

INTEGRATED REGULATORY REVIEW SERVICE (IRRS)

MISSION TO BELARUS

Minsk, Belarus

3-14, October 2016

DEPARTMENT OF NUCLEAR SAFETY AND SECURITY



Integrated
Regulatory
Review Service
IRRS



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Mission dates:	3-14 October, 2016
Regulatory body:	Gosatomnadzor
Location:	Minsk
Regulated facilities and activities in the mission scope:	<i>Nuclear Power Plant, Research Nuclear Facilities, Radioactive Waste Management Facilities, Radiation Sources, Decommissioning, Emergency Preparedness and Response Control of Medical Exposure, Occupational Radiation Protection, Control of Radioactive Discharges, Materials for Clearance.</i>
Organized by:	<i>IAEA</i>

IRRS REVIEW TEAM

TIIPPANA Petteri	Team Leader (Finland)
LORSON Raymond	Deputy Team Leader (United States of America)
MOSES Colin	Reviewer (Canada)
MELKUMYAN Anna	Reviewer (Armenia)
BLY Ritva	Reviewer (Finland)
OHLEN Elisabeth	Reviewer (Sweden)
RYBALKA Natalia	Reviewer (Ukraine)
BOKOV Dmitry	Reviewer (Russian Federation)
BOSNJAK Jovica	Reviewer (Bosnia & Herzegovina)
VLAHOV Nikolay	Reviewer (Bulgaria)
PETOFI Gabor	Reviewer (Hungary)
TIPEK Zednek	Reviewer (Czech Republic)
KAPRALOV Evgeny	Reviewer (Russian Federation)
HU Linguang	Reviewer (China)
STERN Warren	Reviewer (United States of America)
DEBOODT Pascal	Reviewer (Belgium)
HÜLSMANS Mark	Observer (EU)
BACIU Adriana	Reviewer (IAEA)

KENNEDY William
MAKAROVSKA Olga
KOBETZ Tim
ALEXANDER Tom

Reviewer (IAEA)
Team Coordinator (IAEA)
Deputy Team Coordinator (IAEA)
Administrative Assistant (IAEA)

IAEA-2016

The number of recommendations, suggestions and good practices is in no way a measure of the status of the national infrastructure for nuclear and radiation safety. Comparisons of such numbers between IRRS reports from different countries should not be attempted.

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EXECUTIVE SUMMARY

At the request of the Republic of Belarus, an international team of senior nuclear safety and radiation safety experts met with representatives of the Government, Ministry for Emergency Situations and Gosatomnadzor, the Ministry of Health, and the Ministry of Natural Resources and the Environment of the Republic of Belarus from 03 – 14 October 2016 to conduct an Integrated Regulatory Review Service (IRRS) mission. The purpose of the IRRS mission was to perform a peer review of Belarus' national regulatory framework for nuclear and radiation safety against IAEA safety standards as the international benchmark for safety. The IRRS review team received full cooperation of all parties in an open and transparent manner throughout the mission. The mission took place at the Gosatomnadzor Headquarters in Minsk.

The IRRS team concluded that Belarus has a regulatory framework for safety in place and a strong commitment to nuclear and radiation safety as demonstrated during the mission. As an embarking country, a major challenge to the Republic of Belarus is to regulate the safe operation of its first nuclear power plant which is currently under construction and scheduled to begin operation within two years. This challenge has been identified by the Belarusian Government and numerous measures are underway. It is necessary that the Government continues to support and provide resources to complete these important activities in a timely manner to ensure that effective regulatory oversight for operation has been established before the plant is placed in service. In particular, focus should be directed towards continued building of Gosatomnadzor's technical capabilities and establishing regulations and procedures for operations and emergency preparedness and response.

The country has a long history in the use and regulation of ionizing radiation in medical and industrial applications, as well as, in science. Notwithstanding, there are still challenges to be resolved related to the consistent and effective regulation of the use of ionizing radiation sources.

The IRRS team identified two good practices and also made recommendations and suggestions to indicate where improvements are necessary or desirable to further enhance and more closely align the regulatory framework with IAEA safety standards. The IRRS team noted that many of these areas had been identified by Gosatomnadzor prior to the mission and addressed in its action plan.

The good practices identified by the IRRS team include:

- Gosatomnadzor's tools to manage its growth and innovative approaches to build a healthy organizational culture;
- Arrangements at the governmental level, state authorities' level and at the level of Gosatomnadzor, operator and main contractors to ensure collaboration and information exchange during the construction and commissioning of the Belarusian NPP.

The IRRS team made observations that warrant additional emphasis. Specifically:

- Develop the national policy and strategy for safety and establish a strategy for radioactive waste management for facilities and activities other than nuclear power plants;
- Clarify the roles and responsibilities between the Ministry of Emergency Situations and the Ministry of Health for common areas and for emergency preparedness and response;
- Ensure consistency of regulations and continue to develop or update regulations as necessary to meet IAEA safety standards;
- Continue efforts to update the regulatory framework for emergency preparedness and response;

- Continue to build the competence of Gosatomnadzor and to ensure availability of technical support;
- Complete activities to establish and implement an integrated management system within Gosatomnadzor;
- Enhance processes for authorization, review and assessment, inspections and enforcement with the application of a graded approach.

While the areas above mostly relate to the regulation of the use of nuclear energy and require special attention in the near term, it is also important to note that technologies and methods in the use of ionizing radiation can evolve rapidly and therefore regulatory requirements and capabilities to regulate medical and occupational exposures need to receive proper attention as well.

The IRRS mission covered all civilian nuclear and radiation facilities and activities regulated in Belarus with the exception of transportation activities. The mission was also used to exchange information and experience between the IRRS review team members and the Belarusian counterparts in the areas covered by the IRRS.

The IRRS team consisted of 16 senior experts from 13 IAEA Member States, 4 IAEA staff members, an IAEA administrative assistant and one observer. The IRRS team carried out the review in the following areas: responsibilities and functions of the government; the global nuclear safety regime; responsibilities and functions of the regulatory body; the management system of the regulatory body; the activities of the regulatory body including the authorization, review and assessment, inspection and enforcement processes; development and content of regulations and guides; emergency preparedness and response; control of medical exposures, occupational radiation protection, control of radioactive discharges and materials for clearance. The IRRS mission included two policy issue discussions: Advisory body to the regulatory authority and public hearings.

The mission included observations of regulatory activities and interviews and discussions with Deputy Prime Minister of the Republic of Belarus, staff of the Ministry for Emergency Situations, Gosatomnadzor, the Ministry of Health, the Ministry of Natural Resources and Environmental Protection. Activities included visits to: Belarusian Nuclear Power Plant; SSE “JIPNR-Sosny”; CJS “Isotope Technologies; CUE “Ecores”; and SE “Republican Clinical Hospital of Medical Rehabilitation”. The IRRS team members observed regulated activities and performance of inspection activities, and had discussions with the licensee personnel and management.

In preparation for the IRRS mission Belarus conducted a self-assessment and prepared a preliminary action plan to address weaknesses that were identified. The results of the self-assessment, action plan and supporting documentation were provided to the team as advance reference material for the mission.

The IRRS review team findings are summarized in Appendix V.

An IAEA press release was issued at the end of the IRRS Mission and a press conference was held.

I. INTRODUCTION

At the request of the Republic of Belarus, an international team of senior nuclear safety and radiation safety experts met with representatives of the Government, Gosatomnadzor, The Ministry for Emergency Situations, the Ministry of Health, and the Ministry of Natural Resources and the Environment of the Republic of Belarus from 03 – 14 October 2016 to conduct an Integrated Regulatory Review Service (IRRS) mission. The mission took place at the Gosatomnadzor Headquarters in Minsk. The purpose of the IRRS mission was to perform a peer review of Belarus' national regulatory framework for nuclear and radiation safety.

The IRRS mission covered all civilian nuclear and radiation source facilities and activities regulated in Belarus with the exception of transportation activities. The review compared the Belarusian regulatory framework for safety against IAEA safety standards as the international benchmark for safety. The mission was also used to exchange information and experience between the IRRS review team members and the Belarusian counterparts in the areas covered by the IRRS.

The IRRS team consisted of 16 senior regulatory experts from 13 IAEA Member States, 4 IAEA staff members, 1 IAEA administrative assistant and one observer. The IRRS team carried out the review in the following areas: responsibilities and functions of the government; the global nuclear safety regime; responsibilities and functions of the regulatory body; the management system of the regulatory body; the activities of the regulatory body including the authorization, review and assessment, inspection and enforcement processes; development and content of regulations and guides; emergency preparedness and response; control of medical exposures, occupational radiation protection, control of radioactive discharges and materials for clearance.

The IRRS mission included two policy issue discussions: Advisory body to the regulatory authority and public hearings.

The mission included observations of regulatory activities and interviews and discussions with Deputy Prime Minister of the Republic of Belarus, staff of the Ministry for Emergency Situations, Gosatomnadzor, the Ministry of Health and the Ministry of Natural Resources and Environmental Protection. Activities included visits to: Belarusian 1 and 2 NPPs; SSE "JIPNR-Sosny"; CJS "Isotope Technologies; CUE "Ecores"; and SE "Republican Clinical Hospital of Medical Rehabilitation". The IRRS team members observed regulated activities and performance of inspection activities, including discussions with the licensee personnel and management.

In preparation for the IRRS mission Belarus conducted a self-assessment and prepared a preliminary action plan to address weaknesses that were identified. The results of the self-assessment, resolution action plan and supporting documentation were provided to the team as advance reference material for the mission. Throughout the mission, the IRRS review team was extended full cooperation in the regulatory, technical, and policy issues by all parties in a very open and transparent manner.

The IRRS entrance meeting was held on Monday, 3 October 2016, with the participation of senior management and staff of the Ministry for Emergency Situations, Gosatomnadzor, Gospromnadzor, the Republican Center for Emergency Management and Response, the Ministry of Health, the Ministry of Natural Resources and Environmental Protection and the Ministry of Foreign Affairs. Opening remarks were made by Vladimir Vashchenko, Minister for Emergency Situations, Olga Lugovskaya, Head of Gosatomnadzor and Mr Petteri Tiippana, IRRS Team Leader. Ms Lugovskaya gave an overview of the major regulatory framework for nuclear and radiation safety in Belarus.

During the mission, a review was conducted for all the review areas with the objective of providing Belarus and Gosatomnadzor with recommendations and suggestions for improvement as well as identifying good practices. The review was conducted through meetings, interviews and discussions.

The IRRS team performed its activities based on the mission programme given in Appendix II.

The IRRS exit meeting was held on Friday, 14 October 2016. The opening remarks at the exit meeting were presented by Mr Vladimir Vashchenko, Minister for Emergency Situations of the Republic of Belarus and was followed by the presentation of the results of the mission by the IRRS Team Leader, Mr Petteri Tiippana and feedback of Ms Olga Lugovskaya, Head of Gosatomnadzor. Closing remarks were made by Mr Peter Johnston, IAEA, Director, Division of Radiation, Transport and Waste Safety.

A joint press conference was held and an IAEA press release was issued at the end of the mission.

II. OBJECTIVE AND SCOPE

The purpose of this IRRS mission was to review Republic of Belarus radiation and nuclear safety regulatory framework and activities against the relevant IAEA safety standards to report on regulatory effectiveness and to exchange information and experience in the areas covered by the IRRS. The agreed scope of this IRRS review included all facilities and activities regulated in Republic of Belarus with the exception of the transport. It is expected this IRRS mission will facilitate regulatory improvements in Republic of Belarus and other Member States utilising the knowledge gained and experiences shared between Belarusian regulatory bodies staff and IRRS reviewers and the evaluation of the Republic of Belarus regulatory framework for nuclear safety, including its good practices.

The key objectives of this mission were to enhance the national legal, governmental and regulatory framework for nuclear and radiation safety, and national arrangements for emergency preparedness and response through:

- a) providing an opportunity for continuous improvement of the national regulatory body through an integrated process of self-assessment and review;
- b) providing the host country (regulatory body and governmental authorities) with a review of its regulatory technical and policy issues;
- c) providing the host country (regulatory body and governmental authorities) with an objective evaluation of its regulatory infrastructure with respect to IAEA safety standards;
- d) promoting the sharing of experience and exchange of lessons learned among senior regulators;
- e) providing key staff in the host country with an opportunity to discuss regulatory practices with IRRS Review Team members who have experience of other regulatory practices in the same field;
- f) providing the host country with recommendations and suggestions for improvement;
- g) providing other states with information regarding good practices identified in the course of the review;
- h) providing reviewers from Member States and IAEA staff with opportunities to observe different approaches to regulatory oversight and to broaden knowledge in their own field (mutual learning process);
- i) contributing to the harmonization of regulatory approaches among states;
- j) promoting the application of IAEA Safety Requirements; and
- k) providing feedback on the use and application IAEA safety standards.

III. BASIS FOR THE REVIEW

A) PREPARATORY WORK AND IAEA REVIEW TEAM

At the request of the Government of Belarus, a preparatory meeting for the Integrated Regulatory Review Service (IRRS) was conducted from 15-16 December 2015. The preparatory meeting was carried out by the appointed Team Leader Mr Petteri Tiippana and the IRRS IAEA Team representatives: Ms Olga Makarovska, Team Coordinator and Mr Tim Kobetz, Deputy Team Coordinator.

The IRRS mission preparatory team had discussions regarding regulatory programmes and policy issues with the senior management of Gosatomnadzor. It was agreed that the regulatory framework with respect to the following facilities and activities would be reviewed during the IRRS mission in terms of compliance with the applicable IAEA safety requirements and compatibility with the respective safety guides:

- Nuclear power plants;
- Research nuclear installations;
- Waste management facilities;
- Radiation sources facilities and activities;
- Decommissioning;
- Control of medical exposure;
- Occupational radiation protection;
- Discharges and Material Clearance;
- Waste management (policy and strategy, predisposal and disposal); and
- Selected policy issues.

Ms Olga Lugovskaya and Ms Zoya Trafimchik made presentations on the national context, the current status of the regulatory regime in Republic of Belarus and the self-assessment results to date.

IAEA staff presented the IRRS principles, process and methodology. This was followed by a discussion on the tentative work plan for the implementation of the IRRS in Belarus in October 2016.

The proposed composition of the IRRS Review team was discussed and tentatively confirmed. Logistics including meeting and work places, counterparts and Liaison Officer identification, proposed site visits, lodging and transportation arrangements were also addressed.

The Liaison Officer for the IRRS mission in Belarus was confirmed as Ms Zoya Trafimchik, Deputy Head of Gosatomnadzor

Gosatomnadzor provided IAEA with the advance reference material (ARM), including country self-assessment report formed using SARIS software for the review at the end of July 2016. The documentation included the complete set of the Belarusian legislative and regulatory framework governing nuclear safety and radiation protection and self-assessment. In preparation for the mission, the IAEA review team members reviewed the Belarusian advance reference material and provided their initial impressions to the IAEA Team Coordinator prior to the commencement of the IRRS mission.

B) REFERENCES FOR THE REVIEW

The relevant IAEA safety standards and the Code of Conduct on the Safety and Security of Radioactive Sources were used as review criteria. The complete list of IAEA publications used as the references for this mission is provided in Appendix VII.

C) CONDUCT OF THE REVIEW

The initial IRRS Review team meeting took place on Sunday 2 October, 2016 in Minsk, directed by the IRRS Team Leader and the IRRS IAEA Team Coordinator. Discussions encompassed the general overview, the scope and specific issues of the mission, clarified the bases for the review and the background, context and objectives of the IRRS programme. The understanding of the methodology for review was reinforced. The agenda for the mission was presented to the team. As required by the IRRS Guidelines, the reviewers presented their initial impressions of the ARM and highlighted significant issues to be addressed during the mission.

The host Liaison Officer was present at the initial IRRS Review team meeting, in accordance with the IRRS Guidelines, and presented logistical arrangements planned for the mission.

The IRRS entrance meeting was held on Monday, 3 October, 2016, with the participation of 32 senior management and staff of Belarusian authorities. Opening remarks were made by Mr Vladimir Vashchenko, Minister for Emergency Situations of the Republic of Belarus, Ms. O Lugovskaya, Head of the Department of Nuclear and Radiation Safety, Mr Petteri Tiippana, IRRS Team Leader. Ms Olga Lugovskaya gave an overview of the Belarusian legal, governmental and regulatory infrastructure for safety and the action plan prepared as a result of the pre-mission self-assessment.

During the IRRS mission, a review was conducted for all review areas within the agreed scope with the objective of providing Belarus with recommendations and suggestions for improvement and where appropriate, identifying good practice. The review was conducted through meetings, interviews and discussions, visits to facilities and direct observations regarding the national legal, governmental and regulatory framework for safety.

The IRRS Review team performed its review according to the mission programme given in Appendix II.

The IRRS exit meeting was held on Friday, 14 October, 2016. The opening remarks at the exit meeting were presented by Vladimir Vashchenko Minister for Emergency Situations of the Republic of Belarus and were followed by the presentation of the results of the mission by the IRRS Team Leader Mr Petteri Tiippana and the feedback of Ms Olga Lugovskaya, Head of Gosatomnadzor. Closing remarks were made by Mr Peter Johnston, IAEA, Director, Division of Radiation, Transport and Waste Safety.

A joint IAEA and Gosatomnadzor press conference took place at the end of the mission.

An IAEA press release was issued.

1. RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT

1.1. NATIONAL POLICY AND STRATEGY FOR SAFETY

The safety approach of the Republic of Belarus is outlined in the National Security Concept of the Republic of Belarus, which describes fundamental principles that are to be applied by the Government. Specific principles applicable to nuclear and radiation safety are included in the two main legislative instruments in the national regulatory framework: the Law of the Republic of Belarus “On Atomic Energy Use” (Law on Atomic Energy Use) and the Law of the Republic of Belarus “On Radiation Safety of Population” (Law on Radiation Safety of Population). These are referred hereafter as the Acts.

Articles 3 of each act include key principles that govern the application of the act and generally aligns with the IAEA Safety Fundamental No. SF-1 *Fundamental Safety Principles*. Many of the elements of GSR Part 1 (Rev.1) Requirement 1 are included, however all principles are not systematically addressed in the policy or the principles of the Acts. Specifically, neither the National Security Concept, nor the Acts set out the mechanisms for implementing a national policy taking into account the fundamental safety objective and fundamental safety principles. In addition, the Government has not clearly documented a commitment to international legal instruments (although this commitment is evident as outlined in section 2), or adequate measures for taking account of social and economic developments and the promotion of leadership and management for safety, including safety culture.

In addition, although Requirement 1 of GSR Part 1 (Rev.1) requires that the policy and strategy be subject to a graded approach, both the National Security Concept and the acts, do not describe their implementation in accordance with a graded approach. This is necessary to ensure that the radiation risks associated with facilities and activities receive appropriate attention by the government or by the regulatory body, as noted in paragraph 2.4 of GSR Part 1 (Rev.1).

This gap may be addressed in different ways, for example by developing a distinct policy (as noted in the action plan) to address the findings of its IRRS self-assessment or through the National Security Concept and adjustments to the Principles addressed in Articles 3 of the Law on Atomic Energy Use, governing nuclear installations (reactor and radioactive waste management facilities) and the Law on Radiation Safety of Population.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *There is no distinct national policy and strategy for safety that addresses the fundamental safety objective and fundamental safety principles. Development of a national policy and strategy is part of the action plan.*

(1)

BASIS: GSR Part 1 (Rev.1) Requirement 1 states that: “*The government shall establish a national policy and strategy for safety, the implementation of which shall be subject to a graded approach... to achieve the fundamental safety objective and to apply the fundamental safety principles established in the Safety Fundamentals.*”

R1

Recommendation: **The Government should document its national policy and establish a strategy for radiation and nuclear safety that addresses the mechanisms to achieve the Fundamental Safety Objective and to apply the Fundamental Safety Principles in accordance with a graded approach.**

1.2. ESTABLISHMENT OF A FRAMEWORK FOR SAFETY

The Republic of Belarus has established a governmental, legal and regulatory framework for the safe use of nuclear energy and ionizing radiation sources and for radiation protection of population. The legal framework consists of the Law on Atomic Energy Use, Law on Radiation Safety of Population and a number of associated legal acts approved by the President, and the Council of Ministers as well as the international conventions and agreements. The provisions related to establishment of regulatory body, licensing, inspection, enforcement, principles for protecting people, types of facilities and activities subject to licensing, spent nuclear fuel and radioactive waste as stipulated in the GSR Part 1 point 2.5, are covered in the national framework for safety.

The state regulation for the use of safe nuclear energy and ionizing radiation is the responsibility of the Ministry for Emergency Situations of the Republic of Belarus (MES), the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus, the Ministry of Health (MoH) of the Republic of Belarus, the Ministry of Internal Affairs of the Republic of Belarus and the State Security Committee of the Republic of Belarus. The responsibilities and functions of these authorities are established in the Law on Atomic Energy Use and the Law on Radiation Protection of the Population and other supporting legislation. The process to establish agreements or memorandum between the mentioned regulatory bodies on allocation of regulatory responsibilities for nuclear and radiation safety has been initiated. Their completion is part of the action plan (see recommendation R2 in Section 1.5).

1.3. ESTABLISHMENT OF A REGULATORY BODY AND ITS INDEPENDENCE

The Decree of the President No. 756 “On Some Issues of the Ministry of Emergency Situations” established MES as the state body responsible for regulation of nuclear and radiation safety and creates the Department for Nuclear Safety and Radiation Protection (Gosatomnadzor) as a sub-division within MES. The decree defines Gosatomnadzor as a separate legal entity funded from the national budget. MES is the licensing authority in the area of the use of nuclear energy and sources of ionizing radiation. The licensing process as well as the types of activities requiring a license, is defined in the Decree of the President No. 450 “On Licensing of Certain Types of Activities”.

MES has no role in the promotion of nuclear energy, however MES manages the operation of the two facilities: the “Polesie” (Gomel) and “Radon” (Mogilev), which manage radioactive waste originating from decontamination following the Chernobyl accident. The Department responsible for the management of these facilities is functionally separate from Gosatomnadzor, but licensing decisions are ultimately made by the MES Board, which is equally responsible for the management of the operating Department. Mechanisms are in place to manage this potential conflict (such as the functional separation of regulatory and operating roles). Similarly, in the area of oversight of radiation safety in hospitals, the MoH has regulatory responsibilities for the radiation and sanitary safety, while also being responsible for their operations. However, the decision making authority is functionally separate from the operating department.

The IRRS team noted that locating the operation and regulation of certain facilities within the same ministry creates a potential for a real or perceived conflict of interest. This may compromise the ability of the regulator to maintain effective independence from regulated facilities and activities. As such, the government should consider removing the responsibility for the operation of those facilities from within MES and MoH and/or fully delegate decision making authority for the regulation of these facilities to Gosatomnadzor. Alternatively, other measures could be considered to ensure effective independence of the regulatory function.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *MES manages the operation of two facilities: the “Polesie” and “Radon” facilities and is also responsible for their regulation. Also, MoH operates medical facilities and is also responsible for their regulation. Despite certain mechanisms currently in place to manage this, there remains a potential for a real or perceived conflict of interest, which may compromise the independence of the regulator.*

(1)

BASIS: GSR Part 1 (Rev.1) Requirement 4 states that: *“The government shall ensure that the regulatory body is effectively independent in its safety related decision making and that it has functional separation from entities having responsibilities or interests that could unduly influence its decision making.”*

S1

Suggestion: The Government should consider establishing measures to enhance independence of the regulator for regulated facilities and activities undertaken within MoH and MES.

1.4. RESPONSIBILITY FOR SAFETY AND COMPLIANCE WITH REGULATIONS

The responsibilities of the operator during the construction, operation, decommissioning of nuclear facilities is established in the Article 32 of the Law on Atomic Energy Use, and, for other ionizing radiation sources, in Article 12 for the Law on Radiation Safety of Population. These provisions state that the operator is responsible for ensuring the safety of facilities and activities. They equally specify that the operator bears liability for non-compliance with the safety requirements of the nuclear installation and storage facilities. The Decree of the President No. 450 describes the process for licence transfers, and states that a licensee may not transfer its authority to another legal entity or private individual. The statute provides Gosatomnadzor with the authority to require compliance with regulatory requirements.

The laws do not expressly state that compliance with regulations and requirements established or adopted by the regulatory body does not relieve the person or organization responsible for a facility or an activity of its prime responsibility for safety, as required in GSR Part 1 Requirement 6.

As noted in section 1.1, the Government should elaborate the national policy on safety to fully address the safety fundamentals. Attention should be paid to Principle 1: Responsibility for safety which states *“The prime responsibility for safety must rest with the person or organization responsible for facilities and activities that give rise to radiation risks.”* In addressing this, the Government should ensure all elements of GSR Part 1 (Rev. 1) Requirement 6 are covered (see recommendation R1).

1.5. COORDINATION OF AUTHORITIES WITH RESPONSIBILITIES FOR SAFETY WITHIN THE REGULATORY FRAMEWORK

The Acts assign regulatory oversight of nuclear and radiation safety to MES. The Acts also assign specific areas of responsibility to other ministries, including the MoH, the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus, the Ministry of Internal Affairs of the Republic of Belarus, the State Security Committee of the Republic of Belarus. Given the multiple regulatory bodies it is important to have a clear understanding of roles, responsibilities and interactions amongst the different regulators.

The Acts establish the roles and responsibilities of each regulatory body, and individual statutes defining their responsibilities are in place. The Decree of the President No. 756 provides a detailed description of the functions of MES as well as Gosatomnadzor. In addition, a State Control Committee ensures that state regulators fulfil their regulatory obligations in a manner that aligns with state requirements on regulation.

In the course of the mission, the IRRS team identified some areas that may have an overlap in regulatory functions. For example, see recommendation R12 for authorization processes and associated regulations in the field of activities with radiation sources. Also, as noted in section 7, some aspects of inspections of radiation sources and radioactive waste management facilities may be duplicative between MoH and Gosatomnadzor. In addition, as noted in section 11.1 “Medical Exposures” unintended and accidental doses are required to be reported to both regulatory bodies. Further, responsibilities for Gosatomnadzor to support response activities during emergencies are not defined in the decree establishing the department, as discussed in section 10.

Working arrangements are in effect for interfaces between regulators. The sequence of regulatory decisions appears well understood, e.g. a conclusion on safety is required from the MoH before MES can make a decision on a licence for radiation sources. However as discussed in section 5, this process is not always clearly documented. In addition, state authorities are consulted for input during the development of regulatory documents. Recognizing the importance of strong collaboration during the construction, commissioning and future operation of the NPP, the Government has established an inter-ministerial commission on coordination of the plan of major organizational arrangement for construction of nuclear power plant in the Republic of Belarus and control over its implementation, a working group led by MES for the coordination of state control (supervision) activities for the construction of the NPP, in order to discuss matters of mutual regulatory interest, as well as holding multiple meetings with all suppliers, the operator and the regulator.

Aside from the above there are no formal arrangements between the regulatory bodies that clearly define their interactions and means for collaboration and communication for other than NPP construction and commissioning activities. Recognizing this, MES and MoH have organized meetings with their fellow regulators in the interest of establishing such formal agreements.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: <i>The Republic of Belarus and regulatory agencies have established a number of practices and mechanisms to ensure strong collaboration in the oversight of the construction and commissioning of the Belarusian NPP.</i>	
(1)	BASIS: GSR Part 1 (Rev.1) Requirement 7, para. 2.18 states that: “Where several authorities have responsibilities for safety... the government shall ensure that there is appropriate coordination of and liaison between the various authorities...”
GPI	Good Practice: Recognizing the importance of strong collaboration during the construction, commissioning and future operation of the NPP, the Government: <ul style="list-style-type: none"> • has established an “inter-ministerial commission on coordination of the plan of major organizational arrangements for construction of nuclear power plant in the Republic of Belarus and control over its implementation,” • has created a working group led by MES for the coordination of state control (supervision) activities for the construction of the NPP, in order to discuss matters of mutual regulatory interest

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

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| | <ul style="list-style-type: none"> • holds multiple meetings with all suppliers, the operator and the regulator. <p>These initiatives demonstrate a strong commitment of the Government, and go beyond the standard practice for embarking countries and help ensure high-level and effective coordination and oversight of NPP construction projects.</p> |
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RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *There are areas of overlapping or unclear roles and responsibilities for nuclear and radiation safety regulation. There are no formal mechanisms between ministries responsible for the regulation of facilities and activities. A process to establish a formal agreement between the ministries is part of the action plan.*

(1)	BASIS: GSR Part 1 (Rev.1) Requirement 7, para. 2.18 states that: “Where several authorities have responsibilities for safety... the government shall ensure that there is appropriate coordination of and liaison between the various authorities...”
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R2	<p>Recommendation:</p> <p>The Government should clarify roles and responsibilities for MoH and MES.</p> <p>The regulatory bodies should finalize formal agreements to ensure appropriate coordination and liaison between the two regulatory bodies and possibly to conduct joint inspections.</p>
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1.6 SYSTEM FOR PROTECTIVE ACTIONS TO REDUCE EXISTING OR UNREGULATED RADIATION RISKS

Following the Chernobyl accident, the Republic of Belarus has established robust mechanisms to manage and reduce existing or unregulated radiation risks. Resolution of the Council of Ministers No. 560 “On Approving the Procedure of Interaction Between Republican Bodies of State Administration, Other State Bodies and Organizations upon Detection of Ionizing Radiation Sources, as well as in the Case of Their Detention while Moving Across the State Border of the Republic of Belarus” documents this process.

Roles and responsibilities are defined, including investigative responsibilities, health assessments, and technical assessment (in order to identify the source). The state takes control of the source in order to ensure the safety and appropriate management of the orphan source. In such cases, Gosatomnadzor is designated to perform regulatory oversight of these activities.

These mechanisms have been proven by past experience such as the recovery of orphan historical military sources.

1.7. PROVISIONS FOR THE DECOMMISSIONING OF FACILITIES AND THE MANAGEMENT OF RADIOACTIVE WASTE AND OF SPENT FUEL

The requirements for safe management of the various types of radioactive waste are established by the Law on the Atomic Energy Use, Law on Radiation Safety of Population, and a number of regulations. Classification of radioactive waste is established in the Resolution of the Ministry of Health of the Republic of Belarus of December 31, 2015 No.142 "On approval of sanitary norms and rules

“Requirements for ensuring radiation safety of personnel and the public during radioactive waste management”, as well as in Resolution of the Ministry of Health of the Republic of Belarus of March 31, 2010 No.39 "On approval of sanitary norms, rules and hygienic standards "Hygienic requirements for the design and operation of nuclear power plants". The regulations establish requirements for the safe management of radioactive waste at all stages of its lifecycle: collection, segregation, conditioning, transportation, accounting, storage and disposal. However some gaps in the regulatory framework have been identified, as noted in section 9 (see recommendation R17).

According to the legislation, the operator is responsible for providing safety at all stages of radioactive waste management – from the moment it is generated to its disposal. State authorities in charge of safety regulation of the use of nuclear energy and ionizing radiation verify compliance with legislation in the field of radioactive waste management.

A strategy for Radioactive Waste Management of the Belarusian NPP documents the preferred disposal options (near-surface for very low-level, low-level and intermediate-level radioactive waste and deep geological for high-level waste). Resolution of the Council of Ministers No. 460 approved the Strategy for Radioactive Waste Management of the Belarusian NPP. There are some gaps in this strategy. Specifically, the strategy does not specify all controls required including regulatory control of activities, consider societal factors, assign clear responsibility for the implementation of the strategy and establish all time frames for the implementation of planned measures.

In addition, the current legal and regulatory framework does not allocate responsibility for radioactive waste management, including disposal and long-term storage of all types of radioactive waste to any state authority. It also does not establish the radioactive waste management operator with clearly defined legal, technical and financial responsibilities for the development and operation of the new near-surface disposal and long-term storage facilities and geological repository. While financial estimations have been completed for the NPP waste strategy, no financial estimations for radioactive waste management of activities other than the NPP have been developed. Also, provisions are not in place to ensure adequate resources for radioactive waste management of all sources of radioactive waste. Finally, there is no strategy for other potential sources of radioactive waste in use in the country. The action plan stemming from the self-assessment recognizes this gap. The Republic of Belarus could consider establishing a single strategy for all radioactive waste in the country, which is consistent with international practice.

For decommissioning, Article 20 of the Law on Atomic Energy Use specifies that decommissioning or limiting of the operational characteristics of a nuclear facility and (or) storage facility must be carried out in accordance with the applicable codes and standards. The operator is required to develop a decommissioning program for a nuclear facility and (or) storage facility five years prior to its lifetime expires. This program should contain measures for dismantling these facilities, management of nuclear materials and spent nuclear materials and (or) operational radioactive waste, as well as measures for further control and state supervision of these facilities.

Article 21 “Fund of decommissioning of a nuclear facility and (or) storage facility” of the Law on Atomic Energy Use specifies that for the purposes of decommissioning, early decommissioning or limitation of the operational characteristics of the nuclear facility and (or) storage facility, the operator must establish a decommissioning fund. According to the Article 21 of the Law of the Republic of Belarus “On the use of nuclear energy” a decommissioning fund for a nuclear power plant or its unit is formed from the funds received from the sale of electricity and thermal energy and the provision of other services, as well as from other sources not contradicting the legislation. Currently, the sale of electricity and thermal energy produced as a result of the Belarusian nuclear power plant operation is not carried out. As such, the fund

has yet to be established. The Government has also made provisions for the safe management of spent fuel via an agreement with the Russian Federation for the return of spent fuel originating from Russia. However, financial arrangements are not in place for radioactive waste management and decommissioning of other regulated facilities and activities.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *There are gaps in the Belarusian NPP radioactive waste strategy and framework and there is no strategy for radioactive waste generated by other facilities and activities. This was acknowledged in the action plan. The framework does not clearly allocate responsibility for disposal facilities.*

(1)	BASIS: GSR Part 1 (Rev.1) Requirement 10 states that: <i>“The government shall make provision for the safe decommissioning of facilities, the safe management and disposal of radioactive waste arising from facilities and activities...”</i>
(2)	BASIS: SSR-5 Requirement 1 states that: <i>“The government is required to establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities shall be clearly allocated for disposal facilities for radioactive waste to be sited, designed, constructed, operated and closed. This shall include: ...and clear allocation of responsibilities...”</i>
(3)	BASIS: SSR-5, para 3.6 states that: <i>“Matters that have to be considered include: ...Setting clearly defined legal, technical and financial responsibilities for organizations that are to be involved in the development of facilities for radioactive waste management, including disposal facilities of all types.”</i>
R3	Recommendation: The Government should address gaps in the radioactive waste management strategy and framework for radioactive waste from the Belarusian NPP and establish a strategy and framework for all other sources of radioactive waste including allocation of responsibility for disposal facilities.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *A decommissioning fund for nuclear facilities is required but not established. Financial arrangements for management of radioactive waste and for the decommissioning of facilities or sources of ionizing radiation other than for the Belarusian NPP are not in place.*

(1)	BASIS: GSR Part 1 (Rev.1) Requirement 10 states that: <i>“The government shall make provision for the safe decommissioning of facilities, the safe management and disposal of radioactive waste arising from facilities and activities...”</i>
(2)	BASIS: GSR Part 1, Requirement 10, para. 2.5 (16) states that: <i>“... framework for safety shall set out ... (16) Responsibilities and obligations in respect of financial provision for ... decommissioning of facilities and termination of activities.”</i>
(3)	BASIS: GSR Part 1, Requirement 10, para. 2.33 states that: <i>“Appropriate financial provision shall be made for: (a) Decommissioning of facilities...”</i>
(4)	BASIS: GSR Part 6, Requirement 9 states that: <i>“Responsibilities in respect of financial provisions for decommissioning shall be set out in national legislation. These provisions shall include establishing a mechanism to provide adequate financial resources and to ensure that they are available when necessary, for ensuring safe decommissioning.”</i>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

R4	Recommendation: The Government should establish financial arrangements for managing radioactive waste and for the decommissioning of all regulated facilities and activities.
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1.8. COMPETENCE FOR SAFETY

Recognizing the need to build domestic competence in the area of nuclear safety, the government has made provisions for building and maintaining the competence of authorities responsible for safety of facilities and activities in a number of legal acts. The State Program of Staff Training for the Nuclear Power Industry of the Republic of Belarus for 2008-2020 has been adopted (Resolution of the Council of Ministers No. 1329), and its implementation allows for the training of regulatory, technical support, and operating personnel for the construction, commissioning and safe operation of the NPP, as well as providing scientific, methodological, technical support to the universities. Particular focus is put on improving the qualification of university lecturers, creating training and laboratory facilities, and strengthening the technical base of educational and scientific institutions carrying out training. The team commends the rapid development and approval of this program, which will help ensure that the Republic of Belarus will maintain sustainable competence in the area of nuclear and radiation safety.

Under Resolution of the Council of Ministers No. 33, the Joint Institute for Power and Nuclear Research – JIPNR-Sosny within the National Academy of Sciences of the Republic of Belarus is designated as the body providing scientific and technical support to the MES. The Resolution specifies the areas where JIPNR-Sosny provides support. Gosatomnadzor is also supported by two organizations-licensees for safety expertise in the field of using ionizing radiation sources: the Research Institute of Nuclear Problems of Belarusian State University and the Promelektromontazh company.

Currently, when Gosatomnadzor identifies the need for independent expert review, it develops technical specifications for the review. These are provided to the organization licensed to perform the review, which performs the review and submits its assessment. Gosatomnadzor then verifies that the review was performed in accordance with the technical specifications. The decision to accept or not the analysis submitted by the licensee rests with Gosatomnadzor.

The decree designating JIPNR-Sosny specifies that there shall be no overlap in their activities with work performed for licensees. Criteria for the work of the expert organizations (e.g. to maintain expertise in certain areas and the means by which they are to provide their technical assessments to Gosatomnadzor) are outlined in resolution of the Council of Ministers No. 1781 "On Approving Procedure of Review of Documentation Justifying Nuclear and Radiation Safety Assurance during the use of Nuclear Energy and Ionizing Radiation Sources" (2010). This would be enhanced if the government implements their plans to develop a distinct TSO, as discussed in section 3.4 (see suggestion S3). In addition, as discussed in section 5, the means by which Gosatomnadzor accesses a technical assessment could be improved.

It is noteworthy that the process for Gosatomnadzor to increase its staff requires a Presidential Decree. In practice, this could restrict the flexibility the regulator has to determine and to access the resources it deems necessary to fulfil its mandate. With that said, the IRRS team was informed that Gosatomnadzor is able to access additional support from MES in the event of the need for additional resources to manage urgent matters.

1.9. PROVISION OF TECHNICAL SERVICES

Technical services are available in the Republic of Belarus, including personal dosimetry, environmental monitoring and metrological certification, verification and calibration of equipment. While not subject to licensing, these services must be accredited by the State Committee on Standardization of the Republic of Belarus.

The MoH is responsible for dosimetry of workers, performed by a technical support organisation that reports to the MoH. As the MoH also has a regulatory function, there may be a benefit to designating a separate organization for the provision of calibration services.

