



**INTEGRATED
REGULATORY
REVIEW SERVICE (IRRS)
FOLLOW-UP MISSION
TO
THE RUSSIAN FEDERATION**

Moscow
11 to 19 November 2013

DEPARTMENT OF NUCLEAR SAFETY AND SECURITY





INTEGRATED REGULATORY REVIEW SERVICE (IRRS)
FOLLOW-UP REPORT TO
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Mission date: *11 to 19 November 2013*

Regulatory body: *FEDERAL ENVIRONMENTAL, INDUSTRIAL AND NUCLEAR SUPERVISION SERVICE OF RUSSIA (ROSTECHNADZOR)*

Location: *ROSTECHNADZOR HEADQUARTERS in Moscow, RUSSIAN FEDERATION*

Regulated facilities and activities: *Nuclear power plants (NPPs), research reactors, fuel cycle facilities, medical industrial and research applications, waste facilities, decommissioning and remediation.*

Organized by: *International Atomic Energy Agency (IAEA)*

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The number of recommendations, suggestions and good practices is in no way a measure of the status of the regulatory body. Comparisons of such numbers between IRRS reports from different countries should not be attempted.

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EXECUTIVE SUMMARY

In November 2009, at the request of the Government of the Russian Federation, an international team of twenty two experts in nuclear and radiation safety visited the Ministry of Natural Resources and Environment (MNRE) and the Federal Environmental, Industrial and Nuclear Supervision Service of Russia (Rostekhnadzor) to conduct an Integrated Regulatory Review Service (IRRS). The purpose of the IRRS mission was to review the framework for regulating safety of all nuclear facilities and activities in the Russian Federation, and the effectiveness of the regulatory functions implemented by MNRE and Rostekhnadzor. At the request of the Government of the Russian Federation, an international team of senior safety experts met representatives of Rostekhnadzor from 11 to 19 November 2013 to conduct the IRRS follow-up mission to the Russian Federation. The mission took place at the headquarters of Rostekhnadzor in Moscow and included site visits to the Novovoronezh Nuclear Power Plant. The purpose of the peer review was to review the national regulatory framework for nuclear and radiation safety in the Russian Federation, including the measures undertaken following the recommendations and suggestions of the 2009 IRRS mission. In addition, this follow-up mission was carried out to review additional areas, namely Emergency Preparedness and Response and regulatory implications to the Russian framework for safety in relation to the lessons learned from the TEPCO Fukushima Daiichi accident.

The review compared the Russian 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 team members and the Russian counterparts in the areas covered by the IRRS.

The IRRS team consisted of 10 senior regulatory experts from 9 IAEA Member States and five IAEA staff members.

The IRRS team carried out a review of the measures undertaken following the recommendations and suggestions of the 2009 IRRS missions 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 related to regulation of all facilities and activities, including authorization, review and assessment, inspection, enforcement, and the development and content of regulations and guides. In reviewing these areas, special attention was given to regulatory implications of the Russian framework for safety in relation to the lessons learned from the TEPCO Fukushima Daiichi accident as recommended by the IAEA Nuclear Safety Action Plan.

The mission included observations of regulatory activities, interviews and discussions with Rostekhnadzor staff including site inspectors at the Novovoronezh NPP. The IRRS team members met with Novovoronezh personnel and management and observed an emergency exercise at the Novovoronezh NPP, at the offsite emergency centre and at HQ of Rostekhnadzor.

Rostekhnadzor provided the IRRS team with advance reference material and comprehensive documentation including the results of the self-assessment in all areas within the scope of the mission.

Throughout the mission, the IRRS team was extended full cooperation in regulatory, technical, and policy issues by all parties; in particular, the staff of Rostekhnadzor provided the fullest practicable assistance and demonstrated extensive openness and transparency.

The IRRS team concluded that the recommendations and suggestions from the 2009 IRRS mission have been taken into account systematically by a comprehensive action plan. Significant progress has been made in many areas and many improvements were carried out following the implementation of the action plan.

The team noted that all 2009 suggestions and recommendations previously referring to MNRE are now applicable to Rostekhnadzor, as it is the independent regulatory body according to a Decree of the Government of the Russian Federation.

During this follow-up mission, the IRRS team determined that 10 out of 25 recommendations and 17 of 34 suggestions made by the 2009 IRRS mission had been effectively addressed and therefore

could be considered closed; 8 out of 25 recommendations and 6 out of 34 suggestions made by the 2009 IRRS mission could be considered closed on the basis of progress made and confidence in their effective completion. Rostechnadzor should be commended for this accomplishment.

The IRRS team made the following general observations:

- There have been improvements to the legal basis for state nuclear safety regulation, in particular changes related to the federal law “On the Use of Atomic Energy”, and the adoption of a new federal law “On the Management of Radioactive Waste and Amendment of Some Acts of the Law of the Russian Federation”.
- A significant change since the first mission is that in 2010 Rostechnadzor transferred from being under the jurisdiction of the Ministry of Natural Resources and Environment to being a separate regulatory body reporting directly to the Government of the Russian Federation. Rostechnadzor is therefore now effectively independent of other federal executive authorities. It can now develop independently, and submit for consideration, acts of the President and the Government of the Russian Federation, and develop and put into effect associated federal regulations in the field of atomic energy use. In addition, the restrictions on frequency and duration of the regulatory inspections have been effectively removed.
- Tangible enhancements in the cooperation of Rostechnadzor with other federal authorities involved in the regulatory supervision are being carried out by Government orders and agreements, and joint actions have already taken place. The team observed that additional work is necessary in this area, in particular in the national harmonization of the safety regulations and their practical implementation.
- In relation to the improvement of human resources of Rostechnadzor, positive developments have taken place to ensure proper regulatory oversight of the ambitious national construction programme of nuclear power plants. However, it is vital that the Government of the Russian Federation properly addresses the overall issue of human and financial resources of the regulatory body.
- Some activities were initiated on the establishment of the management system of the regulatory body. However, a comprehensive management system is not in place and significant efforts need to be dedicated to this area. In particular, this system needs to be updated to properly reflect the new administrative status of Rostechnadzor.
- Actions taken by Rostechnadzor immediately after the TEPCO Fukushima Daiichi accident were timely and effective in developing a national nuclear safety action plan fully consistent with the IAEA nuclear safety action plan, considering in particular, the re-assessment of safety of the nuclear power plant and research reactor sites, including spent fuel pools and dry storage facilities. However, the safety re-assessment has not been extended to other fuel cycle facilities.

The IRRS team identified a number of good practices and made further recommendations and suggestions that indicate where improvements are necessary or desirable to continue enhancing the effectiveness of regulatory functions in line with the IAEA safety standards.

Among the good practices identified by the IRRS team are the following:

- The Russian Federation, through its leadership and collaboration with various international stakeholders, has contributed effectively to the development of measures and programs that may strengthen the global safety regime in the wake of the TEPCO Fukushima Daiichi accident. The team noted in particular, its contribution to the IAEA Nuclear Safety Action Plan and proposal to improve the international legal binding instruments towards worldwide safety enhancements.
- Benchmarking of nuclear power plant assessment and inspection activities with foreign regulatory bodies to share best safety practices and experiences in the field of nuclear power plant supervision.
- The introduction of a systematic emergency exercise evaluation methodology and the adoption of extensive and detailed regulations on the contents of licensee emergency plans.

- The proactive approach taken by Rostekhnadzor, in coordination with the other national organizations concerned, to revise the national regulations for transport of radioactive material in parallel to the revision of the relevant IAEA Safety Standards.

The IRRS team identified certain issues warranting attention or in need of improvement. This report includes 5 recommendations and 8 suggestions. Key areas for improvement identified during the mission include:

- A remuneration scheme that rectifies the salary gaps between the employees of Rostekhnadzor and the operating organisations in order to improve the capability of Rostekhnadzor to recruit and retain competent staff.
- The allocation of dedicated resources of Rostekhnadzor to assist and cooperate with regulatory bodies of Member States in particular those that are acquiring Russian nuclear technologies.
- The development of a management system to include processes and procedures to continuously monitor and evaluate the safety progress made by the operating organization, and development and implementation of new safety requirements and guidelines in relation to severe accidents prevention and management at nuclear facilities.
- The extension of the safety re-assessment to consider also fuel cycle facilities, as follow-up to the TEPCO's Fukushima Daiichi accident to identify necessary potential improvements.
- The revision of the current licence conditions related to the safety assessment and safety case of liquid radioactive waste disposal facilities.
- The completion of the revision of the regulation on the emergency classification scheme based on plant parameters in accordance with IAEA Safety Standards.
- The expansion of Rostekhnadzor's evaluation programme of emergency exercises to cover facilities other than nuclear power plants.

The findings by the IRRS team of 2009 that remain open can be found in Appendix IV.

The new IRRS team findings are summarized in Appendix V.

An IAEA press release was issued at the end of the mission and a joint Rostekhnadzor IAEA press conference was organized.

