regulatory bodies. It originated as an effort to mitigate project delays and complete the V1 NPP decommissioning by the end of 2025 by merging projects D4.5 "Buildings Decontamination", D4.6 "Buildings Demolition and Backfilling" and D6.1 "Site Restoration", applying an optimized approach to project execution.

With respect to the longer procurement phase of the D4.4C.01 project, a mitigation measure was suggested by JAVYS to keep 2025 as the final completion date of V1 NPP decommissioning. Part of the scope of the project D6.2 "Final Survey and Site Release" will be included in the scope of Subproject D4.7.01 and part will be performed by JAVYS. The V1 NPP site will be released gradually, as the individual sets will be implemented by the D4.7.01 contractor. JAVYS will review all protocols and verify the status of site conditions. In the end, a final survey will be conducted in accordance with Act No. 541/2004 (Atomic Act) by the D4.7.01 contractor. Cost estimate for this merge is in the amount of 1 M€. The D4.7 Project Documents will be updated accordingly.

Provision of funds for Subproject D4.7.01 (the Contractor's part) will proceed in three phases due to time-efficient use of available funds necessary for the V1 NPP decommissioning projects, as follows:

Table No. 18: Granting phases of Subproject D4.7.01

Phase	Amount (M€)
Phase 1/ year 2018	63.292
Phase 2/ year 2019	61.601*
Phase 3/ year 2020	34.470
Total	**159.363***

*Including 1 M€ for D6.2

Accordingly, grant allocation from SIEA to JAVYS for Subproject D4.7.01 - Phase 2 in the amount of 61.601 M€ is expected in 2019 and 34.470 M€ in 2020.

3.6. EXCHANGE OF KNOWLEDGE BETWEEN EU-FUNDED DECOMMISSIONING PROGRAMMES

In 2013, Council Regulation No. 1368/2013 on Union support for the nuclear decommissioning assistance programmes in Bulgaria and Slovakia (and No. 1369/2013 for Lithuania) came into force, in order to ensure the seamless continuation of decommissioning in the period from 2014 to 2020 for these three programmes. The regulations stress that one of the main objectives is to ensure the highest possible efficiency by using the best available technical expertise with due regard to the nature and technological specifications of the units, thus taking into account international best practices and know-how. The EU added value of these programmes has always been defined in terms of nuclear safety, but as time passes, the exchange of knowledge between programmes has become increasingly important. The EU emphasizes the significance of sharing experience and know-how gained within the programmes as it can be beneficial to other decommissioning projects; thus resulting in an increase in the overall level of safety within the EU as well as efficient utilization of funds used within the programmes.

3.6.1. TRILATERAL KNOWLEDGE-SHARING SEMINAR IN 2019

Since 2014, several workshops and trilateral seminars have been organized at Bohunice, Kozloduy and Ignalina NPP sites in order to exchange practical information and know-how gained during decommissioning of respective nuclear facilities. The next workshop will be hosted by the company JAVYS on 13 - 14 March 2019, with the participation of representatives of the EC, MoE SR, Implementing Bodies, Kozloduy NPP and Ignalina NPP. The main objective of the trilateral seminar is to exchange views on various technical, managerial, economical, legislative and contractual aspects of decommissioning, as well as to share lessons learnt from the implementation of projects; discuss similarities and differences and possibly outline future prospects and recommendations.

3.6.2. TRANSFER OF EXPERIENCE FROM DECONTAMINATION OF THE V1 NPP PRIMARY CIRCUIT TO KOZLODUY PROGRAMME

After the significant milestone of the Bohunice programme - the successful decontamination of the primary circuit of V1 NPP in December 2017 (D2-A project), the European Commission, with the support of the European Bank for Reconstruction and Development, strongly supported the exchange of this experience with the Bulgarian company SERAW which will implement similar activities in the upcoming period. For this reason, JAVYS participated in tender for the Project 55 “Support in the Preparation of the Reactor Building for the Decontamination of the Primary Circuit of KNPP Units 1- 4” to assist in the preparation and implementation of decontamination of four Kozloduy NPPs using the same technology and equipment as during decontamination of two units of V1 NPP Bohunice in order to maximize the effectiveness of both decommissioning programmes.

In the first project (Project 55), JAVYS will provide SERAW with consultancy services in order to confirm the suitability of the proposed decontamination technology and equipment (DfD line) in the conditions of the Kozloduy NPP. Technical and financial proposals for Phase 1 of Project 55 were sent to SERAW at the end of October 2018.

After completing of Project 55, another project(s) will be implemented to address the transfer of ownership, transport, delivery, and support during installation, testing and commissioning of the

decontamination equipment (DfD line), assistance and technological support during performance of a chemical decontamination.

The funds received from KIDSF in connection with this support will be *exclusively* used for financing of V1 NPP decommissioning.

3.7. OVERVIEW TABLE: FUNDING BY SECTOR

The Bohunice Programme (EU Assistance)

Table No. 19: Funding by Sector and Subsector (% of the total annual EU funding)

Sector		Allocated to Projects							
		< 2014	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
1. Decommissioning		**68%**	**98%**	**97%**	**97%**	**97%**	**97%**	**98%**	**99%**
1A	Decontamination and dismantling	3%	29%	28%	46%	42%	35%	45%	55%
1B	Waste storage & disposal	12%	47%	42%	41%	52%	58%	48%	39%
1C	Regulatory and administrative assistance	14%	24%	30%	13%	6%	7%	7%	6%
1D	Pre-decommissioning activities	71%	0%	0%	0%	0%	0%	0%	0%
2. Programme Administration		**2%**	**2%**	**3%**	**3%**	**3%**	**3%**	**2%**	**1%**
2A	Administrative overheads of the programme	2%	2%	3%	3%	3%	3%	2%	1%
2B	Technical assistance in the programme administration	X	X	X	X	X	X	X	X
3. Other – energy sector consequential measures		**30%**	X	X	X	X	X	X	X
3A	Energy infrastructure	23%	X	X	X	X	X	X	X
3B	Energy efficiency	7%	X	X	X	X	X	X	X

4. APPENDICES

APPENDIX No. 1: List of V1 NPP decommissioning projects under implementation in 2018