1.10. SUMMARY

The Republic of Belarus has used international requirements and guidance to develop a comprehensive, and at times complex, framework for nuclear and radiation safety. While demonstrating a commitment to meeting international requirements, there are some areas that require attention. In particular, key policy and legislative instruments should be reviewed to adequately address all of the IAEA safety fundamental principles and address other gaps and non-compliances identified in this report.

In many areas, nuclear and ionizing radiation facilities and activities are supervised by multiple regulatory bodies, most notably between the Ministry of Emergency Situations/Gosatomnadzor and the Ministry of Health. The Government should ensure a clear division of roles and responsibilities between the ministries in order to minimize potential duplication and overlap. In addition, formal agreements documenting the activities and mechanisms for collaboration and communication between regulatory bodies should be established.

Recognizing the challenge of the rapid introduction of nuclear power in the country, the Republic of Belarus has implemented a comprehensive strategy to build competence in safety.

2. THE GLOBAL SAFETY REGIME

2.1. INTERNATIONAL OBLIGATIONS AND ARRANGEMENTS FOR INTERNATIONAL COOPERATION

The Republic of Belarus is a contracting party to all major conventions and agreements related to nuclear safety and have effectively ensured that their obligations under these agreements are met. The Republic of Belarus has also signed a written commitment to the IAEA to work toward the full implementation of the Code of Conduct Code of Conduct on the Safety and Security of Radioactive Sources and Supplementary Guidance on the Import and Export of Radioactive Sources.

Bilateral agreements have been concluded between the government of the Republic of Belarus and the Governments of Poland, Austria, Ukraine, Armenia, the Russian Federation and other countries to support collaboration in nuclear safety and radiation protection related issues, notification in case of emergencies, NPP construction and other issues relevant to safety. Agreements for cooperation with the regulatory bodies of the Russian Federation, Ukraine, Hungary, Nordic countries (Norway, Finland, and Sweden) as well as technical support organizations such as the IRSN (France) and GRS (Germany) have been signed. In 2014, the MES proposed a draft agreement to the national regulatory authority of Lithuania (VATESI) proposing cooperation between Belarusian and Lithuanian regulatory authorities in the area of nuclear and radiation safety regulation and exchange of information on nuclear and radiation safety. Negotiations are in process.

Gosatomnadzor actively cooperates and exchanges experience in the development of capabilities in various areas related to regulation of nuclear and radiation safety through IAEA technical cooperation projects and European Commission Instrument for Nuclear Safety Cooperation (EC INSC). Gosatomnadzor also participates in activities of the Regulatory Cooperation Forum (RCF) as a recipient country embarking a on nuclear program, and is an observer to the Western European Nuclear Regulators Association (WENRA) and the WWER Regulators Forum. The Belarusian NPP (Republican Unitary Enterprise Belarusian NPP) joined the World Association of Nuclear Operators (WANO) in 2015.

The Republic of Belarus has hosted a variety of peer review missions, including the IAEA's INIR, IPPAS and this current IRRS, and has plans to host the ISSAS, EPREV, INIR (phase 3), SEED and INSServ peer review missions.

2.2. SHARING OF OPERATING EXPERIENCE AND REGULATORY EXPERIENCE

Gosatomnadzor has developed a draft of an internal procedure for the review, assessment and dissemination of information on operational events. It has prepared a draft procedure on the organization and functioning of the system of accounting for NPP operational events. The draft procedure stipulates requirements for the format and content of information on operational events that must be submitted by the operator. A draft procedure is also in development for the investigation and accounting of operational events. Gosatomnadzor also has plans for the establishment of a database for events.

Gosatomnadzor acquires information related to NPP construction through technical visits, fellowships and scientific visits to the countries constructing NPPs under bilateral agreements and through IAEA technical cooperation projects and the EC INSC. In addition, the Belarusian NPP operator obtains information from WANO on operating experience. Other tools are also available for collecting international expertise, such as the IAEA IRS system, the Heads of the European Radiological Protection Competent Authorities (HERCA) and the Multinational Design Evaluation Programme (MDEP) WWER working group are

available. The IRRS team was informed that utilisation of these tools is now under consideration by Gosatomnadzor, which attended the June meeting of HERCA and is reviewing the process for joining MDEP.

The Republic of Belarus has decided to perform the stress tests for the Belarusian NPP. The IRRS team was informed that regulations have been developed and established for the stress test, based on the ENSREG specification. A self-assessment of the Belarusian NPP is scheduled to be completed before the end of 2017, it will be performed in accordance with these regulations and submitted to Gosatomnadzor who will prepare a national report in 2017.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>Some additional international knowledge and reporting networks are not currently used to receive and share information on regulatory and operating experience.</i>	
(1)	BASIS: GSR Part 1 (Rev.1) para. 3.4 states that: <i>“The regulatory body shall establish and maintain a means for receiving information from other States, regulatory bodies of other States, international organizations and authorized parties, as well as a means for making available to others lessons learned from operating experience and regulatory experience. The regulatory body shall require appropriate corrective actions to be carried out to prevent the recurrence of safety significant events. This process involves acquisition of the necessary information and its analysis to facilitate the effective utilization of international networks for learning from operating experience and regulatory experience.”</i>
S2	Suggestion: Gosatomnadzor should consider joining international knowledge and reporting networks, such as the IAEA IRS and establish procedures on receiving and sharing information on operating and regulatory experience.

2.3. SUMMARY

With a clear commitment to international alignment and collaboration, the Republic of Belarus has ratified all major international conventions and agreements in the area of nuclear and radiation safety. It makes extensive use of international peer reviews to get feedback to improve the nuclear safety regime in the country and to fulfil its international obligations undertaken under the conventions and agreements ratified in the nuclear safety field.

In order to effectively oversee construction and eventual operation of the Belarusian NPP, Gosatomnadzor should utilize all available sources of construction and operating experience, as well as related regulatory experience. In that regard, MES should consider joining the IAEA’s IRS system as well as other related groups such as the MDEP WWER working group and establish procedures on receiving and sharing information on operation and regulatory experience.

3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY

3.1. ORGANIZATIONAL STRUCTURE OF THE REGULATORY BODY AND ALLOCATION OF RESOURCES

Gosatomnadzor is assigned to regulate nuclear and radiation safety under the Decree of the President No.756 “On Some Measures for the NPP Construction”. It was established in the structure of the MES in 2007 under the Decree of the President No. 565 with 39 staff and 8 divisions. When the NPP construction phase started in 2013, the number of staff positions allocated to Gosatomnadzor was increased to 82 and an on-site inspection office was established. Over the last few years 43 new staffs were recruited including 22 graduates from universities in Belarus specialized in physics, radiation chemistry, radiology and engineering disciplines.

The organizational structure of Gosatomnadzor is approved by Minister of Emergency Situations. The tasks, responsibilities and functions of Gosatomnadzor divisions, sectors, and territorial divisions are specified in their relevant normative acts approved by the head of Gosatomnadzor.

The head of Gosatomnadzor is appointed by the President as advised by the Minister for Emergency Situations. The head of Gosatomnadzor has deputies, including one first deputy, appointed by the Minister for Emergency Situations as advised by the head of Gosatomnadzor and agreed to by the Council of Ministers of the Republic of Belarus. To fulfil the tasks and functions delegated to Gosatomnadzor the head has the right to issue orders, distribute responsibilities among deputies, to make changes in the organizational structure, to approve statutes of the structural units, appoint and dismiss staff, except for deputies, to represent interest of the Gosatomnadzor in the state authorities and international organizations, manage the property and exercise other rights as established in the legislation of the Republic of Belarus.

Gosatomnadzor is funded from the state budget. It develops a budget plan for the next year after evaluating the implementation of the previous annual plans and current needs. The annual state budget is approved by the National Assembly of the Republic of Belarus and ratified by the President. If necessary, funding can also be provided from the budget of the MES to cover unplanned activities in Gosatomnadzor, as well as procurement of expert and consultancy services.

According to the statute, the scope of the Gosatomnadzor functions cover: participation in the authorization process, establishment of requirements to the safety submittals of nuclear installations and ionizing radiation sources, as well as to investigation of events, organization of safety expertise, R&D, implementation of control over radioactive waste management, control of physical protection, control over planning of protection measures and compliance with the rules and regulations on nuclear and radiation safety, personnel training and retraining and other functions as established in the statute.

3.2. EFFECTIVE INDEPENDENCE IN THE PERFORMANCE OF REGULATORY FUNCTIONS

As noted in section 1.3 of the Decree of the President No.756 establishes the roles and responsibilities of MES and Gosatomnadzor, which, aside from the examples cited above, do not confer any responsibilities for the promotion or application of nuclear energy and ionizing radiation sources.

The operations of MES are also bound by other legal instruments, such as the Regulation on Licensing of Certain Types of Activities (Approved by Decree of the President No. 450), that assigns MES the responsibility for key regulatory functions such as licensing. These instruments include requirements that may limit the ability of MES to fully fulfil its regulatory duties. These include prescribed timelines for the rendering of licensing decisions (e.g. 1 month for ionizing radiation sources, 1 year for nuclear facilities) and restrictions on inspection frequency and allowances for unplanned inspections in facilities other than the nuclear facilities. In practice, Gosatomnadzor has managed around these constraints through strategies such as the staged licensing of the nuclear power plant during construction (licences issued with only certain activities permitted, such as the preparation of foundations, pending the completion of the regulatory review of other elements) or using monitoring visits to oversee licensee activities. In addition, as a result of a recent decree, Gosatomnadzor must now issue indeterminate licenses. As discussed in section 5, this restriction makes it particularly important that the regulator adopt a practice of requiring periodic safety reviews for all regulated facilities and activities (see recommendation R11).

These requirements put limits on key control activities undertaken by Gosatomnadzor. This could potentially affect the ability of the regulatory body to adequately discharge its regulatory duties, thus the government should consider allowing flexibility in complying with these provisions if necessary to adequately ensure nuclear or radiation safety.

An internal order documenting the Gosatomnadzor’s policy to prevent conflict of interest has been established within Gosatomnadzor. In particular, this order restricts the activities of personnel previously employed by regulated entities. Specifically, staffs are prevented from performing inspections of previous employers for a minimum of three years.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *MES is required to complete licensing reviews within prescribed timelines. MES is not permitted to perform unannounced inspections unless it is for cause (e.g. as a result of an event). This could impact its ability to fully perform its regulatory functions and potentially create undue pressure or constraint. Development of a documented procedure for carrying out unannounced inspections is part of the action plan.*

(1)	BASIS: GSR Part 1 (Rev.1) Requirement 4 states that: “ <i>The government shall ensure that the regulatory body is effectively independent in its safety related decision making and that it has functional separation from entities having responsibilities or interests that could unduly influence its decision making.</i> ”
(2)	BASIS: GSR Part 1 (Rev.1) Requirement 4, para. 2.7 states that: “ <i>...the government shall ensure that the regulatory body is able to make decisions under its statutory obligation for the regulatory control of facilities and activities, and that it is able to perform its functions without undue pressure or constraint.</i> ”
R5	Recommendation: The Government should provide additional flexibility to Gosatomnadzor to extend timelines prescribed for licensing review and to perform unannounced inspections to ensure safety is not compromised.

3.3. STAFFING AND COMPETENCE OF THE REGULATORY BODY

The Strategy for the Development of the Department for Nuclear and Radiation Safety of the Ministry for Emergency Situations (2016 Development Strategy) reviews the coming challenges for Gosatomnadzor

and identifies priorities to help Gosatomnadzor prepare for these challenges. A strategic plan, which lists actions and timelines has been developed to support implementation of the 2016 Development Strategy.

A number of innovative actions are included in the strategy that not only support development of competence, but that will also help the department establish and maintain a healthy organizational culture. The IRRS team determined that this is critically important, as Gosatomnadzor is facing some significant challenges with the oversight of the construction of the Belarusian NPP and preparations to effectively oversee NPP commissioning and operation. Every effort should be made to implement the actions identified in the development strategy's action plan. As discussed in Module 4, there is a strong senior management emphasis on safety up to and including the Minister for Emergency Situations. With that said, however, the use of personal dosimeters during observed inspections was inconsistent, as discussed in section 11.2 (see suggestion S18).

Gosatomnadzor has performed an analysis, based on advice from experts from other countries, in order to identify all areas in which technical expertise is required. Twenty research and educational institutions of the Republic of Belarus have been identified as sources, or potential sources, of such expertise. Gosatomnadzor has developed a proposal to develop a dedicated support organization, of 25 staff in key areas that will serve as a dedicated TSO. The TSO would be established as a separate organization in the portfolio of MES. If implemented, together with building Gosatomnadzor's in-house expertise, this will improve the regulator's expertise to adequately perform their regulatory duties; i.e. provide them with sufficient expertise to perform technical reviews and assessment and, if external technical assessments are required from external expert organizations such as JIPNR-Sosny fully judge their adequacy. This is particularly important as Gosatomnadzor prepares for oversight of the operation of the Belarusian NPP.

With respect to regulation of medical exposure and medical uses of ionizing radiation Gosatomnadzor also relies on MoH to judge the adequacy of licence applications. As noted in section 1.5, MES/Gosatomnadzor and MoH should review their respective roles in this area to ensure that their regulatory oversight is complementary (see recommendation R2).

The competency requirements to Gosatomnadzor employees are defined based on the Qualifications Guide "Public Positions of Civil Servants", approved under the Resolution of the Ministry of Labour and Social Protection of the Republic of Belarus No. 135 of 2003. In addition, competency requirements are defined in accordance with the functions and tasks of Gosatomnadzor that are established in the statutes of the Gosatomnadzor, including its organizational structure and job descriptions of employees. The EC, IAEA projects and other bilateral cooperation agreements with the regulators of different countries as well as the State training program of the Republic of Belarus for nuclear power engineering (approved by the Resolution of the Council of Ministers of the Republic of Belarus № 1329) are used to organize training of the regulatory personnel.

Gosatomnadzor is focused on employee development, and individual training programs are developed for all staff. In addition, Gosatomnadzor has developed a targeted process to effectively integrate junior specialists or new employees without experience, which includes the development and implementation of 6-month individual programs, and the organization of internships in various departments of Gosatomnadzor to ensure staff have developed a good understanding of the operations of the whole department before commencing work in a particular section. The IRRS team considers that these efforts will be important to ensure that the regulatory body builds the capacity to effectively regulate nuclear safety and radiation safety.

A process for effective knowledge management is in development.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *Recognizing the challenges associated with their rapid growth and the importance of knowledge management, Gosatomnadzor has placed a particular emphasis on recruiting and developing new talent, on building and maintaining a healthy organizational culture and continuous improvement.*

(1)	BASIS: GSR Part 1 (Rev.1) Requirement 18, para. 4.13 states that: “A process shall be established to develop and maintain the necessary competence and skills of staff of the regulatory body, as an element of knowledge management.”
(2)	BASIS: GSR Part 2, Requirement 12, para. 5.2 states that: “Senior managers and all other managers shall advocate and support the following: ... <i>(c) An organizational culture that supports and encourages trust, collaboration, consultation and communication; ... (e) Measures to encourage a questioning and learning attitude at all levels in the organization and to discourage complacency with regard to safety.</i> ”
GP2	Good Practice: The regulatory body has established a variety of tools to manage their rapid growth, and has adopted innovative approaches to building a healthy organizational culture. Innovative practices include delegating responsibility for preparing the knowledge management strategy to newer staff, holding day-long meetings with staff to solicit feedback and holding a competition for staff to prepare essays on potential improvements (and establishing working groups to implement these improvements).

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *Gaps in Gosatomnadzor’s access to technical expertise in some technical areas have been identified Gosatomnadzor is continuing to further develop the technical competence of its staff. A strategy to develop a dedicated TSO and to build a network of support organizations in order to address some of these gaps is included in the action plan. In addition Gosatomnadzor has a focused plan to further train and develop its employees to enhance their competencies.*

(1)	BASIS: GSR Part 1 (Rev.1) Requirement 11, para. 2.36 (b) states that: “[the government] shall make provision for adequate arrangements for the regulatory body and its support organizations to build and maintain expertise in the disciplines necessary for discharge of the regulatory body’s responsibilities in relation to safety.”
(2)	BASIS: GSR Part 1 (Rev.1) Requirement 18 states that: “The regulatory body shall employ a sufficient number of qualified and competent staff, commensurate with the nature and the number of facilities and activities to be regulated, to perform its functions and to discharge its responsibilities.”
R6	Recommendation: The Government should ensure that adequate technical support is available to the regulator for all applicable disciplines. Gosatomnadzor should continue to implement the training and development plans to enhance its staff competencies.

3.4. LIAISON WITH ADVISORY BODIES AND SUPPORT ORGANIZATIONS

The use of advisory bodies was identified as one of the policy discussions for the IRRS mission. The provision to avoid conflict of interest between the operator and Gosatomnadzor is established in the

“Procedure of Review of Documentation Justifying Nuclear and Radiation Safety Assurance during the Use of Atomic Energy and Ionizing Radiation Sources” (approved by the Resolution of the Council of Ministers No. 1781 of 2010). Specialists of expert organizations and experts involved in the design, construction and operation of the nuclear facilities or uses of ionizing radiation, in the development of documents, or having civil and (or) labour relations with the customer expertise may not participate as experts. If such a fact is detected the expertise is recognized invalid.

JIPNR-Sosny has been designated as the organization to provide technical support and expertise. However, gaps in JIPNR-Sosny’s expertise have been identified. In addition, JIPNR-Sosny provides technical support to the operator (although not in the same areas that they support Gosatomnadzor). Gosatomnadzor is in the process of establishing a distinct TSO that can provide technical and expert support, and that will develop agreements with a network of organizations (including JIPNR-Sosny). The description of the TSO is covered in section 1.8 of this report and recommendation R6 is done.

Currently JIPNR-Sosny is the only licensed expert organization with the right to perform safety reviews in the area of nuclear energy, which could prove a challenge if JIPNR-Sosny proceeds with plans for a new research reactor.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>In order for Gosatomnadzor to obtain a technical review, it asks the licensee/applicant to arrange a review through a contract with an expert organization. It also can order technical support on its budget. It appears that Gosatomnadzor’s ability to order independent expert support may be limited.</i>	
(1)	BASIS: GSR Part 1 (Rev.1) Requirement 20, para. 4.19 states that: <i>“The regulatory body may decide to establish a dedicated support organization, in which case clear limits shall be set for the degree of control and direction by the regulatory body over the work of the support organization”</i>
(2)	BASIS: GSR Part 1 (Rev.1) Requirement 20, para. 4.20 states that: <i>“Arrangements shall be made to ensure that there is no conflict of interest for those organizations that provide the regulatory body with advice or services.”</i>
S3	Suggestion: The Government should consider enabling Gosatomnadzor to request an independent expert review when necessary.

**Policy issue #1
The Advisory Council for Nuclear and Radiation Safety**

The basis of this policy issue is GSR Part 1 (Rev.1), requirement 20 regarding the use of advisory bodies that states: “The regulatory body shall obtain technical or other expert professional advice or services as necessary in support of its regulatory functions, but this shall not relieve the regulatory body of its assigned responsibilities.” IAEA safety standards also stress that obtaining advice does not relieve the regulatory body of its assigned responsibilities and regulatory body should have core competence to assess the advice and to make decisions to accept or not accept the advice.

MES/Gosatomnadzor intends to establish the Advisory Council for Nuclear and Radiation Safety. This Council will be an interdisciplinary, scientific, expert and advisory body on issues of nuclear and radiation safety specifically for nuclear facilities regulation. The Advisory Council will make

recommendations to MES/Gosatomnadzor. According to IAEA standards, the regulatory body may decide to give formal status to the processes by which advice is provided. Gosatomnadzor considers two possible options for the Advisory Council establishing. The first option is the creation of the Advisory Council under the MES and the second under the Council of Ministers of the Republic of Belarus.

The advantages and disadvantages of each option were discussed. For example, Gosatomnadzor considers that establishment of the Advisory Council under the Council of Ministers allows MES/Gosatomnadzor to make enhancements to the regulatory infrastructure and obtain the government's approval. However, the IRRS team members expressed their concern that direct advice on nuclear and radiation safety provided to the Government by such Advisory Council may challenge the regulatory body decisions and compromise regulatory body independence.

The experience of Belgium, Bosnia and Herzegovina, Finland and China was exchanged. The following issues were covered: provisions for the establishment of the advisory bodies in the national law; the scope and terms of reference of the advisory bodies; veto power on the realization of the certain proposals for which regulatory body searches the advice; criteria and procedure for advisory body experts assignment and work; role of the advisory bodies in qualified experts recognition; the role of advisory bodies in providing credibility and openness of regulatory decisions; avoiding of the conflict of interest; secretariat functions for the advisory body and award for the members.

3.5. LIAISON BETWEEN THE REGULATORY BODY AND AUTHORIZED PARTIES

Meetings with licensees are conducted during the course of oversight activities and are scheduled. Gosatomnadzor is authorized to communicate directly with authorized parties. Meetings are held regularly to discuss findings, new developments and other matters of relevance. When developing technical requirements, draft documents are shared with the regulated entities to solicit comment, which is taken into account before finalizing. Implementation of the suggested improvements in section 3.8 will also help ensure all authorized parties are engaged during the development of regulatory documents (see recommendation R7).

Several permanent resident inspectors are in place at the Belarusian NPP. Currently inspection reports prepared and sent to the head office for approval, although Gosatomnadzor is in the process of reviewing their duties and powers in order to ensure that they are empowered to take immediate action in the event of a significant safety concern. There are no restrictions on their length of stay.

Moreover, regional offices have been established to ensure adequate and efficient involvement of inspection staff in the supervision over radiation safety of sources of ionizing radiation.

3.6. STABILITY AND CONSISTENCY OF REGULATORY CONTROL

Gosatomnadzor developed strategies specifying safety and quality policies, principles and criteria as well as established associated action plans to implement these strategies. As described in section 4, the management system describing 12 core regulatory functions (such as licensing, the conduct of review and assessment, establishment, amending and supplementing rules and regulations, enforcement, supervision in the nuclear and radiation safety areas, emergency preparedness, communication and information, management of competences) is in the process of development by Gosatomnadzor. Full implementation of an integrated management system, as recommended in module 4, will help ensure that the regulatory body performs the duties in a consistent way. Information about policies, principles and safety objectives

and associated criteria that make the basis for the regulatory decisions is communicated via web page, official exchange of letters, meetings. This report contains several recommendations and suggestions to improve processes which will help to ensure a stable and consistent regulatory approach (see recommendation R8 in section 4.2).

3.7. SAFETY RELATED RECORDS

Although systems are well developed in the area of radiation safety (e.g. source registry), with established requirements for reporting, similar systems for nuclear facilities do not currently exist. Gosatomnadzor has recognized the importance of records relating to nuclear facilities, and has identified processes and supporting systems that are necessary to support this function. The regulatory body is in the process of developing records management systems for records related to the nuclear power plant, including databases and procedures for recording information obtained from the licensee. Further, although currently in development, requirements (on licensees) for reporting and record keeping have yet to be implemented.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
<i>Observation: Requirements for regulatory reporting and record keeping are not in place for nuclear facilities. Further, Gosatomnadzor does not have systems to track and analyze industry events and performance. This has been recognized in the action plan as being currently in development.</i>	
(1)	BASIS: GSR Part 1 (Rev.1) Requirement 35, para. 6.63 states that: “The regulatory body shall make provision for establishing and maintaining the following main registers and inventories:...Records relating to the safety of facilities and activities; Records that might be necessary for the shutdown and decommissioning (or closure) of facilities; Records of events, including non-routine releases of radioactive material to the environment; ...”
S4	Suggestion: MES/Gosatomnadzor should consider finalizing and implementing requirements for record keeping and reporting for nuclear facilities, and developing internal systems to effectively track and analyse operating experience and trends in performance.

3.8. COMMUNICATION AND CONSULTATION WITH INTERESTED PARTIES

Gosatomnadzor has in place a strategy for informing and communicating with the public, and has established a dedicated website that reports on the activities of the department. This website outlines the overall regulatory system, and includes information on the activities of Gosatomnadzor. In addition, more comprehensive information is provided in an annual report (the first having been issued in 2014) which is prepared, in collaboration with other authorities responsible for regulatory oversight. The report describes the main activities, events and measures in the field of regulations of nuclear and radiation safety.

The strategy details key objectives of communication and is focused on the achievement of sustainable awareness by targeted audiences and strengthening the credibility of state regulation. The main vehicle of communication is Gosatomnadzor’s website, although public information sessions are also held. Further, Gosatomnadzor had held open houses for interested members of the public, who are invited to pose any questions to the department’s management team. MES maintains a public information line, and inquiries are tracked and addressed.

Recognizing the significant upcoming decision on the operating licence for the Belarusian NPP, Gosatomnadzor is in the process of analysing best practices for public hearings, both domestically (such as those held by the Ministry for Natural Resources and Environmental Protection) and internationally. They have applied to the IAEA for support in these activities. This item was one of the policy discussions for the meeting.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
<p>Observation: <i>The public is not consistently consulted during the development of regulations and rules. Also, Gosatomnadzor does not provide the public with an opportunity to engage in major regulatory decisions and does not have targeted consultations with interested parties in the vicinity of the Belarusian NPP. Conducting a public hearing for the decision on the operation of the NPP is part of the action plan.</i></p>	
(1)	<p>BASIS: GSR Part 1 (Rev.1) Requirement 36, para. 4.67 states that: “...there shall be consultation by means of an open and inclusive process with interested parties residing in the vicinity of authorized facilities and activities, and other interested parties, as appropriate.”</p>
(2)	<p>BASIS: GSR Part 1 (Rev.1) Requirement 36, para. 4.67 states that: “Interested parties including the public shall have an opportunity to be consulted in the process for making significant regulatory decisions, subject to national legislation and international obligations. The results of these consultations shall be taken into consideration by the regulatory body in a transparent manner.”</p>
(3)	<p>BASIS: GSR Part 1 (Rev.1) Requirement 34, para. 4.61 states that: “The government or the regulatory body shall establish, within the legal framework, processes for establishing or adopting, promoting and amending regulations and guides. These processes shall involve consultation with interested parties in the development of the regulations and guides.”</p>
R7	<p>Recommendation: MES/Gosatomnadzor should finalize and implement plans to inform and consult with the public when making significant regulatory decisions.</p>

3.9. SUMMARY

Gosatomnadzor has gone through a major transformation in recent years to prepare for and oversee the construction, commissioning and eventual operation of the Belarusian NPP. Comprehensive strategies that identify and prioritize development activities for the organization have been developed. The regulatory body should focus on completing the associated action plans in order to ensure it maintains an adequate level of readiness and capability to face the upcoming challenges. Gosatomnadzor has established mechanisms to communicate with the public on its activities through its web page, regular reports and other communication channels.

Gaps in the availability of technical expertise in all applicable technical disciplines should be addressed on a priority basis, in order to ensure that the regulatory body has the requisite expertise to effectively regulate facilities and activities. In addition, the framework for safety and the rules governing the operation of government and regulatory bodies are extensive. Gosatomnadzor will need continued government support to allow them to quickly adapt their resources and practices in order to effectively perform their regulatory duties.

4. MANAGEMENT SYSTEM OF THE REGULATORY BODY

Gosatomnadzor is in the process of establishing and implementing an integrated management system in line with the IAEA safety standards GSR Part 2. In the ARM, the management system was self-assessed according to the IAEA safety standard GS-R-3. On 30 June 2016, the new safety standards GSR Part 2 were published superseding the GS-R-3. The IRRS team reviewed this area against the safety standard GSR Part 2, taking into account that the ARM is done according to GS-R-3.

4.1. LEADERSHIP FOR SAFETY

The Regulatory Strategy, approved by the Board of Gosatomnadzor addresses the vision “to ensure a high level of nuclear and radiation safety” and the Gosatomnadzor mission “to serve the interests of the protection of people, society and the environment from harmful effects of ionizing radiation”.

In the strategy the four organizational values of Gosatomnadzor include:

Competence

“Our approvals and solutions are based on science-based proven knowledge.”

Cooperation

“Our cooperation is based on good relationships, collective participation and mutual trust. In addressing the relevant issues, the opinions of stakeholders are taken into account.”

Attitude to safety

“Our control (supervisory) activities are aimed at achieving high safety culture requirements and include a critical attitude, a balanced approach and an exchange of views aimed at ensuring and improving safety.”

Transparency

“Our activities are transparent and open to all the stakeholders, specialists and the public.”

Moreover, in the policy for Gosatomnadzor for 2015 to 2020, Gosatomnadzor declares its commitment to exemplify the development and maintenance of safety culture and its independence from operational and economic interests of nuclear facilities and radiation source users. The policy, as well as, parts of the Regulatory strategy are part of the recently developed manual of the integrated management system.

4.2 MANAGEMENT FOR SAFETY

RESPONSIBILITY FOR INTEGRATION OF SAFETY INTO THE MANAGEMENT SYSTEM

There is a Coordinating Committee of the Integrated Management System consisting of the Head of Gosatomnadzor and the Deputy Heads. The Head of the sub-division of Professional Training and Quality Management is the secretary of the committee meetings. Since the first meeting in January 2015, there have been three additional meetings. Before any formal decisions related to the management system are made by the Head of Gosatomnadzor, there are discussions held in this committee. Internal regulations for the Coordinating Committee, Management representative, and Process owners were approved in March 2015. There is a draft list of appointed process owners, working groups and others involved in the work.

The Management System

Gosatomnadzor is developing a management system, according to a plan ordered by the Head of Gosatomnadzor in 2015 (amended in September 2016). The plan consists of three phases: Organization and Preparation, Development of Documents and Processes, and Implementation of the Integrated

Management System. The first phase was finalised and Gosatomnadzor is in the process of developing documents and processes.

The manual of the management system (not formally implemented) includes:

- the Policy of Gosatomnadzor (approved);
- General description of management system including tasks, goals and responsibilities;
- Legal requirements;
- Mission, vision and values of the organization;
- Summary and short description of development strategy;
- Approaches to implement safety culture as part of the regulatory activities;
- Responsibilities of senior management and organization structure;
- List of stakeholders and their expectation and needs;
- Planning and application of a graded approach;
- Overall process map and documentation of the management system (hierarchy, nomenclature and methodology) ;
- Monitoring and analyses of management system;
- Management of non-conformities and continuous improvement.

The Board of Gosatomnadzor has approved a Development strategy and a Regulatory strategy. In addition to this, the Board approved five thematic strategies and recently a strategic plan for 2016-2020. The preparation of administrative documents is carried out according to with normative legal acts (Law of the Republic of Belarus on National Archive and archives etc.). All decided documents of the management system of importance for the performance of the work are distributed to the staff to read and sign. The IRRS team considers that the present plans and documents demonstrate that, when implemented, the management system will integrate safety, health, environmental, security, quality, human-and-organizational-factor, societal and economic elements.

Management of Resources

Competence requirements for different functions are specified in job descriptions and training programs, which are evaluated on an individual basis. The competence issue is one of the strategic areas in the strategic plan pointing at the importance of achieving and sustaining the required levels of competence necessary to perform their regulatory tasks (see section 3.3). Some training with the managers and members of the staff in the relevant requirements of the management system has been conducted. However, training of all members of the staff will occur at a later stage of implementation. The IRRS team noted that since the development of the regulatory processes is planned to involve a substantial portion of the employees, to include junior staff, this also would create a learning opportunity. This is discussed in module 3, sections 3.1 and 3.3.

Management of Processes and Activities

In the management system manual there is a general description of the processes by an overall process map describing the management, core regulatory, and support processes. The development of processes has started for four pilot regulatory processes: Safety Assessment, Licensing, Supervision and Competence Management. The three last processes were discussed by the Coordinating Committee of the Management system in their last meeting, Supervision and Competence Management processes approved by Gosatomnadzor order №50 of 2016. Suggested alterations to the licensing process are expected to be discussed later this year.

The team identified several examples of deficiencies of documented processes, procedures and guidelines (see Sections 5.1; 5.3; 5.5; 6.1.1; 6.2; 6.5; 7.3; 8.1; 8.2.10.1; 10.3; 10.4; 11.2; 11.3) that, if not addressed, could impact the performance of safety related activities of the regulatory body. The team concluded that it is important to complete the work (according to the plan) associated with development of the processes, especially those with the most impact on nuclear and radiation safety. In addition, MES/Gosatomnadzor should make provisions to provide sufficient training to the staff to ensure that individuals are knowledgeable of the relevance and the importance of their activities. (See R6; R14; R18; S19 and R21).

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: Gosatomnadzor has not fully developed and implemented an Integrated Management System to include the documentation of the processes and procedures contributing to the achievement of the safety goals of the organization. Gosatomnadzor has not assessed the leadership of safety and safety culture. Development of the management system and approaches to Gosatomnadzor self-assessment of safety culture is part of the action plan.

(1)	BASIS: GSR Part 1 Req. 19 para. 4.14 – 4.17 states that: “The regulatory body shall establish, implement, and assess and improve a management system that is aligned with its safety goals and contributes to their achievement.”
(2)	BASIS: GSR Part 2 Req. 10 para. 4.28 – 4.32 states that: “Processes and activities shall be developed and shall be effectively managed to achieve the organization’s goals without compromising safety.”
(3)	BASIS: GSR Part 2 requirement 14, para. 6.9. – 6.11 states that: “Senior management shall regularly commission assessments of leadership for safety and of safety culture in its own organization.”
R8	Recommendation: Gosatomnadzor should complete its activities to establish, implement, and assess its integrated management system. Special attention should be on the regulatory processes, applying a graded approach, and assessing leadership for safety and safety culture.

4.3 CULTURE FOR SAFETY

The Gosatomnadzor vision – “to ensure a high level of nuclear and radiation safety” as stated in the Regulatory Strategy refers to strengthening of safety culture in the nuclear field. Over the past few years there have been several activities and workshops designed to enhance organizational safety culture. For example, there was a high-level meeting on the development of a safety culture in the nuclear field with the Deputy Director General of the IAEA and the First Deputy Prime Minister, the Minister for Emergency Situations, and the Deputy Minister of Energy (with support of the Regulatory Co-operation Forum), and there have also been workshops with the IAEA and EU-commission on leadership, management, and safety culture for managers at all levels. There have also been special events for junior specialists where they met with the Head of Gosatomnadzor who encouraged the staff to identify problem areas and make suggestions for improvement, as well as tutoring from more experienced employees. Moreover, working groups of experienced specialists are established to solve identified problems, prepare decisions, and draft documents related to safety. MES/Gosatomnadzor plans to conduct these activities periodically as part of the 2016-2020 strategic plan. This is one of several activities conducted to strengthen the organizational safety culture and its regulatory activities. Gosatomnadzor is also planning

to organize and conduct a local conference on the state and development of safety culture involving all staff to provide measures to strengthen and self-assess the safety culture.

The team determined that Gosatomnadzor has a systematic approach to activities designed to strengthen their safety culture and that the activities involving engagement of the junior specialists to suggest improvements areas illustrated an innovative approach (See GP2 in Section 3.3).

4.4. MEASUREMENT, ASSESSMENT AND IMPROVEMENT

The activities of Gosatomnadzor are assessed and analysed by Gosatomnadzor and the administration of the Ministry for Emergency Situations, and once every six months they are discussed at a meeting of the Board of Gosatomnadzor. The activities of Gosatomnadzor are monitored monthly by the Ministry of Emergency Situation, and the Minister also has weekly meetings with the Head of Gosatomnadzor. The Head and Deputy Heads of Gosatomnadzor have weekly meetings, where heads of sub-division also attend if needed. Further, Gosatomnadzor is using the results of external audits (IAEA mission, audits of Gosatomnadzor from the Ministry for Emergency Situations and other competent authorities of the Republic of Belarus) the experience of regulatory bodies in other countries for improving their regulatory activities.

The Coordinating Committee has had meetings to discuss the development of the management system. As mentioned in the action plan, Gosatomnadzor has not yet documented indicators to assess the effectiveness of the management system and its processes for the implementation of regulatory functions. However, an assessment of the management system is included in their bi-annual 6-month report. In addition, the IRRS team found that a responsible entity had not been assigned to conduct independent assessment (internal audits) of the management system. Gosatomnadzor should identify such an entity and plans to complete and initiate an initial and periodic independent reviews of their management system.

There have been several activities for strengthening the organizational safety culture. However, Gosatomnadzor has no specific indicators to assess the safety culture and has not commissioned an assessment of the leadership for safety and safety culture. Although the latter was not a specific requirement in the superseded IAEA safety standard GS-R-3, the IRRS team considers that it is important that such assessments take place and that the results be communicated to all levels in the organization. This was also identified by Gosatomnadzor in the action plan. (See recommendation R8 in Section 4.2.)

4.5. SUMMARY

Gosatomnadzor is in the process of establishing and implementing an integrated management system in line with the IAEA safety standards GSR Part 2. There is lack of documented processes of safety related regulatory activities. Gosatomnadzor should complete the work associated with development of the processes, especially those with the most impact on safety, and provide sufficient training to ensure that individuals are knowledgeable of the relevance and the importance of their activities.

The competence issue is a strategic area to achieve and sustain the levels of competence necessary to perform their regulatory tasks. Gosatomnadzor has a systematic approach to the activities strengthening the safety culture, however, no assessments of leadership for safety and safety culture has been conducted.

5. AUTHORIZATION

5.1. GENERIC ISSUES

The IRRS team concluded that the Republic of Belarus is implementing an authorization process based on the issuance of special permits (license) and granting of other relevant permits. Decree of the President No. 450 approves “Regulation on the Licensing of Certain Types of Activities” (latest amendments in June 2016). This Decree provides the licensing requirements and arrangements for nuclear and radiation facilities and activities. Decree of the President No. 450 empowers MES as the licensing authority for nuclear and radiation facilities and activities and establishes a uniform system of licensing in the country. According to Article 3, implementation of any nuclear or radiation activity without a license is considered illegal and is prohibited. Chapter 13 establishes the specific requirements for nuclear and radiation facilities and activities while the list of facilities and activities that require license is provided in Article 5 of Annex 1 of the Decree. The main activities that require a licence are limited to:

- Use of nuclear energy;
- Use of ionizing radiation sources;
- Management of radioactive waste;
- Design and manufacturing of equipment, as well as design and manufacturing of radiation protection means; and
- Conducting safety assessments in the use of nuclear energy and ionizing radiation sources.

According to Article 1 there is only one possible licensing document called “special permit (license)” (hereinafter referred to as “license”) for all activities in the country. License and corresponding conditions may be appealed first to the MES and then in court. The time limit for requesting a court appeal is one month from notification of the regulatory decision.

President Decree 450 specifies that there is no time limit associated with a license and it remains valid indefinitely (Article 56). The IRRS team was advised that this does not cause significant problems. For example, for the NPP this is compensated by the requirement for a Periodic Safety Review. However, an unlimited licensing period should be accompanied by increased attention from the regulatory body with respect to the verification of safety of the facilities and activities; in addition to, requiring well-defined safety requirements and clear criteria and procedures for license termination or withdrawal. The IRRS team could not find sufficient evidence to determine that MES/Gosatomnadzor had reviewed the potential safety impacts and mitigation measures associated with allowing facilities to operate without limits on the duration of the licensed period.