I. INTRODUCTION

In November 2009, at the request of the Government of the Russian Federation, an international team of twenty two experts in nuclear and radiation safety visited MNRE and Rostekhnadzor to conduct an IRRS mission. The purpose of the IRRS mission was to review the framework for regulating safety of all nuclear facilities and activities in the Russian Federation, and the effectiveness of the regulatory functions implemented by MNRE and Rostekhnadzor.

At the request of the Government of the Russian Federation, an international team of senior safety experts met representatives of Rostekhnadzor from 11 to 19 November 2013 to conduct the IRRS follow-up mission to the Russian Federation. The mission took place mainly at the headquarters of Rostekhnadzor in Moscow. The purpose of the peer review was to review the national regulatory framework for nuclear and radiation safety in the Russian Federation, including the measures undertaken following the recommendations and suggestions of the 2009 IRRS mission. In addition, this mission was carried out to review additional areas, namely emergency preparedness and response, and the regulatory implications of the Fukushima accident. The review mission was formally requested by the Government of the Russian Federation in May 2013. A preparatory mission was conducted from 12 to 13 August 2013 at Rostekhnadzor Headquarters in Moscow, to discuss the purpose, objectives, scope and detailed preparations of the review in connection with the previous IRRS mission, conducted in 2009 and additional areas of review.

The IRRS team consisted of 10 senior regulatory experts from 9 IAEA Member States and 5 IAEA staff members.

The IRRS team carried out a review of the measures undertaken following the recommendations and suggestions of the 2009 IRRS mission 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 related to regulation of all facilities and activities regulated by Rostekhnadzor (nuclear power plants, research reactors, waste management facilities, fuel cycle facilities, industrial medical and research facilities and activities and transport of radioactive material), including authorization, review and assessment, inspection, enforcement, and the development and content of regulations and guides. In addition, the following area was reviewed: emergency preparedness and response.

As recommended by the IAEA Nuclear Safety Action Plan, special attention was given to regulatory implications to the Russian framework for safety in relation to the lessons learned from the TEPCO Fukushima Daiichi accident.

The IRRS mission also included policy discussions on response to new builds of Nuclear Power Plants and associated human resources management.

Rostekhnadzor conducted a self-assessment in preparation for the mission and prepared a preliminary action plan for the additional areas. The results of the self-assessment and supporting documentation were provided to the team as advance reference material for the mission. During the mission the IRRS team performed a systematic review of all topics by reviewing the advance reference material, conducting interviews with management and staff from Rostekhnadzor and performed direct observation of Rostekhnadzor working practices during inspection at the Novovoronezh Nuclear Power Plant and observation of an emergency exercise at the Novovoronezh Emergency Technical Centre. Meetings with the Federal Medical and Biological Agency (FMBA), the Ministry of Civil Defense and Emergencies (EMERCOM), the State Corporation “Rosatom”, the Federal Service for Technical and Export Control (FSTEC) were also organized. All through the mission the IRRS team received excellent support and cooperation from Rostekhnadzor and other organizations.

II. OBJECTIVE AND SCOPE

The purpose of the peer review was to review the national regulatory framework for nuclear and radiation safety in the Russian Federation, including the measures undertaken following the recommendations and suggestions of the 2009 IRRS mission. In addition, this mission was carried out to review additional areas. The IRRS review scope addressed all facilities and activities regulated by Rostekhnadzor, including nuclear power plants, research reactors, fuel cycle facilities and waste management facilities; and radiation sources facilities, as well as transport of radioactive material. The review was carried out by comparison of existing arrangements against the IAEA safety standards.

It is expected that the IRRS mission will facilitate regulatory improvements in the Russian Federation and other Member States from the knowledge gained and experiences shared by Rostekhnadzor and IRRS reviewers and through the evaluation of the effectiveness of the Russian regulatory framework for nuclear safety and its good practices.

The key objectives of this mission were to enhance nuclear and radiation safety, as well as emergency preparedness and response:

- Providing the Russian Federation and Rostekhnadzor, through completion of the IRRS questionnaire, with an opportunity for self-assessment of its activities against IAEA safety standards;
- Providing the Russian Federation and Rostekhnadzor with a review of its regulatory programme and policy issues relating to nuclear and radiation safety, and emergency preparedness;
- Providing the Russian Federation and Rostekhnadzor with an objective evaluation of its nuclear and radiation safety, as well as emergency preparedness and response regulatory activities with respect to IAEA safety standards;
- Contributing to the harmonization of regulatory approaches among IAEA Member States;
- Promoting the sharing of experience and exchange of lessons learned;
- Providing reviewers from IAEA Member States and the IAEA staff with opportunities to broaden their experience and knowledge of their own fields;
- Providing key Rostekhnadzor staff with an opportunity to discuss their practices with reviewers who have experience with different practices in the same field;
- Providing the Russian Federation and Rostekhnadzor with recommendations and suggestions for improvement; and
- Providing other States with information regarding good practices identified in the course of the review.

III. BASIS FOR REVIEW

A) Preparatory work and IAEA review team

At the request of the Government of the Russian Federation, a preparatory meeting for the IRRS follow-up mission was conducted from 12 to 13 August 2013. The preparatory meeting was carried out by the appointed Team Leader Mr Ramzi Jammal, Deputy Team Leader Mr Karol Janko and the IAEA representatives, Mr Gustavo Caruso, Mr Hazem Suman, and Mr Jean-Francois Lafortune.

The IRRS mission preparatory team had discussions regarding the progress made by Rostekhnadzor in addressing measures undertaken following the recommendations and suggestions of the 2009 IRRS missions, the self-assessment work conducted since 2009 and the relevant regulatory programmes for additional areas for review that were not addressed in 2009. The Rostekhnadzor team was led by its senior management, represented by Mr Valery Bezzubtsev, Deputy Chairman of Rostekhnadzor and included other senior management and staff. The discussions resulted in agreement that the following areas of its regulatory programme were to be reviewed by the IRRS mission:

- Follow up of IRRS findings from the 2009 mission;
- Emergency Preparedness and Response with regards to Rostekhnadzor responsibilities only;
- Regulatory implications of the TEPCO Fukushima Daiichi accident; and,
- Selected policy issues.

Rostekhnadzor representatives made presentations on the major regulatory changes in nuclear safety since 2009, as well as progress made in implementing recommendations and suggestions of the 2009 IRRS mission and preliminary results of self-assessment for the emergency preparedness and response and the regulatory implications of the TEPCO Fukushima Daiichi accident.

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 the Russian Federation in November 2013.

The proposed IRRS team composition (senior regulators from Member States to be involved in the review) was discussed and the size of the IRRS team was tentatively confirmed. Logistics including meeting and work space, counterparts and Liaison Officer identification, proposed site visits, lodging and transportation arrangements were also addressed.

The Rostekhnadzor Liaison Officer for the preparatory meeting and the IRRS mission was Ms Irina Sokolova, Head of International Relations Department, Rostekhnadzor.

Rostekhnadzor provided the IAEA (and the review team) with the advance reference material for the review at the end of September 2013, including the self-assessment results. In preparation for the mission, the IAEA review team members conducted a review of the advance reference material and provided their initial review comments to the IAEA Team Coordinator prior to the commencement of the IRRS mission.

B) Reference for the review

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

C) Conduct of the review

An initial IRRS team meeting was conducted on Sunday, 10 November 2013, in Moscow by the IRRS Team Leader and the IRRS IAEA Team Coordinator to discuss the general overview, the focus areas and specific issues of the mission, to clarify the basis for the review and the background, context and objectives of the IRRS and to agree on the methodology for the review and the evaluation among all reviewers. They also presented the agenda for the mission.

In addition, the IAEA Review Area Facilitator presented the expectations regarding the module on the “Regulatory Implications from TEPCO Fukushima Daiichi accident” to be applied.

The Liaison Officer was present at the opening IRRS team meeting, in accordance with the IRRS guidelines, and presented logistical arrangements planned for the mission.

The reviewers also reported their first impressions of the advance reference material.

The IRRS entrance meeting was held on Monday, 11 November 2013, with the participation of Rostekhnadzor acting Chairman Mr Alexey Ferapontov, senior management and staff. Opening remarks were made by Mr Valery Bezzubtsev, Deputy Chairman of Rostekhnadzor, Mr Ramzi Jammal, IRRS Team Leader and Mr Gustavo Caruso, IRRS Team Coordinator. Mr Bezzubtsev gave an overview of the major regulatory changes in nuclear safety since 2009. Rostekhnadzor representatives presented a status of the progress made regarding previous IRRS findings, as well as of the regulatory programmes in the additional review areas to be assessed in this mission.

During the mission, a review was conducted for all the review areas with the objective of providing the Russian Federation and Rostekhnadzor with recommendations and suggestions for improvement as well as identifying good practices. The review was conducted through meetings, interviews and discussions, visits to facilities and direct observations regarding the national practices and activities.