APPENDIX No. 2: Gantt chart for 2019-2025

APPENDIX No. 3: Gantt chart for 2019

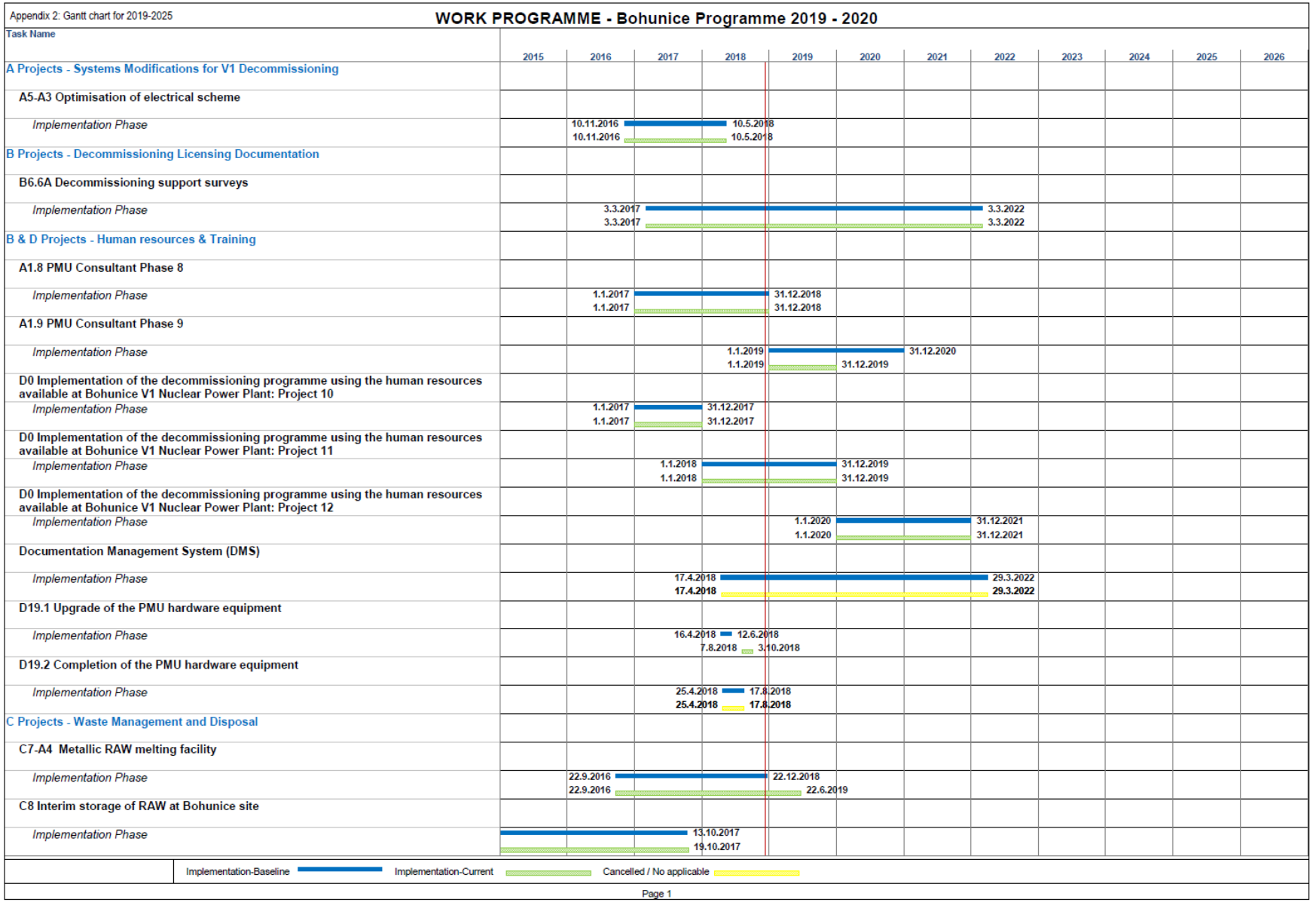
APPENDIX No. 1

List of V1 NPP decommissioning projects under implementation in 2018

Main activity		Implementation Current
Code	**Title**	
A1.8	PMU Consultant - Phase 8	01/2017 – 12/2018
A5-A3	Optimisation of Electric Scheme	11/2016 – 05/2018
B6.6A	Decommissioning Support Surveys	03/2017 – 03/2022
C7-A4	Metallic RAW Melting Facility	09/2016 – 06/2019
C9.4	Design and Erection of New Disposal Facilities for LLW and VLLW from V1 NPP Decommissioning at NRR Mochovce	01/2016 – 05/2019
C15-A	Integrated Computer System for V1 NPP Decommissioning Logistic System	09/2014 – 06/2018
D0	Implementation of the Decommissioning Programme Using the Human Resources Available at Bohunice V1 Nuclear Power Plant: Project 11	01/2018 – 12/2019
D2_R/ D2-A_R	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient	01/2015 –12/2023
D2.1	Decontamination of Spent Fuel Pools and Other Contaminated Tanks in the V1 NPP – Part 1	10/2016 – 02/2018
D2.1_R	Radioactive waste processing and transportation to the repository implemented by the Recipient	06/2017 – 12/2018
D3.1B	Dismantling and Demolition of V1 NPP Cooling Towers	08/2016 – 11/2018

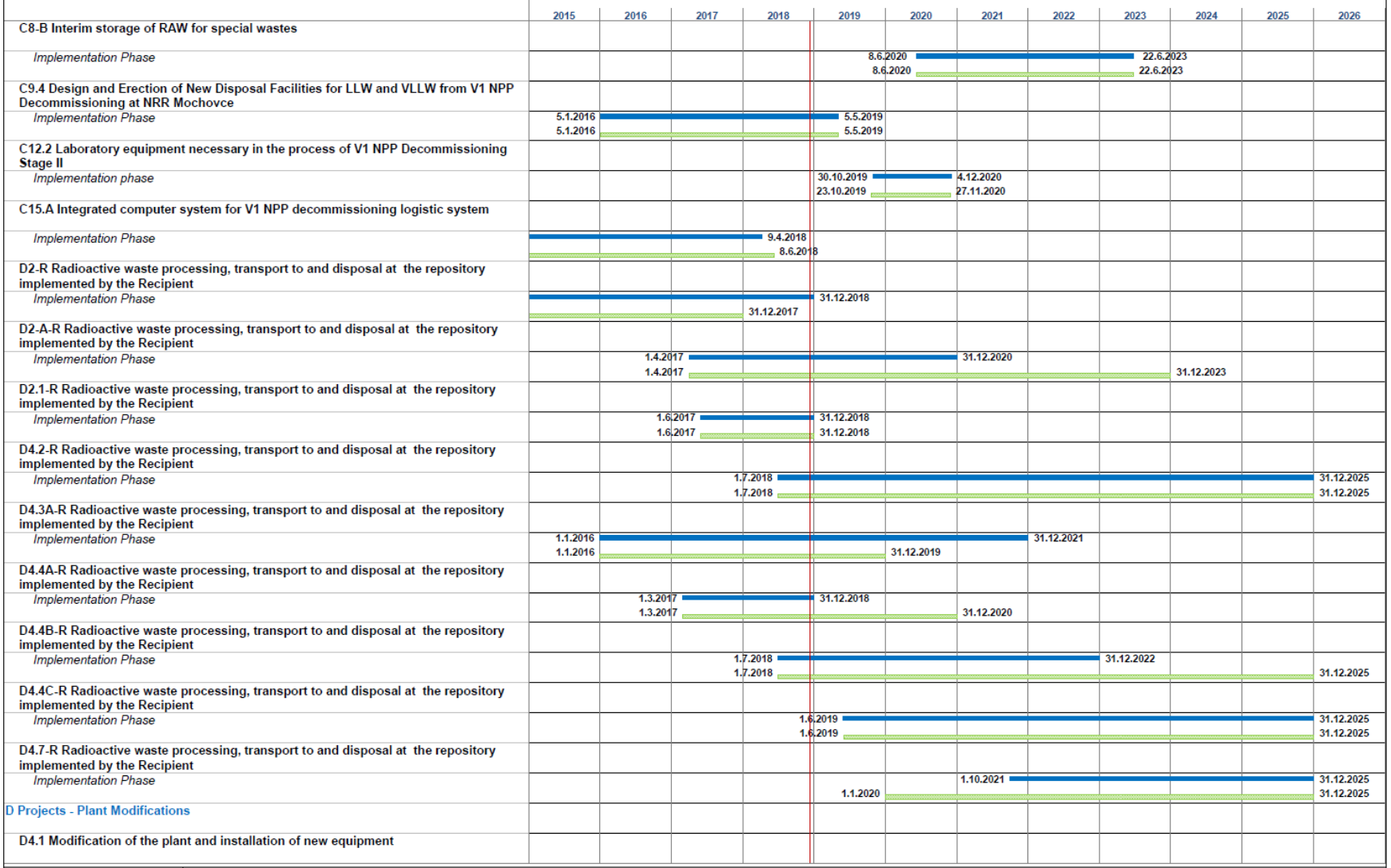
Main activity		Implementation Current
Code	**Title**	
D4.1	Modification of the Plant and Installation of New Equipment	02/2017 – 02/2020
D4.2	Dismantling of Reactor Coolant System Large Components	10/2017 – 12/2022
D4.3A_R	Radioactive waste processing and transportation to the repository implemented by the Recipient	01/2016 – 12/2019
D4.4A	Auxiliary Buildings System Removal – Stage 1	05/2016 – 07/2018
D4.4A_R	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient	03/2017 – 12/2020
D4.4B_R	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient	07/2018 – 12/2022
D4.4B	Dismantling of Systems in V1 NPP Controlled Area – Part 1	09/2017 – 03/2021
D4.4A1	Modification of Facilities in the AKOBOJE System	04/2017 – 04/2019
D19.1	Upgrade of the PMU hardware equipment	08/2018 – 10/2018