The IRRS team also found that due to the provisions of Decree of the President No. 450:

- MES is not authorised to initiate changes to the license on its own discretion in cases related to nuclear and radiation safety;
- The list of facilities and activities that require a license (Annex 1) does not include disposal facilities and its lifecycle stages.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *Decree of the President No.450 does not authorise MES to initiate changes in the license or license conditions when needed for safety related purposes. It also does not require licensing of disposal facilities and its lifecycle stages.*

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GSR Part 1 (Rev.1) Requirement 24, para. 4.29 states that: <i>“Different types of authorization shall be obtained for the different stages in the lifetime of a facility or the duration of an activity. The regulatory body shall be able to modify authorizations for safety related purposes...”</i>
R9	Recommendation: The Government should update Decree of the President No. 450 to ensure that it authorises MES to initiate changes in the license and license conditions when needed for safety related purposes and that it requires licensing of disposal facilities and its lifecycle stages.

Concerning safety related modifications, the IRRS team identified that no legal document requires regulatory approval of modifications. This finding applies to NPPs, research nuclear installations (RNIs), radioactive waste management (RAWM) facilities and was also identified for some activities with ionizing radiation sources (IRS). MES had identified the issue (for NPPs) and discussed it with the Russian regulator, Rostechнадзор. In this respect, a condition is included in the construction license for the Belarusian NPP for the licensee to report on safety-related modifications. Recently, based on that condition of the license, the licensee is expected to inform Gosatomnadzor regarding site to facilitate review by Gosatomnadzor.

A MES regulation regarding the management of modifications has been drafted but not yet adopted. The IRRS team determined that it is of utmost importance that all requirements, processes and procedures are in place to ensure that safety important modifications are reviewed by Gosatomnadzor. It is also important to ensure that implementation of such modifications is not possible without the prior approval of the Gosatomnadzor. IAEA Safety Standards require that safety significant modifications require a separate regulatory decision – a permit, consent, authorisation. By applying a graded approach many regulators grade the modifications according to their safety significance and only those that may impact safety are reviewed in detailed and approved. Consideration should be taken not only of design changes but also of changes in documents that impact safety.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *Arrangements on review and assessment of safety-related modifications of design and procedures are missing. A draft of an MES decree on the subject is being developed.*

(1)	BASIS: GSR Part 1 (Rev.1) Requirement 24, para. 4.29 states that: <i>“Different types of authorization shall be obtained for the different stages in the lifetime of a facility or the duration of an activity. The regulatory body shall be able to modify authorizations for safety related purposes...”</i>
(2)	BASIS: GSR Part 1 (Rev.1) Requirement 26, para. 4.44 states that: <i>“Any proposed modification that might significantly affect the safety of a facility or activity shall be subject to a review and assessment by the regulatory body”</i>
R10	MES should establish appropriate requirements, processes and procedures to ensure that modification of facility design, processes or procedures, which might significantly affect safety, undergo prior review and assessment by Gosatomnadzor.

5.2. AUTHORIZATION OF NUCLEAR POWER PLANTS

Concerning NPPs a license should be issued for:

- Design, siting, construction, operation and decommissioning of nuclear installations;
- Design, siting, construction, operation and decommissioning of storage facilities for nuclear material;
- Management of nuclear materials, nuclear fuel, spent nuclear materials and spent nuclear fuel; and,
- Providing safety-related services to the operator, including construction.

The IRRS team identified that for the new NPP, MES has issued a siting license for the two units, and a construction license for the two units. The construction license included two main stages, namely the “first concrete,” and the complete construction works. The adopted practice excluded design approval (license), as the legal system requires licensing only of activities and products created inside the country. Respectively, the design review has been conducted as part of the documentation review for issuing a construction license (see Section 6). In addition, the commissioning process is split into two parts, namely pre-operational adjustments without nuclear fuel to be done as part of the construction license, and pre-operational adjustments with nuclear fuel and physical start-up testing and verification to be performed subsequent to fuel delivery on-site. The approach covers all important stages of the licensing of a nuclear installation. However, there is no legal document that explicitly specifies the licensing stages, namely issuing of a construction license in two stages and the completion of the commissioning process in steps.

To obtain a license the applicant is required to submit a set of documents that justify the safety of the facility and activity. The administrative documents are listed in the Decree of the President No. 450, while the safety justification ones are included in a MES Decree No. 58/2010. Authorized activities shall be explicitly listed in the license. The IRRS team was advised that for a NPP the management of fresh and spent fuel, as well as RAW management activities will be included in the operating license of the facility. The process for issuing a license starts with a review for completeness of the submitted documents. This is done by a dedicated task force or employee and results in either acceptance or return of the application. Any further requests or information is communicated to the applicant in writing. To review the documents, MES forms an internal review team and establishes a review plan. This plan includes distribution of review topics among team members and schedules for completion. Also, Gosatomnadzor decides on the need for an independent external expert review and assessment of submitted documents. The review process may or may not require independent analysis, calculations or modelling. When needed, Gosatomnadzor prepares the terms of reference and contracts its technical support organization (TSO) for the independent review and assessment. The TSO work is financed by the applicant. The results of both internal and external reviews are collected by the task force and an expert conclusion is drawn, discussed and approved. This conclusion is the basis for the decision of the MES Board on whether to issue a license or not. The license is signed by the Head of Gosatomnadzor.

As part of the review and assessment process, MES has organised a series of meetings (11 meeting) with all parties involved in the preparation and review of the design to discuss expert findings and corrective actions to be taken by the applicant to eliminate non-conformances. The following organisations were involved in the meetings: MES; expert organisation providing expert advice to MES (JIPNR-Sosny); operating organisation; general designer of the plant; general designer for development of the design and working documentation; general designer of the reactor installation; turbine manufacturer; scientific project manager; fuel manufacturer; manufacturer of reactor pressure vessel steel; and, the company responsible for the preparation of design and working documentation. The IRRS team determined that this MES initiative was an efficient and effective way to better complete the review process (see Good Practice GP1 in section 1.5).

Initially, the MES was not empowered to set special conditions in the licenses. This situation changed with the amendment of Decree of the President No. 450 in 2015, where MES was provided with the authority to set special conditions in the license. The IRRS team verified this practice by review of the latest amendment to the license for NPP construction. However, the IRRS team did not find any formal procedure describing the content and scope of the license conditions to be established. This could lead to difficulties in formulating license conditions in the forthcoming operating license. The team was advised that drafting of such internal rules started in 2013 in cooperation with foreign experts. These internal rules represent a sound basis for definition of conditions to be included in the future operating license. This is not an immediate issue, however, formal adoption of the rules would enable MES to be better prepared for the licensing and operation of the NPP.

The IRRS team found that MES has not been authorised to initiate changes in the license itself on their own discretion in cases related to nuclear and radiation safety (see recommendation R9 in section 5.1)

Article 11 of the Law on Atomic Energy Use requires that “certain activities” at nuclear facilities shall be carried out only by authorised personnel. The law explicitly defines MES as the authorisation authority for these personnel. Decree of the Council of Ministers No. 156 (2012) defines the complete list of administrative services to be provided by the state administration in the Belarus. In 2015, by Decree of the Council of Ministers No. 854 (2015) “permit on the right to carry out activities in the use of nuclear energy...” (hereinafter referred as individual permit) was added to the state list of administrative services. Decree of the Council of Ministers No. 854 specifies the general procedure and the documents to be submitted to Gosatomnadzor for issuing of individual permits. For NPPs the list of activities and respective positions that require a permit is approved by a joint decision of MES and Ministry of Energy. The MES made a review of the international practice and requirements for licensing of personnel of contractors working for the NPP. It could not find any applicable practices and criteria. In this respect, there is no list of activities and positions of contractors that require individual permits. The IRRS team was advised that this issue is being addressed by MES, and one of the possible solutions is amending the relevant Decree.

Nuclear power plant personnel are initially trained on-site. An individual training programme is established for each position, including simulator training. After completing this training programme the individuals pass internal exams organised by the licensee and successful completion of the exam allows their application to be submitted to MES for an individual permit.

The MES has established a “Commission on competence assessment” (CCA), which consists of at least 3 members of Gosatomnadzor staff. Exams are conducted in two main stages, namely, a written exam and an interview. Final decision of the CCA could be either “yes” or “no”, which is included in the exam protocol. Based on the exam results, Gosatomnadzor will issue or deny an individual permit. The permit validity is 5 years. The individual permits are issued for the specific activity and position, so any change in position requires a new permit. To further improve objectivity and consistency, MES is developing examination questionnaires, which are based on the questionnaires of the Russian regulator. MES could benefit from including outside independent experienced experts in the CCA where their own competence is considered insufficient to judge on the competence of the operating personnel. The IRRS team did not review individual permits, as no permits have been issued to date. The first group to be examined is the management staff and the physical protection personnel of the NPP.

Several sites on the territory of Belarus had been investigated and three had been investigated in detail. Based on those studies, the Ostrovets site was selected. An Environmental Impact Assessment (EIA) had been performed with a final positive decision. The application for a site license included:

- Feasibility study for the NPP;
- Preliminary SAR (PSAR) including safety justification for the selected site; general site description; aspects of public and environmental safety; plant physical protection arrangements;
- General quality assurance programme for the NPP;
- Quality assurance programme for the site selection process.

Gosatomnadzor performed a review and assessment of the safety submittals and concluded that a license could be issued. Based on the positive conclusion, the MES decision making board issued the site license (31 May 2012). Regarding the design of the NPP, the Decree of the President No.450 explicitly mentions that licensing is required only for activities carried out on the territory of Belarus. As the design was created in Russia and imported into the country there was no need to issue a separate design license. This does not relieve Gosatomnadzor from its responsibility to review the NPP design, and the review was performed within the process for issuance of the construction license.

With the application for a construction license, the applicant presented among others:

- Preliminary SAR;
- PSA Level 1;
- General quality assurance programme for the NPP;
- Quality assurance programme for the construction process;
- Design documentation.

Initially, a construction license was issued only for the first concrete and later on the license was amended to cover the complete construction activity. This is not a unique approach, as many countries set hold points in the licensing process. Hold points are further discussed in Section 6 of this report.

The IRRS team noted that the documents for issuing of an operating license are contained in article 5.3 of MES Decree No.58 /2010 and include most of the documents needed to judge safety of the plant, including the: Final SAR, PSA Level 1, PSA Level 2, Technical Specifications, Severe Accident Management Guidelines, Emergency Operating Procedures, maintenance activities, and test documentation and results. As part of the application for an operating license the applicant shall also present analyses of the implementation of all license conditions included in the construction license, as well as, a report on the implementation of the findings from the design review. The IRRS team found that the only thing missing is the set of operating instructions on the basis of which the operations will be conducted. This IRRS Team discussed this issue with Gosatomnadzor and learned that this item was being addressed.

Policy Issue Discussion - Public Hearings

The IAEA safety standard SSG-12, para. 2.42 states that: “The public should be given an opportunity to present their views during certain steps of the licensing process, where appropriate. If a site is near a State’s national boarder, there should be appropriate cooperation, including public participation, with neighbouring State(s) in the vicinity of the nuclear installation.” Para. 2.43 states that: “Transparency, along with public participation and involvement in the regulatory process reinforces the credibility of the regulatory body and enhances local public confidence in the nuclear regulatory regime.”

Belarus has not yet conducted hearings but has strong intentions to do so in the future, in particular with licensing of Belarusian NPP for operation. The hearings that will be held will not be legal proceedings but are focused on obtaining public comment and insights on the construction and operation of the NPPs. To assist Belarus in this regard a policy discussion was conducted during the IRRS mission during which the IRRS team exchanged experiences with Gosatomnadzor regarding best practices and experiences with public hearings and the need to obtain and consider the views of interested parties.

The IRRS team noted that there are several different reasons to hold public hearings. The main reason is to allow the public to raise safety concerns to the regulatory body and other decision makers involved in the licensing process. The team noted that it is not sufficient just to listen to the concerns. The regulatory body must document the concerns and any associated follow-up actions taken to address the concerns. Several different types of public hearings were discussed. In some States, formal, legal hearings are required for major licensing decisions. It is important to announce the opportunity for hearings sufficiently in advance to allow the public to participate. In this regard, in addition to the usual use of media (television, radio and print), social media should be considered for communicating with the public and other interested stakeholders.

IRRS team members discussed experiences that they have encountered that were very similar to the situation that Belarus was currently in. Insights were provided regarding public hearings associated with the building of new NPPs for the last 30 years. The team encouraged Belarus to start conducting public hearings early and to evaluate the outcomes of the hearings and make improvements for future hearings. A process should be developed and followed so that the meetings can be consistently conducted. The use of a moderator may be useful to efficiently control the hearing. Belarus should be prepared for unexpected situations such as participants not following the hearing protocol and the need to ensure balanced views and an opportunity to participate by all involved. Belarus raised the concern regarding the public perception of the issues of nuclear and radiation safety in the country that evolved after the Chernobyl accident. The IRRS team members acknowledged the unique situation that Belarus was in and offered a few examples of some contentious public hearings and how their organizations addressed them.

5.3. AUTHORIZATION OF RESEARCH NUCLEAR INSTALLATIONS

Decree of the President No. 450, MES Decree No.58 (2010), and MES Decree No.72 (2006) provide a framework for authorization of research nuclear installations (RNIs) that is generally consistent with IAEA Safety Standards GSR Part 1 and NS-R-4. The IRRS team observed the authorization file for the new fresh fuel storage facility that is under construction at the JIPNR-Sosny site and noted that it includes a complete application, formal communications between MES/Gosatomnadzor and JIPNR-Sosny, evaluations by external technical support organizations, regulatory evaluations and an authorization for the activities conducted by JIPNR-Sosny. Even though the fresh fuel storage facility is not a RNI, the regulatory processes and requirements are similar in nature.

The IRRS team noted that there is no regulatory requirement for a comprehensive periodic safety review (PSR) of RNIs, despite that an authorization for a RNI has no expiration date. Further, the regulations are not clear about the process for amending authorizations to allow facility modifications that are important to safety for an RNI. This could lead to degraded facility safety. The counterparts reported that none of the facilities currently under regulatory supervision have requested amendments to their authorizations.

Decree of the President No. 450, MES Decree No.58 (2010) and MES Decree No.72 (2006) provide a graded approach for authorization of RNIs by requiring a reduced scope and lower level of detail in the

information required for an application for authorization of an RNI as compared to an authorization for a NPP. The required information for applications for authorizations is further graded according to the type of RNI, with research reactors needing the most information, followed by critical facilities and finally sub-critical assemblies. MES Resolution 58 (2010) specifies the grading scheme for different stages in the lifetime of RNIs and nuclear power plants, including construction, operation and decommissioning.

Regarding authorization of personnel with responsibility for nuclear and radiation safety at RNIs, the regulatory requirements of MES/Gosatomnadzor are in line with the IAEA safety standards in that personnel are required to be trained, periodically retrained and formally licensed by MES/Gosatomnadzor.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>Comprehensive periodic safety reviews are not required by the regulations for RNIs or radioactive waste management facilities.</i>	
(1)	BASIS: GSR Part 1 (Rev.1) Requirement 26 and paragraph 4.39(A) states that: <i>“The regulatory body shall ensure, adopting a graded approach, that authorized parties routinely evaluate operating experience and periodically perform comprehensive safety reviews of facilities, such as periodic safety reviews for nuclear power plants.”</i>
(2)	Basis: GSR Part 5, Requirement 16 states that: <i>“The operator shall carry out periodic safety reviews and shall implement any safety upgrade required by the regulatory body following this review.”</i>
R11	Recommendation: MES/Gosatomnadzor should require parties holding authorizations for research nuclear installations and radioactive waste management facilities to periodically perform comprehensive safety reviews of their facilities.

5.4. AUTHORIZATION OF RADIOACTIVE WASTE MANAGEMENT FACILITIES

Currently the radioactive waste comes mainly from the use of radioactive sources and nuclear technologies in research, medicine and industry. CUE “Ecores” is the only RAWM facility in the country that is licensed to store radioactive waste. The license was granted in 2004 for five years and extended every five years afterwards until 2015 when the Decree of the President No. 450 was amended and the license term or period became unlimited. Initially, RAW had been disposed at Radon-type near-surface facilities operated by CUE “Ecores”. Facilities were equipped with below surface reinforced concrete vaults for “historical” disposal facilities of solid RAW and wells for disused radioactive sources; laundry for contaminated clothes. In the late nineties the statute of CUE “Ecores” facilities was changed from disposal to storage and a program for upgrading of the CUE “Ecores” facility was initiated. Retrieval of radioactive waste from the existing “historical” facilities is under consideration.

According to its license from 2012 JIPNR-Sosny performs processing of low and intermediate level liquid radioactive waste (cementing). Processed radioactive waste (200L drums) is transferred for storage in a RAW storage facility at the CUE “Ecores” site.

MES has also licensed several facilities for the storage/disposal of radioactive waste originating from the Chernobyl NPP accident: Republican Specialized Unitary Enterprises “Polesie” (Gomel) and “Radon”

(Mogilev). Existing exposure situations including the management of this kind of RAW is out of the scope of the mission.

With respect to NPPs, the RAWM Strategy foresees the development and construction of a near surface facility for disposal of VLLW, LLW, and a facility for long-term storage of ILW, as well as a geological repository for HLW. Plans include the first two facilities to start operation till 2028 and the geological disposal after 60 years.

The IRRS team identified that Decree of the President No. 450 does not include requirements for the licensing of disposal facilities and respectively its lifecycle stages. MES should establish the licensing framework for siting, design, construction, operation and closure of radioactive waste disposal facilities and require operators of radioactive waste management facilities to periodically perform comprehensive safety reviews of their facilities (see recommendations R9 in section 5.1 and R11 in section 5.3).

5.5. AUTHORIZATION OF RADIATION SOURCES FACILITIES AND ACTIVITIES

Article 9 of the Law on Radiation Safety of Population, provides the legal basis for licensing in the field of radiation safety and the licensing process is defined in more detail in the “Regulation on Licensing of Certain Types of Activities”, which was approved by the Decree of the President No. 450.

There is a process that involves authorization of activities by two authorities: MES and MoH. The MoH authorization is issued in a form of a sanitary passport as a result of review of justification of radiation safety, including conducting sanitary expertise. The threshold for regulatory activity is established in the sanitary rules (i.e., criteria for decision which sources and activities are to be authorized). There are two types of MES authorizations for activities involving use of sources: for sealed radionuclide sources with activity higher than 3.7×10^{10} Bq or generators with energy higher than 100keV and some other activities a license is required, if the activity is lower but higher than the exemption threshold, established in regulation (Resolution of the Council of Ministers of the Republic of Belarus of April 30, 2009 No.562, "On approving the Regulations on the Procedure of State Registration of Ionizing Radiation Sources and Managing the Unified State System of Ionizing Radiation Sources Accounting and Control") then authorization is in form of registration, if necessary.

In accordance with Paragraph 3 of the “Regulation on Licensing of Certain Types of Activities” any activities, as well as works and/or services constituting the activities, specified in Annex 1, is unlawful and prohibited to be carried out without a license.

The regulations in Republic of Belarus do not use the terms "exemption" or "exemption levels," as defined in the IAEA Standards. “Regulation on the procedure of state registration of ionizing radiation sources and maintenance of the united state system of accounting and control of ionizing radiation sources” specified criteria for implementation of state registration and removal from the register of ionizing radiation sources. Criteria for state registration of ionizing radiation sources listed in Appendix 1 of this Regulation are used as exemption levels. Reference values of specific activity of thresholds for open sources in this regulation is Appendix 13 to the Hygienic normative “Criteria for assessing radiation exposure” approved by the Resolution of the MoH No.213 "On approval of sanitary norms and rules "Requirements for Radiation Safety" and Hygienic standards "Criteria for assessing radiation exposure". Limits or thresholds that are used for licensing and for registration are not based on international standards, they are taken by the regulator as historical values. Categorisation of sealed radioactive sources

as criteria for licensing is not taken into consideration and lower activity thresholds for category 5 sealed sources are not used as a threshold for regulatory control.

These limits provide some confusion and challenges in practical application. For example, generators for mammography are not licensed, but just registered, while usually requiring more strict regulatory control. Also, this threshold for authorization is contradictory with safety rules, adopted by MES (Rules and regulations for nuclear and radiation safety assurance "Safety when dealing with ionizing radiation sources General Provisions", approved by the MES Resolution No.22), which establishes categorization of ionizing radiation sources based on activity level and D values according to GSR Part 3.

The process for authorizations by MoH requires that sanitary expertise should be done to obtain authorization in form of a sanitary passport. The form of sanitary passport and requirements for the content of such passport are established in sanitary norms. At the same time there is currently no regulation which defines the process for obtaining this passport. This process, as well as, a description of the documents required for obtaining sanitary passports are explained in a letter of the MoH. Regional bodies of State Sanitary Inspection (which is part of MoH) issue sanitary passports to legal entities based on sanitary-epidemiological certificates. These passports entitle legal entities to work with ionizing radiation sources (transportation, storage, operation). In case of X-ray equipment, a Technical passport is required for getting the sanitary passport. The Technical passport is issued by the authority reporting to the MoH. Before issuing the Sanitary passport, a state sanitary inspection assesses the compliance with normative legal acts and performance of the user in fulfilling all requirements. In authorizing the medical use of radiation MES is dependent on both its safety requirements and the Sanitary Passport issued by MoH. On the other hand MoH is the biggest operator on the field of medical use of radiation. MES issues a license to operate a linear accelerator in radiation therapy, but no beam energies are specified in the license. In the sanitary passport only to the highest photon and electron energies are mentioned. For patient protection, all beam energies should be controlled. These issues are addressed in section 1.3 and 1.5 (see suggestion S1 and recommendations R2).

The process for obtaining authorization for activity in the area of use of ionizing radiation sources contains conflicting requirements that add complexity for the user. Specifically, the requirements for obtaining a sanitary passport stipulate that the user should provide the "order-request" for the supply of the source, which should be approved by MES, and license (if applicable). But at the same time the requirements for approval of the "order-request" for the supply of the source by Gosatomnadzor (article 35 of MES Resolution No.22) stipulate that the applicant must provide information about the sanitary passport, issued by the MoH. This is the same for licensing and registration requirements. There are requirements for providing information about sanitary passports, while requirements for sanitary passports require providing information about licenses. This results in MoH and MES not being able to define a clear authorization process.

For the import and export of radioactive sources, Gosatomnadzor is responsible for issuing permits for import or export. Requirements for documents to be submitted for permits, as well as requirements for deadlines for review of the application are provided in administrative procedure (article 20.34 of Resolution of the Council of Ministers No. 156 (2012)). For permits for export, MES verifies that the receiver has an appropriate authorization for work with the exported radioactive source. The IRRS team did not find any non-compliances with the Code of Conduct on Safety and Security of Radioactive sources in the area of import and export.

MES also issues authorizations (in form of licenses) for institutions which are providing training on the field of use of ionizing radiation. The application form and other samples of documents as well as a list of documents required for licensing is available on Gosatomnadzor’s website.

Gosatomnadzor maintains the national register for sources of ionizing radiation (which is based on information provided in accordance with Resolution of the Council of Ministers of the Republic of Belarus of April 30, 2009, No.562 "On approving the Regulations on the Procedure of State Registration of Ionizing Radiation Sources and Managing the Unified State System of Ionizing Radiation Sources Accounting and Control"). While maintaining this register Gosatomnadzor ensures proper reporting by comparing report information from the shippers/providers and receivers of the radioactive sources (including analysing information from approved “order-requests” for the supply of the sources). Medical devices are also registered to the national registry of medical devices in the MoH.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>Process for authorization for activities in area of use of sources of ionizing radiation (including process for licensing and/or registration by MES and issue of sanitary passport by MoH) and associated regulations are not fully consistent.</i>	
(1)	<p>BASIS: GSR Part 1 Requirement 2, para. 2.5 states that: “The government shall promulgate laws and statutes to make provision for an effective governmental, legal and regulatory framework for safety. This framework for safety shall set out the following: (3) The type of authorization that is required for the operation of facilities and for the conduct of activities, in accordance with a graded approach; GSR Part 1 Requirement 4, para. 2.12 states that: “Where several authorities are involved in the authorization process, requirements shall apply, and they shall be applied consistently and without undue modification.”</p>
(2)	<p>BASIS: GS-G-1.5, para. 3.23 states that: “The Basic Safety Standards apply the terms notification, and authorization by registration or licence to indicate broadly an appropriate type of control based upon the levels of risk or complexity associated with non-exempted practices, notification being applied to the lowest level of risk or complexity and licence to the highest...”</p>
R12	<p>Recommendation: MES and MoH should revise the authorization processes and associated regulations in the field of activities with ionizing radiation sources to make them consistent.</p>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>Criteria (such as activity and energy threshold) for exemption of sources and for licensing of activities in the field of use of radioactive sources are not justified and not consistent, also not based on internationally recognized standards.</i>	
(1)	<p>BASIS: GSR Part 3 Requirement 8: Exemption and clearance, para. 3.10 and 3.11 state that: “The government or the regulatory body shall determine which practices or sources within practices are to be exempted from some or all of the requirements of these Standards, including the requirements for notification, registration or licensing, using as the basis for this determination the criteria for exemption specified in Schedule I or any exemption levels specified by the regulatory body on the basis of these criteria. 3.11. Exemption shall not be granted for practices deemed to be not justified.</p>
(2)	<p>BASIS: GS-G-1.5, para. 3.23 states that: “... A categorization system for sealed radioactive</p>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

	sources based on considerations of health detriment, among other factors, has been published by the IAEA. This categorization should be used to assist regulatory bodies in determining the graded approach to notification and authorization that should be adopted.”
R13	Recommendation: MES should revise exemption criteria in accordance with international standards and define criteria for licensing of activities with radiation sources taking into account a graded approach.

5.6. AUTHORIZATION OF DECOMMISSIONING ACTIVITIES

President Decree No. 450 and MES Decree No. 58 (2010) provide the framework for licensing of decommissioning activities. Decommissioning and respectively closure activities are included as part of the requirements for licensing of NPPs, research nuclear installations and related RAW management facilities (Annex 1, para. 5.1.1 and 5.1.3); licensing of RAW management facilities (Annex 1, para 5.3.2).

For NPPs, information on the initial decommissioning strategies and plans shall be presented to MES as part of the preliminary and final SAR, which are part of the license application (MES Decree No. 58). In addition, MES Decree No. 58 requires two sets of documents to be submitted after the final shut down of the installation, namely for preparation for decommissioning stage (installation is still within the operating license) and for the decommissioning stage. A Decommissioning Program (plan) and a Dismantling Program are required for the licensing of the decommissioning stage. For RNIs, only the stage of decommissioning is to be licensed (preparatory phase is not licensed) and decommissioning plan is a prerequisite for licensing.

Until now, MES had issued only one decommissioning license to JIPNR-Sosny for its RNIs “Giascint” and “Cristal” and related storage facilities for nuclear and radioactive material. Currently the corresponded activity is limited to a long term shut-down. According to Article 20 of the Law of the Republic of Belarus “On Nuclear Energy Use,” to initiate the decommissioning works “JIPNR-Sosny” should elaborate a decommissioning program. This program should comprise measures on dismantlement, management of nuclear materials, spent nuclear materials and (or) operational radioactive waste, as well as measures on further control and state supervision. The program should be coordinated among the state bodies for the regulation of safety in the use of nuclear energy (including MES) and approved by the Government. Decommissioning activities have not yet been performed by “JIPNR-Sosny.”

5.7. SUMMARY

The authorization process in the Republic of Belarus covers all nuclear and radiation facilities and activities, except disposal facilities and their lifecycle stages. It covers the major life stages of NPPs, NRIs and RAWM facilities. Decommissioning is seen as a distinct stage in the facility lifecycle and requires licensing by the regulatory body. The legislation covers also authorization of activities with ionizing radiation sources, and also provides for exemption of low activity sources from licensing. Individual permits are issued to positions responsible for the safety of nuclear facilities.

The IRRS Team noted some requirements and practices that require additional attention by the regulatory body. For example, the current law does not allow the imposition of time limits on a license; the regulatory body is not authorized to initiate license amendments for modifications; and, in some cases a

single license may be issued for multiple units of radiation facility. The regulatory body should review and revise existing practices to address the above issues to be consistent with IAEA safety standards.

IRRS identified the following areas for improvement:

- update of Decree of the President No. 450 to ensure that it requires licensing of disposal facilities and that MES is authorized to initiate changes in the license or license conditions on its own discretion when needed for safety related purposes;
- establish appropriate requirements, processes and procedures to ensure that modifications of facility design, processes or procedures, which might significantly affect safety, undergo prior review and assessment by MES;
- require licensees holding authorizations for RNIs and radioactive waste management facilities to periodically perform a comprehensive safety reviews of their facilities;
- authorization processes in the field of using of radiation sources and associated regulations (including criteria for licensing and registration) should be revised to make them consistent.

6. REVIEW AND ASSESSMENT

6.1. GENERIC ISSUES

6.1.1. MANAGEMENT OF REVIEW AND ASSESSMENT

The Belarusian legislation (Decree of President No. 450) determines activities which require a license. The license is issued on the basis of assessment of compliance with regulatory requirements (MES Resolution No.58). The depth and scope of the review by Gosatomnadzor has not been formalized to apply a graded approach based on the radiation risks of a facility or activity. See Suggestion S5 in this section.

The technical documents substantiating the license application are reviewed to confirm if they comply with the legal and regulatory requirements. Gosatomnadzor performs an initial compliance review for the documents submitted in support of license applications, followed by a more detailed assessment. A formal assessment report documents the findings of the assessment process. The findings are sent to the licensee to be resolved or to develop an action plan for resolution. The submitted action plan is approved by the Gosatomnadzor and its implementation is ordered as a license condition. The procedure of Gosatomnadzor regarding this review and assessment process is still in draft. See Suggestion S5 in this section.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>The regulatory procedure to conduct review and assessment including a graded approach and categorizations of safety assessment findings is not established by the Gosatomnadzor.</i>	
(1)	BASIS: GS-G 1.2 Par 3.4 states that: <i>“For regulatory efficiency, the findings of the preliminary review should be prioritized on the basis of their potential implication for the overall safety assessment of the facility and associated hold points in the authorization process. For regulatory effectiveness, the review and assessment efforts should usually be focused more on those aspects of site evaluation, design or operation which involve untested (innovative) features.”</i>
(2)	BASIS: GSR Part 1 (Rev.1) Requirement 26, para. 4.33 states that: <i>“Prior to the granting of an authorization, the applicant shall be required to submit a safety assessment [9], which shall be reviewed and assessed by the regulatory body in accordance with clearly specified procedures. The extent of the regulatory control applied shall be commensurate with the radiation risks associated with facilities and activities, in accordance with a graded approach.”</i>
S5	Suggestion: Gosatomnadzor should consider finalizing the review and assessment procedure that includes a graded approach and the categorization of safety assessment findings.

6.1.2. ORGANIZATION AND TECHNICAL RESOURCES FOR REVIEW AND ASSESSMENT

Gosatomnadzor licenses the organizations to provide safety review and assessment services for facilities and activities. The license authorizes the organizations to perform such tasks for any license application. The only organization in the Republic of Belarus that holds a license for review and assessment of nuclear facilities is JIPNR-Sosny, although the JIPNR-Sosny does not have expert capabilities for all expert areas

(see recommendation R6 in Section 3.3). In the case of missing expert capacity Gosatomnadzor can request JIPNR-Sosny to involve other experts in the assessment. When applying for a license the applicant has to propose an independent expert review of the submitted documents. In that case, Gosatomnadzor prepares the Terms of Reference in which it defines the tasks and conditions for JIPNR-Sosny to provide the expert review, based on which the applicant contracts JIPNR-Sosny and pays for its services. The IRRS team questioned whether Gosatomnadzor had sufficient financial resources and independence from the operator to expert services (see suggestion S3 in section 3.4).

The findings, such as requests for additional information are provided to Gosatomnadzor by JIPNR-Sosny. In the existing procedure only Gosatomnadzor is authorized to interact officially with the licensee. JIPNR-Sosny has an internal procedure for the expert review. JIPNR-Sosny experts are also licensed individually to provide expertise. JIPNR-Sosny's management system has not been certified by an official auditor, but was reviewed in 2016 by Gosatomnadzor with support from the Armenian and Russian TSOs.

JIPNR-Sosny is also a license holder for its critical facility and some other activities. These activities are organizationally separated from the expert activities provided for Gosatomnadzor. So far, JIPNR-Sosny has not entered into a contracted relation with the licensee of the nuclear power plant under construction, although it is not prohibited by legislation. At the moment there are no plans for JIPNR-Sosny to provide support to the licensee for the Belorussian NPP. If such a contract would take place, it is expected that the independence of experts would be ensured through a declaration certification by the management of JIPNR-Sosny. All these arrangements are meant to avoid the possibility for a conflict of interests during expert reviews by JIPNR-Sosny. This is also addressed by the Resolution of Council of Ministers No. 1781.

The competence of Gosatomnadzor staff needs to be enhanced to carry out reviews and assessments of a license application on medical uses of radiation including technical knowledge on modern medical technology.

6.1.3. BASES FOR REVIEW AND ASSESSMENT

While conducting reviews and assessments for the NPP Gosatomnadzor takes into account the following areas from the GSR Part 1 (Rev. 1) para. 4.45: the site and facility characteristics, design of the facility, applicable management system, competence and skills for operation, protection of workers and the public, arrangements for emergencies, the application of defence-in-depth. However the following items appeared to be considered only in a limited manner: best practices, and feedback of operating experience, nationally and internationally, and especially of relevant operating experience from similar facilities and activities. The team considers that these issues should also be taken into account when developing the Gosatomnadzor's internal procedures for review and assessment (see suggestion S5 in section 6.1.1).

In the Republic of Belarus the format and content of license applications submitted for regulatory assessment are specified in regulations. The content of the safety analysis report is described in the Technical Code of Practice 294-2010 (Requirements on the content of the safety analysis report for nuclear power plant with a VVER reactor). In terms of safety analysis the Gosatomnadzor, where applicable, strives to perform own assessments through verification using computer codes available at JIPNR-Sosny (and other TSOs) and by itself. The Gosatomnadzor defines a limited scope safety analysis to perform an in-depth review. The qualification of experts for using such codes is planned. The model development has already started.

6.1.4. PERFORMANCE OF REVIEW AND ASSESSMENT

In the Republic of Belarus there is no specific procedure for licensing of modifications, therefore the Gosatomnadzor has no requirements and procedures to conduct the review and assessment of such applications (see the respective recommendation R10 in Section 5.1).

The findings discovered in the process of review and assessment by Gosatomnadzor and by the TSO, as appropriate, are documented in a review report. There are no clear criteria or a process to assess safety significance of the review findings. Therefore a suggestion is made to create a basis for categorization of the issues in the review and assessment procedure (see suggestion S5 in section 6.1.1). As a result of the review, a letter of issues with deadlines is sent to the licensee, based on which the licensee is required to compile an action plan. This action plan is then referenced in the respective license as a condition if approved with a positive expert judgement concluded based on the basis of all available information. The decision on issuance of a license is made by the Board of the MES via a majority voting based on the proposal of the head of the Gosatomnadzor.

Gosatomnadzor conducts and coordinates comprehensive inspections at the NPP under construction twice a year. With the involvement of other authorities 20-30 persons take part in such a process. The results of review and assessment and the results of inspection findings in the case of comprehensive inspections are incorporated in an inspection report sent to the operator along with an order to the licensee to eliminate the findings. The process, conditions and criteria of this assessment activity are not documented in a regulatory procedure (see recommendation R8).

Gosatomnadzor does not have requirements and internal procedures for conduct of event investigations. While the respective norms are under development any event that occurs before the plan has been developed will be managed on an ad-hoc basis. This is demonstrated by the response to the drop of the reactor pressure vessel at the Belarusian NPP. Gosatomnadzor initiated a prompt inspection of this event; an in-depth investigation of the event and its consequences was required by the Council of Ministers. The review and assessment procedure under development (see recommendation R8) should cover the assessment activities necessary for investigation of safety significant events including the identification of various types of causes, lessons learned and actions to be taken to avoid recurrence of the event.

Gosatomnadzor requires the licensee of the nuclear power plant under construction to submit an annual safety performance report as a license condition. The report is formally reviewed and approved by Gosatomnadzor. The content of this report however is not specified in the Belarusian regulations and the process and criteria for reviewing such reports are not established. Gosatomnadzor should consider extending the requirements to all facilities and determining the mandatory content of the safety performance report and developing the regulatory procedure for the assessment of such reports.

In addition to review and assessment license applications, Gosatomnadzor performs inspections and investigation of safety related events. The annual activity report prepared by Gosatomnadzor contains limited information on the safety performance of the facilities, mainly concentrating on the progress of the action plan implementation set as a license condition. An overall integrated safety performance assessment of the facilities is not performed on a periodic basis to identify trends and conclusions from the inspection results, reviews and assessments, investigation of safety related events and operating experience. As a consequence, the results of reviews and assessments are not fed back to the e.g. inspection planning process.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *The regulatory body does not perform safety performance assessment of facilities and activities on a regular basis.*

(1)	BASIS: GSR Part 1 (Rev.1) Requirement 25 states that: <i>“The regulatory body shall review and assess relevant information — whether submitted by the authorized party or the vendor, compiled by the regulatory body, or obtained from elsewhere — to determine whether facilities and activities comply with regulatory requirements and the conditions specified in the authorization. This review and assessment of information shall be performed prior to authorization and again over the lifetime of the facility or the duration of the activity, as specified in regulations promulgated by the regulatory body or in the authorization.”</i>
(2)	BASIS: GSR Part 1 (Rev.1) Requirement 26, para. 4.46 states that: <i>“For an integrated safety assessment, the regulatory body shall first organize the results obtained in a systematic manner. It shall then identify trends and conclusions drawn from inspections, from reviews and assessments for operating facilities, and from the conduct of activities where relevant. Feedback information shall be provided to the authorized party. This integrated safety assessment shall be repeated periodically, with account taken of the radiation risks associated with the facility or activity, in accordance with a graded approach.”</i>
(3)	BASIS: GS-G 1.2 Para 2.5 states that: <i>“The review and assessment of nuclear facilities necessitate considerable amounts of work and resources, and appropriate plans should be made for these. The regulatory body should develop a programme to review and assess information provided by the operator (see Ref. [4], paras 4.2–4.8) or collected during its own inspections [3]. The co-operation of the operator should be obtained to ensure that review and assessment can be carried out in an effective and informed manner. In addition, information from other sources (such as incident reports from other States) which have a bearing on the safety of facilities should be reviewed and assessed.”</i>
S6	Suggestion: The regulatory body should consider performing safety performance assessments of facilities and activities on a periodic basis.

6.2. REVIEW AND ASSESSMENT FOR NUCLEAR POWER PLANTS

The Belarusian NPP is in construction phase.

The first Periodic Safety Review will be due in 10 years after commissioning. The regulation for conducting the Periodic Safety Review is under development. Gosatomnadzor is encouraged to finalize the respective regulation in order to provide the basis for the collection of operating experience, international best practices and keeping track of safety related operational trends from the commissioning of the nuclear power plant.

