MISSION REPORT

ON

THE INTEGRATED NUCLEAR INFRASTRUCTURE REVIEW (INIR) - PHASE 3

Counterpart: Nuclear Energy Department, Ministry of Energy of the Republic of Belarus

24 February – 4 March 2020

Minsk, Belarus

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EXECUTIVE SUMMARY

On 15 January 2008, at a session of the Security Council of the Republic of Belarus, it was decided to build a nuclear power plant in the country with a total capacity of about 2000 MWe. The Russian Federation was selected as strategic partner, necessary intergovernmental agreements were signed, and in 2012, the general contract on construction was concluded. Belarus has established a legal and regulatory framework and developed the key organizations.

In 2019, the Republic of Belarus requested the International Atomic Energy Agency (IAEA) to carry out a Phase 3 Integrated Nuclear Infrastructure Review (INIR) mission. Belarus submitted its Self-Evaluation Report (SER) with the supporting documents to the IAEA on 24 December 2019. A pre-INIR mission was conducted from 14 to 15 January 2020.

The main INIR mission was conducted from 24 February to 4 March 2020. The INIR mission team was led by Mr Milko Kovachev, Head of the Nuclear Infrastructure Development Section of the IAEA, and consisted of staff from the IAEA Departments of Nuclear Energy, Nuclear Safety and Security, and Safeguards as well as international experts.

The INIR mission and associated activities were funded through the IAEA Technical Cooperation Programme and an extra-budgetary contribution through the Peaceful Uses Initiative (PUI) Project entitled *Strengthening Nuclear Power Infrastructure Development in Member States and the Nuclear Security Fund*.

Belarus was well prepared for the mission and managed its participation in the review effectively. During the interviews, the Belarusian counterparts provided an update on the status of issues where progress had been made since the SER was finalized, and provided additional information and supporting documentation.

The INIR team concluded that Belarus is close to completing the required nuclear power infrastructure for starting the operation of its first nuclear power plant (NPP). It has competent organizations and is finalising its activities to prepare for start up of the first unit.

In order to assist the Belarus in completing and maintaining its infrastructure development, the INIR team made 7 Recommendations and 6 Suggestions. The INIR team also identified 5 Good Practices that may benefit other countries implementing a nuclear power programme.

Based on the recommendations and suggestions, the key areas for further action are summarized below:

- **Belarus Needs to Further Develop its Legal Framework and Certain Institutional Arrangements**

Belarus has established a comprehensive legal framework through a series of laws, decrees and regulations, is a party to most of the international legal instruments, and has established the key organizations. Belarus needs to consolidate and strengthen its nuclear legislation and adhere to and implement the remaining international legal instruments to which Belarus is not yet a party. Belarus has an independent regulatory body but needs to reconsider its arrangements regarding the use of advisory and expert organizations. The draft decree regarding the establishment of funds for decommissioning and radioactive waste management

needs to be reviewed and approved and the responsibility for establishing the waste management organization allocated.

- **It is Necessary for Belenergo and Belarusian NPP to Finalize the Remaining Arrangements for Sustainable Operation of the Nuclear Power Plant**

Belarusian NPP has undertaken considerable work to develop the capabilities and arrangements for operation. It is necessary for Belarusian NPP to finalize all necessary programmes for starting operation and complete the interface provisions with Belenergo. During the warranty period, Belarusian NPP needs to establish long term arrangements for maintenance, involving national industries as appropriate. Belarusian NPP also needs to further develop the capability to assume the design authority function.

1. INTRODUCTION

The total installed electricity capacity in Belarus is 10 080 MWe. About 99% of electricity is produced from imported natural gas. The Energy Policy 2007 called for commissioning of a nuclear power plant by 2020. On 15 January 2008, at a session of the Security Council of the Republic of Belarus, it was decided to build a nuclear power plant in the country with a total capacity of about 2000 MWe. The Russian Federation was selected as strategic partner and intergovernmental agreements were signed. In 2012, the general contract was concluded to construct two WWER-1200 MWe units at the Ostrovets site. Construction has been progressing and the commissioning of the first unit is expected to take place in 2020.

On 25 February 2019, the Republic of Belarus requested the International Atomic Energy Agency (IAEA) to carry out a Phase 3 Integrated Nuclear Infrastructure Review (INIR) mission. On 16 April 2019, the IAEA agreed to conduct the INIR Phase 3 mission and requested that a Self-Evaluation Report (SER) be prepared using the Evaluation of the Status of National Nuclear Infrastructure Development at Milestone 3 (IAEA Working Document 2016). Preparatory work was performed in Vienna by the IAEA contributing to the SER on the base of the existing information from previous review mission reports and national reports presented by Belarus during the review meetings of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management and the Convention on Nuclear Safety. Belarusian counterparts submitted the final version of the SER on 24 December 2019. A pre-INIR mission was conducted from 14 to 15 January 2020.

The main INIR mission was conducted from 24 February to 4 March 2020. Mr Viktor Karankevich, Minister of Energy, and Mr Mikhail Mikhadzuk, Deputy Minister of Energy, participated in the opening session and the exit meeting of the INIR mission. Mr Mikhail Chudakov, IAEA Deputy Director General and Head of the Department of Nuclear Energy, participated in the exit meeting.

The INIR mission team was led by Mr Milko Kovachev, Head of the Nuclear Infrastructure Development Section of the IAEA, and consisted of staff from the IAEA Departments of Nuclear Energy, Nuclear Safety and Security, and Safeguards as well as international experts.

The INIR mission and associated activities were funded through the IAEA Technical Cooperation Programme and an extra-budgetary contribution through the Peaceful Uses Initiative (PUI) Project Strengthening Nuclear Power Infrastructure Development in Member States and the Nuclear Security Fund.

Prior to the INIR Phase 3 mission, Belarus hosted the IAEA review and advisory services for specific areas of its nuclear power programme. These included the Integrated Nuclear Infrastructure Review (INIR) Phase 1&2 Mission, the Integrated Regulatory Review Service (IRRS), the Site and External Events Design (SEED), the Emergency Preparedness Review (EPREV), the SSAC Advisory Service (ISSAS) and the Pre-Operational Safety Review Team (Pre-OSART). Those services provided recommendations and suggestions for further improvement on the respective areas of review. Belarus has requested an International Physical Protection Advisory Service (IPPAS) mission which will be conducted in 2021.

2. OBJECTIVES OF THE MISSION

The main objectives of the INIR mission were to:

— Evaluate the development status of the national infrastructure to support the nuclear power programme according to the IAEA publication entitled *Milestones in the Development of a National Infrastructure for Nuclear Power, IAEA Nuclear Energy Series No.* NG-G-3.1 (Rev. 1) and the evaluation conditions described in the *Evaluation of the Status of National Nuclear Infrastructure Development at Milestone 3 (IAEA Working Document 2016);*

— Identify the areas needing further actions to reach Milestone 3: *Ready to commission and operate the first nuclear power plant;*

— Provide recommendations and suggestions which can be used by the Government of the Republic of Belarus and national institutions to prepare an action plan.

3. SCOPE OF THE MISSION

The INIR mission evaluated the status of the infrastructure in the Republic of Belarus covering all 19 infrastructure issues relative to the conditions identified in the IAEA publication *Evaluation of the Status of National Nuclear Infrastructure Development at Milestone 3 (IAEA Working Document 2016).*

4. WORK DONE

Prior to the mission, the INIR team reviewed the SER and supporting documentation that included relevant national laws, regulations, studies and reports. The INIR team sought input from the IAEA staff members with relevant expertise working with the Republic of Belarus. INIR team meetings were conducted prior to the mission in Vienna from 20 to 21 February 2020 and in Minsk on 23 February 2020.

The main INIR mission was conducted from 24 February to 4 March 2020. The meetings were held at the Ministry of Energy in Minsk. The interviews were conducted over five days. Belarus was well prepared for the mission and managed its participation in the review effectively. During the interviews, the Belarusian counterparts provided an update on the

status of issues where progress had been made since the SER was finalized, and provided additional information and supporting documentation.

The preliminary draft report was prepared by the INIR team and discussed with the counterparts. The main mission results were presented to Belarus at an exit meeting on 4 March 2020. The preliminary draft report was provided to the counterparts during this meeting.

The results of the mission are summarized in Section 5 and presented in tabular form in Section 6 for each of the 19 infrastructure issues. Appendix 1 provides the evaluation results for each issue.

The INIR mission was conducted in a cooperative manner. The mission was coordinated on the Belarusian side by the Department of Nuclear Energy of the Ministry of Energy with participants representing relevant organizations involved in the nuclear power programme and corresponding infrastructure development (the full list of participants is in Appendix 2).

5. MAIN CONCLUSIONS

The INIR team concluded that Belarus is close to completing the required nuclear power infrastructure for starting the operation of its first nuclear power plant (NPP). It has competent organizations, and is finalising its activities to prepare for start up of the first unit.

In order to assist the Belarus in completing and maintaining its infrastructure development, the INIR team made 7 Recommendations and 6 Suggestions. The INIR team also identified 5 Good Practices that may benefit other countries implementing a nuclear power programme.

Based on the recommendations and suggestions, the key areas for further action are summarized below:

- **Belarus Needs to Further Develop its Legal Framework and Certain Institutional Arrangements**

Belarus has established a comprehensive legal framework through a series of laws, decrees and regulations, is a party to most of the international legal instruments, and has established the key organizations. Belarus needs to consolidate and strengthen its nuclear legislation and adhere to and implement the remaining international legal instruments to which Belarus is not yet a party. Belarus has an independent regulatory body but needs to reconsider its arrangements regarding the use of advisory and expert organizations. The draft decree regarding the establishment of funds for decommissioning and radioactive waste management needs to be reviewed and approved and the responsibility for establishing the waste management organization allocated.

- **It is Necessary for Belenergo and Belarusian NPP to Finalize the Remaining Arrangements for Sustainable Operation of the Nuclear Power Plant**

Belarusian NPP has undertaken considerable work to develop the capabilities and arrangements for operation. It is necessary for Belarusian NPP to finalize all necessary programmes for starting operation and complete the interface provisions with Belenergo. During the warranty period, Belarusian NPP needs to establish long term arrangements for maintenance, involving national industries as appropriate. Belarusian NPP also needs to

further develop the capability to assume the design authority function.

Recommendations

R-1.1.1 The Government of Belarus should ensure that Gosatomnadzor has the means to directly contract for timely expert support to assure its regulatory independence.

R-3.1.1 Belarusian NPP and Belenergo should make the necessary arrangements for ensuring maintenance of the NPP after the warranty period.

R-4.2.1 Belarus should revise the draft decree to ensure that sufficient funds will be accumulated for spent fuel management, radioactive waste management and decommissioning.

R-5.1.1 Belarus should adhere to the Amendment to the CPPNM and bring into force the Protocol Additional to its Comprehensive Safeguards Agreement.

R-5.1.2 Belarus should consolidate and strengthen its legal framework to support effectively its nuclear power programme.

R-7.2.1 Gosatomnadzor should complete the development of its Integrated Management System and implement it.

R-15.1.1 Belarusian NPP should put the physical protection system into operation before the delivery of the fuel.

Suggestions

S-2.4.1 Belarusian NPP is encouraged to complete the arrangements to assume the design authority function by the end of the warranty period.

S-3.3.1 Belarusian NPP is encouraged to complete the development of all elements of its integrated management system.

S-7.1.1 Belarus is encouraged to consider the scope and positioning of the Advisory Council taking into account the need for independent decision making by the regulatory body.

S-9.3.1 Belenergo and Belarusian NPP are encouraged to complete the development of instructions to ensure restart of the grid system in the event of total collapse, and train staff in their use.

S-17.2.1 Belarus is encouraged to allocate responsibility for establishing the radioactive waste management organization.

S-18.1.1 Belarus is encouraged to develop a plan for the participation of Belarusian companies in the operational phase.

Good Practices

GP-1.1.1 Engagement and leadership of high-level decision makers through regular meetings of the Inter Departmental Committee and close programme and project monitoring.

GP-1.3.1 Utilizing international peer review services at appropriate times in the development of nuclear power infrastructure and monitoring the implementation of the corresponding national action plans.

GP-7.4.1 Active engagement of Gosatomnadzor with other regulatory bodies and

international organizations in the area of regulatory practices.

GP-11.1.1 Active engagement with the international community in areas such as environmental impact assessment and monitoring, emergency preparedness and response, and post Fukushima stress tests.

GP-14.3.1 Effective coordination and systematic approach in developing, reviewing, testing, updating emergency and contingency plans and training at all levels for all organizations involved.

6. EVALUATION RESULTS FOR PHASE 3

For the purposes of the INIR mission results, the following definitions are used:

Significant* actions needed:

The review observations indicate that important work still needs to be initiated or completed to meet the condition.

Minor* actions needed:

The review observations indicate that some additional work or steps are needed to meet the condition or that plans for the next phase need to be enhanced.

No actions needed:

The available evidence indicates that all the work to meet the condition has been completed.

*The judgment whether the actions are significant or minor is based on the importance of the work to the overall programme and/or the resources needed to complete it. The classification is done through a consensus of the INIR team and is not based solely upon the judgment of any individual team member.

Recommendations:

Recommendations are proposed when the expectations of the condition have not been met. A recommendation should:

— Emphasize 'what' needs to be done, not 'how';

— Be based on the IAEA Milestones Approach / Evaluation Methodology;

— Be succinct, self-explanatory and achievable;

— Be supported by the Review Observation text—a 'gap' must be identified; already planned work can still be a recommendation if it is required to reach the milestone.

Suggestions:

Suggestions propose the consideration of new or different approaches to develop infrastructure and enhance performance, or to point out better alternatives to current work. A suggestion:

— Should be clear and self-explanatory;

— Should be supported by the Review Observation text;

— May relate to work already under consideration for the next phase.

Good practices:

A good practice is identified in recognition of an outstanding practice or arrangement, superior to those generally observed elsewhere. It is more than fulfilment of the conditions or expectation, and worthy of the attention of other countries involved in the development of nuclear infrastructure as a model in the drive for excellence.

It should be noted that the results summarized in the following tables neither validate the country actions and programmes, nor certify the quality and completeness of the work done by a country.

1. National position	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
1.1. Government role assigned and effective	**X**		
1.2. National strategy successfully implemented			**X**
1.3. Long term support through international cooperation evident			**X**
2. Nuclear safety	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
2.1. Basis of safety understood			**X**
2.2. Leadership and safety culture evident			**X**
2.3. Action plan in place to address any outstanding licensing issues			**X**
2.4. Owner/operator design integrity process defined and effective		**X**	
3. Management	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
3.1. Ongoing arrangements for support clear	**X**		
3.2. Structure and staffing of the operating organization adequate for commissioning and operation			**X**
3.3. Management system for operation developed		**X**	
3.4. Mechanisms for verification of construction and for handover of systems, structures and components from main supplier in place			**X**

4. Funding and financing	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
4.1. Adequate income to sustain operation obtained			**X**
4.2. Funding mechanisms in place for waste management, long term spent fuel management and decommissioning	**X**		
4.3. Civil liability for nuclear damage in place			**X**
5. Legal framework	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
5.1. Legal framework implemented and being reviewed as necessary	**X**		
6. Safeguards	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
6.1. An SSAC that is operational for the nuclear power programme			**X**
7. Regulatory framework	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
7.1. Competent and Independent regulatory body operating effectively		**X**	
7.2. Management system in place		**X**	
7.3. Regulations in place			**X**
7.4. Arrangements in place for co-operation with regulatory bodies in other countries			**X**

8. Radiation protection	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
8.1. Equipment for dose monitoring and control in place			**X**
8.2. Programmes to optimize doses from operation and maintenance in place			**X**
9. Electrical grid	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
9.1. Interface between operating organization and grid company effective			**X**
9.2. Plans for grid enhancement executed			**X**
9.3. Grid reliability demonstrated		**X**	
10. Human resource development	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
10.1. On-going human resource development programme in the operating organisation effective			**X**
10.2. Ongoing human resource development programme in the regulatory body effective			**X**
10.3. National educational programmes and research and development to support capacity building implemented			**X**
11. Stakeholder involvement	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
11.1. Transparent and open communications continue			**X**

12. Site and supporting facilities	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
12.1. Confirm/update site characterisation parameters and continue site monitoring			**X**
13. Environmental protection	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
13.1. Environmental limits and conditions defined			**X**
13.2. Environmental monitoring programmes in place			**X**
14. Emergency planning	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
14.1. Owner/operator emergency arrangements in place and tested			**X**
14.2. Government and Regulatory body arrangements in place and tested			**X**
14.3. Arrangements for regular training, drills and exercises in place			**X**
15. Nuclear security	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
15.1. Physical protection system demonstrated and approved		**X**	
15.2. Contingency plan approved			**X**
15.3. Leadership and security culture evident			**X**
15.4. Preparation and approval of the security plan			**X**

16. Nuclear fuel cycle	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
16.1. Arrangements for fuel supply in place			**X**
16.2. Spent fuel management arrangements in place			**X**
17. Radioactive waste management	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
17.1. Plans for decommissioning available			**X**
17.2. Arrangements for low and intermediate level waste in place		**X**	
17.3. Work to develop HLW disposal arrangements ongoing			**X**
18. Industrial involvement	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
18.1. Support for Industrial development established		**X**	
19. Procurement	**Phase 3**		
Condition	**Actions Needed**		
	SIGNIFICANT	**MINOR**	**NO**
19.1. Procurement capability for operations available			**X**

APPENDIX 1: REVIEW OBSERVATIONS, RECOMMENDATIONS AND SUGGESTIONS FOR PHASE 3

1. National Position **Condition 1.1: Government role assigned and effective**	**Phase 3**
Summary of the condition to be demonstrated	Government entities have been assigned the on-going government responsibilities for the sustainability of the nuclear power infrastructure. There is an agreed mechanism for communication and co-operation among the key organizations.
Examples of how the condition may be demonstrated	(1) Entities with clearly defined roles and responsibilities; (2) A close out report from the NEPIO showing how any on-going requirements will be met.

Observations

The roles and responsibilities of the main organizations involved in the nuclear power programme are defined in the Law on the Use of Atomic Energy (No. 426-Z of 2008) and other legislative acts.

The NEPIO has been formed under the Presidential Decree No. 378 of 10 July 2008, and its coordination role is defined under the Governmental Resolution No. 1330 of 10 September 2008. The Department of Nuclear Energy in the Ministry of Energy serves as secretariat for the Inter-Departmental Commission (IDC) chaired by the Deputy Prime Minister. The IDC was established by the Government Resolution No.1010 of 5 November 2012. At its first meeting the IDC approved the action plan on the creation of the nuclear power infrastructure.

The INIR team was informed that many organizations will continue to be involved in the nuclear power programme during the overall plant lifetime and there is an intent to keep the IDC operational. The role of the Nuclear Energy Department is to implement the state policy and this role will continue during the operating phase, in particular to develop further the legislative framework and monitor State Programmes such as the research and development programme and the scientific research for disposal facilities.

The State Enterprise 'Belarusian NPP′ was formed by the Presidential Decree No. 583 of 30 December 2013 with the role of customer and future operating organisation. Belarusian NPP was incorporated into the State Association 'Belenergo' (the Belarusian integrated electric utility) on 1 January 2020 following the Presidential Decree No. 172 of 11 May 2019.

The INIR team was informed that Belenergo has plans to establish two departments with the total of 25 staff in the areas of technical support and maintenance. The purpose of these two departments is to ensure coordination between Belenergo and its subsidiary companies and Belarusian NPP on technical support and maintenance.

Several Belenergo subsidiary companies participated in the construction and commissioning works of the NPP project as subcontractors to the general contractor. During the construction, Belenergo established working relations with Belarusian NPP.