APPENDIX No. 2
Gantt chart for 2019-2025



Appendix 2: Gantt chart for 2019-2025

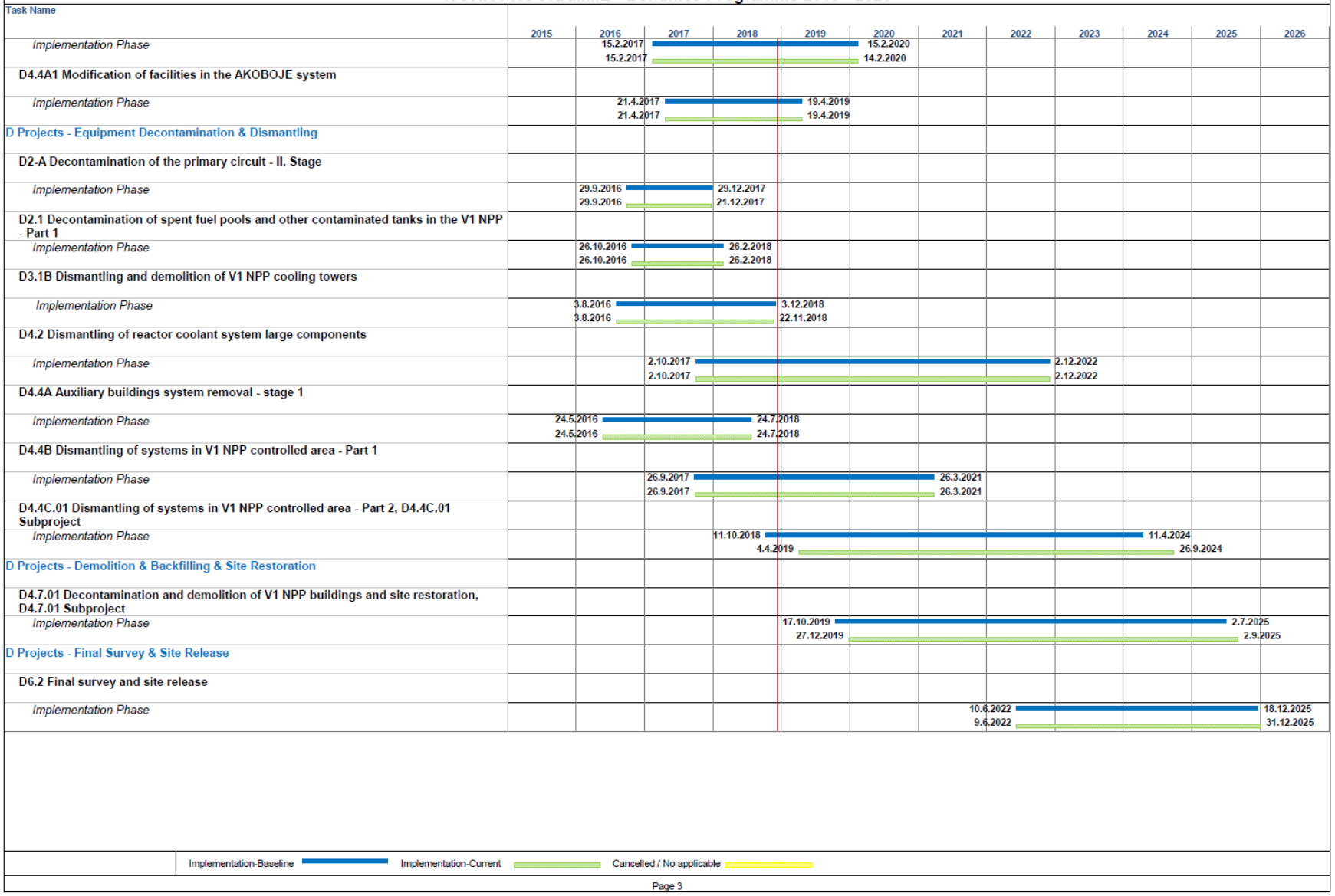
WORK PROGRAMME - Bohunice Programme 2019 - 2020



