ANNEX 3
Annual Work Programme

Kozloduy Programme 2019

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LIST OF ABBREVIATIONS

AB	Auxiliary Building
AWP	Annual Work Programme
BNRA	Bulgarian Nuclear Regulatory Agency
CPS	Circulating Pump Station
DfD	Decontamination for Dismantling
DGS	Diesel Generation Station
EBT	Emergency Boron Tank
ECT	Evaporator Concentrates Tank
EIA	Environmental Impact Assessment
HR	Human resources
HW	Hardware
IER	Ion-exchange resins
ILW	Intermediate-level waste
KNPP	Kozloduy NPP
LLW	Low-level waste
MEW	Ministry of Environment and Waters
PMF	Plasma Melting Facility
PDS	Predesign Study
RAM	Radioactive materials
RAW	Radioactive waste
RAW TF	Radioactive Waste Treatment Facility
RB	Reactor Building
RCC	Reinforced Concrete Container
SD RAW	Specialized Division Radioactive Waste – Kozloduy
SFP	Spent Fuel Pool

SRDW	Size Reduction and Decontamination Workshop
SSC	Structures, systems and components
SW	Software
TG	Turbine Generator
TH	Turbine Hall

1. INTRODUCTION

1.1 PROGRESS IN DECOMMISSIONING OF KOZLODUY UNITS 1 TO 4

This Annual Work Programme (AWP) 2019 is developed according to the Schedule of KNPP Decommissioning Project. The Schedule was elaborated according to the Work Breakdown Structure of the Decommissioning Project (see Figure 3) which follows the International Structure for Decommissioning Costing (ISDC) of Nuclear Installations [3]. The first level of the Work Breakdown Structure includes the Key Phases (Principal Activities), which reflect the main phases of the decommissioning project:

01 Pre-decommissioning actions;

02 Facility shutdown activities;

03 Dismantling activities outside controlled area;

04 Dismantling activities within the controlled area;

05 Waste processing, storage and disposal;

06 Site infrastructure and operation;

07 Project management, engineering and support;

08 Fuel and activated material;

09 Miscellaneous expenditures.

Units 1 to 4 are managed according to the granted Decommissioning Licenses.

1.2 MAIN ACHIEVEMENTS AND ISSUES IN 2018

The main goals of the implementation of Decommissioning of Units 1 to 4 in 2018 were – engineering support for the on-going investment projects and preparation for starting of other ones as identified in the Kozloduy Programme, dismantling of systems and equipment and waste management, regulatory assistance and management of human resources. This Annual Work Programme reports the progress achieved by August 2018.

1.2.1 Main achievements in 2018

The main activities and the results are as follows:

- Radioactive solutions in Controlled Area of Units 1 to 4 drained by the systems – 1 000 m^3
- Radioactive solutions treated in Controlled Area of Units 1 to 4 – 5 820 m^3
- Dismantling of equipment in Turbine Hall – 2 150 t metal
- Demolition of civil structures in Turbine Hall – 1 389 t concrete
- Dismantling of equipment in Controlled Area – 122 t metal
- Materials free released – 5 445 t
- Completion of the characterisation of RAM in the Mogilnik mortuaries 1&2
- Obtained PMF Utilization Permit by the Directorate for National Construction Control

- Obtained Commissioning Permit by BNRA for the Plasma Melting Facility
- 120hr active commissioning test successfully completed for the PMF
- Taking-over Certificate signed for the Size Reduction and Decontamination Workshop, which commenced its industrial operation
- Contract awarded for Treatment of Wet Solid Wastes
- Approval of Conceptual Design package for the dismantling of Primary Circuit and components within RB of Unit 1
- Completion the National Disposal Facility's bulk excavation works, establishing of loess-cement batching plant and loess-cement cushion test area

1.2.2 Problematic issues in 2018

The Court rejected the appeal against preliminary implementation of NDF's EIA decision. The appeal against NDF's EIA is ongoing. The Court decision in respect of the appeal against the NDF's EIA is pending.

1.3 PROGRAMME STATUS AND NEXT IMPORTANT STEPS

The main achievements as of August 2018 according to AWP 2018 were as follows:

1.3.1 Key Phase 01: Pre-decommissioning actions

01.0400 Waste management planning. This activity group includes activities concerning the strategic (conceptual) planning of the waste management and activities related to the detailed planning of necessary additional infrastructure for waste management. The implemented activities are as follows:

> Identify, analyse, justify and rank alternative solutions towards the dismantling and management of the Mogilnik storages (40a) – Feasibility study. SERAW, supported by the D-R PMU Consultant, has developed a programme for inventory of "Mogilnik" storages to complement the limited available data. The implementation of this programme has been completed in Mogilnik 1 and Mogilnik 2.

The Feasibility Study analysed the following groups of options as per the known international experience:

- **Option 1a:** The wastes are retained into the sealed storage nests until decay of activity to classify the waste as Category 2a (qualified for the disposal in the NDF);
- **Option 1b:** The wastes are retained into the sealed storage nests and its processing is deferred until a Category 2b waste storage facility is available;
- **Option 2:** Process the wastes in-situ until a Category 2b waste storage facility is available;
- **Option 3:** Retrieve, process and store the wastes in an interim facility until a Category 2b waste storage facility is available. This option is defined as the immediate retrieval of the wastes and their processing as necessary to optimise packaging and storage.

For Options 2 and 3, and given that the wastes found after inspection and characterisation of the RAM stored at the mortuaries are of very heterogeneous in both physical and radiological nature (gamma dose rates from 0.1 to 14.200 mSv/h), additional considerations are made on the needs of retrieval, packaging transportation, fragmentation and decontamination, presenting and analysing for each of these steps, feasible options.

01.0500 Authorisation. This activity group includes activities related to preparation of sets of documents to obtain permits from authorities and BNRA licence. The completed activities were as follows:

Preparation of documentation for the application of Plasma Melting Facility licensing

Preparation of documentation for the coordination and approval of dismantling activities in Reactor Building of Units 1-4

1.3.2 Key Phase 02: Facility shutdown activities

Key Phase 02 "Facility Shutdown Activities" involves activities implemented during the transitional period after the shutdown. In respect of this SERAW implemented activities covered by the Decommissioning Licenses for Units 1&2 and Units 3&4. Some of these activities are a continuation of the previous licensed RAW management activities.

02.0200 Mode of operation of Units 1&2 as a RAW Management Facility. The implemented activities are as follows:

Removal of historical waste from Units 1&2 as per the annual schedule for treatment and conditioning of RAW.

02.0400 Mode of operation of Units 3&4 as a RAW Management Facility. The implemented activities are as follows:

Removal of historical waste from Units 3&4 as per the annual schedule for treatment and conditioning of RAW.

1.3.3 Key Phase 03: Dismantling activities outside Controlled Area

03.0300 Dismantling activities of SSC in TH of Units 1&2. This activity group includes the dismantling of Structures, Systems and Components in Turbine Hall of Units 1&2. The implemented activities are as follows:

Dismantling of equipment from elevation 0.00 to elevation -3.6.

03.0500 Planning the dismantling activities of Structures, Systems and Components (SSC) in TH of Units 3&4. This activity group includes the detailed planning of the dismantling of TG 5-8. The implemented activities are as follows:

Planning the dismantling of TG-8

03.0600 Dismantling activities of SSC in TH of Units 3&4. This activity group covers the dismantling of Structures, Systems and Components in Turbine Hall of Units 3&4. The implemented activities are as follows:

Dismantling activities of common SSC in TH of Units 3&4

Dismantling activities of SSC within TG-5

Dismantling activities of SSC within TG-6

Dismantling activities of SSC within TG-7

Dismantling activities of SSC within TG-8

Dismantling of reinforced concrete structures of the TG-8 group

Dismantling of equipment from elevation 0.00 to elevation -3.6

03.0700 Activities in DGS-1. This activity group includes assessment, planning, dismantling of existing equipment and reconstruction of DGS-1 building for decommissioning purposes. The implemented activities are as follows:

Project 39-2 Reconstruction of the DGS-1 Building for Decommissioning Purposes. The project activities completed were as follows:

- Contract award and project launch
- Definition of QA programme and detailed schedule of work
- Collection and verification of input data for the design stage

1.3.4 Key Phase 04: Dismantling activities within the Controlled Area

04.0100 Preparation of Reactor Building of Units 1&2 for dismantling. This activity group includes the preparatory activities carried out prior to the commencement of the dismantling in the Reactor Building of Units 1 and 2 and related to the isolation and marking of systems there, removal of hazardous and burnable materials, removal of insulation and filters, adapting of ventilation systems and activities related to the decontamination of systems and equipment. They are performed according to Technical decisions and Programmes agreed with BNRA. The implemented activities are as follows:

Isolation of connections between the RB and TH and AB-1 which are not needed

Marking of systems remaining in operation during decommissioning of the Units 1&2

Isolation of all systems which are not needed for dismantling

Isolation of the operating part and not operating part of the systems above

Removal of fluids from the systems

Switching off / disconnecting of all electrical systems which are not needed

Removal of the insulation from the systems in accordance with the decontamination plan

Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)

Adapting of the ventilation systems in the RB

Setting up and maintaining the systems which remain in operation

Installation of new systems

Primary circuit and auxiliary syetems' decontamination

Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning

04.0200 Preparation of Reactor Building of Units 3&4 for dismantling. This activity group includes the preparatory activities carried out prior to the commencement of the dismantling in the Reactor Building of Units 3 and 4 and related to the isolation and marking of systems there, removal of hazardous and burnable materials, removal of insulation and filters, adapting of ventilation systems and activities related to the decontamination of systems and equipment. They are performed according to Technical decisions and programmes agreed with BNRA. The implemented activities are as follows:

Isolation of connections between the RB and TH and AB-2 which are not needed

Marking of systems which remain in operation during decommissioning of Units 3&4

Isolation of all systems which are not needed for dismantling

Isolation of the operating part and not operating part of the systems above

Removal of fluids from the systems

Switching off / disconnecting of all electrical systems which are not needed

Removal of the insulation from the systems in accordance with the decontamination plan

Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)

Setting up and maintaining the systems which remain in operation

Installation of new systems

Decontamination of SFP 4 and spent fuel racks

Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning

04.0300 Planning the dismantling activities within Controlled Area of Units 1-4. This activity group includes planning of dismantling in Reactor Buildings of Units 1 to 4, AB-1 and AB-2. The implemented activities according to AWP 2018 are as follows:

Project 44 Elaboration of a Design for Dismantling of Equipment in the Controlled Areas of KNPP Units 1-4. The main steps completed are as follows:

- Finalise the 3D Model and Uniform Information Model (Deliverable 2)
- Design package for systems, plant and equipment for Auxiliary Building-1 (Deliverable 3)
    - ✓ Data collection and analysis
    - ✓ Spatial layout and structural decisions, electrical power supply, water supply, water disposal system, HVAC, communication networks, production technology and RAW management
- Design package for the systems, plant and equipment in Unit 1 excluding Primary Circuit (Deliverable 4)
    - ✓ Data collection and analysis
    - ✓ Spatial layout and structural decisions
    - ✓ Electrical power supply, water supply, water disposal system, HVAC, communication networks, production technology – 40% completed
- Design package for the dismantling of the Primary Circuit and the components within Unit 1 Reactor Building (Deliverable 5)
    - ✓ Conceptual Design, Rev. 2 – approved

Detailed concurrent planning during dismantling of ventilation systems within controlled area of Units 1-4

Detailed concurrent planning during dismantling of electrical systems within controlled area of Units 1-4

Detailed concurrent planning during the dismantling of I&C systems within controlled area of Units 1-4

Detailed concurrent planning during the dismantling of technological systems within

Reactor Buildings of Units 1-4

Detailed concurrent planning during the dismantling of technological and ventilation systems within AB-1 and AB-2

04.0400 Dismantling activities in Reactor Building of Units 1&2 and AB-1. This activity group includes the implementation of dismantling activities of ventilation, electrical, technological and I&C systems. The implemented activities are as follows:

Dismantling of electrical systems in RB of Units 1&2

Dismantling of I&C systems in RB of Units 1&2

Dismantling of technological systems in RB of Units 1&2

Dismantling of technological equipment in AB-1

04.0500 Dismantling activities in Reactor Building of Units 3&4 and AB-2. This activity group includes the implementation of dismantling activities of ventilation, electrical, technological and I&C systems. The implemented activities are as follows:

Dismantling of ventilation systems in RB of Units 3&4

Dismantling of electrical systems in RB of Units 3&4

Dismantling of I&C systems in RB of Units 3&4

Dismantling of technological systems in RB of Units 3&4

Dismantling of technological equipment in AB-2

04.0600 Decontamination activities in Reactor Buildings of Units 1-4

Decontamination of equipment and rooms prior to dismantling

Table 1: Dismantled quantities by types of materials as of August 2018

Month	Unit	Ferrous metals, kg	Stainless steel, kg	Nonferrous metals, kg	Concrete, kg	Thermal insulation, kg
January	1	15004			4500	
	2	8698				
	3	13843		220		1400
	4	4459		2770	157300	2793
	CA	8720				
February	1			1356		2182
	2	25235		400	6800	700
	3	22042		550		800
	4	40653		243	338700	
	CA	257				
March	1	7545		1424		3878
	2	66462		300	52015	2200
	3			600		2150
	4	1310			178600	1500
	CA	27244				

Month	Unit	Ferrous metals, kg	Stainless steel, kg	Nonferrous metals, kg	Concrete, kg	Thermal insulation, kg
April	1	42936		200		1200
	2	190295		100	40075	1100
	3	102007				1100
	4	105000		500		700
	CA	16850				
May	1	59624		200		200
	2	412751		450	11850	850
	3	220000		250		850
	4			100		100
	CA	7538				
June	1	5583				
	2	113637		100		150
	3	238381		300		300
	4	216029		300		300
	CA	18324				
July	1	2025				
	2	9985		900		700
	3	96111		1010	34530	1300
	4			300	221700	100
	CA	12173				
August	1			1300		950
	2	10330				
	3	90634		1100		1300
	4	14400			342850	
	CA	30604				
Total TH		**2 134 979**	**0**	**14 973**	**1 388 920**	**28 803**
Total CA		**121 710**	**0**	**0**	**0**	**0**
Total		**2 256 689**	**0**	**14 973**	**1 388 920**	**28 803**

1.3.5 Key Phase 05: Waste processing, storage and disposal

Key Phase 05 “Waste processing, storage and disposal” deals with the management of the historical waste and decommissioning waste resulting from activities undertaken within Key Phase 03 (Dismantling activities outside Controlled Area) and Key Phase 04 (Dismantling activities within the Controlled Area). Activities for establishment of the infrastructure for treatment and conditioning of historical and decommissioning waste and activities for temporary storage of different types of waste are also included.

The decommissioning and historical waste on the territory of Units 1 to 4 was transported for treatment under the approved annual schedule for treatment and conditioning of RAW.

Most of the dismantled equipment in TH of Units 1 to 4 is from systems of Contamination Category 1 and it was subsequently released from regulation. The materials contaminated above free release levels are stored at special organised areas and transported to SRDW for processing. Within the eight-month period, 120 tons of contaminated materials have been processed. Materials characterized as RAW, for which decontamination is not economically effective, will be transferred for management to SD RAW-Kozloduy or treated in the PMF.

Table 2: Main waste processing activities

Activity	Planned amounts 2018	Actual amounts as of August 2018	Percentage fulfilment as per the Annual plan
Retrieval and transport of historical liquid RAW	150 m^3	100 m^3	76.9%
Draining of radioactive solutions in the CA	500 m^3	1000 m^3	200%
Management of RAM and RAW from decommissioning activities – treatment of radioactive water	8 000 m^3	5 820 m^3	72.7%
Treatment of historical solid waste	40 m^3	35 m^3	87.5%
Treatment of decommissioning solid waste	125 m^3	108 m^3	86.4%

Non-radioactive materials are generally disposed at KNPP's existing depot for non-radioactive household and industrial waste. Specific waste not suitable for the depot is transferred to licensed companies for further management.

The activities completed are as follows:

05.0100 Construction of National Disposal Facility Radiana

Radiana site preparations – fencing, relocations and utility connection points.

- Completion of construction works for rehabilitation of axcess road for Radiana site (R-Project 4F)

Predisposal Monitoring of the Radiana site.

- Finalization of procurement for ratiologcal, hydrogeological and geodetic monitoring during construction of of NDF Phase 1, on-going implementation

Construction of NDF Phase 1:

- Preparation and submission of DD remaining parts – ongoing;
- Preparation of method statements – ongoing;
- Implementation of humus backfill on the slope – ongoing;
- Shaping the onsite soil stockpile – ongoing;
- Installation of temporary security measures at the perimeter of Radiana site, including provision of electrical supply – completed;
- Excavation works for auxiliary buildings – completed;
- Installation of temporary loess-cement mixing plant, provision of water and electrical supply for the plant, testing and calibration of the plant – completed;
- Experimental loess-cement cushion implementation:

- ✓ Removal of humus layer, excavation works, drainage installation and preparation of soil base – completed;
- ✓ Preparation of loess-cement layers – completed;
- ✓ Loess-cement cushion test area – completed.

- Excavation for shaping the road profile for Roads Axis 1, 3, 4, 5 and Main road – completed;

Independent supervision of NDF Phase 1 Construction

Designer's supervision of NDF Phase 1 Construction

Support services and security

05.0200 Reconstruction of existing facilities and procurement of additional equipment for management of historical waste

Project 5b Facility for Treatment and Conditioning of Solid Radioactive Waste with a High Volume Reduction Factor. The main steps completed are as follows:

- As-built documentation accepted by the Ministry of Regional Development and Public Works (MRDPW);
- The State Acceptance Commission took place during week commencing 1st May 2018 and Protocol 16 on establishment of the operational suitability of the construction project was signed;
- Utilisation Permit by the National Construction Supervision Directorate issued to SERAW on 14th May 2018;
- Commissioning Permit issued by BNRA on 18th May 2018 and preparation for 120-hour Commissioning Tests commenced on 21st May 2018;
- Completed 120-hour Commissioning Tests on 31st May 2018;
- Approved Commissioning Tests Report – compliance of PMF radiation protection and safety and key parameters confirmed.

05.0300 Reconstruction of existing facilities and procurement of additional equipment for management of materials from the decommissioning activities

Facility for Free Release Measurement – completion of the accreditation audit process by the Bulgarian Accreditation Service for Accreditation of SERAW's Inspection Body of Type C "Free Release"

Project 12a Size Reduction and Decontamination Workshop. The main steps completed are as follows:

- SERAW personnel have been undertaking operational activities within the facility by processing waste from the TH from March 2018;
- Technical and Detail Design "as-built" documentation handed over;
- SERAW issued a Taking-over Certificate for the whole of the Works in June 2018, confirming that the Works had been completed with only minor rectification of finishing works to be addressed.

Project 48 Modernisation and Reconstruction of SD RAW-Kozloduy to Receive and Process Decommissioning RAW. The main steps completed are as follows:

- Signed Consultancy Contract - 22 January 2018;
- Kick-off meeting - held 7th February 2018;
- Conducted site walkdowns & technical discussions to verify input data;
- QA and Working Programmes approved;

- Technical Proposal for the Solid RAW Treatment Line - accepted;
- Technical Design parts 'Video Monitoring' and 'High Speaker' Systems – SERAW's comments currently being addressed;
- Technical Design development ongoing – 60% completed.

05.0400 Management of historical RAW

Project 9b-2 Retrieval and Processing of the Historical Wet Solid Waste. The major steps completed during 2018 are as follows:

- Second Stage Tenders Evaluation completed in May 2018;
- Evaluation Report was Non-Objected by EBRD on 11th June 2018;
- Letter of Acceptance sent to the Contractor on 13th June 2018;
- Kick-off meeting held 2nd August 2018;
- QA Programme & Plan approved.

Retrieval and Processing of the Historical Solid Waste

Reducing the volume of RAW using PMF

Manufacturing of RCC for conditioning of historical waste

Final conditioning of historical waste in 10 RCC

Temporary storage of RCC with historical waste

05.0500 Management of decommissioning waste and materials

Initial measurement, characterization and sorting

Temporary storage of non-radioactive materials

Temporary storage of radioactive materials

Decontamination of radioactive materials in SRDW

Measurements for release from regulation

Disposal of non-radioactive waste

Processing the decommissioning solid waste in RAW TF

Processing the secondary liquid waste from SRDW

Processing the decommissioning liquid waste from AB-2 (or from a temporary storage tank) in RAW TF

Manufacturing of RCC for conditioning of decommissioning waste

Final conditioning of decommissioning waste in 15 RCC

Temporary storage of RCC with decommissioning waste

05.0700 Removal of sludge from Turbine Hall elevation -3.60

Sampling and characterization of sludge

1.3.6 Key Phase 06: Site infrastructure and operation

In accordance with the AWP 2018 planned activities under this Key Phase, operation and support of automated access control systems, monitoring systems and alarms were implemented. Access for contractors' personnel and visitors is provided. Daily surveillance on the territory of SERAW

for review of technical security systems is implemented. Operation of support systems – planned periodical repairs of motors, pumps and ventilation systems is implemented according to the life cycle management programme.

Radiation and environmental safety monitoring – continuous monitoring of radioactive liquid and gaseous releases into the environment is performed. Radiation monitoring on the territory of the industrial site of NPP Units 1 to 4 is carried out under contract with KNPP. Periodical monitoring and control of other environmental parameters is carried out by inspectors from the MEW. The recorded values of the observed radiation and environmental parameters are below the exposure limits. All routine activities related to this key phase will be performed until 2030 and along with the progress of the dismantling activities. The radiation monitoring and environmental monitoring will be discontinued after site release from regulation.

The scheduled activities are as follows:

06.0100 Site security and surveillance

Site security and personnel access

06.0200 Site operation and maintenance

Project 35 Independent infrastructure separation between KNPP and SERAW. The main steps completed are as follows:

- SERAW and KNPP have reached a mutual agreement for implementation of the project taking into account the status of the Detailed Spatial Plan on Kozloduy NPP site which may affect the Construction Permit issuance.

Inspection and maintenance of buildings and systems

Site upkeep activities

Utilities

06.0300 Operation of support systems

Readjustment and operation of electrical and lighting systems according to the requirements of decommissioning

Readjustment and operation of ventilation systems according to the requirements of decommissioning

Readjustment and operation of heat and steam systems according to the requirements of decommissioning

Readjustment and operation of water supply and fire extinguishing systems according to the requirements of decommissioning

Readjustment and operation of sewage systems according to the requirements of decommissioning

Readjustment and operation of compressed air systems according to the requirements of decommissioning

06.0400 Radiation and environmental safety monitoring

Radiation protection and monitoring

Environmental protection and radiation environmental monitoring

1.3.7 Key Phase 07: Project management, engineering and support

SERAW personnel responsible for the management of investment projects continued to perform their duties supported by the D-R PMU Consultant's Team.

Support to the decommissioning project progress – monitoring decommissioning implementation, cost control and decommissioning risk management.

Engineering support is provided to the D-R PMU Consultant and includes provision of input data, ensuring projects coordination, technical review of project documentation and review for compliance with authorities' requirements.

SD Decommissioning of Units 1 to 4 maintains a current Emergency Plan according to KNPP's Emergency Plan and the National Emergency Plan; emergency trainings are periodically conducted, including the common ones with Kozloduy NPP. There are emergency teams available 24/7.

Requalification and relocation of personnel – assessment of training needs is done every year and training plans are developed. Training Plan for the staff is executed. Specialized staff is trained by authorized organizations.

Engineering support – development and update of instructions, flow diagrams, programmes and procedures for systems in operation are performed.

Information system and computer support - maintaining and expanding the internal computer network. Hardware and software are maintained. Decommissioning, materials management and documents databases are maintained.

Waste management support – Radiological survey, classification and categorization of waste and streams management plans are developed and carried out in different stages of material management process. Health physics (radiation safety) – Personal dosimetry monitoring is ensured. Systematic control of individual doses of staff is made. Annual spectrometric measurement for personnel working in the Controlled Area is made.