The INIR team was also informed that Belarusian NPP will retain all revenues from the sale of its electricity and that it will be separate from the other 6 regional supply organizations under Belenergo.

SSI 'JIENR-Sosny' is assigned to provide scientific support to the nuclear power programme through the Presidential Decree No. 565 of 2007. The Governmental Resolution No. 1116 of 2010 adopted the state programme for scientific support of the NPP project until 2020. The INIR team was informed that the state programme for scientific support for the period 2021-2025 is being developed.

The INIR team was informed that the contractual arrangements for the Department for Nuclear and Radiation Safety (GAN) to engage support from JIENR-Sosny for the review and assessment of the safety analysis report were made through Belarusian NPP. The INIR team notes that similar situations may occur in the future, for example for periodic safety reviews or urgent needs, and considers that this could compromise the independence of GAN which should contract directly with expert organizations within its TSO system.

Areas for further action	**Significant**	Regulatory body (GAN) contracting of expert support
	Minor	None

RECOMMENDATIONS

R-1.1.1 The Government of Belarus should ensure that Gosatomnadzor has the means to directly contract for timely expert support to assure its regulatory independence.

SUGGESTIONS

None

GOOD PRACTICES

GP-1.1.1 Engagement and leadership of high level decision makers through regular meetings of the Inter Departmental Committee and close programme and project monitoring.

1. National Position **Condition 1.2: National strategy successfully implemented**	**Phase 3**

Summary of the condition to be demonstrated	The nuclear power programme has successfully met the national expectations for the introduction of nuclear power.
Examples of how the condition may be demonstrated	A review of the implementation of the project against the national expectations covering for example: HR development, industrial involvement, financing, waste management**.**

Observations

Enhancing energy security was one of the main objectives for the nuclear power programme in Belarus. Currently, Belarus is dependent on gas supplies from the Russian Federation and is seeking to diversify its energy sources. Belarus aims also to reduce its greenhouse gas emissions and as a party of the Paris Agreement, it has identified nuclear energy as one of the means to achieve its National Determined Contribution.

The INIR team was informed that the nuclear power project has been an important driver for the development of the Grodno region. When the nuclear power plant project started, Ostrovets was a village with 8000 habitants mainly living from agricultural activities. Three residential districts have been built along with kindergartens, new schools and community centres and a hospital with modern

equipment.

More than 20 local companies participated in the construction of the NPP. They contributed to 80% of civil construction and raw materials supplies as well as 8% of equipment. Some companies are planning to become part of the supply chain in the future nuclear power plant projects for example in Uzbekistan. To participate in the supply chain, they have obtained special qualifications and respective licences.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

1. National Position **Condition 1.3: Long term support through international cooperation evident**	**Phase 3**

Summary of the condition to be demonstrated	Effective mechanisms are in place for provision of required support and exchange of information with other countries operating nuclear power and international organisations.
Examples of how the condition may be demonstrated	(1) Participation in nuclear safety, security and non-proliferation regimes; (2) Participation in IAEA activities aimed at information sharing; (3) Intergovernmental agreements for provision of support from experienced countries; (4) Interagency agreements; (5) Participation in WANO activities.

Observations

Belarus signed agreements on cooperation with China, Armenia and Turkey as well as memoranda on cooperation with Bangladesh, Uzbekistan and Slovakia in the field of peaceful use of nuclear energy. Belarus cooperates with the Commonwealth of Independent States (CIS) in the field of peaceful use of nuclear energy. The CIS Commission on the Peaceful Use of Nuclear Energy is currently chaired by Belarus.

The Ministry of Emergency Situations (MES) signed agreements on cooperation with regulatory authorities of 7 countries (Russian Federation, Finland, Hungary, Slovakia, Slovenia, Sweden and Ukraine). Belarus is a member of the Regulatory Cooperation Forum (RCF) and has an observer status

in the Western European Nuclear Regulators Association (WENRA), the Forum of the State Nuclear Authorities of the Countries Operating WWER Type Reactors (WWER Forum), and the European Nuclear Safety Regulators Group (ENSREG). Activities with Rostechnadzor, the regulatory body of vendor country, are implemented under annual plans and have covered areas such as training of inspectors and nuclear safety review and assessment. The INIR team was informed that various activities have been implemented under other international agreements including with Hungary, Ukraine and Sweden.

Belarus has signed five intergovernmental agreements on early notification of nuclear accidents and exchange of information in the field of nuclear and radiation safety (with the Russian Federation, Armenia, Austria, Latvia and Poland).

Belarus has long standing cooperation with the IAEA. Since 2015, Belarusian NPP is member of World Association of Nuclear Operators (WANO).

Areas for further actions	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

GP-1.3.1 Utilizing international peer review services at appropriate times in the development of nuclear power infrastructure and monitoring the implementation of the corresponding national action plans.

2. Nuclear Safety **Condition 2.1: Basis of safety understood**		**Phase 3**
Summary of the condition to be demonstrated	Safety analysis reports have been reviewed by the operating organization and approved by the regulatory body. Operational Limits and Conditions and other documents and programmes have been prepared by the operating organization and approved by the Regulatory Body.	
Examples of how the condition may be demonstrated	(1) A summary of the work undertaken by the operating organisation to achieve the construction and operating license for the NPP (2) A summary of the work undertaken to ensure the OLC and other documents and programmes are understood by the technical and operating staff (3) A summary of the work done by the regulatory body to review, assess and approve the above documents	

Observations

The Ministry of Emergency Situations (MES) Resolution No. 46 of 2018 identifies a number of documents for submission to the regulatory body as part of the operating license application, including the Final Safety Analysis Report (FSAR), Operational Limits and Conditions (OLC) and a set of relevant reports and programs.

The preliminary version of the FSAR was provided to Belarusian NPP by the General Contractor in July 2016. The FSAR was then subject to a multi-stage review of compliance with regulations and the design specifications by Belarusian NPP with continuous interaction between the operating organization specialists and the authors of the FSAR to resolve the comments and issues. This included a series of meetings held with representatives of the General Contractor, the Nuclear Steam Supply System (NSSS) designer (Gidropress), the lead scientific organization (Kurchatov Institute) and the architect engineer (Atomproekt). The INIR team was informed that approximately 100 specialists from Belarusian NPP were involved in this process. The result of this work is a revised version of the FSAR that was submitted to Gosatomnadzor in October 2017 as part of the operating license application.

The INIR team was informed that GAN specialists reviewed the completeness of the safety documentation submitted by Belarusian NPP. GAN formed a multi-disciplinary working group with the participation of 25 staff to prepare Terms of Reference defining the scope of expert reviews and to receive and review the expert assessments. GAN utilized the services of TSOs, including JIENR-Sosny, involving 72 experts to conduct the review and assessment of the safety documentation.

The first stage of the review and assessment was completed in December 2019. Results of the review and assessment of the full package of the safety documentation including the review of the OLC are expected to be received from JIENR-Sosny on 27 April 2020. The results of the review of JIENR-Sosny will be reviewed by GAN and will be considered in licensing decisions.

Areas for further action	**Significant**	None

	Minor	None

RECOMMENDATIONS
None
SUGGESTIONS
None
GOOD PRACTICES
None

2. Nuclear Safety **Condition 2.2: Leadership and safety culture evident (see also 15.3)**	**Phase 3**

Summary of the condition to be demonstrated	The senior management of all organizations provides effective leadership; a safety culture is evident throughout the owner/operator and its activities are verified and addressed by regulatory inspection.
Examples of how the condition may be demonstrated	(4) Evidence of leadership behaviours to promote a safety culture; (5) Policies and actions with respect to error reporting, questioning attitude; (6) Review of regulatory inspections of processes and behaviours carried out; (7) Planned inspections for operating phase.

Observations

The importance of safety culture is emphasized in the safety policy of Belarusian NPP. It states that safety culture should be encouraged by leadership and management actions to emphasize safe operation.

The INIR team was informed that the process of building and maintaining the safety culture at Belarusian NPP includes activities such as:

— Safety culture awareness training;

— Reinforcing the importance of safety in daily activities;

— Safety awareness days;

— Implementing corrective and preventive actions;

— Assessment of staff safety culture.

The INIR team was informed that the senior management of the operating organization demonstrates a commitment to safety by communicating to employees the importance of performing their functions for safety, signing of the Safety Policy, conducting observations, compliance with industrial safety requirements, ensuring their presence in the field and supporting personnel training. However, the Pre-OSART mission identified weaknesses related to incorrect subcontractor worker behaviours not

being promptly identified and challenged.

The INIR team was informed that Belarusian NPP has a procedure for assessment and analysis of safety culture. A self-assessment was conducted in 2019 covering various organizational units.

The INIR team was informed that GAN reviews safety culture through inspections at the NPP. GAN also requires annual self-assessment from the operating organization.

The INIR team was informed that the importance of developing and maintaining a high level of safety culture in Gosatomnadzor is reflected in the GAN Policy 2015-2018. Safety culture is an integral part of regulatory activity. It is implemented in all Gosatomnadzor processes.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

2. Nuclear Safety **Condition 2.3: Action plan in place to address any outstanding licensing issues**	**Phase 3**

Summary of the condition to be demonstrated	An action plan is in place and adequately resourced to address resolution of all outstanding issues identified by the regulatory body to be resolved before Milestone 3.
Examples of how the condition may be demonstrated	(1) A list of issues with timescales for resolution agreed with the regulator with a corresponding action plan; (2) The process for managing and closing out actions.

Observations

An Action Plan is in place for dealing with pending issues from the review and assessment of documentation submitted by the applicant. It is agreed between Belarusian NPP and GAN and includes categorisation of the issues according to the nuclear safety/security/radiation protection significance and prioritisation of the issues with target timescales for resolution. GAN further stated that licencing of operation is a two stage process. The first stage is for receiving fresh fuel on site followed by the second stage for fuel loading, commissioning and operation. All the results of the review and assessment, and inspections will be presented to an interdepartmental start-up commission for their consideration and decision. The Ministry of Emergency Situations issues the licenses following the completion of this process.

The general procedure for the licensing process is determined by the Presidential Decree No. 450 of

2010, as amended by the Decree No. 475 of 2015. The IRRS mission 2016 observed that MES is required to complete licensing reviews within prescribed timelines. The INIR team was informed that, in accordance with the Presidential Decree No. 70 of 2019, the time frame for processing operating license applications can be flexible depending on the volume of documents submitted by the operating organizations.		
Areas for further action	**Significant**	None
	Minor	None
RECOMMENDATIONS		
None		
SUGGESTIONS		
None		
GOOD PRACTICES		
None		
2. Nuclear Safety **Condition 2.4: Owner/operator design integrity process defined and effective**		**Phase 3**
Summary of the condition to be demonstrated	The operating organisation has established an internal entity that will maintain the knowledge of the design and its configuration management (often called the design authority). The operating organization has agreed with the supplier country(s) how ongoing support for this design authority function will be provided in order to ensure nuclear safety.	
Examples of how the condition may be demonstrated	(1) Company or Department Manual defining where the entity is located; (2) Process description of how design integrity is maintained; (3) Evidence of interactions with other organisations operating similar plants; (4) Statements defining the required levels of support from the vendor and other bodies to act as authorised designers.	
Observations The General Contractor is the Design Authority responsible for the design and configuration of the NPP during the design and construction stages and operation during the warranty period. The INIR team was informed that Belarusian NPP is developing its own arrangements to conduct design and configuration control and assume responsibility as the Design Authority. This includes the drafting of the necessary process and documents and the definition of technical responsibilities within		

Belarusian NPP.

In respect of the Design Authority function, the Pre-OSART mission report states that technical support functions in Belarusian NPP are distributed among several departments involving nuclear safety, engineering support, production-technical, maintenance and other departments. Nevertheless, the overall technical support organization chart and functions within the plant organization are not clearly defined. The INIR team noted Belarusian NPP had developed an action plan to address the recommendations and suggestions identified by the Pre-OSART mission. The development of an instruction on facility configuration control is planned for quarter four of 2020. The Design Authority responsibility is to be moved to the Department of Resource and Modernization Management of Belarusian NPP at the end of the NPP warranty period under the General Contract.

The INIR team was informed that a procedure has been developed for the handover of the Design Authority responsibility from the General Contractor to Belarusian NPP. Contractual arrangements will be put in place between Belarusian NPP and the Gidropress, Atomproekt and the Kurchatov Institute to maintain access to the overall design knowledge and experience of the NPP designers and validate design modifications.

Areas for further action	**Significant**	None
	Minor	Design Authority function

RECOMMENDATIONS

None

SUGGESTIONS

S-2.4.1 Belarusian NPP is encouraged to complete the arrangements to assume the design authority function by the end of the warranty period.

GOOD PRACTICES

None

3. Management **Condition 3.1: Ongoing arrangements for support clear**		**Phase 3**
Summary of the condition to be demonstrated	The arrangements with the supplier to support on-going operation should be clear.	
Examples of how the condition may be demonstrated	(1) Statements defining the required levels of support from the vendor and other bodies and mechanisms for information exchange, training, technical support, etc. *Note: Design Authority requirements are covered by Condition 2.4;* (2) MoU or contractual arrangements between operating organization and suppliers.	

Observations

The INIR team was informed that the contracts with the General Contractor for construction and commissioning include the provision of support during the two year warranty period. During this period a group of experts from the General Contractor will stay on site and will provide advice to Belarusian NPP staff. Belarusian NPP will conclude contracts with the General Designer, the nuclear steam supply system (NSSS) supplier and the technical and scientific support organization from the vendor country for long term support.

The INIR team was informed that maintenance activities will be carried out by Belarusian NPP and by Belenergo. Belarusian NPP will implement regular maintenance during routine operation and will negotiate specific contracts with the original suppliers of equipment, particularly for the nuclear island.

Belenergo and its subsidiary companies will carry out maintenance of conventional equipment. Belenergo currently has experience in maintenance of electrical and thermo-mechanical equipment.

The INIR team was informed that Belenergo is proposing to expand its capabilities and is also undertaking discussions with foreign companies to provide engineering and maintenance support.

The INIR team noted that the scope and sharing of responsibilities between Belarusian NPP and Belenergo are still to be defined.

Areas for further action	**Significant**	Arrangements for maintenance after warranty period.
	Minor	None

RECOMMENDATIONS

R-3.1.1 Belarusian NPP and Belenergo should make the necessary arrangements for ensuring maintenance of the NPP after the warranty period.

SUGGESTIONS

None

GOOD PRACTICES		
None		
3. Management **Condition 3.2: Structure and staffing of the operating organization adequate for commissioning and operation**		**Phase 3**
Summary of the condition to be demonstrated	The operating organization has developed the structures and staffing required for operation, including any certification process of its staff.	
Examples of how the condition may be demonstrated	(1) Organisational structure with clearly defined responsibilities; (2) Evidence that the organization is staffed for operation.	

Observations

The organizational structure of Belarusian NPP has been developed and roles and responsibilities defined. The overall headcount for the two units will be 2425. The INIR team was informed that the staffing of the first unit of the NPP is close to completion and managers and key specialists of all organizational units have been filled and trained. Belarusian NPP also has more than a hundred staff with previous experience in nuclear power operation.

The INIR team was informed that Belarusian NPP personnel training is established based on the systematic approach to training. Training is provided under the general contract and this covers 600 people in 45 job positions. The remaining staff were trained in the Belarusian NPP Training Centre. The INIR team was informed that all staff who are involved in commissioning have completed their training programmes.

There are 72 staff (48 operational staff) that require regulatory certification. Currently 62 staff (44 operational staff) have been certified. In addition, Gosatomnadzor issued permits to managers and other categories of specialists.

The INIR team was informed that Belarusian NPP developed an action plan to address the recommendation of the Pre-OSART mission to complete staffing and organizational structure of Belarusian NPP and it is under implementation.

Areas for further action	**Significant**	None
	Minor	None
RECOMMENDATIONS		
None		
SUGGESTIONS		
None		
GOOD PRACTICES		

None

3. Management Condition 3.3: Management system for operation developed	Phase 3
Summary of the condition to be demonstrated	The operating organisation has a management system that defines responsibilities, lines of authority and interfaces with external organizations, describes processes for operation and qualification of suppliers and includes processes to assess the effectiveness of the system.
Examples of how the condition may be demonstrated	(1) A documented management system addressing all the organisations drivers (e.g. health, quality, safety, security, safeguards, environment, economic), defining roles and responsibilities of each part of the organisation, identifying the processes of the organisation, and a process for review of its effectiveness; (2) The main processes for operation have been defined and are understood by relevant staff. They should include operations, demonstration of compliance with OLC, maintenance and plant configuration, event reporting etc.; (3) The processes for commissioning have been defined, including definition of responsibilities and how test procedures and reporting of results will be approved; (4) Processes for qualification of suppliers; (5) An operational document management system.

Observations

The INIR team was informed that Belarusian NPP continues to integrate the various elements of its management system, including policies, processes and Quality Assurance (QA) programs. Additional documents covering industrial safety, periodic safety review, technical support, management of engineering documentation, emergency preparedness and response will be finalized before the end of 2020.

The current work on integration brings together the areas of quality, environment, industrial safety and nuclear and radiation safety. The INIR team was informed that nuclear security is still to be integrated into the management system. The INIR team was also informed that the management system of Belarusian NPP have been developed in compliance with the requirements of STB ISO 9001-2015, STB 18001-2009, STB ISO 14001-2017 and the IAEA Safety Standard No. GSR Part 2. Belarusian NPP will undergo certification against ISO standards on quality management, environmental and occupational safety aspects.

The INIR team was informed that internal audit of the effectiveness of the management system is currently implemented on an organizational basis and there are plans to move to a process-based audit.

Belarusian NPP implemented a self-assessment process to measure the effectiveness of the implemented management system. It starts from the individual self-assessments through the review

by the quality committee where proposals for improvements are reviewed and discussed and sent for senior management's approval.		
Areas for further action	**Significant**	None
	Minor	Integration of management system.
RECOMMENDATIONS		
None		
SUGGESTIONS		
S-3.3.1 Belarusian NPP is encouraged to complete the development of all elements of its integrated management system.		
GOOD PRACTICES		
None		
3. Management **Condition 3.4: Mechanisms for verification of construction and for handover of systems, structures and components from main supplier in place**		**Phase 3**
Summary of the condition to be demonstrated	The owner/operator has validated that the plant has been built consistent with the approved design. The mechanisms (procedural and contractual) for handover of systems, structures and components from the main supplier to the operating organization are clearly defined and in use.	
Examples of how the condition may be demonstrated	(1) Procedures for how the owner/operator has validated the plant construction and availability of reports to support the validation; (2) Hand over procedures available; (3) Examples of some systems handed over; (4) Commissioning manual/programme available.	

Observations

Belarusian NPP has several divisions with responsibilities for control of construction and commissioning. The key task of the Technical Supervision Department is to verify compliance with the design documentation. Based on results of verification, a package of 'as built' documentation is developed. The role of the Control of Incoming Equipment and Material Department includes visual inspection, measurement and review of quality documentation.

The INIR team was informed that procedures for verification and handover of systems, structures and components from the General Contractor to Belarusian NPP are in place and 75-80% of the systems of Unit 1 have been handed over.

Belarusian NPP developed a series of procedures to define the interactions between all organisations

involved in commissioning. There are also teams to oversee commissioning in the different technical areas. They involve the general contractor, the commissioning organisation and Belarusian NPP.

Gosatomnadzor is involved in oversight of safety class 1-3 equipment and this also includes manufacturing inspections.