The IRRS team also reviewed the Rostekhnadzor response to the TEPCO Fukushima Daiichi accident. This review was performed by conducting interviews with involved Rostekhnadzor staff, reviewing associated documents and the results of the self-assessment completed by Rostekhnadzor. The results are provided in Section 11 of this report.

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

The IRRS exit meeting was held on Tuesday, 19 November 2013. The opening remarks at the exit meeting were presented by Rostekhnadzor Acting Chairman Mr Alexey Ferapontov and were followed by the presentation of the results of the mission by the IRRS Team Leader, Mr Ramzi Jammal. Closing remarks were made by Mr Denis Flory, Deputy Director General, Head of IAEA Department of Nuclear Safety and Security.

A press conference was organized at the end of the mission by Rostekhnadzor and the IAEA.

An IAEA press release was issued at the end of the mission.

1. LEGISLATIVE AND GOVERNMENTAL RESPONSIBILITIES

1.1. NATIONAL POLICY AND STRATEGY

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R1	<u>Recommendation:</u> The Government of the Russian Federation should continue the work on the enhancement of its legislation in accordance with IAEA Safety Standards to provide clear and sustainable nuclear and radiation safety regulations for all nuclear activities, including radioactive waste management and decommissioning, as well as to remove the restrictions on frequency and duration of the inspections of the regulating authorities.
R2	<u>Recommendation:</u> The Government of the Russian Federation should develop and implement a financing mechanism which ensures adequate resources for nuclear and radiation safety regulation including competent staff and the necessary financing for independent safety reviews that are a prerequisite for licensing decisions, taking into account the increasing amount of nuclear energy utilization in the Russian Federation.

Changes since the initial IRRS mission

Recommendation 1: Recommendation 1 comprises two parts: the first relates to the need for the Russian Federation to enhance legislation so that appropriate regulations can be put in place for all nuclear activities, and the second relates to the need to remove restrictions on the frequency and duration of inspections.

Part I of Recommendation 1:

Since the last mission, there have been very considerable improvements to the legal basis for state safety regulation. The two major changes are:

- A) Amendments to the federal law “On the Use of Atomic Energy”, and
- B) Adoption of a new federal law “On the Management of Radioactive Waste and Amendment of Some Acts of the Law of the Russian Federation”.

The Atomic Energy law has undergone numerous amendments to ensure there is a unified regulatory and technical basis to ensure the safe use of atomic energy. Some key amendments relating to nuclear regulation are:

- The priority of legislation to the field of atomic energy over requirements of legislation under other fields, for example, industrial safety
- The legal status of the regulatory body (see section 1.4 on the enhancements to its powers and independence)
- The types of activities subject to licensing
- The adequacy of regulatory response to potential hazards of facilities
- The need for periodic safety assessment of nuclear facilities every 10 years
- The enhancement of administrative responsibility for norms and rules violation
- The role of technical support organisations for the state safety regulatory authority

At the time of the 2009 IRRS mission, both the legal framework and the national policy for the safe management of radioactive waste were not well-established. This was a key issue considering that the Russian Federation has a large nuclear programme with an associated large amount of legacy waste, and where the final disposal of generated radioactive waste has yet to be defined. This has now received special attention with the passing of the law on radioactive waste management as well as the

development of associated regulations for the safe management of radioactive waste and decommissioning.

The Radioactive Waste Management law (which has been in development since the 1990s and enacted in 2011) addresses matters such as:

- The administrative and legal framework for radioactive waste management
- The state system for the management of radioactive waste, including its categorisation and ownership
- The state agency and the national operator for radioactive waste management.

Both laws have been supported by a number of Government decrees.

The team noted that the Russian Federation has made very considerable legislative progress. But a significant amount of further legislation is required before the law comprehensively covers all nuclear safety matters. In particular, there is the need for further legislation to cover decommissioning (see Recommendation 5) and spent fuel management. Rostechнадзор stated that the majority of the laws needed are now in place, but the laws on decommissioning and on spent nuclear fuel are to be enacted in the coming years. Nevertheless, Rostechнадзор stated that these timescales will not undermine its continued ability to undertake its regulatory duties, and that most of associated regulations are in place. For example, there are statements relating to decommissioning in the current law and a decree for special funds for decommissioning is already in place. Rostechнадзор is also working on further decrees, but its current priority is in developing and implementing outstanding regulations.

Part II of Recommendation 1:

This part relates to the removal of restrictions of frequency and duration of inspections by the regulating authorities. The Advance Reference Material and field verifications demonstrated that these restrictions have been removed. The law and associated decree now allows for (1) unscheduled inspections on grounds listed in the legislation, and (2) permanent state supervision, including inspections, at specified nuclear facilities (also see Recommendation 20).

Recommendation 2: Recommendation 2 comprises two parts.

Part I of Recommendation 2:

The first part of Recommendation 2 addresses the need for the Government of the Russian Federation to develop and implement a financing mechanism which ensures adequate resources for nuclear and radiation safety regulation. Rostechнадзор reported that proposals had been submitted to the Government to increase the salaries of Rostechнадзор inspectors to ensure that the organisation attracts potential recruits of the appropriate quality, while retaining and maintaining existing capability. However, these proposals were not agreed by the Ministry of Finance and the Ministry of Labour and Social Protection.

Part II of Recommendation 2:

The second part of Recommendation 2 relates to the cost recovery of safety reviews. Rostechнадзор described the system now in place, backed by law. Rostechнадзор set the terms of reference for the reviews. The applicant then selects an organization that will undertake the review from a list of Rostechнадзор licensed organisations (dependent on the hazard posed by the facility). The review is fully paid for by the applicant. The results of the review are then further reviewed by Rostechнадзор before it renders its regulatory decisions. The team was satisfied that this process provided for appropriate financing, while retaining Rostechнадзор's regulatory authority and independence.

Status of the findings in the initial mission

Recommendation 1 Part 1 is closed on the basis of progress made and confidence in effective completion. Although not all the legislation is in place, the team was satisfied that there was a credible plan, and that particular outstanding pieces of legislation are covered by other Recommendations and Suggestions.

Recommendation 1 Part 2 is closed. The team was satisfied that the restrictions on inspections have been removed.

Recommendation 2 Part 1 is open. The financing mechanism relating to human resources, as well as broader issues of human resources has not been adequately addressed, and this remains a key issue.

Recommendation 2 Part 2 is closed. The necessary financing mechanism is now in place.

New observations from the follow-up mission

The topic of human resources management and financial system to support Rostekhnadzor's regulatory functions in the context of new builds of nuclear reactors and other nuclear facilities was selected as the policy issue to be discussed by the IRRS team and Rostekhnadzor.

The IRRS team and Rostekhnadzor discussed opportunities for improving the capability of Rostekhnadzor to carry out its national mandate and to provide support to foreign regulatory bodies. The discussion focused on the need for additional human and financial resources based on best practices and lessons learned arising from the experience of other international regulatory bodies such as Canada, France, Finland, Slovakia, Ukraine, United Kingdom and the United States. This is especially the case in the current context where the Russian Federation is expanding its nuclear power program. At this time, the IRRS team noted that Rostekhnadzor has already identified efficiencies and re-allocated resources internally to address current construction activities of nuclear facilities and other expansions in nuclear activities in the Russian Federation. However, the expansion of the nuclear program will require additional resources within Rostekhnadzor to appropriately perform its regulatory duties for all stages of the nuclear fuel cycle (construction, operation, decommissioning, etc).

The first aspect considered was of internal nature to Rostekhnadzor. The IRRS team was informed that staff salary is higher at the headquarter office of Rostekhnadzor compared with its regional offices. This is explained by an administrative rule of the Government of the Russian Federation. The IRRS team believes that augmenting the salary of the staff at regional offices to the level of the salary at headquarters would allow Rostekhnadzor to retain and recruit highly qualified staff. The IRRS team recognizes that all governments worldwide including the Russian Federation are implementing deficit reduction measures and are looking for ways to improve efficiencies within their respective government. It was noted by the IRRS team and Rostekhnadzor during the discussion that several other regulatory bodies countries (Canada, France, Finland, Slovakia, Ukraine, the United Kingdom and the United States) maintain competitive salary for their staff comparing with the industry sector which ensure retention of competent staff. Periodic review of salary levels are also conducted in those countries in the form of national benchmarking exercises to ensure the consistency of salaries offered by the regulatory body with those of the industry. It was also noted that these regulators provide the same level of salary at headquarters and regional offices. The IRRS team encourages Rostekhnadzor and the Government of the Russian Federation to conduct an analysis and make good use of these countries' practices.