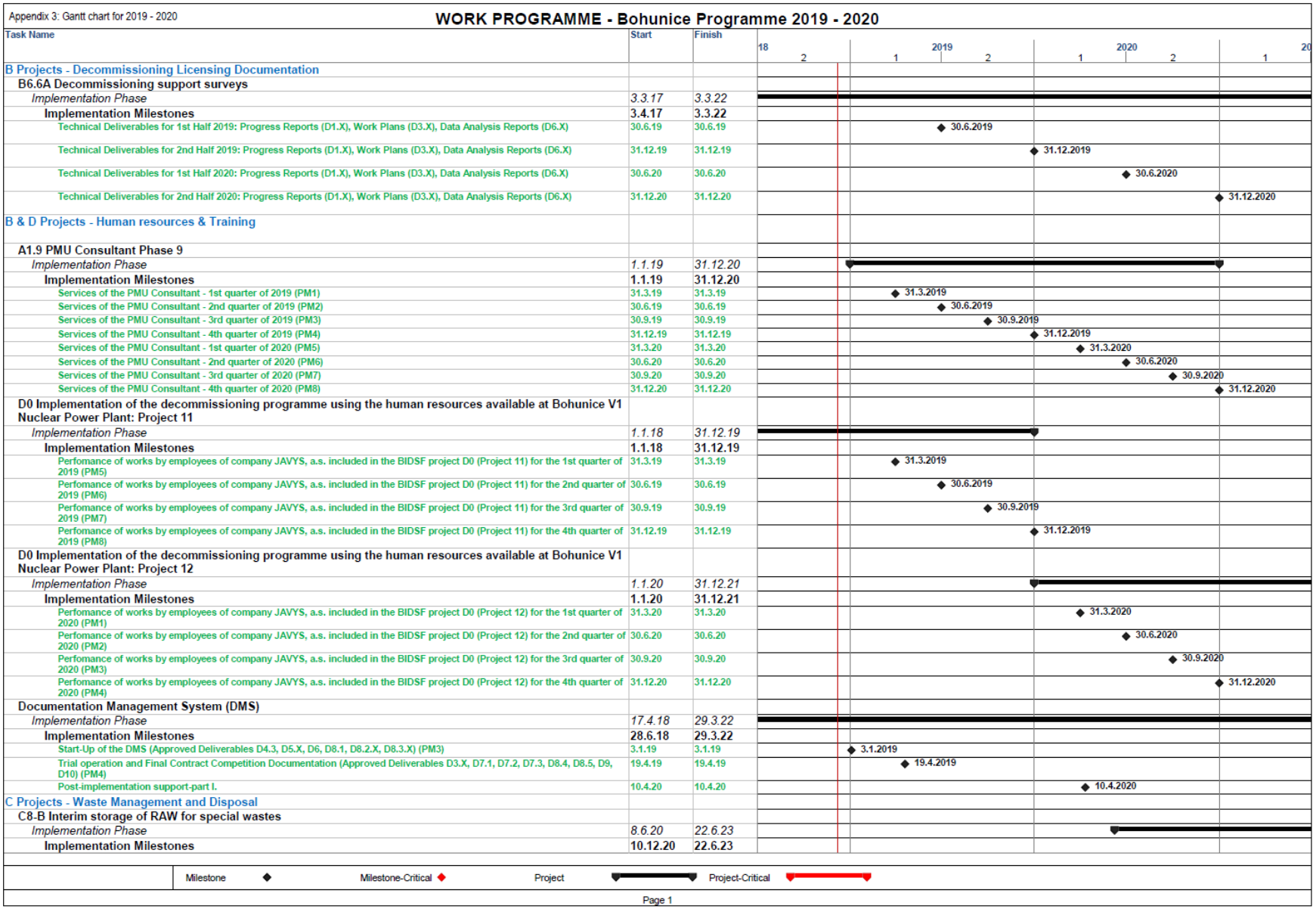
Page 2

Appendix 2: Gantt chart for 2019-2025

WORK PROGRAMME - Bohunice Programme 2019 - 2020



APPENDIX No. 3
Gantt chart for 2019-2020

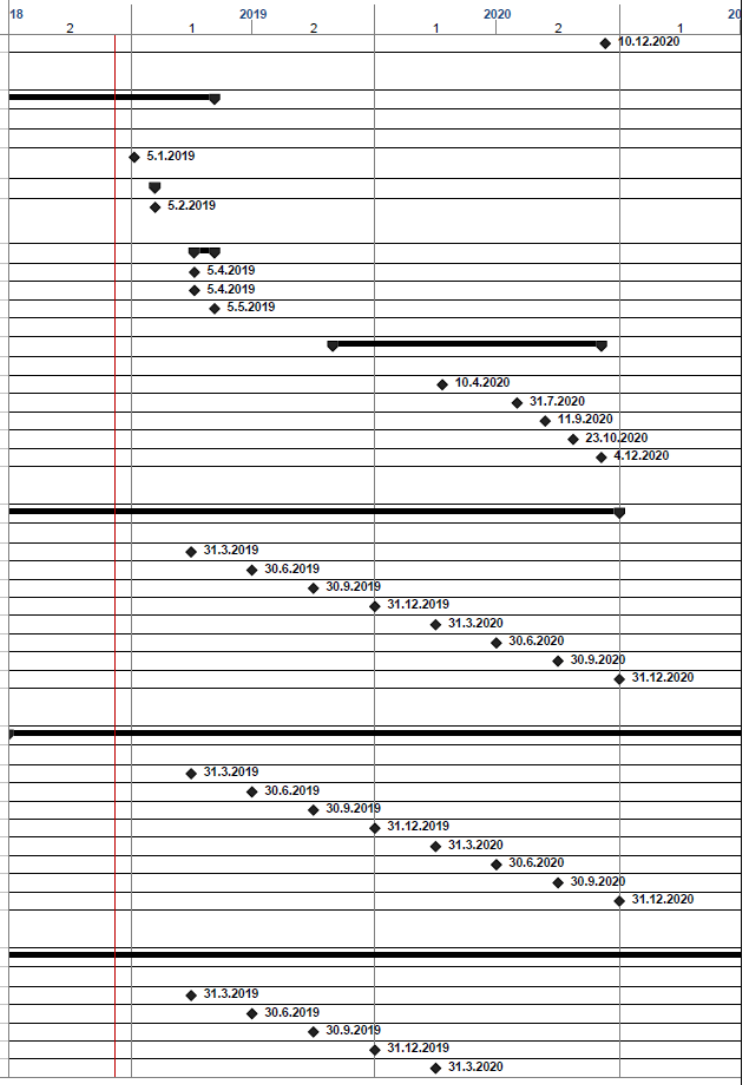


Task Name	Start	Finish
B Projects - Decommissioning Licensing Documentation		
B6.6A Decommissioning support surveys		
Implementation Phase	*3.3.17*	*3.3.22*
Implementation Milestones	3.4.17	3.3.22
Technical Deliverables for 1st Half 2019: Progress Reports (D1.X), Work Plans (D3.X), Data Analysis Reports (D6.X)	30.6.19	30.6.19
Technical Deliverables for 2nd Half 2019: Progress Reports (D1.X), Work Plans (D3.X), Data Analysis Reports (D6.X)	31.12.19	31.12.19
Technical Deliverables for 1st Half 2020: Progress Reports (D1.X), Work Plans (D3.X), Data Analysis Reports (D6.X)	30.6.20	30.6.20
Technical Deliverables for 2nd Half 2020: Progress Reports (D1.X), Work Plans (D3.X), Data Analysis Reports (D6.X)	31.12.20	31.12.20
B & D Projects - Human resources & Training		
A1.9 PMU Consultant Phase 9		
Implementation Phase	*1.1.19*	*31.12.20*
Implementation Milestones	1.1.19	31.12.20
Services of the PMU Consultant - 1st quarter of 2019 (PM1)	31.3.19	31.3.19
Services of the PMU Consultant - 2nd quarter of 2019 (PM2)	30.6.19	30.6.19
Services of the PMU Consultant - 3rd quarter of 2019 (PM3)	30.9.19	30.9.19
Services of the PMU Consultant - 4th quarter of 2019 (PM4)	31.12.19	31.12.19
Services of the PMU Consultant - 1st quarter of 2020 (PM5)	31.3.20	31.3.20
Services of the PMU Consultant - 2nd quarter of 2020 (PM6)	30.6.20	30.6.20
Services of the PMU Consultant - 3rd quarter of 2020 (PM7)	30.9.20	30.9.20
Services of the PMU Consultant - 4th quarter of 2020 (PM8)	31.12.20	31.12.20
D0 Implementation of the decommissioning programme using the human resources available at Bohunice V1 Nuclear Power Plant: Project 11		
Implementation Phase	*1.1.18*	*31.12.19*
Implementation Milestones	1.1.18	31.12.19
Perfomance of works by employees of company JAVYS, a.s. included in the BIDSF project D0 (Project 11) for the 1st quarter of 2019 (PM5)	31.3.19	31.3.19
Perfomance of works by employees of company JAVYS, a.s. included in the BIDSF project D0 (Project 11) for the 2nd quarter of 2019 (PM6)	30.6.19	30.6.19
Perfomance of works by employees of company JAVYS, a.s. included in the BIDSF project D0 (Project 11) for the 3rd quarter of 2019 (PM7)	30.9.19	30.9.19
Perfomance of works by employees of company JAVYS, a.s. included in the BIDSF project D0 (Project 11) for the 4th quarter of 2019 (PM8)	31.12.19	31.12.19
D0 Implementation of the decommissioning programme using the human resources available at Bohunice V1 Nuclear Power Plant: Project 12		
Implementation Phase	*1.1.20*	*31.12.21*
Implementation Milestones	1.1.20	31.12.21
Perfomance of works by employees of company JAVYS, a.s. included in the BIDSF project D0 (Project 12) for the 1st quarter of 2020 (PM1)	31.3.20	31.3.20
Perfomance of works by employees of company JAVYS, a.s. included in the BIDSF project D0 (Project 12) for the 2nd quarter of 2020 (PM2)	30.6.20	30.6.20
Perfomance of works by employees of company JAVYS, a.s. included in the BIDSF project D0 (Project 12) for the 3rd quarter of 2020 (PM3)	30.9.20	30.9.20
Perfomance of works by employees of company JAVYS, a.s. included in the BIDSF project D0 (Project 12) for the 4th quarter of 2020 (PM4)	31.12.20	31.12.20
Documentation Management System (DMS)		
Implementation Phase	*17.4.18*	*29.3.22*
Implementation Milestones	28.6.18	29.3.22
Start-Up of the DMS (Approved Deliverables D4.3, D5.X, D6, D8.1, D8.2.X, D8.3.X) (PM3)	3.1.19	3.1.19
Trial operation and Final Contract Competition Documentation (Approved Deliverables D3.X, D7.1, D7.2, D7.3, D8.4, D8.5, D9, D10) (PM4)	19.4.19	19.4.19
Post-implementation support-part I.	10.4.20	10.4.20
C Projects - Waste Management and Disposal		
C8-B Interim storage of RAW for special wastes		
Implementation Phase	*8.6.20*	*22.6.23*
Implementation Milestones	10.12.20	22.6.23