There is also a start-up commission led by the chief engineer. Its role is to ensure commissioning tests are completed as defined in the commissioning programme. The Pre-OSART mission provided recommendations and suggestions in the area of commissioning. Belarusian NPP prepared an action plan to implement these recommendations and suggestions. In accordance with this plan, work is underway to implement activities to enhance safety of commissioning with a goal to complete by mid 2020.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

4. Funding and Financing Condition 4.1: Adequate income to sustain operation obtained	Phase 3
Summary of the condition to be demonstrated	The operating organization has sufficient income to provide adequate resources to sustain operation of the nuclear power plant and related facilities.
Examples of how the condition may be demonstrated	Information available will depend on the contractual model and arrangements (and may be confidential) but could include: (1) Evidence that the costs of operating have been assessed, budgets have been agreed, and a review mechanism is in place; (2) Information regarding the adequacy of resourcing and staffing of the operating organization (e.g. a regulatory review); (3) Evidence that tariffs will provide adequate returns or a compensatory mechanism is in place; (4) Evidence that operating costs include adequate funds for long term maintenance costs.

Observations

The tariff for electricity generated by the NPP will be based on the costs of production as defined in the *Instruction on Planning and Calculating Costs for the Electricity Production at the State Enterprise Belarusian NPP*. These costs will be estimated ahead of the FY and include: salaries and other benefits, services, maintenance and repair, fuel and energy costs, contributions to the safety and decommissioning funds, premium for insurance for civil liability for nuclear damage, depreciation, and profit sufficient to repay loans.

Compliance of the cost assessment against the agreed methodology will be checked first by Belenergo and then by the Ministry of Energy. The planned tariff for electricity supplied by the NPP will then be agreed with the Ministry of Antimonopoly Regulation and Trade as defined in the Resolution of the Council of Ministers of the Republic of Belarus of 17 March 2014 No. 222 'On Approval of the Regulation on Pricing (Tariffs)' (as amended by the Resolution of the Council of Ministers No. 22 on 15 January 2020).

The INIR team was informed that Belenergo expects the Belarusian NPP's tariffs will be lower than tariffs for electricity from other sources.

The INIR team was informed that the Resolution No. 222 also states that all electricity generated by the NPP will be bought by those regional energy suppliers of Belenergo which have a supply deficit at the defined tariff. Belenergo's role in agreeing the tariff is to confirm compliance with the assessment methodology, it does not have an input into the costs required to operate safely, this is entirely the responsibility of Belarusian NPP. The INIR team was also informed that Belenergo cannot redistribute the income from Belarusian NPP to other companies.

The INIR team was also informed that in the event of costs higher than planned or output lower than planned, Belarusian NPP will seek to absorb the costs but it can also seek a revision of the tariff.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

4. Funding and Financing **Condition 4.2: Funding mechanisms in place for waste management, long term spent fuel management and decommissioning**	**Phase 3**
Summary of the condition to be demonstrated	An appropriate funding plan has been implemented for waste, long-term spent fuel management and for the decommissioning of the nuclear power plant. The plan includes mechanisms for the regular review of the adequacy of the funding arrangements. *Note: Funding of government role and regulatory body covered under Issue 1 and Issue 7.*
Examples of how the condition may be demonstrated	(1) Evidence that costs of waste management, spent fuel management and decommissioning have been estimated; (2) Evidence that a secure funding mechanism is in place to meet the cost estimates.

Observations

Article 21 of the Law on Use of Atomic Energy requires the operator to establish a decommissioning fund. The fund's use is limited to "financing measures provided by the program of de-commissioning, premature de-commissioning or limitation of operational characteristics of the nuclear installation and (or) storage facilities". The INIR team noted that the phrase "limitation of operational characteristics" was not clear but were informed that the decommissioning fund may only be used following the permanent shutdown of one or both units. In addition, Article 32 of the law refers to the formation of a fund for "financing maintenance and improvement of safety of the nuclear installation and (or) storage facilities".

The Ministry of Energy has drafted a presidential decree 'On Funding of the Belarusian NPP' that defines the procedure for the formation and use of the decommissioning fund and the safety improvement fund.

The draft decree defines the activities that the funds are intended to cover. The draft decree also states that the operator's monthly contributions to the funds will come from its revenue from the sale of electricity. The amount to be transferred will be determined annually by the Ministry of Energy in agreement with the Ministry of Antimonopoly Regulation and Trade and the Ministry of Finance and

defined as a percentage of the revenue from sale of electricity.

The draft decree also states that the amount of contributions to both funds takes into account the costs of implementing all identified activities, but is limited to not more than 15% of revenue.

The INIR team was informed that within one year of the start of commercial operation of the second unit, Belarusian NPP will contract a company to carry out an assessment of the decommissioning costs based on an immediate dismantling strategy and the preliminary decommissioning plan. This will form the basis of the calculation of the percentage to be included in the annual electricity tariff. There is also a provision in the draft decree to review the decommissioning costs every five years to take into account cost inflation, knowledge and technology improvements.

Until this process has been completed, the draft decree requires the NPP to contribute 4% of the revenue from the sale of electricity into the decommissioning fund.

The draft decree states that the decommissioning fund will be managed by the Ministry of Finance with investment in bonds and held within the national current account. The Ministry of Finance has no access to the fund and it is not included in the state budget. Any interest from the funds in excess of that assumed in the fund build up calculations is paid into the national budget. The Ministry of Energy controls the expenditure of the fund, based on the requirements specified in the law and the draft decree.

The safety improvement fund is intended for major investments in safety enhancements for the plant and costs associated with the development of spent fuel storage facilities and radioactive waste storage and disposal facilities, additional to those provided as part of the NPP. The INIR team was informed that it covers the cost of reprocessing of spent nuclear fuel. The Ministry of Energy expects that the fund will be limited to enhancements to the nuclear island and will develop a detailed instruction identifying areas that the fund is intended to cover.

Radioactive waste management strategy estimates the total costs of the indicated spent nuclear fuel (SNF) management options with existing technologies to be between US $2.5 billion and US $3.5 billion for the entire lifetime of the plant - up to 100 years.

The INIR team was informed that Belarusian NPP has also undertaken work to estimate the costs of waste management storage and disposal facilities.

When determining the level of contributions required to cover safety improvements, Belarusian NPP is required to develop and approve an assumed lifetime plan for improving the safety of the NPP, prior to putting the NPP into operation. The INIR team was informed that this plan is reviewed by the regulatory body. This plan is regularly updated, and the adequacy of the fund reviewed.

The safety improvement fund comprises two parts for which the expenditure is controlled differently:

a) That which is associated with the buildup of funds for future activities is managed by the Ministry of Finance with expenditure controlled by the Ministry of Energy; and

b) That which is to be used to finance activities in the current fiscal year is under the direct control of Belarusian NPP.

Based on the lifetime plan, Belarusian NPP develops proposals for spending from the safety improvement fund. The Ministry of Energy reviews the proposals and decides whether the activity should be funded by the safety improvement fund or from operational costs. Proposals are then approved by the Ministry of Finance and Ministry of Antimonopoly Regulation and Trade (MAMRT).

The INIR team noted that the scope of use of the safety improvement fund as determined in the draft decree is open to interpretation. The INIR team also noted that most countries do not have a combined fund for safety improvements and waste management costs. Combining safety improvements with long term costs such as deep disposal of high-level waste would need careful control to ensure the accumulation of adequate funds.		
Areas for further action	**Significant**	Adequate funds for long term liabilities.
	Minor	None
RECOMMENDATIONS		
R-4.2.1 Belarus should revise the draft decree to ensure that sufficient funds will be accumulated for spent fuel management, radioactive waste management and decommissioning.		
SUGGESTIONS		
None		
GOOD PRACTICES		
None		

4. Funding and Financing **Condition 4.3: Civil liability for nuclear damage in place**	**Phase 3**
Summary of the condition to be demonstrated	Mechanisms are in place to implement the provisions of nuclear legislation on civil liability for nuclear damage.
Examples of how the condition may be demonstrated	(1) Financial security arrangements for operator agreed; (2) Mechanisms in place to ensure contribution to international fund where appropriate.

Observations

The amounts for civil liability for nuclear damage are defined in the Presidential Decree No. 15 of 14 January 2019.

The operator, Belarusian NPP, is liable up to 150 million Special Drawing Rights (SDR). The State is obliged to provide an additional 150 million SDR, if needed. Belarusian NPP has put insurance in place to cover its liability. The insurance contract has been concluded with the Belarusian Nuclear Insurance Pool, which also has reinsurance in place with the Russian Nuclear Insurance Pool. There are also discussions to agree reinsurance with the nuclear insurance pools in Switzerland and Germany.

The annual premium of the insurance for civil liability for nuclear damage is included in the tariff on electricity generated by the NPP.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS
None
SUGGESTIONS
None
GOOD PRACTICES
None

5. Legal Framework **Condition 5.1: Legal framework implemented and being reviewed as necessary**	**Phase 3**
Summary of the condition to be demonstrated	All actions to implement the relevant international legal instruments (as identified in Phase 2) are being undertaken. Action plan to address any identified issues with the legal framework and amend it as necessary.
Examples of how the condition may be demonstrated	(1) Demonstration of how each of the international legal instruments are implemented (e.g. identification of contact points/competent authorities, and participation in review meetings); (2) Identification of any issues arising in the implementation of the laws and how they are planned to be addressed.

Observations

The Republic of Belarus is a party to the following relevant international legal instruments:

- Convention on Early Notification of a Nuclear Accident (Early Notification Convention);
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (Assistance Convention);
- Convention of Physical Protection of Nuclear Material (CPPNM);
- Convention on Nuclear Safety (CNS);
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (JC);
- Vienna Convention on Civil Liability for Nuclear Damage (1963 VC);
- Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage (1997 VC); and
- Agreement between the Republic of Belarus and the IAEA for the Application of Safeguards in connection with the NPT (CSA).

Belarus has not yet joined the Amendment to the CPPNM adopted on 8 July 2005 and entered into force on 8 May 2016.

The INIR team was informed that Belarus supports the Amendment to the CPPNM and considers it as an important international legal instrument for strengthening nuclear security. The INIR team was also informed that Belarus plans adhering to this instrument in the future.

The Protocol Additional to the CSA signed by Belarus on 15 November 2005 has not been yet ratified. The INIR team was informed that Belarus plans to ratify this Protocol in the future.

In accordance with Article 5 of the CNS and Article 32 of the JC, Belarus has consistently submitted

national reports for the review meetings held pursuant to these conventions. In addition, Belarus participates in meetings of the Contracting Parties to the CNS and the JC (e.g. review meetings, extraordinary meetings and organisational meetings).

In accordance with Article 7 of the Early Notification Convention and Article 4 of the Assistance Convention, Belarus has nominated the required competent authorities and made them known to the IAEA. Further, Belarus participates in international exercises held within the framework of these conventions (ConvEx).

Regarding the CPPNM, Belarus has nominated its Central Authority and Point of Contact (Department for Nuclear and Radiation Safety (Gosatomnadzor)) as required under Article 5 of the Convention. In addition, Belarus has informed the depositary of its laws and regulations giving effect to the CPPNM as required by Article 14 of the Convention.

The legal hierarchy for nuclear activities and facilities is structured in a way that documents of lower legal force are subject to the relevant requirements of the documents of higher legal force, as follows:

— Constitution of the Republic of Belarus;

— Laws;

— Normative legal acts of the President of the Republic of Belarus (decrees);

— Resolutions of the Government of the Republic of Belarus;

— Normative legal acts of the authorized republican state administrative bodies responsible for state regulation in the field of safe nuclear energy use; and

— Norms and rules in the field of nuclear and radiation safety, as well as other technical regulatory legal acts.

Currently, the legal framework governing the nuclear energy and activities involving ionizing radiation is based on:

— 1998 Law on Radiation Protection of Population (of 5 January 1998, No.122-Z); and

— 2008 Law on the Use of Atomic Energy (of 30 July 2008, No.426-Z).

A new Law on Radiation Safety (No.198-Z) was adopted on 18 June 2019 and will come into force on 27 June 2020. This new Law will supersede the Law on Radiation Protection of Population No. 122 of 5 January 1998. The INIR team was informed that this new Law will apply to nuclear power plants (NPPs) where other relevant pieces of legislation lack provisions on radiation protection for NPPs in normal conditions and emergency situations.

The Law on the Use of Atomic Energy addresses safety, security, safeguards and nuclear liability. The aim of this Law was to establish the framework to regulate the siting, design, construction, commissioning, operation, and decommissioning of NPPs or storage facilities, as well as the management of radioactive waste and spent nuclear fuel.

The following presidential decrees were also issued:

— On Determining the State Body Responsible for Fulfilling Obligations under Certain International Treaties (No. 279 of 2010);

— On Licensing of certain types of activities (No. 450 of 2010, as amended by No. 475 of 2015);

and

— On Ensuring Safety during Construction and Operation of the Belarusian Nuclear Power Plant (No. 62 of 2015, as amended by No. 70 of 2019).

These three decrees supplement the 2008 Law and clarify the roles and responsibilities of the Ministry of Emergency Situations and Gosatomnadzor.

Further to these two decrees, many relevant resolutions of the Council of Ministers have also been adopted e.g. addressing public hearings and physical protection.

As part of the development of its nuclear power infrastructure, Belarus seeks to consolidate the existing legislation and address identified deficiencies, firstly, through the entry into force of the new Law on Radiation Safety (No.198-Z), secondly, through the amendment of the 2008 Law. The Ministry of Energy is developing a roadmap on the concept for strengthening the legal framework governing nuclear activities and has distributed a questionnaire to the relevant stakeholders to collect proposals for potential changes to the 2008 Law. The amendment of the 2008 Law will also take into consideration the relevant recommendations and suggestions from IAEA review and advisory services.

Areas for further action	**Significant**	International Legal Instruments National legislation
	Minor	None

RECOMMENDATIONS

R-5.1.1 Belarus should adhere to the Amendment to the CPPNM and bring into force the Protocol Additional to its Comprehensive Safeguards Agreement.

R-5.1.2 Belarus should consolidate and strengthen its legal framework to support effectively its nuclear power programme.

SUGGESTIONS

None

GOOD PRACTICES

None

6. Safeguards **Condition 6.1: An SSAC that is operational for the nuclear power programme**	**Phase 3**
Summary of the condition to be demonstrated	The State System of Accounting and Control (SSAC) is operational to: (a) regulate and control all activities associated with the nuclear power programme; (b) provide correct and complete information, on time, to the IAEA; (c) facilitate IAEA verification activities through institutional arrangements and by providing access to IAEA inspectors.
Examples of how the condition may be demonstrated	(1) Clear responsibilities for the implementation of safeguards at the State and facilities level are defined; (2) Procedures in place for the provision of required information, access of IAEA inspectors and facilitation of verification; (3) Procedures in place relating to accounting for and control of nuclear material based on a system of reports, records and measurements that permit the tracking of inventory changes and the closing of material balances; (4) Mechanisms to detect unauthorized activities involving nuclear material and other items subject to regulatory control.

Observations

The Law on the Use of Atomic Energy provides that the Ministry of Emergency Situations (MES) within its authority performs the regulatory and control function with respect to ensuring the operation of a unified State System of Accounting for and Control of nuclear materials (SSAC) in Belarus. The Council's of Ministers Resolution No. 224 (2014) establishes the procedures for the SSAC in accordance with Article 12 of the Law of 2008. Gosatomnadzor is the department of MES implementing the SSAC.

Two MES Regulations No. P-2 (1995) govern the implementation of IAEA safeguards in Belarus, and the procedures established by these regulations are mandatory for all entities that use, transport or store nuclear material. These procedures cover the provision of required information as well as access of IAEA inspectors and facilitation of verification activities, pursuant to Belarus' safeguards agreement with the IAEA. The INIR team was informed that Belarus plans to revise these regulations to clarify terminology and harmonize them with other normative documents including MES Regulation No. 26 (2019) on *Rules for the Accounting and Control of Nuclear Materials* and that the planned time frame for updates is within 1–2 years of the planned amendment of the Law on the Use of Atomic Energy (see Condition No. 5.1).

An IAEA SSAC Advisory Service (ISSAS) mission conducted in May 2019 evaluated Belarus' SSAC and identified, inter alia, areas where effort should be focused to enhance its capabilities given the decision of Belarus to embark on a nuclear power programme. The ISSAS mission also identified good practices in place to be maintained and that could be shared with other countries. GAN provided information about the status of the implementation of the ISSAS recommendations and suggestions

related to the nuclear power programme.

The INIR team was informed that Belarusian NPP has developed 13 local normative documents which define all necessary procedures for safeguards implementation at the level of the operating organization, taking into account IAEA's *Guidance for States Implementing Comprehensive Safeguards Agreements and Additional Protocols, IAEA Services Series No. 21 (2016*) and *Nuclear Material Accounting Handbook, IAEA Services Series No. 15 (2008).* These procedures cover administrative control of nuclear materials, access of IAEA inspectors and facilitation of verification activities, physical inventory taking, nuclear material measurement, and accounting and control of small amounts of nuclear material.

Belarusian NPP has procured and installed software for accounting and control of nuclear material contained in nuclear fuel. Belarusian NPP has developed a database to account for small amounts of nuclear materials. The INIR team was informed that GAN requested a test report on nuclear material, which was provided, and has concluded that plant's nuclear material accounting and control system appears sufficient to meet safeguards requirements during NPP operation.

Belarus has submitted the required design information questionnaires (DIQ) to the IAEA within the time frame required by its safeguards agreement with the IAEA. Belarusian NPP updates the information in the DIQ as necessary. The IAEA is sending inspectors to Belarusian NPP regularly to verify the design information.

Terms of reference have been approved for the installation of IAEA containment and surveillance equipment for Unit 1 of the NPP. The INIR team was informed that work to prepare the plant for the installation of this equipment is on schedule and in line with project milestones. Belarusian NPP explained that the general contractor has been involved in this work as necessary.

The INIR team was informed that Belarusian NPP is preparing a document that describes the planned programme of operations for the coming year including operational milestones with safeguards relevance, and GAN will provide the required information and updates as needed to the IAEA.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

7. Regulatory Framework Condition 7.1: Competent and Independent regulatory body operating effectively	Phase 3
Summary of the condition to be demonstrated	An independent regulatory body is in place with sufficient funding and competent to oversee the peaceful, safe and secure operation of the NPP including review, licensing and inspection activities.
Examples of how the condition may be demonstrated	(1) Evidence from reviews carried out during licensing; (2) Evidence from inspections carried out during construction; (3) A comprehensive inspection programme for operations; (4) TSO arrangements in place for support in regulation of commissioning and operation.

Observations

In accordance with the Law on the Use of Atomic Energy, the Ministry of Emergency Situations (MES) is assigned as the state body responsible for the regulation of safety, security with other competent authorities), and safeguards. The Presidential Decree No. 565 of 2007 establishes the Department for Nuclear and Radiation Safety (Gosatomnadzor (GAN)) within MES as a separate legal entity. GAN's regulatory responsibilities include review and assessment, inspection and enforcement, and preparation of draft decisions for licensing; MES is the licensing authority for nuclear power plants. GAN is funded from the national budget.

The INIR team was informed that since the start of construction of the NPP in 2013, GAN has increased its staff from 39 to 82 including an on-site inspection office comprising 7 inspectors. The regulatory capacity building programme was jointly developed with experts provided under technical support projects with the European Commission and responds to a recommendation made by the INIR Phase 1&2 mission in 2012.

The INIR team was informed that an organization for technical support, the Centre for Nuclear and Radiation Safety (CNRS), was established with 25 members of staff under the management responsibility of the Head of GAN and with a mandate from the Government of Belarus to also coordinate the national system of technical support comprising 16 research and educational institutions. The INIR team was also informed that a national workshop under auspices of IAEA TSO Forum is planned with the preparation of a self-evaluation report in line with IAEA TSO forum methodology.