All routine activities related to this key phase will be performed until 2030 and along with the progress of the dismantling activities.

The implemented activities are as follows:

07.0100 Project Management by Consultant

D-R CON

07.0200 Project Management

Project Management for D-R PMU

Quality assurance and quality surveillance

General administration and accounting

Public relations

Project 20 Information Centre for Decommissioning. The main steps completed are as follows:

- Construction permit obtained;
- Publication of the Invitation for tenders made on 29 March 2018;
- Opening of Tender Proposals on 5 June 2018;

- Non-Objection to the Tender Evaluation Report and the contract award recommendation on 17 July 2018;
- Contract awarded;
- Kick off meeting held.

07.0300 Decommissioning management system

Operation of System for Management of Decommissioning Materials

Project 51 Development of Integrated Information System for Radioactive Waste Management

- Collecting and analysis of input data for preparation of a PIS.

07.0400 Support services

Engineering Support

Waste management support

Decommissioning support including chemistry, decontamination

Training and Development in Decommissioning

Training of personnel

Documentation and records control

Procurement, warehousing and materials handling

Housing, office equipment, support services

07.0500 Health and safety

Health physics

Industrial safety

1.3.8 Key Phase 08: Fuel and activated material

Key Phase 08 involves the activities concerned with the construction of dedicated storage for spent fuel and activated materials. It also includes all the activities for safe storage and handling of spent fuel and activated materials. Currently most of these activities (excluding Temporary storage of boron absorbers and dummy assemblies in Reactor Building) are performed by KNPP personnel and financed by KNPP own funds.

08.0100 Temporary storage of spent fuel in Spent Fuel Storage Facility. This activity group includes the activities related with the safe storage of spent fuel in Spent Fuel Storage Facility and the preparation for transfer to the Dry Spent Fuel Storage Facility. The activities are as follows:

Safe storage of fuel in the Spent Fuel Storage Facility

Loading the fuel in dedicated casks Constor 440/84

Transfer casks from Spent Fuel Storage Facility to Dry Spent Fuel Storage Facility

08.0200 Dedicated storage for fuel and activated material involves the activities concerned with the construction and operation of Dry Spent Fuel Storage Facility. The activities are as follows:

Temporary storage of casks with spent fuel in Dry Spent Fuel Storage Facility

08.0300 Temporary Storage of activated material involves the activities concerned with the safe storage of acticated materials in Reactor Buildings. The activities are as follows:

Temporary storage of boron absorbers and dummy assemblies in Reactor Building (SFP-3)

1.3.9 Key Phase 09: Miscellaneous expenditures

In Key Phase 09 "Miscellaneous expenditures" are included payments to BNRA, municipalities, other stakeholders, as well as KNPP and SERAW's own investments. There are no activities.

1.3.10 Key Performance Indicators as of August 2018

The Key Performance Indicators are given in Table 3 below.

Table 3: Key Performance Indicators as of August 2018

№	Indicator	Planned targets 2018	Fufillment as of August 2018	Percentage fulfilment as per the Annual plan
1.	**IMPLEMENTATION OF DISMANTLING PLAN**			
1.1.	Dismantling in TH, Units 1-4			
1.1.1.	Dismantling of equipment in TH	5 000 t	2 150 t	43%
1.1.2.	Demolition of civil structures in TH	1 500 t	1 389 t	92.6%
1.1.3.	Free released materials	8 000 t	5 445 t	68%
1.2.	Dismantling of equipment in CA	200 t	122 t	61%

1.3.11 Planned main steps in 2019

The planned main steps are listed below:

- Radioactive solutions in Controlled Area planned to be drained by the systems – 1000 m^3
- Radioactive solutions planned to be treated in Controlled Area – 8 000 m^3
- Dismantling of equipment in Turbine Hall – 1238 t metal
- Dismantling of equipment in Controlled Area – 200 t metal
- Materials planned for free release – 7 000 t
- Cutting of connections between technological systems in operation and not needed systems – according to Technical Decisions

- SERAW personnel to operate the PMF in two operational campaigns as per the facility's design capacity and Commissioning Permit by BNRA through the technical support by the Project 5b Contractor
- Approval of the Technical Design for Treatment of Wet Solid Wastes by the Employer and Regulator
- Continue processing 600 tons of contaminated materials in the Size Reduction and Decontamination Workshop
- Complete development of Design package for AB-1 (Deliverable 3), Design package for RB Unit 1 (Deliverable 4), Design package for the Primary Circuit and components within RB of Unit 1 (Deliverable 5) and Technical Specifications for all items of plant, equipment and tools for dismantling activities in RB and AB (Deliverable 6)
- Upon confirmation of the full applicability of the DfD technology used in Bohunice to transfer the property, deliver the DfD equipment to Kozloduy NPP site and award a contract for Full System Decontamination of the Primary Circuit of Units 1-4 Kozloduy NPP (Project 55). The below listed expected synergies between this project and the corresponding project, successfully completed in Bohunice, will demonstrate the added value to Nuclear Decommissioning Assistance Programme:
  - Free sharing of lessons learnt
  - Sharing of practical experience with compensation for the staff involved (remuneration)
  - Free sharing of project documentation only for information, including licensing of the process
  - Delivery to Kozloduy site and sharing of cost between the BIDSF and KIDSF with no profit of the main items of equipment already procured and available at Bohunice
  - An agreed ratio of initial equipment cost and transfer of the property, transportation and dlivery to SERAW site for the cost of equipment
- Completion of loess-cement cushion and infiltration control network galleries structure on the National Disposal Facility, progress in construction of buffer storage and auxiliary buildings
- Participation in IAEA workshops
- Organisation and participation in an IAEA workshop under *TC Project RER9150 "Improving Capabilities to Efficiently Implement Large Ongoing Decommissioning Projects and Waste Management with Minimization of Risks Based on Initiatives and Potential Synergies" – Regional Workshop on Characterization of Areas Affected by Accidents or High Dose Rate Areas*, hosted by The Government of Bulgaria through State Enterprise Radioactive Waste, to be held 13-17 May 2019
- Participation in a knowledge-sharing workshop organised by JAVYS in March 2019 in continuation of the good practices between the three Nuclear Decommissioning Assistance Programmes – Bulgaria, Slovakia and Lithuania.

1.4 FINANCING

The scheduled disbursement of decommissioning funding, including national co-financing for the period 2014-2020 is shown in Table 4.

Table 4: Decommissioning Funding Sources for the period 2014-2020

Funding Source	Actual Funding in MEUR				Forecast Funding in MEUR		
	2014	2015	2016	2017	2018	2019	2020
Kozloduy International Decommissioning Support Fund	31.094	32.348	26.494	35.165	53.029	52.516	57.209
- Bulgarian National Decommissioning Funds through the State Budget - Radioactive Waste Fund - Decommissioning of Nuclear Facilities Fund - Additional funding from the BNDF with Management Board authorisation - KNPP own funding	12.304	16.563	13.890	15.034	14.755	16.463	15.994
TOTAL	**43.398**	**48.911**	**40.384**	**50.199**	**67.784**	**68.979**	**73.203**

Note: The amounts above include decommissioning activities related to NDF and RAW TF, contingencies and KNPP own funding for temporary storage of spent fuel in Spent Fuel Storage Facilities on site. The amount shown for 2018 reflects the actual funding for the first half plus the forecast for the balance for the year without contingency.

2. UPDATED DECOMMISSIONING SCHEDULE, INCLUDING DEVIATION FROM THE BASELINE PLAN

2.1 UPDATED DECOMMISSIONING SCHEDULE

The activities for 2019 are shown in Figure 2: AWP 2019 - Units 1 to 4 Decommissioning Schedule as compared with the Baseline.

2.2 PLANNED ACTIVITIES AND DISBURSEMENT IN 2019

Table 5: Planned activities and disbursement for 2019

№ in indicative schedule	Activities 2019	MEUR
1	**01 Pre-decommissioning actions**	
62	***01.0500 Authorisation***	
67	Preparation of documentation for the application of Plasma Melting Facility licensing	0.031118
75	Preparation of documentation for coordination and approval of dismantling activities in Reactor Buildind of Units 1-4	0.031118
77	**02 Facility shutdown activities**	
85	***02.0200 Mode of operation of Units 1&2 as a RAW Management Facility***	
89	Removal of historical waste from Units 1&2	0.195196
98	***02.0400 Mode of operation of Units 3&4 as a RAW Management Facility***	
102	Removal of historical waste from Units 3&4	0.195196
104	**03 Dismantling activities outside Controlled Area**	
809	***03.0600 Dismantling activities of SSC in TH of Units 3&4***	
810	Dismantling activities of common SSC in TH of Units 3&4	0.182573
1258	Dismantling of equipment from elevation 0.00 to elevation -3.6	0.182572
1259	***03.0700 Activities in DGS-1***	
1266 and 1268	Reconstruction of the DGS-1 Building for Decommissioning Purposes	1.023
1302	**04 Dismantling activities within the Controlled Area**	
1303	***04.0100 Preparation of Reactor Building of Units 1&2 for dismantling***	
1317, 1318, 1322÷1324, 1328, 1329	Marking of systems remaining in operation during decommissioning of the Units 1&2	0.118815
1330, 1338, 1340	Isolation of all systems which are not needed for dismantling	0.118815
1365÷1369	Isolation of the operating part and not operating part of the systems above	0.148519
1370, 1371, 1378, 1381, 1387	Removal of fluids from the systems	0.207926
1397	Switching off / disconnecting of all electrical systems which are not needed	0.148519

1398	Removal of the insulation from the systems in accordance with the decontamination plan	0.029704
1399	Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)	0.065065
1400	Adapting of the ventilation systems in the RB	0.067894
1401	Setting up and maintaining the systems which remain in operation	0.067894
1402	Installation of new systems	0.033947
1403	Primary circuit and auxiliary systems' decontamination	0.169736
1421	Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning	0.186709
1422	***04.0200 Preparation of Reactor Building of Units 3&4 for dismantling***	
1423÷1425, 1433÷1435	Isolation of connections between the RB and Turbine Hall and AB-2 which are not needed	0.118815
1449, 1463, 1464, 1470, 1474, 1480	Isolation of all systems which are not needed for dismantling	0.118815
1484÷1488	Isolation of the operating part and not operating part of the systems above	0.148519
1489, 1490, 1496, 1498, 1504	Removal of fluids from the systems	0.237630
1516	Switching off / disconnecting of all electrical systems which are not needed	0.148519
1517	Removal of the insulation from the systems in accordance with the decontamination plan	0.029704
1518	Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)	0.065065
1520	Setting up and maintaining the systems which remain in operation	0.169736
1521	Installation of new systems	0.032533
1522	Primary circuit and auxiliary systems' decontamination	0.169736
1541÷1544	Cleaning the Emergency Boron Tank (EBT) 3	0.118815
1549	Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning	0.186709
1550	***04.0300 Planning the dismantling activities within Controlled Area of Units 1-4***	
1551	Preparation of Detail Design for dismantling of equipment in the Controlled Areas of KNPP Units 1-4	3.021871
1552, 1553, 1572	Detailed concurrent planning during dismantling of ventilation systems within Controlled Area of Units 1-4	0.062236
1591÷1593	Detailed concurrent planning during dismantling of electrical systems within Controlled Area of Units 1-4	0.062236
1594÷1596	Detailed concurrent planning during the dismantling of I&C systems within Controlled Area of Units 1-4	0.062236

1597, 1598, 1608÷1616, 1642, 1652÷1656	Detailed concurrent planning during the dismantling of technological systems within Reactor Buildings of Units 1-4	0.062236
1686, 1687, 1704	Detailed concurrent planning during the dismantling of technological and ventilation systems within AB-1 and AB-2	0.062236
1751	***04.0400 Dismantling activities in Reactor Building of Units 1&2 and AB-1***	
1752	Dismantling of ventilation systems in RB of Units 1&2	0.390392
1771	Dismantling of electrical systems in RB of Units 1&2	0.390392
1776	Dismantling of I&C systems in RB of Units 1&2	0.390392
1785, 1833÷1866, 1975	Dismantling of technological systems in RB of Units 1&2	0.585588
2065	Dismantling of technological equipment in AB-1	0.455457
2112	Dismantling of ventilation systems in AB-1	0.455457
2199	***04.0500 Dismantling activities in Reactor Building of Units 3&4 and AB-2***	
2200	Dismantling of ventilation systems in RB of Units 3&4	0.390392
2219	Dismantling of electrical systems in RB of Units 3&4	0.390392
2224	Dismantling of I&C systems in RB of Units 3&4	0.390392
2233, 2281÷2306, 2423, 2453÷2456, 2472÷2502	Dismantling of technological systems in RB of Units 3&4	0.585588
2513	Dismantling of technological equipment in AB-2	0.455457
2560	Dismantling of ventilation systems in AB-2	0.455457
2647	***04.0600 Decontamination activities in Reactor Buildings of Units 1-4***	
2648	Decontamination of equipment and rooms prior to dismantling	1.244728
2661	**05 Waste Processing, Storage and Disposal**	
2662	***05.0100 Construction of National Disposal Facility Radiana***	
2730, 2738, 2755, 2757	Radiana site preparations – fencing, relocations and utility connection points	3.248750
2758, 2759, 2762÷2764	Predisposal Monitoring of the Radiana site	0.318000
2766, 2767	Construction of NDF Phase 1	14.435820
2769	Independent supervision of NDF Phase 1 Construction	0.674938
2770	Designer’s supervision of NDF Phase 1 Construction	0.260128
2773	Support services and security	0.771532
2774	***05.0200 Reconstruction of existing facilities and procurement of additional equipment for management of historical waste***	
2781	Supply of New Utilities for Infrastructure Projects Units 1-4	0.004110
2787	***05.0300 Reconstruction of existing facilities and procurement of additional equipment for management of materials from the decommissioning activities***	
2797	Supply of different types of containers for transport and storage of materials resulting from dismantling works (11b, 11b2)	0.550000

2799	Sites for Management of Materials from Decommissioning Activities at KNPP Units 1-4	0.049500
2805	Modernisation and Reconstruction of SDRAW-Kozloduy to Receive and Process Decommissioning RAW	1.132800
2808	***05.0400 Management of historical RAW***	
2813	Retrieval and Processing of the Historical Wet Solid Waste	6.135637
2814÷2827	Retrieval and Processing of the Historical Solid Waste	0.068214
2828÷2845	Reducing the volume of RAW using PMF	1.366356
2854 and 2856	Manufacturing of RCC for conditioning historical waste	0.002483
2857÷2862	Final conditioning of historical waste in RCC	0.118640
2863÷2866	Temporary storage of RCC with historical waste	0.004941
2875	***05.0500 Management of decommissioning waste and materials***	
2876	Initial measurement, characterization and sorting	0.148519
2877÷2879	Temporary storage of non-radioactive materials	0.435118
2880, 2882, 2883	Temporary storage of radioactive materials	0.438050
2884÷2903	Decontamination of radioactive materials in SRDW	1.215740
2905, 2907	Measurements for release from regulation	0.311182
2908	Disposal of non-radioactive waste	0.141446
2909	Processing the decommissioning solid waste in RAW TF	0.740681
2910	Processing the secondary liquid waste from SRDW	0.084247
2911÷2918	Processing the decommissioning liquid waste from AB-2 (or from a temporary storage tank) in RAW TF	0.282899
2919 and 2921	Manufacturing of RCC for conditioning decommissioning waste	0.298000
2922÷2930	Final conditioning of decommissioning waste in RCC	0.759489
2931÷2934	Temporary storage of RCC with decommissioning waste	0.066351
2946	***05.0700 Removal of sludge from Turbine Hall elevation -3.60***	
2949	Retrieval and processing of sludge from Turbine hall Units 1 to 4	0.558751
2950	Buffer storage of sludge before release from regulation	0.113157
2955	**06 Site Infrastructure and Operation**	
2956	***06.0100 Site security and surveillance***	
2962	Site security and personnel access	0.509538
2963	***06.0200 Site operation and maintenance***	
2966	06.0203 Independent infrastructure separation between KNPP and SERAW	3.15000
2968	06.0205 Inspection and maintenance of buildings and systems	0.466073
2969÷2973	06.0206 Site upkeep activities	0.844638
2974÷2977	06.0207 Utilities	1.053678
2978	***06.0300 Operation of support systems***	
2979	Readjustment and operation of electrical and lighting systems according to the requirements of decommissioning	0.148436
2980	Readjustment and operation of ventilation systems according to the requirements of decommissioning	0.112659

2981	Readjustment and operation of heat and steam systems according to the requirements of decommissioning	0.141982
2982	Readjustment and operation of water supply and fire extinguishing systems according to the requirements of decommissioning	0.115870
2983	Readjustment and operation of sewage systems according to the requirements of decommissioning	0.110832
2984	Readjustment and operation of compressed air systems according to the requirements of decommissioning	0.107761
2985	***06.0400 Radiation and environmental safety monitoring***	
2987÷2992	Radiation protection and monitoring	0.405484
2993÷2995	Environmental protection and radiation environmental monitoring	0.316022
2996	**07 Project Management, Engineering and Support**	
2997	***07.0100 Project Management by Consultant***	
3000	D-R CON	0.381506
3001	Extension of Consultant support	5.250000
3002	***07.0200 Project Management***	
3005	Project Management for D-R PMU	0.565785
3006	Quality assurance and quality surveillance	0.056579
3007	General administration and accounting	0.156612
3008	Public relations	0.028289
3009	Information Centre for Decommissioning	0.683350
3011	***07.0300 Decommissioning management system***	
3015	Operation of System for Management of Decommissioning Materials	0.056579
3017	***07.0400 Support services***	
3018	Engineering Support	0.155591
3019	Waste management support	0.155591
3020	Decommissioning support including chemistry, decontamination	0.265663
3021, 3023	Training and Development in Decommissioning	0.040000
3024	Training of personnel	0.043573
3025	Documentation and records control	0.069050
3026	Procurement, warehousing and materials handling	0.096738
3027	Housing, office equipment, support services	0.100921
3028	***07.0500 Health and safety***	
3029	Health physics	0.056400
3030	Industrial safety	0.154556
3031	Personnel safety equipment and work clothing	0.134482
3032	**08 Fuel and Activated Material**	
3033	***08.0100 Temporary storage of spent fuel in Spent Fuel Storage Facility***	
3034	Safe storage of fuel in Spent Fuel Storage Facility	0.684766
3035÷3041	Loading the fuel in dedicated casks Constor 440/84	0.18000
3042	Transfer casks from Spent Fuel Storage Facility to Dry Spent Fuel Storage Facility	0.01000
3044	***08.0200 Dedicated storage for fuel and activated material***	
3046	Temporary storage of casks with spent fuel in Dry Spent Fuel Storage Facility	0.106090

3047	***Activity Group 08.0300 Temporary Storage of activated material***	
3051	Temporary storage of boron absorbers and dummy assemblies in Reactor Building	0.148519
3052	**09 Miscellaneous Expenditures**	
3053	***09.0100 Payments to BNRA***	
3054	09.0101 Fees for issuing licenses	0.00000
3058	09.0102 Other payments to BNRA	1.75000
3062	***09.0200 Payments to other bodies (institutions)***	
3063	09.0201 Payments to Ministry of Regional Development and Public Works	0.000651
3064	09.0202 Payments to municipalities	0.125518
3065	09.0203 Other payments to other state bodies	0.042584
3066	09.0204 Other payments	0.032596
3067	***09.0300 KNPP Investments***	
3069	09.0302 KNPP Investments in SFSF and DSFSF	0.054781
3060	***09.0400 SERAW Investments***	
3071	09.0401 Investments in tangible assets	0.342566
3075	09.0402 Investments in intangible assets	0.168726

2.3 CRITICAL PATH

Impact identified in the main Decommissioning project and Corrective measures

In the process of implementation planned for the year, the following challenges were identified:

Project 9b-2 – The retrieval of wet solid radioactive waste is a prerequisite to start the dismantling of large systems and components in AB-1 and AB-2. The following risks have been identified:

- Refusal by the BNRA of the new technology, specifically the APS matrix, which would cause project delay.
  Mitigation measures: Proper justification by the Contractor and preliminary discussion with Regulator

Project 44 – Direct effect to the overall decommissioning of the CA of Units 1-4 as a consequence of being unable to undertake major decommissioning activities. The following risks have been identified:

- The Consultant does not submit Deliverables in compliance with the agreed Schedule, which will impact the overall Decommissioning Programme.
  Mitigation measures: Maintain pressure through close management of the Consultant to submit the Deliverables on time and in accordance with the Contract, and SERAW to ensure accelerated review process of the deliverables.
- Authorities are reluctant to the proposed approach due to its deviation from the National Strategy for spent fuel and radioactive waste management until 2030.
  Mitigation measures: Early engagement with authorities to agree with the selected dismantling approach.

Project 48 – Direct effect on the RAW retrieval and conditioning impacting the overall Decommissioning Programme.

Project 55 – Direct effect on the dismantling of the Primary Circuit impacting the overall Decommissioning Programme. The following risks have been identified:

- The technology applied in Bohunice is demonstrated not to be feasible in Kozloduy Units, not allowing to achieve the conditions needed to start the dismantling of the primary circuit.
  Mitigation measures: Engage JAVYS to confirm the full applicability of the technology prior to proceeding with the transfer of the decontamination equipment
- Direct Contracting with JAVYS/Westinghouse fails, producing huge delays in the implementation of the dismantling of the RB with unknown costs.
  Mitigation measures: Use the unique opportunity to save considerable time and money by taking advantage of the experience, knowledge, equipment and capabilities exclusive to the Westinghouse/JAVYS combination.

Project R-10 – Direct effect on the projects that require disposal of low and intermediate level RAW impacting the overall Decommissioning Programme. The following risks have been identified:

- Court rejects the EIA decision, which will cause delays in the NDF construction and commissioning.
  Mitigation measures: Active communication with Ministry of Environment and Waters and participation of SERAW in defending the EIA decision in the Supreme Administrative Court.

3. MAIN ACTIVITIES TO BE PERFORMED

3.1 ,DETAILED DECOMMISSIONING ACTIVITIES PLANNED FOR THE NEXT TWO YEARS

The activities planned to be implemented for the period 2019–2020 are shown in Table 6.