Appendix 3: Gantt chart for 2019 - 2020

WORK PROGRAMME - Bohunice Programme 2019 - 2020

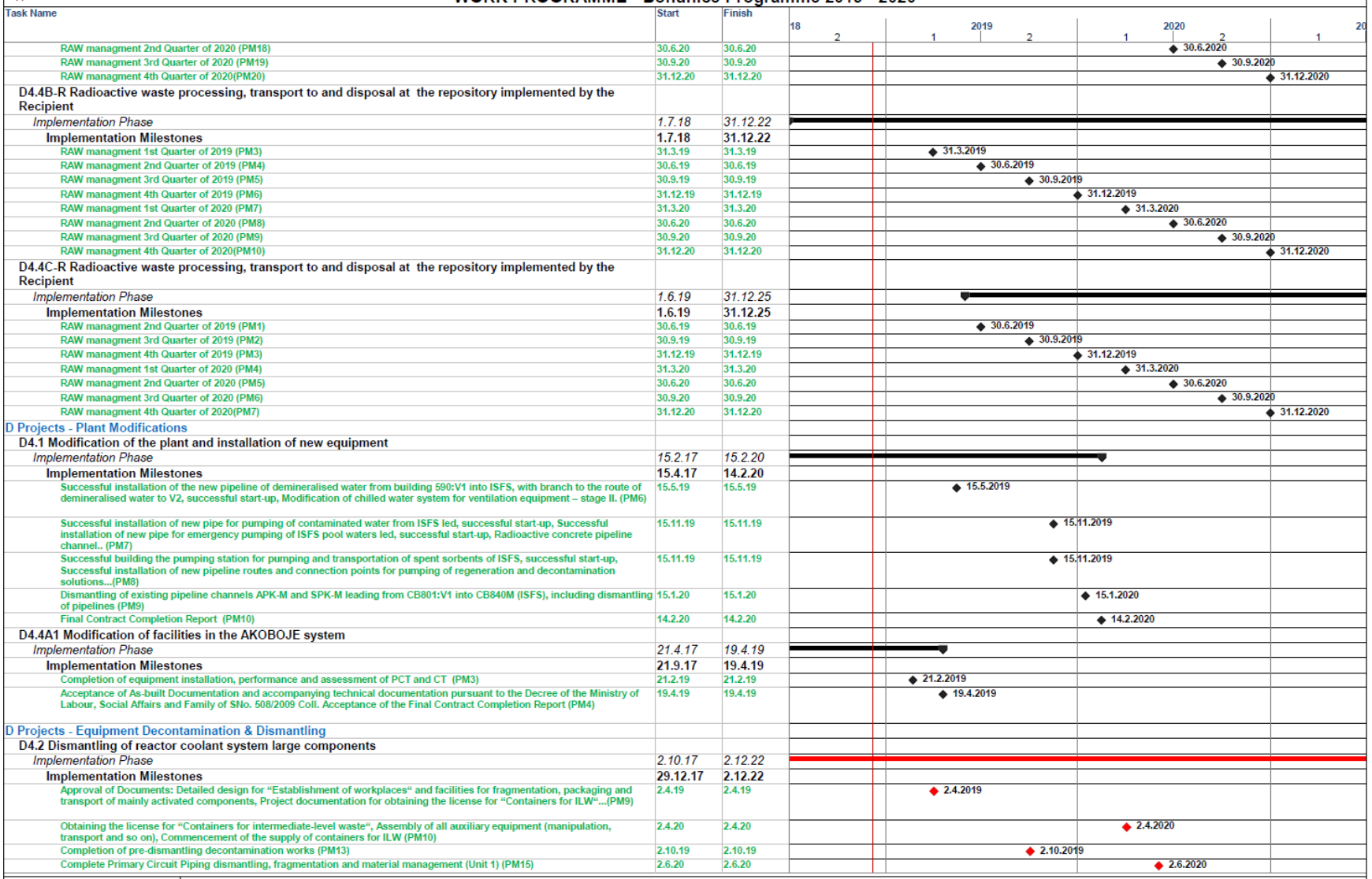
Task Name	Start	Finish
Design for building permit	10.12.20	10.12.20
C9.4 Design and Erection of New Disposal Facilities for LLW and VLLW from V1 NPP Decommissioning at NRR Mochovce		
Implementation Phase	*5.1.16*	*5.5.19*
Implementation Milestones	**4.3.16**	**5.5.19**
Section 2	**5.5.17**	**5.1.19**
Finished erection of LLW repository, pursuant to valid building permit and Detailed design. As Built documentation and Accompanying technical documentation, including appropriate tests (PM7)	5.1.19	5.1.19
Section 3	**5.2.19**	**5.2.19**
Finished erection of VLLW – II. Part pursuant to valid building permit and Detailed design (including handling building and auxiliary facilities). As Built documentation and Accompanying technical documentation, including appropriate tests (PM9)	5.2.19	5.2.19
Section 4	**5.4.19**	**5.5.19**
Acceptance of the House inspection certificate for LLW repository (PM8)	5.4.19	5.4.19
Acceptance of the House inspection certificate for VLLW repository (PM10)	5.4.19	5.4.19
Final Contract Completion Report (PM11)	5.5.19	5.5.19
C12.2 Laboratory equipment necessary in the process of V1 NPP Decommissioning Stage II		
Implementation phase	*30.10.19*	*4.12.20*
Implementation Milestones	**10.4.20**	**4.12.20**
Development of Project documentation, review, setting up orders for manufacturing	10.4.20	10.4.20
Supply and installation of new equipment	31.7.20	31.7.20
Start up and testing of new equipment	11.9.20	11.9.20
Issuing of Taking-Over Certificate, Execution of Performance Protocol, Training of the personnel	23.10.20	23.10.20
Final Contract Completion Report	4.12.20	4.12.20
D2-A-R Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient		
Implementation Phase	*1.4.17*	*31.12.20*
Implementation Milestones	**1.4.17**	**31.12.20**
RAW managment 1st Quarter of 2019 (PM8)	31.3.19	31.3.19
RAW managment 2nd Quarter of 2019 (PM9)	30.6.19	30.6.19
RAW managment 3rd Quarter of 2019 (PM10)	30.9.19	30.9.19
RAW managment 4th Quarter of 2019 (PM11)	31.12.19	31.12.19
RAW managment 1st Quarter of 2020 (PM12)	31.3.20	31.3.20
RAW managment 2nd Quarter of 2020 (PM13)	30.6.20	30.6.20
RAW managment 3rd Quarter of 2020 (PM14)	30.9.20	30.9.20
RAW managment 4th Quarter of 2020(PM15)	31.12.20	31.12.20
D4.2-R Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient		
Implementation Phase	*1.7.18*	*31.12.25*
Implementation Milestones	**1.7.18**	**31.12.25**
RAW managment 1st Quarter of 2019 (PM3)	31.3.19	31.3.19
RAW managment 2nd Quarter of 2019 (PM4)	30.6.19	30.6.19
RAW managment 3rd Quarter of 2019 (PM5)	30.9.19	30.9.19
RAW managment 4th Quarter of 2019 (PM6)	31.12.19	31.12.19
RAW managment 1st Quarter of 2020 (PM7)	31.3.20	31.3.20
RAW managment 2nd Quarter of 2020 (PM8)	30.6.20	30.6.20
RAW managment 3rd Quarter of 2020 (PM9)	30.9.20	30.9.20
RAW managment 4th Quarter of 2020(PM10)	31.12.20	31.12.20
D4.3A-R Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient		
Implementation Phase	*1.1.16*	*31.12.21*
Implementation Milestones	**1.1.16**	**31.12.21**
RAW managment 1st Quarter of 2019 (PM13)	31.3.19	31.3.19
RAW managment 2nd Quarter of 2019 (PM14)	30.6.19	30.6.19
RAW managment 3rd Quarter of 2019 (PM15)	30.9.19	30.9.19
RAW managment 4th Quarter of 2019 (PM16)	31.12.19	31.12.19
RAW managment 1st Quarter of 2020 (PM17)	31.3.20	31.3.20