The INIR team was informed that the contractual arrangements for GAN to engage support from Sosny for the review and assessment of the safety analysis report were made through Belarusian NPP. The INIR team notes that similar situations may occur in the future, for example for periodic safety reviews or urgent needs, and considers that this could compromise the independence of GAN which should contract directly with expert organizations within its TSO system. (See Recommendation R-1.1.1).

Following a review of capacity and competences the GAN organization structure was revised in March 2019 to be ready for the commissioning and operation of the NPP. The INIR team was informed that the revision was completed with the objectives to maintain flexibility, to provide more

focus on regulatory functions through splitting the larger divisions and to deploy new staff becoming available from the professional development programme. The INIR team was informed that in response to an ISSAS recommendation, GAN plans to assign additional human resources from CNRS to support the work of the sub-division of nuclear material accounting and control and physical protection to support some technical activities. The INIR team was informed that every post has a job description with defined technical competences.

The INIR team was informed that MES/GAN intends to establish an Advisory Council for Nuclear and Radiation Safety. The Council will be a multi-disciplinary, scientific, expert and advisory body on issues of nuclear and radiation safety advising the Council of Ministers and the plan was for it to become operational in 2020. The IRRS (2016) expressed concern that direct advice on nuclear and radiation safety provided to the Government by such an Advisory Council may challenge the regulatory body independence.

The INIR team was informed that following the IRRS mission in 2016 a national action plan with 71 activities was developed to address the 25 Recommendations and 20 Suggestions. To date, 30 activities have been completed and a follow up mission is envisaged in 2021.

Areas for further action	**Significant**	None
	Minor	Advisory Council

RECOMMENDATIONS

None

SUGGESTIONS

S-7.1.1 Belarus is encouraged to consider the scope and positioning of the Advisory Council taking into account the need for independent decision making by the regulatory body.

GOOD PRACTICES

None

7. Regulatory Framework **Condition 7.2: Management system in place**	**Phase 3**
Summary of the condition to be demonstrated	The regulatory body has developed and implemented a comprehensive management system including processes for assessment, licensing, issuing and reviewing regulations and qualification of suppliers. The management system clearly defines responsibilities, lines of authority and interfaces with external organizations. Processes are also in place to assess the effectiveness of the system.
Examples of how the condition may be demonstrated	(1) A suite of documentation defining the organization and its processes; (2) Results of internal or external audits; (3) Defined requirements for review and improvement of the management system.

Observations

Gosatomnadzor (GAN) has established and is continuing to develop an Integrated Management System (IMS) based on a systematic assessment and IAEA safety standards. The INIR team was informed that the management system was a GAN priority in the regulatory strategy for the period 2015-2020.

GAN has an approved strategy and action plan in place for the further development of the IMS. With respect to the 17 processes identified to be developed, 8 out of 10 core processes and one management process have been documented to date. Four processes are under approval. A working version of the IMS Manual has been developed.

The INIR team was informed that the IMS has been updated to reflect the changes in the organizational structure.

The INIR team was informed that a procedure for internal audits has been documented and published. A programme of auditing of the management system is in place and audits of processes have been conducted and relevant corrective measures were identified and implemented.

The INIR team was informed that IMS training commenced in 2015 and has included several seminars organized by IAEA and the EC. The training includes courses for new employees on the GAN organizational policies and procedures within the IMS and new employees also receive IMS related on the job training. In respect of ongoing training it was stated that IMS process owners have been identified and are responsible for ensuring staff understand the processes, their responsibilities and the documentation systems.

Areas for further action	**Significant**	None
	Minor	Integrated Management System (IMS)

RECOMMENDATIONS

R-7.2.1 Gosatomnadzor should complete the development of its Integrated Management System and implement it.

SUGGESTIONS

None

GOOD PRACTICES

None

7. Regulatory Framework **Condition 7.3: Regulations in place**	**Phase 3**

Summary of the condition to be demonstrated	The regulatory body should have in place a comprehensive set of regulations and have a process for their regular review and re-issue as required.
Examples of how the condition may be demonstrated	A comprehensive set of regulations covering safety, security and safeguards

Observations

The legal and regulatory framework in Belarus is based on a set of legal documents which are organized into a hierarchy of four distinct levels (see Condition 5.1). At the regulatory level, there are resolutions, norms and rules and technical normative acts (including technical code of practices (TCPs) some of which are mandatory.

A presidential decree authorizes the use of technical regulations of the Russian Federation (vendor country) in the absence of relevant Belarusian regulatory documents when the Russian Federation's regulations are in compliance with international standards.

The IRRS mission in 2016 recommended MES and GAN to complete the development of regulations in line with the relevant IAEA safety standards. During the period 2017-2019, 20 new norms and rules were adopted and became effective and 8 were reviewed and re-issued. The INIR team was informed that regulatory documents on aging management, operational experience feedback, NPP modifications management and investigation of events were developed. The INIR team was informed that the set of regulatory documents addressing the operational phase is complete.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

7. Regulatory Framework **Condition 7.4: Arrangements in place for co-operation with regulatory bodies in other countries**	**Phase 3**

Summary of the condition to be demonstrated	The regulatory body has reviewed opportunities for co-operation with regulatory bodies in countries operating similar plants and put appropriate arrangements in place.
Examples of how the condition may be demonstrated	Co-operation agreements identifying support mechanisms

Observations

Cooperation agreements were signed with regulatory bodies of the Russian Federation, Ukraine, Hungary, Norway, Finland, Sweden, Slovakia, Slovenia and Armenia, as well as technical support organizations such as the Institute of Radiation Protection and Nuclear Safety (IRSN), France, and the Society for the Safety of Nuclear Installations and Reactors (GRS), Germany. The INIR team was informed that the cooperation agreement with the regulatory body of Lithuania is at final stage of preparation. Belarus has been a member of the WWER Regulators' Forum since 2015.

In respect of preparations for the operation of the NPP, the INIR team was informed that Belarus has joined the IAEA Incident Reporting System (IRS) to enable engagement at an international level on safety related events at NPPs. This will allow Belarus to share operating experience and lessons learned with the international community.

The INIR team was informed that additional bilateral agreements with TSOs in Finland and Armenia are being negotiated.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

GP-7.4.1 Active engagement of Gosatomnadzor with other regulatory bodies and international organizations in the area of regulatory practices.

8. Radiation Protection **Condition 8.1: Equipment for dose monitoring and control in place**	**Phase 3**
Summary of the condition to be demonstrated	Radiation monitoring equipment and dosimetry requirements are in place. *Note: This covers the protection of workers and public on-site during planned operation. Off-site releases from planned operation are addressed in '13. Environmental Protection' and Accidental releases and associated radiation protection are addressed mainly in '14. Emergency Planning'*
Examples of how the condition may be demonstrated	(1) National arrangements for dosimetry measurements and record keeping in place. (2) Provision and maintenance of adequate instrumentation, protective clothing, and facilities

Observations

Whole body dose limits for workers and the population are set at the state level by the Law On Radiation Safety of the Population, No 122-Z of 1998. This will be superseded by the Law On Radiation Safety of 2019 which comes into effect on 27 June 2020. More detailed radiation protection requirements, covering dose constraints, extremity dose limits, internal dose limits, reference levels, are set out in the Sanitary and Hygienic Standards developed in 2012 by the Ministry of Health and incorporate the requirements of GSR Part 3 and GSR Part 7. These standards are being updated and other provisions of the 2019 Law are being implemented through a number of draft resolutions awaiting approval.

Within the NPP, there is a comprehensive Radiation Monitoring System (RMS) which, through a number of sub-systems, measures dose rates and contamination levels on the plant and monitors environmental discharges. This is managed by the Radiation Protection Department. The INIR team was informed that all systems required to be ready for fuel delivery have been commissioned and are currently undergoing pilot testing. The system is underpinned by operating procedures and instructions. The INIR team was informed that these have been approved by GAN and the Ministry of Health.

The INIR team was informed that it is planned to display radiation dose rates at the plant in Minsk and Ostrovets. Individual dosimetry requirements for the construction phase of the NPP are specified in the Presidential Decree No. 390-DSP and are based on the Russian Federation's practices. This decree will be updated through a new presidential decree to cover the operational phase of the NPP and is currently under consideration.

Personnel, both from Belarusian NPP and external organisations, who are radiation workers will be issued with personal whole-body dosimetry and extremity dosimetry as appropriate. The INIR team was informed that internal doses will be measured, where necessary, using a whole-body monitor and specimen analysis. The dosimetry system is currently undergoing accreditation by the Belarusian State Centre for Accreditation.

The INIR team was informed that there is a sanitary/radiation passport system which will come into

effect in time for commissioning, the details of which are in the course of being approved.

Assessed individual doses are reported to the Unified State Dose Accounting System operated by the Ministry of Health. This procedure was set up after the Chernobyl accident and also accounts for doses to the population and occupational doses from other users of ionising radiation. Belarusian NPP has its own registry within the unified accounting system. The draft resolution incorporates requirements for using the system for epidemiological purposes.

The INIR team was informed that in the event of an overexposure of a worker, an internal investigation committee, involving GAN, would be established by Belarusian NPP. In addition, the Ministry of Health would also investigate such event. GAN would have the formal authority under their powers to take further action if necessary.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

8. Radiation Protection **Condition 8.2: Programmes to optimize doses from operation and maintenance in place**	**Phase 3**

Summary of the condition to be demonstrated	The operating organisation has programmes to ensure doses from routine and unplanned operations are optimized and these have been reviewed by the regulatory body. *Note: This covers the protection of workers and public on-site during planned operation. Off-site releases from planned operation are addressed in '13. Environmental Protection' and Accidental releases and associated radiation protection are addressed mainly in '14. Emergency Planning'*
Examples of how the condition may be demonstrated	(1) Approved radiation protection programme (2) Procedures for the planning and control of radiation exposures during planned work and emergencies

Observations

The basic principles and requirements for dose optimisation are set out in the Law on Radiation

Safety of 2019 and the Law on the Use of Atomic Energy of 2008. In addition, there are Resolutions of the Council of Ministers, the Ministry of Health, and the Ministry of Emergency Situations. Specific radiation safety requirements have been established in a number of Sanitary and Hygienic Standards and Rules.

Implementing the Belarusian NPP Radiation Protection Programme, which covers dose optimisation, is set out in a number of Belarusian NPP procedures and instructions:

— Radiation Control Regulation which defines the frequency and procedure for conducting radiation control, and the technical means for radiation control;

— Radiation Safety Instruction which set out the radiation safety requirements when planning and performing work and include provisions to optimize doses;

— Dosimetric Control Instruction which regulates the control and evaluation of doses of the radiation-controlled zone (RCZ);

— Instructions for Improving and Optimizing Radiation Protection which implements the ALARA methodology and includes provisions for dose budgeting for specified groups of workers in normal operations and during scheduled outages;

— Classifier of Work Performed in Radiation Hazard Conditions which establishes a job classification system involving Radiation Work Permits, Orders and Individual Permits. This system informs the collective doses received which are used for comparison purposes.

The INIR team was informed that the Radiation Safety Instruction and the Radiation Control Regulation have been approved by the Ministry of Health and GAN and the remaining procedures and instructions are under consideration.

The Pre-OSART mission identified a number of activities requiring attention in the area of radiation protection. Belarusian NPP had produced an action plan to address these. The INIR team was informed that these had largely been completed and any outstanding issues were in the process of finalisation.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

9. Electrical Grid **Condition 9.1: Interface between operating organization and grid company effective**		**Phase 3**
Summary of the condition to be demonstrated	Arrangements in place for coordination of grid operation with power plant operation.	
Examples of how the condition may be demonstrated	(1) MOU between grid operators and NPP operators on how grid will be managed to ensure reliable support for the NPP and prevent unnecessary shutdowns/power reductions; (2) Protocol for scheduling shutdowns (and power changes if projected) and managing grid maintenance.	

Observations

Prior to the integration of Belarusian NPP into Belenergo, a document had been prepared to manage the interaction between the Operational Dispatch Unit (ODU) and Belarusian NPP. The objective of this document (Regulation on Interaction of the Republican Unitary Enterprise 'ODU' staff and the State Enterprise 'Belarusian NPP' staff) is to ensure reliable support from the electrical grid to the NPP and to minimize the need to reduce the power output of the NPP. The document covers operating mode and outage planning for both the NPP and national grid system, repair of electrical equipment at the NPP site, operating personnel interactions during power switching, emergency procedures and staff training**.** The INIR team was informed that the document is being used as the basis of interaction between ODU and Belarusian NPP and will be integrated into Belenergo documentation defining the interface with Belarusian NPP.

The INIR team was informed that in autumn 2019 ODU staff had received training on systems for modelling the grid in the event of loss of output of the NPP. Training on the requirements of the NPP for the grid system, on the black start up procedure and on the configuration of the switchyard is planned for the summer 2020. Belarus recognized the importance of personnel in ODU to have a good understanding of the characteristics of the NPP and its electrical requirements.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

9. Electrical Grid **Condition 9.2: Plans for grid enhancement executed**		**Phase 3**
Summary of the condition to be demonstrated	Necessary upgrades and enhancements to the grid and interconnections completed and tested.	
Examples of how the condition may be demonstrated	Report on current status of required enhancements.	

Observations

Belenergo has 6 regional supply organisations and owns the complete production and distribution system. The total capacity is a little more than 10 GW. The capacity of the largest single unit at present is 427 MW. Power input from the 12 major energy facilities (greater than 100 MW) are controlled directly by ODU as are all the 330 kV high voltage transmission lines.

The grid currently has interconnections with Ukraine, the Russian Federation and the Baltic States, However, the Baltic States and Ukraine are considering disconnecting from the Belarusian grid and synchronising with the European Union grid. This was taken into account in the analysis of upgrades required.

The upgrades to the grid system that were required to ensure reliable and safe NPP operation, were determined based on detailed system modeling. Seven new 330 kV transmission lines have been constructed together with one new and one upgraded substation. This work was completed in December 2018. 4 lines are currently in operation, the other 3 will be in operation by May 2020.

The grid system control provides for primary, secondary and tertiary reserve capacity. Secondary reserve is maintained at the size of the largest unit on the system. Currently this is 427 MW but will need to be increased to 1200 MW. The INIR team was informed that this will be achieved by the construction of 800 MW of gas turbine plants that can start up and connect to the grid within 15 minutes as required by the grid standards. The new generating plant will be complete by 2021. Reserve capacity can be provided by existing generating plants but the construction of these new facilities provides a more economical solution. There is also a load shedding protocol that can be implemented via automatic switchgear and interconnectors with other countries that can be disconnected or used as appropriate. The interconnection with Russia is 1400 MW.

The INIR team was also informed that the construction of 900 MW of electrical boilers at district heating plants will be completed in 2020 to increase the demand at night.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

9. Electrical Grid **Condition 9.3: Grid reliability demonstrated**	**Phase 3**

Summary of the condition to be demonstrated	Results of analysis to confirm the reliability of the national grid system provided regularly and contingency arrangements in place for restoration of power in the event of a major loss of grid capability.
Examples of how the condition may be demonstrated	(1) Agreements of provision of regular reporting of grid reliability; (2) Defined arrangements for restoration of power in the event of a major loss of grid capability; (3) Tests planned to address impact of full power trip and major grid component failures.

Observations

The INIR team was informed that power generators and grid system operators regularly provide reports on equipment failures, their impact and the time to compensate for and restore their operation. These reports are used to identify mechanisms for continuous improvement of grid reliability. Grid system staff are also regularly trained to respond to severe system failures.

A report on the reliability of the grid system in Belarus was also provided to the General Contractor and included in the Preliminary Safety Analysis Report.

As part of the commissioning programme for the NPP, tests will be carried out to demonstrate the ability of the grid to cope with loss of power from the NPP. These tests will be carried out at increasing levels of power, starting at 40% and increasing to 100%. Further tests will demonstrate the ability of the NPP to reduce power and supply house load in the event of loss of off-site supplies as well as to operate in shutdown mode using emergency supplies.

The INIR team was informed that Belenergo currently has a procedure for restarting the grid system in the event of total collapse of the grid (black start up). Work has been carried out to analyse what will be required to maintain this capability once the NPP is in operation. No additional equipment is required but a new procedure will need to be developed jointly by Belarusian NPP and Belenergo to define in detail the generators to be used and the power supply route. In addition, training will be required for staff in both organizations.

The INIR team noted the importance of this work and was informed that Belenergo and Belarusian NPP plan to complete the development of instructions for supplying power to the NPP in the first quarter of 2020 to start up the plant in the event of total collapse of the grid. A joint training for Belenergo and Belarusian NPP staff is planned to be conducted in the second quarter of 2020.

Areas for further action	**Significant**	None
	Minor	Black start up instructions

RECOMMENDATIONS

None
SUGGESTIONS
S-9.3.1 Belenergo and Belarusian NPP are encouraged to complete the development of instructions to ensure restart of the grid system in the event of total collapse, and train staff in their use.
GOOD PRACTICES
None

10. Human Resources Development **Condition 10.1: On-going human resource development programme in the operating organisation effective**	**Phase 3**
Summary of the condition to be demonstrated	Programs for training and development of staff in the operating organisation are in place and effective to support the continued operation of the current and future units.
Examples of how the condition may be demonstrated	(1) Initial and continuing training programmes and mechanisms to review their effectiveness in place; (2) Availability of suitable training facilities including a full scope plant specific simulator, and competent trainers; (3) Recruitment and training programmes that recognize the need for new and replacement staff, depending on the overall programme objectives; (4) A review/accreditation of training against national or international standards (e.g. INPO); (5) Availability of a leadership development programme.

Observations

Training of personnel of Belarusian NPP is carried out in accordance with the legislation of the Republic of Belarus, regulatory documents and the IAEA's guidance on the systematic approach to training.

The Belarusian NPP Training Centre began its work in January 2016. The Training Centre is fully staffed, and training programmes are in place covering among other operations, maintenance, fire safety and industrial safety. To complement classroom trainings, the Training Centre maintains a full scope simulator, an analytical simulator, PC based simulators and equipment to support training in pipe fitting, fire protection, foreign material exclusion and refuelling.

Based on training needs identified for each post, a training plan is developed. A individual plan is developed for each employee which takes into account previous education and experience. Newly hired personnel receive induction training including using a computer-based training system on fundamentals of nuclear safety. Belarusian NPP has a personnel qualification programme which requires training, refresher training and periodic assessment. GAN has reviewed the safety related training materials and approved the training programme. In addition, certain job positions require evaluation and certification by GAN in order to obtain permission to work in the field of nuclear safety, security and safeguards.

Training of 600 staff members covering senior and specialist positions was implemented through the General Contract for construction including practical experience at Novovoronezh-2 NPP in the Russian Federation. This group included future instructors of the Belarusian NPP Training Centre. The training of personnel which were not covered under the General Contract is carried out in the Training Centre under the guidance of qualified specialists with experience working in nuclear power plants together with instructors of the Training Centre. Belarusian NPP developed a leadership training programme for all levels of managers which includes modules on leadership and management, safety culture, error prevention, systematic approach to training and legal and

regulatory requirements. Belarusian NPP cooperates with other Belarusian educational institutions in this area. Belarusian NPP established a knowledge management process that covers risks of knowledge loss and preservation and transfer of knowledge. To support this process a nuclear knowledge portal will be developed and integrated with other IT applications.

The suggestion of the Pre-OSART mission on enhancing processes and practices for the development, implementation and evaluation of training programmes was addressed in an action plan, and the INIR team was informed that the suggestion is close to completion.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

10. Human Resources Development **Condition 10.2: Ongoing human resource development programme in the regulatory body effective**	**Phase 3**
Summary of the condition to be demonstrated	Programs for training and development of staff in the regulatory body to oversee the commissioning and operational phase of the NPP are in place and effective.
Examples of how the condition may be demonstrated	(1) Plans to develop capability to carry out inspections and reviews for the operational phase; (2) Ongoing training programmes and mechanisms to review their effectiveness in place; (3) Availability of a leadership development programme.