Table 6: Decommissioning activities for the period 2019-2020

№ in indicative schedule	Activities 2019	Activities 2020
1	***01 Pre-decommissioning actions***	***01 Pre-decommissioning actions***
62	***01.0500 Authorisation***	***01.0500 Authorisation***
67	Preparation of documentation for the application of Plasma Melting Facility licensing	Preparation of documentation for the application of Plasma Melting Facility licensing
69		Preparation of documents for applying for RAW Processing Facility license (after modernization)
75	Preparation of documentation for the coordination and approval of dismantling activities in Reactor Building of Units 1-4	Preparation of documentation for the coordination and approval of dismantling activities in Reactor Building of Units 1-4
77	**02 Facility shutdown activities**	**02 Facility shutdown activities**
85	***02.0200 Mode of operation of Units 1&2 as a RAW Management Facility***	***02.0200 Mode of operation of Units 1&2 as a RAW Management Facility***
89	Removal of historical waste from Units 1&2	Removal of historical waste from Units 1&2
98	***02.0400 Mode of operation of Units 3&4 as a RAW Management Facility***	***02.0400 Mode of operation of Units 3&4 as a RAW Management Facility***
102	Removal of historical waste from Units 3&4	Removal of historical waste from Units 3&4
104	**03 Dismantling activities outside Controlled Area**	**03 Dismantling activities outside Controlled Area**
809	***03.0600 Dismantling activities of SSC in TH of Units 3&4***	
810	Dismantling activities of common SSC in TH of Units 3&4	
1258	Dismantling of equipment from elevation 0.00 to elevation -3.6	
1259	***03.0700 Activities in DGS-1***	

№ in indicative schedule	Activities 2019	Activities 2020
1266 and 1268	Reconstruction of the DGS-1 Building for Decommissioning Purposes	
1269		***03.0800 Activities in CPS-1***
1270÷1274		Preparatory activities for dismantling at CPS-1 (ЦПС-1)
1302	**04 Dismantling activities within the Controlled Area**	**04 Dismantling activities within the Controlled Area**
1303	***04.0100 Preparation of Reactor Building of Units 1&2 for dismantling***	***04.0100 Preparation of Reactor Building of Units 1&2 for dismantling***
1317, 1318, 1322÷1324, 1328, 1329	Marking of systems remaining in operation during decommissioning of the Units 1&2	
1330, 1338, 1340	Isolation of all systems which are not needed for dismantling	
1365÷1369	Isolation of the operating part and not operating part of the systems above	Isolation of the operating part and not operating part of the systems above
1370, 1371, 1378, 1381, 1387	Removal of fluids from the systems	Removal of fluids from the systems
1397	Switching off / disconnecting of all electrical systems which are not needed	Switching off / disconnecting of all electrical systems which are not needed
1398	Removal of the insulation from the systems in accordance with the decontamination plan	Removal of the insulation from the systems in accordance with the decontamination plan
1399	Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)	Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)
1400	Adapting of the ventilation systems in the RB	Adapting of the ventilation systems in the RB
1401	Setting up and maintaining the systems which remain in operation	Setting up and maintaining the systems which remain in operation
1402	Installation of new systems	Installation of new systems
1403	Primary circuit and auxiliary systems' decontamination	Primary circuit and auxiliary systems' decontamination
1421	Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning	Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning
1422	***04.0200 Preparation of Reactor Building of Units 3&4 for dismantling***	***04.0200 Preparation of Reactor Building of Units 3&4 for dismantling***

№ in indicative schedule	Activities 2019	Activities 2020
1423÷1425, 1433÷1435	Isolation of connections between the RB and Turbine Hall and AB-2 which are not needed	Isolation of connections between the RB and Turbine Hall and AB-2 which are not needed
1449, 1463, 1464, 1470, 1474, 1480	Isolation of all systems which are not needed for dismantling	Isolation of all systems which are not needed for dismantling
1484÷1488	Isolation of the operating part and not operating part of the systems above	Isolation of the operating part and not operating part of the systems above
1489, 1490, 1496, 1498, 1504	Removal of fluids from the systems	Removal of fluids from the systems
1516	Switching off / disconnecting of all electrical systems which are not needed	Switching off / disconnecting of all electrical systems which are not needed
1517	Removal of the insulation from the systems in accordance with the decontamination plan	Removal of the insulation from the systems in accordance with the decontamination plan
1518	Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)	Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)
1520	Setting up and maintaining the systems which remain in operation	Setting up and maintaining the systems which remain in operation
1521	Installation of new systems	Installation of new systems
1522	Primary circuit and auxiliary systems' decontamination	Primary circuit and auxiliary systems' decontamination
1523 and 1528		Decontamination of SVO-1, SVO-2, SVO-3, SVO-4 and SVO-6
1541÷1544	Cleaning the Emergency Boron Tank (EBT) 3	
1549	Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning	Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning
1550	***04.0300 Planning the dismantling activities within Controlled Area of Units 1-4***	***04.0300 Planning the dismantling activities within Controlled Area of Units 1-4***
1551	Preparation of Detail Design for dismantling of equipment in the Controlled Areas of KNPP Units 1-4	
1552, 1553, 1572	Detailed concurrent planning during dismantling of ventilation systems within Controlled Area of Units 1-4	Detailed concurrent planning during dismantling of ventilation systems within Controlled Area of Units 1-4

№ in indicative schedule	Activities 2019	Activities 2020
1591÷1593	Detailed concurrent planning during dismantling of electrical systems within Controlled Area of Units 1-4	Detailed concurrent planning during dismantling of electrical systems within Controlled Area of Units 1-4
1594÷1596	Detailed concurrent planning during the dismantling of I&C systems within Controlled Area of Units 1-4	Detailed concurrent planning during the dismantling of I&C systems within Controlled Area of Units 1-4
1597, 1598, 1608÷1616, 1642, 1652÷1656	Detailed concurrent planning during the dismantling of technological systems within Reactor Buildings of Units 1-4	Detailed concurrent planning during the dismantling of technological systems within Reactor Buildings of Units 1-4
1686, 1687, 1704	Detailed concurrent planning during the dismantling of technological and ventilation systems within AB-1 and AB-2	Detailed concurrent planning during the dismantling of technological and ventilation systems within AB-1 and AB-2
1751	***04.0400 Dismantling activities in Reactor Building of Units 1&2 and AB-1***	***04.0400 Dismantling activities in Reactor Building of Units 1&2 and AB-1***
1752	Dismantling of ventilation systems in RB of Units 1&2	Dismantling of ventilation systems in RB of Units 1&2
1771	Dismantling of electrical systems in RB of Units 1&2	Dismantling of electrical systems in RB of Units 1&2
1776	Dismantling of I&C systems in RB of Units 1&2	Dismantling of I&C systems in RB of Units 1&2
1785, 1833-1866, 1975	Dismantling of technological systems in RB of Units 1&2	Dismantling of technological systems in RB of Units 1&2
2065	Dismantling of technological equipment in AB-1	Dismantling of technological equipment in AB-1
2112	Dismantling of ventilation systems in AB-1	Dismantling of ventilation systems in AB-1
2199	***04.0500 Dismantling activities in Reactor Building of Units 3&4 and AB-2***	***04.0500 Dismantling activities in Reactor Building of Units 3&4 and AB-2***
2200	Dismantling of ventilation systems in RB of Units 3&4	Dismantling of ventilation systems in RB of Units 3&4
2219	Dismantling of electrical systems in RB of Units 3&4	Dismantling of electrical systems in RB of Units 3&4
2224	Dismantling of I&C systems in RB of Units 3&4	Dismantling of I&C systems in RB of Units 3&4
2233, 2281÷2306, 2423, 2453÷2456, 2472÷2502	Dismantling of technological systems in RB of Units 3&4	Dismantling of technological systems in RB of Units 3&4
2513	Dismantling of technological equipment in AB-2	Dismantling of technological equipment in AB-2

№ in indicative schedule	Activities 2019	Activities 2020
2560	Dismantling of ventilation systems in AB-2	Dismantling of ventilation systems in AB-2
2647	***04.0600 Decontamination activities in Reactor Buildings of Units 1-4***	***04.0600 Decontamination activities in Reactor Buildings of Units 1-4***
2648	Decontamination of equipment and rooms prior to dismantling	Decontamination of equipment and rooms prior to dismantling
2652	***04.0700 Procurement of equipment for dismantling within the Controlled Area***	***04.0700 Procurement of equipment for dismantling within the Controlled Area***
2658		Dismantling and Size Reduction of Plant and Equipment in Reactor Buildings (13b)
2660		Concrete Core Sampling Analysis
2661	**05 Waste Processing, Storage and Disposal**	**05 Waste Processing, Storage and Disposal**
2662	***05.0100 Construction of National Disposal Facility Radiana***	***05.0100 Construction of National Disposal Facility Radiana***
2730, 2738, 2755, 2757	Radiana site preparations – fencing, relocations and utility connection points	Radiana site preparations – fencing, relocations and utility connection points
2758, 2759, 2762÷2764	Predisposal Monitoring of the Radiana site	Predisposal Monitoring of the Radiana site
2766, 2767	Construction of NDF Phase 1	Construction of NDF Phase 1
2769	Independent supervision of NDF Phase 1 Construction	Independent supervision of NDF Phase 1 Construction
2770	Designer’s supervision of NDF Phase 1 Construction	Designer’s supervision of NDF Phase 1 Construction
2771		Design and construction of multi-layer test cover of NDF site
2773	Support services and security	Support services and security
2774	***05.0200 Reconstruction of existing facilities and procurement of additional equipment for management of historical waste***	***05.0200 Reconstruction of existing facilities and procurement of additional equipment for management of historical waste***
2780		Implementation of the selected option from Project 40a for the management of the “Mogilnik” storages
2781	Supply of New Utilities for Infrastructure Projects Units 1-4	

№ in indicative schedule	Activities 2019	Activities 2020
2787	***05.0300 Reconstruction of existing facilities and procurement of additional equipment for management of materials from the decommissioning activities***	***05.0300 Reconstruction of existing facilities and procurement of additional equipment for management of materials from the decommissioning activities***
2797	Supply of different types of containers for transport and storage of materials resulting from dismantling works (11b-1 II phse)	
2799	Sites for Management of Materials from Decommissioning Activities at KNPP Units 1-4	
2804		Procurement of equipment providing individual radiation control for the process of decommissioning
2805	Modernisation and Reconstruction of SDRAW-Kozloduy to Receive and Process Decommissioning RAW	Modernisation and Reconstruction of SDRAW-Kozloduy to Receive and Process Decommissioning RAW
2808	***05.0400 Management of historical RAW***	***05.0400 Management of historical RAW***
2813	Retrieval and Processing of the Historical Wet Solid Waste	Retrieval and Processing of the Historical Wet Solid Waste
2814÷2827	Retrieval and Processing of the Historical Solid Waste	Retrieval and Processing of the Historical Solid Waste
2828÷2845	Reducing the volume of RAW using PMF	Reducing the volume of RAW using PMF
2854 and 2856	Manufacturing of RCC for conditioning historical waste	Manufacturing of RCC for conditioning historical waste
2857÷2862	Final conditioning of historical waste in RCC	Final conditioning of historical waste in RCC
2863÷2866	Temporary storage of RCC with historical waste	Temporary storage of RCC with historical waste
2875	***05.0500 Management of decommissioning waste and materials***	***05.0500 Management of decommissioning waste and materials***
2876	Initial measurement, characterization and sorting	Initial measurement, characterization and sorting
2877÷2879	Temporary storage of non-radioactive materials	Temporary storage of non-radioactive materials
2880÷2883	Temporary storage of radioactive materials	Temporary storage of radioactive materials
2884÷2903	Decontamination of radioactive materials in SRDW	Decontamination of radioactive materials in SRDW

№ in indicative schedule	Activities 2019	Activities 2020
2905, 2907	Measurements for release from Regulation	Measurements for release from Regulation
2908	Disposal of non-radioactive waste	Disposal of non-radioactive waste
2909	Processing the decommissioning solid waste in RAW TF	Processing the decommissioning solid waste in RAW TF
2910	Processing the secondary liquid waste from SRDW	Processing the secondary liquid waste from SRDW
2911÷2918	Processing the decommissioning liquid waste from AB-2 (or from a temporary storage tank) in RAW TF	Processing the decommissioning liquid waste from AB-2 (or from a temporary storage tank) in RAW TF
2919 and 2921	Manufacturing of RCC for conditioning decommissioning waste	Manufacturing of RCC for conditioning decommissioning waste
2922÷2930	Final conditioning of decommissioning waste in RCC	Final conditioning of decommissioning waste in RCC
2931÷2934	Temporary storage of RCC with decommissioning waste	Temporary storage of RCC with decommissioning waste
2943		***05.0600 Activities related to radioactively contaminated soils***
2944		05.0601 Inventory of soils and develop remediation strategy (phase 1 of 23)
2946	***05.0700 Removal of sludge from Turbine Hall elevation -3.60***	***05.0700 Removal of sludge from Turbine Hall elevation -3.60***
2949	Retrieval and processing of sludge from Turbine Hall Units 1 to 4	Retrieval and processing of sludge from Turbine Hall Units 1 to 4
2950	Buffer storage of sludge before release from regulation	Buffer storage of sludge before release from regulation
2955	**06 Site Infrastructure and Operation**	**06 Site Infrastructure and Operation**
2956	***06.0100 Site security and surveillance***	***06.0100 Site security and surveillance***
2962	Site security and personnel access	Site security and personnel access
2963	***06.0200 Site operation and maintenance***	***06.0200 Site operation and maintenance***
2966	Independent infrastructure separation between KNPP and SERAW	Independent infrastructure separation between KNPP and SERAW
2968	Inspection and maintenance of buildings and systems	Inspection and maintenance of buildings and systems
2969÷2973	Site upkeep activities	Site upkeep activities
2974÷2977	Utilities	Utilities

№ in indicative schedule	Activities 2019	Activities 2020
2978	***06.0300 Operation of support systems***	***06.0300 Operation of support systems***
2979	Readjustment and operation of electrical and lighting systems according to the requirements of decommissioning	Readjustment and operation of electrical and lighting systems according to the requirements of decommissioning
2980	Readjustment and operation of ventilation systems according to the requirements of decommissioning	Readjustment and operation of ventilation systems according to the requirements of decommissioning
2981	Readjustment and operation of heat and steam systems according to the requirements of decommissioning	Readjustment and operation of heat and steam systems according to the requirements of decommissioning
2982	Readjustment and operation of water supply and fire extinguishing systems according to the requirements of decommissioning	Readjustment and operation of water supply and fire extinguishing systems according to the requirements of decommissioning
2983	Readjustment and operation of sewage systems according to the requirements of decommissioning	Readjustment and operation of sewage systems according to the requirements of decommissioning
2984	Readjustment and operation of compressed air systems according to the requirements of decommissioning	Readjustment and operation of compressed air systems according to the requirements of decommissioning
2985	***06.0400 Radiation and environmental safety monitoring***	***06.0400 Radiation and environmental safety monitoring***
2987÷2992	Radiation protection and monitoring	Radiation protection and monitoring
2993÷2995	Environmental protection and radiation environmental monitoring	Environmental protection and radiation environmental monitoring
2996	**07 Project Management, Engineering and Support**	**07 Project Management, Engineering and Support**
2997	***07.0100 Project Management by Consultant***	***07.0100 Project Management by Consultant***
3000	D-R CON	
3001	Extension of Consultant support	Extension of Consultant support
3002	***07.0200 Project Management***	***07.0200 Project Management***
3005	Project Management for D-R PMU	Project Management for D-R PMU
3006	Quality assurance and quality surveillance	Quality assurance and quality surveillance
3007	General administration and accounting	General administration and accounting
3008	Public relations	Public relations

№ in indicative schedule	Activities 2019	Activities 2020
3009	Information Centre for Decommissioning	
3010		Implementation of an overall information strategy concerning the nuclear decommissioning process
3011	***07.0300 Decommissioning management system***	***07.0300 Decommissioning management system***
3015	Operation of System for Management of Decommissioning Materials	Operation of System for Management of Decommissioning Materials
3016		Development of Integrated Information System for Radioactive Waste Management
3017	***07.0400 Support services***	***07.0400 Support services***
3018	Engineering Support	Engineering Support
3019	Waste management support	Waste management support
3020	Decommissioning support including chemistry, decontamination	Decommissioning support including chemistry, decontamination
3021, 3023	Training and Development in Decommissioning	Training and Development in Decommissioning
3024	Training of personnel	Training of personnel
3025	Documentation and records control	Documentation and records control
3026	Procurement, warehousing and materials handling	Procurement, warehousing and materials handling
3027	Housing, office equipment, support services	Housing, office equipment, support services
3028	***07.0500 Health and safety***	***07.0500 Health and safety***
3029	Health physics	Health physics
3030	Industrial safety	Industrial safety
3031	Personnel safety equipment and work clothing	Personnel safety equipment and work clothing
3032	**08 Fuel and Activated Material**	**08 Fuel and Activated Material**
3033	***08.0100 Temporary storage of spent fuel in Spent Fuel Storage Facility***	***08.0100 Temporary storage of spent fuel in Spent Fuel Storage Facility***
3034	Safe storage of fuel in Spent Fuel Storage Facility	Safe storage of fuel in Spent Fuel Storage Facility

№ in indicative schedule	Activities 2019	Activities 2020
3035÷3041	Loading the fuel in dedicated casks Constor 440/84	Loading the fuel in dedicated casks Constor 440/84
3042	Transfer casks from Spent Fuel Storage Facility to Dry Spent Fuel Storage Facility	Transfer casks from Spent Fuel Storage Facility to Dry Spent Fuel Storage Facility
3044	***08.0200 Dedicated storage for fuel and activated material***	***08.0200 Dedicated storage for fuel and activated material***
3046	Temporary storage of casks with spent fuel in Dry Spent Fuel Storage Facility	Temporary storage of casks with spent fuel in Dry Spent Fuel Storage Facility
3047	***Activity Group 08.0300 Temporary Storage of activated material***	***Activity Group 08.0300 Temporary Storage of activated material***
3051	Temporary storage of boron absorbers and dummy assemblies in Reactor Building	Temporary storage of boron absorbers and dummy assemblies in Reactor Building

3.1.1 Key Phase 01: Pre-decommissioning actions

01.0500 Authorisation includes activities related to preparation of sets of documents for obtaining permissions or another licences from BNRA. The following activities are planned to be implemented in 2019:

Preparation of documentation for the application of Plasma Melting Facility licensing

Preparation of documentation for the application for Facility for Retrieval and Processing of Historical Wet Solid Wastes licensing

Preparation of documentation for the coordination and approval of dismantling activities in Reactor Building of Units 1-4

3.1.2 Key Phase 02: Facility shutdown activities

Key Phase 02 “Facility Shutdown Activities” involves activities implemented during the transitional period after the shutdown. In respect of this SERAW implemented activities covered by the Decommissioning Licenses for Units 1, 2, 3, and 4. Some of these activities are a continuation of the previous licensed RAW management activities.

02.0200 Mode of operation of Units 1&2 as a RAW Management Facility. The following activities are planned to be implemented in 2019:

Removal of historical waste from Units 1&2

02.0400 Mode of operation of Units 3&4 as a RAW Management Facility. The following activities are planned to be implemented in 2019:

Removal of historical waste from Units 3&4

3.1.3 Key Phase 03: Dismantling activities outside Controlled Area

03.0600 Dismantling activities of SSC in TH of Units 3&4. This activity group includes the dismantling of Structures, Systems and Components in Turbine Hall of Units 3&4. The following activities are planned to be implemented in 2019:

Dismantling activities of common SSC in TH of Units 3&4

Dismantling of equipment from elevation 0.00 to elevation -3.6

03.0700 Activities in DGS-1. This activity group includes reconstruction of DGS-1 building for decommissioning purposes. The following activities are planned to be implemented in 2019:

Project 39-2 Reconstruction of the DGS-1 Building for Decommissioning Purposes. The major steps foreseen during 2019 are as follows:

- Structural Statement on the Condition of the Civil Structures of the Building and the necessary Technical Solutions for the Reconstruction
- Approval of the Structural Statement on the Condition of the Civil Structures of the Building
- Detailed Design Documentation as per Section 2.1 of the Technical Specification
- Approval of Plan for the Performance of the Demolition and Dismantling Activities
- Detail Design Approval

3.1.4 Key Phase 04: Dismantling activities within the Controlled Area

04.0100 Preparation of Reactor Building of Units 1&2 for dismantling. This activity group includes the preparatory activities carried out prior to the commencement of the dismantling in the Reactor Building of Units 1 and 2 and related to the isolation and marking of systems there, removal of hazardous and burnable materials, removal of insulation and filters, adapting of ventilation systems and activities related to the decontamination of systems and equipment. They are performed according to Technical decisions and programmes agreed with BNRA. The following activities are planned to be implemented in 2019:

Marking of systems remaining in operation during decommissioning of the Units 1&2

Isolation of all systems which are not needed for dismantling

Isolation of the operating part and not operating part of the systems above

Removal of fluids from the systems

Switching off / disconnecting of all electrical systems which are not needed

Removal of the insulation from the systems in accordance with the decontamination plan

Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)

Adapting of the ventilation systems in the RB

Setting up and maintaining the systems which remain in operation

Installation of new systems

Primary circuit and auxiliary systems' decontamination

Decontamination, draining, rinsing, drying and isolation of the technological systems, which are not needed for the decommissioning

04.0200 Preparation of Reactor Building of Units 3&4 for dismantling. This activity group includes the preparatory activities carried out prior to the commencement of the dismantling in the Reactor Building of Units 3 and 4 and related to the isolation and marking of systems there, removal of hazardous and burnable materials, removal of insulation and filters, adapting of ventilation systems and activities related to the decontamination of systems and equipment. They are performed according to Technical decisions and programmes agreed with BNRA. The following activities are planned to be implemented in 2019:

Isolation of connections between the RB and TH and AB-2 which are not needed

Isolation of all systems which are not needed for dismantling

Isolation of the operating part and not operating part of the systems above

Removal of fluids from the systems

Switching off / disconnecting of all electrical systems which are not needed

Removal of the insulation from the systems in accordance with the decontamination plan

Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)

Setting up and maintaining the systems which remain in operation

Installation of new systems

Primary circuit and auxiliary systems' decontamination

Cleaning the Emergency Boron Tank 3 (EBT-3)

Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning

04.0300 Planning the dismantling activities within Controlled Area of Units 1-4. This activity group includes planning of dismantling in RB, AB-1 and AB-2. The following activities are planned to be implemented in 2019:

Project 44 Elaboration of a Design for Dismantling of Equipment in the Controlled Areas of KNPP Units 1-4. The main steps foreseen for 2019 are as follows:

- Complete the Design Documentation Package for the Dismantling of AB-1 (Deliverable 3);
- Complete the Design Documentation Package for dismantling of Equipment in Reactor Building Unit 1, not part of the Primary Circuit (Deliverable 4);
- Complete the the Design Documentation Package for the Dismantling of the Primary Circuit and Associated Components in Reactor Building Unit 1 (Deliverable 5);
- Complete Technical Specifications for all items of plant, equipment and tools for dismantling activities in RB and AB (Deliverable 6).
- Although the reference for this project is the dismantling of the Greifswald NPP in Germany, SERAW through the D-R PMU Consultant support will take into account

the process of dismantling of the RB components in Bohunice, through the cooperation and knowledge sharing workshop organised by JAVYS planned to be conducted in March 2019 among the three Nuclear Decommissioning Assistance Programmes

Detailed concurrent planning during dismantling of ventilation systems within controlled area of Units 1-4

Detailed concurrent planning during dismantling of electrical systems within controlled area of Units 1-4

Detailed concurrent planning during the dismantling of I&C systems within controlled area of Units 1-4

Detailed concurrent planning during the dismantling of technological systems within Reactor Buildings of Units 1-4

Detailed concurrent planning during the dismantling of technological and ventilation systems within AB-1 and AB-2

04.0400 Dismantling activities in Reactor Building of Units 1&2 and AB-1. This activity group includes the implementation of dismantling activities of ventilation, electrical, technological and I&C systems. The following activities are planned to be implemented in 2019:

Dismantling of ventilation systems in RB of Units 1&2

Dismantling of electrical systems in RB of Units 1&2

Dismantling of I&C systems in RB of Units 1&2

Dismantling of technological systems in RB of Units 1&2

Dismantling of technological equipment in AB-1

Dismantling of ventilation systems in AB-1

04.0500 Dismantling activities in Reactor Building of Units 3&4 and AB-2. This activity group includes the implementation of dismantling activities of ventilation, electrical, technological and I&C systems. The following activities are planned to be implemented in 2019:

Dismantling of ventilation systems in RB of Units 3&4

Dismantling of electrical systems in RB of Units 3&4

Dismantling of I&C systems in RB of Units 3&4

Dismantling of technological systems in RB of Units 3&4

Dismantling of technological equipment in AB-2

Dismantling of ventilation systems in AB-2

04.0600 Decontamination activities in Reactor Buildings of Units 1-4

Decontamination of equipment and rooms prior to dismantling.

3.1.5 Key Phase 05: Waste processing, storage and disposal

Key Phase 05 deals with the management of the historical waste and decommissioning waste resulting from activities undertaken within Key Phase 03 (Dismantling activities outside controlled area) and Key Phase 04 (Dismantling activities within the Controlled Area). Activities for

establishment of the infrastructure for treatment and final disposal of historical and decommissioning waste and activities for temporary storage of different types of waste are also included.

The decommissioning and historical waste on the territory of Units 1 to 4 is transported for treatment under the approved annual schedule.