Gosatomnadzor should also prepare for the independent review and assessment of operating experience, oversight of the operating experience feedback and the corrective action programme of the licensee from the time of commissioning of the nuclear power plant.

In Republic of Belarus the non-nuclear testing stage of commissioning is licensed within the construction licensing process, while the nuclear testing stage is approved in the operation license. Regulation (TCP

170-200, General provisions for nuclear power plant safety guaranteeing) established hold points when commissioning activities should be discontinued pending regulatory approval. It is not clear how the review and assessment process will be carried out to obtain the regulatory approval in the commissioning process.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>Hold points are required to be included in the operational license, however procedures to implement the respective regulatory requirements have not been developed.</i>	
(1)	BASIS: GSR Part 1 (Rev.1) Requirement 24, para. 4.35 states that: “4.35. Some of the stages in the lifetime of a facility or the duration of an activity (see para. 4.29) may require specific hold points at which separate authorizations are required. In such cases, the completed stages have to be subject to review and assessment, with account taken of feedback from the previous stages.”
(2)	BASIS: SSG 12 para. 3.47 states that: “Before authorizing significant steps such as the introduction of nuclear or certain types of radioactive material, fuel loading, initial criticality or power raising, the regulatory body should complete the review, assessment and inspection of: ...”
(3)	BASIS: SSG 12 para. 3.54 states that: “The results of commissioning tests should be subject to: ... (b) Review, assessment and inspection by the regulatory body. The aim of these regulatory controls is to assess whether the test results are adequate for confirming the adequacy of all safety related features of the nuclear installation.”
S7	Suggestion: MES/Gosatomnadzor should consider developing procedures to implement the respective regulatory requirements related to hold points.

6.3. REVIEW AND ASSESSMENT FOR RESEARCH NUCLEAR INSTALLATIONS

Resolution of the Council of Ministers No. 1781 (2010) "On Approving Procedure of Review of Documentation Justifying Nuclear and Radiation Safety Assurance during the use of Nuclear Energy and Ionizing Radiation Sources," provides the process and rules for review and assessment for RNIs and is generally consistent with the requirements in GSR Part 1 (Rev.1) and NS-R-4. In conjunction with Resolution No. 1781, MES Decree No. 72 (2006) provides a graded approach to the scope and depth of information considered in review and assessment and includes specific technical acceptance criteria for the different types of RNIs. Other aspects of review and assessment, such as requesting additional information from applicants, preparing evaluations, making decisions and communicating the results to applicants, are in line with the IAEA requirements, but a graded approach has not been applied (see suggestion S5 in section 6.1.1).

The IRRS team observed the review and assessment documentation in the authorization file for the new fresh fuel storage facility that is under construction at the JIPNR-Sosny site. The IRRS team noted that the documents include criticality safety analysis performed by an external expert (independent from the JIPNR-Sosny organization), MES/Gosatomnadzor’s evaluation of the expert’s conclusion, requests for JIPNR-Sosny to submit additional information and MES/Gosatomnadzor’s regulatory findings and safety conclusions supporting authorization of construction of the facility which are consistent with the guidance in IAEA Safety Standards No. GS-G-1.2.

Resolution No. 1781, Decree of the President of the Republic of Belarus No. 756 "On Some Issues of the Ministry of Emergency Situations" (with the... "Regulations on the Department for Nuclear and Radiation Safety of the Ministry of Emergency Situations of the Republic of Belarus") (revised on 16.02.2015) and Resolution of the Council of Ministers No. 33 "On Research and Technical Support to the Ministry of Emergency Situations, and Amendments and Additions into the Resolution of the Council of Ministers of the Republic of Belarus of August 28, 2009 No.1116" (11.01.2012) specify provisions for Gosatomnadzor to obtain technical support from external organization for review and assessment activities, including the requirement that the technical support organization be independent of the applicant/licensee subject to review and assessment. Currently JIPNR-Sosny is the only organization licensed to provide MES/Gosatomnadzor with technical support (See Recommendation R6 in section 3.3) Additionally, Gosatomnadzor faces the challenge of maintaining adequate competences and resources for effective regulation of the operating RNIs while preparing to license the nuclear power plant.

6.4. REVIEW AND ASSESSMENT FOR WASTE MANAGEMENT FACILITIES

The requirements for safety assessment of the nuclear power plant's radioactive waste management are established in the technical requirements for the structure and content of SAR of NPP (TCP 294-2010). The regulation norms and rules to ensure nuclear and radiation safety "Requirements to the structure and content of the Safety Analysis Report for radioactive waste management facilities" approved by Resolution of the Ministry of Emergency Situations of the Republic of Belarus of December 13, 2010 No.64 have some identified gaps as compared to the IAEA requirements. Further information is included in chapter 9.4. (See recommendation R17 in Section 9.1). For example, there is no requirement to perform periodic safety assessments (see recommendation R11 in section 5.3)

The expert review of safety assessment documentation within the licensing process is implemented according to Resolution of the Council of Ministers No. 1781 "On Approving Procedure of Review of Documentation Justifying Nuclear and Radiation Safety Assurance during the use of Nuclear Energy and Ionizing Radiation Sources." This regulation requires the review of safety assessment documentation only in the framework of licensing procedure.

6.5. REVIEW AND ASSESSMENT FOR RADIATION SOURCES FACILITIES AND ACTIVITIES

General procedure for review and assessment is defined in "Regulation on Licensing of Certain Types of Activities." (approved by the Decree of the President No.450). It stipulates general requirements and conditions for licensing: Article 128.3 establishes the licensing requirements and conditions for activities in the field of ionizing radiation sources, activities on radioactive waste management, activities in the design and manufacture of equipment and means of radiation protection.

Also this regulation provides that evaluation or expert review (expertise) can be conducted in order to assess the ability of applicants to operate safely. However, this regulation (and other regulations, including those issued by MES) do not provide processes or criteria for determining cases when this expert review (expertise) is needed. In practice, for licensing of activities on using of sources of ionising radiation, only an evaluation is conducted. Also it is not clear from regulation how MES evaluates the results of review and assessment in order to have decision on issuing the license or rejecting the application (see suggestion S5 in section 6.1.1).

MES Resolution No. 58 (2010) approved the regulation on the set of documents required for review and assessment during licensing: "The Requirements to the Composition and Content of the Documents Justifying Nuclear and Radiation Safety in the Exercise of Activities Related to Use of Nuclear Energy

and Ionizing Radiation Sources." In this regulation composition and content of the documents justifying nuclear and radiation safety is defined, including separate lists of requirements for the supporting documents for each type of work (activity) in area of use of nuclear energy and ionizing radiation sources.

The procedure for conducting expertise during licensing activities with ionizing radiation sources is defined in Resolution of the Council of Ministers No.1781 (2010) "On Approving Procedure of Review of Documentation Justifying Nuclear and Radiation Safety Assurance during the use of Nuclear Energy and Ionizing Radiation Sources." This regulation explains responsibilities of Gosatomnadzor and the applicant, including requirements for expert organizations to be involved and provisions for ensuring independence of the expert organization from the applicant. Some steps in the expert review (expertise) process are not explained in this regulation, including: who is choosing the expert organization (user or Gosatomnadzor), and how the expert organization is to estimate their level of effort and associated costs.

Currently there is no procedure for pre-licensing inspections (verification of submitted documents at site of applicant by regulatory authority) within the review and assessment process.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	<p>Observation: <i>In the use of radiation sources Gosatomnadzor does not perform inspection by means of pre-licensing verification to confirm validity of the documents submitted for review and assessment of an application.</i></p>
(1)	<p>BASIS: GS-G-1.5 para. 3.42 states that: <i>“A fundamental feature of the process of review and assessment of an application for authorization by the regulatory body is its consideration of the documentation submitted by the applicant. For significant risk sources or unusual or complex practices, the regulatory body should also verify the contents of the documents submitted by means of inspection of the site where the radiation sources are to be installed or used. These inspections will also allow the regulatory body to supplement the information and data needed for review and assessment. Additionally, the regulatory body will be able to extend its practical understanding of the managerial, engineering and operational aspects of the application for authorization and to foster links with specialists of the operating organization.”</i></p>
S8	<p>Suggestion: Gosatomnadzor should consider verification during the pre-licensing process of radiation sources.</p>

6.6. REVIEW AND ASSESSMENT FOR DECOMMISSIONING ACTIVITIES

The requirements for the safety assessment of the NPP’s decommissioning are established in the technical requirements for the structure and content of Safety Analysis Report (SAR) of the NPP. In the SAR chapter for decommissioning submitted to Gosatomnadzor within the licensing process of Belarusian NPP, the two main options (strategies) for decommissioning are considered: “Liquidation of NPP” unit and “Entombment (disposal) of NPP” unit. It is also stated that the preference is given to the option – Entombment (disposal). However neither Entombment nor Liquidation is an acceptable decommissioning strategy according to IAEA requirements. An expert review of the SAR of NPP provided by JIPNR-Sosny during the assessment of the license application did not identify any issues in this respect. A possible reason is that the national regulations for decommissioning are not in compliance with IAEA safety standards (see recommendation R17).

If an expert review is necessary for decommissioning of the nuclear research facilities at the JIPNR-Sosny site, the MES should ensure that it is carried out by an independent TSO (see recommendation R6 in section 3.3).

6.7. SUMMARY

Gosatomnadzor is in the process of developing the review and assessment processes and procedures. Since the Belarusian NPP is under construction, the IRRS team highlights the importance of the following areas:

- Review and assessment corresponding to licensing of modifications,
- Appropriate procedure that takes into account a graded approach and uses a safety categorization of safety related findings,
- Procedure for assessment and investigation of safety related events,
- Integrated assessment of the safety performance of facilities on a regular basis
- Review and assessment requirements and regulatory procedure with respect to the hold points determined by law for the commissioning phase of the nuclear power plant

In addition arrangements for independent review and assessment of operating experience, the oversight of the operating experience feedback and the corrective action programme should be in place from the time of commissioning of the nuclear power plant. The requirements for periodic safety review of facilities other than NPPs should also be completed and put in force. In the area of use of radiation sources the procedure for pre-licensing inspections should be established.

7. INSPECTION

7.1. GENERIC ISSUES

7.1.1. INSPECTION PROGRAMME

Gosatomnadzor carries out inspections in the areas of nuclear safety and radiation safety in order to verify that supervised institutions including licensees comply with legislation and the conditions that are specified in licenses. Rights and duties of Gosatomnadzor inspectors who carry out inspections are determined by Law on Atomic Energy Use, by the Resolution of the Council of Ministers of the Republic of Belarus No.133 (2015) "On Approving Regulations on Organization and Implementation of Control (Supervision) over Safety Assurance during the Construction and Commissioning of the Belarusian Nuclear Power Plant", by Decree of the President No. 332 (2014), by Decree of the President No. 62 (2015) "On Provision of Safety during the Construction of the Belarusian Nuclear Power Plant", and by the conditions of the construction license of the Belarusian NPP. During inspections, Gosatomnadzor inspectors verify compliance of licensees with requirements contained in the relevant laws, implementing decrees and conditions specified in licenses.

The above documents in addition to Gosatomnadzor Order No. 45 and Order No. 40 provide the requirements and detailed programme for preparation, conduct, reporting and follow-up of inspections and are generally consistent with IAEA Safety Standards GSR Part 1 and NS-R-4, and related IAEA safety guides.

The legal basis for inspection in the field of radiation safety is established by the Article 10-1 of the Law on Radiation Safety of Population:

“State oversight in area of radiation safety includes:

- maintaining the state system for control and accounting of sources of ionizing ionization and state registration;
- organization of inspection and monitoring;”

The monitoring and assessment of nuclear and radiation safety in all nuclear installations and uses of ionizing radiation sources is one of Gosatomnadzor’s duties. Gosatomnadzor fulfils this obligation through its planned inspection programmes.

In 2015, Gosatomnadzor performed 28 inspections at the Belarusian NPP, 13 visits to the manufacturers of systems and equipment for the Belarusian NPP and 138 inspections of users of ionizing radiation. Planned inspections at NRIs and radioactive waste facilities are conducted once every 6 months in accordance with the MES master inspection schedule.

MES/Gosatomnadzor has the legal authority to conduct planned, unplanned (reactive) and control (follow-up) inspections at NPPs and RNIs, during which inspectors have free access to the entire facility. The territorial subdivision can announce an unscheduled inspection by the verbal notification of the inspected organization just before the beginning of inspection if violations or events are detected on the site of the Belarusian NPP as needed. Currently, Gosatomnadzor does not have the authority to conduct unannounced inspections (see recommendation R5 in section 3.2)

The majority of Gosatomnadzor inspections are planned inspections. Reactive inspections are performed when necessary. Reactive inspections are initiated including as a result of identified safety-relevant non-

standard situations. The general methodology and criteria for implementing a reactive inspection are described in Gosatomnadzor order No. 45, however, there are no comprehensive detailed criteria for initiating reactive inspections.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>Gosatomnadzor performs reactive inspections in response to significant events; however the comprehensive and detailed set of criteria to initiate a reactive inspection has not been formalized.</i>	
(1)	BASIS: GSR-1, Requirement 28 states that: <i>“Inspections of facilities and activities shall include programmed inspections and reactive inspections; both announced and unannounced.”</i>
(2)	BASIS: GS-G-1.3, Para. 3.10 states that: <i>“Reactive inspections, by individuals or teams, are usually initiated by the regulatory body in response to an unexpected, unplanned situation or incident in order to assess its significance and implications and the adequacy of corrective actions. A reactive inspection may be occasioned by an isolated incident or a series of lesser events occurring at the particular facility under consideration. Similarly, a reactive inspection may be made in response to a generic problem encountered at another plant or identified by the review and assessment staff of the regulatory body. Unlike planned inspections, which are scheduled, reactive inspections are only partly subject to planning by the regulatory body and may disrupt regulatory programmes and schedules. The regulatory body should assume that there will be a need for reactive inspections and should plan to meet its needs for staff and consultants accordingly. For example, in implementing the inspection programme, the regulatory body should establish a graded approach in responding to unforeseen circumstances. All available resources may be needed in responding to a serious event, whereas in the simplest of cases only one inspector may be needed. This pre-established graded approach in responding to special circumstances will assist in determining the appropriate level of resources for use in inspections.”</i>
S9	Suggestion: Gosatomnadzor should consider developing detailed and comprehensive criteria for initiating reactive inspection to supplement their general criteria.

Gosatomnadzor utilises external experts to provide support for inspections. According to the procedure for the act preparation, a report outlining the results of the experts’ review may be included as an attachment to the inspection report (act) only if accepted by the head of inspection. If expert support is required when performing inspections, Gosatomnadzor primarily utilizes JINPR-Sosny experts for support. During 2015-2016, JINPR-Sosny experts participated in 4 Gosatomnadzor inspections. If necessary, Gosatomnadzor also can request the support of other Belarusian organisations which are being integrated into the TSO system, as well as, competent foreign organisations. During 2015-2016 FSUE VO "Safety" (Russian Federation) was involved into carrying out comprehensive inspections.

Furthermore, MES/Gosatomnadzor coordinates with other regulatory bodies when performing comprehensive inspections at the Belarusian NPP. These inspections are planned once or twice per year, and the programme of each inspection is agreed to by the other regulators involved. Gosatomnadzor also performed a joint inspection with the assistance of consultants from the Nuclear and Radiation Safety Center of the Republic of Armenia, in order to verify JINPR-Sosny’s review and assessment capabilities.

7.1.2. INSPECTION PROCESS AND PRACTICE

The inspection process description has been developed within the framework of the Gosatomnadzor integrated management system process.

All inspection methods mentioned in IAEA GS-G-1.3 are utilized, including monitoring, direct observation, discussions, reviews, examinations of procedures, records and documentation. Independent sampling, tests and measurements are conducted in the area of radiation protection and radioactive waste. Gosatomnadzor prepares several types of records on inspection results depending on the results of the inspection. If no violations are found in the course of the inspection, a certificate of the absence of violations is prepared and sent to the inspected organisation. If violations are found, an act is prepared. The act contains a list of violations. If the inspected organisation responds to all findings within 15 days, Gosatomnadzor takes no further action. If the inspected organisation does not quickly respond to all findings, an instruction to eliminate the violations is sent requiring corrective actions. The content of records containing inspection results (act or certificate) and the order complies with the IAEA guidance on content of inspection reports in the IAEA GS-G-1.3.

The results of inspections are analysed to prepare various documents and proposals for improving the effectiveness of inspections. They are also taken into account when preparing inspection plans. Review of inspection findings including, for example, the grouping of findings, assessment of findings' significance, and further analysis to determine the causes of violations is periodically performed. This information is provided to monthly meetings of the steering group with all organisations that are involved in onsite NPP construction. This review process is not sufficiently described in the Gosatomnadzor internal guidance documents, although Gosatomnadzor plans to develop a detailed description within its integrated management system. Semi-annual and annual reports with statistical information on inspection results are prepared by Gosatomnadzor for MES. The results of inspections are used as inputs for review and assessment, authorisation, and enforcement activities.

General information on comprehensive inspections is available on the Gosatomnadzor website. While Gosatomnadzor internal documents and records of inspections results are not publicly available, Belarusian citizens have a right to ask Gosatomnadzor any question and Gosatomnadzor is obliged to respond. Information on the results of inspections is published in annual reviews of nuclear and radiation safety in the Republic of Belarus that are available from the Gosatomnadzor website.

7.1.3. INSPECTORS

Gosatomnadzor has in total a staff of 76 people. Gosatomnadzor has about 50 inspectors and specialists to implement its inspection program at nuclear installations, 10 inspectors in the radiation sources and radioactive waste management facilities inspection division, and 3 inspectors in the division responsible for radiation safety inspection methodology.

In MoH there are 32 state sanitary inspectors who carry out inspections before issuing the Sanitary Passport and provide supervision over all users of ionizing sources above criteria established by MoH. Gosatomnadzor inspects about 120 medical radiation facilities annually. Activities that are inspected include radiotherapy, nuclear medicine or radiology with x-ray equipment and others.

To ensure the effective implementation of the inspection program and to enable the identification of significant safety issues, Gosatomnadzor emphasizes the training and qualification of its inspectors.

Newcomers must pass an exam to become a civil servant before being hired to Gosatomnadzor. Inspectors must have a university degree. A training program developed with the use of the IAEA SARCON methodology is in place within the framework of the national training programme for all Gosatomnadzor employees. The competence of inspectors is achieved through formal training programs.

An inspector initial training program is in place, and every inspector has an individual plan of specialized training, which includes on-the-job training for inspectors, knowledge of Belarusian legislation, Gosatomnadzor competencies, facilities and activities being regulated, internal Gosatomnadzor processes and procedures, and other specific office skills. The initial inspector's training is concluded with an inspector examination before a Gosatomnadzor internal commission. Annual refreshing training plans are prepared, including for experienced employees. These plans include components such as knowledge of national legislation, participation at international training workshops and meetings.

The senior resident inspector at Belarusian NPP has plans to arrange training for resident inspectors in the NPP's on-site training centre once the centre becomes operational and the plant is commissioned. The IRRS team supports this plan and encourages Gosatomnadzor management to make the necessary arrangements to secure the use of this centre.

7.2. INSPECTION OF NUCLEAR POWER PLANTS

Comprehensive inspection programmes for the nuclear power plant construction and commissioning stage have been issued in the form of Gosatomnadzor Head orders and are used for management of inspections at Belarusian NPP. Gosatomnadzor inspection programmes for the nuclear power plant construction and commissioning stages have been distributed to main stakeholders in the form of compact booklets. The inspection programme for the nuclear power plant operational stage has yet not been prepared.

The IRRS team discussed inputs for preparation of these inspection programmes with Gosatomnadzor, and identified gaps when compared against the Appendix included in IAEA GS-G-1.3.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
<p>Observation: <i>Inspection programmes for nuclear power plant construction and commissioning phase are in place; however, a formally documented analysis of whether these programmes cover all inspection areas listed in the Appendix to the IAEA GS-G-1.3 has not been performed. Inspection programme for nuclear power plant operational stage has not prepared.</i></p>	
(1)	<p>BASIS: GSR-1, Para. 4.50 states that: „<i>The regulatory body shall develop and implement a programme of inspection of facilities and activities, to confirm compliance with regulatory requirements and with any conditions specified in the authorization. In this programme, it shall specify the types of regulatory inspection (including scheduled inspections and unannounced inspections), and shall stipulate the frequency of inspections and the areas and programmes to be inspected, in accordance with a graded approach.</i>“</p>
(2)	<p>BASIS: Appendix to the GS-G-1.3 provides a list of “<i>inspection areas to be inspected in the course or regulatory inspections.</i>”</p>
(3)	<p>BASIS: GSR Part 2, Para 4.26 states that: “<i>All individuals in the organization shall be trained in the relevant requirements of the management system. Such training shall be conducted to ensure that individuals are knowledgeable of the relevance and the importance</i></p>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	<i>of their activities and of how their activities contribute to ensuring safety in the achievement of the organization's goals.”</i>
S10	Suggestion: The regulatory body should consider performing formally documented analysis to verify that inspection programmes for nuclear power plant construction and commissioning stages cover all inspection areas listed in the Appendix to the IAEA GS-G-1.3.
R14	Recommendation: The regulatory body should ensure that adequate inspection programmes and training are in place to support effective supervision of the NPP operational phase.

Gosatomnadzor inspection programmes and Belarusian NPP construction schedules are used for preparation of semi-annual inspection plans. There is a comprehensive set of inspection procedures along with check lists developed for inspections at the Belarusian NPP. Systems and components subjected to Gosatomnadzor inspections are listed in Gosatomnadzor order No. 45. There is no guidance on how the graded approach should be considered when planning inspections.

Although the inspection programme for nuclear power plant construction and commissioning stage is comprehensive and a set of inspection procedures for inspections at nuclear power plant is in place, a graded approach to inspections has not been fully adopted.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	Observation: <i>The frequency, the focus, intensity, and the level of detail of Gosatomnadzor inspections are not fully determined based on the risks associated with activities planned to be inspected. A graded approach is not fully implemented in the Gosatomnadzor inspection programme for nuclear power plants. Implementation of graded approach is part of the action plan.</i>
(1)	BASIS: GSR Part 1 (Rev.1) Requirement 29 states that: „Graded approach to inspections of facilities and activities. Inspections of facilities and activities shall be commensurate with the radiation risks associated with the facility or activity, in accordance with a graded approach.“
R15	Recommendation: Gosatomnadzor should fully implement a graded approach for carrying out inspections at the nuclear power plants.

The IRRS team visited the Belarusian NPP construction site. The IRRS team discussed activities performed by Gosatomnadzor resident inspectors, as well as the system in place for their training. There are 7 resident inspectors permanently present at the Belarusian NPP construction site. Their main duty is to perform routine inspections within the framework of Gosatomnadzor permanent supervision. They are focused on construction activities on site, activities on installation and adjustment of components related to safety and onsite acceptance inspections of safety related components. Besides inspection activities, they are members of MES Commission of knowledge assessment of normative legal acts, including technical normative legal acts in the field of nuclear and radiation safety which is established for the licensing of workers performing safety relevant activities. The Head of the Sub-division of supervision over nuclear and radiation safety at the NPP site is a member of the group of speakers of Gosatomnadzor and is involved in communication with the public (Order of the Head of Gosatomnadzor of 2016, №1).

The IRRS Team observed resident inspectors performing an inspection focused on the welding of the feedwater tank in unit 1. The inspection consisted of reviewing documents relevant to the activity and performing checks of various logbooks used for recording the progress, control and results of activities. The inspector verified records on welding, NDT testing, qualification of personnel, tools and materials used for welding of the feedwater tank. The Gosatomnadzor inspector followed the inspection procedure, which describes in detail the items to be verified during the inspection. During the inspection, several non-compliances in the reviewed documents were identified. The non-compliances were communicated to workers of the inspected company and recorded by the Gosatomnadzor inspector.

The IRRS Team discussed the relationship between Gosatomnadzor and the licensee with the Belarusian NPP chief engineer. He confirmed that Gosatomnadzor inspectors are considered to be competent, professional, respected and well prepared for inspections. When asked about the most important safety issues at the Belarusian NPP, the plant manager quoted the reactor pressure vessel drop, a quality problem with the composition of reactor cavity concrete and a material quality problem with the main coolant piping liner. IRRS team confirmed with counterparts that Gosatomnadzor was following these issues within the framework of inspection programme. He appreciated the efficiency of Gosatomnadzor's permanent supervision, however noted that in his opinion, comprehensive inspections were quite demanding. He indicated a desire to reduce the frequency and/or scale of such inspections.

Gosatomnadzor also performs inspections of factory acceptance tests at contractors' facilities. These inspections are usually performed with the collaboration of resident inspectors and inspectors from Gosatomnadzor headquarters.

7.3. INSPECTION OF RESEARCH NUCLEAR INSTALLATIONS

The IRRS team reviewed inspection reports (No. 15-1-BGU-2014 and No. 17-2-PAV/2016) for the facilities on the JIPNR-Sosny site. The reports included the persons involved, topics covered, inspection activities, identified violations, licensee comments and follow-up on previous violations, which is consistent with IAEA Safety Standards No. GS-G-1.3. The IRRS team also observed that the Order (No. 15-12/02-2015) required corrective actions for the violations identified in inspection report No. 15-1-BGU-2014 and included links between the violations and regulatory requirements as well as dates for the completion of corrective actions. MES/Gosatomnadzor also maintains a database of all inspections of nuclear facilities which includes violations and corrective actions which for RNIs and the NPP.

The IRRS team visited the Fresh Fuel Storage Facility at JIPNR-Sosny to observe an inspection. (The Fresh Fuel Storage Facility is not an RNI, but the inspection requirements and programme are similar for both.) The IRRS team noted that the inspection was in accordance with Order No. 40 of Gosatomnadzor. The IRRS team observed the lead inspector reviewing facility procedures, logbooks and records of periodic testing and maintenance, as well as checking the physical status of the facility and material storage conditions. The inspector had detailed knowledge of the facility, communicated preliminary inspection findings to the facility management and followed-up on findings of the previous inspection. While the inspection appeared to be well-organized and thorough, the IRRS team noted that the inspector did not use detailed procedures or checklists to perform the inspection. This could lead to incomplete and/or inconsistent inspections. Following the inspection, the IRRS team observed a detailed inspection plan for a previous inspection at the fresh fuel storage facility that could be used as a model for future inspections.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *Inspection procedures or checklists are not consistently prepared or available for facilities and activities other than NPPs.*

(1)	BASIS: GSR Part 1 (Rev.1) Requirement 2, para. 2.5 (10) states that “ <i>an effective governmental, legal and regulatory framework for safety ... shall set out ... provision for the inspection of facilities and activities, and for the enforcement of regulations, in accordance with a graded approach</i> ”.
(2)	BASIS: GSR Part 1 (Rev.1) Requirement 28, para. 4.50 (10) states that “ <i>The regulatory body shall develop and implement a programme of inspection of facilities and activities, to confirm compliance with regulatory requirements and with any conditions specified in the authorization.</i> ”
(3)	BASIS: GS-G-1.3, para. 4.1 states that: “ <i>To ensure that all nuclear facilities in a State are inspected to a common standard and that their level of safety is consistent, the regulatory body should provide its inspectors with written guidelines in sufficient detail. The guidelines should be followed to ensure a systematic and consistent approach to inspection while allowing sufficient flexibility for inspectors to take the initiative in dealing with new concerns that arise. Appropriate information and guidance should be provided to the inspectors ... Appropriate subjects for guidance and instructions for inspectors could include:</i> ... <i>(c) the use of regulatory requirements, regulations and guides and industrial standards;</i> <i>(d) implementation of the inspection programme, including:</i> — <i>areas to be subject to inspection,</i> — <i>method of inspection to be used,</i> — <i>methods for selection of inspection samples,</i> — <i>relevant technical information and questionnaires;</i> ... ”
S11	Suggestion: Gosatomnadzor should consider development and consistent use of inspection procedures or checklists for facilities and activities other than NPPs.

7.4 INSPECTION OF WASTE MANAGEMENT FACILITIES

The general process and requirements for conducting oversight activities is established by the Decree of the President No.510 (2009) "On Improving Control (Supervision) Activity in the Republic of Belarus." According to the facility categorization (in the high-risk category), planned inspections of CUE “Ecores” radioactive waste management facility should take place once per a year according to the facility categorization (high risk category). There is the other type of checking by inspectors – monitoring. “Monitoring” site visits are planned by Gosatomnadzor mainly with the objective of checking the status of implementation of measures for addressing inconsistencies and the licensee’s annual Plan of actions to comply with the safety requirements (developed according to Article 12 of the Law of Radiation Protection).

A “monitoring” site visit was observed at CUE “Ecores” facilities. The inspection group included Gosatomnadzor’s inspector and 2 specialists. The inspection started with a meeting with the licensee and presentation of inspection goals. During the inspection the following methods were used: interviews with

the responsible staff members and verifications. Verification was done: by checking the safety documentation and records (radiation control and monitoring results, data base for characteristics of RW received, the staff competence evidence, safety and operational documentation actualization), by verifying that established control levels of relevant parameters were not exceeded; and by direct observation of the facilities, systems and equipment of the facility, including the containers. Inspection participants were provided with electronic dosimeters from CUE "Ecores".

The observed areas of improvements include the need for consistent use of check lists for inspection. In addition, interviews with the head of the radioactive waste storage facility provided evidence that the inspections from MoH and Gosatomnadzor in the field of radiation control, control of individual doses and monitoring are focused on the same issues.

See recommendation R2 in Section 1.5 and suggestion S11 in section 7.3.

7.5. INSPECTION OF RADIATION SOURCES FACILITIES AND ACTIVITIES

There is a number of regulations on the inspection and monitoring process for sources, including the definition of inspection scope, the frequency and the procedure for conducting the inspection.

The general process and requirements for conducting oversight (supervisory) activities by state authorities (which includes oversight by MES in the area of radiation safety of radiation sources, but not the area of nuclear and radiation safety for nuclear facilities) for radiation sources are established in Decree of the President No. 510 (2009). The Decree states that scheduled inspections of users in the same calendar year cannot be done separately by different state authorities. Thus if two authorities (for example MES and MoH) are going to inspect same user - they must do it at the same period (during a prescribed month) (otherwise it would not be approved by State control committee). In practice, however, such joint inspections are not conducted by MES and MoH. They are performing separate inspections despite verifying some of the same issues, leading to possible overlapping inspection activities (see recommendation R2 in Section 1.5).

In order to facilitate the conduct of inspection procedures, there is internal guidance for inspectors, which is approved by Gosatomnadzor ("Methodological recommendations on conducting state supervision in the field of radiation safety of ionizing radiation sources"). The guidance explains the provisions of the Decree for the preparation and conduct of different types of inspections. Checklists are also developed by MES for inspections of users of lower risk groups of sources. Such checklists are filled by the users of radiation sources and submitted for evaluation in lieu of inspection by Gosatomnadzor.

There are inspection protocols for inspections of medical uses of IRS in place, which include some special issues on medical exposure. During inspections it is verified that users' staff members are trained, and occupational doses are verified. Occasionally, the hospital staff are required to perform a QC test to verify the parameters of the equipment. Other safety requirements are verified, including preparedness for accidents at a hospital. It is understood that such inspection protocols will be further developed and updated as necessary.

The IRRS team was informed that patient doses are not inspected by Gosatomnadzor. However, key elements that effect patient doses, such as training of the staff and protocols to operate the equipment, quality control of equipment and administered activities to the patients were inspected. Justification and optimization of medical exposures should be more fully covered by the inspections performed by

Gosatomnadzor. Cooperation with MoH inspections should be further developed on this area (see suggestion S11 in the section 7.3).

Gosatomnadzor does not have all suitable survey meters for inspecting medical facilities. There is no survey meter for neutron dose rate measurements or pressurized ionization chamber for photon dose rate measurements at accelerators or computed tomography equipment that produces pulsed radiation. The IRRS team provided advice on the purchase of measuring instruments with characteristics that allow measurements in pulsed beams. The IRRS team was informed that Gosatomnadzor uses dose rate meters during inspections that were provided by licensees. Inspectors need further training on the issues related to patient protection and using the instrumentation (see suggestion S18 on the use of equipment in chapter 11.2).

The IRRS team observed an inspection carried out at the public hospital. The inspection team consisted of six inspectors lead by a senior inspector. The IRRS team was not informed if there were any pre-inspection meetings. The facilities to be inspected were an X-ray department with a CT and a nuclear medicine department equipped with a dual head SPECT camera using only Tc-99m. At the inspection entrance meeting the inspection group met with the director of the hospital and deputy director of the hospital responsible for the radiation safety (but not named to be a radiation protection officer). IRRS team recognized that more training is needed for inspectors on the establishment and use of DRLs. The exit meeting did not point out any gaps in radiation safety. The inspection was carried out in a professional manner. The team was well prepared for the inspection and the supervised hospital had also prepared the requested documents and materials. Discussions were open and co-operative. The inspection was shortened from a normal inspection in order to fit into the IRRS team's schedule.

During the mission, the IRRS team visited an "Isotope production" radiation facility and observed monitoring activities performed by three Gosatomnadzor inspectors. Conducting of monitoring was approved by decision of the Deputy Head of Gosatomnadzor. The decision identified the issues to be verified during that activity (a list of issues was detailed and can be used as an inspection program or checklist). During this monitoring the register of sources at the facility was verified against reports that had been provided by the facility. In addition, emergency response planning and exercises plans and results were reviewed, as well as training of staff. The monitoring process was in accordance with associated guide and regulation.

7.6 INSPECTION OF DECOMMISSIONING ACTIVITIES

The only NRIs licensed for decommissioning are at the JIPNR-Sosny site. The inspection actions for all facilities under JIPNR-Sosny license are performed in the similar way as described in section 7.3.

7.7 SUMMARY

The IRRS team concluded that there is a sufficient legal basis for the conduct of inspections and that Gosatomnadzor internal processes and inspection practices are in accordance with relevant IAEA documents:

- Gosatomnadzor inspections are planned and performed in such way that an acceptable level of assurance that regulatory requirements are met is achieved;
- NPP inspectors are well qualified, motivated to discharge their duties, and respected by inspected organisations. Gosatomnadzor has implemented a well-structured, systematic and effective system of inspectors' training and

- The results of Gosatomnadzor inspections are recorded and communicated to the inspected organisations, within Gosatomnadzor and to the public, as appropriate.

The IRRS team identified several areas for improvement of Gosatomnadzor processes and provided suggestions and recommendations in applicable areas for improvement of Gosatomnadzor's inspection programme and practices. These include, for example, the completion and updating of inspection guidance documents and the development of criteria for initiating reactive inspections.

8. ENFORCEMENT

A consistent enforcement system is established in the Republic of Belarus. Based on the high-level legal acts (laws, decrees of the President and of the resolutions of the Council of Ministers), the powers and functions of MES/Gosatomnadzor for the implementation of enforcement actions are provided, and the application of sanctions are stipulated.

Section 10 of the Resolution of the Council of Ministers № 133 obliges regulatory authority inspectors to require the authorized parties to remediate violations of the safety requirements and to supervise the removal of such violations. Suspension and/or termination of authorized activities in the event of an identified violation is required if it may result in a security threat, or the damage of public life and health and environment.

The legislation of the Republic of Belarus provides a wide set of enforcement actions including: orders, suspension of the license, suspension of a specific activity of a licensee, warning, fine, withdrawal of the license and the corresponding mechanisms of enforcement implementation.

8.1. ENFORCEMENT POLICY AND PROCESS

The enforcement policy for responding to non-compliance by authorized parties with regulatory requirements or with any conditions specified in the license is established within the legal framework of the Republic of Belarus and is based on the Regulation on Licensing of Certain Types of Activities, approved by the Decree of the President No. 450, Decree of the President № 62 on Safety Assurance During the Construction of the Belarusian NPP, Resolution of the Council of Ministers No. 133, the Code of the Republic of Belarus on Administrative Offences and the Criminal Code of the Republic of Belarus. The enforcement policy envisages both reactive and preventive actions to ensure nuclear and radiation safety. Enforcement actions are taken commensurate with safety significance of the non-compliance revealed, ranging from oral warnings made by a Gosatomnadzor inspector to license withdrawal, and include administrative penalties and criminal prosecution. The IRRS team was informed that the Enforcement Policy of Gosatomnadzor was recently approved as a stand-alone policy document.

Preventive actions are taken on the different levels of management and for NPP if necessary are escalated to the steering group at the governmental level («Stab») resulting in inter-ministerial orders requiring preventive actions. Enforcement actions are implemented on the basis of non-compliances with regulatory requirements or authorization conditions that identified during the oversight process (including inspections).

Enforcement orders are drafted by an inspector and are submitted to the Gosatomnadzor Sector of Legal Support or/and Division on organization of supervision nuclear facilities. After checking the received documents, the draft enforcement order is approved by Deputy Head. If, in the revealed non-compliance, the inspector also identifies any requisites of an administrative offence, they open an administrative case issuing an administrative protocol. If the Gosatomnadzor Sector of Legal Support identifies evidence of a criminal offence in identified non-compliances, all the corresponding documents are communicated to the prosecutor.

The act of inspection is communicated to the inspected licensee within 2 days. Enforcement orders are established and signed by the Gosatomnadzor Head (Deputy Head) no later than 15 days after the non-compliances (violations) were revealed and documented by an act of inspection.

Before the enforcement order is received, the licensee is able to voluntarily eliminate the identified non-compliances and report its actions to Gosatomnadzor. If acceptable, the corresponding actions are not included in the enforcement order. The enforcement order includes corrective actions with defined periods of implementation. The licensee must report to Gosatomnadzor on the completion of each corrective action within this period.

Gosatomnadzor implemented a computer-based tracking system for monitoring the implementation of required corrective actions, which is accessible to headquarters and the onsite inspection division. Results and effectiveness of corrective actions taken is checked by Gosatomnadzor inspectors during follow-up inspection activities. Licensees have a right to appeal an enforcement order to Gosatomnadzor top-management or directly to court. Procedures for financial penalties are established in the Code on Administrative Offences and the Code on Execution Procedure for Administrative Offences . These high level legal acts cover general procedures for implementation of financial penalties by oversight authorities. They provide MES/Gosatomnadzor officials the authority to initiate financial sanctions for violations of rules in the area of nuclear and radiation safety. Sanctions can be implemented in the form of a warning or a fine, and the range of fines for physical and legal persons goes from half of the installed base value to pre-defined values. In the event that a physical or a legal person admits to committing the violation, a decision for a fine can be issued by Gosatomnadzor and the fine will be of a certain fixed amount. In case of disagreement, Gosatomnadzor submits the case to the court. The same procedures apply to MoH regarding the control over users of radiation sources, based on regulatory requirements included in sanitary norms and rules.

The authority of MES/Gosatomnadzor to suspend or withdraw a license is also established in the Regulation on Licensing of Certain Types of Activities. The corresponding chapter of this Regulation introduces the term of «severe violation», which is a violation potentially leading to a radiation accident.