Observations

GAN identified the competencies needed to carry out its regulatory functions for the nuclear power programme following national legislation and IAEA guidance. Based on the needs identified, GAN developed job profiles which provided the basis for the development of the training programme.

GAN established a process to manage competence relevant to its work and GAN applies the systematic approach to training. The process is reviewed by the process owner and the management of GAN twice a year. This process was audited internally in 2018.

Evaluation of the effectiveness of the measures taken to achieve and maintain the qualifications of GAN employees is carried out through periodic assessments of knowledge and certifications, and results of external and internal audits.

Based on training needs identified for each post, a training plan is developed. An individual plan is

developed for each employee taking into account previous education and experience. Newly hired personnel receive induction training. For young professionals internal training is organized in the divisions (units) of Gosatomnadzor. GAN training covers legislation and regulations, processes and procedures, mentoring and practical hands-on training on regulatory activities, analysis, preparation of reports and documenting the results, on-the-job training including in the regulatory body of the vendor country (Rostechnadzor) and other regulatory bodies. Training in the WWER technology is carried out at the Belarusian NPP Training Centre. GAN also implemented construction and commissioning inspections which were shadowed by Rostechnadzor.

Within the framework of the European Commission's project, a permanent mission of experts is working in the Republic of Belarus, which includes representatives of France, Germany, and Ukraine, Bulgaria, Sweden. The mission's experts assist GAN by providing on strategic and operational issues in all areas of regulatory activities in the field of nuclear and radiation safety.

Gosatomnadzor supports the development of the competencies of experts of scientific and technical support organizations. Each year Gosatomnadzor organizes refresher training courses in the field of nuclear and radiation safety for experts from scientific and technical support organizations.

The INIR team was informed that GAN arranges leadership training for top managers, young specialists and unit heads. It includes information sessions, meetings with the head of GAN and advanced training courses and seminars on the development of managerial and leadership competencies with support of the Management Academy of Belarus.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

10. Human Resources Development **Condition 10.3: National educational programmes and research and development to support capacity building implemented**	**Phase 3**

Summary of the condition to be demonstrated	National educational and research programme required to support the nuclear power programme in place.
Examples of how the condition may be demonstrated	(1) Evidence of university courses/research activities in support of the nuclear programme; (2) Support for research programmes; (3) Combined initiatives by government and industry to support educational programmes;

	(4) Availability of relevant university programmes; (5) Availability of technician training institutes and craftsmen training; (6) Ongoing maintenance of the National Capacity Building Plan.

Observations

A State Programme was approved to develop and implement a comprehensive personnel training system for construction, commissioning and safe operation of the nuclear power plant.

Belarusian nuclear power programme is supported by four universities (the Belarusian State University, the Belarusian State University of Informatics and Radioelectronics, the Belarusian National Technical University and the International State Environmental Institute named after Andrey Sakharov). Courses offered by these universities include nuclear physics, chemistry, thermomechanical equipment, electrical engineering, construction and nuclear and radiation safety. Universities develop their degree programmes taking into account the needs identified by Belarusian NPP and Gosatomnadzor.

Since 2013, more than 800 students have graduated and been employed in the organizations supporting the nuclear power programme. This includes 350 young specialists working at Belarusian NPP.

The INIR team was informed that the national educational system includes vocational education to prepare technicians and craftsmen. This education is implemented in a wide range of technical national institutions, including the Belenergo technical college.

Scientific research projects are carried out in the State Scientific Institution Sosny, the State Institution Centre of Geophysical Monitoring and the Center for Nuclear and Radiation Safety. Currently, the State Programme *High Technologies and Technics* for 2016–2020 is being implemented. The INIR team was informed that the Conceptual Project and the activities of the State Programme focusing on scientific support for operation of the NPP for the years 2021-2025 and for the period until 2040 are being developed.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

11. Stakeholder Involvement **Condition 11.1: Transparent and open communications continue**	**Phase 3**
Summary of the condition to be demonstrated	Government, Operator and regulatory body have a programme of stakeholder involvement that maintains a proactive, transparent and open approach, including statutory requirements.
Examples of how the condition may be demonstrated	(1) Operational public information centres; (2) Evidence of communications with the media and public; (3) Continued communication, led by the government explaining the rationale for nuclear power; (4) Qualified and experienced staff in place; (5) Public opinion surveys; (6) Mechanisms set up by operating organization for local stakeholder involvement; (7) Well defined and implemented stakeholder involvement plan for the operating organization; (8) Open information policy and practice in the regulatory body; (9) Examples of regulatory stakeholder communications; (10) All organizations continue to share with one another their stakeholder management plans.

Observations

The Inter Departmental Commission (IDC) supervises stakeholder involvement activities for the nuclear power programme. Each key organisation, MoE, Belarusian NPP and GAN, has stakeholder involvement plans and prepares a quarterly report on the results of their activities. The IDC reviews the reports of all key stakeholders on a regular basis and makes decisions on further work.

A working group under IDC manages and coordinates the activities at a working level chaired by MoE. It involves 5 organizations: MoE, Ministry of Natural Resources Environmental Protection (MoNREP), MoFA, Belarusian NPP and GAN. This working group shares plans, collects information on events and reports to IDC. The working group can provide timely responses to requests for information and issues that arise. Belenergo will become part of the group.

Belarusian NPP and MoE have a communication plan on the nuclear power programme including the construction progress. This plan identifies relevant information for the mass media, and methods of engaging with experts and business associations of Belarus.

Information on the status of the NPP construction project is regularly posted on the internet by news agencies, on the websites of the Ministry of Energy and Belarusian NPP, as well as in popular social media networks.

Since 2018, the Ministry of Energy, Belarusian NPP and the newspaper *Republic* have been

implementing a Joint Monthly Information Project entitled *Energy of the Future by providing* regular updates on the status of the project and other important issues of the NPP construction. Five to six press tours and press conferences are held annually at the NPP for Belarusian and foreign journalists.

The Institute of Sociology of the National Academy of Sciences of the Republic of Belarus has carried out public surveys since 2005 at the request of MoE. These surveys are conducted in all regions of Belarus and include respondents selected according to the criteria of gender, age, education, social status, region and town of residence. The results of surveys are used by the IDC for adapting strategies of stakeholder involvement and communication plans. The IDC reports the results of surveys to the Government of Belarus.

The last survey was conducted May 2019. In total, 49% of the population support the nuclear power programme, 21% are against and 29% are undecided.

In 2015, the Atomic Energy Information Centre (AEIC) was opened in Minsk. The Centre organizes educational and career opportunity events, scientific and technical conferences, etc. Since its opening 31 000 people have visited it.

An Information and Public Relations Division was established in Belarusian NPP with experienced employees. It has a group with 3 communication specialists and a group dealing with international cooperation. The Division is responsible for the interface with mass media, participation in national and international fora and exhibitions. The Division is also responsible for the operation of the Information Centre of the Belarusian NPP which was established and made operational in 2009 in Ostrovets. The Centre is intended to inform the public on nuclear energy and safety matters, environmental protection, international cooperation and on the NPP project. Since its opening, 20 000 people have visited the centre.

The Information and Public Relations Division is working closely with local communities in Ostrovets and in Grodno region. The Division organized several public discussions. The last was organized in 2018 with participation of 400 people including representatives of green movements.

GAN posts on the corporate website of MES regulatory documents, forms, information and clarification of requirements, status of the licensing process and results of inspections, etc.

There is an existing mechanism for public consultation on draft regulatory documents through the website of the Legal Forum of Belarus, the official website of MES/GAN, parliamentary hearings.

The INIR team was informed that in response to the 2016 IRRS mission recommendation MES/GAN is preparing to hold a public hearing before issuing the operation license to Unit 1. It will be held in Ostrovets and will focus on licencing process of Unit 1.

MES/GAN publishes national reports on the implementation of the obligations under the Convention on Nuclear Safety, the Joint Convention on the Safety of Spent Fuel Management and Radioactive Waste Management, reports of IAEA review missions and other official documents are publicly available.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS
None
GOOD PRACTICES
GP-11.1.1 Active engagement with the international community in areas such as environmental impact assessment and monitoring, emergency preparedness and response, and post Fukushima stress tests.

12. Site and supporting facilities **Condition 12.1: Confirm/update site characterisation parameters and continue site monitoring**		**Phase 3**
Summary of the condition to be demonstrated	The operating organisation has confirmed the site characteristics, taking into account information obtained during the construction phase. The operating organisation has a plan for on-going monitoring to ensure the site continues to meet the design intent.	
Examples of how the condition may be demonstrated	(1) A report confirming the site characteristics, taking into account monitoring data and information obtained from construction; (2) Arrangements to monitor the characteristics of appropriate natural and human induced hazards as well as the demographic, meteorological and hydrological conditions of relevance.	

Observations

Belarusian NPP is monitoring the site characteristics during the construction phase through the Integrated Environmental Monitoring Programme. This programme includes seismic, hydrological, geotechnical parameters and meteorological phenomena and factors. The results of the monitoring programme are submitted on a regular basis to Gosatomnadzor. Some parameters are reported on an annual basis, others, in particular geotechnical parameters, are reported quarterly. Upon request, reports are also submitted to the Ministry of Natural Resources. The INIR team was informed that the monitoring system will be subject to some minor modifications for the operational phase. The modified monitoring system is described in the final safety assessment report for the operating licence application.

A Site and External Events Design (SEED) review service was conducted in 2017 with the objective to review the relevant NPP design parameters against site-specific hazards.

The SEED mission concluded, based on a comparison between site characteristics and design parameters, that appropriate steps were followed to adequately address all necessary aspects of site safety. The SEED mission also concluded that appropriate measures had been taken to address challenges related to external events in light of lessons from the Fukushima Daiichi accident.

Specifically, in the area of site monitoring, the SEED report states that “The review led to the general conclusion that hazard monitoring programmes are adequate and properly documented in the PSAR”.

The SEED review team suggested that the site-specific seismic ground motion response spectrum should be properly documented in the final SAR. The INIR team was informed that this work will be completed by quarter four 2020.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None
SUGGESTIONS
None
GOOD PRACTICES
None

13. Environmental Protection **Condition 13.1: Environmental limits and conditions defined**		**Phase 3**
Summary of the condition to be demonstrated	The licence conditions include any environmental conditions and limits. *Note: This covers off-site releases from planned operation and all other environmental issues. The protection of workers and public on-site during planned operation. are addressed in '8. Radiation Protection' and Accidental releases and associated radiation protection are addressed mainly in '14. Emergency Planning'*	
Examples of how the condition may be demonstrated	Availability of environmental conditions and limits and processes to ensure they are met.	

Observations

Non-radiological discharge limits are set out in Environmental Permits issued by the Ministry of Natural Resources and Environmental Protection and shall not exceed the permissible levels established by the Ministry of Health.

The *Hygienic Requirements for the NPP Design and Operation* sets limits for the annual dose for the population living at the sanitary protection zone boundary of the NPP. These limits are 50 μSv per year each for gaseous emissions and liquid discharges.

The Sanitary Standards require that the limit for annual permissible emissions and discharges for individual radionuclides contributing in total for 98% of the dose shall be established. These requirements are taken into account by Belarusian NPP in the development of standards for permissible emissions and discharges of radioactive substances into the environment. The governmental body and the approval procedure for radioactive discharges limits will be approved by a governmental decree in April 2020. A draft decree is currently under consideration by concerned bodies. The INIR team was informed that during the environmental impact assessment and state environmental expertise processes, all relevant parameters defined in the design documents were analysed to ensure compliance with permissible limits established by the regulations. It was also mentioned that the Ministry of Natural Resources and Environmental Protection will conduct regular sampling and testing during the operational phase of the NPP.

During the operational phase of the NPP, annual reports on discharges and releases will be submitted by Belarusian NPP to Gosatomnadzor. Reports to the Ministry of Natural Resources and Environmental Protection and to the Ministry of Health will be provided under request.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS
None

SUGGESTIONS	
None	
GOOD PRACTICES	
None	
13. Environmental Protection **Condition 13.2: Environmental monitoring programmes in place**	**Phase 3**
Summary of the condition to be demonstrated	An environmental monitoring programme is in place that allows the impact of operation to be assessed through comparison with the baseline study.
Examples of how the condition may be demonstrated	(1) An operational environmental monitoring system in place as agreed in the EIA; (2) The Radiation Protection module of OSART (Module 4.7), particularly the sub-section on radioactive waste management and discharges, includes a review of some environmental monitoring arrangements.

Observations

Since 2016 environmental monitoring is being implemented in accordance with the Integrated Environmental Monitoring Programme (IEM) approved by GAN for the construction period of the NPP. The Report on the Initial Environmental Radiation Status is an integral part of the documents substantiating the NPP safety, was prepared based on the IEM data and has been approved. This baseline data will be used for comparative analysis following the startup of the NPP.

The IEM programme covers all required elements including both radiological and chemical contamination in air, water, groundwater, soil, vegetation, local food, feed and wildlife as well as elements of agro-ecosystems, meteorological phenomena and factors, hydrological, aerial, seismological and geotechnical parameters.

The INIR team was informed that, using the IEM, radiation surveys are being conducted on a regular basis in the sanitary protection zone and surveillance zone of the NPP. The work is performed by Belhydromet and RUE "Scientific and Practical Center of Hygiene". Future radiation surveys will be carried out in accordance with the radiation control procedure of Belarusian NPP.

The Radiation Safety Department of Belarusian NPP has a laboratory which operates an automated environmental radiation monitoring system.

In addition, Belarus has a national monitoring system operated by Belhydromet under the Ministry of Natural Resources and Environmental Protection. An action plan was approved in 2016 to improve the existing monitoring system and extend it with radiological monitoring stations close to the NPP. As part of the action plan since 2017, radioactive contamination measurements of surface water are conducted at three different locations: (1) the Viliya river; (2) Svir Lake; and (3) Naroch Lake. The frequency of measurements is five times a year. Soil radiation monitoring with the frequency of once a year is carried out at four observation points located near the villages Bystritsa, Svir, Kemelishki and Gudogay. In 2018, the stationary off-line aerosol station in Lyntupy, Oshmyany and Naroch were set up to monitor the content of airborne radioactive aerosols.

In cases of emergencies, mobile laboratories of Belhydromet will be available. Moreover,

Belhydromet crisis centre will provide support by providing forecasts based on data from the monitoring stations and from simulations using weather forecast data. Food and population monitoring will be provided by the Ministry of Health. Agricultural products, animals and feed will be monitored by the Ministry of Agriculture.		
Areas for further action	**Significant**	None
	Minor	None
RECOMMENDATIONS		
None		
SUGGESTIONS		
None		
GOOD PRACTICES		
None		

14. Emergency Planning Condition 14.1: Owner/operator emergency arrangements in place and tested	Phase 3

Summary of the condition to be demonstrated	The operating organisation has prepared and tested its emergency preparedness programme and it has been verified by the regulatory body.
Examples of how the condition may be demonstrated	Documentation describing the operating organisation's emergency arrangements; facilities and equipment in place to support the plan; regular test of the arrangements.

Observations

Belarusian NPP has developed the Action Plan for Protection of the Belarusian NPP Personnel in the Event of a Radiation Accident (On-Site Emergency Plan). The On-Site Emergency Plan defines the arrangements, responsibilities and procedures for the implementation of protective measures on site in an emergency situation.

In 2019, the On-Site Emergency Plan was reviewed and updated. The new version of the Plan was developed and agreed upon by the Ministry of Emergency Situations/Gosatomnadzor (GAN), the Ministry of Health, the Ministry of Natural Resources and Environmental Protection, the Ministry of Internal Affairs, and the State Security Committee. On-Site Emergency Plan was approved by the Director General of Belarusian NPP on 30 July 2019.

The INIR team was informed that on 28 September 2018 a tabletop exercise was conducted with the situational crisis centers on the topic information support for managerial decisions. A further exercise of the Belarusian NPP On-Site Emergency Plan was conducted from 3 to 4 October 2018 including government bodies and organizations involved in emergency response (including WANO-Moscow Center). Both exercises were monitored and assessed by GAN which identified areas for improvement that were used to amend the On-Site Emergency Plan.

An Emergency Preparedness Review (EPREV) mission was conducted in October 2018. The EPREV mission made 5 Recommendations and 10 Suggestions including that the Belarusian NPP On-Site Emergency Plan did not use the emergency classification system that implements the IAEA Standard Standards. The INIR team was informed that Belarusian NPP had addressed the recommendation and the On-Site Emergency Plan had been amended accordingly. The INIR team was informed that, to address the Pre-OSART mission accident management recommendations, Belarusian NPP reviewed its emergency response arrangements including finalizing the development and implementation of procedures for accident management which were verified and validated, operating personnel training using the full scope simulator, notification system, evacuation of subcontractors' personnel involved in NPP construction from the site, individual protective equipment, iodine tablet availability and the use of emergency equipment including mobile diesel generators.

On 11 October 2019, a national exercise was conducted using the updated On-Site Emergency Plan. During this exercise, the interface with the Off-Site Emergency Plan was also tested.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS	
None	
SUGGESTIONS	
None	
GOOD PRACTICES	
None	
14. Emergency Planning **Condition 14.2: Government and Regulatory body arrangements in place and tested**	**Phase 3**
Summary of the condition to be demonstrated	The government (through defined EPR entities) and regulatory body have prepared a national plan, together with arrangements to implement their responsibilities, and ensure clear decision making process at all stages of the emergency. Arrangements have been demonstrated through a national emergency exercise involving all relevant organizations. Regulations for emergency worker dose protection are in place.
Examples of how the condition may be demonstrated	(1) Regulatory requirements for EPR defined including: operator notifications, emergency dose protection; (2) Procedures to implement the regulatory and government roles; (3) Availability of facilities and equipment to support the plan; (4) Arrangements for international notifications; (5) Plans for medical treatment of exposed persons.

Observations

In Belarus, the emergency preparedness system for nuclear and radiation accidents is integrated into the National Emergency Response System in accordance with the Law on the Protection of the Population and Territories from Natural and Technogenic Emergencies. The concept of creating the situational crisis centers system was approved by the Resolution of the Council of Ministers of the Republic of Belarus, No. 479, June 2016.

The Law on the Use of Atomic Energy and the Regulation on Conditions and Procedure for the Action Plans Development establish requirements for the emergency preparedness and response plans in case of accidents at nuclear facilities. Emergency Preparedness and Response measures in the event of accidents at nuclear facilities are established by the Off-Site and On-Site Emergency Plans. The Off-Site Emergency Plan was approved by a governmental decree in March 2018.

The INIR team was informed that the development of emergency preparedness and response plans started during the NPP construction–and went through several refinements–which helped the development of procedures and staff competence. During the exercises, communication systems for

emergency management were tested.

The INIR team was informed that an exercise was conducted from 18 to 19 October 2017 in the Ostrovets district, Grodno region, to test the Off-Site Emergency Plan including participation from the Government's Departments and the State Forces of Emergency Prevention and Response System (SFEPRS). The exercise was attended by international observers from Latvia and Poland, representatives of the Collective Security Treaty Organisation, as well as the IAEA and the International Committee of the Red Cross. On 11 October 2019, a further national exercise was conducted. During this exercise, the interface with the On-Site Emergency Plan was also tested.