Most of the dismantled equipment in TH is from systems of Contamination Category 1 and it was subsequently released from regulation. The materials contaminated above free release levels will be stored at special organised areas and will be transported to SRDW for processing. Materials characterized as RAW, for which decontamination is not economically effective, will be transferred for management to SD RAW-Kozloduy or treated in the PMF.

Non-radioactive materials are generally disposed at KNPP's existing depot for non-radioactive household and industrial waste. Specific waste not suitable for the depot is transferred to licensed companies for further management.

The following activities are planned to be implemented in 2019:

05.0100 Construction of National Disposal Facility Radiana

Radiana site preparations - fencing, relocations and utility connection points. The main steps foreseen for 2019 are as follows:

- Procurement of relocation of irrigation channel and independent construction supervision of the relocation;
- Commencement of projects implementation.

R-Project 3 Predisposal monitoring at Radiana site

- implementation of monitoring cycles as per approved monitoring programs

Construction of NDF Phase 1. The main steps forseen for 2019 are as follows:

- Completion of loess-cement cushion
- Completion of infiltration control network galleries structure
- Progress in construction of buffer storage and auxiliary buildings

Independent supervision of NDF Phase 1 Construction

Designer's supervision of NDF Phase 1 Construction

Support services and security

05.0200 Reconstruction of existing facilities and procurement of additional equipment for management of historical waste

Project 5b Facility for Treatment and Conditioning of Solid Radioactive Waste with a High Volume Reduction Factor. The main steps foreseen for 2019 are as follows:

- Provision of technical support during operational campaigns.

05.0300 Reconstruction of existing facilities and procurement of additional equipment for management of materials from the decommissioning activities

Project 48 Modernisation and Reconstruction of SDRAW-Kozloduy to Receive and Process Decommissioning RAW. The main steps foreseen for the Technical Design and

update of SAR for Modernisation of SD "RAW-Kozloduy" for 2019 are as follows:

- BNRA approval of Technical Design and SAR.

05.0400 Management of historical RAW

Project 9b-2 Retrieval and Processing of the Historical Wet Solid Waste. The main steps foreseen for 2019 are as follows:

- Approval of the Technical Design for Treatment of Wet Solid Wastes by the Employer and Regulator;
- Construction Permit issuance.

Retrieval and Processing of the Historical Solid Waste

Reducing the volume of RAW using PMF

Manufacturing of RCC for conditioning historical waste

Final conditioning of historical waste in 30 RCC

Temporary storage of RCC with historical waste

05.0500 Management of decommissioning waste and materials

Initial measurement, characterization and sorting

Temporary storage of non-radioactive materials

Temporary storage of radioactive materials

Decontamination of radioactive materials in SRDW

Measurements for release from regulation

Disposal of non-radioactive waste

Processing the decommissioning solid waste in RAW TF

Processing the secondary liquid waste from SRDW

Processing the decommissioning liquid waste from AB-2 (or from a temporary storage tank) in RAW TF

Manufacturing of RCC for conditioning of decommissioning waste

Final conditioning of decommissioning waste in 9 RCC

Temporary storage of RCC with decommissioning waste

05.0700 Removal of sludge from Turbine Hall elevation -3.60

Retrieval and processing of sludge from Turbine Hall of Units 1 to 4

Buffer staorage of sludge before release from regulation

3.1.6 Key Phase 06: Site infrastructure and operation

Operation and support of automated access control systems, monitoring systems and alarms will be implemented. Access for contractors' personnel and visitors is provided. Daily surveillance on the territory of SERAW for review of technical security systems will be implemented.

Operation of support systems – planned periodical repairs of motors, pumps and ventilation systems will be implemented according to the life cycle management programme.

Radiation and environmental safety monitoring – continuous monitoring of radioactive liquid and gaseous releases into the environment will be performed. Radiation monitoring on the territory of the industrial site of NPP Units 1 to 4 will be carried out under contract with KNPP. Periodical monitoring and control of other environmental parameters will be carried out by inspectors from the MEW. All routine activities related to this key phase will be performed until 2030 and along with the progress of the dismantling activities. The radiation monitoring and environmental monitoring will be discontinued after site release from regulation.

The following activities are planned to be implemented in 2019:

06.0100 Site security and surveillance

Site security and personnel access

06.0200 Site operation and maintenance

Project 35 Independent infrastructure separation between KNPP and SERAW. The main steps foreseen for 2019 are as follows:

- **Project 35-1**: Power Supply to Facilities and Buildings of KNPP and SERAW
- Contract award
- Definition of QA programme and detailed schedule of work
- Gathering and verification of input data
- Conceptual design approval

Inspection and maintenance of buildings and systems

Site upkeep activities

06.0300 Operation of support systems

Readjustment and operation of electrical and lighting systems according to the requirements of decommissioning

Readjustment and operation of ventilation systems according to the requirements of decommissioning

Readjustment and operation of heat and steam systems according to the requirements of decommissioning

Readjustment and operation of water supply and fire extinguishing systems according to the requirements of decommissioning

Readjustment and operation of sewage systems according to the requirements of decommissioning

Readjustment and operation of compressed air systems according to the requirements of decommissioning

06.0400 Radiation and environmental safety monitoring

Radiation protection and monitoring

Environmental protection and radiation environmental monitoring

3.1.7 Key Phase 07: Project management, engineering and support

SERAW personnel responsible for the management of investment projects will continue to perform their duties supported by the the D-R PMU Consultant's Team.

Support to the decommissioning project progress – monitoring decommissioning implementation, cost control and decommissioning risk management.

Engineering support will be provided to the D-R PMU Consultant and includes provision of input data, ensuring projects coordination, technical review of project documentation and review for compliance with authorities' requirements. Development and update of instructions, flow diagrams, programmes and procedures for systems in operation will be performed.

SD Decommissioning of Units 1 to 4 maintains a current Emergency Plan according to KNPP's Emergency Plan and the National Emergency Plan; emergency trainings will be periodically conducted, including the common ones with Kozloduy NPP. There are emergency teams available 24/7.

Requalification and relocation of personnel – assessment of training needs is done every year and training plans are developed. Training Plan for the staff is executed. Specialized staff will be trained by authorized organizations.

Information system and computer support – maintaining and expanding the internal computer network. Hardware and software are maintained. Decommissioning, materials management and documents databases are maintained.

Waste management support – Radiological survey, classification and categorization of waste and streams management plans are developed and carried out in different stages of material management process. Health physics (radiation safety) – Personal dosimetry monitoring is ensured. Systematic control of individual doses of staff is made. Annual spectrometric measurement for personnel working in the Controlled Area is made.

All routine activities related to this key phase will be performed until 2030 and along with the progress of the dismantling activities.

The following activities are planned to be implemented in 2019:

07.0100 Project Management by Consultant

D-R CON

Extension of Consultant support

07.0200 Project Management

Project Management for D-R PMU

Quality assurance and quality surveillance

General administration and accounting

Public relations

Project 20 Information Centre for Decommissioning. The major steps foreseen during 2019 are as follows:

- Construction of the Information Centre's building
- Equipment delivery and installation

07.0300 Decommissioning management system

Operation of System for Management of Decommissioning Materials

Project 51 Development of Integrated Information System for Radioactive Waste Management. The major steps foreseen during 2018 are as follows:

- Finalize the PIS and preparation of a ToR.

07.0400 Support services

Engineering Support

Waste management support

Decommissioning support including chemistry, decontamination

Training and Development in Decommissioning

Training of personnel

Documentation and records control

Procurement, warehousing and materials handling

Housing, office equipment, support services

07.0500 Health and safety

Health physics

Industrial safety

3.1.8 Key Phase 08: Fuel and activated material

Key Phase 08 involves the activities concerned with the construction of dedicated storage for spent fuel and activated materials. It also includes all the activities for safe storage and handling of spent fuel and activated materials. Most of these activities (excluding Temporary storage of boron absorbers and dummy assemblies in Reactor Building) will continue to be performed by KNPP personnel and will be financed by KNPP own funds.

08.0100 Temporary storage of spent fuel in Spent Fuel Storage Facility. This activity group includes the activities related with safe storage of spent fuel in Spent Fuel Storage Facility and the preparation for transfer to Dry Spent Fuel Storage Facility. The following activities are planned to be implemented in 2019:

Safe storage of fuel in Spent Fuel Storage Facility

Loading the fuel in dedicated casks Constor 440/84

Transfer casks from Spent Fuel Storage Facility to Dry Spent Fuel Storage Facility

08.0200 Dedicated storage for fuel and activated material involves the activities concerned with the construction and operation of Dry Spent Fuel Storage Facility. The following activities are planned to be implemented in 2019:

Temporary storage of casks with spent fuel in Dry Spent Fuel Storage Facility

08.0300 Temporary Storage of activated material

Temporary storage of boron absorbers and dummy assemblies in Reactor Building (SFP-3)

3.1.9 Key Phase 09: Miscellaneous expenditures

In Key Phase 09 "Miscellaneous expenditures" are included only payments to BNRA, municipalities, other stakeholders, as well as KNPP and SERAW's own investments. There are no activities.

3.2 PLANNED DISBURSEMENT

3.2.1 Planned disbursement for the period 2014-2020

Table 7: Disbursement by key phases for the period 2014-2020

Key phases	2014	2015	2016	2017	2018	2019	2020
01 Pre-decommissioning actions	0.287	0.828	0.877	0.162	0.390	0.062	0.063
02 Facility shutdown activities	4.065	2.811	2.101	0.851	0.374	0.390	0.066
03 Dismantling activities outside controlled area	4.076	3.369	3.505	1.811	3.172	1.388	0.981
04 Dismantling activities within the controlled area	1.737	2.840	3.828	4.901	9.098	12.821	11.846
05 Waste Processing, Storage and Disposal	12.522	18.027	14.788	24.014	37.432	34.735	39.218
06 Site Infrastructure and Operation	4.888	4.637	4.265	6.339	4.171	7.483	7.703
07 Project Management, Engineering and Support	8.817	8.715	5.398	7.321	8.627	8.451	9.894
08 Fuel and Activated Material	4.969	3.228	1.529	1.555	1.751	1.129	0.967
09 Miscellaneous Expenditures	2.037	4.455	4.093	3.246	2.769	2.517	2.464
Total in MEUR	**43.398**	**48.911**	**40.384**	**50.199**	**67.784**	**68.979**	**73.203**

Note: The amounts above include decommissioning activities related to NDF and RAW TF, contingencies and KNPP own funding for temporary storage of spent fuel in Spent Fuel Storage Facilities on site. The amount shown for 2018 reflects the actual funding for the first half plus the forecast for the balance for the year without contingency.

Table 8: Milestones and planned value table for 2019

№ in indicative schedule	Activities 2019	MEUR
1	**Key Phase 01: Pre-decommissioning actions**	
62	01.0500 Authorisation	
67	Preparation of documentation for the application of Plasma Melting Facility licensing	0.031
75	Preparation of documentation for coordination and approval of dismantling activities in Reactor Buildind of Units 1-4	0.031
77	**Key Phase 02: Facility shutdown activities**	
85	02.0200 Mode of operation of Units 1&2 as a RAW Management Facility	
89	Removal of historical waste from Units 1&2	0.195
98	02.0400 Mode of operation of Units 3&4 as a RAW Management Facility	
102	Removal of historical waste from Units 3&4	0.195
104	**Key Phase 03: Dismantling activities outside Controlled Area**	
809	03.0600 Dismantling activities of SSC in TH of Units 3&4	
810	Dismantling activities of common SSC in TH of Units 3&4	0.183
1258	Dismantling of equipment from elevation 0.00 to elevation -3.6	0.182
1259	03.0700 Activities in DGS-1	
1266 and 1268	Reconstruction of the DGS-1 Building for Decommissioning Purposes	1.023
1302	**Key Phase 04: Dismantling activities within the Controlled Area**	
1303	04.0100 Preparation of Reactor Building of Units 1&2 for dismantling	
1317, 1318, 1322÷1324, 1328, 1329	Marking of systems remaining in operation during decommissioning of the Units 1&2	0.119
1330, 1338, 1340	Isolation of all systems which are not needed for dismantling	0.119
1365÷1369	Isolation of the operating part and not operating part of the systems above	0.149
1370, 1371, 1378, 1381, 1387	Removal of fluids from the systems	0.208
1397	Switching off / disconnecting of all electrical systems which are not needed	0.149

1398	Removal of the insulation from the systems in accordance with the decontamination plan	0.030
1399	Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)	0.065
1400	Adapting of the ventilation systems in the RB	0.068
1401	Setting up and maintaining the systems which remain in operation	0.068
1402	Installation of new systems	0.034
1403	Primary circuit and auxiliary systems' decontamination	0.170
1421	Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning	0.187
1422	04.0200 Preparation of Reactor Building of Units 3&4 for dismantling	
1423÷1425, 1433÷1435	Isolation of connections between the RB and Turbine Hall and AB-2 which are not needed	0.119
1449, 1463, 1464, 1470, 1474, 1480	Isolation of all systems which are not needed for dismantling	0.119
1484÷1488	Isolation of the operating part and not operating part of the systems above	0.149
1489, 1490, 1496, 1498, 1504	Removal of fluids from the systems	0.238
1516	Switching off / disconnecting of all electrical systems which are not needed	0.149
1517	Removal of the insulation from the systems in accordance with the decontamination plan	0.030
1518	Supervision and setting up of systems and equipment deemed to be used during decommissioning (handling and lifting equipment)	0.065
1520	Setting up and maintaining the systems which remain in operation	0.170
1521	Installation of new systems	0.033
1522	Primary circuit and auxiliary systems' decontamination	0.170
1541÷1544	Cleaning the Emergency Boron Tank (EBT) 3	0.119
1549	Decontamination, draining, rinsing, drying and isolation of the technological systems which are not needed for the decommissioning	0.187
1550	04.0300 Planning the dismantling activities within Controlled Area of Units 1-4	

1551	Preparation of Detail Design for dismantling of equipment in the Controlled Areas of KNPP Units 1-4	3.022
1552, 1553, 1572	Detailed concurrent planning during dismantling of ventilation systems within Controlled Area of Units 1-4	0.062
1591÷1593	Detailed concurrent planning during dismantling of electrical systems within Controlled Area of Units 1-4	0.062
1594÷1596	Detailed concurrent planning during the dismantling of I&C systems within Controlled Area of Units 1-4	0.062
1597, 1598, 1608÷1616, 1642, 1652÷1656	Detailed concurrent planning during the dismantling of technological systems within Reactor Buildings of Units 1-4	0.062
1686, 1687, 1704	Detailed concurrent planning during the dismantling of technological and ventilation systems within AB-1 and AB-2	0.062
1751	04.0400 Dismantling activities in Reactor Building of Units 1&2 and AB-1	
1752	Dismantling of ventilation systems in RB of Units 1&2	0.390
1771	Dismantling of electrical systems in RB of Units 1&2	0.390
1776	Dismantling of I&C systems in RB of Units 1&2	0.390
1785, 1833÷1866, 1975	Dismantling of technological systems in RB of Units 1&2	0.586
2065	Dismantling of technological equipment in AB-1	0.455
2112	Dismantling of ventilation systems in AB-1	0.455
2199	04.0500 Dismantling activities in Reactor Building of Units 3&4 and AB-2	
2200	Dismantling of ventilation systems in RB of Units 3&4	0.390
2219	Dismantling of electrical systems in RB of Units 3&4	0.390
2224	Dismantling of I&C systems in RB of Units 3&4	0.390
2233, 2281÷2306, 2423, 2453÷2456, 2472÷2502	Dismantling of technological systems in RB of Units 3&4	0.586
2513	Dismantling of technological equipment in AB-2	0.455
2560	Dismantling of ventilation systems in AB-2	0.455
2647	04.0600 Decontamination activities in Reactor Buildings of Units 1-4	
2648	Decontamination of equipment and rooms prior to dismantling	1.245
2661	**Key Phase 05: Waste Processing, Storage and Disposal**	

2662	05.0100 Construction of National Disposal Facility Radiana	
2730, 2738, 2755, 2757	Radiana site preparations – fencing, relocations and utility connection points	3.249
2758, 2759, 2762÷2764	Predisposal Monitoring of the Radiana site	0.318
2766, 2767	Construction of NDF Phase 1	14.436
2769	Independent supervision of NDF Phase 1 Construction	0.675
2770	Designer's supervision of NDF Phase 1 Construction	0.260
2773	Support services and security	0.772
2774	05.0200 Reconstruction of existing facilities and procurement of additional equipment for management of historical waste	
2781	Supply of New Utilities for Infrastructure Projects Units 1-4	0.004
2787	05.0300 Reconstruction of existing facilities and procurement of additional equipment for management of materials from the decommissioning activities	
2797	Supply of different types of containers for transport and storage of materials resulting from dismantling works (11b-1 II phase)	0.550
2799	Sites for Management of Materials from Decommissioning Activities at KNPP Units 1-4	0.050
2805	Modernisation and Reconstruction of SDRAW-Kozloduy to Receive and Process Decommissioning RAW	1.133
2808	05.0400 Management of historical RAW	
2813	Retrieval and Processing of the Historical Wet Solid Waste	6.136
2814÷2827	Retrieval and Processing of the Historical Solid Waste	0.068
2828÷2845	Reducing the volume of RAW using PMF	1.366
2854 and 2856	Manufacturing of RCC for conditioning historical waste	0.002
2857÷2862	Final conditioning of historical waste in RCC	0.119
2863÷2866	Temporary storage of RCC with historical waste	0.005
2875	05.0500 Management of decommissioning waste and materials	
2876	Initial measurement, characterization and sorting	0.149
2877÷2879	Temporary storage of non-radioactive materials	0.435
2880, 2882, 2883	Temporary storage of radioactive materials	0.438
2884÷2903	Decontamination of radioactive materials in SRDW	1.216
2905, 2907	Measurements for release from regulation	0.311
2908	Disposal of non-radioactive waste	0.141
2909	Processing the decommissioning solid waste in RAW TF	0.741

2910	Processing the secondary liquid waste from SRDW	0.084
2911÷2918	Processing the decommissioning liquid waste from AB-2 (or from a temporary storage tank) in RAW TF	0.283
2919 and 2921	Manufacturing of RCC for conditioning decommissioning waste	0.298
2922÷2930	Final conditioning of decommissioning waste in RCC	0.759
2931÷2934	Temporary storage of RCC with decommissioning waste	0.066
2946	05.0700 Removal of sludge from Turbine Hall elevation -3.60	
2949	Retrieval and processing of sludge from Turbine hall Units 1 to 4	0.559
2950	Buffer storage of sludge before release from regulation	0.113
2955	**Key Phase 06: Site Infrastructure and Operation**	
2956	06.0100 Site security and surveillance	
2962	Site security and personnel access	0.510
2963	06.0200 Site operation and maintenance	
2966	06.0203 Independent infrastructure separation between KNPP and SERAW	3.150
2968	06.0205 Inspection and maintenance of buildings and systems	0.466
2969÷2973	06.0206 Site upkeep activities	0.845
2974÷2977	06.0207 Utilities	1.054
2978	06.0300 Operation of support systems	
2979	Readjustment and operation of electrical and lighting systems according to the requirements of decommissioning	0.148
2980	Readjustment and operation of ventilation systems according to the requirements of decommissioning	0.113
2981	Readjustment and operation of heat and steam systems according to the requirements of decommissioning	0.142
2982	Readjustment and operation of water supply and fire extinguishing systems according to the requirements of decommissioning	0.116
2983	Readjustment and operation of sewage systems according to the requirements of decommissioning	0.111
2984	Readjustment and operation of compressed air systems according to the requirements of decommissioning	0.108
2985	06.0400 Radiation and environmental safety monitoring	
2987÷2992	Radiation protection and monitoring	0.405
2993÷2995	Environmental protection and radiation environmental monitoring	0.316
2996	**Key Phase 07: Project Management, Engineering and Support**	
2997	07.0100 Project Management by Consultant	
3000	D-R CON	0.382

3001	Extension of Consultant support	5.250
3002	07.0200 Project Management	
3005	Project Management for D-R PMU	0.566
3006	Quality assurance and quality surveillance	0.057
3007	General administration and accounting	0.157
3008	Public relations	0.028
3009	Information Centre for Decommissioning	0.683
3011	07.0300 Decommissioning management system	
3015	Operation of System for Management of Decommissioning Materials	0.057
3017	07.0400 Support services	
3018	Engineering Support	0.156
3019	Waste management support	0.156
3020	Decommissioning support including chemistry, decontamination	0.266
3021, 3023	Training and development in Decommissioning	0.040
3024	Training of personnel	0.044
3025	Documentation and records control	0.069
3026	Procurement, warehousing and materials handling	0.097
3027	Housing, office equipment, support services	0.101
3028	07.0500 Health and safety	
3029	Health physics	0.056
3030	Industrial safety	0.155
3031	Personnel safety equipment and work clothing	0.134
3032	**Key Phase 08: Fuel and Activated Material**	
3033	08.0100 Temporary storage of spent fuel in Spent Fuel Storage Facility	
3034	Safe storage of fuel in Spent Fuel Storage Facility	0.685
3035÷3041	Loading the fuel in dedicated casks Constor 440/84	0.180
3042	Transfer casks from Spent Fuel Storage Facility to Dry Spent Fuel Storage Facility	0.010
3044	08.0200 Dedicated storage for fuel and activated material	
3046	Temporary storage of casks with spent fuel in Dry Spent Fuel Storage Facility	0.106
3047	08.0300 Temporary Storage of activated material	
3051	Temporary storage of boron absorbers and dummy assemblies in Reactor Building	0.149

3052	**Key Phase 09: Miscellaneous Expenditures**	
3053	09.0100 Payments to BNRA	
3054	09.0101 Fees for issuing licenses	0.000
3058	09.0102 Other payments to BNRA	1.750
3062	09.0200 Payments to other bodies (institutions)	
3063	09.0201 Payments to Ministry of Regional Development and Public Works	0.001
3064	09.0202 Payments to municipalities	0.127
3065	09.0203 Other payments to other state bodies	0.043
3066	09.0204 Other payments	0.033
3067	09.0300 KNPP Investments	
3069	09.0302 KNPP Investments in SFSF and DSFSF	0.055
3060	09.0400 SERAW Investments	
3071	09.0401 Investments in tangible assets	0.343
3075	09.0402 Investments in intangible assets	0.169

4. EXPECTED RESULTS AND PERFORMANCE INDICATORS

The expected results/status and the target values along with the performance indicators for 2018 are listed inTable 9 and Table 10. Detailed information for the planned activities is given in Section 3.