Milestone ◆ Milestone-Critical ◆ Project ▬ Project-Critical ▬

Appendix 3: Gantt chart for 2019 - 2020

WORK PROGRAMME - Bohunice Programme 2019 - 2020



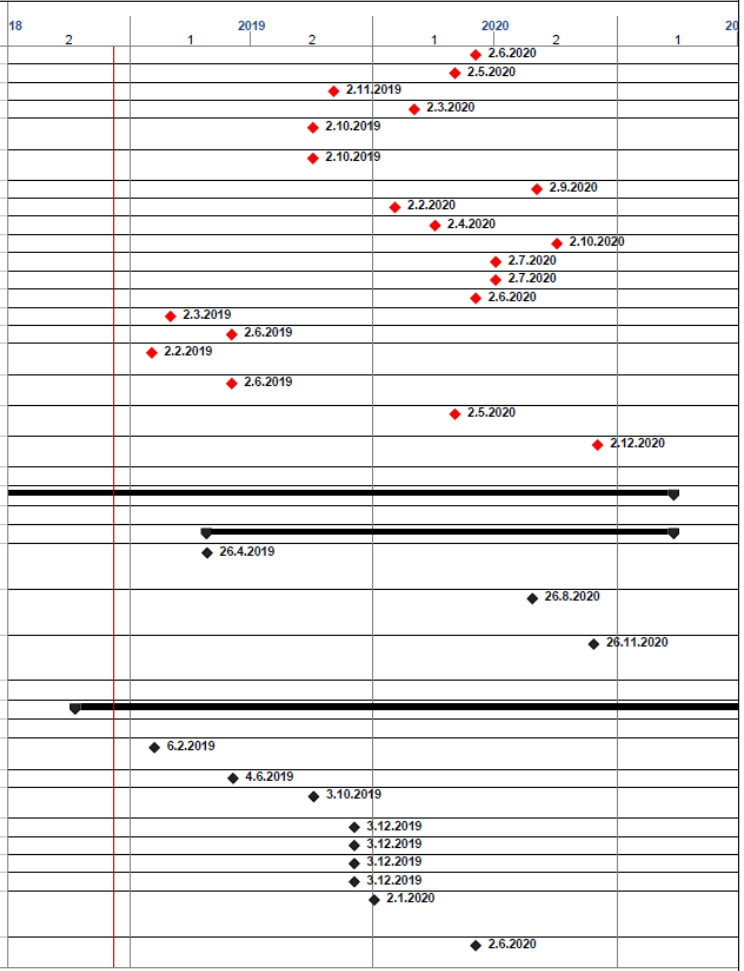
Task Name	Start	Finish
RAW managment 2nd Quarter of 2020 (PM18)	30.6.20	30.6.20
RAW managment 3rd Quarter of 2020 (PM19)	30.9.20	30.9.20
RAW managment 4th Quarter of 2020(PM20)	31.12.20	31.12.20
D4.4B-R Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient		
Implementation Phase	*1.7.18*	*31.12.22*
Implementation Milestones	**1.7.18**	**31.12.22**
RAW managment 1st Quarter of 2019 (PM3)	31.3.19	31.3.19
RAW managment 2nd Quarter of 2019 (PM4)	30.6.19	30.6.19
RAW managment 3rd Quarter of 2019 (PM5)	30.9.19	30.9.19
RAW managment 4th Quarter of 2019 (PM6)	31.12.19	31.12.19
RAW managment 1st Quarter of 2020 (PM7)	31.3.20	31.3.20
RAW managment 2nd Quarter of 2020 (PM8)	30.6.20	30.6.20
RAW managment 3rd Quarter of 2020 (PM9)	30.9.20	30.9.20
RAW managment 4th Quarter of 2020(PM10)	31.12.20	31.12.20
D4.4C-R Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient		
Implementation Phase	*1.6.19*	*31.12.25*
Implementation Milestones	**1.6.19**	**31.12.25**
RAW managment 2nd Quarter of 2019 (PM1)	30.6.19	30.6.19
RAW managment 3rd Quarter of 2019 (PM2)	30.9.19	30.9.19
RAW managment 4th Quarter of 2019 (PM3)	31.12.19	31.12.19
RAW managment 1st Quarter of 2020 (PM4)	31.3.20	31.3.20
RAW managment 2nd Quarter of 2020 (PM5)	30.6.20	30.6.20
RAW managment 3rd Quarter of 2020 (PM6)	30.9.20	30.9.20
RAW managment 4th Quarter of 2020(PM7)	31.12.20	31.12.20
D Projects - Plant Modifications		
D4.1 Modification of the plant and installation of new equipment		
Implementation Phase	*15.2.17*	*15.2.20*
Implementation Milestones	**15.4.17**	**14.2.20**
Successful installation of the new pipeline of demineralised water from building 590:V1 into ISFS, with branch to the route of demineralised water to V2, successful start-up, Modification of chilled water system for ventilation equipment – stage II. (PM6)	15.5.19	15.5.19
Successful installation of new pipe for pumping of contaminated water from ISFS led, successful start-up, Successful installation of new pipe for emergency pumping of ISFS pool waters led, successful start-up, Radioactive concrete pipeline channel.. (PM7)	15.11.19	15.11.19
Successful building the pumping station for pumping and transportation of spent sorbents of ISFS, successful start-up, Successful installation of new pipeline routes and connection points for pumping of regeneration and decontamination solutions...(PM8)	15.11.19	15.11.19
Dismantling of existing pipeline channels APK-M and SPK-M leading from CB801:V1 into CB840M (ISFS), including dismantling of pipelines (PM9)	15.1.20	15.1.20
Final Contract Completion Report (PM10)	14.2.20	14.2.20
D4.4A1 Modification of facilities in the AKOBOJE system		
Implementation Phase	*21.4.17*	*19.4.19*
Implementation Milestones	**21.9.17**	**19.4.19**
Completion of equipment installation, performance and assessment of PCT and CT (PM3)	21.2.19	21.2.19
Acceptance of As-built Documentation and accompanying technical documentation pursuant to the Decree of the Ministry of Labour, Social Affairs and Family of SNo. 508/2009 Coll. Acceptance of the Final Contract Completion Report (PM4)	19.4.19	19.4.19
D Projects - Equipment Decontamination & Dismantling		
D4.2 Dismantling of reactor coolant system large components		
Implementation Phase	*2.10.17*	*2.12.22*
Implementation Milestones	**29.12.17**	**2.12.22**
Approval of Documents: Detailed design for "Establishment of workplaces" and facilities for fragmentation, packaging and transport of mainly activated components, Project documentation for obtaining the license for "Containers for ILW"...(PM9)	2.4.19	2.4.19
Obtaining the license for "Containers for intermediate-level waste", Assembly of all auxiliary equipment (manipulation, transport and so on), Commencement of the supply of containers for ILW (PM10)	2.4.20	2.4.20
Completion of pre-dismantling decontamination works (PM13)	2.10.19	2.10.19
Complete Primary Circuit Piping dismantling, fragmentation and material management (Unit 1) (PM15)	2.6.20	2.6.20