To facilitate enforcement actions, Gosatomnadzor developed and approved internal guidance on the use of administrative measures, which provides guidelines to inspectors on the legal basis and on the steps to implement sanctions in accordance with legislative provisions. While this guidance is a useful tool for combining the provisions from a number of legislative acts, the approach on how to categorize violations and use the graded approach is still missing. There is no description or guidance on how to assess a violation (e.g. if it should be subject for financial penalty or not), and in case of financial penalty, how to estimate the amount of the fine based on the severity of the violation. Also, guidance on assessing a violation from the point of view of its severity is missing, as well as specifying which violation is severe enough to suspend activity immediately in a facility or a part of the facility.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *The existing procedure is not sufficient to evaluate inspection findings and to consider their severity in order to decide whether or not to imply specific sanctions.*

(1)	BASIS: GS-G-1.5 para. 3.75 states that: <i>“Within the legal framework within which it is established, the regulatory body may draft and issue enabling regulations that detail procedures for determining and exercising enforcement actions as well as the rights and obligations of the operator.</i>
(2)	BASIS: GS-G-1.5 para. 3.85 states that <i>“The regulatory body should adopt clear administrative procedures governing the taking of enforcement actions. ... The procedures should cover in detail the decision making approach of the regulatory body in determining</i>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

	<i>the level of action to take and the way in which actions should be taken, including dealing with the failure of the operator to comply with the regulatory enforcement requirements.</i>
S12	Suggestion: Gosatomnadzor should consider improving the procedure for determining the safety significance of inspection findings to imply the appropriate enforcement action

As the enforcement actions and sanctions according to the legislation of the Republic of Belarus are taken only for non-compliances with regulatory requirements or authorization conditions revealed by a regulatory body (which is actually a reactive component), the IAEA requirement addressing the proactive approach to corrective actions on unforeseen radiation risks is not fulfilled. Empowering Gosatomnadzor to require appropriate corrective actions in the event of an unforeseen radiation risks is identified as a part of the action plan.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: <i>MES/Gosatomnadzor and MoH are not able to require a licensee to take appropriate corrective actions in the event unforeseen radiation risks are identified.</i>	
(1)	BASIS: GSR Part 1 (Rev.1) Requirement 31, para. 4.59 states that: <i>“In the event that unforeseen radiation risks are identified, whether or not they are due to non-compliances with regulatory requirements or authorization conditions, the regulatory body shall require the authorized party to take appropriate corrective actions to reduce the risks”.</i>
R16	Recommendation: The Government should provide MES/Gosatomnadzor and MoH with the authority to require the authorized party to take appropriate corrective actions in the event unforeseen radiation risks are identified that are not the result of non-compliances.

8.2. ENFORCEMENT IMPLEMENTATIONS

Enforcement implementation is an important part of the Belarusian regulatory oversight process. Based on the identified non-compliances, the Gosatomnadzor Sub-Division of Supervision over Nuclear and Radiation Safety on NPP Construction Site (Resident Division of Gosatomnadzor) prepares a draft enforcement instruction for Gosatomnadzor top-management approval. However, any inspector on site is empowered to immediately suspend works of an authorized party in case of an acute health or safety issue revealed during an inspection of any type or during a regular NPP walkdown. Work suspension on the site is recorded in the General work performance log, which is mandatory for the operator’s general contractor and all subcontractors.

Instruction № 45 on the permanent oversight regime of the Belarusian NPP (approved by Gosatomnadzor order on September 23, 2016) states that if a Gosatomnadzor inspector identifies a non-compliance under the jurisdiction of another state regulatory (oversight) authority, this non-compliance is officially communicated in writing to the relevant oversight body.

The inspectors of the Gosatomnadzor Resident Inspector's Division assess the adequacy of the corrective actions received from the authorized party in the remediation or resolution of the non-compliance. If found to be unsatisfactory, the inspector will suggest to Gosatomnadzor management to suspend or withdraw the license of the authorized party.

Analyses of the type of non-compliances and violations are performed by the Gosatomnadzor Resident Division. The results of the analyses are communicated by Gosatomnadzor to the authorized parties in the form of information letters, pointing out legal requirements and requiring corrective actions to avoid recurrence of similar non-compliances and violations in the future.

The implementation and the completeness of the reported corrective actions is verified by the Gosatomnadzor Resident Division in a timely manner. If the implementation is recognized to be unsatisfactory, Gosatomnadzor may maintain the suspension of the work until the authorized party achieves a satisfactory implementation of the corrective actions.

In case an administrative offence is identified, and in order to facilitate the establishment of an administrative protocol, the Gosatomnadzor Sector of Legal Support provides inspectors with a report template containing a set of standard formulations for typical violations.

In general, the communication between the NPP operator and Gosatomnadzor on enforcement appears effective and transparent and is based on safety considerations.

8.3. SUMMARY

MES/Gosatomnadzor has developed and maintains a comprehensive enforcement system that is based on the legally established enforcement procedures and a wide set of sanctions, implemented in function of the safety significance of the issued revealed.

MES/Gosatomnadzor should pay specific attention to developing a pro-active approach to safety and to risks, including unforeseen radiation risks, so that Gosatomnadzor requirements for corrective actions are not necessarily the result of a revealed non-compliance (violation). Gosatomnadzor should also consider developing a procedure for the evaluation of inspection findings in function of their severity, in order to decide whether or not to apply specific sanctions (such as suspension of activities or financial sanctions) and to decide on the amount of financial sanctions, in function of the severity of the violation.

Overall, the enforcement system in the Republic of Belarus provides for effective and transparent communication between the regulatory (oversight) authorities and authorized parties, and is focused on safety considerations.

9. REGULATIONS AND GUIDES

9.1. GENERIC ISSUES

The regulatory framework in Republic of Belarus is based on a set of legal documents which are organized into a hierarchy of four distinct levels. The top level includes laws and presidential decrees, the next level includes resolutions of the Council of Ministries followed by the 3rd level - the resolutions of the individual ministries, mainly the MES and MoH. The lowest level contains norms and rules and technical normative legal acts (including technical code of practices (TCPs)). TCPs provide recommendations and guidance and may be legally binding when specifically referenced in a legally binding requirement or when formally committed to by the operator. The IRRS team was informed that the Decree of the President of the Republic of Belarus № 390 for the design, construction and commissioning of the Belarusian NPP established that it is allowed to use technical normative legal acts of the Russian Federation in the absence of similar Belarusian documents when those acts are in compliance with international standards.

There are 2 laws, 8 decrees of the President, 13 resolutions of the Council of Ministers and 22 resolutions of MES that are directly related to nuclear safety and radiation protection oversight. These are accompanied by a list of regulatory documents of different levels that are related to nuclear and radiation safety regulation. In addition, there are numerous norms and rules and technical norm legal documents. This comprehensive regulatory framework covers the full scope of regulatory expectations in the area of nuclear energy and ionizing radiation, as well as the roles and responsibilities of regulatory bodies.

During the mission, the IRRS team identified areas that may challenge the implementation of certain regulations and guides. For example, in some areas other than the NPP, the IRRS team concluded that the legal status of some guides namely TCPs is not fully clear. MES/Gosatomnadzor is working on a new system that will replace TCPs with norms and rules and safety guides. In addition, some requirements appeared to contradict with other requirements (see recommendation R12 in section 5.5) or inconsistent guidance was given for different requirements. It was also not clear to the IRRS team what criteria is used to determine whether a given instrument should be a resolution, technical normative act or norm and rule.

While the Republic of Belarus has a comprehensive set of rules and technical standards, the inconsistencies and problems noted above could lead to challenges during implementation of the legal requirements by operators who may be less well versed on the regulations than the regulator. For example, the sanitary norms issued by the MoH related to use of radiation sources and associated activities, and radioactive waste management facilities, overlap in some areas with the radiation safety rules adopted by MES and it can be more difficult to keep them identical all the way. In addition, MES Resolution No.22 requires a license for transportation which is no longer mandatory.

The IRRS team also noted a number of examples described throughout this report in diverse areas where regulatory requirements were not consistent with international safety standards. Some examples included: requirements to establish financial assurance for decommissioning of other than nuclear facilities have not been established yet; requirements to perform periodic safety reviews of nuclear and radioactive waste management facilities have not been promulgated; authorization procedure for discharge limits for facilities other than NPP has not been established; the Design Extension Condition requirements for NPP has not been introduced; and some values used in MoH sanitary rules are based on obsolete IAEA safety standards. More information regarding these and other examples of regulation inconsistency contained in this report can be found in Sections 1.7, 5.4, 6.1.4, 6.4, 9.2, 9.3, 9.4, 9.6.

MES/Gosatomnadzor recognized the need to improve a number of regulatory documents and has developed a plan to review and revise their regulatory documents. This process complies with Presidential

Decree No.359 (2003) and typically includes the collecting of comments from appropriate stakeholders including other authorities, the operator, and the public. While there is stakeholder outreach and input prior to the approval of the law and resolutions, norms and rules are not yet sent out for public comment (see recommendation R7 in section 3.8). In addition MES/Gosatomnadzor has a long-term plan to further develop and revise their regulations and guides and periodically reviews and updates their requirements.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
<p>Observation: <i>In some areas other than the NPP, the IRRS team concluded that the legal status of some guides namely TCPs is not fully clear. Some existing regulations and guides do not fully comply with the IAEA Standards. In addition there is some overlap and inconsistency between some regulations and guides, particularly in areas where MES and MoH have common regulatory responsibility.</i></p> <p><i>The need to review and revise the regulations and guides is part of the action plan.</i></p>	
(1)	<p>BASIS: GSR Part 1 (Rev.1)Requirement 33 states that:“Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration of relevant international safety standards and technical standards and of relevant experience gained.”</p>
(2)	<p>BASIS: GSR Part 1 (Rev.1)Requirement 34 states that: “The regulations and guides shall be kept consistent and comprehensive, and shall provide adequate coverage commensurate with the radiation risks associated with the facilities and activities, in accordance with a graded approach.”</p>
R17	<p>Recommendation: The MES and MoH should:</p> <ul style="list-style-type: none"> • complete efforts to clarify the legal status of TCPs in the area of radiation and nuclear safety, • continue developing and revising regulations and guides to avoid overlaps and/or inconsistency and to be in line with IAEA safety standards.

9.2. REGULATIONS AND GUIDES FOR NUCLEAR POWER PLANTS

The basic legal relationships regarding the development of nuclear power are outlined in the Law on Atomic Energy Use. A series of requirements are included in different level documents, such as a Decree of the President, a resolution of the Council of Ministers, resolutions by other ministries.

Technical safety requirements and TCPs covering NPP design and operation have been issued. These include: TCP 097 by MES to establish general requirements for site selection and evaluation; TCP 098 by the Ministry of Architecture to provide instructions for site investigation and study; TCP 263 by MES to provide the specific safety criteria for the external impacts of natural and man-made events; TCP 170, issued by MES, establishes general provisions of safety of nuclear power plants. TCP 170 was supplemented by several TCPs, in which the specified safety criteria of reactor core, containment, and design feature against external or internal hazard was provided, respectively.

The above TCPs reflected the principles of defense in depth and the fundamental safety functions. Because these documents were developed several years ago, the content of some newer IAEA safety

standards has not been fully reflected, such as the design extension conditions and certain operational activities.

The list of technical normative legal acts of the Russian Federation, applicable to the design, construction and commissioning of the Belarusian NPP is approved by order of the Head of Gosatomnadzor (14.10.2015 № 36) and posted on the website of Gosatomnadzor. The IRRS team was informed that Gosatomnadzor updates this list at least four times per year.

9.3. REGULATIONS AND GUIDES FOR RESEARCH NUCLEAR INSTALLATIONS

National regulations and requirements for RNIs are generally in line with the requirements in GSR Part 1 (Rev.1) and NS-R-4 in that they provide for a staged authorization process, review and assessment, inspection and enforcement, as well as provisions for use of a graded approach. The technical safety requirements for RNIs in Resolution No. 72 (2006), provides a level of detail for the preparation of the safety analysis report for RNIs that is consistent with IAEA safety guides and includes explicit acceptance criteria for demonstrating safety. However, the guides that are specific to RNIs (and the new Fresh Fuel Storage Facility) are limited and comprise of TCP 476 covering quality management, TCP 550 maintenance of Safety during Decommissioning and TCP 501 safety analysis for fresh fuel storage. There are general requirements for emergency preparedness, aging management and periodic comprehensive reviews of facility safety (periodic safety review) (see Section 5.1 of this report for additional discussion of periodic safety review), but detailed guides are not available.

9.4. REGULATIONS AND GUIDES FOR WASTE MANAGEMENT FACILITIES

There are a set of regulations in the field of radioactive waste management and decommissioning issued by MES and MoH. The MES Resolution No.47 (2010) was issued by giving general principles for the radioactive waste management. The Resolution of MES No.7 (2012) was issued giving the safety requirement on the disposal of RAW. The Resolution of MES No.64 (2012) was issued giving the requirement of content of the safety analysis report of RAW management facility. Several TCPs were issued by MES to give specific requirements. However, some overlapping and non-compliance, as well as some gaps were identified by the IRRS team.

The IAEA safety standards for radioactive waste management facilities are not fully addressed by existing MES regulations. The team has identified gaps in the following areas: RW classification schemes set out in different valid regulations not comply to each other (GSG-1, para.1.8, para.2.32); interdependences among all step of radioactive waste management (GSR part5, Requirement 6); the passive means for long-term safety of disposal facility (SSR-5, Requirement 5); long-term safety assessment for disposal facilities (SSR-5, Requirement 13); waste acceptance criteria derivation as a result of safety assessment of RWM facility (SSR-5, Requirement 20); undertake sensitivity and uncertainty analyses in safety assessment of disposal facility (SSR-5, Requirement 13, para.4.19). See Recommendation R17 in section 9.1.

9.5. REGULATIONS AND GUIDES FOR RADIATION SOURCES FACILITIES AND ACTIVITIES

A general framework for radiation sources facilities and activities consists of legislation of higher level (laws, presidential decrees, resolution of Council of Ministers) and documents of regulatory authorities (documents, adopted by MES and MoH). MoH develops and adopts sanitary norms and rules, hygienic normative in the field of radiation safety, also determines procedures related to authorization of users of sources (procedures for obtaining of sanitary passport). MES develops and adopts norms and rules in the field of nuclear and radiation safety, also establishes requirements and procedures related to authorization of users of sources (procedures for obtaining of license and other types of approval and authorization). Also there are a number of documents developed by MES as internal guidance to facilitate regulatory activities.

There are a few guides available for users (e.g., the model plan for physical protection of the sources and some guides and explanations on licensing process and requirements), but there is some lack of guidance for users of sources on how to implement normative legal acts in the field of radiation safety. In addition, some guides appear contradictory (as they were developed in different years) and may need to be revised.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>There is lack of non-mandatory regulatory guides for users of radiation sources on how to implement the safety requirements of normative legal acts in the field of radiation safety.</i>	
(1)	BASIS: GS-G-1.5 para. 3.11 states that: “Guides, of a non-mandatory nature, on how to comply with the regulations shall be prepared, as necessary’. Irrespective of the degree to which the regulatory body has developed prescriptive regulations, the regulatory body is required to give consideration to supplementing its regulations with guidance documents, where appropriate, based on those of the IAEA and of the other joint sponsoring organizations of this Safety Guide..”
S13	Suggestion: MES should consider development of more non-mandatory regulatory guides for implementation of safety regulations and requirements, as necessary.

9.6. REGULATIONS AND GUIDES FOR DECOMMISSIONING ACTIVITIES

The general requirements for the decommissioning activities are addressed in the Law on Atomic Energy Use. Some general provisions of decommissioning exist in the resolutions related to radioactive waste management facilities and RNIs. However, in addition to existing general requirement there is a need to develop regulations which establish appropriate detailed safety requirements for decommissioning of nuclear facilities, according to the requirements of GSR Part 6 (see Recommendation R17 in section 9.1).

In the Action Plan of Gosatomnadzor, it is planned to elaborate a technical normative legal act providing the safety requirement and criteria for the safety of decommissioning of NPP.

9.7. SUMMARY

Regulations have been established to provide requirements for current scope of facilities and activities. The Team identified that challenges remain with some regulations that are unclear or provide inconsistent guidance. In addition regulation needs to be developed to support future activities including operation of the NPP, decommissioning and disposal. The Team also identified examples where the regulations are not consistent with IAEA safety standards. MES/Gosatomnadzor and MoH have plans to review and update their regulations.

10. EMERGENCY PREPAREDNESS AND RESPONSE – REGULATORY ASPECTS

The IRRS team reviewed this area against IAEA General Safety Requirements Part 7 (GSR Part 7, published Nov 2015) that supersedes GS-R-2.

10.1. GENERAL EPR REGULATORY REQUIREMENTS

Basic responsibilities

The regulatory requirements for emergency preparedness and response for facilities and activities are distributed over a large number of legislative acts: laws, presidential decrees, governmental decrees, ministerial orders, hygiene standards and technical codes of common practice (TCPs). Three laws are at the top of legislative pyramid of the nuclear and radiation safety legislative framework: Law on Public and Territorial Protection from Natural and Technogenic Emergency Situations, Law on Radiation Safety of Population and Law on Atomic Energy Use.

According to the legislative framework, both MES and MoH are empowered to adopt regulatory requirements for facilities and activities, including for emergency preparedness and response (EPR), and to ensure the verification of on-site arrangements with these requirements, during licensing and throughout the lifetime of facilities or activities.

MoH regulatory requirements on EPR relate to radiation protection of personnel, emergency workers and population. There are two regulatory acts with generic EPR requirements for users of radiation sources: MoH Resolution No. 213 (2012) and MoH Resolution No.137 (2013). In addition, MoH has published 28 hygiene rules which include special articles or chapters with regulatory requirements for EPR. For the application of regulatory requirements, special guidelines on EPR are under preparation by MoH experts for the users of radioactive sources in medical facilities. According to the discussions with MoH, these guidelines will soon be finalized and approved. Special regulatory requirements on radiation safety for the Belarusian NPP are issued by MoH Resolution No. 39 (2010).

Within MES, Gosatomnadzor is assigned the role (Decree of the Presidential No. 756) to perform special regulatory functions in the field of nuclear and radiation safety, including emergency preparedness and response. In general, the regulatory requirements issued by MES/Gosatomnadzor in the field of emergency preparedness and response cover all the aspects, except those related to radiation protection of personnel, emergency workers and public, which are addressed by MoH. In addition to the Laws mentioned above, there are two main regulations that are used by MES/Gosatomnadzor for their regulatory process in relation to EPR: MES Resolution No.22 (2010) for the users of radioactive sources and Resolution of the Council of Ministers No.1242 (2010) for nuclear facilities. For the Belarusian NPP, in addition to existing domestic legislative and technical framework, Russian technical regulations and guides on radiation and nuclear safety, including EPR, are used to fill the gaps until the framework is completed. The missing regulatory requirements for the NPP should be completed as soon as possible, before commencement of operations of the Belarusian NPP, as they form the basis for establishing the NPP on-site arrangements for emergency preparedness and response.

When evaluating the documentation, the IRRS team noticed that some regulatory requirements are repeated in a number of legislative acts (e.g. requirement for on-site plans, for notification and exchange of information, for protective and mitigatory actions on the site, etc). Some other requirements are rather generic, incomplete or are not yet in line with IAEA recommendations (especially in relation to the Belarusian NPP, e.g. detailed requirements for on-site training and exercise programmes). Some other EPR regulatory requirements do not comply with the IAEA safety standard GSR Part 7 (e.g. hazard

assessment).

The regulatory control over on-site EPR arrangements is performed by both MoH and MES/Gosatomnadzor during the authorization process by evaluating the content of on-site emergency plans, during the revision of on-site emergency plans (at every three years), during inspections and by observing on-site emergency exercises (only Gosatomnadzor experts observe on-site exercises). For verification of on-site EPR arrangements for facilities and activities (users of radioactive sources and nuclear facilities), the inspectors of each ministry verify the application and compliance of on-site EPR arrangements with the regulatory requirements they have issued. For evaluation of on-site EPR requirements for nuclear facilities, the provisions included in Law on Atomic Energy Use and Resolution of the Council of Ministers No. 1242 (2010) form the main basis for the Gosatomnadzor staff. There are some other legislative acts issued by Gosatomnadzor where regulatory requirements for EPR for operating organizations are included and these will be addressed, case by case, under sub-chapters 10.2 and 10.3.

Within Gosatomnadzor, the Sub-Division of Radiation Safety and the Division of Supervision over Radiation Safety of Ionizing Radiation Sources in Regions and Minsk are responsible for verifying the content of on-site emergency plans and compliance with regulatory requirements. In support of the regulatory control over EPR arrangements of users of radioactive sources, internal procedures have been issued on “Methodological guidance on evaluating the content of on-site emergency plans for operating organizations using radioactive sources” (Gosatomnadzor Order 42/2016) and on “Evaluating the on-site exercises” (Gosatomnadzor Order 32/2016). Similar internal procedures for inspecting the Belarusian NPP and for observing their on-site emergency exercises are in draft (they are planned to be approved by the end of 2016). Gosatomnadzor should strengthen its regulatory control on EPR through developing a comprehensive methodology for its inspections of the NPP, in order to ensure that the on-site EPR arrangements provide for a reasonable assurance of an effective response. This gap is referred in section 4 as part of the management of processes and activities (see recommendation R8 in section 4.2); in section 7 as part of the inspection program (see suggestion S10 and recommendation R14 in section 7.2).

Special entities under subordination of MoH perform the inspections of facilities and activities using radioactive sources. MoH inspectors should consider their participation in on-site emergency exercises, for evaluation and providing feedback for improvement of on-site EPR arrangements.

Hazard assessment

Both concepts of hazard assessment and graded approach for planning the response to radiological emergencies are addressed to some extent in the current legislation. However, the approach to hazard assessment and the graded approach are not in line with the requirements of IAEA GSR Part 7. The concept of graded approach for planning the response to a radiological emergency is addressed in terms of source categorization (MoH Resolution No.137 (2013); MES Resolution No. 22 (2010)). In relation to hazard assessment, the regulatory requirements for the on-site emergency plan’s content (MoH Resolution No. 137 (2013)) include generic requirement, but specific guidance on using a graded approach for planning the response is not provided. Specific requirements and associated guidance are not established for the operating organizations on developing hazard assessment in line with the IAEA standards, as the basis for emergency response plans. Adopting emergency preparedness categories in line with GSR Part 7 as basis for the hazard assessment of operating organizations is part of the Action Plan and is referred under Recommendation R20 in sub-chapter 10.1. Based on discussion, there is a draft regulation to address the above deficiencies.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *Some of the regulatory requirements for emergency preparedness and response for facilities and activities are not yet established (mainly in relation to the Belarusian NPP) or not fully in compliance with the IAEA GSR Part 7. For example, the IAEA emergency preparedness categories as basis for the hazard assessment and regulatory criteria or guidance are not yet in place.*

Revising regulatory requirements on EPR in line with GSR Part 7 and adopting emergency preparedness categories are part of the Action Plan.

(1)	BASIS: GSR Part 7 para. 4.12 states that “The regulatory body is required to establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based [...].”
(2)	BASIS: GSR Part 7 para. 4.19 states that “For the purposes of these safety requirements, assessed hazards are grouped in accordance with the emergency preparedness categories [...]. The five emergency preparedness categories [...] establish the basis for a graded approach to the application of these requirements and for developing generically justified and optimized arrangements for preparedness and response for a nuclear or radiological emergency.”
R18	<p>Recommendation: MES/Gosatomnadzor and MoH should jointly:</p> <ul style="list-style-type: none"> i) adopt IAEA emergency preparedness categories as the basis for a graded approach for planning the response to a nuclear or radiological emergency, ii) prepare and promulgate documented criteria and guidance for operating organizations to perform, and periodically review, the on-site hazard assessment as basis for a graded approach to emergency preparedness arrangements and iii) review, update and complete the other regulatory requirements on preparedness and response for a nuclear or radiological emergency for all operating organizations, in line with IAEA safety standards in the area of emergency preparedness and response.

10.2. FUNCTIONAL REGULATORY REQUIREMENTS

Establishing emergency management and operations

Regulatory requirements on the licensee’s emergency management structure specifically addressing the need for the prompt transition from normal operation to emergency conditions are not in line with IAEA safety standards. Nevertheless, some generic requirements for an emergency management system are included in MoH Resolution No. 213 (2012). MES TCP 170-2009 contains additional guidance related to emergency management system.

Identifying, notifying and activating

A generic classification of emergency situations is included in Article 5 of Law on Protection of Population and Territories against Emergencies of Natural and Anthropogenic Origin. According to this classification, emergency situations are divided into local, regional, state and transboundary depending on sizes of affected areas and of intensity of damage produced. MES Resolution No.41 (2005) includes

classes, groups and types of emergencies occurring at facilities and activities using radioactive sources in accordance with their nature and impact.

There are no regulatory requirements for operators of nuclear facilities to apply an emergency classification system consistent with GSR Part 7, which allows to promptly classify, on the basis of plant conditions or observable conditions on the scene, a nuclear or radiological emergency which would warrant protective actions and other response actions to protect workers, emergency workers and members of the public. The adoption of IAEA system for emergency classification is part of the Action Plan and is referred under Recommendation R19 in section 10.2.

Regulatory requirements for notification of an emergency by licensees are in place for the users of radioactive sources (Law on Radiation Safety of Population, MoH Resolution No. 213 (2012)) and also for nuclear facilities (Law on Atomic Energy Use; Resolutions of the Council of Ministers No. 1280 (2001) and No. 1242 (2010)).

Taking mitigatory actions

Generic regulatory requirements are in place for operating organizations to take mitigatory actions of an incident/accident and for the on-site emergency plans to include description of these mitigatory actions, in both MoH and MES regulations (MoH Resolution No.137 (2013); MoH Resolution No. 213 (2012); MES Resolution No. 22 (2010)). Regulatory requirements regarding the use of external emergency services as part of the licensee's plan to take mitigatory actions are included for nuclear facilities in Resolutions of the Council of Ministers No. 1242 (2010) and also in TCP 170-2009. For the users of radiation sources, there is no clear requirement for arrangements to receive external support from emergency services. From discussions with Gosatomnadzor it resulted that the arrangements exist under the national EPR framework which requires coordination of on-site and local off-site emergency plans (Resolutions of the Council of Ministers No. 495 (2001)).

Taking urgent protective action

MoH adopted in its regulations (MoH Resolution No. 39 (2010); MoH Resolution No. 213 (2012); MoH Resolution No.137 (2013)) the concept and definition of emergency planning zones (PAZ, UPZ) and distances (ingestion and commodities planning distance, ICPD) as described in IAEA safety standard GSR Part 7. These regulations also include the generic criteria to be used for taking protective actions and other response actions, as in IAEA safety standards GSR Part 3 and GSR Part 7. As described during the interviews with MoH and Gosatomnadzor, Extended Planning Distances (EPD) will be adopted in the off-site emergency plan of the Belarusian NPP.

Currently, MoH regulations include old intervention levels (MoH Resolution No. 39 (2010)) and new generic criteria (MoH Resolution No. 213 (2012), in line with IAEA GSR Part 3 and GSR Part 7). MoH should ensure consistency among all existing criteria for taking protective actions (urgent, early).

Generic requirements for having in place emergency planning zones and distances are included in MoH resolution No. 39 (2010) and generic requirements on taking protective actions are included in MoH Resolution No. 213 (2012).

Providing information and issuing instructions

The national legislative framework includes a clear allocation of roles and responsibilities at all levels, including operating organizations, for warning the population in affected areas, and for communicating with the public in case of any type of emergency. Important legislative acts with respect to providing instructions and communicating to the public in case of an emergency are Law on Protection of Population and Territories in Emergencies and the Decree of the President No. 756 (2006). In addition,

provisions for operating organization of the Belarusian NPP for instructing the public and keeping it informed in case of a nuclear or radiological emergency are included in the Law on Atomic Energy Use, MoH Resolution No. 39 (2010) and Resolution of the Council of Ministers No. 1242 (2010). For the users of radioactive sources, generic regulatory requirements are included in Law on Radiation Safety of Population, MES Resolution No. 22 (2012) and MoH Resolution No.137 (2013).

Protecting emergency workers

Protection of emergency workers in a nuclear or radiological emergency is primarily regulated under the Law on Radiation Safety of Population, MoH Resolution No. 39 (2010), MoH Resolution No. 213 (2012), MoH Resolution No.137 (2013) and MES Orders No. 50 (2015). The regulatory requirements provide for the responsibility of operating organizations to take all measures to protect the emergency workers, to record radiation doses of emergency workers and to limit the exposure of emergency workers based on the action values adopted by MoH, which are consistent with IAEA safety standard GSR Part 7.

Assessing the initial phase

Both the Law on Atomic Energy Use and MoH Resolution 39/2010 include regulatory requirements for the operator of the Belarusian NPP to perform radiation monitoring and to evaluate the radiological situation (in both routine and emergency conditions) in the so-called “supervised area” with a radius of 12.9 km surrounding the NPP. Requirements for radiation monitoring around the facility, in support to the assessment of radiological situation in case of an emergency for the users of radioactive sources are defined under MES resolution 73/2011 (articles 41 and 50).

Managing the medical response

The responsible regulatory body for medical response in a nuclear or radiological emergency is MoH. In its chapter 25, MoH Resolution No. 213 (2012) includes provisions for medical treatment and follow-up of the personnel of operating organizations in case of overexposure or being contaminated in case of an emergency. Generic requirements about medical assistance to personnel are established in the MoH Resolution 39 for NPP (2010). However, regulatory requirements should be enhanced to provide specific direction to operating organizations to have arrangements to provide immediate medical attention to the personnel exposed to radiation and transport, when needed, to a medical facility. Relevant criteria for exposed personnel to radiation are included in MoH 213/2012.

Other activities in emergency preparedness

MoH is the responsible regulatory body to establish criteria and regulatory requirements for taking long term protective actions. Generic requirements are included in MoH Resolution No. 213 (2012) but some issues should be revised to be in line with GSR Part 7.

In relation to mitigating the non-radiological consequences of the emergency and of the response, there are no specific provisions included in the regulatory requirements. Based on discussions held, the IRRS team has been informed that this aspect will be considered under the draft regulations and also within the on-site NPP and off-site emergency plans.

Regulatory requirements and criteria are not established in relation to terminating the emergency, as identified also in the Action Plan, and this aspect is referred under Recommendation R18 in section 10.1.

All generic, incomplete, absent or inconsistent regulatory requirements (partly described under this sub-chapter) are referred under Recommendation R18 in section 10.1.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *Although general classification of emergencies in terms of size and damage exist, a system for emergency classification in line with IAEA safety standard GSR Part 7 and specific criteria for the NPP are not yet in place. The adoption of IAEA system for emergency classification is part of the Action Plan.*

(1)	BASIS: GSR Part 7 para. 5.14 states that “ <i>The operating organization of a facility or activity in category I, II, III or IV shall make arrangements for promptly classifying, on the basis of the hazard assessment, a nuclear or radiological emergency warranting protective actions and other response actions to protect workers, emergency workers, members of the public [...]. This shall include a system for classifying all types of nuclear or radiological emergency as follows: [...]</i> ”
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R19	Recommendation: MES/Gosatomnadzor should ensure that a system for emergency classification and operational criteria that follows IAEA GSR Part 7 are adopted by the NPP, for the effective declaration of the emergency and activation of the response.
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10.3. REGULATORY REQUIREMENTS FOR INFRASTRUCTURE

Authority

Authorities are clearly stated in the regulatory requirements of MoH and MES.

Organization

Regulatory requirements for on-site emergency response personnel for NPPs are generally addressed in TCP170-2009 with general provisions on the safety of nuclear power plants, though these requirements are generic, mandating only that the personnel be sufficient in terms of numbers and qualifications. In addition, TCP-294-2010 requires that NPP Safety Analysis Report (SAR) address emergency staffing and requires that the licensee demonstrate staffing is adequate to protect personnel and the public. For the users of radioactive sources, general requirements are included in MES Resolution No. 22 (2010).

Coordination of emergency response

Resolution of the Council of Ministers No. 1242 (2010) requires that the on-site plan be coordinated with the off-site plan, including emergency services. It also provides for emergency preparedness verification. Coordination is further required under Resolution of the Council of Ministers No. 495 (2001), which regulates the national emergency management system, coordinated by MES. Special requirements have to be adopted for the operating organization of the NPP.

Plans and procedures

General regulatory requirements to have in place on-site emergency plans are included in Resolution of the Council of Ministers No. 1242 (2010) for nuclear facilities and in MES Resolution No. 22 (2010) for the users of radioactive sources. For the NPP, Gosatomnadzor is in the process of developing more detailed requirements for on-site plans and certain Russian regulations are used in the meantime. Development of detailed requirements for on-site plans is part of the Action Plan and is referred under Recommendation R18 in section 10.1.

The authority for regulatory approval of the licensee’s onsite response plan is clear in Resolution of the Council of Ministers No. 1242 (2010). According to the Law on Atomic Energy Use, the on-site emergency plan of the NPP should be approved six months prior to the date of commissioning. In addition, the Law requires practical testing of the on-site plan before commissioning. The IRRS team

noticed that the timeframe for testing the on-site emergency plan of the NPP may be insufficient, unless the preparation for this exercise is started before the on-site emergency plan of the NPP is approved. Moreover, it is not clear if the “practical testing” before the commencement of the operation at the NPP include testing both the on-site and off-site arrangements together.

Logistical support and facilities

With regard to radioactive sources, MES Resolution No. 22 (2010) specifies that response plan must be supported by all necessary infrastructure elements. This is verified during inspections and approval process of plans. For the NPP, TCP -170-2009 and MES Order No. 14 (2009) require that the emergency plan provides for needed infrastructure elements. Gosatomnadzor informed the IRRS team that for the NPP these requirements will be specified in more detail in a regulation, which is in draft.

Training, drills and exercises

EPR drills, training programs and exercises are required based on MES Resolution No. 22 (2010) (for the users of radiation sources) and Law on Atomic Energy Use (for NPP). MES is responsible for monitoring of emergency exercises of the NPP and of users of radiation facilities. Resolution of the Council of Ministers No. 413 (2013) and MES Resolution No. 48 (2004) provide guidance and general requirements on exercises and trainings at national level, as well as requirements for evaluation of such exercises. However, there are currently no specific regulatory requirements for training, drills and exercises at the NPP.

For evaluating on-site exercises of users of radioactive sources, Gosatomnadzor has in place an internal procedure (Gosatomnadzor Order No. 32 (2016)). For evaluating the on-site exercises of the NPP there are not yet specific regulatory requirements in place. According to discussions held, such a document with specific regulatory requirements for training, drills and exercises at the NPP is being prepared by Gosatomnadzor and is planned for completion in 2017. Development of regulatory requirements for NPP training, drills and exercises is part of the Action Plan and is referred under Recommendation R18 in section 10.1.

Quality assurance programme

For users of radioactive sources, MES Order No. 73 /2011) contains general requirements for EPR on-site arrangements to be integrated into the quality assurance programme of the operating organization. The quality assurance program for EPR is part of the overall quality assurance program for the NPP and in general provides for quality assurance and improvement. It is addressed in TCP 294-2010, under the quality assurance program of the NPP.

All generic, incomplete or missing regulatory requirements (partly described under this sub-chapter) are referred under Recommendation R18 in section 10.1.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *According to the Law on Atomic Energy Use, the on-site emergency plan of the NPP should be approved six months prior to the date of commissioning. In addition, the Law requires practical testing of the on-site plan before commissioning. This timeline may not provide adequate time for testing and evaluation of the on-site and off-site emergency plans.*

(1)

BASIS: *GSR Part 7 para. 4.14 states that “Before commencement of operation of the facility or commencement of the activity, the regulatory body shall ensure, for all facilities and activities under regulatory control that could necessitate emergency response actions,*

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

	<i>that the on-site emergency arrangements:(a) Are integrated with those of other response organizations, as appropriate; [...]; (c) Provide, to the extent practicable, assurance of an effective response to a nuclear or radiological emergency.”</i>
S14	Suggestion: MES/Gosatomnadzor should consider ensuring that the organization of the exercise and methodology for evaluation of the exercise are in place before the on-site plan is approved.
S15	Suggestion: MES should consider exercising the on-site and off-site emergency plans together, before commissioning of the NPP, in order to ensure that on-site and off-site EPR arrangements are integrated and provide for an effective response to a nuclear or radiological emergency.

10.4. ROLE OF REGULATORY BODY DURING RESPONSE

The two regulatory bodies MES and MoH are integrated into the overall national emergency management system. Both MoH and MES have clearly allocated roles and responsibilities for emergency preparedness and response.

Responsibilities of MoH include, among others, forecasting and appraisal of the health consequences of an emergency situation. In all emergencies, including nuclear or radiological emergencies, MES has a number of roles, including the coordinating of other state bodies, as well as of local bodies and other response organizations. In addition, the Head of Gosatomnadzor is member of the Commission for Emergency Situations under the Council of Ministers, which is a coordinating body of the State System of Prevention and Mitigation of Emergencies at the republican level.

While MES roles are clearly defined as a whole, Gosatomnadzor’s role in a nuclear or radiological emergency is not well defined in legislation. The description of Gosatomnadzor’s responsibilities in Decree of the President No. 756 (2006) does not mention clear responsibilities during the response to a nuclear or radiological emergency. The Council of Ministers Resolution No. 479 (2016) on “Approval of concept of creation of system of emergency crisis centres in Republic of Belarus” defines generically the functions of Gosatomnadzor in emergency as being “provision of information and analytical support”. Based on this, Gosatomnadzor is planning for a new information and analytical emergency centre and is developing a strategy and concept of operation for the centre.

Currently, Gosatomnadzor has no internal emergency plan in place, no emergency response structure and no internal training, drills and exercise programme.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *While MES roles are clearly defined as a whole, Gosatomnadzor’s role in a nuclear or radiological emergency is not well defined or documented in legislation.*

(1)	BASIS: GSR Part 7 para. 4.7 states that “The government shall ensure that all roles and responsibilities for preparedness and response for a nuclear or radiological emergency are clearly allocated in advance among operating organizations, the regulatory body and response organizations.”
(2)	BASIS: GSR Part 7 para. 4.8 states that “The government shall ensure that response organizations, operating organizations and the regulatory body have the necessary human, financial and other resources, in view of their expected roles and responsibilities and the

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	<i>assessed hazards, to prepare for and to deal with both radiological and non-radiological consequences of a nuclear or radiological emergency [...].”</i>
R20	Recommendation: The Government should ensure that: i) clear roles and responsibilities are assigned to Gosatomnadzor in the area of emergency response and ii) these roles are consistent with and not duplicative of those established for MoH.
R21	Recommendation: Gosatomnadzor should develop its own internal EPR arrangements including: emergency plans and procedures; designation of emergency response structure; internal training, drills and exercise programs.

10.5. SUMMARY

The regulatory framework with regard to emergency preparedness and response is comprehensive and allows for appropriate regulatory control of facilities and activities using radioactive sources. MoH and MES are in the process of revising existing EPR requirements for facilities and activities and developing detailed regulatory requirements for the first Belarusian NPP, in line with the IAEA GSR Part 7.