Table 9: Key performance indicators - 2019

№	Indicator	Planned targets
1.	**IMPLEMENTATION OF DISMANTLING PLAN**	
1.1.	Dismantling in TH, Units 1-4	
1.1.1.	Dismantling of equipment in Turbine Hall	1,238 tons
1.1.2.	Free release of materials	7 000 tons
1.2.	Dismantling of equipment in CA	200 tons

Table 10: Table per detailed objectives – Health and Safety

№	Indicator	Planned targets
2	**Health and Safety**	
2.1.	Radiological	
2.1.1.	Collective dose for workers	42 [man. mSv]
2.1.2.	Number of incidents (Over limits of individual administrative dose)	0
2.1.3.	Discharges into Environment Aerosols discharges (per each Ventilation Stack) Liquid discharges (per each Auxiliary Building)	 < 3.0 GBq < 222 GBq
2.2.	Industrial	
2.2.1.	Number of incidents	0

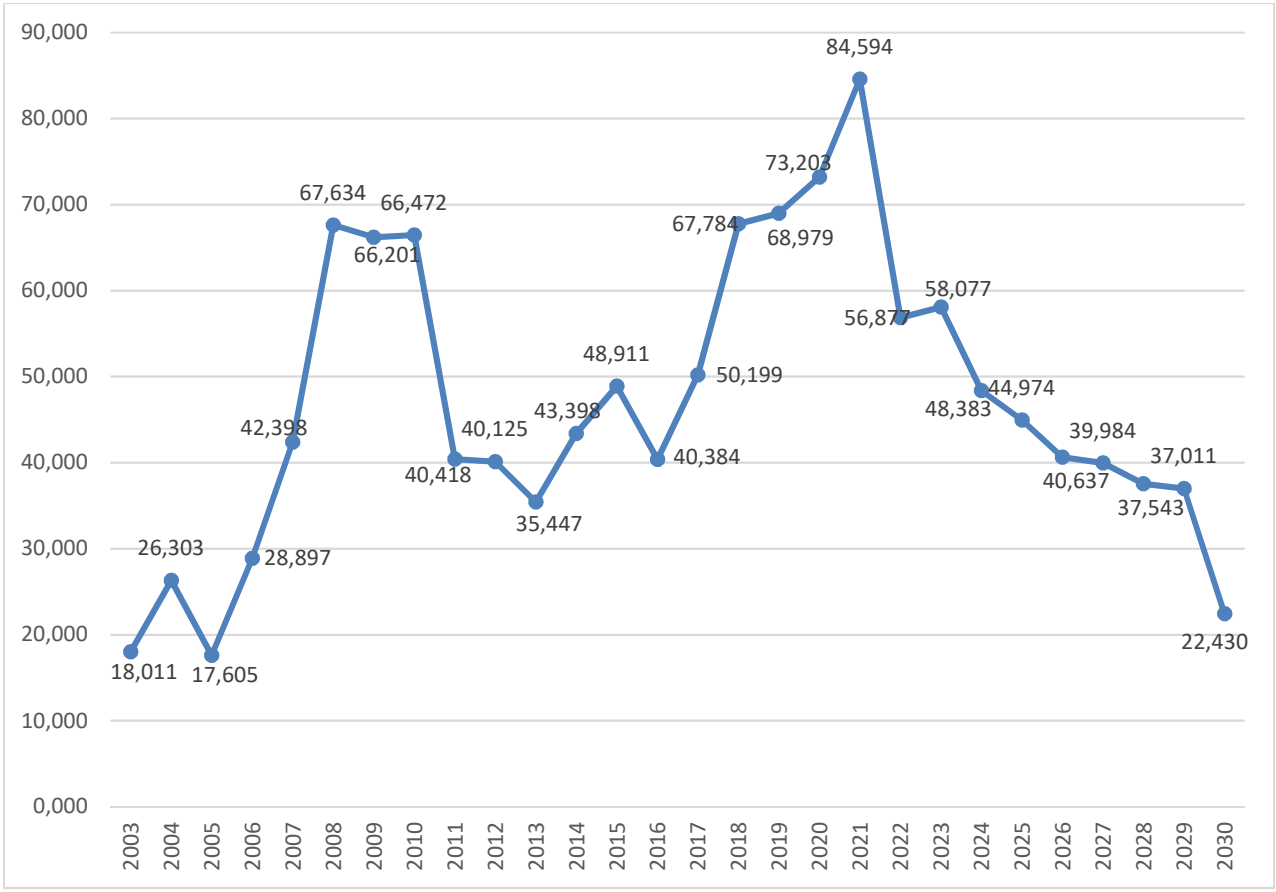
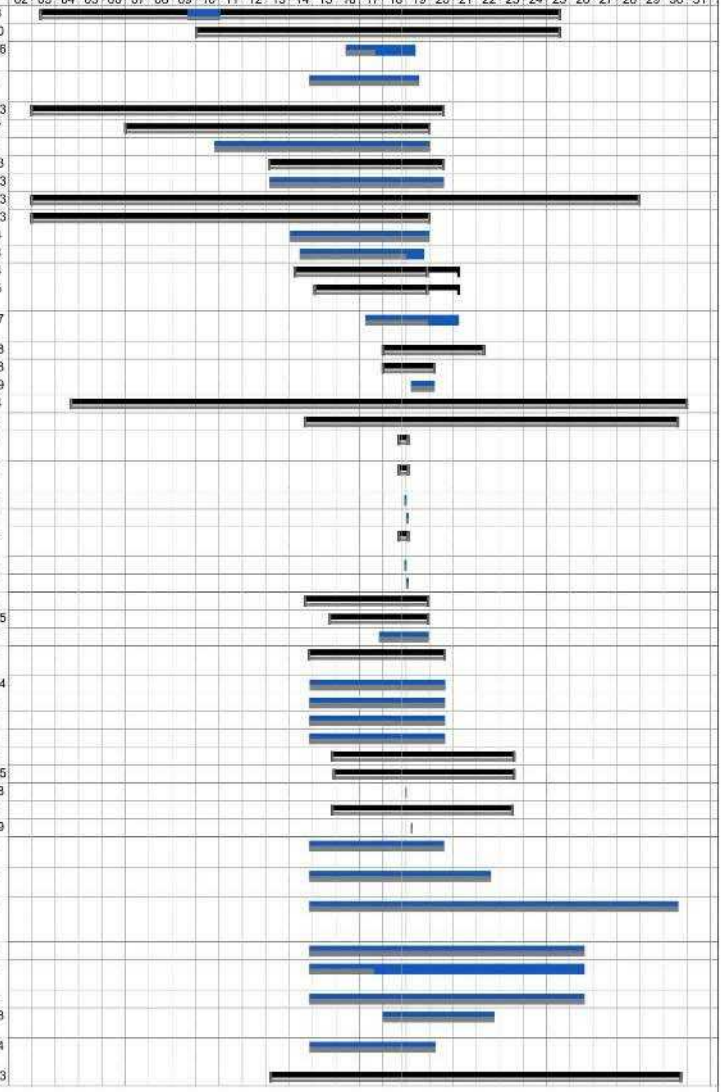


Figure 1: Value graph

Note: Total Costs for the Decommissioning Programme 2003-2030 including actual funding till first half of 2018 plus the forecast for the balance for the year without contingency and forecast for the period 2019-2030 with contingency

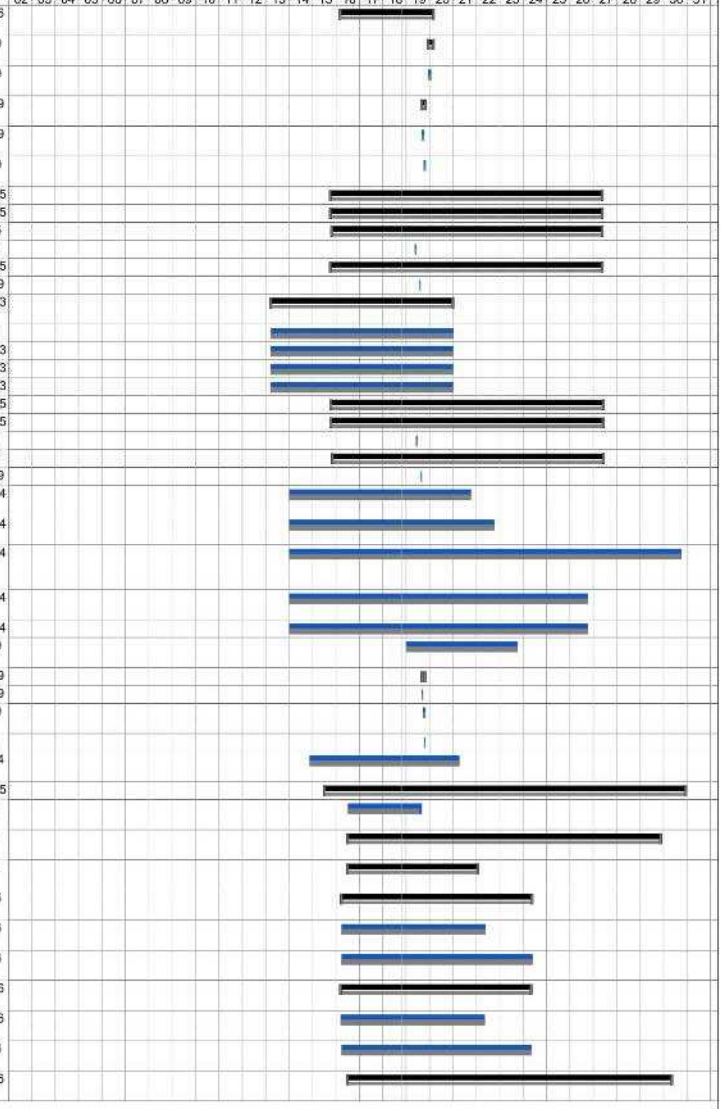
AWP 2019 - Units 1 to 4 Decommissioning Schedule

ID	WBS	Task Name	Duration	Start	Finish	Baseline Duration	Baseline Start
1	01	01 Pre-decommissioning actions	5802 days	Tue 20-05-03	Fri 25-07-25	5802 days	Tue 20-05-03
62	01.05	01.0500 Authorisation	4061 days	Mon 18-01-10	Fri 25-07-25	4061 days	Mon 18-01-10
67	01.0505	01.0505 Preparation of documents for applying for Plasma Melting Facility license	780 days	Wed 01-06-16	Wed 22-05-19	330 days	Wed 01-06-16
75	01.0513	01.0513 Preparation of documents for coordination and approval of dismantling activities in Reactor Building of Units 1-4	1225 days	Fri 14-11-14	Mon 15-07-19	1225 days	Fri 14-11-14
77	02	02 Facility shutdown activities	4606 days?	Wed 01-01-03	Fri 07-08-20	4606 days?	Wed 01-01-03
85	02.02	02.0200 Mode operation of Units 1&2 as a RAW Management Facility	3403 days?	Thu 04-01-07	Fri 03-01-20	3403 days?	Thu 04-01-07
89	02.0204	02.0204 Removal of historical waste of Units 1&2	2411 days?	Fri 22-10-10	Fri 03-01-20	2411 days?	Fri 22-10-10
98	02.04	02.0400 Mode operation of Units 3&4 as a RAW Management Facility	1955 days?	Mon 25-02-13	Fri 07-08-20	1955 days?	Mon 25-02-13
102	02.0404	02.0404 Removal of historical waste of Units 3&4	1953 days	Wed 27-02-13	Fri 07-08-20	1953 days	Wed 27-02-13
104	03	03 Dismantling activities outside controlled area	6787 days?	Wed 01-01-03	Fri 15-12-28	6787 days?	Wed 01-01-03
809	03.06	03.0600 Dismantling activities of SSC in TH of Units 3&4	4445 days?	Wed 01-01-03	Thu 26-12-19	4445 days?	Wed 01-01-03
810	03.0601	03.0601 Dismantling activities of general for TH of Units 3-4 SSC	1560 days	Thu 16-01-14	Thu 26-12-19	1560 days	Thu 16-01-14
1258	03.0610	03.0610 Dismantling of equipment from elevation 0.00 to elevation -3.6	1393 days	Tue 17-06-14	Fri 04-10-19	1193 days?	Tue 17-06-14
1259	03.07	03.0700 Activities in DGS-1	1834 days?	Thu 03-04-14	Wed 31-03-21	1486 days?	Thu 03-04-14
1266	03.0703	03.0703 Reconstruction of the DGS-1 Building for Decommissioning Purposes	1613 days	Thu 05-02-15	Wed 31-03-21	1265 days	Thu 05-02-15
1268	03.0703.2	02. Reconstruction of the DGS-1 Building for the purposes of Kozloduy NPP Units 1&2 decommissioning (39-2)	1046 days	Mon 03-04-17	Wed 31-03-21	698 days	Mon 03-04-17
1269	03.08	03.0800 Activities in CPS-1	1127 days	Mon 08-01-18	Mon 02-05-22	1127 days	Mon 08-01-18
1270	03.0801	03.0801 Preparatory activities for dismantling at CPS-1 (ЦПС-1)	572 days	Mon 08-01-18	Mon 16-03-20	572 days	Mon 08-01-18
1274	03.0801.4	04. Building concrete walls instead existing barriers	261 days	Mon 18-03-19	Mon 16-03-20	261 days	Mon 18-03-19
1302	04	04 Dismantling activities within the controlled area	6875 days?	Thu 09-09-04	Mon 30-12-30	6875 days?	Thu 09-09-04
1303	04.01	04.0100 Preparation of Reactor Building of Units 1&2 for dismantling	4161 days?	Fri 12-09-14	Mon 12-08-30	4161 days?	Fri 12-09-14
1317	04.0102	04.0102 Marking of systems, which remain in operation during decommissioning of the Units 1&2	102 days	Fri 14-09-18	Mon 04-02-19	102 days	Fri 14-09-18
1318	04.0102.1	01. Marking of systems of Unit 1, which remain in operation during decommissioning	102 days	Fri 14-09-18	Mon 04-02-19	102 days	Fri 14-09-18
1322	04.0102.1.4	Marking of system for Radiation monitoring	20 days	Fri 07-12-18	Thu 03-01-19	20 days	Fri 07-12-18
1323	04.0102.1.5	Marking of system for fire detection and fire extinguishing	22 days	Fri 04-01-19	Mon 04-02-19	22 days	Fri 04-01-19
1324	04.0102.2	02. Marking of systems of Unit 2, which remain in operation during decommissioning	102 days	Fri 14-09-18	Mon 04-02-19	102 days	Fri 14-09-18
1328	04.0102.2.4	Marking of system for Radiation monitoring	20 days	Fri 07-12-18	Thu 03-01-19	20 days	Fri 07-12-18
1329	04.0102.2.5	Marking of system for fire detection and fire extinguishing	22 days	Fri 04-01-19	Mon 04-02-19	22 days	Fri 04-01-19
1330	04.0103	04.0103 Isolation of all systems, which are not needed for dismantling	1379 days	Fri 12-09-14	Fri 13-12-19	1379 days	Fri 12-09-14
1338	04.0103.2	02. Electrical	1104 days	Wed 30-09-15	Fri 13-12-19	1104 days	Wed 30-09-15
1340	04.0103.2.2	Isolation of Unit 2 electrical systems	552 days	Fri 03-11-17	Fri 13-12-19	552 days	Fri 03-11-17
1365	04.0104	04.0104 Isolation of the operating part of the systems, which remain in operation from this, which not remain in operation	1519 days	Fri 14-11-14	Fri 28-08-20	1519 days	Fri 14-11-14
1366	04.0104.1	01. Ventilation	1516 days	Wed 19-11-14	Fri 28-08-20	1516 days	Wed 19-11-14
1367	04.0104.2	02. Electrical	1515 days	Fri 14-11-14	Mon 24-08-20	1515 days	Fri 14-11-14
1368	04.0104.3	03. I&C	1515 days	Fri 14-11-14	Mon 24-08-20	1515 days	Fri 14-11-14
1369	04.0104.4	04. Technological	1515 days	Fri 14-11-14	Mon 24-08-20	1515 days	Fri 14-11-14
1370	04.0105	04.0105 Removal of fluids from the systems	2034 days	Fri 06-11-15	Mon 14-08-23	2034 days	Fri 06-11-15
1371	04.0105.1	01. Removal of fluids from the systems in Unit 1	2015 days	Wed 02-12-15	Mon 14-08-23	2015 days	Wed 02-12-15
1378	04.0105.1.7	Removal of fluids from SVO-5	10 days	Mon 24-12-18	Fri 04-01-19	10 days	Mon 24-12-18
1381	04.0105.2	02. Removal of fluids from the systems in Unit 2	2017 days	Fri 06-11-15	Thu 20-07-23	2017 days	Fri 06-11-15
1387	04.0105.2.6	Removal of fluids from SVO-5	10 days	Mon 18-03-19	Fri 29-03-19	10 days	Mon 18-03-19
1397	04.0109	04.0109 Switching off / disconnecting of all electrical systems, which are not needed	1505 days?	Fri 14-11-14	Mon 10-08-20	1505 days?	Fri 14-11-14
1398	04.0110	04.0110 Removal of the insulation from the systems, taking into account the decontamination plan	2028 days?	Fri 14-11-14	Wed 10-08-22	2028 days?	Fri 14-11-14
1399	04.0111	04.0111 Supervision and readjustment of the systems and the equipment, which may be used during decommissioning (systems for handling, lifting equipment)	4116 days?	Fri 14-11-14	Mon 12-08-30	4116 days?	Fri 14-11-14
1400	04.0112	04.0112 Arrangement of the ventilation systems in the RB	3071 days?	Fri 14-11-14	Mon 10-08-26	3071 days?	Fri 14-11-14
1401	04.0113	04.0113 Readjustment and maintaining the systems, which remain in operation	3071 days?	Fri 14-11-14	Mon 10-08-26	722 days?	Fri 14-11-14
1402	04.0114	04.0114 Installation of new systems	3071 days?	Fri 14-11-14	Mon 10-08-26	3071 days?	Fri 14-11-14
1403	04.0115	04.0115 Primary circuit decontamination and of the auxiliary systems (after cost benefit assessment)	1243 days?	Mon 01-01-18	Mon 03-10-22	1243 days?	Mon 01-01-18
1421	04.0120	04.0120 Decontamination, draining, rinsing, drying and isolation of the technological systems, which are not needed for the decommissioning	1413 days?	Mon 17-11-14	Fri 03-04-20	1413 days?	Mon 17-11-14
1422	04.02	04.0200 Preparation of Reactor Building of Units 3&4 for dismantling	4585 days?	Wed 20-03-13	Mon 30-09-30	4585 days?	Wed 20-03-13



AWP 2019 - Units 1 to 4 Decommissioning Schedule

ID	WBS	Task Name	Duration	Start	Finish	Baseline Duration	Baseline Start
1423	04.0201	04.0201 Isolation of connections of RB with the Turbine Hall and with AB-2, which are not needed	1045 days	Mon 07-03-16	Mon 02-03-20	1045 days	Mon 07-03-16
1424	04.0201.1	01. Isolation of connections between RB and TH of Service Water system	60 days	Tue 10-12-19	Mon 02-03-20	60 days	Tue 10-12-19
1425	04.0201.1.1	Isolation of connections between RB and TH of Service Water system - for Unit 3	30 days	Tue 10-12-19	Mon 20-01-20	30 days	Tue 10-12-19
1433	04.0201.4	04. Isolation of connections between RB and TH of Clean Condensate system	43 days	Mon 02-09-19	Wed 30-10-19	43 days	Mon 02-09-19
1434	04.0201.4.1	Isolation of connections between RB and TH of Clean Condensate system - for Unit 3	23 days	Mon 02-09-19	Wed 02-10-19	23 days	Mon 02-09-19
1435	04.0201.4.2	Isolation of connections between RB and TH of Clean Condensate system - for Unit 4	20 days	Thu 03-10-19	Wed 30-10-19	20 days	Thu 03-10-19
1449	04.0203	04.0203 Isolation of all systems, which are not needed for dismantling	3039 days	Wed 07-10-15	Thu 20-05-27	3039 days	Wed 07-10-15
1463	04.0203.4	04. Technological	3039 days	Wed 07-10-15	Thu 20-05-27	3039 days	Wed 07-10-15
1464	04.0203.4.1	Isolation of Unit 3 technological systems	3025 days	Tue 27-10-15	Thu 20-05-27	3025 days	Tue 27-10-15
1470	04.0203.4.1.6	Isolation of SVO-5	10 days	Fri 17-05-19	Thu 30-05-19	10 days	Fri 17-05-19
1474	04.0203.4.2	Isolation of Unit 4 technological systems	3039 days	Wed 07-10-15	Thu 20-05-27	3039 days	Wed 07-10-15
1480	04.0203.4.2.6	Isolation of SVO-5	10 days	Mon 29-07-19	Fri 09-08-19	10 days	Mon 29-07-19
1484	04.0204	04.0204 Isolation of the operating part of the systems, which remain in operation from this, which not remain in operation	2043 days?	Wed 20-03-13	Fri 01-01-21	2043 days?	Wed 20-03-13
1485	04.0204.1	01. Ventilation	2041 days?	Fri 22-03-13	Fri 01-01-21	2041 days?	Fri 22-03-13
1486	04.0204.2	02. Electrical	2039 days?	Wed 20-03-13	Mon 28-12-20	2039 days?	Wed 20-03-13
1487	04.0204.3	03. I&C	2039 days?	Wed 20-03-13	Mon 28-12-20	2039 days?	Wed 20-03-13
1488	04.0204.4	04. Technological	2039 days?	Wed 20-03-13	Mon 28-12-20	2039 days?	Wed 20-03-13
1489	04.0205	04.0205 Removal of fluids from the systems	3046 days	Wed 14-10-15	Mon 07-06-27	3046 days	Wed 14-10-15
1490	04.0205.1	01. Removal of fluids from the systems in Unit 3	3046 days	Wed 14-10-15	Mon 07-06-27	3046 days	Wed 14-10-15
1496	04.0205.1.6	Removal of fluids from SVO-5	10 days	Fri 07-06-19	Thu 20-06-19	10 days	Fri 07-06-19
1498	04.0205.2	02. Removal of fluids from the systems in Unit 4	3029 days	Fri 06-11-15	Mon 07-06-27	3029 days	Fri 06-11-15
1504	04.0205.2.6	Removal of fluids from SVO-5	10 days	Mon 19-08-19	Fri 30-08-19	10 days	Mon 19-08-19
1516	04.0209	04.0209 Switching off / disconnecting of all electrical systems, which are not needed	2031 days?	Wed 01-01-14	Thu 30-09-21	2031 days?	Wed 01-01-14
1517	04.0210	04.0210 Removal of the insulation from the systems, taking into account the decontamination plan	2293 days?	Wed 01-01-14	Fri 30-09-22	2293 days?	Wed 01-01-14
1518	04.0211	04.0211 Supervision and readjustment of the systems and the equipment, which may be used during decommissioning (systems for handling, lifting equipment)	4379 days?	Wed 01-01-14	Mon 30-09-30	4379 days?	Wed 01-01-14
1520	04.0213	04.0213 Readjustment and maintaining the systems, which remain in operation	3336 days?	Wed 01-01-14	Wed 30-09-26	3336 days?	Wed 01-01-14
1521	04.0214	04.0214 Installation of new systems	3336 days?	Wed 01-01-14	Wed 30-09-26	3336 days?	Wed 01-01-14
1522	04.0215	04.0215 Primary circuit decontamination and of the auxiliary systems (after cost benefit assessment)	1241 days?	Tue 01-01-19	Mon 02-10-23	1241 days?	Tue 01-01-19
1541	04.0219	04.0219 Cleaning of the Emergency Boron Tank (EBT) 3	31 days	Mon 09-09-19	Mon 21-10-19	31 days	Mon 09-09-19
1542	04.0219.1	01. Draining of the EBT	6 days	Mon 09-09-19	Mon 16-09-19	6 days	Mon 09-09-19
1543	04.0219.2	02. Mechanical cleaning of EBT walls and floor (using the equipment supplied under Project 4b)	25 days	Tue 17-09-19	Mon 21-10-19	25 days	Tue 17-09-19
1544	04.0219.3	03. Removal of sludge, settled on the EBT floor	6 days	Fri 11-10-19	Fri 18-10-19	6 days	Fri 11-10-19
1549	04.0221	04.0221 Decontamination, draining, rinsing, drying and isolation of the technological systems, which are not needed for the decommissioning	1674 days?	Mon 17-11-14	Mon 05-04-21	1674 days?	Mon 17-11-14
1550	04.03	04.0300 Planning the dismantling activities within controlled area of Units 1-4	4036 days?	Wed 08-07-15	Fri 13-12-30	4036 days?	Wed 08-07-15
1551	04.0301	04.0301 Preparation of Detail Design for dismantling of equipment in the controlled areas of KNPP Units 1-4 (44)	824 days	Fri 08-07-16	Fri 30-08-19	793 days	Fri 08-07-16
1552	04.0302	04.0302 Detailed concurrent planning during dismantling of ventilation systems within controlled area of Units 1-4	3495 days?	Fri 01-07-16	Fri 16-11-29	3495 days?	Fri 01-07-16
1553	04.0302.1	01. Detailed concurrent planning during dismantling of ventilation systems in RB of Units 1&2	1459 days?	Fri 01-07-16	Fri 28-01-22	1459 days?	Fri 01-07-16
1591	04.0303	04.0303 Detailed concurrent planning during dismantling of electrical systems within controlled area of Units 1-4	2130 days	Tue 29-03-16	Mon 20-05-24	2130 days	Tue 29-03-16
1592	04.0303.1	01. Detailed concurrent planning during dismantling of electrical systems within controlled area of Units 1&2	1608 days	Tue 29-03-16	Fri 20-05-22	1608 days	Tue 29-03-16
1593	04.0303.2	02. Detailed concurrent planning during dismantling of electrical systems within controlled area of Units 3&4	2130 days	Tue 29-03-16	Mon 20-05-24	2130 days	Tue 29-03-16
1594	04.0304	04.0304 Detailed concurrent planning during the dismantling of I&C systems within controlled area of Units 1-4	2131 days	Mon 14-03-16	Mon 06-05-24	2131 days	Mon 14-03-16
1595	04.0304.1	01. Detailed concurrent planning during the dismantling of I&C systems within controlled area of Units 1&2	1609 days	Mon 14-03-16	Fri 06-05-22	1609 days	Mon 14-03-16
1596	04.0304.2	02. Detailed concurrent planning during the dismantling of I&C systems within controlled area of Units 3&4	2120 days	Tue 29-03-16	Mon 06-05-24	2120 days	Tue 29-03-16
1597	04.0305	04.0305 Detailed concurrent planning during the dismantling of technological systems within Reactor Buildings of Units 1-4	3624 days?	Mon 27-06-16	Fri 10-05-30	3624 days?	Mon 27-06-16