In response to the EPREV Mission (October 2018) an Action Plan to address the 5 Recommendations and 10 Suggestions was developed involving 19 governmental bodies. The Action Plan was approved by the Government in March 2019. The Action Plan covers tasks to be completed in the period 2019-2021. The INIR team was informed that progress is in line with the deadlines and actions requiring completion prior to commissioning of Unit 1 have been implemented.

The INIR team was informed that an EPREV follow-up mission is planned following the completion of commissioning of the NPP Unit 2.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

14. Emergency Planning **Condition 14.3: Arrangements for regular training, drills and exercises in place**	**Phase 3**
Summary of the condition to be demonstrated	A programme of training, drills and exercises to confirm the ongoing acceptability of their emergency response arrangements has been defined for each organization and for integrated exercises.
Examples of how the condition may be demonstrated	(1) Plans for each national organization to test their arrangements in isolation; (2) Plans for integrated exercises to demonstrate the overall national plan.

Observations

The INIR team was informed that all organizations involved in the NPP emergency response arrangements conduct comprehensive training, drills and exercises to test their preparedness and

response capability.

The INIR team was informed that the emergency exercise programme and frequency was as follows:

— Comprehensive national exercises involving regions, cities and districts (every 5 years);

— Emergency exercises involving government bodies, district & local bodies (every 2 years);

— Emergency exercises or training within response organizations (annual);

— Special tactical exercises with the State Forces of Emergency Prevention and Response System (SFEPRS) (annual).

The INIR team was informed that emergency exercise planning is completed within a five-year planning cycle with the current programme covering the period 2016-2020. The next comprehensive national level emergency exercise is planned following NPP Unit 2 commissioning.

During the exercises the response and actions of the government bodies and forces of the State Emergency Service, as well as Belarusian NPP were assessed including regulatory oversight from GAN. The exercise reports included the identification of areas for improvement were used to review and amend the Off-Site and On-Site Emergency Plans and to further develop the training of emergency response personnel.

Belarusian NPP has a regular programme of training, drills and exercises of varying scope and frequency. There is an annual plant wide drill more frequent department drills covering all shifts. GAN monitors and observes on-site emergency exercises using approved GAN guidance.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

GP-14.3.1 Effective coordination and systematic approach in developing, reviewing, testing, updating emergency and contingency plans and training at all levels for all organizations involved.

15. Nuclear Security **Condition 15.1: Physical protection system demonstrated and approved**	**Phase 3**
Summary of the condition to be demonstrated	The physical protection system has been completed, tested and approved by the regulatory body and the procedures, training and testing requirements for the protection of nuclear material are in place.
Examples of how the condition may be demonstrated	(1) Evidence of acceptance by, and handover to, the operating organization of the physical protection system; (2) Evidence of review and approval by the regulatory body; (3) Procedures for system maintenance and testing and training of personnel.

Observations

The INIR team was informed that a national nuclear security threat assessment was performed by a special governmental commission including the Ministry of Internal Affairs (MIA), State Security Committee (KGB) and MES. The development and maintenance of the design basis threat (DBT) for the NPP is the responsibility of Belarusian NPP. The DBT was developed by a working group chaired by Belarusian NPP which consists of the representatives of the operator, MIA, MES, Ministry of Energy (MoE), the State Border Guard Committee and the KGB. The INIR team was informed that the DBT defines the physical and cyber capabilities of potential armed and unarmed, internal and external adversaries. The INIR team was informed that new and emerging threats would be reflected in the DBT and then in the Physical Protection System (PPS).

The INIR team was informed that Belarusian NPP identified the potential targets and protection objectives taking into account the categorization of nuclear material, the potential radiological consequences of acts of sabotage to material, structures, systems and components and potential attack scenarios. The technical specifications of the PPS were developed by Belarusian NPP and provided the basis for the design documentation. The vulnerability analysis was performed by Belarusian NPP to identify and eliminate potential weaknesses of the PPS design. The INIR team was informed that a similar approach was applied to physical protection measures for transport of nuclear material.

A Special Security Service was established to operate the PPS, consisting of armed guards, engineering, operating and analytical units, as well as an information protection department. Belarusian NPP established facility level documents for the operation and maintenance of the PPS, including arrangements for access control, response interactions in contingency situations, operation of the Special Security Service, and information security. 222 employees of the Special Security Service have received a variety of specialized training.

The INIR team was informed that adjustments, as required, will be made after the pilot operation of the PPS that is planned to be completed in the early quarter two of 2020. When the PPS will be approved, special forces of the MIA will be deployed within the facility and provide additional armed response.

The INIR team was informed that the effectiveness of the PPS will be ensured by regular drills and

exercises and a quality assurance programme, including periodic checks of PPS components.

The INIR team was informed that the completeness of the PPS will be confirmed by signing the acceptance act by the interdepartmental commission for security consisting of officials from MES/GAN, MIA, MoE and KGB after a comprehensive inspection of all elements of the PPS. The INIR team was informed that the acceptance act is a requirement for issuing the operating license. The INIR team noted that this process needs to be completed before the delivery of the fuel.

International Physical Protection Advisory Service (IPPAS) missions were conducted in Belarus in 2000 and 2009. An IPPAS mission with a detailed review of the nuclear security regime for nuclear facilities, the physical protection of the NPP and the transport of nuclear material has not yet been conducted. Belarus has requested such an IPPAS mission to be conducted in 2021.

Areas for further action	**Significant**	None
	Minor	Physical Protection System in operation

RECOMMENDATIONS

R-15.1.1 Belarusian NPP should put the physical protection system into operation before the delivery of the fuel.

SUGGESTIONS

None

GOOD PRACTICES

None

15. Nuclear Security **Condition 15.2: Contingency plan approved**	**Phase 3**

Summary of the condition to be demonstrated	The regulatory body has approved the contingency plan and an action plan agreed to address any outstanding issues.
Examples of how the condition may be demonstrated	(1) Evidence of an approved security plan and contingency plan; (2) An agreed action plan being monitored to completion.

Observations

The INIR team was informed that Belarusian NPP has established internal documents describing the actions to be performed by the Special Security Service in normal, contingency and emergency situations.

Belarusian NPP has established interaction plans with competent security authorities with roles in contingency and emergency situations, covering information exchange and notifications and tasks and procedures in different contingency situations that may occur at the NPP or during transport of nuclear material.

The INIR team was informed that joint exercises with law enforcement agencies are regularly

performed, including a comprehensive tactical and special training session in 2017. In 2018-2019, 11 training events and exercises were conducted. The lessons learned from these events were used for revising documents, regrouping security forces, improving patrol routes, and improving the interactions with the law enforcement agencies.

The relevant interaction plans were approved by MIA, State Security Committee, MES and the State Border Guard Committee.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

15. Nuclear Security **Condition 15.3: Leadership and security culture evident (See also 2.2)**	**Phase 3**

Summary of the condition to be demonstrated	The senior management of all organizations provide effective leadership; a nuclear security culture is evident throughout the owner/operator and its activities are verified and challenged by regulatory inspection.
Examples of how the condition may be demonstrated	(1) Evidence of leadership behaviours to promote a security culture; (2) Policies and actions with respect to error reporting, questioning attitude; (3) Review of regulatory inspections of processed and behaviours carried out; (4) Planned inspections for operating phase.

Observations

The physical protection of nuclear material and nuclear facilities is regulated by the Regulation on the Physical Protection of Nuclear Facilities, approved by Resolution of the Council of Ministers of the Republic of Belarus No. 385 of 14 June 2019. The physical protection regulation defines nuclear security culture and requires the operator to establish and maintain it.

In order to establish a robust nuclear security culture, Belarusian NPP:

— Establishes ethical standards and rules for the employees;

— Unites employees of different qualification and generation to coherent communities;

— Reinforces morale, public consciousness, morality and self-control;

— Establishes the basis for regulating the behaviour of employees to make the correct decision in difficult situations of conflict and ethical uncertainty.

The INIR team was informed that the Special Security Service constantly monitors how personnel, employees of subcontractors, and representatives of competent authorities and media comply with the requirements for the use of mobile devices. Preventive and disciplinary measures are applied against violators of the physical protection instructions.

According to presidential decree No. 515 of 2016 (as amended by Decree No. 172 of 2019), all those having unescorted access to the NPP are subject to background check by the KGB. If justified, additional verification, including psychological and physical examination and the observation of behaviour may also be performed.

The INIR team was informed that security culture related questions are asked by Gosatomnadzor during the regulatory exam of employees in positions requiring certification.

The INIR team was informed that Belarusian NPP has plans to assess and enhance nuclear security culture with the support of external experts.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

15. Nuclear Security **Condition 15.4: Preparation and approval of the security plan**	**Phase 3**
Summary of the condition to be demonstrated	The regulatory body has approved the security plan and an action plan agreed to address any outstanding issues.
Examples of how the condition may be demonstrated	(1) Evidence of an approved security plan and contingency plan; (2) An agreed action plan being monitored to completion

Observations

The physical protection regulation covers the objectives of physical protection, the roles and responsibilities of competent authorities and the operator, reporting and performance verification.

The final design documentation of the PPS was reviewed by JSC Eleron and Belarusian NPP. It was developed in accordance with the Order No. 213 of 1 January 2010 of the Ministry of Internal Affairs and the Resolution No. 55 of 2011 of the Ministry of Emergency Situations

Prior to commissioning, Gosatomnadzor issued permits for the construction and installation of the physical protection system of the nuclear power plant. The INIR team was informed that Gosatomnadzor was regularly informed on the work related to the construction and installation of the PPS, training and development of facility level documents. Inspections to verify compliance with the requirements and review of physical protection documents are performed by Gosatomnadzor according to the Presidential Decree No. 62 of 2015.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

16. Nuclear Fuel Cycle **Condition 16.1: Arrangements for fuel supply in place**		**Phase 3**
Summary of the condition to be demonstrated	The provisions to secure the first few fuel reloads (consistent with the national fuel cycle strategy) have been contractually committed and responsibility for implementing the long term strategy defined.	
Examples of how the condition may be demonstrated	(1) Requirements specified in contract with fuel supplier (2) Implementation plan for national fuel cycle strategy including any planned national fuel cycle infrastructure with well defined time schedules	
Observations The 2011 IGA provides for the supply of fresh fuel. This Agreement covers the initial load and all subsequent fresh fuel supplies throughout the life of the plant. The initial load and the first reload for both reactor units is included in the General Contract. The lifetime supply of nuclear fuel is included the fuel supply contract signed between Belarusian NPP and JSC TVEL.		
Areas for further action	**Significant**	None
	Minor	None
RECOMMENDATIONS		
None		
SUGGESTIONS		
None		
GOOD PRACTICES		
None		

16. Nuclear Fuel Cycle **Condition 16.2: Spent fuel management arrangements in place**	**Phase 3**
Summary of the condition to be demonstrated	Plans to implement the spent fuel management strategy are in place. Adequate on site storage is available and the schedule and budget for interim spent fuel storage is consistent with the on-site storage capabilities. Any fuel take back arrangements are clear and agreed.
Examples of how the condition may be demonstrated	(1) Documented and approved strategy covering interim storage, and addressing timing, funding and responsibilities of future storage facilities; (2) Contractual arrangements for handling spent fuel (fuel take back, reprocessing) in place and consistent with

	the national storage capacities. Transport requirements and provisions are included.

Observations

Belarus has developed a strategy for the management of spent nuclear fuel which was approved by the Resolution No. 558 of 22 August 2019 of the Council of Ministers. This followed a 2018 feasibility study and public consultation which considered both open and closed fuel cycle options. The preferred option selected was to transport the spent fuel to the Russian Federation for reprocessing, with the return of the resultant waste to Belarus. The 2011 Intergovernmental Agreement requires that this shall be concluded in a separate agreement between the countries.

The INIR team was informed that discussions were at an early stage and a number of agreements would need to be in place between Belarus and the Russian Federation on agreeing the principles to justify the readiness of the Russian Federation to receive spent nuclear fuel, for Belarus to receive HLW, and for transportation of spent nuclear fuel and HLW. Further, a framework contract for the management of spent nuclear fuel between the authorized organizations in each country would need to be in place.

Belarus initially aimed to conclude these agreements by the end of 2020. The INIR team was informed that there would be no impact on issuing the operating license if these were not met.

Further activities identified to implement the strategy include the creation of a storage site for spent fuel prior to it being transported to the Russian Federation, with the option to provide for its expansion in case such transport is not possible.

When spent nuclear fuel is unloaded from the reactor, it will be moved to the reactor's spent fuel storage pool. Each of the two pools has a 10-year storage capacity after which the fuel will be removed and transferred in a TK-13 type transport cask ready for subsequent shipment by rail away from the NPP site.

Although the preferred option is to have spent fuel reprocessed in the Russian Federation, should this not be possible, the strategy has identified long term storage with subsequent geological disposal as the accepted alternative.

The strategy will be reviewed periodically and will include reviewing the costs of implementing the strategy for feeding into the relevant long-term funding scheme.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

17. Radioactive Waste Management **Condition 17.1: Plans for decommissioning available**		**Phase 3**
Summary of the condition to be demonstrated	An initial decommissioning plan is developed.	
Examples of how the condition may be demonstrated	Initial decommissioning plan is developed according to the national decommissioning strategy and consistent with regulatory requirements.	

Observations

Article 20 of the Law on the Use of Atomic Energy requires the program for decommissioning of a nuclear installation to be developed no later than five years before the end of NPP operation.

The 2010 Resolution of the Ministry of Emergency Situations approved the norms and rules in the document entitled: *Safety in the Management of Radioactive Waste. General Provisions*". These require that in designing a radiation facility, an estimate should be given of the volume, activity and composition of the radioactive waste generated during the decommissioning or closure of the facility.

Chapter 18 of the PSAR describes the proposed decommissioning concept and sequence of activities. The concept presented covers the main stages for dismantling and disposal and associated timescales.

Chapter 18 of the PSAR also describes how waste production will be minimised and doses optimized in accordance with ALARA. The PSAR presents preliminary estimates of the radionuclide content and expected volumes of conditioned radioactive waste resulting from decommissioning.

As noted in Section 4.2, the INIR team was informed that within one year of the start of commercial operation of the second unit, Belarusian NPP will contract with a company to carry out an assessment of the decommissioning costs based on an immediate dismantling strategy and the preliminary decommissioning plan.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

17. Radioactive Waste Management **Condition 17.2: Arrangements for low and intermediate level waste in place**	**Phase 3**

Summary of the condition to be demonstrated	Existing, enhanced or new facilities for the storage of LILW are prepared to receive waste arising from operation of the nuclear power plant. Plans for the disposal of LILW are in place and the responsible organization for managing radioactive waste has been established.
Examples of how the condition may be demonstrated	(1) Facilities either operational or on schedule to receive waste as required from NPP; (2) Ownership and management responsibilities for radioactive waste and waste management facilities clear.

Observations

The design of the NPP provides for on-site solid radioactive waste storage facilities for each reactor. The storage capacity of these is designed to accept very low, low and intermediate level solid radioactive waste generated during 10 years of operation.

Article 32 of the Law on the Use of Atomic Energy establishes duties and responsibilities of the operating organization for the safe management of operational radioactive waste. The Radioactive Waste Management Department of Belarusian NPP is responsible for waste management on the site and its responsibilities are set out in the Statute No. 19/30 approved by the Chief Engineer of Belarusian NPP on 3 October 2019.

A number of regulations set out the requirements for nuclear and radiation safety in the management of radioactive waste.

The 2015 Strategy for the management of radioactive waste provides for the construction of a very low, low and intermediate level radioactive waste disposal facility. Within the Strategy, the time limit set for commissioning its first phase was given as 2028. The INIR team was informed that this would require the siting of the facility by 2023 but that these dates might be deferred. The initial capacity of the facility is based on the amount of waste estimated to be generated during the first 10 years of operation. This will be expanded throughout the operational period of the plant and eventually its capacity increased to accept radioactive waste arising from decommissioning waste. The cost of providing this disposal facility will come from the nuclear safety fund (see Section 4).

The INIR team was informed that the site of the facility has not yet been selected. However, preliminary studies had been undertaken and the criteria of a suitable site identified. In addition, waste package specifications had been developed and generic waste acceptance criteria approved. These waste acceptance criteria will be supplemented by site-specific criteria when the site has been selected.

Article 44 of the 2019 Law on Radiation Safety requires that the Council of Ministers should define the state body responsible for "governing activities in the field of radioactive waste management". The main tasks of this state body will include the creation and maintenance of a system for the long-term storage and disposal of radioactive waste, as well as the organization of research and development. The INIR team was informed that the plans for the creation of the state body are being discussed and government is considering which ministry will be responsible for establishing the radioactive waste management organization.

Areas for further action	**Significant**	None

	Minor	Responsibility for managing radioactive waste

RECOMMENDATIONS

None

SUGGESTIONS

S-17.2.1 Belarus is encouraged to allocate responsibility for establishing the radioactive waste management organization.

GOOD PRACTICES

None

17. Radioactive Waste Management **Condition 17.3: Work to develop HLW disposal arrangements ongoing**	**Phase 3**
Summary of the condition to be demonstrated	The responsibility for ultimate disposal of HLW is clear. The responsible organization continues to follow international efforts and progress toward ultimate HLW disposal, and plans to revise the national policy as appropriate. Timescales are consistent with interim storage arrangements.
Examples of how the condition may be demonstrated	(1) Responsibilities clearly defined for development and implementation of disposal plans; (2) Evidence of international interactions; (3) Current national policy available and adequate to meet future requirements; (4) Evidence of continuing to follow international efforts and research on geological disposal; (5) If fuel take back or reprocessing options are considered, the contractual arrangements address the disposal of high level waste including transport arrangements and financial provisions.

Observations

The Council of Ministers Resolution No. 327 of 21 April 2016 *On Approval of the State Program High Technology and Technics for 2016–2020* contains a requirement "to study the necessity and possibility of constructing the disposal facility for high-level radioactive waste in deep geological formation". The INIR team was informed that staff from the Belarusian Academy of Sciences, GAN and Belarusian NPP became familiar with the topic also through attending international conferences, visiting facilities in Finland and discussing the subject within the context of a European Union project. In addition, the Academy of Sciences have had discussions with counterparts in the Russian Federation on this topic.

Following the 2019 strategy for the management of spent nuclear fuel, Belarus is in discussion with Russian Federation regarding the option of receiving waste included in a glass matrix containing radionuclides of the cesium- strontium fraction, with the exception of long-lived radionuclides. This

would obviate the need for deep geological disposal in Belarus. The INIR team noted as a result of these discussions, Belarus might need to review the strategy.		
Areas for further action	**Significant**	None
	Minor	None
RECOMMENDATIONS		
None		
SUGGESTIONS		
None		
GOOD PRACTICES		
None		

18. Industrial Involvement **Condition 18.1: Support for Industrial development established**		**Phase 3**
Summary of the condition to be demonstrated	The promotion of industrial development for national participation in the nuclear program continues as appropriate, depending on the national strategy.	
Examples of how the condition may be demonstrated	(1) Support for development of appropriate industries e.g. research and development, long-term financing to upgrade capacity of national/local industries; (2) Supply chain for industrial involvement for NPP is established; (3) The plan for gradually increasing localization of suppliers of goods and services for the operations phase, as well as subsequent units after the first NPP is implemented; (4) National nuclear industries association is established for sharing knowledge/experience and mutual cooperation.	

Observations

In accordance with the Intergovernmental Agreement signed with the Russian Federation, local companies participated in the construction of the NPP. The INIR team was informed that more than 20 Belarusian companies participated in the construction phase. Local companies were responsible for 55% of the civil construction work and materials and 8% of the equipment. Some subsidiary organizations of the Belenergo participated. For example, RUE Belnipienergoprom conducted studies for investing in the NPP construction, SE Belenergostroy, JSC Centroenergomontazh and JSC Belelektromontazhnaladka took part in construction, erection and commissioning of the NPP as subcontractors.