The IRRS team recommend that MoH and MES/Gosatomnadzor should continue their efforts to update the regulatory framework for EPR in line with IAEA safety standards in the area of EPR (GSR Part 7). Special consideration should be given to adopting emergency preparedness categories and relevant criteria and guidance for implementing a graded approach for planning the response to a nuclear or radiological emergency. In addition, MES/Gosatomnadzor should ensure that an emergency classification system and operational criteria in line with IAEA GSR Part 7 are adopted by the NPP.

The IRRS team further suggests that MES should consider testing the on-site and off-site emergency plans together, in order to ensure that all EPR arrangements are integrated and provide for an effective response to a nuclear or radiological emergency.

The roles and responsibilities of Gosatomnadzor in response to a nuclear or radiological emergency are not well-defined in legislation and should be further developed and clarified. In order to make its capability effective, Gosatomnadzor should develop its own internal EPR arrangements including: emergency plans and procedures; designation of emergency response structure; internal training, drills and exercise programs.

The IRRS team believes that the above should be completed as soon as possible, preferably before the commencement of operations at the NPP.

11. ADDITIONAL AREAS

11.1. CONTROL OF MEDICAL EXPOSURES

There are 13 radiotherapy centres, 22 nuclear medicine departments, 1582 public health institutions and a few private clinics equipped with generators of ionizing radiation. There are 22 engineers in the country that perform functions of medical physicists and no recognized qualified experts as defined by IAEA standards. Dosimetry equipment is calibrated in SSDL laboratories. Belarus State Institute of Metrology is part of IAEA SSDL Network.

The MoH performs reviews and assessments of application for Sanitary Passports. Review and assessment of license applications to MES are based on the Sanitary Passports and can be performed by MES or carried out by one or two organizations that are authorized by MES to perform these reviews. The criteria for safety assessment of medical practices are established mainly in the regulations and instructions by the MoH.

MoH inspectors have post-secondary education on medicine and technical expertise is provided by an engineer. The MoH has seven regional offices that control competence and training of hospitals' staff and quality checks of equipment. MoH inspections are carried out before issuing the Sanitary Passport which is valid not more than for a three year period.

Responsibilities of the government

Issues of radiation safety of public (patients) in medical exposure are stipulated in the Law on Radiation Safety of Population. The requirements of the GSR Part 3 for medical exposure are mostly implemented by Resolutions of MoH (Sanitary Norms and Rules). However, the GSR Part 3 has not been fully implemented and this was also the conclusion of the Belarus self- assessment, which identified that development of regulation should be continued. Diagnostic reference levels (DRLs) are adopted from the old Basic Safety Standard 115 and specific release criteria after iodine therapy has not been issued, however value of 3 microSv/h is applied in practice. According to Article 15 of the Law on Radiation Safety of Population there should be dose limits for patients. For medical exposure of asymptomatic patients there is a dose limit. This is conflicting with the GSR Part 3.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *Contrary to IAEA Safety standards Article 15 of the Law on Radiation Safety of Population requires the establishment of dose limits for patients.*

(1) **BASIS:** GSR Part 3 Para 3.145 in the Scope of Medical Exposure states that “Dose limits do not apply to medical exposures.”

R22 **Recommendation:** The Government should remove the requirement to establish dose limits to patients from the law.

Currently MES authorization is dependent on MoH Regulations and Sanitary Passport. The criteria for open sources and medical equipment are regulated by the MoH. The Sanitary passport issued by MoH is required for licensing by MES. Moreover, two registrations are needed for medical equipment: one for MoH and another for MES. MoH is regulating itself as the biggest user of radiation and there is overlap

in the regulatory control of medical practices between MoH and MES. See suggestion S1 in the Section 1.3.

The education and training of medical physicists had been established by the Resolution No. 49 of Ministry of Labour and Social Protection (2013). The IRRS Team was informed that first medical physicists will graduate in 2017 at the latest. The IRRS Team was also informed that education for medical physicists should be parallel to the education of physicians, but that there is a mistake in the Resolution 49 for qualification category I, in which instead of one year working experience should be at least 3 years.

Responsibilities of the regulatory body

All medical exposures are authorized (except all beam energies of linear accelerator, see Module 5), and all licenced medical exposures are inspected (see Module 7).

New responsibilities for medical physicists are determined in the Resolution No. 49 of Ministry of Labour and Social Protection (2013). These should be taken into account when revising or establishing new instructions and regulatory guides on medical exposure.

Responsibilities of registrants and licensees

Justification of medical exposures is regulated in the Resolution No. 137 of MoH (2013). It is in line with the GSR Part 3 for symptomatic patients. Justification of medical exposure for self-referred patients and asymptomatic individuals are not specifically regulated. See recommendation R23 below.

All users of radiation sources involved in medical exposures are specialized and their responsibilities are defined. Responsibilities for medical physicists are provided in the Resolution No. 49 of Ministry of Labour (2013). These should be taken into account in organizing diagnostic and therapeutic use of radiation sources, especially in implementation of GSR Part 3 on calibration, dosimetry and quality assurance under supervision of a medical physicist.

There is a Law About Healthcare that stipulates in the Article 48 to use ethical committee in approving any biomedical research. The research is carried out under control on MoH according to medical regulations. Dose constraints are established for individuals participating in biomedical research and for carers and comforters.

Justification of medical exposure

Justification is regulated in the Resolution No. 137 of MoH (2013) and is mostly in line with the GSR Part 3. There is no referral process for asymptomatic exposure and self-referred patients. Referrals from medical doctors are inspected in MoH inspections.

Optimization of medical exposure

Design considerations

According to the Resolution 137 all medical equipment are required to have acceptance testing. Equipment has to fulfil applicable standards. For shielding calculations MoH had developed guidelines that were based on fixed room sizes and constructions, which is not an optimal method for design of facilities. IRRS team was informed that Sanitary guidelines will be revised to be more performance based than prescriptive.

Operational considerations

The regulations do not require to use medical physicist in optimization of medical exposures that is conflicting with the GSR Part 3 (see recommendation R23). However, education of medical physicists has been established and responsibilities for medical physicists are determined in the Resolution 49 of Ministry of Labour, 2013.

Radiation safety and dosimetry departments in big hospitals carry out quality control in their region. For licensed X-ray equipment manufacturer's maintenance is required. MES inspections verify that appropriate medical radiological equipment and radiopharmaceuticals are used and appropriate techniques and parameters to deliver a medical exposure of the patient that is minimum necessary to fulfil the clinical purpose of the procedure are established. The IRRS Team observed that the use of diagnostic reference levels (DRLs) was not yet applied in diagnostic radiology, but in nuclear medicine comparison to DRLs was carried out. See below paragraph "*Diagnostic reference levels*".

IRRS Team was informed that paediatric patients are imaged and treated in special hospitals in which there are specific paediatric procedures. Exposure of a breast-fed infant as a result of a female patient undergoing a radiological procedure with radiopharmaceuticals and exposure of the foetus were specially regulated to protect the infant and the fetus. Optimization process was verified by sanitary inspections.

Calibration

The requirements for dosimetry and calibration of equipment are defined in the Resolution 137 including the traceability to standards dosimetry laboratory and further technical guidance is performed by MoH.

MoH has published the "Technical code of established practice TKP 532-2014 (02040); Metrological provision of therapy medical apparatuses equipped with ionizing radiation sources" in which two IAEA Code of Practice for dosimetry have been mixed: the TRS 398 has been applied for photon beam dosimetry, but the TRS 277 for electron beam dosimetry. The first one is for absorbed dose to water and the second one is based on air kerma. In case of using a calibration factor for absorbed dose to water in electron beam calibrations according to the TRS 277 there is a systematic error in all patient treatments with electron beams. The error is about 1%. The issue was discussed and the IRRS team was informed that all hospitals are verified that they use IAEA TRS 398 also for electron beam dosimetry. IRRS Team was informed that mission correction actions were taken to update the Technical code.

Dosimetry of patients

According to Resolution 213 dose limit of 1 mSv applies to medical exposure of asymptomatic individuals. This is conflicting with the GSR Part 3.

All patient doses were documented and sent to the registry of The Republican Scientific Practical Center of Radiation Medicine and Human Ecology in MoH.

Diagnostic reference levels

Diagnostic reference levels (DRLs) are established in the Resolution 213 by MoH. DRLs are adopted according to the BSS 115. However, the concept of DRLs recommended by ICRP and used in the GSR Part 3 is such that medical facilities compare their average patient doses to the national DRLs established by the regulatory body. There is a need to develop national DRLs that are based on dose surveys in Republic of Belarus. The Republican Scientific Practical Center of Radiation Medicine and Human Ecology in MoH collects patient doses nationally. The patient dose registry covers all procedures. The IRRS Team advised MoH to contact IAEA to get more practical guidance in establishing own DRLs.

Quality assurance for medical exposures

MoH has established comprehensive guidelines for quality assurance in medical use of ionizing radiation. Implementation of guidelines is inspected.

Dose constraints

Dose constraints are established in the MoH Resolution 213 for careers and comforters and for biomedical research.

Pregnant women and breast feeding women

The Resolution 137 covers protection of pregnant women and breast feeding women and requirements are in line with the GSR Part 3.

Release of patients

The criteria and guidance for releasing patients after radionuclide therapy or permanent implantation of sealed sources has been established only generally that carers and comforters have a dose constraint of 5 mSv and members of the public 1 mSv. There should be more guidance for hospitals on practical release criteria for measurements. It was required that measurements are carried out before releasing the patient, but in absence of a specific criteria hospitals used an old criteria of 3 microSv/h that is far too low and causes too long hospitalization. The IRRS team was informed that the problem had been discussed already and new criteria will be sorted out by learning from experience of other countries.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
<p>Observation: <i>The regulations do not require that the medical physicists be involved with optimization of medical exposures.</i></p>	
(1)	<p>BASIS: GSR Part 3 Requirement 38 states that: “Registrants and licensees and radiological medical practitioners shall ensure that protection and safety is optimized for each medical exposure .”</p>
(2)	<p>BASIS: GSR Part 3 Para 3.166 states that: “in accordance with para. 3.153(d) and (e), the medical physicist shall ensure that:</p> <p>(a) All sources giving rise to medical exposure are calibrated in terms of appropriate quantities using internationally accepted or nationally accepted protocols;</p> <p>(b) Calibrations are carried out at the time of commissioning a unit prior to clinical use, after any maintenance procedure that could affect the dosimetry and at intervals approved by the regulatory body;</p> <p>(c) Calibrations of radiotherapy units are subject to independent verification prior to clinical use;</p> <p>(d) Calibration of all dosimeters used for dosimetry of patients and for the calibration of sources is traceable to a standards dosimetry laboratory.”</p>
(3)	<p>BASIS: GSR Part 3 Para 3.167 states that: “registrants and licensees shall ensure that dosimetry of patients is performed and documented by or under the supervision of a medical physicist, using calibrated dosimeters and following internationally accepted or nationally accepted protocols, including dosimetry to determine the following:</p> <p>(a) For diagnostic medical exposures, typical doses to patients for common radiological procedures;</p> <p>(b) For image guided interventional procedures, typical doses to patients;”</p>
<p>Observation: <i>Referrals for asymptomatic exposure and self-referred patients are not explicitly covered by the regulations as required by IAEA safety standards.</i></p>	

(4)	<p>BASIS: GSR Part 3 Requirement 36, para 3.150 states that “Registrants and licensees shall ensure that no patient, whether symptomatic or asymptomatic, undergoes a medical exposure unless:</p> <p>(a) the radiological procedure has been requested by a referring medical practitioner and information on the clinical context has been provided, or it is part of an approved health screening programme;</p> <p>(b) The medical exposure has been justified through consultation between the radiological medical practitioner and the referring medical practitioner, as appropriate, or it is part of an approved health screening programme;</p> <p>(c) A radiological medical practitioner has assumed responsibility for protection and safety in the planning and delivery of the medical exposure as specified in para. 3.153(a);</p> <p>(d) The patient or the patient’s legal authorized representative has been informed, as appropriate, of the expected diagnostic or therapeutic benefits of the radiological procedure as well as the radiation risks.”</p>
<p>Observation: <i>Dose limit of 1 mSv applies to medical exposure of asymptomatic individuals.</i></p>	
(5)	<p>BASIS: GSR Part 3 Para 3.145 in the Scope of Medical Exposure states that: “Dose limits do not apply to medical exposures.”</p>
<p>Observation: <i>The specific criteria for releasing patients after I-131 therapy is missing.</i></p>	
(6)	<p>BASIS: GSR Part 3 Requirement 40 states that “Registrants and licensees shall ensure that there are arrangements in place to ensure appropriate radiation protection for members of the public and for family members before a patient is released following radionuclide therapy.”...“(a) The activity of radionuclides in the patient is such that doses that could be received by members of the public and family members would be in compliance with the requirements set by the relevant authorities (para. 3.149(b));”</p>
R23	<p>Recommendation: The MoH should revise the regulations to</p> <ul style="list-style-type: none"> • include a requirement <ul style="list-style-type: none"> ○ for using medical physicists in optimizing medical exposures and ○ for a referral process for asymptomatic exposure and self-referred patients; • remove dose limits for medical exposures and • establish specific criteria for releasing patients after I-131 therapy.

Unintended and accidental medical exposures

Hospitals are required to report on accidents to two ministries: MoH and MES (see recommendation R2 in Section 1.5) on overlapping requirements. No reports were received for at least three years. IRRS Team was informed that it is not clear what unintended dose is even though it is in the MoH regulations. The reporting system was established more for reporting on severe accidents and as an example IRRS team was informed that a reporting criteria in nuclear medicine is an effective dose for patient exceeding 200 mSv.

Reviews and records

Radiological reviews are performed on regular base at the hospitals and participation to the IAEA dosimetry audit every second year is required by MoH for all external radiotherapy equipment. Results from 2016 were considered satisfactory by IAEA.

Records for medical exposure are kept in line with the GSR Part 3.

11.2. OCCUPATIONAL RADIATION PROTECTION

11.2.1. Legal and regulatory framework

MES/Goatomnadzor, MoH and the Government of Belarus have developed many regulations that are consistent with IAEA safety standards. Specifically, Sanitary Norms and Rules (SNR), No. 213 dated 2012, and No137 dated 2013; and the Law of the Republic of Belarus dated January 1998 contain the majority of the requirements related to occupational radiation protection. A fourth document, the Decree of the MoH No. 39 issued in 2010 “On approval of Sanitary Standards, Sanitary-Hygienic Standards “Hygienic Requirements for Design and Operation of Nuclear Power Plants” describes the radiation protection program requirements related to the design and operation of NPP’s. These requirements are well described and generally consistent with IAEA Safety Standards.

The Sanitary Norms and Rules documents address the three basic principles of radiation protection (justification, optimisation and limitation) and include a method for implementation of the requirements. Planned exposures limits (occupational, medical and emergency) are clearly defined. The need for developing a radiation protection program for each activity and before each commissioning is described. A health survey of occupational workers is also discussed. The established dose limits are in full compliance with IAEA Safety Standards as described in Appendix 1 to Sanitary Norms and Rules No. 213 Appendix 1 and Decree No. 39, Annex 6 which provides limits for the emergency workers.

11.2.2. General responsibilities of registrants, licensees and employers

Responsibilities of registrants, licensees and employers (operators) concerning the radiation protection and safety of the workplace are described in the regulations. The “operators” shall ensure that protection and safety is optimized and that the dose limits for occupational exposure are not exceeded. Obligations of the employers and licensees regarding the training of workers, provisions for individual limits and for monitoring are prescribed by the regulations. The regulations require that formal radiation protection programmes be established that includes the assessment and recording of occupational exposure and workers’ health surveillance. Protective measures for pregnant and breast-feeding women have to be taken when the employer is informed about the pregnancy or breast-feeding. The IRRS Team noted that there was no requirement established concerning the need for employers to cooperate, for example, when contractors are recruited for operations in workplace where a risk for exposure to ionizing radiations exists.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *Worker doses are being tracked, however, regulatory requirements regarding safety and radiation protection for external workers are not in full compliance with IAEA safety standards.*

(1)	BASIS: GSR Part 3, Req.23 states that <i>“Employers and registrants and licensees shall cooperate to the extent necessary for compliance by all responsible parties with the requirements for protection and safety”</i>
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RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

S16	Suggestion: The regulatory bodies should consider updating requirements needed to provide adequate safety and radiation protection of external workers.
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11.2.3. General responsibilities of workers

Art.36 of the Sanitary Norms and Rules No. 137 describes the requirements for the workers (“personnel”) concerning the knowledge of, and the compliance with, the radiation safety and job specific instructions, on the use of the individual dosimetry tools and means for individual protection. Workers have also to inform their supervision immediately regarding any faults or failures in operations or monitoring devices.

11.2.4. Requirements for radiation protection programmes

Article 11 of the Law of the Republic of Belarus on Radiation Safety of Population describes the criteria to be considered for the assessment of the radiation safety status. These criteria are partially related to the content of the radiation protection programme to be established as condition for getting a licence. Paragraph 56 of Sanitary Norms and Rules No. 137 describe the documentation to be established at the design step of a new activity; this documentation needs to address, among others, the characteristics of the radiation sources, the provisions for equipment, and general means for ensuring radiation protection and safety of the workers and of the population.

Individual monitoring and workplace monitoring, definition and characteristics of supervised areas and of sanitary and protection areas, health surveillance programmes, recording of individual doses, measures for emergency situations are other examples of issues addressed by the regulations concerning the radiation protection programme.

Article 41 of the Law on the Atomic Energy on “The rights of personnel employed by the operator to social securities” states, in part, that “*Personnel employed by the operator bears the right to social securities for harmful impact of ionizing radiation on their health and for additional risk factors, which are to be provided at the expense of the operator in accordance with the legislation establishing amounts and order of provision of such securities, as well as sources of their financing.*” The IRRS Team determined that the term “additional risks” may lead to some confusion and as a result, Article 41 was not consistent with GSR Part 3.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: *Article 41 of the Law on the Atomic Energy is not compliant with the IAEA Standards concerning the conditions of service.*

(1)

BASIS: *GSR Part 3, Req.27 states that: “Employers, registrants and licensees shall not offer benefits as substitutes for measures for protection and safety.”*

R24

Recommendation: **The Government should analyse and make a decision on how to adapt the legislation in order to comply with the IAEA safety standards in the area of conditions of services.**

11.2.5. Monitoring programmes and technical services

Belarus has developed a national dose records registry (“State dosimetric register”) which is managed by the MoH at the regional level. Dosimeters are provided by the MoH and some accredited services. The monitoring period is quarterly and the legal dosimetry uses TLD technology. For some specific operations or activities, individual electronic dosimeters are provided.

For 2015, the total monitored workers amounts was 11,325. The highest individual effective dose was 9.38 mSv.

Although the registry complied with the actual format of the Agency Standards, it is not easy to access the registry and the monitoring period did not provide timely information to investigate potential anomalies. The IRRS team noted that technology could be applied to assist with tracking and monitoring of occupational doses.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>The actual format of the National Dose Records Register doesn't allow for an easy and efficient use of the available data for radiation protection issues.</i>	
(1)	BASIS: GSR Part 1, Req.35 states that “ <i>The regulatory body shall make provision for establishing, maintaining and retrieving adequate records relating to the safety of facilities and activities</i> ”.
(2)	BASIS : GSR Part 3, Req.20 , para. 3.73. states that “ <i>The regulatory body shall be responsible, as appropriate, for:</i> <i>d) Review of periodic reports on occupational exposure (including results of monitoring programmes and dose assessments) submitted by employers, registrants and licensees;</i> ”
S17	Suggestion: The MoH should consider improving the content as well as the access, as appropriate, to the national register of individual dose records for the occupationally exposed workers.

People younger than 16 years old may not be occupationally exposed workers and students between 16 and 18 years old have to comply with lower value of the legal limits. In addition, the Special measures are taken concerning pregnant and breast-feeding women. When notified on pregnancy or breast-feeding, the working conditions have to be such as ensuring a level of protection for persons of the population.

For women up to 45 years old working with ionizing radiation sources, additional restrictions shall be imposed in order to ensure that the doses to the abdomen doesn't exceed 1 mSv per month.

During a visit to the Republican Centre of Epidemiology and Public Health of the Ministry of Health, the team was informed that as preventive measure, occupationally exposed women up to 45 years-old have in addition to the legal individual dosimeter a second dosimeter devoted to the measure of the potential dose to the abdomen.

The team had also the opportunity to visit the “Joint Institute for Power and Nuclear Researches” in JIPNR-Sosny. This visit was combined with an announced inspection by Gosatomnadzor inspectors. The IRRS team discussed the inspection process and observed the inspection of the new fuel storage facility.

The dose rates were about 100 nSv/h of background radiation and about 4-5 µSv/h in the storage area. The IRRS team also observed that the inspectors were not fully prepared for this inspection since that were not wearing dosimetry and did not have any devices to independently measure dose at the facility. This observation reflects a potential weakness regarding operational safety culture and highlights the need to implement the safety culture action plan described in Section 4 (see recommendation R8).

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
<p>Observation: <i>Some inspectors were observed not using individual dosimetry. And this indicates a potential concern with the safety culture. In addition inspectors do not use measuring devices during inspections</i></p>	
(1)	<p>BASIS: Code of Conduct on the Safety and Security of Radioactive Sources par. 22 (d) states that <i>“Every State should ensure that its regulatory body promotes the establishment of a safety culture among all individuals and in all bodies involved in the management of radioactive sources.”</i></p>
(2)	<p>BASIS: GSR Part 3 para. 3.100 states that <i>“For any worker who usually works in a controlled area, or who occasionally works in a controlled area and may receive a significant dose from occupational exposure, individual monitoring shall be undertaken where appropriate, adequate and feasible.”</i></p>
S18	<p>Suggestion: MES and MoH should consider stressing the need for use of personal dosimetry with all inspectors. MES and MoH should consider evaluation, procurement, and use of measuring devices to support independent field measurements by inspectors.</p>

11.2.6. Qualified Experts and Radiation Protection Officers

Article 24 of the Sanitary Norms and Rules No.137 states that “The user of IRS is obliged to exercise control of radiation safety assurance on the radiation facility in accordance with Article12 of the Law of the Republic of Belarus “On Radiation Safety of Population”. Moreover, Article 24 says that “the user of IRS is obliged to assign a person who is authorized to exercise control of radiation assurance, as well as to assign persons, who are responsible for radiation control, registration, storage and delivery of ionizing radiation sources, arrangement for collection, storage and delivery of radioactive substances”. This corresponds to the main functions of the Radiation Protection Officer as defined in the IAEA Glossary 2007 Edition but this expression is not used in the Belarussian regulations.

Currently, no official process for recognition of such “radiation safety specialists” and, moreover, Belarussian regulations don’t address the function of “Qualified Expert” as defined in the IAEA Glossary 2007 Edition.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
<p>Observation: <i>There is no process for the recognition of Radiation specialists such as qualified experts.</i></p>	

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 Req.11, para. 2.34 states that “As an essential element of the national policy and strategy for safety, the necessary professional training for maintaining the competence of a sufficient number of suitably qualified and experienced staff shall be made available.”
(2)	BASIS: GSR Part 3, Req.2, para. 2.21 states that: “The government shall ensure that requirements are established for: (a) Education, training, qualification and competence in protection and safety of all persons engaged in activities relevant to protection and safety; (b) The formal recognition of qualified experts; (c) The competence of organizations that have responsibilities relating to protection and safety.”
(3)	BASIS: GSR Part 3 Req.3, para. 2.32 states that: “The regulatory body shall ensure the application of the requirements for education, training, qualification and competence in protection and safety of all persons engaged in activities relevant to protection and safety.”
S19	Suggestion: The Government should consider establishing appropriate requirements for the qualification, and make sufficient arrangements for the training and the recognition of radiation safety specialists (i.e., radiation protection officers, qualified experts) in order to ensure a reliable availability of such specialists.

11.3. CONTROL OF RADIOACTIVE DISCHARGES, MATERIALS FOR CLEARANCE

Exemption levels for radioactive materials are described in the Section 5.5 (see recommendation R13). The radioactive material clearance criteria are established in the Attachment 4 of MoH hygienic regulation No. 213 (2012) “Criteria for assessing radiation exposure”. The established criteria and clearance levels correspond to IAEA requirements (Schedule I, GSR, Part 3). According to MoH Sanitary Norms and Rules No. 137 (2013) “Requirements on provisions of Radiation Safety of Personnel and Population at Accomplishing the Activity on Atomic Energy Use and Ionizing Radiation Sources Use” the MoH is responsible for issuing the sanitary-hygienic conclusion. This conclusion approves the movement and use of radioactive materials outside of a site/facility and is based on the absence of removable contamination and also the radio-nuclide content of the materials. There is no MES/Gosatombdзор’s procedure that describes requirements to remove radioactive materials from the site/facility.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>The procedure for clearance of radioactive materials from regulatory control has not been established. Development of a clearance procedure is part of the action plan.</i>	
(1)	BASIS: GSR Part 3, Requirement 8, para. 3.12 states that: “The regulatory body shall approve which sources, including materials and objects, within notified or authorized practices may be cleared from regulatory control, using as the basis for such approval the criteria for clearance specified in Schedule I or any clearance levels specified by the regulatory body on the basis of these criteria. By means of this approval, the regulatory

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

	<i>body shall ensure that sources that have been cleared from regulatory control do not again become subject to the requirements for notification, registration or licensing unless it so specifies.”</i>
(2)	BASIS: GSR Part 1, para. 4.26 states that: <i>“The regulatory process shall be a formal process that is based on specified policies, principles and associated criteria, and that follows specified procedures in the management system.”</i>
S20	Suggestion: MES/Gosatomnadzor should consider establishing a procedure for clearance of radioactive materials.

According to the MoH Sanitary Norms and Rules No.137 (2013) “Requirements on provisions of Radiation Safety of Personnel and Population at Accomplishing the Activity on Atomic Energy Use and Ionizing Radiation Sources Use” MoH is responsible for establishment of discharge limits for the facilities. Facility limits apply when the dose from atmospheric discharges is projected to exceed 0.01 mSv/year.

The MoH hygienic requirements for the design and operation of NPPs establish criteria for discharges limits: for NPP operation it is 0.1 mSv/year (0.05 mSv/year for discharges, and 0.05 mSv/year for liquid releases). Attachment 3 of the regulation establishes radionuclide limits for NPP discharge.

Article 11 of the Law on Radiation Safety of Population states that users of ionizing radiation sources must have a radiation-hygienic passport. This passport is developed by the user and is approved by the MoH state sanitary supervision authority in the area of radiation safety. Requirements for the radiation-hygienic passport content are established by Decree of the Council of Ministers No.797. According to these requirements authorised person includes into the passport information on the discharges that were made during the last 5 years or from the date of the discharges. This passport is provided annually to MES/Gosatomnadzor by the facilities of 1 and 2 category of potential radiation danger and can be required by MES/Gosatomnadzor for the other facilities.

IRRS team was not provided with the evidence that authorised limits for discharges are established for the facilities other than NPPs.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: <i>The authorized limits for NPP discharges and dose criteria for radioactive waste management facilities discharges are established in MoH regulations. There is no procedure within the licensing process to establish or approve authorized limits for discharges for facilities other than NPPs.</i>	
(1)	BASIS: GSR Part 3 Requirement 29: Responsibilities of the government and the regulatory body specific to public exposure, states that: <i>“Para 3.123. The regulatory body shall establish or approve operational limits and conditions relating to public exposure, including authorized limits for discharges. These operational limits and conditions: ... (b) Shall correspond to doses below the dose limits with account taken of the results of optimization of protection and safety;...”</i>
(2)	BASIS: GSR Part 3 Requirement 31, states that: <i>“3.132. Registrants and licensees in applying for an authorization for discharges, as appropriate:</i>

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

	<p><i>(a) Shall determine the characteristics and activity of the material to be discharged, and the possible points and methods of discharge;</i></p> <p><i>(b) Shall determine by an appropriate pre-operational study all significant exposure pathways by which discharged radionuclides could give rise to exposure of members of the public;</i></p> <p><i>(c) Shall assess the doses to the representative person due to the planned discharges;</i></p> <p><i>(d) Shall consider the radiological environmental impacts in an integrated manner with features of the system of protection and safety, as required by the regulatory body;</i></p> <p><i>(e) Shall submit to the regulatory body the findings of (a)–(d) above as an input to the establishment by the regulatory body, in accordance with para. 3.123, of authorized limits on discharges and conditions for their implementation.”</i></p>
R25	<p>Recommendation: MES should revise licensing process for facilities other than NPP with provisions for discharge limits authorization as appropriate.</p>

11.4. SUMMARY

Medical exposures are stipulated in the Law on Radiation Safety of Population. Contrary to IAEA Safety standards, Article 15 of the Law on Radiation Safety of Population requires the establishment of dose limits for patients. The requirements of the GSR Part 3 for medical exposure are mostly implemented by Resolutions of MoH (Sanitary Norms and Rules). However, diagnostic reference levels (DRLs) are adopted from the old BSS 115 and specific release criteria after iodine therapy have not been issued. Moreover, for medical exposure of asymptomatic patients there is a dose limit, which is conflicting with the GSR Part 3. New responsibilities for medical physicists are determined in the Resolution 49 of Ministry of Labour and Social Protection, 2013. These should be taken into account when revising or establishing new instructions and regulatory guides on medical exposure.

There is a high level of compliance of the Belarusian regulations with the IAEA safety standards concerning the occupational exposure. Two actions concerning the regulatory authority (on condition of services) and the operators (cooperation) and three suggestions are made in order to still increase this level.

General requirements for the clearance and discharges of radioactive material are established in compliance with IAEA requirements. These requirements should be fully implemented by including the appropriate actions into the MES/Gosatombadzor authorization process.

APPENDIX 1 – LIST OF PARTICIPANTS

TIIPPANA Petteri	Radiation and Nuclear Safety Authority (STUK)	Petteri.Tiippana@stuk.fi
LORSON Raymond	U.S. Nuclear Regulatory Commission (NRC)	Raymond.Lorson@nrc.gov
MOSES Colin	Canadian Nuclear Safety Commission (CNSC)	colin.moses@canada.ca
MELKUMYAN Anna	Armenian Nuclear Regulatory Authority	a.melkumyan@anra.am
BLY Ritva	Radiation and Nuclear Safety Authority (STUK)	Ritva.Bly@stuk.fi
OHLEN Elisabeth	Swedish Radiation Safety Authority (SSM)	elisabeth.ohlen@ssm.se
RYBALKA Natalia	State Nuclear Regulatory Authority of Ukraine	rybalko@hq.snrc.gov.ua
BOKOV Dmitry	Rostekhnadzor	D.Bokov@gosnadzor.ru
BOSNJAK Jovica	State Regulatory Agency for Radiation and Nuclear Safety	jovica.bosnjak@darns.gov.ba
VLAHOV Nikolay	Bulgarian Nuclear Regulatory Authority	N.Vlahov@bnra.bg
PETOFI Gabor	Hungarian Atomic Energy Authority	petofi@haea.gov.hu
TIPEK Zdenek	Temelin Nuclear Power Plant	zdenek.tipek@sujb.cz
KAPRALOV Evgeny	Federal State Unitary Enterprise VO "Safety"	evg_ii@mail.ru
HU Liguang	National Nuclear Safety Administration (NNSA)	hu.liguang@mep.gov.cn
STERN Warren	Brookhaven Laboratory, U.S.	warren_stern@yahoo.com
DEBOODT Pascal	Nuclear Research Centre	pdeboodt@sckcen.be
OBSERVERS		
HULSMANS Mark	European Commission (EC)	Mark.HULSMANS@ec.europa.eu
IAEA STAFF		
MAKAROVSKA Olga	Division of Radiation, Transport and Waste Safety	O.Makarovska@iaea.org
KOBETZ Tim	Division of Nuclear Installation Safety	t.kobetz@iaea.org
KENNEDY William	Division of Nuclear Installation Safety	W.Kennedy@iaea.org
BACIU Adriana	Incident and Emergency Centre	A.C.Baciu@iaea.org
Tom Alexander	Division of Radiation, Transport and Waste Safety	T.Alexander@iaea.org
LIAISON OFFICER		
TRAFIMCHIK Zoya	Gosatomnadzor	Trafimchik@Gosatomnadzor.gov.by

APPENDIX II MISSION PROGRAMME

Belarus IRRS 2016 First Week

Time	SAT 01.10	SUN 02.10	MON 03.10	TUE 04.10	WED 05.10	THU 06.10	FRI 07.10	SAT 08.10	SUN 09.10	Time														
8:00-9:00	Arrival of Team Members					Briefing from the site visits				8:00-9:00														
9:00-12:00			Entrance Meeting	Interviews (parralel discussions)	Interviews	Site Visits 8:00	Follow-up interviews	Follow-up Interviews	DTC writes introductory parts	9:00-12:00														
12:00-13:00			Standing lunch	Standing lunch	Standing lunch		Standing lunch	Standing lunch		12:00-13:00														
13:00-14:00		<ul style="list-style-type: none"> • Initial Team Meeting • TL Opening remarks • IAEA Introduction • Self-introduction of all attendees • IRRS Process, (IAEA) • Schedule (TL, IAEA) • Presentations of first impression from all team members • Administrative arrangements (Liaison Officer, IAEA) 	Interviews (parralel discussions)	Interviews	TBD, Visit Ministry of Energy: TL, DTL, TC, M1,2,3 reviewers	Writing first draft of preliminary findings R/S/GP	Report preparation	Report preparation	Team members draft the report Finalisation of the recommendations, suggestions and good practices	Team rest day, Social Tour	13:00-14:00													
14:00-15:00											Policy issues discussion	14:00-15:00												
15:00-16:00											Daily Team Meeting for report preparation: finalization of observations, basis, R/S/GP	Daily Team Meeting for report preparation: finalization of observations, basis, R/S/GP	Daily Team Meeting: Discussion of findings	15:00 - 16:00										
16:00-17:00																		Daily Team Meeting for report preparation: finalization of observations, basis, R/S/GP	Daily Team Meeting for report preparation: finalization of observations, basis, R/S/GP	Daily Team Meeting: Discussion of findings	16:00-17:00			
17:00-18:00																								17:00-18:00
18:00-20:00		Informal dinner	Team Dinner	Dinner (D)	D	NPP sub-team	D	D			D	18:00-19:00												

20:00-24:00			Report Writing (RW)	R W	departs to Ostrovets	RW	RW	RW	TL, DTL, TC edit the report		20:00-24:00
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Belarus IRRS 2016 Second Week

Time	MON 10.10		TUE 11.10		WED 12.10		THU 13.10	FRI 14.10	Time	
8:00 -9:00			Finalization of the draft Report						8:00-9:00	
9:00-10:00	Individual discussions of report sections with counterparts	Report writing	Submission of the Draft Report to the Host		Gosatonnadzor reviews the Report Draft	TL, DTL, TC finalize Executive Summary	Discussion with Host on findings if required	Exit Meeting	9:00-10:00	
10:00-11:00			TL, DTL, TC draft Executive Summary	Gosatonnadzor reviews the Report Draft						10:00-11:00
11:00-12:00										
12:00-13:00	Standing lunch		Standing lunch		Written Gosatonnadzor's comments are submitted to the Team		TL finalises exit presentation	Standing Lunch	Lunch	12:00-13:00
13:00-15:00	Draft Report cross-reading		TL, DTL, TC prepare exit presentation	Gosatonnadzor reviews the Report Draft	TC and AF draft the press release		Team meeting for finalisation of the Report.	Submission of the Final Draft Report to Gosatonnadzor	13:00-15:00	
15:00-17:00					IRRS Team reviews Gosatonnadzor's comments					Briefing of the IAEA official (TBD) Finalisation of the press release
17:00-18:00	TL, DTL, TC and „editors“ finalise the report text						Team Members Departure	17:00-18:00		
18:00-20:00	Dinner		Dinner						18:00-20:00	
20:00-24:00	TL, DTL, TC and „editors“ finalise the report text		TL, DTL, TC and „editors“ finalise the report text							20:00-24:00

BELARUS IRRS MISSION PROGRAMME 2 – 14 October 2016

IRRS MISSION PROGRAMME	
2 October Sunday	
IRRS Initial IRRS Review Team Meeting	
13:00 - 19:00	Opening remarks by the IRRS Team Leader (Mr Petteri Tiippana) Introduction by IAEA Self-introduction of all attendees IRRS Process (IAEA) Report writing (IAEA) Schedule (TL, IAEA) First impression from team members arising from the Advanced Reference Material (ARM) (all team members): Presentations Administrative arrangements (Gosatomnadzor IRRS Liaison Officer, IAEA): Detailed Mission Programme
17:00 -18:00	Groups prepare for interviews
3 October Monday	
IRRS Entrance Meeting	
09:00 – 12:00	09:00 Arrival, registration, 09:30 Welcoming Address 09:45 The IRRS programme 10:00 IRRS Team Leader – Expectations for the Mission and introduction of the IRRS Team and the counterparts. 10:30 Gosatomnadzor presentation – Regulatory Overview, SARIS results (strength, challenges, action plan) 11:00 Questions
12:00 – 13:00	Lunch
13:00 – 17:00	Interviews and Discussions with Counterparts (parallel discussions)
17:00 - 18:00	Daily IRRS Review Team meeting
4 October Tuesday,	
Daily Discussions / Interviews	
09:00 – 17:00	Interviews and discussions with counterparts (parallel discussions)
12:00 – 13:00	Lunch

IRRS MISSION PROGRAMME	
13:00 – 13:30	Visits Ministries TL, TC
17:00 – 18:00	Daily IRRS Review Team meeting
NPP inspectors and team members move to Ostrovets	
5 October Wednesday	
Daily Discussions / Interviews	
09:00 – 17:00	Interviews and discussions with counterparts for all modules
08:00 – 16:00	Site Visits
12:00 – 13:00	Lunch
13:00 – 17:00	Writing first draft of preliminary findings (Rs, Ss, GPs)
17:00 – 18:00	Daily IRRS Review Team meeting: discussion of findings (recommendation, suggestions and good practices)
6 October Thursday	
Daily Discussions / Interviews	
08:00 – 09:00	Briefing from the site visits
09:00 – 17:00	Follow-up Interviews as needed Report preparation
17:00 – 18:00	Daily IRRS Review Team Meeting: recommendation, suggestions and good practices
7 October Friday	
Daily Discussions / Interviews	
09:00 – 14:00	Follow-up Interviews as needed Report preparation
14:00 – 16:00	Policy issue discussion in parallel sessions if needed.
16:00 – 18:00	Report preparation: finalize observations, basis, recommendations, suggestions and good practices
8 October Saturday	
Daily Discussions/ Interviews (if needed)	
09:00 – 17:00	Team members write draft report. Finalize Observations, Recommendations and Good Practices.
9 October Sunday	
Team rest day + cultural events	
10 October Monday	
Daily Discussions	
09:00 – 12:00	Individual discussions of the draft Report sections with the Counterparts Report writing
12:00 - 13:00	Lunch
13:00 – 18:00	Cross reading and draft Report editing
11 October Tuesday	
Daily Discussions	
08:00 – 10:00	Finalize report text and submit to the Host
10:00 –	Draft to be sent to Gosatomnadzor for review