AWP 2019 - Units 1 to 4 Decommissioning Schedule

ID	WBS	Task Name	Duration	Start	Finish	Baseline Duration	Baseline Start
1598	04.0305.1	01. Detailed concurrent planning during the dismantling of technological systems within Reactor Buildings of Units 1&2	3624 days	Mon 27-06-16	Fri 10-05-30	3624 days	Mon 27-06-16
1608	04.0305.1.4	Planning the dismantling of SVO-5	120 days	Tue 01-01-19	Mon 17-06-19	120 days	Tue 01-01-19
1609	04.0305.1.4.1	Planning the dismantling of SVO-5 - Unit 1	60 days	Tue 01-01-19	Mon 25-03-19	60 days	Tue 01-01-19
1610	04.0305.1.4.2	Planning the dismantling of SVO-5 - Unit 2	60 days	Tue 26-03-19	Mon 17-06-19	60 days	Tue 26-03-19
1611	04.0305.1.5	Planning the dismantling of main steam lines in the SGC (БПГ)	100 days	Mon 15-07-19	Fri 29-11-19	100 days	Mon 15-07-19
1612	04.0305.1.5.1	Planning the dismantling of main steam lines in the SGC (БПГ) - Unit 1	50 days	Mon 15-07-19	Fri 20-09-19	50 days	Mon 15-07-19
1613	04.0305.1.5.2	Planning the dismantling of main steam lines in the SGC (БПГ) - Unit 2	50 days	Mon 23-09-19	Fri 29-11-19	50 days	Mon 23-09-19
1614	04.0305.1.6	Planning the dismantling of feed water in the Reactor Building of Units 1&2	120 days	Wed 02-10-19	Tue 17-03-20	120 days	Wed 02-10-19
1615	04.0305.1.6.1	Planning the dismantling of feed water pipelines in the SGC (БПГ) - Unit 1	60 days	Wed 02-10-19	Tue 24-12-19	60 days	Wed 02-10-19
1616	04.0305.1.6.2	Planning the dismantling of feed water pipelines in the SGC (БПГ) - Unit 2	60 days	Wed 25-12-19	Tue 17-03-20	60 days	Wed 25-12-19
1642	04.0305.2	02. Detailed concurrent planning during the dismantling of technological systems within Reactor Buildings of Units 3&4	3589 days?	Mon 27-06-16	Fri 22-03-30	3589 days?	Mon 27-06-16
1652	04.0305.2.4	Planning the dismantling of SVO-5	120 days	Mon 03-06-19	Fri 15-11-19	120 days	Mon 03-06-19
1653	04.0305.2.4.1	Planning the dismantling of SVO-5 - Unit 3	60 days	Mon 03-06-19	Fri 23-08-19	60 days	Mon 03-06-19
1654	04.0305.2.4.2	Planning the dismantling of SVO-5 - Unit 4	60 days	Mon 26-08-19	Fri 15-11-19	60 days	Mon 26-08-19
1655	04.0305.2.5	Planning the dismantling of main steam lines in the SGC (БПГ)	100 days	Mon 02-12-19	Fri 17-04-20	100 days	Mon 02-12-19
1656	04.0305.2.5.1	Planning the dismantling of main steam lines in the SGC (БПГ) - Unit 3	50 days	Mon 02-12-19	Fri 07-02-20	50 days	Mon 02-12-19
1686	04.0306	04.0306 Detailed concurrent planning during the dismantling of technological and ventilation systems within AB-1 and AB-2	4036 days?	Wed 08-07-15	Fri 13-12-30	4036 days?	Wed 08-07-15
1687	04.0306.1	01. Detailed concurrent planning during the dismantling of technological and ventilation systems within AB-1	4036 days	Wed 08-07-15	Fri 13-12-30	4036 days	Wed 08-07-15
1704	04.0306.2	02. Detailed concurrent planning during the dismantling of technological and ventilation systems within AB-2	3532 days?	Mon 07-03-16	Tue 11-09-29	3532 days?	Mon 07-03-16
1751	04.04	04.0400 Dismantling activities in Reactor Building of Units 1&2 and AB-1	4042 days?	Wed 15-07-15	Mon 30-12-30	4042 days?	Wed 15-07-15
1752	04.0401	04.0401 Dismantling of ventilation systems in RB of Units 1&2	1459 days?	Fri 01-07-16	Fri 28-01-22	1459 days?	Fri 01-07-16
1771	04.0402	04.0402 Dismantling of electrical systems in RB of Units 1&2	1608 days	Tue 29-03-16	Fri 20-05-22	1608 days	Tue 29-03-16
1776	04.0403	04.0403 Dismantling of I&C systems in RB of Units 1&2	1609 days	Mon 14-03-16	Fri 06-05-22	1609 days	Mon 14-03-16
1785	04.0404	04.0404 Dismantling of technological systems in RB of Units 1&2	3891 days?	Wed 15-07-15	Fri 31-05-30	3891 days?	Wed 15-07-15
1833	04.0404.4	04. Dismantling of SVO-5	120 days	Tue 15-01-19	Mon 01-07-19	120 days	Tue 15-01-19
1834	04.0404.4.1	Dismantling of SVO-5 - Unit 1	60 days	Tue 15-01-19	Mon 08-04-19	60 days	Tue 15-01-19
1835	04.0404.4.1.1	Dismantling of blow down expander	10 days	Tue 15-01-19	Mon 28-01-19	10 days	Tue 15-01-19
1836	04.0404.4.1.2	Dismantling of blow down regenerative heat exchanger	10 days	Tue 29-01-19	Mon 11-02-19	10 days	Tue 29-01-19
1837	04.0404.4.1.3	Dismantling of SG blow down cooler	3 days	Tue 12-02-19	Thu 14-02-19	3 days	Tue 12-02-19
1838	04.0404.4.1.4	Dismantling of cooler of the drainage of the SG blow down	3 days	Fri 15-02-19	Tue 19-02-19	3 days	Fri 15-02-19
1839	04.0404.4.1.5	Dismantling of SG water drainage tank	10 days	Wed 20-02-19	Tue 05-03-19	10 days	Wed 20-02-19
1840	04.0404.4.1.6	Dismantling of valves - electrical	3 days	Wed 06-03-19	Fri 08-03-19	3 days	Wed 06-03-19
1841	04.0404.4.1.7	Dismantling of valves - manual	3 days	Mon 11-03-19	Wed 13-03-19	3 days	Mon 11-03-19
1842	04.0404.4.1.8	Dismantling of pipelines	10 days	Thu 14-03-19	Wed 27-03-19	10 days	Thu 14-03-19
1843	04.0404.4.1.9	Dismantling of the sample coolers	4 days	Thu 28-03-19	Tue 02-04-19	4 days	Thu 28-03-19
1844	04.0404.4.1.10	Dismantling of supports	4 days	Wed 03-04-19	Mon 08-04-19	4 days	Wed 03-04-19
1845	04.0404.4.2	Dismantling of SVO-5 - Unit 2	60 days	Tue 09-04-19	Mon 01-07-19	60 days	Tue 09-04-19
1846	04.0404.4.2.1	Dismantling of blow down expander	10 days	Tue 09-04-19	Mon 22-04-19	10 days	Tue 09-04-19
1847	04.0404.4.2.2	Dismantling of blow down regenerative heat exchanger	10 days	Tue 23-04-19	Mon 06-05-19	10 days	Tue 23-04-19
1848	04.0404.4.2.3	Dismantling of SG blow down cooler	3 days	Tue 07-05-19	Thu 09-05-19	3 days	Tue 07-05-19
1849	04.0404.4.2.4	Dismantling of cooler of the drainage of the SG blow down	3 days	Fri 10-05-19	Tue 14-05-19	3 days	Fri 10-05-19
1850	04.0404.4.2.5	Dismantling of SG water drainage tank	10 days	Wed 15-05-19	Tue 28-05-19	10 days	Wed 15-05-19
1851	04.0404.4.2.6	Dismantling of valves - electrical	3 days	Wed 29-05-19	Fri 31-05-19	3 days	Wed 29-05-19
1852	04.0404.4.2.7	Dismantling of valves - manual	3 days	Mon 03-06-19	Wed 05-06-19	3 days	Mon 03-06-19
1853	04.0404.4.2.8	Dismantling of pipelines	10 days	Thu 06-06-19	Wed 19-06-19	10 days	Thu 06-06-19
1854	04.0404.4.2.9	Dismantling of the sample coolers	4 days	Thu 20-06-19	Tue 25-06-19	4 days	Thu 20-06-19
1855	04.0404.4.2.10	Dismantling of supports	4 days	Wed 26-06-19	Mon 01-07-19	4 days	Wed 26-06-19
1856	04.0404.5	05. Dismantling of main steam lines in the SGC (БПГ)	100 days	Mon 29-07-19	Fri 13-12-19	100 days	Mon 29-07-19
1857	04.0404.5.1	Dismantling of main steam lines in the SGC (БПГ) - Unit 1	50 days	Mon 29-07-19	Fri 04-10-19	50 days	Mon 29-07-19
1858	04.0404.5.1.1	Dismantling of main steam lines above Steam Generators	25 days	Mon 29-07-19	Fri 30-08-19	25 days	Mon 29-07-19
1859	04.0404.5.1.2	Dismantling of main steam lines from Steam Generators to Turbine Hall	25 days	Mon 02-09-19	Fri 04-10-19	25 days	Mon 02-09-19
1860	04.0404.5.2	Dismantling of main steam lines in the SGC (БПГ) - Unit 2	50 days	Mon 07-10-19	Fri 13-12-19	50 days	Mon 07-10-19
1861	04.0404.5.2.1	Dismantling of main steam lines above Steam Generators	25 days	Mon 07-10-19	Fri 08-11-19	25 days	Mon 07-10-19

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ID	WBS	Task Name	Duration	Start	Finish	Baseline Duration	Baseline Start
1862	04.0404.5.2.2	Dismantling of main steam lines from Steam Generators to Turbine Hall	25 days	Mon 11-11-19	Fri 13-12-19	25 days	Mon 11-11-19
1863	04.0404.6	06. Dismantling of feed water in the RB	119 days	Wed 06-11-19	Mon 20-04-20	119 days	Wed 06-11-19
1864	04.0404.6.1	Dismantling of feed water pipelines in the SGC (БПГ) - Unit 1	60 days	Wed 06-11-19	Tue 28-01-20	60 days	Wed 06-11-19
1865	04.0404.6.1.1	Dismantling of feed water pipelines under Steam Generators	30 days	Wed 06-11-19	Tue 17-12-19	30 days	Wed 06-11-19
1866	04.0404.6.1.2	Dismantling of feed water pipelines from Steam Generators to Turbine Hall	30 days	Wed 18-12-19	Tue 28-01-20	30 days	Wed 18-12-19
1975	04.0404.22	22. Dismantling of insulations	2109 days?	Wed 15-07-15	Wed 02-08-23	2109 days?	Wed 15-07-15
2065	04.0405	04.0405 Dismantling of technological equipment in AB-1	4042 days	Wed 15-07-15	Mon 30-12-30	4042 days	Wed 15-07-15
2112	04.0406	04.0406 Dismantling of ventilation systems in AB-1	3530 days	Mon 21-03-16	Fri 21-09-29	3530 days	Mon 21-03-16
2199	04.05	04.0500 Dismantling activities in Reactor Building of Units 3&4 and AB-2	3911 days?	Tue 01-12-15	Mon 18-11-30	3911 days?	Tue 01-12-15
2200	04.0501	04.0501 Dismantling of ventilation systems in RB of Units 3&4	3057 days?	Fri 02-03-18	Fri 16-11-29	2971 days?	Mon 02-07-18
2219	04.0502	04.0502 Dismantling of electrical systems in RB of Units 3&4	2130 days	Tue 29-03-16	Mon 20-05-24	2130 days	Tue 29-03-16
2224	04.0503	04.0503 Dismantling of I&C systems in RB of Units 3&4	2120 days	Tue 29-03-16	Mon 06-05-24	2120 days	Tue 29-03-16
2233	04.0504	04.0504 Dismantling of technological systems in RB of Units 3&4	3745 days?	Tue 01-12-15	Fri 29-03-30	3745 days?	Tue 01-12-15
2281	04.0504.4	04. Dismantling of SVO-5	120 days	Mon 01-07-19	Fri 13-12-19	120 days	Mon 01-07-19
2282	04.0504.4.1	Dismantling of SVO-5 - Unit 3	60 days	Mon 01-07-19	Fri 20-09-19	60 days	Mon 01-07-19
2283	04.0504.4.1.1	Dismantling of blow down expander	10 days	Mon 01-07-19	Fri 12-07-19	10 days	Mon 01-07-19
2284	04.0504.4.1.2	Dismantling of blow down regenerative heat exchanger	10 days	Mon 15-07-19	Fri 26-07-19	10 days	Mon 15-07-19
2285	04.0504.4.1.3	Dismantling of SG blow down cooler	3 days	Mon 29-07-19	Wed 31-07-19	3 days	Mon 29-07-19
2286	04.0504.4.1.4	Dismantling of cooler of the drainage of the SG blow down	3 days	Thu 01-08-19	Mon 05-08-19	3 days	Thu 01-08-19
2287	04.0504.4.1.5	Dismantling of SG water drainage tank	10 days	Tue 06-08-19	Mon 19-08-19	10 days	Tue 06-08-19
2288	04.0504.4.1.6	Dismantling of valves - electrical	3 days	Tue 20-08-19	Thu 22-08-19	3 days	Tue 20-08-19
2289	04.0504.4.1.7	Dismantling of valves - manual	3 days	Fri 23-08-19	Tue 27-08-19	3 days	Fri 23-08-19
2290	04.0504.4.1.8	Dismantling of pipelines	10 days	Wed 28-08-19	Tue 10-09-19	10 days	Wed 28-08-19
2291	04.0504.4.1.9	Dismantling of the sample coolers	4 days	Wed 11-09-19	Mon 16-09-19	4 days	Wed 11-09-19
2292	04.0504.4.1.10	Dismantling of supports	4 days	Tue 17-09-19	Fri 20-09-19	4 days	Tue 17-09-19
2293	04.0504.4.2	Dismantling of SVO-5 - Unit 4	60 days	Mon 23-09-19	Fri 13-12-19	60 days	Mon 23-09-19
2294	04.0504.4.2.1	Dismantling of blow down expander	10 days	Mon 23-09-19	Fri 04-10-19	10 days	Mon 23-09-19
2295	04.0504.4.2.2	Dismantling of blow down regenerative heat exchanger	10 days	Mon 07-10-19	Fri 18-10-19	10 days	Mon 07-10-19
2296	04.0504.4.2.3	Dismantling of SG blow down cooler	3 days	Mon 21-10-19	Wed 23-10-19	3 days	Mon 21-10-19
2297	04.0504.4.2.4	Dismantling of cooler of the drainage of the SG blow down	3 days	Thu 24-10-19	Mon 28-10-19	3 days	Thu 24-10-19
2298	04.0504.4.2.5	Dismantling of SG water drainage tank	10 days	Tue 29-10-19	Mon 11-11-19	10 days	Tue 29-10-19
2299	04.0504.4.2.6	Dismantling of valves - electrical	3 days	Tue 12-11-19	Thu 14-11-19	3 days	Tue 12-11-19
2300	04.0504.4.2.7	Dismantling of valves - manual	3 days	Fri 15-11-19	Tue 19-11-19	3 days	Fri 15-11-19
2301	04.0504.4.2.8	Dismantling of pipelines	10 days	Wed 20-11-19	Tue 03-12-19	10 days	Wed 20-11-19
2302	04.0504.4.2.9	Dismantling of the sample coolers	4 days	Wed 04-12-19	Mon 09-12-19	4 days	Wed 04-12-19
2303	04.0504.4.2.10	Dismantling of supports	4 days	Tue 10-12-19	Fri 13-12-19	4 days	Tue 10-12-19
2304	04.0504.5	05. Dismantling of main steam lines in the SGC (БПГ)	100 days	Mon 16-12-19	Fri 01-05-20	100 days	Mon 16-12-19
2305	04.0504.5.1	Dismantling of main steam lines in the SGC (БПГ) - Unit 3	50 days	Mon 16-12-19	Fri 21-02-20	50 days	Mon 16-12-19
2306	04.0504.5.1.1	Dismantling of main steam lines above Steam Generators	25 days	Mon 16-12-19	Fri 17-01-20	25 days	Mon 16-12-19
2423	04.0504.22	21 Dismantling of insulations	3625 days?	Tue 01-12-15	Fri 12-10-29	3625 days?	Tue 01-12-15
2453	04.0504.22.8	Insulation of SVO-1 system	60 days?	Tue 22-10-19	Mon 13-01-20	60 days?	Tue 22-10-19
2454	04.0504.22.8.1	Regenerative heat exchanger from the Primary Circuit blow-down, glass wool pads	20 days?	Tue 22-10-19	Mon 18-11-19	20 days?	Tue 22-10-19
2455	04.0504.22.8.2	Glass wool pads for DN 100	20 days?	Tue 19-11-19	Mon 16-12-19	20 days?	Tue 19-11-19
2456	04.0504.22.8.3	Aluminium sheet, АД1-Н, 0.7 mm	20 days?	Tue 17-12-19	Mon 13-01-20	20 days?	Tue 17-12-19
2472	04.0504.22.10	Insulation of SVO-5 system	128 days?	Wed 02-01-19	Fri 28-06-19	128 days?	Wed 02-01-19
2473	04.0504.22.10.1	SGBE (ОПП) /expander of the SG blow down/, glass wool pads	5 days?	Wed 02-01-19	Tue 08-01-19	5 days?	Wed 02-01-19
2474	04.0504.22.10.2	Aluminium sheet, АД1-Н, 0.7 mm	5 days?	Wed 09-01-19	Tue 15-01-19	5 days?	Wed 09-01-19
2475	04.0504.22.10.3	RHB (РТП)/regenerative heat exchanger of the blow down/ glass wool pads	5 days?	Wed 16-01-19	Tue 22-01-19	5 days?	Wed 16-01-19
2476	04.0504.22.10.4	Aluminium sheet, АД1-Н, 0.7 mm	5 days?	Wed 23-01-19	Tue 29-01-19	5 days?	Wed 23-01-19
2477	04.0504.22.10.5	SGBE (РПП) /expander of the SG blow down/, glass wool pads	5 days?	Wed 30-01-19	Tue 05-02-19	5 days?	Wed 30-01-19
2478	04.0504.22.10.6	Aluminium sheet, АД1-Н, 0.7 mm	5 days?	Wed 06-02-19	Tue 12-02-19	5 days?	Wed 06-02-19
2479	04.0504.22.10.7	SGDC (ОДП) /SG drains cooler/, glass wool pads-[m³]	5 days?	Wed 13-02-19	Tue 19-02-19	5 days?	Wed 13-02-19
2480	04.0504.22.10.8	Aluminium sheet, АД1-Н, 0.7 mm	5 days?	Wed 20-02-19	Tue 26-02-19	5 days?	Wed 20-02-19
2481	04.0504.22.10.9	Glass wool pads for DN 80	5 days?	Wed 27-02-19	Tue 05-03-19	5 days?	Wed 27-02-19
2482	04.0504.22.10.10	Glass wool pads for DN 50	5 days?	Wed 06-03-19	Tue 12-03-19	5 days?	Wed 06-03-19
2483	04.0504.22.10.11	Aluminium sheet, АД1-Н, 0.7 mm	5 days?	Wed 13-03-19	Tue 19-03-19	5 days?	Wed 13-03-19
2484	04.0504.22.10.12	Aluminium sheet, АД1-Н, 0.7 mm	10 days?	Wed 13-03-19	Tue 26-03-19	10 days?	Wed 13-03-19
2485	04.0504.22.10.13	Glass wool pads for DN 100	5 days?	Wed 27-03-19	Tue 02-04-19	5 days?	Wed 27-03-19
2486	04.0504.22.10.14	Glass wool pads for DN 80	5 days?	Wed 03-04-19	Tue 09-04-19	5 days?	Wed 03-04-19