The second aspect considered was Rostekhnadzor's responsibility to support foreign regulatory bodies of embarking countries and countries with well-established nuclear infrastructure obtaining Russian nuclear technology. It was noted that Rostekhnadzor should be granted by the government the authority to support and assist regulators in embarking countries. The IRRS team believes it is important for the politicians worldwide to recognize that nuclear safety is a global issue, as demonstrated by recent accidents, and to understand that competent regulatory bodies will make a positive impact on nuclear safety globally. Regulatory bodies of these embarking countries must be adequately financed by their national government and staffed to implement effectively their mandate as they are acquiring nuclear technology for the first time. It was noted by the IRRS team that the Russian Federation, as a major exporting country, has the responsibility to ensure that the recipient country has the proper regulatory structure in place to ensure nuclear safety, even if the design provided is robust and secure as this might be compromised by an ineffective regulatory oversight in the importing country. Regulatory assistance and the capacity to provide long term regulatory cooperation are key responsibilities to ensure nuclear safety globally.

It is also important for Rostechnadzor, as the nuclear regulator of a major exporting country, to have sufficient competencies and resources to engage with countries with well-established nuclear infrastructure interested in obtaining the Russian nuclear technology. Increasing the resources of Rostechnadzor and its Technical Support Organizations (TSOs) would ensure appropriate management of programs dedicated to the support of foreign regulators to ensure nuclear safety. In the case of embarking countries, especially when this entails building a regulatory infrastructure and establishing an independent and effective regulator, these programs are considered complex and require dedication of an important number of Rostechnadzor's internal resources.

Observation: The IRRS team notes that the Government of the Russian Federation should consider increasing the financial resources of Rostechnadzor. This would allow for increased salaries to recruit and retain highly competent staff as well as an increase in the number of staff to adequately perform the duties within the mandate of Rostechnadzor in the context of the Russian Federation's expanding nuclear program.

As a result the team makes the following recommendation.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1 Req.3 states that: <i>The government, through the legal system should establish and maintain a regulatory body and shall confer on it the legal authority and provide it with the competence and the resources necessary to fulfil its statutory obligation for the regulatory control of facilities and activities.</i>
RF1	Recommendation: The Government of the Russian Federation should rectify the salary gap that exists between the employees of Rostechnadzor and the operating organisations to make sure that Rostechnadzor is able to recruit and retain competent staff, especially inspectors.

Observation: The team also noted that Rostechnadzor is providing support to regulatory bodies of emerging nations that are developing their nuclear infrastructure using Russian technology. Furthermore, Rostechnadzor is engaging with regulators of nuclear-developed nations that are exploring the use of Russian technology. As a result the team recommends:

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	GSR Part 1 Requirement 14: International obligations and arrangements for international cooperation states: <i>The government shall fulfil its respective international obligations, participate in the relevant international arrangements, including international peer reviews, and promote international cooperation to enhance safety globally.</i>
(2)	GSR Part 1 Requirement 14 para 3.2 e states <i>The features of the global safety regime include:</i> ... <i>(e) Multilateral and bilateral cooperation that enhances safety by means of harmonized approaches as well as increased quality and effectiveness of safety reviews and inspections.</i>
RF2	Recommendation: The Government of the Russian Federation should authorize Rostechnadzor to assist foreign regulatory bodies of countries that are acquiring Russian nuclear technologies and provide Rostechnadzor with dedicated resources to organize these activities.

1.2. ESTABLISHMENT OF A FRAMEWORK FOR SAFETY

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S1	Suggestion: A more clear structure and integration of the legal framework should be considered for better effectiveness of the nuclear regulations, considering the different roles and responsibilities of all involved parties for safety, and more attention should be given to a graded approach to safety considering the wide range of facilities and activities included.

Changes since the initial IRRS mission

Suggestion 1: The legislative changes identified in Section 1.1 above and the regulatory body changes described in section 1.4 below now provide Rostekhnadzor with the responsibility for approving safety regulations. These regulations are binding on the operator. Proposals for new regulations or amendments to existing ones can come from either Rostekhnadzor or Rosatom (though the team was informed that Rostekhnadzor initiates most of the regulations). Rostekhnadzor described the process by which regulations are developed, and which can typically take a number of years. During this process there are numerous rounds of consultations between interested parties. However, irrespective of the provenance of the regulation, it is finally approved by the Chairman of Rostekhnadzor. There is a further step where the regulation goes to the Ministry of Justice for legal scrutiny registration, but the team was assured that this stage does not affect the nuclear safety requirements of the regulation. The only power of veto is by the Government. Furthermore, Rostekhnadzor also has the right to impose more specific requirements to nuclear facilities safety via licence conditions.

The legislative changes have also, for the first time, given a legal status to the regulator's safety guides. These safety guides provide guidance to both the operator and Rostekhnadzor's inspectors on Rostekhnadzor's judgement as to how the operator should comply with the regulations. These are not legally binding and the operator can choose to meet the regulations in a different way as long as they show how this provides an equivalent or better level of nuclear safety.

Rostekhnadzor exercises its regulatory functions over a large number and wide range of facilities and activities. Based on the information the IRRS team gained, Rostekhnadzor in its regulatory practice reflect the graded approach principle to ensure that safety requirements commensurate with the magnitude of any hazard. This approach has been included in the current regulations, where higher level of requirements on facilities and installations presenting higher risk are formulated and that is applied through regulatory actions as licensing, safety assessment, inspection activities, etc. For example, in the case of nuclear facilities with high-power installed thermal capacity or large inventory there is the requirement for complex documentation, PSA Levels 1 and 2, performance of inspection activities, etc. In contrast, source facilities with sealed sources of category 4, 5 receive less frequent inspections.

Status of the findings in the initial mission

Suggestion 1 is closed. The legislative changes and associated changes to the responsibilities of the regulatory body described under Recommendation 1 are judged sufficient to close this suggestion. Furthermore Rostekhnadzor has sufficiently addressed the issue of graded approach.

1.3. ESTABLISHMENT OF A REGULATORY BODY

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R3	Recommendation: Regarding the special need for the coordination of radiation protection issues, including those related to the practical application of the radiation protection optimization principle, the bilateral agreements between Rostekhnadzor on one side, and FMBA and Rospotrebnadzor on the other side, should be encouraged and

2009 mission RECOMMENDATIONS, SUGGESTIONS

given a high priority.

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| S2 | <p><u>Suggestion:</u> The coordination between the different regulatory authorities should go further than developing bilateral agreements. In particular, common actions, such as inspections, could help avoiding conflicting requirements being placed on the authorised parties.</p> |
| S3 | <p><u>Suggestion:</u> As part of continuous improvement, Rostekhnadzor, FMBA and Rospotrebnadzor should analyze the experience gained in the practical application of their agreements and, if appropriate, use this experience for the development of a joint proposal to adapt the necessary provisions of the State to better consolidate the coordination approach.</p> |
| S4 | <p><u>Suggestion:</u> Rostekhnadzor is encouraged to extend its cooperation agreement with EMERCOM beyond NPPs to other facilities.</p> |
| R4 | <p><u>Recommendation:</u> MNRE should take into account that, for improvement and development of the federal legislation and optimization of the structure of the State authorities, it is necessary to consider the issue of effective distribution of all regulatory functions (competent authority approvals) addressed in the IAEA Regulations for the Safe Transport of Radioactive Material, TS-R-1, para 802, namely approval for packages, shipments, special form material, special arrangements etc. between independent federal executive authorities.</p> |
| S5 | <p><u>Suggestion:</u> MNRE and Rostekhnadzor should take initiative to enhance their cooperation with the Ministry of Transport, EMERCOM and FMBA to avoid the duplication of the functions of competent authorities, e.g. by establishing of a Memorandum of Understanding.</p> |

Changes since the initial IRRS mission

Recommendation 3 and Suggestions 2, 3 and 4: Rostekhnadzor reported that an agreement between FMBA and Rospotrebnadzor on cooperation in state regulation of radiation safety in atomic energy use was signed in 2010. In addition, two Joint Orders with each of those bodies respectively relating to approval of cooperations were made in 2012. The Joint Order with FMBA covers conducting joint scheduled inspections, both planned and unplanned. The team explored the implementation of this cooperation agreement with FMBA and were satisfied that there is now a significant level of inspection cooperation at the regional level, and that the regulatory responsibilities of each body were identified. Specifically in the field of joint inspections, annual plans are prepared before the 1st of October each year. For example, there were 34 joint inspections of radiation facilities in 2013.

The team commends this development and encourages both parties to further develop and review this cooperation.

The team established that a certificate from FMBA if it is required by regulations, forms part of the overall licensing package for a licensing decision by Rostekhnadzor. The team encourages closer working relationships between the two bodies, especially relating to radioactive waste management, decommissioning and remediation where the optimal solution for overall nuclear and radiation safety may need further cooperation at the licensing stage and other regulatory activities. Furthermore, the team believes that Rostekhnadzor and FMBA should review how the agreement is working in practice and put in place a programme of periodic reviews of all the coordination activities.