IRRS MISSION PROGRAMME	
12:00 - 13:00	Lunch
13:00 – 18:00	Exit presentations preparation
12 October Wednesday	
Daily Discussions	
09:00 – 15:00	Gosatomnadzor review the draft
09:00 – 15:00	Executive summary and exit presentation finalization Press release draft preparation
15:00 – 17:00	IRRS Team to review Host comments
13 October Thursday	
09:00 - 12:00	Discussion with the counterparts on findings.
12:00 - 13:00	Lunch
13:00 -	Report finalization by the team and handover the report to Gosatomnadzor
17:00 – 18:00	Briefing of the IAEA Official and press release finalization
14 October Friday	
09:00 – 11:00	Government official opening remarks
	Main findings of the IRRS mission (Team Leader)
	Remarks by Gosatomnadzor in response to the Mission findings.
	IAEA Official (TBD): Closing remarks
	Move to press conference

APPENDIX III SITE VISITS

№	Object
1	RUE “Belarusian NPP” <i>Grodno district, Ostrovets</i>
2	SSI “Joint Institute for Power and Nuclear Researches-Sosny” of National Academy of Sciences of Belarus <i>Minsk</i>
3	CJSC “Isotope Technologies” <i>Minsk district</i>
4	Municipal Unitary Enterprise «EKORES» <i>Minsk</i>
5	SI “Republican clinical hospital of medical rehabilitation” <i>Minsk district</i>
6	Scientific Production Unitary Enterprise "ATOMTEX" OJSC “ Minsk Research Institute of Instrument Engineering” <i>Minsk</i>

APPENDIX IV LIST OF COUNTERPARTS

RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT	
Colin Moses Anna Melkumyan	O.M Lugovskaya (Gosatomnadzor) G.A Astashko (Gosatomnadzor) Y.E Kryuk (Gosatomnadzor) N.V Danilenko (Gosatomnadzor)
GLOBAL SAFETY REGIME	
Colin Moses Anna Melkumyan	O.M Lugovskaya (Gosatomnadzor) Z.I Trafimchik (Gosatomnadzor) O.V Sobolev (Gosatomnadzor)
RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY	
Colin Moses Anna Melkumyan	O.M Lugovskaya (Gosatomnadzor) S.V Drobot (Gosatomnadzor) G.A Astashko (Gosatomnadzor) Z.I Trafimchik. (Gosatomnadzor) S.V. Vorsina (Gosatomnadzor)
MANAGEMENT SYSTEM	
Elisabeth Öhlen	Z.I Trafimchik. (Gosatomnadzor) T.A Bosenko (Gosatomnadzor) V.I. Semenikhina (Gosatomnadzor)
AUTHORIZATION	
Dmitry Bokov Jovica Bosnjak Natalia Rybalka Nick Vlahov Gábor Petőfi William Kennedy	N.V Gorelik(Gosatomnadzor) Z.G Kronova (Gosatomnadzor). N.V Gorelik(Gosatomnadzor) I.A.Silitskaya (Gosatomnadzor)
REVIEW AND ASSESSMENT	
Dmitry Bokov Jovica Bosnjak	I.V Tkachonok (Gosatomnadzor) N.M Mikhailov (Gosatomnadzor) S.S Tretyakevich (Gosatomnadzor)

Natalia Rybalka Nick Vlahov Gábor Petőfi William Kennedy	
INSPECTION	
Dmitry Bokov Jovica Bosnjak Natalia Rybalka Evgeny Kapralov Zdenek Tipek William Kennedy	G.A Astashko (Gosatomnadzor) I.V Tkachonok (Gosatomnadzor) N.M Mikhailov (Gosatomnadzor) S.V: Drobot (Gosatomnadzor) S.A Malykhina (Gosatomnadzor)
ENFORCEMENT	
Dmitry Bokov Jovica Bosnjak Natalia Rybalka Evgeny Kapralov Zdenek Tipek William Kennedy	G.A Astashko (Gosatomnadzor) K.A Koroliova (Gosatomnadzor) I.V Tkachonok (Gosatomnadzor) S.A Malykhina (Gosatomnadzor)
REGULATIONS AND GUIDES	
Dmitry Bokov Jovica Bosnjak Natalia Rybalka Nick Vlahov Gábor Petőfi William Kennedy Liguang HU	G.A Astashko (Gosatomnadzor) S.A Malykhina (Gosatomnadzor) L.S. Ivaschekina (Gosatomnadzor) K.A Koroliova (Gosatomnadzor)
EMERGENCY PREPAREDNESS AND RESPONSE	
Warren Stern	V.S. Antonova (Gosatomnadzor) M.V Mazurenko (Gosatomnadzor)

Adriana Baciú	
ADDITIONAL AREAS - Medical Exposure, Discharges, Clearances	
Ritva Bly Natalia Rybalka	Y.E Fedorov (MoH) E.V., Nikolaenko (MoH) N.G.Matsko (MoH) L.F.Rozdyalovskaya (MoH) L.N.Sushchevich (MoH) L.S.Fedorushchenko (MoH) O.R.Panchuk (MoH) I.R.Borovko (MoH) A.E.Zhinko (MoH) R.A.Sakovich (MoH) G.V.Chizh (MoH) I.G.Tarutin (MoH) N.L.Protasenya (MoH) P.D.Demeshko (MoH)
ADDITIONAL AREAS - Occupational Exposure	
Pascal Deboodt	Y.E Fedorov (MoH) E.V., Nikolaenko (MoH) N.G.Matsko (MoH) L.F.Rozdyalovskaya (MoH) L.N.Sushchevich (MoH) L.S.Fedorushchenko (MoH) O.R.Panchuk (MoH) I.R.Borovko (MoH) A.E.Zhinko (MoH) R.A.Sakovich (MoH) G.V.Chizh (MoH) I.G.Tarutin (MoH) N.L.Protasenya (MoH) P.D.Demeshko (MoH)

Meeting with the Deputy Prime Minister of the Republic of Belarus Mr. Vladimir I. Semashko

Petteri Tiippana
Raymond Lorson
Olga Makarovska

Olga Lugovskaya – Head of Gosatomnadzor

Meeting with the First Deputy Minister for Emergency Situations of the Republic of Belarus Mr. Vasily Stepanenko

Petteri Tiippana
Raymond Lorson
Olga Makarovska

Leonid Dedul – Head of the Major Division for the State System of Emergency Situations and Civil Defence of MES;
Alexandr Gresko – Head of Division of Legal Support of MES;
Alexandr Dokuchaev – Head of Division of International Cooperation of MES;
Olga Lugovskaya – Head of Gosatomnadzor;
Grigoriy Astashko – Deputy Head of Gosatomnadzor

Meeting in the Ministry of Environment and Natural Resources of the Republic of Belarus

Petteri Tiippana
Raymond Lorson
Olga Makarovska

Iya Malkina – First Deputy Minister of Environment and Natural Resources;
Nadezhda Zdanevich – Head of the Division of expertize for town planning projects;
Marina Philipiyk– Head of the International Cooperation Division.
Oleg Sobolev – Head of the Subdivision of Communication and Public Information. (Gosatomnadzor):

Meeting in the Ministry of Health of the Republic of Belarus

Petteri Tiippana
Raymond Lorson
Olga Makarovska

Natalia Zhukova – Deputy Minister of Health, Chief Sanitary Doctor;
Anatoliy Grushkovsky - Head of the Division for external communications of the Ministry of Health;
Oleg Panchuk - Head of the Division for organization of medical protection on emergency situations of the Ministry of Health;
Juriy Fedorov - Head of the Division of Hygiene, Epidemiology and Prophylaxis of the Ministry of Health;
Tatyana Yasyulya – Leading Specialist of the Division for organization of medical assistance of the Ministry of Health;
Anzhela Skuranovich - Deputy Head Doctor of the Republican Centre of Hygiene, Epidemiology and Prophylaxis;

	<p>Nikolay Matsko – Head of the Radiation Hygiene and Safety Unit of the Republican Centre of Hygiene, Epidemiology and Prophylaxis;</p> <p>Sergey Sychik – Director of the Republican Unitary Enterprise «Scientific and Practical Centre of Hygiene»;</p> <p>Elena Nikolaenko – Head of Laboratory of Radiation Safety, Republican Unitary Enterprise «Scientific and Practical Centre of Hygiene»</p> <p>Grigoriy Astashko – Deputy Head of Gosatomnadzor</p>
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APPENDIX V RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
1.	RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT	R1	The Government should document its national policy and establish a strategy for radiation and nuclear safety that addresses the mechanisms to achieve the Fundamental Safety Objective and to apply the Fundamental Safety Principles in accordance with a graded approach.
		R2	The Government should clarify roles and responsibilities for MoH and MES. The regulatory bodies should finalize formal agreements to ensure appropriate coordination and liaison between the two regulatory bodies and possibly to conduct joint inspections.
		R3	The Government should address gaps in the radioactive waste management strategy and framework for radioactive waste from the Belarusian NPP and establish a strategy and framework for all other sources of radioactive waste including allocation of responsibility for disposal facilities.
		R4	The Government should establish financial arrangements for managing radioactive waste and for the decommissioning of all regulated facilities and activities.
		S1	The Government should consider establishing measures to enhance independence of the regulator for regulated facilities

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
			and activities undertaken within MoH and MES.
		GP1	<p>Recognizing the importance of strong collaboration during the construction, commissioning and future operation of the NPP, the Government:</p> <ul style="list-style-type: none"> • has established an “inter-ministerial commission on coordination of the plan of major organizational arrangements for construction of nuclear power plant in the Republic of Belarus and control over its implementation,” • has created a working group led by MES for the coordination of state control (supervision) activities for the construction of the NPP, in order to discuss matters of mutual regulatory interest • holds multiple meetings with all suppliers, the operator and the regulator. <p>These initiatives demonstrate a strong commitment of the Government, and go beyond the standard practice for embarking countries and help ensure high-level and effective coordination and oversight of NPP construction projects.</p>
		S2	Gosatomnadzor should consider joining international knowledge and reporting networks, such as the IAEA IRS and establish procedures on receiving and sharing information on operating and regulatory experience.

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
2.	GLOBAL SAFETY REGIME	R5	The Government should provide additional flexibility to Gosatomnadzor to extend timelines prescribed for licensing review and to perform unannounced inspections to ensure safety is not compromised.
3.	RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY	R6	The Government should ensure that adequate technical support is available to the regulator for all applicable disciplines. Gosatomnadzor should continue to implement the training and development plans to enhance its staff competencies.
		GP2	The regulatory body has established a variety of tools to manage their rapid growth, and has adopted innovative approaches to building a healthy organizational culture. Innovative practices include delegating responsibility for preparing the knowledge management strategy to newer staff, holding day-long meetings with staff to solicit feedback and holding a competition for staff to prepare essays on potential improvements (and establishing working groups to implement these improvements).
		S3	The Government should consider enabling Gosatomnadzor to request an independent expert review when necessary.
		S4	MES/Gosatomnadzor should consider finalizing and implementing requirements for record keeping and reporting for nuclear facilities, and developing internal systems to effectively track and analyse operating experience and trends in performance.
		R7	MES/Gosatomnadzor should finalize and implement plans to

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
			inform and consult with the public when making significant regulatory decisions.
4.	MANAGEMENT SYSTEM OF THE REGULATORY BODY	R8	Gosatomnadzor should complete its activities to establish, implement, and assess its integrated management system. Special attention should be on the regulatory processes, applying a graded approach, and assessing leadership for safety and safety culture.
5.	AUTHORIZATION	R9	The Government should update Decree of the President No. 450 to ensure that it authorises MES to initiate changes in the license and license conditions when needed for safety related purposes and that it requires licensing of disposal facilities and its lifecycle stages.
		R10	MES should establish appropriate requirements, processes and procedures to ensure that modification of facility design, processes or procedures, which might significantly affect safety, undergo prior review and assessment by Gosatomnadzor.
		R11	MES/Gosatomnadzor should require parties holding authorizations for research nuclear installations and radioactive waste management facilities to periodically perform comprehensive safety reviews of their facilities.
		R12	MES and MoH should revise the authorization processes and associated regulations in the field of activities with ionizing radiation sources to make them consistent.
		R13	MES should revise exemption criteria in accordance with international standards and define criteria for licensing of

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
			activities with radiation sources taking into account a graded approach.
6.	REVIEW AND ASSESSMENT	S5	Gosatomnadzor should consider finalizing the review and assessment procedure that includes a graded approach and the categorization of safety assessment findings.
		S6	The regulatory body should consider performing safety performance assessments of facilities and activities on a periodic basis.
		S7	MES/Gosatomnadzor should consider developing procedures to implement the respective regulatory requirements related to hold points.
		S8	Gosatomnadzor should consider verification during the pre-licensing process of radiation sources.
7.	INSPECTION	S9	Gosatomnadzor should consider developing detailed and comprehensive criteria for initiating reactive inspection to supplement their general criteria.
		S10	The regulatory body should consider performing formally documented analysis to verify that inspection programmes for nuclear power plant construction and commissioning stages cover all inspection areas listed in the Appendix to the IAEA GS-G-1.3.
		R14	The regulatory body should ensure that adequate inspection programmes and training are in place to support effective supervision of the NPP operational phase.
		R15	Gosatomnadzor should fully implement a graded approach

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
			for carrying out inspections at the nuclear power plants.
		S11	Gosatomnadzor should consider development and consistent use of inspection procedures or checklists for facilities and activities other than NPPs.
8.	ENFORCEMENT	S12	Gosatomnadzor should consider improving the procedure for determining the safety significance of inspection findings to imply the appropriate enforcement action
		R16	The Government should provide MES/Gosatomnadzor and MoH with the authority to require the authorized party to take appropriate corrective actions in the event unforeseen radiation risks are identified that are not the result of non-compliances.
9.	REGULATION AND GUIDES	R17	The MES and MoH should: <ul style="list-style-type: none"> • complete efforts to clarify the legal status of TCPs in the area of radiation and nuclear safety, • continue developing and revising regulations and guides to avoid overlaps and/or inconsistency and to be in line with IAEA safety standards.
		S13	MES should consider development of more non-mandatory regulatory guides for implementation of safety regulations and requirements, as necessary.
10.	EMERGENCY PREPAREDNESS AND RESPONSE	R18	MES/Gosatomnadzor and MoH should jointly: <ul style="list-style-type: none"> i) adopt IAEA emergency preparedness categories as the basis for a graded approach for planning the response to a nuclear or radiological emergency,

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
			<p>ii) prepare and promulgate documented criteria and guidance for operating organizations to perform, and periodically review, the on-site hazard assessment as basis for a graded approach to emergency preparedness arrangements and</p> <p>iii) review, update and complete the other regulatory requirements on preparedness and response for a nuclear or radiological emergency for all operating organizations, in line with IAEA safety standards in the area of emergency preparedness and response</p>
		R19	MES/Gosatomnadzor should ensure that a system for emergency classification and operational criteria that follows IAEA GSR Part 7 are adopted by the NPP, for the effective declaration of the emergency and activation of the response.
		S14	MES/Gosatomnadzor should consider ensuring that the organization of the exercise and methodology for evaluation of the exercise are in place before the on-site plan is approved.
		S15	MES should consider exercising the on-site and off-site emergency plans together, before commissioning of the NPP, in order to ensure that on-site and off-site EPR arrangements are integrated and provide for an effective response to a nuclear or radiological emergency.
		R20	The Government should ensure that: i) clear roles and responsibilities are assigned to Gosatomnadzor in the area of emergency response and ii) these roles are consistent with and not duplicative of those established for MoH.

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
		R21	Gosatomnadzor should develop its own internal EPR arrangements including: emergency plans and procedures; designation of emergency response structure; internal training, drills and exercise programs.
11.1	CONTROL OF MEDICAL EXPOSURES	R22	The Government should remove the requirement to establish dose limits to patients from the law.
		R23	MoH should revise the regulations to <ul style="list-style-type: none"> • include a requirement <ul style="list-style-type: none"> ○ for using medical physicists in optimizing medical exposures and ○ for a referral process for asymptomatic exposure and self-referred patients; • remove dose limits for medical exposures and • establish specific criteria for releasing patients after I-131 therapy.
11.2	OCCUPTIONAL RADIATION PROTECTION	S16	The regulatory bodies should consider updating requirements needed to provide adequate safety and radiation protection of external workers.
		R24	The Government should analyse and make a decision on how to adapt the legislation in order to comply with the IAEA safety standards in the area of conditions of services.
		S17	The MoH should consider improving the content as well as the access, as appropriate, to the national register of individual dose records for the occupationally exposed workers.
		S18	MES and MoH should consider stressing the need for use of

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
			personal dosimetry with all inspectors. MES and MoH should consider evaluation, procurement, and use of measuring devices to support independent field measurements by inspectors.
		S19	The Government should consider establishing appropriate requirements for the qualification, and make sufficient arrangements for the training and the recognition of radiation safety specialists (i.e., radiation protection officers, qualified experts) in order to ensure a reliable availability of such specialists.
		S20	MES/Gosatmnadzor should consider establishing a procedure for clearance of radioactive materials.
		R25	MES should revise licensing process for facilities other than NPP with provisions for discharge limits authorization as appropriate.

APPENDIX VI REFERENCE MATERIAL USED FOR REVIEW

	Core Module 1: Responsibilities and Functions of the Government
	Core Module 2: Global Safety Regime
	Core Module 3: Responsibilities and Functions of the Regulatory Body
	Core Module 4: Management System of the Regulatory Body
	Core Module 5: Authorization
	Core Module 6: Review and Assessment
	Core Module 7: Inspection
	Core Module 8: Enforcement
	Core Module 9: Regulations and Guides
	Core Module 10: Emergency Preparedness and Response
	Module: Safety and Security of Radioactive Sources
	Module: Control of Medical Exposure
	Module: Occupational Radiation Protection
	Module: Discharges and Material Clearance
	Advanced Reference Material Report
International agreements and regulations	
1.	Resolution of the Inter-Parliamentary Committee of the Republic of Belarus, Republic of Kazakhstan, the Kyrgyz Republic, the Russian Federation and the Republic of Tajikistan of October 15, 1999 No. 9-9 on the model law on safety.
2.	Agreement on mutual assistance in case of accidents and other emergencies at electric power facilities of states - participants of Commonwealth of Independent States, of May 30, 2002.
Directives and decrees of the President of the Republic of Belarus	
3.	Directive of the President of the Republic of Belarus of 11.03.2004 No. 1 "On Measures to Strengthen Public Security and Discipline".
4.	Decree of the President of the Republic of Belarus of 15.12.2014 No. 5 "On Strengthening the Requirements to Executive Staff and Employees of Organizations".
Edicts of the President of the Republic of Belarus	
5.	Edict of the President of the Republic of Belarus of February 16, 2015 No.62 "On Provision of Safety during the Construction of the Belarusian Nuclear Power Plant".
6.	Edict of the President of the Republic of Belarus of March 29, 2011 No.124 "On Measures to Implement International Agreements in the Field of Civil Liability for Nuclear Damage".
7.	Edict of the President of the Republic of Belarus of April 12, 2013 No. 168 "On Some Measures for Optimization of the System of State Bodies and Other State Organizations, as well as the Number of Their Employees".
8.	Edict of the President of the Republic of Belarus of July 26, 2012 No.332 "On some measures to improve control (supervisory) activity in the Republic of

	Belarus".
9.	Edict of the President of the Republic of Belarus of August 11, 2003 No.359 "On Approving the Rules of Statutory Frameworks Drafts Development".
10.	Edict of the President of the Republic of Belarus of August 18, 2015 No.362 "On Staff Training for Nuclear Power Industry".
11.	Edict of the President of the Republic of Belarus of September 15, 2011 No.418 "On Siting and Design of the Nuclear Power Plant in the Republic of Belarus".
12.	Edict of the President of the Republic of Belarus of September 2, 1998 No. 430 "On Accession of the Republic of Belarus to the Convention on Nuclear Safety".
13.	Edict of the President of the Republic of Belarus of 01.09.2010 No. 450 (revised on 26.11.2015 No. 475)"On Licensing of Certain Types of Activities"(along with the Regulation on licensing of certain activities).
14.	Edict of the President of the Republic of Belarus of October 25, 2011 No. 486 "On Some Measures of Safety Assurance for Critically Important Information Facilities".
15.	Edict of the President of the Republic of Belarus of 06.11.2003 No.489 "On Approving Regulations on State Employees Certification".
16.	Edict of the President of the Republic of Belarus of November 2, 2013 No.499 "On the Belarusian Nuclear Power Plant Construction".
17.	Edict of the President of the Republic of Belarus of 16.10.2009 No.510 "On Improving Control (Supervision) Activity in the Republic of Belarus".
18.	Edict of the President of the Republic of Belarus of October 8, 2010 No. 521 "On Arranging Conditions for the Provision of Technical Assistance by the USA Government for Removal and Exchange of Nuclear Fuel".
19.	Edict of the President of the Republic of Belarus of November 12, 2007 No. 565 (revised on 31.01.2013) "On Some Measures for the Nuclear Power Plant Construction".
20.	Edict of the President of the Republic of Belarus of 09.11.2010 No. 575 (revised on 01.24.2014) "On Approval the Concept of National Security of the Republic of Belarus".
21.	Edict of the President of the Republic of Belarus of 31.12.2013 No. 90 "On some issues of public procurement of goods (works, services)".
22.	Edict of the President of the Republic of Belarus of 29.12.2006 No. 756 (revised on 16.02.2015) "On Some Issues of the Ministry of Emergency Situations" (with the "Regulations on the Ministry of Emergency Situations of the Republic of Belarus", "Regulations on Department for Industrial Safety of the Ministry of Emergency Situations of the Republic of Belarus", "Regulations on the <i>Department for Liquidation of Chernobyl Accident Consequences of the Ministry for Emergency Situations of the Republic of Belarus</i> ", "Regulations on Material Reserves Department of the Ministry of Emergency Situations of the Republic of Belarus", "Regulations on the Department for Nuclear and Radiation Safety of the Ministry of Emergency Situations of the Republic of Belarus").
Codes of the Republic of Belarus	
23.	Code of the Republic of Belarus dated 30.04.2014 No.149-3 "Water Code of the

	Republic of Belarus".
24.	Code of the Republic of Belarus on Administrative Offences, of 21.04.2003 No.194-3 (revised on 28.04.2015) Part 1 of Article 12.7. Illegal business activities Part 1 of Article 15.4. Violation of safety rules when handling genetically engineered organisms, environmentally hazardous substances and wastes Article 15.5. Violation of the order of disposal of radioactive waste Article 16.3. Violation of radiation safety requirements in areas exposed to radioactive contamination. Article 16.4. Violation of rules of radiation control. Article 16.5. Use of radiation equipment, not proofed for technical characteristics or being in faulty condition, for diagnostic or therapeutic purposes. Article 16.6. Violation of legal acts in the field of nuclear and radiation safety.
25.	Code of the Republic of Belarus on Education, of January 13, 2011 No.243-3
26.	Code of the Republic of Belarus from 23.07.2008 No.425-3 (revised on 31.12.2014) "Code of the Republic of Belarus on land".
The Laws of the Republic of Belarus	
27.	Law of the Republic of Belarus of 26.11.1992 No.1982-XII "On Environmental Protection".
28.	Law of the Republic of Belarus of September 5, 1995 No. 3848-XII "On Ensuring Unity of Measurements ".
29.	Law of the Republic of Belarus from 06.06.2001 No.32-3 "On the Transport of Dangerous Goods" (revised on 07.12.2013).
30.	Law of the Republic of Belarus of June 22, 2001 No. 39-3 "On Rescue Services and Rescuer Status".
31.	Law of the Republic of Belarus of November 9, 2009 No.54-3 "On State Ecological Expertise" (revised on 14.07.2011).
32.	Law of the Republic of Belarus of November 11, 1997 No.76-3 "On Ratifying the Vienna Convention on Civil Liability for Nuclear Damage, of May 21, 1963"
33.	Law of the Republic of Belarus of January 5, 1998 No.122-3 "On Radiation Safety of Population" (revised on 04.01.2014 No. 106 -3).
34.	Law of the Republic of Belarus of July 17, 2002 No.130-3 "On Ratifying the Joint Convention on Safe Treatment of Spent Fuel and Safe Treatment of Radioactive Waste".
35.	Law of the Republic of Belarus of May 5, 1998 No.141-3 "On Public and Territorial Protection from Natural and Technogenic Emergency Situations".
36.	Law of the Republic of Belarus of 05.05.1998 No.157-3 "On State Forecasting and programs of socio-economic development of the Republic of Belarus".
37.	Law of the Republic of Belarus of 20.07.2006 No.165-3 "On Combating Corruption".
38.	Law of the Republic of Belarus of October 20, 2006 No.171-3 "On Ratifying the International Convention for the Suppression of Acts of Nuclear Terrorism".
39.	Law of the Republic of Belarus of January 4, 2003 No.174-3 " On the declaration by individuals of income property, and source of funds " (in revision Laws of the

	Republic of Belarus of 03.12.2009 No.64-3, of 13.12.2011 No.325-3, of 04.01.2014 No.101-3).
40.	Law of the Republic of Belarus of 14.06.2003 No.204-3 (revised on 14.07.2014) "On Public Service in the Republic of Belarus".
41.	Law of the Republic of Belarus of 29.06.2003 No.217-3 "On quality and safety of food raw materials and foodstuffs for human life and health".
42.	Law of the Republic of Belarus of July 5, 2004 No.296-3 "On Ratifying the Agreement between the Government of the Republic of Belarus and the Government of the Republic of Lithuania on cooperation in the field of prevention of catastrophes, natural disasters and major accidents as well as liquidation of their consequences".
43.	Law of the Republic of Belarus of 05.07.2004 No.300-3 "On architectural, town-planning and construction activity in the Republic of Belarus".
44.	Law of the Republic of Belarus from 25.11.2011 No.323-3 "On archives and records management in the Republic of Belarus".
45.	Law of the Republic of Belarus of January 7, 2012 No.340-3 "On Sanitary and Epidemiological Public Welfare".
46.	Law of the Republic of Belarus of 23.06.2008 No.356-3 "On Labour Protection".
47.	Law of the Republic of Belarus of 10.01.2000 No.361-3 "On Statutory Frameworks of the Republic of Belarus".
48.	Law of the Republic of Belarus of May 13 2000 No.384-3 "On Ratifying the Comprehensive Nuclear Test Ban Treaty".
49.	Law of the Republic of Belarus of May 26, 2012 No.385-3 "On legal regime of the territories affected by radioactive contamination as a result of the Chernobyl disaster".
50.	Law of the Republic of Belarus of 13.07.2012 No.419-3 "On public procurement of goods (works, services)".
51.	Law of the Republic of Belarus of 30.07.2008 No.426-3 (revised on 22.12.2011) "On Nuclear Energy Use".
52.	Law of the Republic of Belarus of October 26, 2012 No. 435-3 "On Introducing Alterations and Amendments in Some Laws of the Republic of Belarus on the Issues of Combating with Terrorism and Counterterrorism Policy" (Article 126).
Intergovernmental agreements	
53.	Agreement between the Government of the Republic of Belarus and the Government of the Republic of Austria on Exchange of Information in the Field of Nuclear Safety and Protection Against Ionizing Radiation.
54.	Agreement between the Government of the Republic of Belarus and the Government of the Republic of Armenia on Exchange of Information and Cooperation in Nuclear Safety and Radiation Protection, of September 14, 2013.
55.	Agreement between the Government of the Republic of Belarus and the Government of the People's Republic of China on cooperation in the field of peaceful use of nuclear energy from the May 11, 2009.
56.	Agreement between the Government of the Republic of Belarus and the Government of the Republic of Poland on early Warning of Nuclear Accidents

	and Cooperation in the Field of Radiation Safety of October 26, 1994.
57.	Agreement between the Government of the Republic of Belarus and the Government of the Russian Federation on Cooperation in the Field of Nuclear Energy Use for Peaceful Purposes, of November 16, 2009.
58.	Agreement between the Government of the Republic of Belarus and the Government of the Russian Federation on Cooperation in Construction of a Nuclear Power Plant in the Territory of the Republic of Belarus, of December 16 2011.
Interagency agreements	
59.	Agreement between the Ministry of Emergency Situations of the Republic of Belarus and the State Inspectorate for Nuclear Regulation of Ukraine on cooperation in the field of nuclear and radiation safety, of September 5, 2015.
60.	Agreement between the Ministry of Emergency Situations of the Republic of Belarus and the Federal Service for Environmental, Technological and Nuclear Supervision (Russian Federation) on cooperation in the field of nuclear and radiation safety at the use of nuclear energy for peaceful purposes, of December 20, 2013.
Resolutions of the Government	
61.	Decree of the Presidium of the Supreme Council of the Republic of Belarus of December 18, 1986 No.1216-XI "On Ratifying the Convention on Early Warning of Nuclear Accident, and Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency".
62.	Resolution of the Council of Ministers of the Republic of Belarus of 11.01.2012 No.33 "On Research and Technical Support to the Ministry of Emergency Situations, and Amendments and Additions into the Resolution of the Council of Ministers of the Republic of Belarus of August 28, 2009 No.1116".
63.	Resolution of the Council of Ministers of the Republic of Belarus of February 5, 2014 No.98dsp "On Human Visualization Using Ionizing Radiation for Medical Purposes".
64.	Resolution of the Council of Ministers of the Republic of Belarus of 25.02.2015 No.133 "On Approving Regulations on Organization and Implementation of Control (Supervision) over Safety Assurance during the Construction and Commissioning of the Belarusian Nuclear Power Plant" defines special procedure for control (supervision) over Belarusian NPP construction and commissioning.
65.	Resolution of the Council of Ministers of the Republic of Belarus of February 17, 2012 No.156 "On approving the Unified List of Administrative Procedures Performed by National Bodies and other Organizations with regard to Legal Persons and Individual Entrepreneurs, Introduction of Amendments into the Resolution of the Council of Ministers of the Republic of Belarus of February 14, 2009 No.193 and Annulment of Certain Resolutions of the Council of Ministers of the Republic of Belarus".
66.	Resolution of the Council of Ministers of the Republic of Belarus of February 29, 2012 No.194 "On approving the State Program of Belarusian Energy System Development for the Period until 2016" (revised on 10.08.2013).

67.	Resolution of the Council of Ministers of the Republic of Belarus of March 17, 2014 No.224 "On approving Regulations on State System of Nuclear Materials Accounting and Control Procedures of the Republic of Belarus".
68.	Resolution of the Council of Ministers of the Republic of Belarus of March 28, 2016 No.250 "On approval of the State program "Education and youth policy" for 2016 - 2020".
69.	Resolution of the Council of Ministers of the Republic of Belarus of 21.04.2016 No.327 "On Approval of the State Program "High-tech technologies and equipment" on 2016-2020 ".
70.	Resolution of the Council of Ministers of the Republic of Belarus of May 24, 1993 No.338 "On Measures for Physical Protection of Nuclear Materials".
71.	Resolution of the Council of Ministers of the Republic of Belarus of March 27, 2002 No.377 "On approving Regulations on Emergency Situations Commission of the Council of Ministers of the Republic of Belarus, and its working body, as well as the Composition of the Commission".
72.	Resolution of the Council of Ministers of the Republic of Belarus of May 23, 2013 No.413 "On approval of the Regulations on the training of managers and employees of the republican bodies of state administration, other state organizations subordinated to the Government of the Republic of Belarus, local executive and administrative bodies, organizations regardless of ownership, and population in the field of population and territories from emergency situations of natural and man-made disasters and civil defense, as well as citizens, who are recruited for special formations of organs and departments for emergency situations by mobilizing ".
73.	Resolution of the Council of Ministers of the Republic of Belarus of 14.06.2016 No. 458 "On Approval of the Regulations of organizing and holding public discussions of projects of environmentally significant decisions, reports on environmental impact assessment, accounting of accepted environmentally significant decisions and amendments and additions to some resolutions of the Council of Ministers of the Republic of Belarus".
74.	Resolution of the Council of Ministers of the Republic of Belarus of June 2, 2015 No.460 "On approving the Strategy of Belarusian NPP Radioactive Waste Management".
75.	Resolution of the Council of Ministers of the Republic of Belarus of April 10, 2001 No.495 "On the State System of Emergency Situations Prevention and Liquidation".
76.	Resolution of the Council of Ministers of the Republic of Belarus of April 9, 2010 No. 551 "On Approving Regulations on Determining of Cases, and Procedure for Reimbursement (Payment) of Costs Related to the Research, Tests, Technical Examination, Expertise, Involvement of Experts and Specialists, Sampling, as well as Amounts of Sums to be paid to an Expert or a Specialist".
77.	Resolution of the Council of Ministers of the Republic of Belarus of 30.04.2009 No. 560 "On Approving the Procedure of Interaction Between Republican Bodies of State Administration, Other State Bodies and Organizations upon Detection of

	Ionizing Radiation Sources, as well as in the Case of Their Detention while Moving Across the State Border of the Republic of Belarus”.
78.	Resolution of the Council of Ministers of the Republic of Belarus of 30.04.2009 No.561 "On National Commission of the Republic of Belarus for Radiation Protection of the Council of Ministers of the Republic of Belarus".
79.	Resolution of the Council of Ministers of the Republic of Belarus of April 30, 2009 No.562 "On approving the Regulations on the Procedure of State Registration of Ionizing Radiation Sources and Managing the Unified State System of Ionizing Radiation Sources Accounting and Control" (in revision of the Resolution of the Council of Ministers of 16.11.2015 No.956).
80.	Resolution of the Council of Ministers of the Republic of Belarus of 04.05.2009 No.574 "On some issues of execution of works on the use of atomic energy".
81.	Resolution of the Council of Ministers of the Republic of Belarus of May 17, 2004 No.576 "On Approval of the procedure of performing within national system of environmental monitoring in the Republic of Belarus of radiation monitoring and the use of its data" (in revision Resolution of the Council of Ministers of the Republic of Belarus of 27.12. 2007 No.1837, of 10.06.2008 No.835, of 18.05.2009 No.638, of 12.07.2013 No.622).
82.	Resolution of the Council of Ministers of the Republic of Belarus of June 6, 2011 No.716 "On approving the Procedure of Acceptance of Construction Facilities for Commissioning".
83.	Resolution of the Council of Ministers of the Republic of Belarus of November 30, 1992 No.721 "On joining of the Republic of Belarus the international treaties regulating the transportation of goods in the international automobile communication" (in revision of Resolution of the Council of Ministers of the Republic of Belarus of 29.03.2005 No.339).
84.	Resolution of the Council of Ministers of the Republic of Belarus of 22.08.2012 No.778 “On some measures for the implementation of the Law “On public procurement of goods (works, services)”.
85.	Resolution of the Council of Ministers of the Republic of Belarus of June 24, 2006 No.797 "On Radiation and Hygienic Passport of the User of Ionizing Radiation Sources, Procedure of Its Management and Use" (together with the "Instruction on the Procedure of Management and Use of Radiation and Hygienic Passports of the User of Ionizing Radiation Sources").
86.	Resolution of the Council of Ministers of the Republic of Belarus of 14 October 2015 No. 854 "On issuing permission to carry out work on the field of using of nuclear energy"
87.	Resolution of the Council of Ministers of the Republic of Belarus of June 17, 1999 No.929 "On Unified State System of Individual Exposure Control and Accounting".
88.	Resolution of the Council of Ministers of the Republic of Belarus of 15.07.2011 No.954 (revised on 03.09.2014) "On Certain Issues of Further Adult Education".
89.	Resolution of the Council of Ministers of the Republic of Belarus of 5 November 2012 No.1010 "About the plan of the basic organizational actions for the

	construction of a nuclear power plant in the Republic of Belarus" (restricted).
90.	Resolution of the Council of Ministers of the Republic of Belarus of November 30, 2012 No.1105 "On approving the List of Measures of Technical (Technological, Verification) Character".
91.	Resolution of the Council of Ministers of the Republic of Belarus No.1116 of 28.08.2009 "On approving the State Program "Scientific Support to Nuclear Power Development in the Republic of Belarus for the period of 2009-2010 and till 2020".
92.	Resolution of the Council of Ministers of the Republic of Belarus of December 13, 2012 No.1147 "On Approving the List of Control (Supervisory) Bodies and (or) Control (Supervision) Areas, applying Problems Lists (Checklists), defining requirements to the Form of a Problem List (Checklist) and Invalidation of the Resolution of the Council of Ministers of the Republic of Belarus of April 1, 2010 No.489".
93.	Resolution of the Council of Ministers of the Republic of Belarus of August 9, 2010 No.1180 "On Approving the Strategy of Energy Potential Development in the Republic of Belarus".
94.	Resolution of the Council of Ministers of the Republic of Belarus of September 26, 2003 No.1221 "On approving the Regulations of the Competition to Hold a Public Office".
95.	Resolution of the Council of Ministers of the Republic of Belarus of August 27, 2010 No.1242 "On approving Regulations on Conditions and Procedure of Emergency Plans of Actions Development".
96.	Resolution of the Council of Ministers of the Republic of Belarus of August 23, 2001 No.1280 "On Procedure of Collecting Information in the Field of Public and Territorial Protection from Natural and Technogenic Emergency Situations, and Exchange with Such Information".
97.	Resolution of the Council of Ministers of the Republic of Belarus of September 10, 2008 No.1329 "On approving the State Program of Staff Training for the Nuclear Power Industry of the Republic of Belarus for 2008-2020" (revised on 28.11.2013).
98.	Resolution of the Council of Ministers of the Republic of Belarus of September 27, 2010 No.1385 "On approving the Regulations on Physical Protection of Nuclear Facilities".
99.	Resolution of the Council of Ministers of the Republic of Belarus of September 23, 2008 No.1397 "On Some Issues of Certain Goods Movement Through the State Border of the Republic of Belarus".
100.	Resolution of the Council of Ministers of the Republic of Belarus of November 19, 2004 No.1466 "On Approving the Regulations on Monitoring and Prediction System for Natural and Technogenic Emergency Situations".
101.	Resolution of the Council of Ministers of the Republic of Belarus of December 31, 2009 No.1748 "On the approval of the technical regulation of the Republic of Belarus "Buildings and structures, building materials and products. Security" (Tp 2009/013/By)" (in revision of Resolution of the Council of Ministers of the