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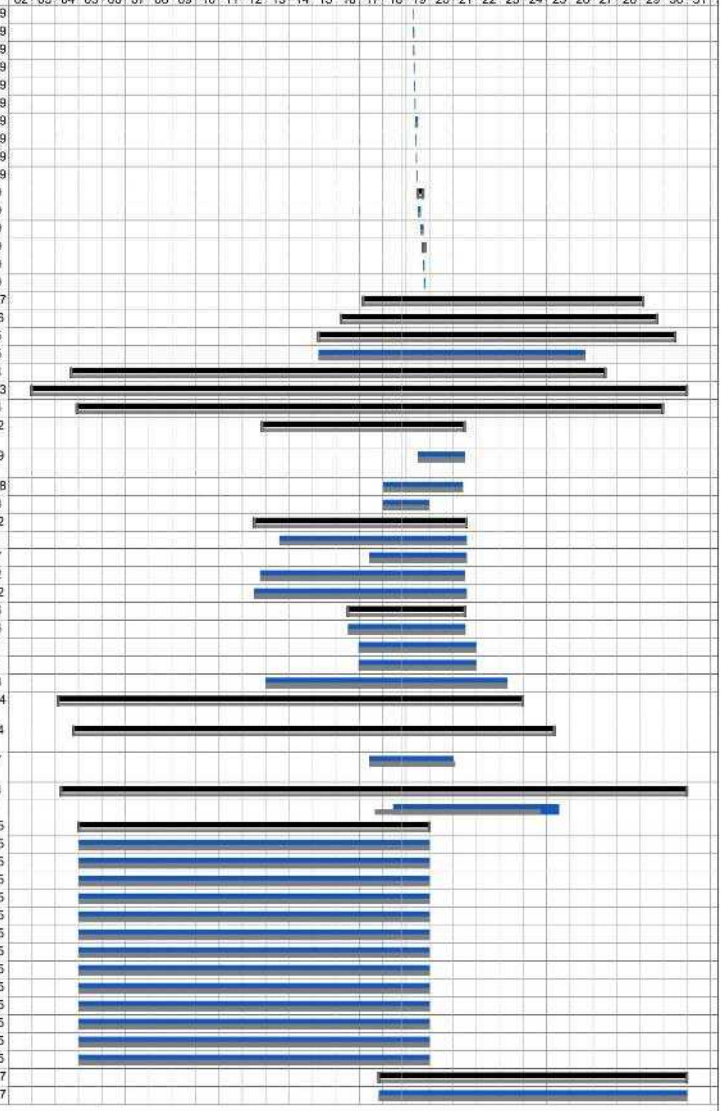
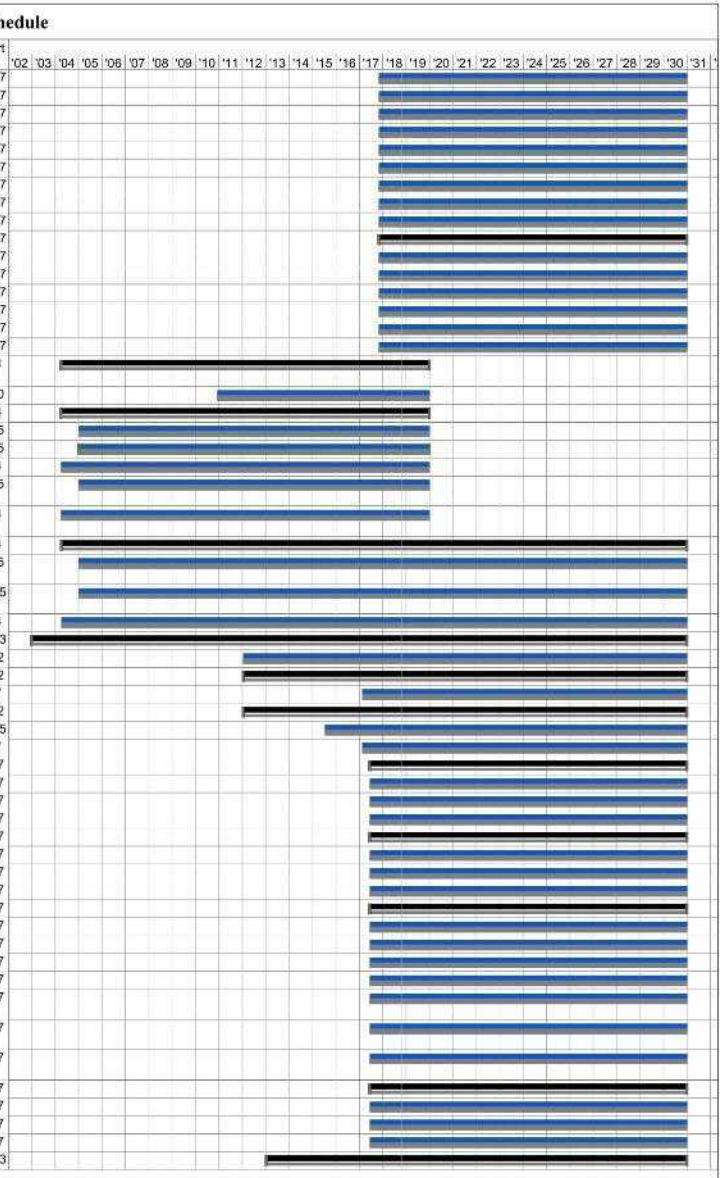
ID	WBS	Task Name	Duration	Start	Finish	Baseline Duration	Baseline Start
2487	04.0504.22.10.15	Glass wool pads for DN 150	5 days?	Wed 10-04-19	Tue 16-04-19	5 days?	Wed 10-04-19
2488	04.0504.22.10.16	Glass wool pads for DN 100	10 days?	Wed 17-04-19	Tue 30-04-19	10 days?	Wed 17-04-19
2489	04.0504.22.10.17	Glass wool pads for DN 80	5 days?	Wed 24-04-19	Tue 30-04-19	5 days?	Wed 24-04-19
2490	04.0504.22.10.18	Glass wool pads for DN 50	5 days?	Wed 01-05-19	Tue 07-05-19	5 days?	Wed 01-05-19
2491	04.0504.22.10.19	Aluminium sheet, АД1-Н, 0.7 mm	5 days?	Wed 08-05-19	Tue 14-05-19	5 days?	Wed 08-05-19
2492	04.0504.22.10.20	Aluminium sheet, АД1-Н, 0.7 mm	5 days?	Wed 15-05-19	Tue 21-05-19	5 days?	Wed 15-05-19
2493	04.0504.22.10.21	Aluminium sheet, АД1-Н, 0.7 mm	28 days?	Wed 22-05-19	Fri 28-06-19	28 days?	Wed 22-05-19
2494	04.0504.22.10.22	Aluminium sheet, АД1-Н, 0.7 mm	5 days?	Wed 29-05-19	Tue 04-06-19	5 days?	Wed 29-05-19
2495	04.0504.22.10.23	Aluminium sheet, АД1-Н, 0.7 mm	5 days?	Wed 05-06-19	Tue 11-06-19	5 days?	Wed 05-06-19
2496	04.0504.22.10.24	Aluminium sheet, АД1-Н, 0.7 mm	5 days?	Wed 12-06-19	Tue 18-06-19	5 days?	Wed 12-06-19
2497	04.0504.22.11	Insulation of main steam lines system	60 days?	Tue 02-07-19	Mon 23-09-19	60 days?	Tue 02-07-19
2498	04.0504.22.11.1	Glass wool pads for DN 400	30 days?	Tue 02-07-19	Mon 12-08-19	30 days?	Tue 02-07-19
2499	04.0504.22.11.2	Thin galvanized steel sheet 0,7mm	30 days?	Tue 13-08-19	Mon 23-09-19	30 days?	Tue 13-08-19
2500	04.0504.22.12	Insulation of feed water system	20 days?	Tue 24-09-19	Mon 21-10-19	20 days?	Tue 24-09-19
2501	04.0504.22.12.1	Glass wool pads for DN 250	10 days?	Tue 24-09-19	Mon 07-10-19	10 days?	Tue 24-09-19
2502	04.0504.22.12.2	Thin galvanized steel sheet 0,7mm	10 days?	Tue 08-10-19	Mon 21-10-19	10 days?	Tue 08-10-19
2513	04.0505	04.0505 Dismantling of technological equipment in AB-2	3127 days?	Wed 01-03-17	Fri 16-02-29	3127 days?	Wed 01-03-17
2560	04.0506	04.0506 Dismantling of ventilation systems in AB-2	3530 days?	Mon 21-03-16	Fri 21-09-29	3530 days?	Mon 21-03-16
2647	04.06	04.0600 Decontamination activities in Reactor Buildings of Units 1-4	3983 days?	Tue 07-04-15	Mon 01-07-30	3983 days?	Tue 07-04-15
2648	04.0601	04.0601 Decontamination of equipment and rooms prior to dismantling	2978 days?	Tue 07-04-15	Mon 24-08-26	2978 days?	Tue 07-04-15
2652	04.07	04.0700 Procurement of equipment for dismantling within the controlled area	5966 days	Thu 09-09-04	Tue 06-07-27	5966 days	Thu 09-09-04
2661	05	05 Waste Processing, Storage and Disposal	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2662	05.01	05.0100 Construction of National Disposal Facility Radiana	6544 days	Thu 09-12-04	Fri 21-12-28	6544 days	Thu 09-12-04
2730	05.0106	05.0106 Radiana site preparations - fencing, relocations and utility connection points	2268 days	Mon 05-11-12	Wed 30-06-21	2268 days	Mon 05-11-12
2738	05.0106.8	08. Provision of electrical supply for Radiana site (for monitoring equipment) (R-Project 4B)	523 days	Mon 01-07-19	Wed 30-06-21	523 days	Mon 01-07-19
2755	05.0106.25	25. Rainwater connections to discharge points	885 days	Wed 10-01-18	Mon 31-05-21	885 days	Wed 10-01-18
2757	05.0106.27	27. Implementation of relocation of irrigation channel	515 days	Tue 02-01-18	Fri 20-12-19	515 days	Tue 02-01-18
2758	05.0107	05.0107 Predisposal Monitoring of the Radiana site	2375 days	Mon 09-07-12	Fri 30-07-21	2375 days	Mon 09-07-12
2759	05.0107.1	01.Geodelic Monitoring	2095 days	Fri 02-08-13	Fri 30-07-21	2095 days	Fri 02-08-13
2762	05.0107.4	04. Seismic Monitoring	1090 days	Thu 01-06-17	Fri 30-07-21	1090 days	Thu 01-06-17
2763	05.0107.5	05. Hydrogeological monitoring and geochemical analyses	2290 days	Thu 04-10-12	Wed 30-06-21	2290 days	Thu 04-10-12
2764	05.0107.6	06. Radiological Monitoring	2375 days	Mon 09-07-12	Fri 30-07-21	2375 days	Mon 09-07-12
2766	05.0108	05.0108 Construction of NDF Phase 1	1308 days	Thu 07-07-16	Wed 07-07-21	1308 days	Thu 07-07-16
2767	05.0108.1	01. Construction of NDF Phase 1	1308 days	Thu 07-07-16	Wed 07-07-21	1308 days	Thu 07-07-16
2769	05.0109	05.0109 Independent supervision of NDF Phase 1 Construction	1308 days	Fri 23-12-16	Thu 23-12-21	1308 days	Fri 23-12-16
2770	05.0110	05.0110 Designer's supervision of NDF Phase 1 Construction	1308 days	Fri 23-12-16	Thu 23-12-21	1308 days	Fri 23-12-16
2773	05.0113	05.0113 Support services and security	2705 days	Tue 01-01-13	Fri 28-04-23	2705 days	Tue 01-01-13
2774	05.02	05.0200 Reconstruction of existing facilities and procurement of additional equipment for management of historical waste	5195 days	Wed 18-02-04	Thu 28-12-23	5195 days	Wed 18-02-04
2787	05.03	05.0300 Reconstruction of existing facilities and procurement of additional equipment for management of materials from the decommissioning activities	5370 days	Mon 18-10-04	Wed 30-04-25	5370 days	Mon 18-10-04
2805	05.0310	05.0310 Modernisation and Reconstruction of SDRAW-Kozloduy to Receive and Process Decommissioning RAW (48)	939 days	Thu 01-06-17	Thu 31-12-20	960 days	Thu 01-06-17
2808	05.04	05.0400 Management of historical RAW	6992 days	Thu 01-04-04	Tue 31-12-30	6992 days	Thu 01-04-04
2813	05.0403	05.0403 Retrieval and Processing of the Historical Wet Solid Waste (9b-2)	1849 days	Wed 13-06-18	Fri 11-07-25	1849 days	Fri 01-09-17
2814	05.0404	05.0404 Retrieval and Processing of the Historical Solid Waste	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2815	05.0404.1	01. Retrieval of solid waste from depots in AB-1 and AB-2	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2816	05.0404.2	02. Sorting and characterization	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2817	05.0404.3	03. Packaging	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2818	05.0404.4	04. Loading in 12 m3 or 6 m3 containers	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2819	05.0404.5	05. Transportation to RAW TF	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2820	05.0404.6	06. Incoming radiation monitoring	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2821	05.0404.7	07. Reassortment and scanning (total activity, 60Co and 137Cs)	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2822	05.0404.8	08. Compaction in 200 l barrel using 50 t press	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2823	05.0404.9	09. Marking and sealing	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2824	05.0404.10	10. Gamma spectrometric measurements	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2825	05.0404.11	11. Temporary storage in buffer depot 1	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2826	05.0404.12	12. Super compaction using 1000 t press	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2827	05.0404.13	13.Temporary storage in buffer depot 2	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2828	05.0405	05.0405 Reducing the volume of RAW using PMF	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2829	05.0405.1	01. Receiving of RAW	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17



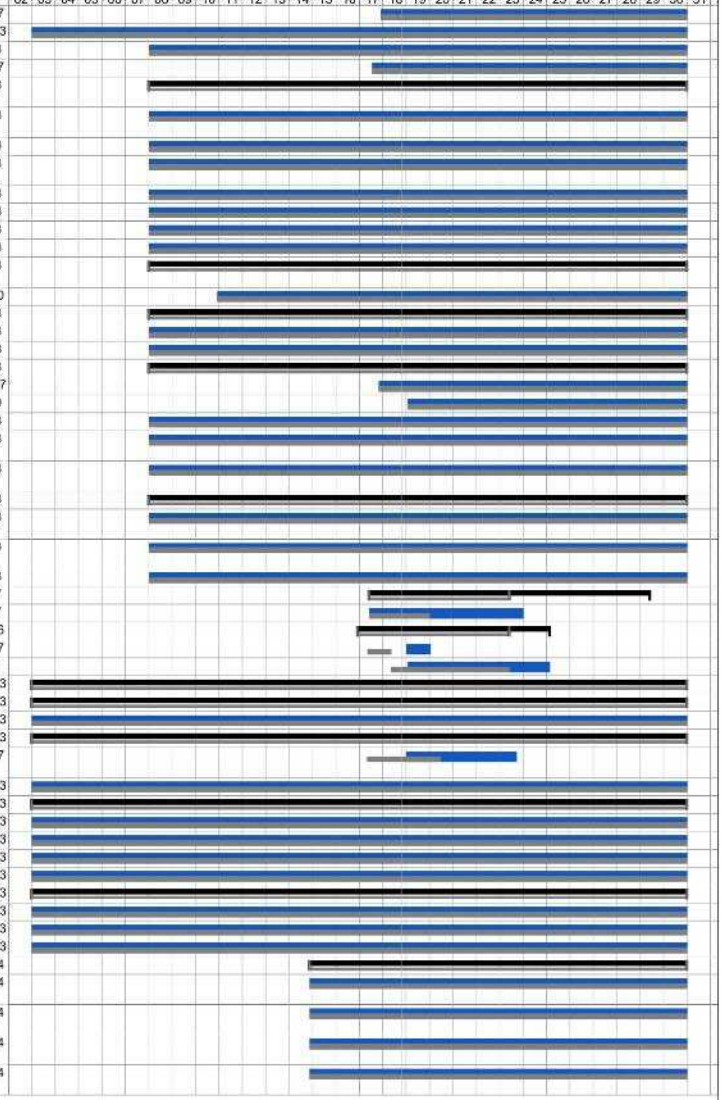
AWP 2019 - Units 1 to 4 Decommissioning Schedule

ID	WBS	Task Name	Duration	Start	Finish	Baseline Duration	Baseline Start
2830	05.0405.2	02. Temporary storage and radiological measurement	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2831	05.0405.3	03. Sorting of the RAW regarding the technological requirements	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2832	05.0405.4	04. Feeding for treatment in PMF	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2833	05.0405.5	05. Reducing the volume of the RAW	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2834	05.0405.6	06. Gaseous radiological and environmental monitoring	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2835	05.0405.7	07. Collecting slag in 190 l barrels	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2836	05.0405.8	08. Measurement of the barrels and marking	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2837	05.0405.9	09. Temporary storage of barrels	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2838	05.0405.10	08. Transportation to RAW TF	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2839	05.0405.11	09. Utilities, spare parts and consumables for the operation of PMF	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2840	05.0405.11.1	Power supply	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2841	05.0405.11.2	Nitrogen	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2842	05.0405.11.3	Service water	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2843	05.0405.11.4	Compressed air	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2844	05.0405.11.5	Hydrogen	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2845	05.0405.11.6	Procurement of consumables and spare parts	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2854	05.0407	05.0407 Procurement/ Manufacturing of RCC for conditioning historical waste	4121 days	Thu 01-04-04	Tue 31-12-19	4121 days	Thu 01-04-04
2856	05.0407.2	02. Manufacturing of RCC	2377 days	Mon 06-12-10	Tue 31-12-19	2377 days	Mon 06-12-10
2857	05.0408	05.0408 Final conditioning of historical waste in RCC	4121 days	Thu 01-04-04	Tue 31-12-19	4121 days	Thu 01-04-04
2858	05.0408.1	01. Final conditioning in RCC type 1	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2859	05.0408.2	02. Final conditioning in RCC type 2	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2860	05.0408.3	03. Final conditioning in RCC type 3	4121 days	Thu 01-04-04	Tue 31-12-19	4121 days	Thu 01-04-04
2861	05.0408.4	04. 2 days temporary storage of RCC type 2 in a depot designed for storing filled containers	3923 days	Mon 03-01-05	Tue 31-12-19	3923 days	Mon 03-01-05
2862	05.0408.5	05. 7 days temporary storage of RCC type 3 in a depot designed for storing filled containers	4121 days	Thu 01-04-04	Tue 31-12-19	4121 days	Thu 01-04-04
2863	05.0409	05.0409 Temporary storage of RCC with historical waste	6987 days	Thu 08-04-04	Tue 31-12-30	6987 days	Thu 08-04-04
2864	05.0409.1	01. Temporary storage of RCC type 1 before release from regulation (not earlier then 25 years of storage)	6794 days	Mon 03-01-05	Tue 31-12-30	6794 days	Mon 03-01-05
2865	05.0409.2	02. Temporary storage of RCC type 2 before release from regulation or final disposal (not earlier then 30 years of storage)	6792 days	Wed 05-01-05	Tue 31-12-30	6792 days	Wed 05-01-05
2866	05.0409.3	03. Temporary storage of RCC type 3 before final disposal	6987 days	Thu 08-04-04	Tue 31-12-30	6987 days	Thu 08-04-04
2875	05.05	05.0500 Management of decommissioning waste and materials	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2876	05.0501	05.0501 Initial measurement, characterization and sorting	4958 days	Mon 16-01-12	Tue 31-12-30	4958 days	Mon 16-01-12
2877	05.0502	05.0502 Temporary storage of non-radioactive materials	4958 days	Mon 16-01-12	Tue 31-12-30	4958 days	Mon 16-01-12
2879	05.0502.2	02 Temporary storage at site for non-radioactive materials	3623 days	Thu 16-02-17	Tue 31-12-30	3623 days	Thu 16-02-17
2880	05.0503	05.0503 Temporary storage of radioactive materials	4958 days	Mon 16-01-12	Tue 31-12-30	4958 days	Mon 16-01-12
2882	05.0503.2	02. Temporary storage in Reactor Buildings	4043 days	Wed 15-07-15	Tue 31-12-30	4043 days	Wed 15-07-15
2883	05.0503.3	03. Temporary storage at sites for 20'ISO containers	3623 days	Thu 16-02-17	Tue 31-12-30	3623 days	Thu 16-02-17
2884	05.0504	05.0504 Decontamination of radioactive materials in SRDW	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2885	05.0504.1	01. Unloading the ISO containers	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2886	05.0504.2	02. Incoming radiation monitoring	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2887	05.0504.3	03. Sorting of materials	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2888	05.0504.4	04. Decontamination of materials	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2889	05.0504.4.1	Size reduction	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2890	05.0504.4.2	Mechanical decontamination	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2891	05.0504.4.3	Chemical decontamination	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2892	05.0504.5	05. Management of generated secondary RAW	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2893	05.0504.5.1	Collection of solid RAW in suitable packages (200 l barrels)	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2894	05.0504.5.2	Temporary storage of liquid RAW in 20 m3 tank	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2895	05.0504.6	06. Intermediate radiation monitoring	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2896	05.0504.7	07. Outgoing radiation monitoring	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2897	05.0504.8	08. Loading decontaminated materials in ISO Containers and transportation for free release measurements	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2898	05.0504.9	09. Loading materials including secondary solid Raw in 12 m3 or 6 m3 containers and transportation to RAW TF	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2899	05.0504.10	10. Loading the secondary liquid RAW in mobile 10 m3 tank and transportation to RAW TF	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2900	05.0504.11	11. Utilities, spare parts and consumables for the operation of SRDW	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2901	05.0504.11.1	Power supply	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2902	05.0504.11.2	Demineralized Water	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2903	05.0504.11.3	Service water	3540 days	Mon 12-06-17	Tue 31-12-30	3540 days	Mon 12-06-17
2905	05.0505	05.0505 Measurements for release from Regulation	4701 days	Wed 09-01-13	Tue 31-12-30	4701 days	Wed 09-01-13



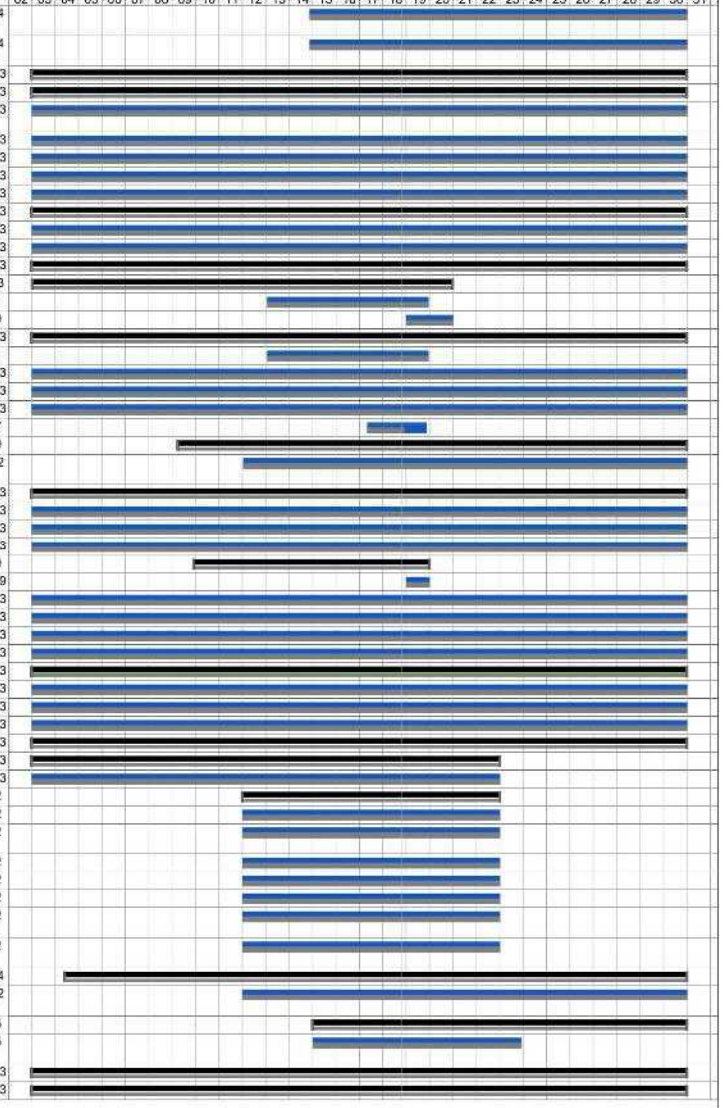
AWP 2019 - Units 1 to 4 Decommissioning Schedule