Although not stated explicitly in the text of Suggestion 3, Rostekhnadzor in its Advance Reference Material identified that administrative regulations for cooperation with EMERCOM are in the process of development. This agreement is also important to ensure that there is joined-up working in areas of

potential conflict, for example in fire safety where both bodies have responsibilities. Furthermore, Suggestion 4 encourages that this agreement should extend beyond NPPs. The team therefore suggests that Rostechnadzor finalises the agreement with EMERCOM in 2014, including extending the agreement to cover fuel cycle facilities, research reactors and radioactive sources, including orphan sources.

Recommendation 4: The regulatory responsibilities for the oversight of safety of transport of radioactive material in the Russian Federation are distributed among several authorities and entities, as described by several legal documents.

Rosatom is one of these entities, with clear and central regulatory functions in the area of transport of radioactive material, as it issues certificates for the approval of packages and for transport. Rostechnadzor, as well as FMBA, is involved in the authorisation processes of Rosatom, and its agreement is mandatory for Rosatom to issue certificates.

This situation existed prior to the IRRS mission in 2009, and no change has been initiated since then. This situation does not comply with the principles of the IAEA Requirements related to the independence of the regulatory body, the separation between regulatory functions and operating functions (GSR Part 1). But Rostechnadzor has also indicated that it was not aware of any circumstances where the existing distribution of regulatory functions has an impact on safety or presented a situation of conflict of interest, and therefore it was more for the State to decide if the situation should be changed.

The IRRS team pointed out that in addition to the non-compliance with IAEA Safety Standards, this situation is also now in contradiction with the recent amendment to the Federal Law on atomic energy use, establishing “*such principles of legal regulation as «separation of responsibilities and functions of state bodies of safety regulation, bodies of control of atomic energy use, authorized body of control of atomic energy use and organizations carrying out activities in the field of atomic energy use» and «state bodies of safety regulation shall be independent of the bodies of control of atomic energy use, the authorized body of control of atomic energy use and organizations carrying out activities in the field of atomic energy use in making decisions and exercising their powers»*”.

Suggestion 5: The IRRS team was informed about the recent development of improved cooperation between Rostechnadzor and FMBA (see Recommendation 3 for more details). This cooperation also includes transport. Rostechnadzor also explained that there are on-going efforts to enhance the existing agreement with EMERCOM, so that it extends beyond its current scope (see Suggestion 4). However, there is currently no action taken to initiate an agreement with the Ministry of Transport. This is needed to clarify and formalize cooperation on topics such as the revision of the transport safety regulations.

Status of the findings in the initial mission

Recommendation 3 is closed because bilateral agreements have now been put in place.

Suggestion 2 remains open because, though good progress has been made in coordinated inspections, the team judged that further progress is needed across all regulatory functions.

Suggestion 3 remains open because the regulatory bodies still need to analyse the experience gained in the practical applications of their agreements, and these should be done on a periodic basis.

Suggestion 4 remains open because the cooperation agreement with EMERCOM has not been extended.

Recommendation 4 remains open as the issue of the effective distribution of all regulatory functions between independent authorities in the area of transport of radioactive material has not been resolved. This recommendation is for the government and not for Rostechnadzor.

Suggestion 5 remains open due to the need of further progress in cooperation with the Ministry of Transport and EMERCOM while noting good progress made in enhancing cooperation with FMBA.

1.4. INDEPENDENCE OF THE REGULATORY BODY

There were no findings in this area in the initial IRRS mission

A significant change since the first mission is that in 2010 Rostekhnadzor transferred from being under the jurisdiction of the Ministry of Natural Resources and Environment to being a separate regulatory body reporting directly to the Government of the Russian Federation. Rostekhnadzor is therefore now effectively independent of other federal executive authorities. It can now draft independently, and submit for consideration, acts of the President and the Government of the Russian Federation, and develop and put into effect associated federal regulations in the field of atomic energy use. In addition, the restrictions on frequency and duration of the regulatory inspections have been effectively removed.

The Rostekhnadzor organisational structure can be found in Appendix VIII.

1.5. SYSTEM FOR PROTECTIVE ACTIONS TO REDUCE EXISTING OR UNREGULATED RADIATION RISKS

2009 mission RECOMMENDATIONS, SUGGESTIONS

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| S6 | <p>Suggestion: The Government of the Russian Federation should develop and implement the necessary legal and regulatory framework for the control and supervision of the remediation to be undertaken for the identified past practices and installations that need remedial actions. This should include the necessary steps to identify all entities responsible for decontamination. The government should set financial requirements and mechanisms for the remediation activities, for clearance from the regulatory control and for the establishment of the institutional control where needed.</p> |
| S7 | <p>Suggestion: MNRE and Rostekhnadzor are encouraged to establish formal cooperation and exchange of information with EMERCOM and other responsible authorities to provide an effective State system for gaining control over orphan radioactive sources. This should be done through clear allocation of responsibilities and definition of mechanisms of coordination and interaction of national competent authorities.</p> |

Changes since the initial IRRS mission

Suggestion 6: The new Law on Radioactive Waste Management now defines that the national operator is expected to cover all aspects of radioactive waste management, including the radioactive waste arising from remediation of contaminated sites. In 2009, the IRRS review team was informed that some regulations on remediation issues were under development but that there was a need for the comprehensive improvement and implementation of a regulatory framework for remediation.

Rostekhnadzor explained that the government is working on the implementation of the necessary legal framework for the control and supervision of remediation arising from identified past practices, including financing of such activities. State Policy has been articulated and the legal framework is now provided by the Atomic Energy and the Radioactive Waste Management Acts. It is planned that this will be enhanced by the forthcoming law related to Decommissioning. The State now has responsibility for legacy wastes, and responsibilities for other wastes are with the radiation waste owner, including funding.

Suggestion 7: As stated before, the current agreement for the cooperation and exchange of information between Rostekhnadzor and EMERCOM will be extended to cover a broader scope. It is planned that this expanded agreement will include, inter alia, provisions related to the gaining control over orphan radioactive sources. The Russian Federation State Programme, requires that detection and management of the orphan radioactive sources be provided. EMERCOM shall execute this State Program and co-executors are Ministry of Health, Ministry of the Regional Development and

Rostekhnadzor. The measures of the State Program are funded from the created Targeted Financial Reserve.

A description was provided to the IRRS team on how the cooperation and exchange of information is done in an emergency situation resulting from the discovery of an orphan radioactive source. The responsibilities of the involved authorities and enterprises are defined in their respective documents (provisions, statutes). During the discussion it was agreed that there is still room for improvement of cooperation and exchange of information for gaining control over the orphan radioactive sources. Selective search campaigns of potential orphan sources could also be jointly organized.

Status of the findings in the initial mission

Suggestion 6 remains open. Rostekhnadzor stated that further work was required in this area. Nevertheless the team noted the progress that has been made.

Suggestion 7 remains open as further cooperation and exchange of information with EMERCOM and other responsible authorities to provide an effective State system for gaining control over orphan radioactive sources should be established in the framework of the State Program implementation.

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

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S8	<u>Suggestion:</u> MNRE should specify the tasks assigned to Rosatom in order to implement the law on radioactive waste management. MNRE should also promote identification of the regulatory responsibilities in all areas included in the law on radioactive waste management.
R5	<u>Recommendation:</u> MNRE should promote the elaboration and approval of an overall legal and regulatory framework for decommissioning in accordance with the IAEA Safety Standards.

Changes since the initial IRRS mission

Suggestion 8: See Recommendation 1 in Section 1.1. relating to radioactive waste management.

Recommendation 5: Since 2009 Rostekhnadzor has worked on the improvement of the overall legal and regulatory framework for decommissioning in accordance with the IAEA Safety Standards (see Recommendation 1). In particular, regulations and safety guides for the decommissioning of ships and other floating vessels with nuclear installations and radiation sources were issued. The structure and content of report on the results of integrated engineering and radiation survey for decommissioning of a nuclear power plant unit was also developed. The safety guide on final examination and release of nuclear research installations from the federal state supervision in the field of the use of atomic energy was issued and approved by Rostekhnadzor. Finally, the team was informed that a draft Federal Regulations on Safety assurance in decommissioning of nuclear facilities was developed and is under approval process.

Status of the findings in the initial mission

Suggestion 8 is closed as a law on radioactive waste management has been implemented and the regulatory responsibilities have been identified.

Recommendation 5 remains open. The law on decommissioning should be developed and Rostekhnadzor will be actively engaged in its development.

1.7. PROVISION OF TECHNICAL SERVICES

There were no findings in this area in the initial IRRS mission.

2. GLOBAL NUCLEAR SAFETY REGIME

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S9	Suggestion: Rostekhnadzor should evaluate whether its practice in feedback of operating experience is in line with international recommendations and could consider requiring the systematic collection, analysis and dissemination of operating experience of all nuclear facilities, especially for the research reactors.