The Government of the Republic of Belarus, through the Interdepartmental Commission, is responsible for identifying and incentivizing local companies to participate in the supply chain and provide goods and services.

In 2015 a resolution of the Council of Ministers created a working group to support localization. The main objective of the working group is to provide organizational and technical support to facilitate localization. The working group is chaired by the Deputy Minister of Industry and includes representatives from the ministries of industry, energy, and construction and architecture. The General Contractor, Belenergo and Belarusian NPP are also members of the working group.

The INIR team was informed that the role of the Interdepartmental Commission in the coordination and monitoring of industrial involvement will remain for the operational phase. The INIR team was also informed that Belenergo and Belarusian NPP intend to develop a localization plan for suppliers of goods and services for the future operation of the NPP building on the experience of Belenergo. Areas being considered includes electromechanical equipment, maintenance, lubricants for diesel generators, ventilation equipment, cables, etc.

Areas for further action	**Significant**	None

	Minor	Localization plan
RECOMMENDATIONS		
None		
SUGGESTIONS		
S-18.1.1 Belarus is encouraged to develop a plan for the participation of Belarusian companies in the operational phase.		
GOOD PRACTICES		
None		

19. Procurement **Condition 19.1: Procurement capability for operations available**	**Phase 3**
Summary of the condition to be demonstrated	The owner/operator has the competences to procure and store operational and emergency equipment and to procure services.
Examples of how the condition may be demonstrated	(1) Description of the processes that will be used to specify, procure and accept services and equipment for the operational NPP; (2) Description of the processes that will be used to ensure that counterfeit, fraudulent or substandard / non-conforming items are not used; (3) Description of the processes and facilities that will be used to store equipment to ensure its suitability for use; (4) Demonstration of the competence of the procurement staff based on training and experience; (5) Demonstration of the ready availability of design basis related information supporting the procurement process (e.g. specifications, bills of materials, spare parts lists, etc.).

Observations

The organizational arrangements related to procurement have been defined and include three departments in Directorate of Production and Technical Procurement of Belarusian NPP: the Purchasing Department (12 staff), the Equipment Storage Management Department (20 staff) and the Procurement Department (16 staff).

This latter department currently exists within the Capital Construction Directorate of Belarusian NPP but will be transferred into Directorate of Production and Technical Procurement. The procurement regulations and procedures are under development. Procurement of spare parts, components and consumables will be based on the defined annual, quarterly and monthly schedules in accordance with the equipment specification. The establishment of capability and documentation should be complete by mid 2020.

For the period of construction, the General Contractor created the Tender Commission, which includes specialists from the Department of Equipment Accounting and Procurement of Belarusian NPP, qualified lawyers and economists in order to be able to carry out a competent assessment of potential suppliers and the proposed works and services.

All members of the Tender Commission were trained in the field of procurement and obtained certificates in the relevant training institutions. The use of a Tender Commission is mandatory in Belarus and the same team will continue into operation.

The INIR team was informed that the main steps of the procurement process include: development of technical specifications by the appropriate technical specialists, issue of the tender by the Tender Commission, evaluation of potential suppliers by the Tender Commission and the technical specialists to ensure compliance with the specification, selection of the supplier by the Tender Commission.

Belenergo has its own procurement regulation and tender commission and where appropriate,

equipment for Belarusian NPP will be bought through the Belenergo procurement process. However, development of the technical specifications, ensuring compliance of bids with the technical requirements and control and receipt of equipment will be carried out by Belarusian NPP.

The construction project of the NPP includes warehouses designed for the storage of spare parts, components and consumables, and includes storage under climate-controlled conditions where appropriate. These will remain available for the operational period. In addition, the construction of specific stores for operational equipment is planned to be completed by June 2020.

The INIR team was informed of the measures taken by Belarusian NPP to prevent fraudulent, suspect and counterfeit items. For major items, potential suppliers are required to submit evidence of competence and specialists from Belarusian NPP may witness manufacturing or inspect facilities or audit the suppliers' quality control processes. All procured equipment undergoes incoming quality control procedures.

For more standard equipment, in addition to quality control procedures which include visual and measurement checks and confirmation of appropriate quality documentation, the Tender Commission will check with other users of the equipment regarding experience with such products and may propose a visit to the manufacturer to confirm quality arrangements.

Areas for further action	**Significant**	None
	Minor	None

RECOMMENDATIONS

None

SUGGESTIONS

None

GOOD PRACTICES

None

APPENDIX 2: LISTS OF THE INIR TEAM MEMBERS AND COUNTERPARTS

INIR MISSION REVIEW TEAM - IAEA	
Milko Kovachev	IAEA
Mehmet Ceyhan	IAEA
Jose Bastos	IAEA
David Senior	IAEA
Pal Vincze	IAEA
Kristof Horvath	IAEA
Sean Dunlop	IAEA
Stephen Mortin	External Expert
Abdelmadjid Cherf	External Expert
John Mathieson	External Expert
Alex Polyakov	WANO observer

BELARUSIAN COUNTERPARTS in INIR PHASE 3 MISSION

Nuclear Energy Department of Ministry of Energy of Belarus		
1.	Polyukhovich Vasili	Director of the Nuclear Energy Department
2.	Dulinets Liliya	Deputy Director of the Nuclear Energy Department
3.	Bertosh Pavel	Consultant of the International Cooperation, Training and Information Division, Nuclear Energy Department
4.	Vysotskiy V. Vladimir	Head of the Division of the Nuclear Energy Department
State Enterprise 'Belarusian NPP'		
1.	Kissel Mikhail	Deputy General Director for Security;
2.	Senyut Valery	Deputy General Director for General Issues
3.	Malishevsky Vitaly	Deputy Chief Engineer for Production and Technical Support

4.	Zavyalov Dmitry	Deputy Chief Engineer for Engineering Support and Modernization
5.	Valeev Rinat	Head of the Reliability and Safety Analysis Department
6.	Gorin Vladimir	Deputy Chief Engineer for Personnel and Head of the Training Center
7.	Lastovsky Vladislav	Head of the Commercial and Legal Department
8.	Ris Alexey	Head of the Planning and Economic Department
9.	Pigulevsky Mikhail	Head of the Group of the Production and Technical Department
10.	Chizh Irina	Head of the Group of the Department of Information and Public Relations
11.	Triputen Ales	Leading Specialist of the Group of the Department of Information and Public Relations
12.	Shigera Vladislav	Head of the Laboratory, Nuclear Safety Department
13.	Artemova Liliya	Engineer for the Accounting and Control of Nuclear Materials
14.	Kuvshinnikov Arthur	Leading Instructor for Staff Training
15.	Kevlya Sergey	Head of the Quality Management Department
16.	Chernysh Viktoria	Leading Quality Engineer, Quality Management Department
17.	Gushcha Sergey	Head of the Department of Nuclear Safety
18.	Karpenko Nikolay	Lead Engineer for Safety Analysis ONAB
19.	Kukushkin Pavel	Shift Supervisor of the Radiation Safety Workshop
20.	Kitkovskaya Leokadia	Head of the Licensing Department
21.	Kolesnikova Ekaterina	Leading Engineer of the Licensing Department
22.	Hapalyuk N.A.	Safety Analysis Engineer ONAB
23.	Khilmanovich Nikolay	Head of the Security Service Group
24.	Avetesyan Levon	Head of the Nuclear Physics Laboratory
25.	Kireev Igor	Head of the Department of Environmental Protection
26.	Svidersky Valery	Deputy Head of the Radiation Safety Workshop
27.	Vorobiev Andrey	Head of the Laboratory of the Central Hospital

28.	Guts Nikita	Physics Engineer
29.	Svirid Eduard	Head of the Department of Information and Public Relations
30.	Luksha Evgeniy	Deputy Head of the Department of Logistics
31.	Suzdalev Mikhail	Head of the Department of Accounting and Configuration of Equipment UKS
32.	Koltan Gennady	Head of the Department of Civil Defense and Emergencies
33.	Budo Andrey	Leading Specialist in Civil Defense
34.	Lupyakov Aleksandr	Deputy Head of the RW Management Shop
35.	Ustinovich Yana	Engineer for Radiometric and Spectrometric Measurements of the Radioactive Waste Management Workshop.
Ministry of Emergency Situations (Gosatomnadzor)		
1.	Lugovskaya Olga	Head of Gosatomnadzor;
2.	Dedul Leonid.	First Deputy Head of Gosatomnadzor;
3.	Trafimchik Zoya	Deputy Head of Gosatomnadzor;
4.	Bosenko Tatyana	Deputy Head of the Department of Ideological, Personnel Work and Quality Management;
5.	Antonova Victoriya	Head of the radiation safety regulation department;
6.	Zhigalko Elena	Head of the Legal Support Sector;
7.	Gorelik Natalia	Head of the Department of Licensing and Permission;
8.	Kriuk Uliana	Director of the State Scientific Technical Institution “Center for Nuclear and Radiation Safety”;
9.	Mazurenko Maksim	Head of the Department for the Organization of Supervision of Nuclear and Radiation Safety of Nuclear Installations;
10.	Marukhyan Vigen	Head of the Department for Nuclear Safety Regulation;
11.	Tretyakevich Sergey	Deputy Head of the Department for Nuclear Safety Regulation;
12.	Bugrov Yury	Deputy Head of the Department of Regulation of Radiation Safety;
13.	Mikhailov Nikolay	Head of the Department for Safety Supervision of Radioactive Waste and Spent Nuclear Materials

		Management
14.	Sobolev Oleg	Consultant
15.	Yurzhits Andrey	Head of the Main Department of the State System for Prevention and Response of the Emergencies and Civil Defence
Joint Institute for Power and Nuclear Research Sosny' of the National Academy of Sciences of Belarus		
1.	Trifonov Alexandr	Deputy General Director;
2.	Lukashevich Alexey	Head of the laboratory;
3.	Gurko Olga	Leading Researcher.
RUE Belnipienergoprom		
1.	Katanaev Andrey	Chief Specialist of the Production and Technical Department
State Institution ' Republican Center for Hydrometeorology, Radioactive Contamination Control and Environmental Monitoring		
1.	Kovalenko Mikhail	Head of the Radiation Monitoring Service
Ministry of Finance		
1.	Gulevskaya Tatsiana.	Head of the Finance Department of the Fuel and Energy Complex
Ministry of Education		
1.	Maruda Nikolay	Consultant of the Higher Education Department of the Main Department of Vocational Education
Ministry of Information		
1.	Bobtsov Vladimir	Head of the Department of Electronic Media and Internet Resources.
Ministry of Foreign Affairs		
1.	Vitaly Mackay	Deputy Director of the Directorate-General for Multilateral Diplomacy
2.	Aleksei Raiman	Senior Counsellor of the Directorate-General for Multilateral Diplomacy
3.	Anna Kliut	Counsellor of the Directorate-General for Multilateral Diplomacy

Ministry of Defense		
1.	Chebotarevich Olga	Deputy Head of the Center Head of the Department of Ecology and Radiation Safety
Ministry of Natural Resources and Environmental Protection		
1.	Kovalenko Vasily	Head of the Department of State Ecological Expertise of the Department for Regulation of Effects on Atmospheric Air, Climate Change and Expertise
State Institution 'Republican Center for Hygiene, Epidemiology and Public Health		
1.	Matsko Nikolay	Head of the Department of Radiation Hygiene and Safety.
RUE - Scientific and Practical Center of Hygiene		
1.	Nikolaenko Elena	Head of the radiation safety laboratory
2.	Rozdyalovskaya Larisa	Senior Researcher, Laboratory of Radiation Safety
By SPA Belenergo		
1.	Drozd Pavel	General Director
2.	Bobrov Vladimir	First Deputy General Director, Chief Engineer
3.	Kovalev Denis	Deputy General Director for Operations Chief Dispatcher
4.	Zhih Igor	Head of Legal Division
5.	Zdanevich Nadezhda	Leading Engineer for Fuel Use and Radioactive Waste Management, Technical Maintenance Department
6.	Prokopovich Ludmila	Head of Economic Division
7.	Memetov Dzhafer	Deputy Chief Engineer
8.	Porshnev Valery	Deputy Chief Engineer
9.	Nikiforov Alexey	Head of the Ddivision of Operation and Repair of Power Plants and Heating Networks
10.	Petkevich Vadim	Head of the Electrical Equipment Operation Department
11.	Arutunian Arthur	Head of the Human Resources Division
12.	Zhavoronok Natalia	Leading Specialist of the Human Resources Division
13.	Mazurkevich Tatsiana	Leading Specialist of the Personnel Department, Leading Environmental Protection Engineer of the Technical Department
14.	Kudryavets Dmitry	Head of Dispatch Service

15.	Rudkovsky Victor	Head of the Electric Networks Operation Department
16.	Nashilov Leonid	Leading Mobilization Specialist
17.	Malkov Alexander	Head of Media Relations Service
18.	Nikolaenko Natalia	Head of the Department of Material and Technical Resources and Production Infrastructure
19.	Kapura Irina	Head of the Department for the Organization of Procurement of Material and Technical Resources, Management of Material and Technical Resources and Industrial Infrastructure

APPENDIX 3: REFERENCES

Documents Provided by the Republic of Belarus

1. Belarus Self-Evaluation Report for INIR Phase 3 Mission, 24 December 2019;
2. BELARUSIAN NUCLEAR POWER PLANT, Belarus Preliminary Information Package for Pre-OSART Mission 2019;
3. The Law of the Republic of Belarus No. 426-Z of 30 July 2008, on the Use of Atomic Energy (2008);
4. Decree of the President of the Republic of Belarus No. 378 of 10 July 2008 on Establishment of the Department of Nuclear Energy of the Ministry of Energy of the Republic of Belarus and Making Additions and Amendments to some Decrees of the President of the Republic of Belarus, Minsk (2008);
5. Decree of the President of the Republic of Belarus No. 583 of 30 December 2013 on Reorganization of State Institution 'Directorate for the Construction of the Nuclear Power Plant', Minsk (2013);
6. Decree of the President of the Republic of Belarus No. 565 of 12 November 2007 on Certain Measures for the NPP Construction, Minsk (2007);
7. Decree of the President of the Republic of Belarus No. 172 of 11 May 2019 on Amending Decrees of the President of the Republic of Belarus, Minsk (2019);
8. Resolution of the Council of Ministers of the Republic of Belarus No. 327 of 21 April 2016 On Approval of the State Programme 'High Technologies and Engineering' for 2016–2020, Minsk (2016);
9. Resolution of the Ministry of Emergency Situations of the Republic of Belarus No. 46 of 17 August 2018 On the Composition and Content of Documents Substantiating Nuclear and Radiation Safety when Carrying Out Activities in the field of the Use of Nuclear Energy and Ionizing Radiation Sources, Minsk (2018);
10. BELARUSIAN NUCLEAR POWER PLANT, Regulation on the Formation and Maintenance of the Safety Culture of the State Enterprise Belarusian NPP, No. 282/34PO-19, Ostrovec (2019);
11. BELARUSIAN NUCLEAR POWER PLANT, Regulation on the Analysis, Monitoring and Evaluation of Safety Culture of State Enterprise Belarusian NPP, No. 333/34PO-19, Ostrovec (2019);
12. Order of the President of the Republic of Belarus No. 362 of 18 August 2015 on Personnel Training for Nuclear Power Industry, Summary (informal translation), Minsk (2015);
13. Resolution of the Council of Ministers of the Republic of Belarus No. 250 of 28 March 2016,
14. Sub-programme 10, Personnel Training for Nuclear Power Industry of the State Programme 'Education and Youth Policy' for 2016-2020 (contents summary/working paper);
15. Resolution of the Council of Ministers of the Republic of Belarus No. 854 of 14 October 2015 On Issuance of Permits to Carry Out Works in the field of Nuclear Energy Use, Minsk (2015);
16. BELARUSIAN NUCLEAR POWER PLANT, Regulation on the Procedure for

Operational Personnel Staffing of the Belarusian NPP, Ref. 98/08.1 PO, 22 February 2016 (contents summary/working paper) (2016);

17. STATE ENTERPRISE Belarusian NUCLEAR POWER PLANT (BELARUSIAN NPP), Guidance on Integrated Management System of the State Enterprise Belarusian NPP, R ISU–01-OUK–2020, Contents (2020);

18. MINISTRY OF ENERGY OF THE REPUBLIC OF BELARUS, General Quality Assurance Programme for the Nuclear Power Plant POKAS (O) No. PR.PEU/04, Edition 1, 15 November 2017, Table of Contents, pages 2-4 (2017);

19. MINISTRY OF ENERGY OF THE REPUBLIC OF BELARUS, Quality Assurance Programme during Operation of NPP Units, POKAS I, Edition 2, 24 August 2018, Table of Contents, pages 1-4 (2018);

20. BELARUSIAN NUCLEAR POWER PLANT, Programme for Putting Units No. 1 and 2 of the Belarusian NPP into Operation;

21. BELARUSIAN NUCLEAR POWER PLANT, List of Commissioning Works and Documentation of the Belarusian NPP Units 1,2;

22. Decree of the President of the Republic of Belarus No. 583 of 30 December 2013, on Reorganization of the State Enterprise 'The Directorate for the NPP Construction', paragraph 2.3 (informal translation), Minsk (2013);

23. BELARUSIAN NUCLEAR POWER PLANT, Instruction on Planning and Calculating Costs for the Electricity Production at the State Enterprise 'Belarusian NPP', Order of the Director General, paragraph 6: General Provisions (working paper/informal translation), Ostrovec (2019);

24. Resolution of the Council of Ministers of the Republic of Belarus of 17 March 2014, No. 222, Regulation on Pricing (Tariffs) for Natural and Liquefied Gas, Electric and Thermal Energy (as amended by the Resolution of the Council of Ministers No. 22 of 15 January 2020), Minsk (2014 and 2020);

25. MINISTRY OF ENERGY OF THE REPUBLIC OF BELARUS, Draft Decree of the President of the Republic of Belarus on Belarusian NPP Funds (2020);

26. Decree of the President of the Republic of Belarus No. 15 of 14 January 2019 On Responsibility for Nuclear Damage., Minsk (2019);

27. Resolution of the Ministry of Emergency Situations of the Republic of Belarus No. 26 of 22 February 2019, Rules for the Accounting and Control of Nuclear Materials, Minsk (2019);

28. MINISTRY OF ENERGY OF THE REPUBLIC OF BELARUS, Instructions for Accounting and Control of Small Amounts of Nuclear Materials, No.188/31-I, 28 November 2017, Abstract (working paper), Ostrovec (2017);

29. Organizational Structure of the Department of Nuclear and Radiation Safety of the Ministry for Emergency Situations of the Republic of Belarus, 11 March 2018, Organigram (2018);

30. Deputy Prime Minister of the Republic of Belarus, National Action Plan for the Implementation of the Recommendations and Suggestions of the IRRS Mission, Order No. 33/213-272/78, 9 February 2018 (in Russian) (2018);

31. MINISTRY OF EMERGENCY SITUATIONS (MES), DEPARTMENT FOR NUCLEAR AND RADIATION SAFETY, GOSATOMNADZOR, Key State Authorities involved in Nuclear and Radiation Safety Provision, Organigram;

32. MINISTRY OF EMERGENCY SITUATIONS (MES), DEPARTMENT FOR

NUCLEAR AND RADIATION SAFETY, GOSATOMNADZOR, Policy of the Department of Nuclear and Radiation Safety of the Ministry of Emergency Situations of the Republic of Belarus for 2015-2017 and for the period until 2020, Approved by the Board of Gosatomnadzor on 28.01.2016 Summary (working paper); Regulatory Strategy of Gosatomnadzor for 2015-2018 and until 2020, Summary (working paper); Approved by the Board of Gosatomnadzor on 28.01.2016;