Milestone ◆ Milestone-Critical ◆ Project Project-Critical

Appendix 3: Gantt chart for 2019 - 2020

WORK PROGRAMME - Bohunice Programme 2019 - 2020

Task Name	Start	Finish
Complete Main Isolation Valves dismantling, fragmentation and material management (Unit 1) (PM16)	2.6.20	2.6.20
Complete Main Coolant Pumps (MCPs) dismantling, fragmentation and material management (Unit 1) (PM17)	2.5.20	2.5.20
Complete Pressurizer dismantling, fragmentation and material management (Unit 1) (PM19)	2.11.19	2.11.19
Complete Bubble tank dismantling, fragmentation and material management (Unit 1) (PM20)	2.3.20	2.3.20
FAT tests of workplaces and facilities for fragmentation, with approved container for ILW, packaging and transport of mainly activated components (PM21)	2.10.19	2.10.19
Establishment of workplaces and facilities for fragmentation, packaging and transport of mainly activated components, completed pre-commissioning and commissioning tests (PM22)	2.10.19	2.10.19
Complete Reactor Internal Structures (RIS dismantling, fragmentation and material management (Unit 1) (PM23)	2.9.20	2.9.20
Complete Reactor Shielding Assemblies (RSA) dismantling, fragmentation and material management (PM25)	2.2.20	2.2.20
Complete Annular Water Tank (AWT) dismantling, fragmentation and material management (Unit 1) (PM29)	2.4.20	2.4.20
Complete Annular Water Tank (AWT) dismantling, fragmentation and material management (Unit 2) (PM30)	2.10.20	2.10.20
Complete Primary Circuit Piping dismantling, fragmentation and material management (Unit 2) (PM31)	2.7.20	2.7.20
Complete Main Isolation Valves dismantling, fragmentation and material management (Unit 2) (PM32)	2.7.20	2.7.20
Complete Main Coolant Pumps (MCPs) dismantling, fragmentation and material management (Unit 2) (PM33)	2.6.20	2.6.20
Complete Pressurizer dismantling, fragmentation and material management (Unit 2) (PM35)	2.3.19	2.3.19
Complete Bubble tank dismantling, fragmentation and material management (Unit 2) (PM36)	2.6.19	2.6.19
Complete dismantling and fragmentation of the reactor vessel lid extension with fuel assemblies drives and other systems and material management (Unit 1) (PM37)	2.2.19	2.2.19
Complete dismantling and fragmentation of the reactor vessel lid extension with fuel assemblies drives and other systems and material management (Unit 2) (PM38)	2.6.19	2.6.19
Complete dismantling and fragmentation of the Active water treatment system (Unit 1) and material management (PM41)	2.5.20	2.5.20
Complete dismantling and fragmentation of the Active water treatment system (Unit 2) and material management (PM42)	2.12.20	2.12.20
D4.4B Dismantling of systems in V1 NPP controlled area - Part 1		
Implementation Phase	*26.9.17*	*26.3.21*
Implementation Milestones	**26.12.17**	**26.3.21**
Section 3 (D6-D10)	**26.4.19**	**26.3.21**
Completion of preparatory works and lockout, mobilization, surveys, housekeeping, RP measures implementation, establishment of workplaces, establishment of general auxiliary infrastructure, preparation and conditioning of transport routes and ...(PM5)	26.4.19	26.4.19
Completion of drainage, sludge removal, in-situ decontamination, dismantling and fragmentation, sorting and transport, tag-out activities of all equipment and material within scope of works in the Auxiliary Building (PM6)	26.8.20	26.8.20
Completion of drainage, sludge removal, in-situ decontamination, dismantling and fragmentation, sorting and transport, tag-out activities of all equipment and material, within scope of works in the Reactor Building and in other buildings and areas (PM7)	26.11.20	26.11.20
D4.4C Dismantling of systems in V1 NPP controlled area - Part 2		
Implementation Phase	*11.10.18*	*11.4.24*
Implementation Milestones	**6.2.19**	**11.4.24**
Documentation approval: Inception Report; Detailed Time Schedule; Quality Assurance Plan; Health and Safety Plan; Environmental Protection Plan; Risk and Safety Analysis; Risk Management Plan (PM1)	6.2.19	6.2.19
Documentation approval: Waste Management Plan; Project Implementation Plan (PM2)	4.6.19	4.6.19
Documentation approval: Detailed design; Affected licencing documentation according to Section 2.4.1.3; Work Procedures (PM3)	3.10.19	3.10.19
Approval of licencing and design documentation by relevant state administration authorities (PM4)	3.12.19	3.12.19
Commencement of Contractor`s mobilization to start site works (PM5)	3.12.19	3.12.19
Removal and fixation of sludge from the tanks (PM6)	3.12.19	3.12.19
Documentation approval: Cost Benefit Analysis Report on decontamination methods (PM7)	3.12.19	3.12.19
Preparatory activities for Phase 1 of dismantling: Completion of preparatory works and lockout, mobilization, inspections, cleaning, implementation of radiation protection measures, establishment of workplaces, establishment of general auxiliary... (PM8)	2.1.20	2.1.20
Dismantling of certified dosimetrical systems, system for deactivation in SK 201, removal of dangerous materials from the Controlled area, dismantling of tanks in CB 801:V1: SK013/3, SK013/4, SK013/5 (PM9)	2.6.20	2.6.20



Milestone ◆ Milestone-Critical ◆ Project ▬ Project-Critical ▬

DATA FOR CALCULATION OF EVM IN MONITORING REPORTS

2019 - 2020

Planned values for calculation of EVM in 2019 (contingency included)

Project acronym	Project title	Cumulative value including 2019	Value for 2019	2019	
				1H 2019	2H 2019
A1.9 - x	PMU Consultant Phase 9 - x	505,344 €	505,344 €	252,672 €	252,672 €
B6.6A	Decommissioning Support Surveys	1,162,691 €	272,492 €	136,246 €	136,246 €
C12.2	Laboratory equipment necessary in the process of V1 NPP Decommissioning Stage II	0 €	0 €	0 €	0 €
C7-A4	Metallic RAW melting facility	1,869,547 €	0 €	0 €	0 €
C8-B	Interim Storage of RAW for Specific Waste	0 €	0 €	0 €	0 €
C9.4	Design and Erection of New Disposal Facilities for LLW and VLLW from V1 NPP Decommissioning at NRR Mochovce	22,435,982 €	14,759,763 €	14,759,763 €	0 €
D2-A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D2-A)	5,495,403 €	2,563,588 €	1,025,435 €	1,538,153 €
D4.1	Modification of the Plant and Installation of New Equipment	8,480,617 €	5,016,649 €	1,504,995 €	3,511,655 €
D4.2	Dismantling of reactor coolant system large components	78,484,770 €	40,787,970 €	19,852,552 €	20,935,418 €
D4.2 (national co-financing)	Dismantling of reactor coolant system large components	4,039,412 €	0 €	0 €	0 €
D4.2_RAW (national co-financing)	Dismantling of reactor coolant system large components	18,779,136 €	12,247,262 €	4,898,905 €	7,348,357 €
D4.3A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.3A)	3,997,542 €	1,019,528 €	509,764 €	509,764 €
D4.4A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4A)	691,093 €	290,546 €	145,273 €	145,273 €
D4.4A1	Modification of Facilities in the AKOBOJE System	158,701 €	80,801 €	80,801 €	0 €
D4.4B	Dismantling of Systems in V1 NPP Controlled Area – Part 1	2,175,957 €	1,248,924 €	1,248,924 €	0 €
D4.4B_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4B)	8,509,454 €	5,236,587 €	2,618,294 €	2,618,294 €

Project acronym	Project title	Cumulative value including 2019	Value for 2019	2019	
				1H 2019	2H 2019
D4.4B_RAW (national co-financing: Disposal at the National Repository Mochovce)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4B)	408,561 €	251,422 €	125,711 €	125,711 €
D4.4C	Dismantling of systems in V1 NPP controlled area - Part 2	5,467,995 €	5,467,995 €	0 €	5,467,995 €
D4.4C_RAW (national co-financing)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4C)	6,795,552 €	5,096,664 €	0 €	5,096,664 €
D4.7	Decontamination and demolition of V1 NPP buildings and site restoration	9,498,581 €	9,498,581 €	0 €	9,498,581 €
D4.7_RAW (national co-financing)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.7)	0 €	0 €	0 €	0 €
D6.2	Final survey and site release	0 €	0 €	0 €	0 €
DMS	Documentation management system	143,308 €	46,372 €	23,186 €	23,186 €
TOTAL		**179,099,646 €**	**104,390,490 €**	**47,182,520 €**	**57,207,969 €**

Planned values for calculation of EVM in 2019 (contingency excluded)

Project acronym	Project title	Cumulative value including 2019	Value for 2019	2019	
				1H 2019	2H 2019
A1.9 - x	PMU Consultant Phase 9 - x	500,000 €	500,000 €	250,000 €	250,000 €
B6.6A	Decommissioning Support Surveys	981,461 €	200,000 €	100,000 €	100,000 €
C12.2	Laboratory equipment necessary in the process of V1 NPP Decommissioning Stage II	0 €	0 €	0 €	0 €
C7-A4	Metallic RAW melting facility	1,785,953 €	0 €	0 €	0 €
C8-B	Interim Storage of RAW for Specific Waste	0 €	0 €	0 €	0 €
C9.4	Design and Erection of New Disposal Facilities for LLW and VLLW from V1 NPP Decommissioning at NRR Mochovce	21,700,436 €	14,105,283 €	14,105,283 €	0 €
D2-A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D2-A)	4,786,939 €	2,209,356 €	883,743 €	1,325,614 €
D4.1	Modification of the Plant and Installation of New Equipment	7,717,631 €	4,539,783 €	1,361,935 €	3,177,848 €
D4.2	Dismantling of reactor coolant system large components	63,204,838 €	33,181,660 €	16,150,366 €	17,031,295 €
D4.2 (national co-financing)	Dismantling of reactor coolant system large components	4,039,412 €	0 €	0 €	0 €
D4.2_RAW (national co-financing)	Dismantling of reactor coolant system large components	15,879,272 €	10,356,047 €	4,142,419 €	6,213,628 €
D4.3A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.3A)	3,840,303 €	967,804 €	483,902 €	483,902 €
D4.4A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4A)	550,000 €	220,000 €	110,000 €	110,000 €
D4.4A1	Modification of Facilities in the AKOBOJE System	150,000 €	75,000 €	75,000 €	0 €
D4.4B	Dismantling of Systems in V1 NPP Controlled Area – Part 1	1,847,519 €	1,055,725 €	1,055,725 €	0 €
D4.4B_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4B)	7,167,868 €	4,410,996 €	2,205,498 €	2,205,498 €
D4.4B_RAW (national co-financing: Disposal at the National Repository Mochovce)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4B)	408,561 €	251,422 €	125,711 €	125,711 €