	Republic of Belarus of 07.02.2012 No.125, of 01.02.2013 No.82, of 01.04.2014 No.301, of 03.09.2015 No.744).
102.	Resolution of the Council of Ministers of the Republic of Belarus of 30.12.2011 No.1780 (revised on 30.01.2014) "On Approval of the procedure for changing the purpose of land".
103.	Resolution of the Council of Ministers of the Republic of Belarus of 07.12.2010 No.1781 "On Approving Procedure of Review of Documentation Justifying Nuclear and Radiation Safety Assurance during the use of Nuclear Energy and Ionizing Radiation Sources".
104.	Resolution of the Council of Ministers of the Republic of Belarus of 30.12.2011 No.1786 "On approving the Regulations on the Procedure of Documents Management related to public and legal persons' applications in State Bodies, Other Organizations, and Individual Entrepreneurs".
105.	Resolution of the Council of Ministers of the Republic of Belarus of 30.12.2011 No.1791 "On Creation of a Working Team to Coordinate Supervision of the Belarusian NPP Construction headed by the First Deputy Minister of Emergency Situations of the Republic of Belarus".
106.	Resolution of the Council of Ministers of the Republic of Belarus of December 31, 2008, No.2056 "On Some Issues of Implementing State Supervision in the Field of Industrial Safety, Nuclear and Radiation Safety".
107.	Resolution of the Council of Ministers of the Republic of Belarus of 31.12.2008 No.2070 "On approving the Instruction on the Procedure for Statutory Frameworks Drafts Development by Republican Bodies of State Administration and Other State Organizations Subordinated to the Government of the Republic of Belarus.
Resolutions of the ministries and departments of the Republic of Belarus	
108.	Resolution of the Security Council of the Republic of Belarus of January 31, 2008 No. 1 "On Development of Nuclear Power Industry in the Republic of Belarus".
109.	Resolution of the Ministry of Environment, Ministry of Emergency Situations of the Republic of Belarus of October 10, 2007 No. T-6/88 approved TCP 099-2007 (02120/02300) "Siting of nuclear power plants. Guidance on the design and content of studies of ecological safety of nuclear power plants".
110.	Resolution of the Ministry of Architecture, Ministry of Emergency Situations of the Republic of Belarus of October 10, 2007 No.16/87 approved TCP 098-2007 (02250/02300) "Siting of nuclear power plants. Basic requirements to composition and volume of study and research when selecting NPP location and site".
111.	Resolution of the Ministry of Emergency Situations, Ministry of Internal Affairs of the Republic of Belarus and State Security Committee of the Republic of Belarus of May 18, 2012 No.31/142/20 approved TCP 389-2012 (02300/02010/03070) "Rules of physical protection of ionizing radiation sources".
112.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus, Ministry of Foreign Affairs of the Republic of Belarus, State Security Committee

	of the Republic of Belarus of April 11, 2005 No.35/3/9 "On approving the Instruction for Harmonizing List of IAEA Experts to Inspect Nuclear Facilities in the Republic of Belarus".
113.	Resolution of the Ministry of Energy, Ministry of Architecture, Ministry of Emergency Situations of the Republic of Belarus of October 10, 2007 No. 35/17/86 approved TCP 101-2007 (02230/02250/02300) "Siting of nuclear power plants. Procedure for the development of overall quality assurance program for a nuclear power plant" and TCP 102-2007 (02230/02250/02300) "Siting of nuclear power plants. Procedure for the development of quality assurance program in site identification for a nuclear power plant".
114.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus, Ministry of Health of the Republic of Belarus of August 31, 2006 No.41/67 "On Dose Rate Limits for Making Decision with regard to Protective Measures in Case of Radiation Accidents".
115.	Resolution of the Ministry of Defence of the Republic of Belarus of March 5, 2009 No.12 "On approval of the instructions on procedure of ensuring radiation safety in the armed forces of the Republic of Belarus".
116.	Resolution the Ministry of Commerce of the Republic of Belarus of 26.06.2013 No.14 "On approval of exemplary forms of documents on the procedures of public procurement".
117.	Resolution of the Ministry of Labor and Social Protection of the Republic of Belarus of 17.06.2013 No. 56 "On Labor Remuneration of public Officers of State Bodies" (in revision of the Decree of the Ministry of Labor and Social Protection of the Republic of Belarus of 18.12.2013 No.120, of 27.12.2013 No.133, of 10.03.2014 No.10, of 29.08.2014 No.85, of 02.02.2015 No.9, of 23.11.2015 No.71).
118.	Resolution of the Ministry of Labor and Social Protection of the Republic of Belarus of 24.10.2003 No.135. Qualification reference book "Public positions of civil servants".
119.	Resolution of the Ministry of Justice of the Republic of Belarus of 19.01.2009 No.4. "On approval of the Instruction on office-work in state bodies and other organizations".
120.	Resolution of the Ministry of Justice of the Republic of Belarus of 24.05.2012 No.140 (revised on 12.12.2014) "On some measures for the implementation of the Law of of the Republic of Belarus of November 25, 2011 "On archives and records management in the Republic of Belarus".
Resolutions of the Ministry of Emergency Situations	
121.	Resolution of the Ministry of Emergency Situations of January 24, 2011 No. 4 "On Granting Officials of the Department for Nuclear and Radiation Safety of the Ministry of Emergency Situations of the Republic of Belarus with Authorities to Draw Up Administrative Offence Protocols and Finalizing Initiation of Administrative Proceedings".
122.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of 20 January 2012 No.7 "On approval of rules and regulations to ensure nuclear

	and radiation safety "Disposal of radioactive waste. The principles, criteria and basic safety requirements ".
123.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of February 19, 2003 N 17 "On Classification of natural and technogenic emergency situations".
124.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of May 11, 2010 No.19 "On Approving Rules and Regulations on Nuclear and Radiation Safety Assurance" introduced: "Rules for arrangement and safe operation of ventilation systems important for nuclear power plants safety "; "Rules of hydrogen explosion protection assurance at nuclear power plants equipped with WWER reactors"; "General provisions on arrangement and operation of emergency power supply systems of nuclear power plants".
125.	Resolution of the Ministry of Emergency Situations of April 25, 2015 No.19 "On approval and enactment of the Technical Code of Practice" approved TCP 565-2015 (33130) "Safety regulations for NPP radioactive waste management".
126.	Resolution of the Ministry of Emergency Situations of April 30, 2009 No. 20 "On approving the Form of the Passport Accompanying the Transport of Radioactive Waste, and the Instruction on Finalizing the Passport Accompanying the Radioactive Waste Transport".
127.	Resolution of the Ministry of Emergency Situations of April 30, 2009 No. 21 "On approving the Instruction on Development, Harmonization and Approving of the Radioactive Waste Management Process".
128.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of May 31, 2010 No.22 "On approval of rules and regulations on ensuring nuclear and radiation safety" Safety when dealing with sources of ionizing radiation. General Provisions " (in revision of the Decree of the Ministry of Emergency Situations of the Republic of Belarus of 21.08.2013 No.37).
129.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of 29.04.2016 No. 25 "On establishing the form of authorization to carry out activities in the field of using nuclear energy".
130.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of 9 September 2014 No.26 "On approval and enactment of the Technical Code of Practice" approved TCP 545-2014 "Securing of dry storage items of spent nuclear fuel".
131.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of August 10, 2010 No. 39 "On approval and enactment of the Technical Code of Practice" approved TCP 254-2010 (02300) "Fire safety of nuclear power plants. General requirements".
132.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of August 2, 2005 N 41 "On approving Instructions on submitting information in the field of public and territorial protection from natural and technogenic emergency situations".

133.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of August 17, 2009 No. 42 "On Approving Regulation on Organizing the Functioning of Management Information System of the State System of Prevention and Liquidation of Emergency Situations".
134.	Resolution of the Ministry of Emergency Situations of September 28, 2010 No. 47 "On approving Rules and Regulations of Nuclear and Radiation Safety Assurance "Radioactive Waste Management Safety. General Provisions".
135.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of October of 12, 2010 No. 48 "On approval and enactment of the Technical Code of Practice" approved TCP 263-2010 (02300) "Accounting for external impacts of natural and anthropogenic origin at nuclear facilities" and TCP 264-2010 (02300) "Rules for design and operation of localizing security systems of nuclear power plants".
136.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of November 30, 2010 No. 54 approved "On approval of Instruction on the procedure of admission to the conduct of safety expertise in the field of using nuclear energy and ionizing radiation sources".
137.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of November 30, 2010 No. 55 approved "Instruction on Training, instructions and assessment of statutory frameworks knowledge, including technical legal acts, in the field of nuclear and radiation safety".
138.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of October 31, 2011 No.55 "On approval and enactment of the Technical Code of Practice" approved: TCP 356-2011 (02300) "System of physical protection of nuclear materials and nuclear facilities. Instruction on design structure" TCP 357-2011 (02300) "General safety and physical protection rules during nuclear materials transport" TCP 358-2011 (02300) "System of physical protection of nuclear materials and nuclear facilities. Requirements to design solutions" TCP 359-2011 (02300) "Requirements to the quality assurance program of physical protection systems at nuclear facilities" TCP 360-2011 (02300) "Regulations on general requirements to the systems of physical protection of nuclear facilities" TCP 361-2011 (02300) "Identification of nuclear facilities physical protection level".
139.	Resolution of the Ministry of Emergency Situations of November 28, 2013 No.56 "On approval and enactment of the Technical Code of Practice" approved TCP 501-2013 (02300) "Rules and procedure for the developing report on Safety Case of nuclear materials storage facilities".
140.	Resolution of the Ministry of Emergency Situations of November 28, 2013 No.57 "On approval and enactment of the Technical Code of Practice" approved TCP 503-2013 (02300) "Regulations for siting of storage facilities for nuclear materials and radioactive substances".
141.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of

	30.11.2010 No.58 "On Approving Rules and Regulations on Nuclear and Radiation Safety Assurance "Requirements to the Composition and Content of the Documents Justifying Nuclear and Radiation Safety Assurance during Activities in the Use of Nuclear Energy and Ionizing Radiation Sources" (revise on 08.04.2016).
142.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus December 13, 2010 No.64 "On approval of norms and rules to ensure nuclear and radiation safety "Requirements to the structure and content of the Safety Analysis Report for radioactive waste management facilities".
143.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of December 27, 2010 No. 68 "On approval and enactment of the Technical Code of Practice" approved TCP 294-2010 (02300) " Content Requirements for Safety Case Report for Nuclear Power Plant with WWER Type Reactor ".
144.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of December 22, 2011 No.68-DSP approved TCP 112-2011 (02300) "Engineering civil defense measures".
145.	Resolution of the Ministry of Emergency Situations of the Republic of Belarus of 30.12.2006 No.72 "On Approving Statutory Frameworks for Nuclear Safety Assurance" (including Safety Assurance Guidelines for Research Nuclear Units", "Safety Rules for Storage and Transportation of Nuclear Fuel in Spent Fuel Storage and Management Systems Facilities", "Design and Safety Commissioning of Actuation Devices of Means Influencing Reactivity", "Safety Rules for Storage and Transportation of Nuclear Fuel in Nuclear Facilities", "Safety Rules for Subcritical Testing Facilities", "Safety Rules for Critical Testing Facilities).
146.	Resolution of Ministry of Emergency Situations of December 30, 2011 No.73 On approval Rules and regulations on nuclear and radiation safety assurance "Requirements to Composition and Content of the Radiation Facility Safety Case Report".
147.	Resolution of the Ministry of Emergency Situations of July 29, 2010 No. 80 "On approving Instructions on Investigation of Accidents, Disasters which entailed Natural and Technogenic Emergency Situations".
Resolutions of the Ministry of Health of the Republic of Belarus	
148.	Resolution of the Ministry of Health of the Republic of Belarus of March 31, 2010 No.39 "On approval of sanitary norms, rules and hygienic standards" Hygienic requirements for the design and operation of nuclear power plants "
149.	Resolution of the Ministry of Health of the Republic of Belarus of December 31, 2013 No.137 "On approval of sanitary norms and rules "Requirements for ensuring radiation safety of personnel and the public in carrying out activities on the use of nuclear energy and ionizing radiation sources" and introducing amendments to the Resolution of the Ministry of Health of the Republic of Belarus of December 28, 2012 No.213".
150.	Resolution of the Ministry of Health of the Republic of Belarus of December 31, 2015 No.142 "On approval of sanitary norms and rules "Requirements for

	ensuring radiation safety of personnel and the public during radioactive waste management”.
151.	Resolution of the Ministry of Health of the Republic of Belarus of December 28, 2012 No.213 "On approval of sanitary norms and rules" Requirements for Radiation Safety" and Hygienic standards "Criteria for assessing radiation exposure".
Decrees of the Chief State Sanitarian of the Republic of Belarus	
152.	Decree of the Chief State Sanitarian of the Republic of Belarus of April 1, 2005 No.38 "On approval of sanitary rules and norms 2.6.3.12-6-2005" Hygienic requirements for design, equipment and operation of radon laboratories, offices of radon therapy (radon hospital)".
153.	Decree of the Chief State Sanitarian of the Republic of Belarus of November 22, 2006 No.143 "On approval of sanitary rules and norms 2.6.3.13-24-2006" Hygienic requirements for radiation safety during radiotherapy".
154.	Decree of the Chief State Sanitarian of the Republic of Belarus of December 31, 2003 No.223 "On approval of sanitary rules and norms 2.6.1.8-38-2003" Hygienic requirements for design and operation of X-ray rooms, X-ray machines and carrying out X-ray examinations".
155.	Decree of the Chief State Sanitarian of the Republic of Belarus of December 28, 2005 No.273 "On approval of sanitary rules and norms 2.6.1.13-55-2005" Hygienic requirements for radiation safety during radionuclide diagnostics".
156.	Decree of the Chief State Sanitarian of the Republic of Belarus of December 30, 2005 No.284 "On approval of sanitary rules and norms 2.6.1.13-60-2005" Hygienic requirements for radiation safety of personnel and the public during transportation of radioactive materials (substances)".
Interstate and state standards of the Republic of Belarus	
157.	Decree of the State Committee for Standardization of the Republic of Belarus of February 23, 2007 No.9 approved STB ISO/IEC 17025-2007 "General requirements for the competence of testing and calibration laboratories".
158.	Decree of the State Standard of the Republic of Belarus of 30 August 1999. No.15 approved STB 1172-99 "Non-destructive testing. Control penetrant (capillary). General Provisions".
159.	STB 8014-2000 "The system for ensuring the uniformity of measurements of the Republic of Belarus. Calibration of measuring instruments. Organization and procedure".
160.	STB 1428-2003 "Non-destructive testing. Compounds of welded pipes and metal structures. Radiographic method".
161.	STB 1429-2003 "Safety in emergencies. The terms and definitions of main concepts".
162.	STB 1537-2005 "Safety in emergencies. The elimination of emergency situations. General requirements".
163.	STB 11.16.04-2009 "Fire safety standards system. Fire Alarm Systems. Addressable Fire Alarm Systems. General technical conditions".
164.	GOST 22.0.05-97 "Safety in emergency situations. Technogenic emergencies.

	Terms and Definitions".
165.	GOST 25804.1-83 "The equipment, instruments, devices and Equipment Process Control Systems of Nuclear Power Plants. Basic provisions".
166.	GOST 25804.2-83 "The equipment, instruments, devices and Equipment Process Control Systems of Nuclear Power Plants. Requirements for reliability".
167.	GOST 25804.3-83 "The equipment, instruments, devices and Equipment Process Control Systems of Nuclear Power Plants. Requirements for durability, strength and resistance to external factors".
168.	GOST 25804.4-83 "The equipment, instruments, devices and Equipment Process Control Systems of Nuclear Power Plants. General structural and technical requirements".
169.	GOST 25804.5-83 "The equipment, instruments, devices and Equipment Process Control Systems of Nuclear Power Plants. General rules for testing and acceptance of prototypes and serial production".
170.	GOST 25804.6-83 "The equipment, instruments, devices and Equipment Process Control Systems of Nuclear Power Plants. Methods of conformity assessment requirements of reliability".
171.	GOST 25804.7-83 "The equipment, instruments, devices and Equipment Process Control Systems of Nuclear Power Plants. Methods of assessing of conformity to requirements for durability, strength and resistance to external influences".
172.	GOST 25804.8-83 "The equipment, instruments, devices and Equipment Process Control Systems of Nuclear Power Plants. Methods of assessing of conformity to common structural and technical requirements".
173.	Decree of the State Standard of the Republic of Belarus of April 20, 2012 No.21 approved STB ISO 10648-1-2012 "Nuclear Energy. Protective Sheaths. Part 1: Principles of construction".
174.	Decree of the State Standard of the Republic of Belarus of April 20, 2012 No.21 approved STB ISO 10648-2-2012 "Nuclear Energy. Protective Sheaths. Part 2. Classification depending on the tightness of control and the corresponding methods".
175.	Decree of the State Standard of the Republic of Belarus of August 29, 2012 No.54 approved STB ISO 15382-2012 "Nuclear energy. Radiation Protection. Dosimetric control method for radiation protection from external exposure weakly penetrating radiation, especially beta radiation, in the operation of nuclear facilities".
176.	Decree of the State Standard of the Republic of Belarus of December 13, 2012 No.79 approved STB ISO 7212-2012 "Sheaths for protection against ionizing radiation. Shielding blocks of lead with wall thickness of 50 mm and 100 mm".
177.	Decree of the State Standard of the Republic of Belarus of December 13, 2012 No.79 approved STB ISO 9404-1-2012 "Sheaths for protection against ionizing radiation. Shielding blocks of lead with wall thickness 150, 200 and 250 mm. Part 1. Chevron blocks with thickness of 150 mm and 200".
178.	Decree of the State Standard of the Republic of Belarus of December 13, 2012 No.79 approved STB ISO 20553-2012 "Radiation Protection. Monitoring

	personnel at risk of internal contamination of the body with radioactive substances".
179.	Decree of the State Standard of the Republic of Belarus of December 12, 2013 No.70 approved STB ISO 17874-1-2013 "Devices of remote handling of radioactive materials. Part 1: General requirements".
180.	Decree of the State Standard of the Republic of Belarus of December 12, 2013 No.70 approved STB ISO 17874-2-2013 "Devices of remote handling of radioactive materials. Part 2: Manipulators of mechanical copying".
181.	Decree of the State Standard of the Republic of Belarus of December 12, 2013 No.70 approved STB ISO 17874-4-2013 "Devices of remote handling of radioactive materials. Part 4: Power manipulators".
182.	Decree of the State Standard of the Republic of Belarus of December 12, 2013 No.70 approved STB ISO 17874-5-2013 "Devices of remote handling of radioactive materials. Part 5. Clamp gripping devices".
183.	Decree of the State Standard of the Republic of Belarus of September 24, 2013 No.50 approved STB 2333-2013 "Nuclear power plants. Security. Security audit of computer systems a nuclear power plant. The rules and procedures".
184.	Decree of the State Standard of the Republic of Belarus of September 24, 2013 No.50 approved STB 2334-2013 "Nuclear power plants. Security. Protection the computer systems of nuclear power plants. General requirements".
185.	Decree of the State Standard of the Republic of Belarus of September 24, 2013 No.50 approved STB 2335-2013 "Nuclear power plants. Security. Method of threat analysis and risk assessment of breach of information technology enterprise security".
186.	Decree of the State Standard of the Republic of Belarus of October 31, 2013 No.56 approved STB 2338-2013 "Nuclear power plants. Security. Management and control systems which are important to safety. The use of probabilistic safety assessment for the classification of functions".
187.	Decree of the State Standard of the Republic of Belarus of April 14, 2015 No.23 approved STB 61226-2015 "Nuclear power plants. Management and control systems which are important to safety. Classification of control and management functions".
188.	Decree of the State Standard of the Republic of Belarus of April 14, 2015 No.23 approved STB 60880-2015 "Nuclear power plants. Management and control systems which are important to safety. Software for computer systems performing category A functions".
Orders of ministries and agencies	
189.	Order of the Ministry of Housing and Communal Services of the Republic of Belarus of 13.12.2005 No.185 "On further improvement of occupational safety and health management".
Orders of the Ministry of Emergency Situations of the Republic of Belarus	
190.	Order of the Ministry of Emergency Situations of the Republic of Belarus of February 17, 2009 No.14 "On approval and enactment of the technical codes of practice" approved:

	TCP 170-2009 (02300) "General provisions of safety of nuclear power plants (GPS NPP)" TCP 171-2009 (02300) "Nuclear safety rules for NPP reactors".
191.	Order of the Ministry of Emergency Situations of the Republic of Belarus of 03.03.2016 No.58 "On organizational and staff changes".
192.	Order of the Ministry of Emergency Situations of the Republic of Belarus of 27.04.2015 No.82 "On approving the Instruction on the organization of work with public, legal entities and individual entrepreneurs applications in the bodies, subdivisions and organizations of the Ministry of Emergency Situations of the Republic of Belarus".
193.	Order of the Ministry of Emergency Situations of the Republic of Belarus of 09.07.2008 No.91 "On approval Regulations of the board of the Nuclear and Radiation Safety Department of the Ministry of Emergency Situations and its personal composition".
194.	Order of the Ministry of Emergency Situations of April 28, 2011 No. 95 "On approving the Statements form on the results of the evaluation and (or) examination of the conformity of a licensee with licensing requirements and conditions".
195.	Order of the Ministry of Emergency Situations of the Republic of Belarus of 25.04.2013 No.117 "On some measures to optimize MES departments".
196.	Order of the Ministry of Emergency Situations of the Republic of Belarus of September 17, 2007 No.139 approved TCP 097-2007 (02230) "Siting of nuclear power plants. Basic criteria and requirements to safety"
197.	Order of the Ministry of Emergency Situations of the Republic of Belarus of 29.10.2015 No.243 "On organizational and staff changes"
198.	Order of the Ministry of Emergency Situations of the Republic of Belarus of 08.12.2014 No.250 "On planning of activities of bodies, subdivisions and organizations of the Ministry of Emergency Situations of the Republic of Belarus and annulment of certain orders of Ministry of Emergency Situations of the Republic of Belarus".
199.	Order of the Ministry of Emergency Situations of the October 23, 2012 No. 253 "On some issues of activity of the Commission of the Ministry of Emergency Situations of the Republic of Belarus to evaluate the knowledge of statutory Frameworks, including technical legal acts, in the field of nuclear and radiation safety assurance".
200.	Order of the Ministry of Emergency Situations of the October 28, 2013 No.261 "On the preparation of draft normative legal acts".
201.	Order of the Ministry of Emergency Situations of the 18.09.2014 No.188 approved Instruction on the procedure of affixing a security classification "For Official Use Only" and the record management for documents containing proprietary information of limited distribution in the organs, departments and organizations of the Ministry of Emergency Situations of the Republic of Belarus.
Other documents	
202.	National plan of actions on carrying out of the recommendations of the IAEA

	mission on comprehensive evaluation of nuclear power engineering infrastructure of the Republic of Belarus (INIR mission), approved by the First Deputy Prime Minister of the Republic of Belarus Vladimir Semashko of 24.01.2013 No. 03/227-31.
203.	The Policy of Gosatomnadzor.
204.	Regulatory Strategy of Gosatomnadzor.
205.	Development Strategy of Gosatomnadzor.
206.	Information and communication strategy of Gosatomnadzor for the period until 2018 approved by the decision of the Board of Gosatomnadzor of 18.11.2013.
207.	Development strategy of knowledge management system of Gosatomnadzor
208.	Seventh National Report of the Republic of Belarus under the Convention on Nuclear Safety.
209.	National Paper of the Republic of Belarus on the Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and Its Associated Guidance on the Import and Export of Radioactive Sources.
210.	Review of the state of nuclear and radiation safety in the Republic of Belarus in 2015.
211.	Order of Gosatomnadzor of 12.01.2015 No.1 "About adjustment of Gosatomnadzor management system in compliance with safety requirements of the IAEA GS-R-3".
212.	Order of the Head of Gosatomnadzor of 12.03.2014 No.6-O/D "On approving the Instruction of candidates selection for vacant positions".
213.	Order of the Head of Gosatomnadzor No.14-O/D of 25.04.2015 "On approving guidelines on application of substantive and procedural law in administrative legal relationships by authorized officials of Gosatomnadzor".
214.	Order of the Head of Gosatomnadzor of 25.04.2015 No.15-O/D "On approving the Instruction "On the procedure of the control (supervision) over the manufacture, installation and setup of the equipment of nuclear facilities".
215.	Order of the Head of Gosatomnadzor of 01.07.2013 No.18O/D "On approving the Regulations on structural subdivisions and job descriptions of Gosatomnadzor personnel".
216.	Order of the Head of Gosatomnadzor of 03.06.2015 No.18 O/D "On organization of "direct telephone lines" and "hot lines" at GAN".
217.	Order of the Head of Gosatomnadzor of 14 July 2015 on the No.22 O/D "On introduction of the Instructions in the new edition" (together with the Regulations on the procedure for consideration and approval of application order of sources of ionizing radiation supply).
218.	Order of Gosatomnadzor No.27-O/D of 22.10.2013 "On the appointment of responsible officials and the establishment of internal validation commissions in the Department of Nuclear and Radiation Safety of the Ministry for Emergency Situations of the Republic of Belarus" with changes and additions.
219.	Order of Gosatomnadzor No.28-O/D of 22.10.2013 "On approval of the Commission for performing interviews with persons claiming to vacant positions at GAN".

220.	Order of the Head of Gosatomnadzor of 14.10.2015 No. 36-O/D "On approving the instruction on organization, procedure and registration of audit results in constant control (supervision) mode performed by the Department of Nuclear and Radiation Safety of the Ministry of Emergency Situations of the Republic of Belarus in the course of construction and commissioning of the Belarusian Nuclear Power Plant".
221.	Order of the Head of Gosatomnadzor of 31.12.2013 No.40-O/D "On liabilities and Deputy Heads of Gosatomnadzor".
222.	Order of the Head of Gosatomnadzor of 26.10.2015 No.40-O/D "On Guidelines Approval".
223.	Action Plan to align Gosatomnadzor management system requirements GS-R-3 (based on ISO 9001-2009).
224.	The Regulation on Coordinating Council on the implementation of the integrated management system.
225.	The Regulation on the Management representative on integrated management system.
226.	The Regulation on the head of the process of the integrated management system
227.	Protocol of meeting of the Coordinating Council for the introduction of an integrated management system.
228.	Instructions on the preparation, formalization and representation for signing official documents and projects of administrative documents of the Department of Nuclear and Radiation Safety of the Ministry of Emergency Situations of the Republic of Belarus.
229.	Order of Gosatomnadzor from 23.09.2013 No.25-O/D approved Instructions for the passage of an industrial practice of students.
230.	Guidelines of performing of the supervision over the radiation safety when carrying out flaw detection MU 03-02-2009.
231.	Guidelines for the implementation of the supervision of the medical accelerators of electrons MU 03-03-2009.
232.	Order of the Head of Gosatomnadzor of 30.06.2009 No.19 approved Procedure of keeping in Gosatomnadzor registration log of applications on administrative procedures in respect of legal entities and individual entrepreneurs.
233.	Order of the Head of Gosatomnadzor of 17.12.2009 No. 35 approved Instructions for conducting a unified state system of accounting and control of radiation sources.
234.	Order of the Head of Gosatomnadzor of 28.12.2009 No.36 approved Instruction on the procedure for issuing permits for using in the Republic of Belarus imported equipment and technical devices supervised by Gosatomnadzor.
235.	Order of the Head of Gosatomnadzor of 05.01.2010 approved Guidelines for the implementation of state supervision in the field of nuclear and radiation safety.
236.	Order of the Head of Gosatomnadzor of 30.12.2013 No.38-O/D approved Guidelines for the assessment of safety culture at nuclear facilities.

237.	Instructions for ensuring information exchange between the GU "Republican Emergency Management and Response Centre of MES " and the Department of Ministry of Emergency Situations of the Republic of Belarus of nuclear and radiation safety, approved 08.05.2015.
238.	Order of the Head of Gosatomnadzor of 03.08.2015 No.23-O/D approved Instruction on the rules of the development, registration and approval of norms and regulations to ensure nuclear and radiation safety.
239.	Order of the Head of Gosatomnadzor of 22.09. 2015 No.31-O/D approved The composition of the commission for check of knowledge of normative legal acts, including technical normative legal acts in the field of nuclear and (or) radiation safety; Procedure of checking of knowledge of normative legal acts, including technical normative legal acts in the field of nuclear and radiation safety; Instruction on the procedure of admission to independent work on performing of functions of the state inspector in the field of nuclear and radiation safety; The list of positions of Gosatomnadzor that are not subject to obtaining admission to independent work on the performing of functions of the state inspector in the field of nuclear and radiation safety; Standard program of initial training for admission to independent work on the performing of functions of the state inspector in the field of nuclear and radiation safety.
240.	Order of the Head of Gosatomnadzor of 23.11.2015 No. 45 Instruction on the procedure of registration, recording and analysis of the causes of radiation accidents and violations dealing with sources of ionizing radiation.
241.	Order of the Head of Gosatomnadzor of 30.11.2015 No. 46 approved Instruction on the procedure of registration of logbooks of inspections in continuous monitoring(supervision) mode at site of the Belarusian nuclear power plant.
242.	Order of the Ministry of Emergency Situations of 31.12.2015 No. 293 approved Instruction on the procedure of forming and keeping General case during control (supervision) for safety in the construction and commissioning of the Belarusian nuclear power plant by the Department of Nuclear and Radiation Safety of the Ministry for Emergency Situations of the Republic of Belarus.
243.	Order of the Head of Gosatomnadzor of 28.01.2016 No. 1 approved The list of works and services provided by operating organizations affecting to safety, including the construction of facilities in the field of use nuclear energy.
244.	Order of the Head of Gosatomnadzor of 18.03.2016 No.11 approved The list of technological equipment for nuclear power facilities, designing and production of which is subject to licensing (1,2,3 safety class).
245.	Order of the Head of Gosatomnadzor of 31.03.2016 No. 14 approved Procedure for control (supervision) of commissioning of nuclear power units with WWER reactors.
246.	Future programs of the Ministry for 2011-2015 , 2016-2020.
247.	The plans of action to realize the President's instructions, MES data, and reports on their performance.
248.	Minutes of the weekly assignments of the Head of Gosatomnadzor.
249.	Minutes of meetings with representatives of other departments, supervised

	institutions on safety issue.
250.	Information about the state of discipline in the organs, departments and organizations MES system.
251.	Executive order of Gosatomnadzor on the organization of the internal internship.
252.	Program of the high-level visit to the Republic of Belarus on the issues of safety culture in the nuclear sphere, headed by Deputy Director General of the IAEA D.Flory.
253.	The seminar program on the basis of Gosatomnadzor without departing from the current activities on the theme "Business collaboration in management" held by Academy of Public Administration under the aegis of the President of the Republic of Belarus.
254.	Measures for the removal of emotional stress and the development of self-regulatory skills with employees of Gosatomnadzor in 2015.
255.	Programmes of initial training of young specialists.
256.	Action Plan RCF BELARUS.
257.	The list of information assets and information databases of Gosatomnadzor.
258.	Plans for training and certification of Gosatomnadzor employees.
259.	Minutes of assessment of knowledge and access to independent work.
260.	Nomenclature of Gosatomnadzor.
261.	The list of forms of departmental reporting in bodies, departments and organizations of system of the Ministry of Emergency Situations of the Republic of Belarus.
262.	Nuclear and radiation safety, the use of nuclear energy. Collection of normative legal acts, 7 volumes, 2010-2015.
263.	The regulatory framework of the Republic of Belarus in the sphere of nuclear and radiation safety, the list of normative legal acts or technical normative legal acts, located in a local network of Gosatomnadzor.

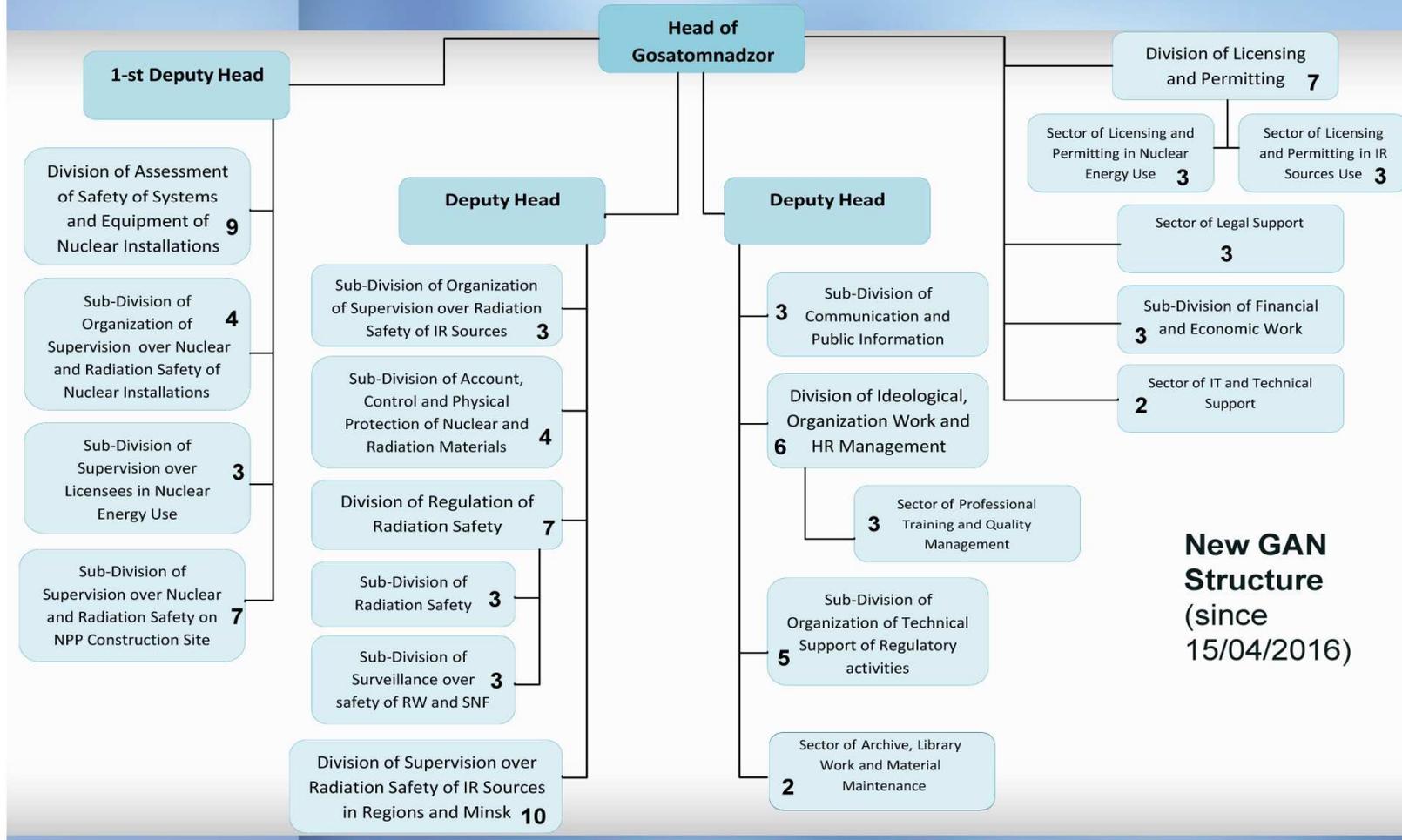
APPENDIX VII IAEA REFERENCE MATERIAL USED FOR THE REVIEW

1. No. SF-1 - Fundamental Safety Principles
2. INTERNATIONAL ATOMIC ENERGY AGENCY - Governmental, Legal and Regulatory Framework for Safety General Safety Requirement Part 1(Rev. 1) Vienna (2016)
3. INTERNATIONAL ATOMIC ENERGY AGENCY – Leadership and Management for Safety General Safety Requirement Part 2 Vienna (2016)
4. INTERNATIONAL ATOMIC ENERGY AGENCY – Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, General Safety Requirements Part 3, (2014)
5. INTERNATIONAL ATOMIC ENERGY AGENCY – Safety assessment for facilities and activities, General Safety Requirements Part 4, No. GSR Part 4 (Rev. 1), IAEA, Vienna (2016)
6. INTERNATIONAL ATOMIC ENERGY AGENCY – Predisposal Management of Radioactive Waste General Safety Requirement Part 5, No. GSR Part 5, IAEA, Vienna (2009)
7. INTERNATIONAL ATOMIC ENERGY AGENCY – Decommissioning of Facilities General Safety Requirement Part 6, No. GSR Part 6, IAEA, Vienna (2014)
8. INTERNATIONAL ATOMIC ENERGY AGENCY – Preparedness and Response for a Nuclear or Radiological Emergency General Safety Requirement Part 7, No. GSR Part 7, IAEA, Vienna (2015)
9. INTERNATIONAL ATOMIC ENERGY AGENCY - Regulations for the Safe Transport of Radioactive Material Specific Safety Requirements 6, No. SSR 6, IAEA, Vienna (2012).
10. INTERNATIONAL ATOMIC ENERGY AGENCY - Organization and Staffing of the Regulatory Body for Nuclear Facilities, Safety Guide Series No. GS-G-1.1, IAEA, Vienna (2002)
11. INTERNATIONAL ATOMIC ENERGY AGENCY - Review and Assessment of Nuclear Facilities by the Regulatory Body, Safety Guide Series No. GS-G-1.2, IAEA, Vienna (2002)
12. INTERNATIONAL ATOMIC ENERGY AGENCY - Regulatory Inspection of Nuclear Facilities and Enforcement by the Regulatory Body, Safety Guide Series No. GS-G-1.3, IAEA, Vienna (2002)
13. INTERNATIONAL ATOMIC ENERGY AGENCY - Documentation for Use in Regulatory Nuclear Facilities, Safety Guide Series No. GS-G-1.4, IAEA, Vienna (2002)
14. INTERNATIONAL ATOMIC ENERGY AGENCY- - Arrangements for Preparedness for a Nuclear or Radiological Emergency, Safety Guide Series No. GS-G-2.1, IAEA, Vienna (2007)
15. INTERNATIONAL ATOMIC ENERGY AGENCY – Criteria for use in Preparedness and Response for a Nuclear or Radiological Emergency, General Safety Guide Series No. GSG-2, IAEA, Vienna (2011)
16. INTERNATIONAL ATOMIC ENERGY AGENCY– Assessment of Occupational Exposure Due to Intake of Radionuclides Safety Guide Series No. RS-G-1.2, IAEA, Vienna (1999)
17. INTERNATIONAL ATOMIC ENERGY AGENCY - Assessment of Occupational Exposure Due to External Sources of Radiation Safety Guide Series No. RS-G-1.3, IAEA, Vienna (1999)
18. INTERNATIONAL ATOMIC ENERGY AGENCY - Building Competence in Radiation Protection and the Safe Use of Radiation Sources, Safety Guide Series No. RS-G-1.4, IAEA, Vienna (2001)
19. INTERNATIONAL ATOMIC ENERGY AGENCY – Classification of Radioactive Waste, General Safety Guide No. GSG-1, IAEA, Vienna (2009)

20. INTERNATIONAL ATOMIC ENERGY AGENCY – Regulatory Control of Radioactive Discharge to the Environment, Safety Guide Series No. WS-G-2.3, IAEA, Vienna (2000)
21. INTERNATIONAL ATOMIC ENERGY AGENCY – Safety Assessment for the Decommissioning of Facilities Using Radioactive Material, Safety Guide Series No. WS-G.5.2, IAEA, Vienna (2009)
22. INTERNATIONAL ATOMIC ENERGY AGENCY – Establishing the Safety Infrastructure for a Nuclear Power Programme Specific Safety Guide No SSG-16, IAEA, Vienna (2011)
23. INTERNATIONAL ATOMIC ENERGY AGENCY - Disposal of Radioactive Waste Specific Safety Requirements 5, No. SSR 5, IAEA, Vienna (2011)

APPENDIX VIII ORGANIZATIONAL CHART

Organigram of Gosatomnadzor



Key State Authorities Involved in Nuclear and Radiation Safety Provision