33. MINISTRY OF EMERGENCY SITUATIONS (MES), DEPARTMENT FOR NUCLEAR AND RADIATION SAFETY, GOSATOMNADZOR, List of the Integrated Management System (IMS) Processes;

34. MINISTRY OF EMERGENCY SITUATIONS (MES), DEPARTMENT FOR NUCLEAR AND RADIATION SAFETY, GOSATOMNADZOR, The pyramid of the Gosatomnadzor IMS documents;

35. MINISTRY OF EMERGENCY SITUATIONS (MES), DEPARTMENT FOR NUCLEAR AND RADIATION SAFETY, GOSATOMNADZOR, Integrated Management System Manual (2019);

36. GASATOMNADZOR (GAN), Normative Document Development Process (chart);

37. Decree of the President of the Republic of Belarus No. 70 of 18 February 2019 On Supplementing the Decree of the President of the Republic of Belarus, Minsk (2019);

38. BELARUSIAN NUCLEAR POWER PLANT, Operating manual for Automated Radiation Monitoring System (ARMS) BLR1 .E.534.&.&&&&&&.&&&&&.078.EA.0001. Book 2: Automated System for Radiation Monitoring of Site and Premises;

39. BELARUSIAN NUCLEAR POWER PLANT, Operating Manual for Automated Radiation Monitoring System (ARMS) BLR1 .E.534.&.&&&&&&.&&&&&.078.EA.0001. Book 4: Automated Individual Radiation Dose Monitoring System;

40. BELARUSIAN NUCLEAR POWER PLANT, Instructions for Radiation Safety during the Belarusian NPP Operation. BLR1.E.534.&.&&&&&&.&&&&&.078.EZ.002;

41. BELARUSIAN NUCLEAR POWER PLANT, Instructions for Improving and Optimizing Radiation Protection No. 344 / 32I-19;

42. BELARUSIAN NUCLEAR POWER PLANT, Classifier of Work Performed in Conditions of Radiation Hazard No. 345/32D-19;

43. Decree of the President of the Republic of Belarus No. 493 of 22 December 2018 On Some Measures to Increase Reliability of the Belarusian Electrical Grid (short summary in English, working paper), Minsk (2018);

44. Resolution of the Council of Ministers of the Republic of Belarus No. 32 of 18 January 2019 On Approval the List of Investment Projects on Reserve Peak Power Sources Construction and Electrical Boiler Installation (short summary in English, working paper), Minsk (2019);

45. Resolution of the Council of Ministers of the Republic of Belarus No. 169 of 1 March 2016 On Approval of the Comprehensive Development Plan for the Electricity Industry until 2025 taking into Account the Commissioning of the Belarusian NPP and Intersectoral Set of Measures to Increase Consumption of Electricity until 2025 (short summary in English, working paper), Minsk (2016);

46. Decree of the President of the Republic of Belarus No. 156 of 10 April 2014 (revised on 31 May 2017) On Construction of High-voltage Lines and Substations for the

Belarusian NPP Power Output (short summary in English, working paper), Minsk (2014);

47. BELARUSIAN NUCLEAR POWER PLANT, Regulation on the Organization of Work with Personnel of the State Enterprise Belarusian NPP SMK PO 37 / 03.6-01-17 of 24 May 2017;

48. BELARUSIAN NUCLEAR POWER PLANT, Enterprise Standard Requirements for Equipping the Classrooms of the Training Centre SMK STP of 14 April 2016;

49. BELARUSIAN NUCLEAR POWER PLANT, Enterprise Standard Technical Training Tools SMK STP 22 / 03.6-01-16 of 5 May 2016;

50. Resolution of the Council of Ministers of the Republic of Belarus of 28 August 2009 No. 1116 approving the State Programme Scientific and Technical Support for Nuclear Energy in the Republic of Belarus for 2009-2010 and for the Period until 2020, (short summary in English/working paper), Minsk (2009);

51. Resolution of the Council of Ministers of the Republic of Belarus No. 327 of 21 April 2016 approving the State Programme 'High Technologies and Technics' for 2016 – 2020, (short summary in English/working paper), Minsk (2016);

52. Resolution of the Council of Ministers of the Republic of Belarus No. 1329 of 13 September 2008, Adopting the State Programme for Personnel Training for Nuclear Power Industry of the Republic of Belarus for 2008–2020 (short summary in English/working paper), Minsk (2008);

53. Resolution of the Council of Ministers of the Republic of Belarus of 28 March 2016 No. 250 On Approval of the State Programme Education and Youth Policy' for 2016 – 2020, Sub-programme 10, Personnel Training for Nuclear Energy, (short summary in English/working paper) Minsk (2016);

54. Action Plan for Information Support of the Belarusian NPP Construction Project in Cooperation with the Russian Federation signed by the Ministry of Energy of the Republic of Belarus and CORPORATION ROSATOM JSC, 14 February 2019;

55. Resolution of the Council of Ministers of the Republic of Belarus No. 56 of 28 January 2019 On Public Discussions of Draft Regulatory Legal Acts (in Russian), Minsk (2019);

56. Resolution of the Council of Ministers of the Republic of Belarus No. 258 of 24 April 2019, Regulation on Public Hearings on Safety Regulation of the Belarusian NPP (in Russian), Minsk (2019);

57. Deputy Prime Minister of the Republic of Belarus, Integrated Environmental Monitoring Programme, Action Plan for Implementation of the Provisions of the Law of the Republic of Belarus No. 198-Z of 18 June 2019 On Radiation Safety, Minsk (Order No. 33/140-47/491, 9 August 2019);

58. STATE ATOMIC ENERGY CORPORATION ROSATOM JSC, NIZHNY NOVGOROD ENGINEERING COMPANY ATOMENERGOPROEKT (NIAEP JSC), Belarusian NPP, Integrated Environmental Monitoring Programme. Books 1-3, cover pages and contents (2015);

59. STATE ATOMIC ENERGY CORPORATION ROSATOM JSC, ASE ENGINEERING COMPANY (ASE EC JSC), Belarusian NPP, Belarusian NPP, Report on Results of the Study of the Initial Radiation State of the Environment in the Sanitary Protection Zone and the Radiation Control Zone of the NPP (Report on 'Zero' Radiation Background), Rev. 1, 29 June 2018, cover page and content (2018) ;

60. MINISTRY OF ENERGY OF THE REPUBLIC OF BELARUS, Republican Unitary

Enterprise Belarusian Nuclear Power Plant (State Enterprise Belarusian NPP) Action Plan of Measures for the Personnel Protection in Case of Emergency at the Belarusian NPP, 30 June 2019 (cover page and content), Ostrovec (2019);

61. Deputy Prime Minister of the Republic of Belarus, Action Plan for the Implementation of the IAEA Mission (8-17 October 2018), Recommendations and Suggestions regarding Emergency Preparedness and Response, (EPREV-mission) Order No. 03/213-62/3232p, 18 March 2019 (in Russian);

62. BELARUSIAN NUCLEAR POWER PLANT, Statute on the Permit System for Access and Access to Physical Protection Items of RUE Belarusian NPP, No. 256/ 14P-18, 19 December 2018;

63. BELARUSIAN NUCLEAR POWER PLANT, Instruction on Access Control at the RUE Belarusian NPP, No. 262/12I-18, 14 December 2018;

64. BELARUSIAN NUCLEAR POWER PLANT, Statute on the Intra-object Regime of RUE Belarusian NPP, No. 277 / 18PO-19, 28 February 2019;

65. Interaction Plan of the Administration, Security Service, Personnel of the Republican Unitary Enterprise Belarusian Atomic Power Station, Military Unit 7334 of the Internal Troops of the Ministry of Internal Affairs of the Republic of Belarus in Regular and Emergency Situations (special conditions) (No. 287/17 PL-19 of 18 March 2019);

66. Statute on the Organization of Work on the Formation and Maintenance of Safety Culture of the Belarusian NPP, 282/34PO-19;

67. Instructions for Ensuring the Protection of Information in the Information System of the Republican Unitary Enterprise Belarusian Nuclear Power Plant No. 19 / 05.1-01-16;

68. Agreement between the Government of the Republic of Belarus and the Government of the Russian Federation on Cooperation for the Construction of Nuclear Power Plant in the Territory of the Republic of Belarus, concluded in Minsk on 15 March 2011 and Law of the Republic of Belarus about ratification the Agreement (25 November 2011, No. 321-Z);

69. Resolution of the Council of Ministers of the Republic of Belarus No. 558 of 22 August 2019 on Approval of the Strategy for the Spent Nuclear Fuel Management of the Belarusian Nuclear Power Plant (summary/working paper), Minsk (2019);

70. Resolution of the Council of Ministers of the Republic of Belarus No. 327 of 21 April 2016 on Approval of the State Program 'High Technology and Technics for 2016 – 2020', Minsk (2016);

71. Agreement between the Government of the Russian Federation and the Government of the Republic of Belarus on Cooperation in the Atomic Energy Use for Peaceful Purposes, 28 May 2009 (short summary/working paper);

73. Agreement between the Government of the Republic of Belarus and the Government of the Russian Federation on Cooperation for the Nuclear Power Plant Construction in the Territory of the Republic of Belarus, 15 March 2011 (short summary – working paper);

74. Resolution of the Council of Ministers of the Republic of Belarus No. 1116 of 28 August 2010, State Programme 'Scientific and Technical Support for Nuclear Energy in the Republic of Belarus for 2009-2010 for the period until 2020 (short summary/working paper) (2010);

75. Decree of the President of the Republic of Belarus No. 172 of 11 May 2019 On mending Decrees of the President of the Republic of Belarus, (short summary – working paper), Minsk (2019);

76. STATE ATOMIC ENERGY CORPORATION ROSATOM, MINISTRY OF ENERGY OF THE REPUBLIC OF BELARUS, Regulation on Procurement Procedures for the Selection of Subcontractors, Chapter 1. Background (2014).

IAEA Documents

1. INTERNATIONAL ATOMIC ENERGY AGENCY, Milestones in the Development of a National Infrastructure for Nuclear Power, IAEA Nuclear Energy Series No. NG-G- 3.1, (Rev. 1) IAEA, Vienna (2015);

2. INTERNATIONAL ATOMIC ENERGY AGENCY, Evaluation of the Status of National Nuclear Infrastructure Development at Milestone 3, Working Document, IAEA, Vienna (2016);

3. INTERNATIONAL ATOMIC ENERGY AGENCY, Guidelines for Preparing and Conducting an Integrated Nuclear Infrastructure Review (INIR), IAEA Services Series No. 34, IAEA, Vienna (2017);

4. INTERNATIONAL ATOMIC ENERGY AGENCY, Responsibilities and Functions of a Nuclear Energy Programme Implementing Organization, IAEA Nuclear Energy Series No. NG-T-3.6 (Rev 1), IAEA, Vienna (2019);

5. INTERNATIONAL ATOMIC ENERGY AGENCY, Initiating Nuclear Power Programmes: Responsibilities and Capabilities of Owners and Operators, IAEA Nuclear Energy Series No. NG-T-3.1 (Rev. 1), IAEA, Vienna (2020);

6. INTERNATIONAL ATOMIC ENERGY AGENCY, Establishing the Safety Infrastructure for a Nuclear Power Programme, IAEA Safety Standards Series No. SSG-16, IAEA, Vienna (2011);

7. INTERNATIONAL ATOMIC ENERGY AGENCY, Leadership and Management for Safety, IAEA Safety Standard Series No. GSR Part 2, IAEA, Vienna (2016);

8. INTERNATIONAL ATOMIC ENERGY AGENCY, Financing of New Nuclear Power Plants, IAEA Nuclear Energy Series No. NG-T-4.2, IAEA, Vienna (2008);

9. STOIBER, C., BAER, A., PELZER, N., TONHAUSER, W., Handbook on Nuclear Law, IAEA, Vienna (2003);

10. INTERNATIONAL ATOMIC ENERGY AGENCY, Guidance for States Implementing Comprehensive Safeguards Agreements and Additional Protocols, IAEA Services Series No. 21, 2016 update, IAEA, Vienna (2016);

11. INTERNATIONAL ATOMIC ENERGY AGENCY, Governmental, Legal and Regulatory Framework for Safety, IAEA Safety Standards Series No. GSR Part 1 (Rev. 1), IAEA, Vienna (2016);

12. INTERNATIONAL ATOMIC ENERGY AGENCY, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014);

13. INTERNATIONAL ATOMIC ENERGY AGENCY, Electric Grid Reliability and Interface with Nuclear Power Plants, IAEA Nuclear Energy Series No. NG-T-3.8, IAEA, Vienna (2012);

14. INTERNATIONAL ATOMIC ENERGY AGENCY, Workforce Planning for New

Nuclear Power Programmes, IAEA Nuclear Energy Series No. NG-T-3.10, IAEA, Vienna (2011);

15. INTERNATIONAL ATOMIC ENERGY AGENCY, Stakeholder Involvement Throughout the Life Cycle of Nuclear Facilities, IAEA Nuclear Energy Series No. NGT-1.4, IAEA, Vienna (2011);

16. INTERNATIONAL ATOMIC ENERGY AGENCY, Site Evaluation for Nuclear Installations, IAEA Safety Standards Series No. SSR-1, IAEA, Vienna (2019);

17. INTERNATIONAL ATOMIC ENERGY AGENCY, Managing Environmental Impact Assessment for Construction and Operation in New Nuclear Power Programmes, IAEA Nuclear Energy Series No. NG-T-3.11, IAEA, Vienna (2014);

18. INTERNATIONAL ATOMIC ENERGY AGENCY, Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GSR Part 7, IAEA, Vienna (2015);

19. INTERNATIONAL ATOMIC ENERGY AGENCY, Establishing the Nuclear Security Infrastructure for a Nuclear Power Programme, IAEA Nuclear Security Series No. 19, IAEA, Vienna (2013);

20. INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Security Recommendations on Physical Protection of Nuclear Materials and Nuclear Facilities (INFCIRC225/Rev 5), IAEA Nuclear Security Series No. 13, IAEA, Vienna (2013);

21. INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Fuel Cycle Objectives, IAEA Nuclear Energy Series No. NF-O, IAEA, Vienna (2013);

22. INTERNATIONAL ATOMIC ENERGY AGENCY, Radioactive Waste Management Objectives, IAEA Nuclear Energy Series No. NW-O, IAEA, Vienna (2011);

23. INTERNATIONAL ATOMIC ENERGY AGENCY, Options for Management of Spent Fuel and Radioactive Waste for Countries Developing New Nuclear Power Programmes, IAEA Nuclear Energy Series No. NW-T-1.24, IAEA, Vienna (2013);

24. INTERNATIONAL ATOMIC ENERGY AGENCY, Policies and Strategies for the Decommissioning of Nuclear and Radiological Facilities, IAEA Nuclear Energy Series No. NW-G-2.1, IAEA, Vienna (2011);

25. INTERNATIONAL ATOMIC ENERGY AGENCY, Industrial Involvement to Support a National Nuclear Power Programme, IAEA Nuclear Energy Series No. NG-T-3.4, IAEA, Vienna (2016);

26. INTERNATIONAL ATOMIC ENERGY AGENCY, Procurement Engineering and Supply Chain Guidelines in Support of Operation and Maintenance of Nuclear Facilities, IAEA Nuclear Energy Series No. NP-T-3.21, IAEA, Vienna (2016);

27. INTERNATIONAL ATOMIC ENERGY AGENCY, Draft Report of the Pre-Operational Safety Review Team (Pre-OSART) Mission to the Belarusian Nuclear Power Plant, Belarus,5 – 22 August 2019, IAEA, Vienna (2019);

28. INTERNATIONAL ATOMIC ENERGY AGENCY, Report on the Integrated Nuclear Infrastructure Review (INIR) Mission to Review the Status of the National Nuclear Infrastructure in Belarus, 18 – 29 June 2012, IAEA, Vienna (2012);

29. INTERNATIONAL ATOMIC ENERGY AGENCY, Report on Site and External Events Design (SEED) Review Mission Report, Safety of the Belarusian NPP against Site Specific External Hazards, 16–20 January 2017, Minsk, Belarus, IAEA-TCR-11619, IAEA, Vienna (2017);

30. INTERNATIONAL ATOMIC ENERGY AGENCY, Report from the IAEA SSAC

Advisory Service (ISSAS) Conducted in Belarus 27 – 31 May 2019, Confidential, IAEA, Vienna (2019);

31. INTERNATIONAL ATOMIC ENERGY AGENCY, Emergency Preparedness Review EPREV, Peer Appraisal of Arrangements in the Republic of Belarus for Preparedness and Response for a Nuclear or Radiological Emergency, 8-10 October 2018, IAEA, Vienna (2018);

32. INTERNATIONAL ATOMIC ENERGY AGENCY, Integrated Regulatory Review Service (IRRS) Mission to Belarus, 3 – 14 October 2016, IRRS Report to the Government of Belarus, IAEA-NS-IRRS-2016/08, IAEA, Vienna (2016);

33. National Report of the Republic of Belarus under Convention on Nuclear Safety, (2016);

34. National Report of the Republic of Belarus under Convention on the Safety of Safety of Spent Fuel Management and Radioactive Waste Management, (2018).

APPENDIX 4: ABBREVIATIONS

AEIC	Atomic Energy Information Centre
BOOT	Build-own-operate-transfer
CIS	Commonwealth of Independent States
CNRS	Centre for Nuclear and Radiation Safety
CNS	Convention on Nuclear Safety
CPPNM	Convention of Physical Protection of Nuclear Material
CSA	Agreement between the Republic of Belarus and the IAEA for the Application of Safeguards in connection with the NPT
DBT	Design Basis Threat
EIA	Environmental impact assessment
EPC	Engineering, procurement and construction
EPREV	Emergency Preparedness Review
FSAR	Final Safety Analysis Report
GAN	Department for Nuclear and Radiation Safety
Gosatomnadzor	Department for Nuclear and Radiation Safety
HLW	High-level Radioactive Waste
IAEA	International Atomic Energy Agency
IDC	Inter-Departmental Commission
IEM	Integrated Environmental Monitoring Programme
IGA	Intergovernmental agreement
IMS	Integrated Management System
INIR	Integrated Nuclear Infrastructure Review
INSSP	Integrated Nuclear Security Support Plan
IPPAS	International Physical Protection Advisory Service
IRRS	Integrated Regulatory Review Service
IRS	IAEA Incident Reporting System
ISSAS	IAEA SSAC Advisory Service

JC	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
KGB	State Security Committee
MAMRT	Ministry of Antimonopoly Regulation and Trade
MES	Ministry of Emergency Situations
MIA	Ministry of Internal Affairs
MoE	Ministry of Energy
MoFA	Ministry of Foreign Affairs
MoNREP	Ministry of Natural Resources Environmental Protection
MWe	Megawatt electric
NEPIO	Nuclear Energy Programme Implementing Organization
NPP	Nuclear power plant
ODU	Operational Dispatch Unit
OLC	Operational Limits and Conditions
PPS	Physical Protection System
Pre-OSART	Pre-Operational Safety Review Team
RMS	Radiation Monitoring System
RCZ	Radiation Controlled Zone
SDR	Special Drawing Rights
SEED	Site and External Events Design
SER	Self-Evaluation Report
SFEPRS	State Forces of Emergency Prevention and Response System
SSAC	State system of accounting for and control of nuclear material
TC	Technical cooperation
TCP	Technical Code of Practices
TSO	Technical support organization

VC	Vienna Convention on Civil Liability for Nuclear Damage
WANO	World Association of Nuclear Operators
WWER	Water Water Energy Reactor