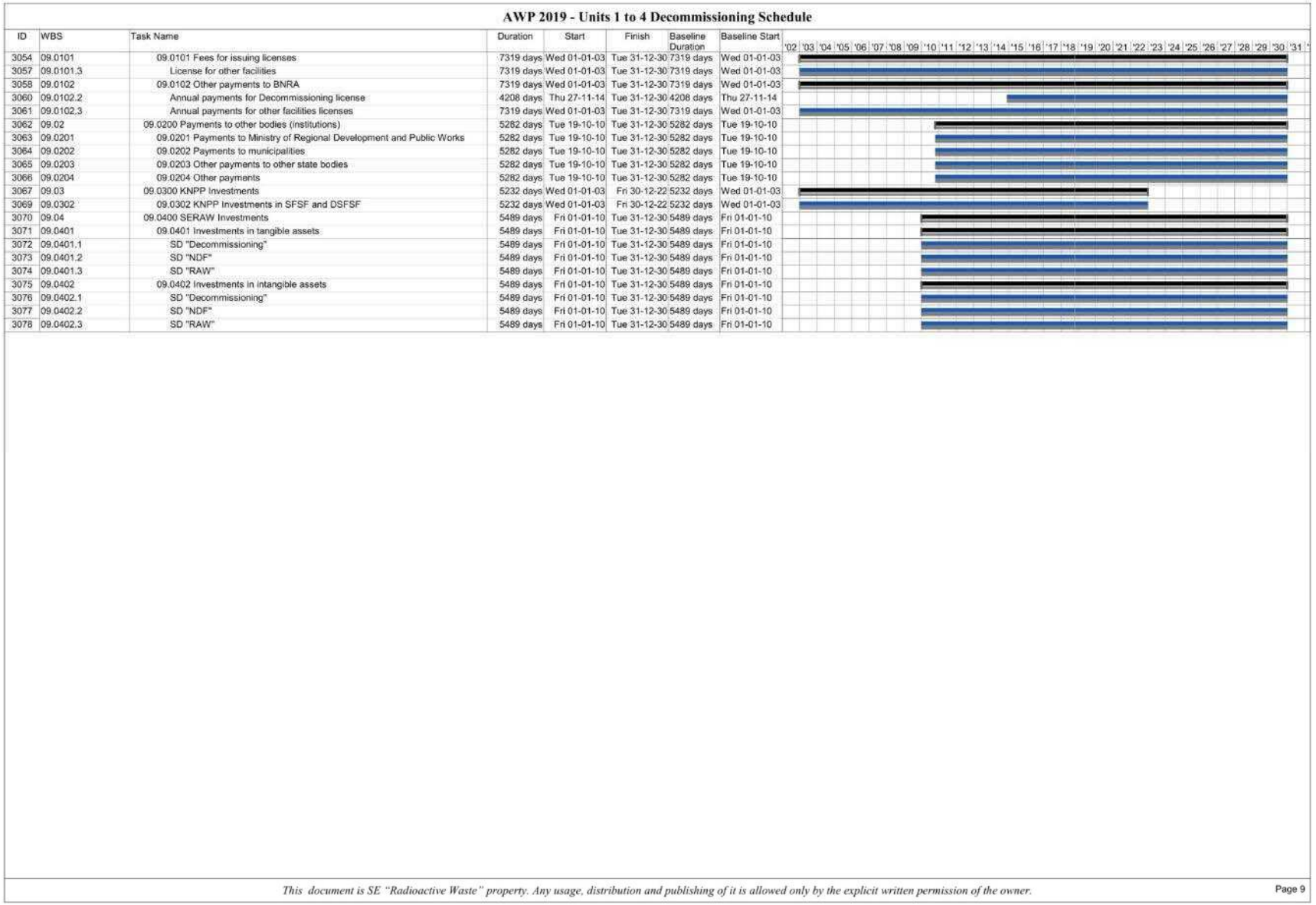
ID	WBS	Task Name	Duration	Start	Finish	Baseline Duration	Baseline Start
2907	05.0505.2	02. Measurements performed by specialized unit of SERAW	3414 days	Mon 04-12-17	Tue 31-12-30	3414 days	Mon 04-12-17
2908	05.0506	05.0506 Disposal of non-radioactive waste	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2909	05.0507	05.0507 Processing the decommissioning solid waste in RAW TF	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2910	05.0508	05.0508 Processing the secondary liquid waste from SRDW in RAW TF	3514 days	Mon 17-07-17	Tue 31-12-30	3514 days	Mon 17-07-17
2911	05.0509	05.0509 Processing the decommissioning liquid waste from AB-2 (or temporary tank) in RAW TF	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2912	05.0509.1	01. Retrieval of liquid waste from Evaporator Concentrate Tanks in AB-2 (or temporary tank)	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2913	05.0509.2	02. Transportation to RAW TF via 10 m3 mobile tank	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2914	05.0509.3	03. Unloading in receiver tanks for non-concentrated Evaporator Concentrate	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2915	05.0509.4	04. Evaporation to 40% salts content	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2916	05.0509.5	05. Transportation in tanks for concentrated Evaporator Concentrate	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2917	05.0509.6	06. Mixing with cement	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2918	05.0509.7	07. Filling in RCC type 3	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2919	05.0510	05.0510 Procurement/ Manufacturing of RCC for conditioning decommissioning waste	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2921	05.0510.2	02. Manufacturing of RCC	5248 days	Mon 06-12-10	Tue 31-12-30	5248 days	Mon 06-12-10
2922	05.0511	05.0511 Final conditioning of decommissioning waste in RCC	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2923	05.0511.1	01. Final conditioning in RCC type 1	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2924	05.0511.2	02. Final conditioning in RCC type 2	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2925	05.0511.3	03. Final conditioning in RCC type 3	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2926	05.0511.3.1	Barrels from PMF	3437 days	Wed 01-11-17	Tue 31-12-30	3437 days	Wed 01-11-17
2927	05.0511.3.2	Barrels from 9b-2	3110 days	Thu 31-01-19	Tue 31-12-30	3110 days	Thu 31-01-19
2928	05.0511.3.3	RAW from decommissioning activities	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2929	05.0511.4	04. 2 days temporary storage of RCC type 2 in a depot designed for storing filled containers	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2930	05.0511.5	05. 7 days temporary storage of RCC type 3 in a depot designed for storing filled containers	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2931	05.0512	05.0512 Temporary storage of RCC with decommissioning waste	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2932	05.0512.1	01. Temporary storage of RCC type 1 before release from regulation (not earlier then 25 years of storage)	6012 days	Tue 01-01-08	Tue 31-12-30	6012 days	Tue 01-01-08
2933	05.0512.2	02. Temporary storage of RCC type 2 before release from regulation or final disposal (not earlier then 30 years of storage)	6010 days	Thu 03-01-08	Tue 31-12-30	6010 days	Thu 03-01-08
2934	05.0512.3	03. Temporary storage of RCC type 3 before final disposal	6007 days	Tue 08-01-08	Tue 31-12-30	6007 days	Tue 08-01-08
2943	05.06	05.0600 Activities related to radioactively contaminated soils	3136 days	Thu 01-06-17	Fri 01-06-29	1570 days	Thu 01-06-17
2944	05.0601	05.0601 Inventory of soils and develop remediation strategy (phase 1 of 23)	1721 days	Thu 01-06-17	Fri 29-12-23	676 days	Thu 01-06-17
2946	05.07	05.0700 Removal of sludge from Turbine hall elevation -3.60	2146 days	Mon 05-12-16	Tue 18-02-25	1697 days	Mon 05-12-16
2949	05.0703	05.0703 Retrieval and processing of sludge from Turbine hall Units 1 to 4	268 days	Thu 03-01-19	Mon 13-01-20	268 days	Mon 08-05-17
2950	05.0704	05.0704 Buffer storage of sludge before release from regulation	1580 days	Thu 31-01-19	Tue 18-02-25	1320 days	Fri 11-05-18
2955	06	06 Site Infrastructure and Operation	7319 days?	Wed 01-01-03	Tue 31-12-30	7319 days?	Wed 01-01-03
2956	06.01	06.0100 Site security and surveillance	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2962	06.0104	06.0104 Site security and personnel access	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2963	06.02	06.0200 Site operation and maintenance	7319 days?	Wed 01-01-03	Tue 31-12-30	7319 days?	Wed 01-01-03
2966	06.0203	06.0203 Independent infrastructure separation between KNPP and SERAW (35)	1232 days	Tue 01-01-19	Tue 19-09-23	820 days	Mon 01-05-17
2968	06.0205	06.0205 Inspection and maintenance of buildings and systems	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2969	06.0206	06.0206 Site upkeep activities	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2970	06.0206.1	01. Grounds keeping	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2971	06.0206.2	02. Mowing grass	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2972	06.0206.3	03. Maintenance of internal roads	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2973	06.0206.4	04. Miscellaneous trash	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2974	06.0207	06.0207 Utilities	7319 days?	Wed 01-01-03	Tue 31-12-30	7319 days?	Wed 01-01-03
2975	06.0207.1	01. Power supply	7319 days?	Wed 01-01-03	Tue 31-12-30	7319 days?	Wed 01-01-03
2976	06.0207.2	02. Water	7319 days?	Wed 01-01-03	Tue 31-12-30	7319 days?	Wed 01-01-03
2977	06.0207.3	03. Heat	7319 days?	Wed 01-01-03	Tue 31-12-30	7319 days?	Wed 01-01-03
2978	06.03	06.0300 Operation of support systems	4216 days	Mon 17-11-14	Tue 31-12-30	4216 days	Mon 17-11-14
2979	06.0301	06.0301 Readjustment and operation of electrical and lighting systems according to the requirements of decommissioning	4216 days	Mon 17-11-14	Tue 31-12-30	4216 days	Mon 17-11-14
2980	06.0302	06.0302 Readjustment and operation of ventilation systems according to the requirements of decommissioning	4216 days	Mon 17-11-14	Tue 31-12-30	4216 days	Mon 17-11-14
2981	06.0303	06.0303 Readjustment and operation of heat and steam systems according to the requirements of decommissioning	4216 days	Mon 17-11-14	Tue 31-12-30	4216 days	Mon 17-11-14
2982	06.0304	06.0304 Readjustment and operation of water supply and fire extinguishing systems according to the requirements of decommissioning	4216 days	Mon 17-11-14	Tue 31-12-30	4216 days	Mon 17-11-14



AWP 2019 - Units 1 to 4 Decommissioning Schedule

ID	WBS	Task Name	Duration	Start	Finish	Baseline Duration	Baseline Start
2983	06.0305	06.0305 Readjustment and operation of sewage systems according to the requirements of decommissioning	4216 days	Mon 17-11-14	Tue 31-12-30	4216 days	Mon 17-11-14
2984	06.0306	06.0306 Readjustment and operation of compressed air systems according to the requirements of decommissioning	4216 days	Mon 17-11-14	Tue 31-12-30	4216 days	Mon 17-11-14
2985	06.04	06.0400 Radiation and environmental safety monitoring	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
2987	06.0402	06.0402 Radiation protection and monitoring	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
2988	06.0402.1	01. Maintaining documentation of the facility's changing radiological conditions	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
2989	06.0402.2	02. Area monitoring	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
2990	06.0402.3	03. Personal dosimetry	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
2991	06.0402.4	04. Personal radiation counting	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
2992	06.0402.5	05. Operational activities	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
2993	06.0403	06.0403 Environmental protection and radiation environmental monitoring	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
2994	06.0403.1	01. Monitoring and recording the airborne releases	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
2995	06.0403.2	02. Monitoring and recording the liquid releases	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
2996	07	07 Project Management, Engineering and Support	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
2997	07.01	07.0100 Project Management by Consultant	4699 days	Mon 13-01-03	Mon 28-12-20	4699 days	Mon 13-01-03
3000	07.0103	07.0103 D-R CON	1802 days	Fri 25-01-13	Mon 09-12-19	1802 days	Fri 25-01-13
3001	07.0104	07.0104 Consultant TBD	520 days	Tue 01-01-19	Mon 28-12-20	520 days	Tue 01-01-19
3002	07.02	07.0200 Project Management	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
3005	07.0203	07.0203 Project Management for D-R PMU	1802 days	Fri 25-01-13	Mon 09-12-19	1802 days	Fri 25-01-13
3006	07.0204	07.0204 Quality assurance and quality surveillance	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
3007	07.0205	07.0205 General administration and accounting	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
3008	07.0206	07.0206 Public relations	7318 days	Wed 01-01-03	Mon 30-12-30	7318 days	Wed 01-01-03
3009	07.0207	07.0207 Information Centre for Decommissioning (20)	667 days	Tue 02-05-17	Fri 15-11-19	417 days	Tue 02-05-17
3011	07.03	07.0300 Decommissioning management system	5685 days	Thu 02-04-09	Tue 31-12-30	5685 days	Thu 02-04-09
3015	07.0304	07.0304 Operation of System for Management of Decommissioning Materials	4958 days	Mon 16-01-12	Tue 31-12-30	4958 days	Mon 16-01-12
3017	07.04	07.0400 Support services	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3018	07.0401	07.0401 Engineering Support	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3019	07.0402	07.0402 Waste management support	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3020	07.0403	07.0403 Decommissioning support including chemistry, decontamination	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3021	07.0404	07.0404 Training and Development in Decommissioning (27)	2640 days	Tue 01-12-09	Mon 30-12-19	2640 days	Tue 01-12-09
3023	07.0404.2	02. SERAW Training and Development in Decommissioning	259 days	Wed 02-01-19	Mon 30-12-19	259 days	Wed 02-01-19
3024	07.0405	07.0405 Training of personnel	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3025	07.0406	07.0406 Documentation and records control	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3026	07.0407	07.0407 Procurement, warehousing and materials handling	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3027	07.0408	07.0408 Housing, office equipment, support services	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3028	07.05	07.0500 Health and safety	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3029	07.0501	07.0501 Health physics	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3030	07.0502	07.0502 Industrial safety	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3031	07.0503	07.0503 Personnel safety equipment and work clothing	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3032	08	08 Fuel and Activated Material	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3033	08.01	08.0100 Temporary storage of spent fuel in Spent Fuel Storage Facility	5232 days	Wed 01-01-03	Fri 30-12-22	5232 days	Wed 01-01-03
3034	08.0101	08.0101 Safe storage of fuel in Spent Fuel Storage Facility	5232 days	Wed 01-01-03	Fri 30-12-22	5232 days	Wed 01-01-03
3035	08.0102	08.0102 Loading the fuel in dedicated casks Constor 440/84	2880 days	Tue 03-01-12	Fri 30-12-22	2880 days	Tue 03-01-12
3036	08.0102.1	01. Transport of empty cask from DSFSF to SFSF	2880 days	Tue 03-01-12	Fri 30-12-22	2880 days	Tue 03-01-12
3037	08.0102.2	02. Preparation for loading, SNF refuelling and measuring the depth of burning	2880 days	Tue 03-01-12	Fri 30-12-22	2880 days	Tue 03-01-12
3038	08.0102.3	03. Preparation for drying	2880 days	Tue 03-01-12	Fri 30-12-22	2880 days	Tue 03-01-12
3039	08.0102.4	04. Vacuum drying	2880 days	Tue 03-01-12	Fri 30-12-22	2880 days	Tue 03-01-12
3040	08.0102.5	05. Sealing the first lid, check of density	2880 days	Tue 03-01-12	Fri 30-12-22	2880 days	Tue 03-01-12
3041	08.0102.6	06. Welding a sealing plate and a second lid. Control of quality of welding scam	2880 days	Tue 03-01-12	Fri 30-12-22	2880 days	Tue 03-01-12
3042	08.0103	08.0103 Transfer casks from Spent Fuel Storage Facility to Dry Spent Fuel Storage Facility	2880 days	Tue 03-01-12	Fri 30-12-22	2880 days	Tue 03-01-12
3044	08.02	08.0200 Dedicated storage for fuel and activated material	6949 days	Mon 31-05-04	Tue 31-12-30	6949 days	Mon 31-05-04
3046	08.0202	08.0202 Temporary storage of casks with spent fuel in Dry Spent Fuel Storage Facility	4968 days	Mon 02-01-12	Tue 31-12-30	4968 days	Mon 02-01-12
3047	08.03	08.0300 Temporary Storage of activated material	4183 days	Thu 01-01-15	Tue 31-12-30	4183 days	Thu 01-01-15
3051	08.0304	08.0304 Temporary storage of boron absorbers and dummy assemblies in Reactor Building	2336 days	Thu 01-01-15	Fri 01-12-23	2336 days	Thu 01-01-15
3052	09	09 Miscellaneous Expenditures	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3053	09.01	09.0100 Payments to BNRA	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03





AWP 2019 - Units 1 to 4 Decommissioning Schedule

ID	WBS	Task Name	Duration	Start	Finish	Baseline Duration	Baseline Start
3054	09.0101	09.0101 Fees for issuing licenses	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3057	09.0101.3	License for other facilities	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3058	09.0102	09.0102 Other payments to BNRA	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3060	09.0102.2	Annual payments for Decommissioning license	4208 days	Thu 27-11-14	Tue 31-12-30	4208 days	Thu 27-11-14
3061	09.0102.3	Annual payments for other facilities licenses	7319 days	Wed 01-01-03	Tue 31-12-30	7319 days	Wed 01-01-03
3062	09.02	09.0200 Payments to other bodies (institutions)	5282 days	Tue 19-10-10	Tue 31-12-30	5282 days	Tue 19-10-10
3063	09.0201	09.0201 Payments to Ministry of Regional Development and Public Works	5282 days	Tue 19-10-10	Tue 31-12-30	5282 days	Tue 19-10-10
3064	09.0202	09.0202 Payments to municipalities	5282 days	Tue 19-10-10	Tue 31-12-30	5282 days	Tue 19-10-10
3065	09.0203	09.0203 Other payments to other state bodies	5282 days	Tue 19-10-10	Tue 31-12-30	5282 days	Tue 19-10-10
3066	09.0204	09.0204 Other payments	5282 days	Tue 19-10-10	Tue 31-12-30	5282 days	Tue 19-10-10
3067	09.03	09.0300 KNPP Investments	5232 days	Wed 01-01-03	Fri 30-12-22	5232 days	Wed 01-01-03
3069	09.0302	09.0302 KNPP Investments in SFSF and DSFSF	5232 days	Wed 01-01-03	Fri 30-12-22	5232 days	Wed 01-01-03
3070	09.04	09.0400 SERAW Investments	5489 days	Fri 01-01-10	Tue 31-12-30	5489 days	Fri 01-01-10
3071	09.0401	09.0401 Investments in tangible assets	5489 days	Fri 01-01-10	Tue 31-12-30	5489 days	Fri 01-01-10
3072	09.0401.1	SD "Decommissioning"	5489 days	Fri 01-01-10	Tue 31-12-30	5489 days	Fri 01-01-10
3073	09.0401.2	SD "NDF"	5489 days	Fri 01-01-10	Tue 31-12-30	5489 days	Fri 01-01-10
3074	09.0401.3	SD "RAW"	5489 days	Fri 01-01-10	Tue 31-12-30	5489 days	Fri 01-01-10
3075	09.0402	09.0402 Investments in intangible assets	5489 days	Fri 01-01-10	Tue 31-12-30	5489 days	Fri 01-01-10
3076	09.0402.1	SD "Decommissioning"	5489 days	Fri 01-01-10	Tue 31-12-30	5489 days	Fri 01-01-10
3077	09.0402.2	SD "NDF"	5489 days	Fri 01-01-10	Tue 31-12-30	5489 days	Fri 01-01-10
3078	09.0402.3	SD "RAW"	5489 days	Fri 01-01-10	Tue 31-12-30	5489 days	Fri 01-01-10

Figure 2: AWP 2019 - Units 1 to 4 Decommissioning Schedule

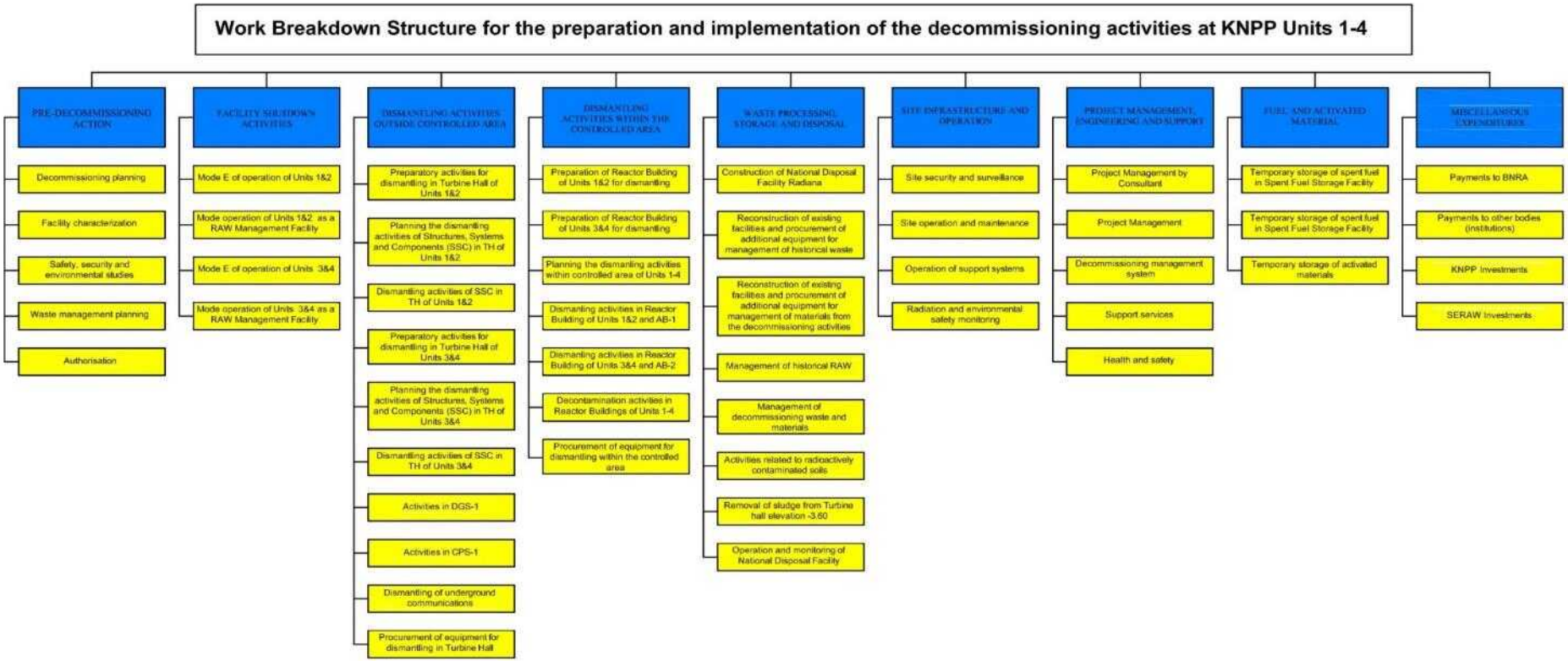


Figure 3: Work Breakdown Structure

Table 11: Funding by Sector and Subsector (% of total annual EU funding)

Sector			Allocated to Projects					
		< 2014	2014	2015	2016	2017	2018	2019	2020
1. Decommissioning		-	-	-	-	-	-	-	-
1A	Decontamination and dismantling	38.08	83.79	81.79	74.8	72.5	31.1	30.1	-
1B	Waste storage & disposal	11.83	7.98	11.98	15.9	6.7	56.6	54.9	-
1C	Regulatory and administrative assistance	3.43	7.73	5.73	8.9	5.0	2.4	3.7	-
1D	Pre-decommissioning activities	1.14	0.5	0.5	0.4	1.0	0.6	0.6	-
2. Programme Administration		-	-	-	-	-	-	-	-
2A	Administrative overheads of the programme	-	-	-	-	14.8	9.3	10.7	-
2B	Technical assistance in programme admin.	-	-	-	-	-	-	-	-
3. Other – energy sector consequential measures		-	-	-	-	-	-	-	-
3A	Energy infrastructure	26.0	X	X	X	X	X	X	X
3B	Energy efficiency	17.8	X	X	X	X	X	X	X

Table 12: Overview table – Staff allocation (in full time equivalent)

Key phases	Staff - actually allocated*	Staff - recently estimated allocation*	Staff – planned allocation*
	2017	2018	2019
01 Pre-decommissioning actions	7	4	2
02 Facility shutdown activities	44	22	12
03 Dismantling activities outside controlled area	89	83	15
04 Dismantling activities within the controlled area	159	215	308
05 Waste Processing, Storage and Disposal	237	204	191
06 Site Infrastructure and Operation	124	77	77
07 Project Management, Engineering and Support	76	56	56
08 Fuel and Activated Material	5	5	5
09 Miscellaneous Expenditures	0	0	0
Total staff allocated:	**741**	**666**	**666**

* The number of the allocated staff includes staff dealing with decommissioning activities related to NDF and RAW TF. For 2017, 650 is the number of allocated staff financed through **GA048B**, and for 2018 and 2019 respectively – 570 through **GA048C**.

5. REFERENCES

[1] Decommissioning Strategy Update for Units 1-4 of Kozloduy NPP, Plc , KPMU/DCS/001, June 2006;

[2] Strategy for the Management of Spent Fuel and Radioactive Waste until 2030, September 2015;

[3] International Structure for Decommissioning Costing (ISDC) of Nuclear Installations", NEA7088, OECD 2012;

[4] Technical Specification, outline of works allocation and cost breakdown of activities, offered by SE RAW for the implementation of the Decommissioning Programme of Units 1-4 (1st January, 2018 — 31st December, 2019)

[5] Key performance indicators regarding decommissioning of Units 1 – 4 of Kozloduy NPP, D-R PMU/D-KPI/001, April 2014