Changes since the initial IRRS mission

Suggestion 9: The provisions on the procedure for investigation and accounting of operational events at nuclear power plants are given by the regulatory documents amended in 2008. To cover all aspects of the procedure for investigation and information transfer in case of operational events at the research installations the regulatory document was published in 2010. To facilitate the analysis and dissemination of operating experience of all nuclear facilities Rostekhnadzor prepared a safety guide covering both nuclear power plants and nuclear research installations. The document was approved and published in April 2013. Currently the operating experiences of nuclear research installations are collected in electronic databases (TSO - SEC NRS) and disseminated by issuing periodic reports on operation and safety aspects of nuclear facilities.

Rostekhnadzor regularly participates in IAEA and other international technical meetings and platforms (WENRA, OECD/NEA, IRS, IRSRR) on sharing operational experience from operation of nuclear power plants and research installations. A study on Rostekhnadzor practice on accounting and evaluation of nuclear research installations operating experience was performed in 2012. Based on the information gained, the IRRS team noted that Rostekhnadzor performs systematic analysis of the information on operating experience coming from the organizations operating nuclear power plants and nuclear research installations and has established the necessary arrangements for distribution of the lessons learned.

Status of the findings in the initial mission

Suggestion 9 is closed as Rostekhnadzor's practice in feedback of operating experience is in line with international recommendations.

3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY

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

There were no findings in this area in the initial IRRS mission.

3.2. STAFFING AND COMPETENCE OF THE REGULATORY BODY

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R6	Recommendation: MNRE and Rostekhnadzor should develop and submit to the Government of the Russian Federation a proposal on the human resources required to cope with the nuclear regulatory duties foreseen in relation with construction of the new reactors also in view of the requirement of not jeopardizing the supervision of the safety of existing nuclear facilities.

2009 mission RECOMMENDATIONS, SUGGESTIONS

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| S10 | <u>Suggestion:</u> MNRE and Rostechnadzor are should develop and implement a systematic approach to training, following the IAEA guidance in this field. |
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Changes since the initial IRRS mission

Recommendation 6: The siting of 11 and construction of 10 new NPP units is underway in the Russian Federation. As a result, Rostechnadzor inspection divisions were set up on the Leningrad NPP-2, Baltic NPP, Novovoronezh NPP-2 sites with 5 persons each. A division of assessment and licensing of new NPPs was set up at Headquarters with 6 staff, and the former division of NPP inspections were reorganised and its staff increased by 5 specialists. The team notes the progress made against this recommendation. However, the broader issues of human resources are covered under the first part of Recommendation 2.

Suggestion 10: The team noted that significant progress has been made in developing Rostechnadzor's training programme. Workshops on various aspects of supervision and licensing staff of Rostechnadzor are held on a yearly basis. In addition, SEC NRS has developed a number of courses on nuclear and safety regulation, which are available on the Rostechnadzor information network. However, a methodological document is still being developed to define the provisions for professional training arrangements for Rostechnadzor staff.

Status of the findings in the initial mission

Recommendation 6 remains open. Although the team acknowledges the progress made, significant challenges in human resources remain, as discussed in Recommendation 2.

Suggestion 10 remains open as Rostechnadzor is still developing a systematic approach to training.

3.3. LIAISON WITH ADVISORY BODIES AND SUPPORT ORGANIZATIONS

2009 mission RECOMMENDATIONS, SUGGESTIONS

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| R7 | <u>Recommendation:</u> RB should ensure that it has sufficient staff capable of guiding and evaluating independent regulatory reviews and assessments performed by technical support organizations. |
| S11 | <u>Suggestion:</u> MNRE and Rostechnadzor should consider the establishment of an independent advisory body to support regulatory decision making for substantiation of decisions, transparency and independence. |

Changes since the initial IRRS mission

Recommendation 7: Rostechnadzor claims in its Advance Reference Material that, at the present time, it has sufficient staff capable of guiding and evaluating independent regulatory reviews and assessments performed by technical support organisations. Rostechnadzor also stated that it has been able to recruit more staff in its headquarters and has been able to increase the salaries of headquarters staff. It further argues that its major human resources problems are concentrated in its regional offices. This is a significant improvement from 2009 where the team judged that staff members were acting more as project managers than inspectors making regulatory judgements. The team learned that there are salary differences between Rostechnadzor headquarters staff undertaking the assessments and those of the TSOs. The team therefore believes that there remains a risk of Rostechnadzor not having the right staff of appropriate technical quality until the differences in salary are addressed, as discussed under Recommendation 2 and the policy discussions in Section 1.

Suggestion 11: Rostechnadzor has considered this suggestion. It believes that its existing Scientific and Technical Board provides sufficient internal challenge to its regulatory decision-making. The

IRRS team was presented with the Scientific and Technical Board's record of decision as evidence of its functions as an independent advisory body to Rostekhnadzor.

Status of the findings in the initial mission

Recommendation 7 is closed on the basis of progress made and confidence in effective completion. The team recognises the very significant progress made in this area. However, the team judges that the human resource challenges across the organisation remain, and the need for Rostekhnadzor to move to a more robust position for the longer-term. See Recommendation 2.

Suggestion 11 is closed. The team accepted Rostekhnadzor's argument above.

3.4. COMMUNICATION AND CONSULTATION WITH INTERESTED PARTIES

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S12	Suggestion: MNRE and Rostekhnadzor should conduct a communication efficiency analysis and prepare and implement communications strategy. This should include improvement of the websites by introducing separate and easily found sections for nuclear and radiation safety topics.

Changes since the initial IRRS mission

Suggestion 12: In line with the goals of the strategic document on state policy in the field of nuclear and radiation safety assurance for the period till 2025, and in accordance with the changes in the law on Atomic Energy Use extending the openness and transparency in area of the use of nuclear energy, Rostekhnadzor reviewed its communication policy with an intention to identify needs for further development. An internal policy document on transparency and openness, which incorporates the elements of public communication strategy, was adopted in 2013 by Rostekhnadzor management.

In order to improve public relations, a division for communication with mass media was created within the International Cooperation Department, which also was appointed to maintain the website of Rostekhnadzor. Currently, the website is updated regularly on a weekly basis. Based on the results of an analysis oriented on improvement of the website, the development of a new structure was approved. Most of the work has already been implemented and should be completed by the end of 2013.

Status of the findings in the initial mission

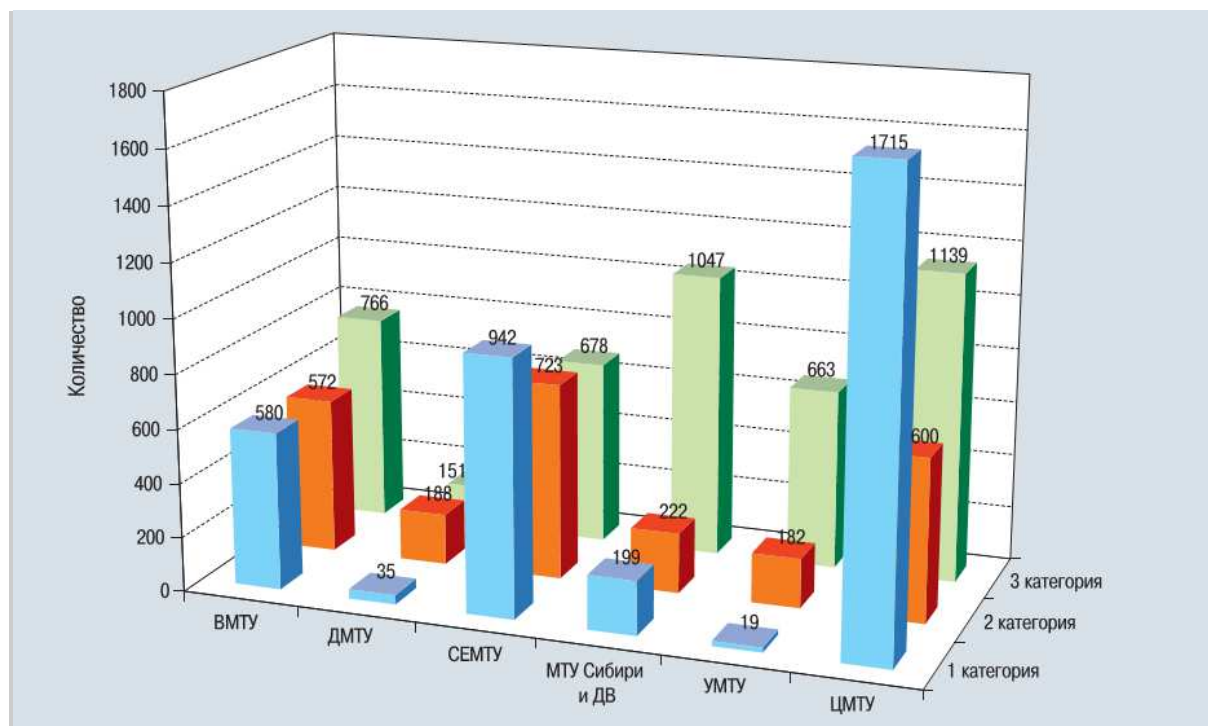
Suggestion 12 is closed on the basis of progress made and confidence in effective completion.