Project acronym	Project title	Cumulative value including 2019	Value for 2019	2019	
				1H 2019	2H 2019
D4.4C	Dismantling of systems in V1 NPP controlled area - Part 2	4,522,592 €	4,522,592 €	0 €	4,522,592 €
D4.4C_RAW (national co-financing)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4C)	5,577,299 €	4,182,974 €	0 €	4,182,974 €
D4.7	Decontamination and demolition of V1 NPP buildings and site restoration	8,336,454 €	8,336,454 €	0 €	8,336,454 €
D4.7_RAW (national co-financing)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.7)	0 €	0 €	0 €	0 €
D6.2	Final survey and site release	0 €	0 €	0 €	0 €
DMS	Documentation management system	130,000 €	42,000 €	21,000 €	21,000 €
TOTAL		**153,126,534 €**	**89,157,096 €**	**41,070,580 €**	**48,086,515 €**

Planned values for calculation of EVM in 2020 (contingency included)

Project acronym	Project title	Cumulative value including 2020	Value for 2020	2020	
				1H 2020	2H 2020
A1.9 - x	PMU Consultant Phase 9 - x	1,010,689 €	505,344 €	252,672 €	252,672 €
B6.6A	Decommissioning Support Surveys	1,685,184 €	522,493 €	261,246 €	261,247 €
C12.2	Laboratory equipment necessary in the process of V1 NPP Decommissioning Stage II	482,931 €	482,931 €	0 €	482,931 €
C7-A4	Metallic RAW melting facility	1,869,547 €	0 €	0 €	0 €
C8-B	Interim Storage of RAW for Specific Waste	92,266 €	92,266 €	0 €	92,266 €
C9.4	Design and Erection of New Disposal Facilities for LLW and VLLW from V1 NPP Decommissioning at NRR Mochovce	22,435,982 €	0 €	0 €	0 €
D2-A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D2-A)	8,486,256 €	2,990,853 €	1,196,341 €	1,794,512 €
D4.1	Modification of the Plant and Installation of New Equipment	9,985,612 €	1,504,995 €	1,504,995 €	0 €
D4.2	Dismantling of reactor coolant system large components	107,997,613 €	29,512,843 €	10,386,348 €	19,126,495 €
D4.2 (national co-financing)	Dismantling of reactor coolant system large components	6,651,608 €	2,612,196 €	1,412,196 €	1,200,000 €
D4.2_RAW (national co-financing)	Dismantling of reactor coolant system large components	31 026 398 €	12 247 262 €	4 898 905 €	7 348 357 €
D4.3A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.3A)	4,079,104 €	81,562 €	0 €	81,562 €
D4.4A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4A)	1,054,276 €	363,183 €	181,591 €	181,591 €
D4.4A1	Modification of Facilities in the AKOBOJE System	158,701 €	0 €	0 €	0 €
D4.4B	Dismantling of Systems in V1 NPP Controlled Area – Part 1	5,298,268 €	3,122,310 €	0 €	3,122,310 €
D4.4B_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4B)	13,249,148 €	4,739,694 €	2,369,847 €	2,369,847 €
D4.4B_RAW (national co-financing: Disposal at the NRR Mochovce)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4B)	470,875 €	62,314 €	31,157 €	31,157 €

Project acronym	Project title	Cumulative value including 2020	Value for 2020	2020	
				1H 2020	2H 2020
D4.4C	Dismantling of systems in V1 NPP controlled area - Part 2	10,226,042 €	4,758,047 €	1,427,414 €	3,330,633 €
D4.4C_RAW (national co-financing)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4C)	11,892,215 €	5,096,664 €	2,038,665 €	3,057,998 €
D4.7	Decontamination and demolition of V1 NPP buildings and site restoration	26,112,304 €	16,613,723 €	3,322,745 €	13,290,978 €
D4.7_RAW (national co-financing)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.7)	2,439,959 €	2,439,959 €	0 €	2,439,959 €
D6.2	Final survey and site release	0 €	0 €	0 €	0 €
DMS	Documentation management system	165,445 €	22,138 €	11,069 €	11,069 €
TOTAL		**266,870,422 €**	**87,770,775 €**	**29,295,191 €**	**58,475,584 €**

Planned values for calculation of EVM in 2020 (contingency excluded)

Project acronym	Project title	Cumulative value including 2020	Value for 2020	2020	
				1H 2020	2H 2020
A1.9 - x	PMU Consultant Phase 9 - x	1,000,000 €	500,000 €	250,000 €	250,000 €
B6.6A	Decommissioning Support Surveys	1,431,462 €	450,001 €	225,000 €	225,001 €
C12.2	Laboratory equipment necessary in the process of V1 NPP Decommissioning Stage II	403,200 €	403,200 €	0 €	403,200 €
C7-A4	Metallic RAW melting facility	1,785,953 €	0 €	0 €	0 €
C8-B	Interim Storage of RAW for Specific Waste	83,356 €	83,356 €	0 €	83,356 €
C9.4	Design and Erection of New Disposal Facilities for LLW and VLLW from V1 NPP Decommissioning at NRR Mochovce	21,700,436 €	0 €	0 €	0 €
D2-A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D2-A)	7,364,521 €	2,577,582 €	1,031,033 €	1,546,549 €
D4.1	Modification of the Plant and Installation of New Equipment	9,079,566 €	1,361,935 €	1,361,935 €	0 €
D4.2	Dismantling of reactor coolant system large components	86,726,870 €	23,522,032 €	8,278,023 €	15,244,009 €
D4.2 (national co-financing)	Dismantling of reactor coolant system large components	6,651,608 €	2,612,196 €	1,412,196 €	1,200,000 €
D4.2_RAW (national co-financing)	Dismantling of reactor coolant system large components	26,235,318 €	10,356,047 €	4,142,419 €	6,213,628 €
D4.3A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.3A)	3,917,727 €	77,424 €	0 €	77,424 €
D4.4A_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4A)	825,000 €	275,000 €	137,500 €	137,500 €
D4.4A1	Modification of Facilities in the AKOBOJE System	150,000 €	0 €	0 €	0 €
D4.4B	Dismantling of Systems in V1 NPP Controlled Area – Part 1	4,486,831 €	2,639,312 €	0 €	2 639 312 €
D4.4B_RAW	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4B)	11,185,169 €	4,017,301 €	2,008,651 €	2,008,651 €

Project acronym	Project title	Cumulative value including 2020	Value for 2020	2020	
				1H 2020	2H 2020
D4.4B_RAW (national co-financing: Disposal at the National Repository Mochovce)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4B)	470,875 €	62,314 €	31,157 €	31,157 €
D4.4C	Dismantling of systems in V1 NPP controlled area - Part 2	7,731,184 €	3,208,592 €	962,578 €	2,246,014 €
D4.4C_RAW (national co-financing)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.4C)	9,760,273 €	4,182,974 €	1,673,190 €	2,509,784 €
D4.7	Decontamination and demolition of V1 NPP buildings and site restoration	23,030,718 €	14,694,264 €	2,938,853 €	11,755,411 €
D4.7_RAW (national co-financing)	Radioactive waste processing, transport to and disposal at the repository implemented by the Recipient (exclusively related to D4.7)	1,884,308 €	1,884,308 €	0 €	1,884,308 €
D6.2	Final survey and site release	0 €	0 €	0 €	0 €
DMS	Documentation management system	150,000 €	20,000 €	10,000 €	10,000 €
TOTAL		**226,054,373 €**	**72,927,839 €**	**24,462,534 €**	**48,465,306 €**