3.5. SAFETY RELATED RECORDS

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S13	Suggestion: MNRE together with Rostekhnadzor should consider the reasonability and possibility of the use of the information from the register of the state system of accounting and control in the Rostekhnadzor management system RAIS (Regulatory Authority Information System).

Changes since the initial IRRS mission

Suggestion 13: RAIS was put into operation by a Rostekhnadzor Order. The inventory of radioactive sources is part of RAIS and is kept by regional offices of Rostekhnadzor. The graph below provides a regional distribution of the radioactive sources of Categories 1, 2 and 3 as presented in the 2011 Annual Report of Rostekhnadzor.



The IRRS team was informed that the automated information system “Nuclear and Radiation Safety” is under development by Rostekhnadzor. The decision was made to have a connection between this Rostekhnadzor’s unified information system “Nuclear and Radiation Safety” and the Register of Sealed Radioactive Sources of the State System of Accounting and Control (SSAC), maintained by Rosatom. The decision about the future connection is documented in the approved terms of reference of the unified information system “Nuclear and Radiation Safety”.

Status of the findings in the initial mission

Suggestion 13 is closed on the basis of the progress made and confidence in effective completion.

4. MANAGEMENT SYSTEM OF THE REGULATORY BODY

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R8	Recommendation: MNRE and Rostekhnadzor should establish their respective comprehensive management systems in accordance with IAEA GS-R-3 and amend RD-03-29-2008 in order to reflect current organizational structure. The management system of regulatory body should provide a clear description of the regulatory review and inspection processes, as well as for the analysis of reportable events.
S14	Suggestion: Rostekhnadzor should consider developing and implementing a system capable of tracking the completion status of regulatory actions in order to provide a corresponding regulatory overview.
S15	Suggestion: Rostekhnadzor should develop a quality declaration that reflects the current activities.

Changes since the initial IRRS mission

Recommendation 8: The team identified that the management system had not been brought up-to-date in accordance with GS-R-3 to reflect the new status of Rostekhnadzor, as described in Section 1.4.

Suggestion 14: Rostekhnadzor has developed and implemented a system capable of tracking the completion status of regulatory actions. The plan is to switch fully to a new web technology in 2014.

Furthermore a system to track regulatory actions arising directly from permanent supervision activities has been introduced.

Suggestion 15: As there are continued shortcomings in the existing management system as highlighted under Recommendation 8, the system cannot yet be considered to meet quality standards.

Status of the findings in the initial mission

Recommendation 8 remains open as there are still identified shortcomings in the Management System that need to be addressed. As it is necessary to ensure that the Rostekhnadzor Quality Management System reflects the actual updated status of Rostekhnadzor, and considering the reallocation of regulatory functions to it from the MNRE, Rostekhnadzor should complete the process of updating the system to replace those parts previously approved by MNRE.

Suggestion 14 is closed because action tracking systems have been implemented.

Suggestion 15 remains open because of the shortcomings highlighted under Recommendation 8.

5. AUTHORIZATION

5.1. GENERAL

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R9	Recommendation: MNRE and Rostekhnadzor should evaluate its practice of licensing third party/external organizations that provide services and products to licensees to ensure that this approach is not contrary to the principle that the licensee's primary responsibility to ensure safety lies with the licensee.
R10	Recommendation: The Government of the Russian Federation should identify the legal procedure for removing restrictions on time limit prescribed for completion of a safety review prior to the granting of an authorization for a nuclear facility or activity. The safety review should be commensurate with the stage in the regulatory process and the potential magnitude and nature of the hazard associated with the particular facility or activity, in accordance with common practice in other IAEA Member States.

Changes since the initial IRRS mission

Recommendation 9: Existing laws place the primary responsibility for safety on the operator. Based on the existing law, Rostekhnadzor continues its practice of licensing third party/external organizations that provide certain types of products and services to operators. However, a new regulation once approved, will provide the prerequisite for further amending of the legislation regarding elimination of the practice of licensing third party/external organisations. The regulation is expected to be issued by the end of 2013. The amendment will specify the accreditation process for nuclear industry organizations that provide services to the operators.

Recommendation 10: A 2011 Amendment to the Federal Law related to the use of Atomic Energy introduced a change to specify that licensing safety reviews were to be completed in accordance with the administrative procedures issued by Rostekhnadzor. A Government Decree issued in 2013 specified that the licensing review was complete when Rostekhnadzor was assured that all safety requirements had been met, and did not establish or mandate that the reviews be completed within any specified timeframe.

Status of the findings in the initial mission

Recommendation 9 remains open since the regulation is not approved.

Recommendation 10 is closed. The legal requirements to complete the licensing reviews within a specific time period have been removed.

5.2. NUCLEAR POWER PLANTS

There were no findings in this area in the initial IRRS mission.

5.3. RESEARCH REACTORS

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R11	Recommendation: MNRE should take the necessary measures to establish the qualification requirements for personnel holding key positions in the safe operation of nuclear research facilities. Rostechnadzor should assess the training and retraining of persons holding key positions in the safe operation of nuclear research facilities and should include the necessary training in the operating license of the facilities

Changes since the initial IRRS mission

Recommendation 11: The recommendation consists of two parts. **Part 1** requires establishment of qualification requirements for nuclear research facility key personnel, **Part 2** recommends assessment of the training of this personnel.

Part I of Recommendation 11:

As for the first part of Recommendation 11, in December 2009 the Ministry of Health and Social Development of the Russian Federation issued a Decree containing detailed descriptions of the requirements to be met by persons taking safety related positions in nuclear facilities. This Decree sets qualification requirements also on the personnel holding key positions in nuclear research facilities. Note that Rostechnadzor contributed to the formation of these requirements by proposing inclusion of research facility positions into the list originally not considered to be qualified. According to a recent order of Rostechnadzor professional skills and qualifications of applicants to become key personnel of nuclear research facilities are assessed by Rostechnadzor in the application process.

Part II of Recommendation 11:

Regarding the second part of Recommendation 11, it is to be stressed that training of the personnel of nuclear installations is performed by dedicated and licensed organizations. These organizations obtain their authorization from the Ministry of Education. Rostechnadzor has no role in the licensing of these organizations, neither has influence on the contents of the personnel training. The team encourages Rostechnadzor to develop assessment of the training programme pertaining to nuclear research facilities.

Status of the findings in the initial mission

Recommendation 11 is closed since qualification requirements on key research reactor personnel have been set and published since the initial mission.

5.4. FUEL CYCLE FACILITIES

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S16	Suggestion: Rostechnadzor should consider the possibility of establishing a procedure to determine the period of license renewal for fuel cycle facilities.

Changes since the initial IRRS mission

Suggestion 16: Recent changes in the legislation of the Russian Federation governing licensing process of nuclear installations ensure that a license is issued for a time period for which the safety of the licensed activity is demonstrated by the related safety analysis. For activities not involving nuclear or radiation risks (e.g. design, engineering, review of Safety Analysis Report) the validity of a license may not exceed 10 years. For other activities (such as siting, construction, operation, decommissioning) the time period of validity of license is requested and substantiated by the applicant

and reviewed and accepted or decreased by Rostekhnadzor. Typically operational licences are granted for 5 years; construction licenses may be granted for a longer period of time.

In case of operational licences with validity longer than 10 years Periodic Safety Review is performed in the 10th year.

The actual legislation in force does not include the possibility of license renewal. Whenever the validity period of a license expires, continuation of the activity necessitates a new license application. Proposal on introduction of license renewal process for fuel cycle facilities was considered by Rostekhnadzor but it was concluded that for the frequent and considerable operational changes in the fuel cycle facilities, issuance of new licences seems to be a more expedient option than a license renewal process.

Status of the findings in the initial mission

Suggestion 16 is closed as effective measures have been taken to define the length of the validity periods of fuel cycle facility licenses, whereas introduction of license renewal option was considered but rejected for practical reasons.

5.5. INDUSTRIAL, MEDICAL AND RESEARCH FACILITIES (FCF)

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R12	Recommendation: For activities with radioactive sources, MNRE and Rostekhnadzor should prepare a proposal to change the licensing requirements so that a graded approach is applied systematically, thus avoiding unnecessary administrative burdens.
S17	Suggestion: Rostekhnadzor should establish and implement criteria, internal procedures and guidance on the types, number and validity of licences that are needed by applicants, and in particular should consider if licensing is needed for all or only some of the stages in the life-time of a facility where radioactive sources are handled, i.e. siting, construction, operation and decommissioning.
S18	Suggestion: MNRE and Rostekhnadzor should establish formal cooperation and exchange of information with the Federal Service for Export and Technological Control to provide for full and effective implementation of the export and import provisions of the Code of Conduct on the Safety and Security of Radioactive Sources.

Changes since the initial IRRS mission

Recommendation 12: Several actions were done to implement a graded approach for activities with radioactive sources:

- Graded approach is declared as a principle in the amended Law On Atomic energy use;
- Activities related to the operation of the radioactive sources of the 4th and 5th categories are exempted from licensing;
- Legal entities operating these sources are not considered to be operators and are registered by notification to Rostekhnadzor and recorded in the register of organizations by Rostekhnadzor;

Practical example of the registration was provided to the team members: application of the metallurgical plant for the registration, inspection report and Rostekhnadzor decision about the registration of the 4th and 5th category sources.

Rostekhnadzor is now considering the application of the graded approach for the non-sealed radioactive sources use.

Rostekhnadzor is encouraged to continue to implement graded approach for the authorization of the activities with radioactive sources of 1, 2 and 3 categories.

Suggestion 17: The amendments into the existing legislation established that applicant can apply for one license for the several types of the activities with the radioactive source. Other amendment

establishes that a licence is given for the period for which the safety is justified. Thus, the goal of the suggestion 17 for validity and numbers of licences is achieved. Administrative Regulation includes lists of documents that should be provided with the application for the activities with the radioactive source: siting, construction, operation and decommissioning. However, criteria, internal procedures or guidance if licensing is needed for all or only some of the stages in the life-time of a facility where radioactive sources are handled, i.e. siting, construction, operation and decommissioning, are not yet established.

Suggestion 18: The responsible authority for the export and import of the radioactive sources licensing is the Federal Service for Export and Technological Control. Procedures for import and export of radioactive sources licensing do not comply with the Code of Conduct for the Safety and Security of Radioactive Sources. In particular, the requirements to notify and to request the consent of the state of import for transfer of the source are not in place. During the follow-up mission, a representative of the Federal Service for Export and Technological Control stated that this agency has no longer the need for information from Rostechndzor. Now, the Federal Service for Export and Technological Control obtains all the necessary information from Rosatom, including information related to the recipient's authorization to receive and possess the source.

Status of the findings in the initial mission

Recommendation 12 is closed on the basis of the progress made and confidence in effective completion.

Suggestions 17 remains open because depending on the risk of the radioactive source, the guidance is needed to specify if a licence is necessary for all or only some of the stages in the life-time of a facility where radioactive sources are handled, i.e. siting, construction, operation and decommissioning.

Suggestion 18 is closed on the basis that it is no longer relevant to Rostechndzor, another government agency obtains the information requested under the code of conduct.

5.6. WASTE FACILITIES

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S19	Suggestion: Rostechndzor should include in all licence for operation of radioactive waste management facilities the waste activity and volume limits for the facility and other limits, conditions and controls needed for the safe operation of the facility.
R13	Recommendation: MNRE should clarify the body that will regulate and control discharges and releases and should establish limits for the discharges and releases of radioactive substances from each nuclear or radiation facility and activity.

Changes since the initial IRRS mission

Suggestion 19: Rostechndzor informed the IRRS team that currently a number of federal regulations pertaining to waste management are either being developed or at the approval stage. These federal regulations prescribe waste management requirements for the safety assessment and the safety case for activities at all facilities including disposal facilities.

The team was informed that, as a result of the previous IRRS mission, Rostechndzor has decided to put in the licence conditions, a requirement to set, and provide safety justification for the limits on volume and total activity of radioactive waste to be treated and stored in each installation. This condition will be implemented in the next safety review of the authorization for each facility. In addition Rostechndzor presented examples of limits established for two facilities on activity concentrations for different types of radioactive waste to be stored in these installations.

Recommendation 13: The team was informed that currently Rostechndzor is empowered by law for approving both the limits of permissible discharges of radioactive substances to water reservoirs and the limits of maximum permissible radioactive releases to atmospheric as well as the procedures for

its calculation. Rostekhnadzor is also empowered to issue the authorizations for radioactive releases and discharges into the environment and for its control and its record keeping.

Examples of authorisations with established limits for discharges were shown to the team, which notes that Rostekhnadzor is keeping track of actual releases versus authorized releases.

Status of the findings in the initial mission

Suggestion 19 remains open considering that initial steps were taken to define in the licence the limits and conditions on radioactive waste to be treated or stored in the facilities under control which has not been fully implemented. During the year of 2015-2016, it is planned to include the requirements in the licence condition for the radioactive waste storage facilities of FSUE “Radon” and FSUE “RosRao” the limiting values for the amount and activities which are subject to storage.

Recommendation 13 is closed. Rostekhnadzor is authorizing and implementing state supervision of interdepartmental (operational) control of radioactive discharges and releases of radioactive substances to the environment.

5.7. TRANSPORT

There were no findings in this area in the initial IRRS mission.

6. REVIEW AND ASSESSMENT

6.1. GENERAL

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R14	Recommendation: The Government of the Russian Federation should establish legal provisions to require the conduct by the operating organization of periodic safety reviews throughout the operational lifetime of major nuclear facilities, including nuclear power plants, research reactors and fuel cycle facilities, in accordance with the IAEA Safety Standards. The systematic safety re-assessment should be performed with a sufficient periodicity to demonstrate an adequate level of safety at the facility, using a graded approach with account taken of the potential magnitude and nature of the hazard associated with the particular facility. The resulting safety improvements should be legally enforceable.
S20	Suggestion: Rostekhnadzor should ensure effective oversight of licensee safety culture, including the development and implementation of a method to systematically assess indicators addressing safety culture.
R15	Recommendation: Rostekhnadzor should formalize its process via procedure for conducting a periodic integrated assessment of licensee safety performance, including definition of the scope, specification of how the assessment should be conducted, the manner of communicating the assessment results, and the use of the assessment results in formulating appropriate strategies for future regulatory oversight of the licensee.
R16	Recommendation: Rostekhnadzor should develop a safety classification system for plant modifications, including those that do not require changes to licence conditions, in order to assist in determining the degree of regulatory assessment required before approving the modification.

Changes since the initial IRRS mission

Recommendation 14: An Amendment to the Federal Law related to the use of atomic energy was adopted in November 2011 to establish a legal framework for the operating organization to perform a periodic safety assessment of its nuclear facilities. These assessments are to be performed at a minimum of once per every ten years and are to be performed in accordance with administrative requirements issued by Rostekhnadzor. As a first step towards implementation of the new

requirement, Rosenergoatom has proposed a schedule for completion of the safety assessments. Rostekhnadzor provided comments on the proposed schedule and is expecting an updated schedule to be submitted by Rosenergoatom.

Suggestion 20: The Administrative Regulation of Rostekhnadzor regarding its function in supervising activities of the use of nuclear energy was revised to require that inspection programs consider safety culture and its indicators. A Safety Guide was published to provide a list of recommendations for performing safety culture assessments at nuclear fuel cycle facilities. This Safety Guide was developed consistent with the IAEA methodology on safety culture assessment. Additional actions are planned to conduct inspector training on this topic and to update the guidance for conducting these assessments at Nuclear Power Plants.

Recommendation 15: A draft safety guide has been developed to implement the procedure for periodic comprehensive safety assessments of the operator and to consider the assessment results when planning follow-up inspection activities. The document will provide a technique for assessment of safety performance, for identification of discrepancies in safety assurance, and for trending of safety performance at nuclear facilities. In addition, the quarterly reports from site resident inspectors are also considered in the assessments. Rostekhnadzor indicated that a more formalized tool for performing these assessments was under development similar to the process used by the U.S. Nuclear Regulatory Commission.

Recommendation 16: Presently all plant modifications are reviewed for acceptance by Rostekhnadzor. The recommendation was developed to reduce burden to allow Rostekhnadzor to provide increased attention towards the most safety important modifications. An internal Rostekhnadzor guide and administrative regulations are under development to better define the scope of review activities to be performed by the headquarters and regional offices.

Status of the findings in the initial mission

Recommendation 14 is closed. Legal requirements and administrative guidance have been established to require periodic safety assessments.

Suggestion 20 remains open. The Safety culture assessment guide for nuclear power plants still needs to be developed and training for Rostekhnadzor staff to be conducted.

Recommendation 15 is closed on the basis of progress made and confidence in effective completion. Rostekhnadzor has procedures in place to review quarterly inspection reports and assess operator performance and adjust regulatory activities as appropriate. A more formalized process for conducting these assessments is under development.

Recommendation 16 is closed on the basis of progress made and confidence in effective completion. The steps to define the responsibilities for reviews of modifications have been determined.

6.2. NUCLEAR POWER PLANTS

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S21	Suggestion: Rostekhnadzor should update policy statement in order to:
	- define the role of the PSA in integrated decision making,
	- ensure that the PSA is consistently used for the assessment of events and plant modifications, and
S22	- consider potential future PSA applications in accordance with NS-R-1, paras 5.2, 5.73.
	Suggestion: Rostekhnadzor should consider supporting the implementation of the updated policy statement on the use of PSA by a pilot study for a nuclear power plant, focusing on the evaluation of events (for a specific time interval), operational limits and conditions, and the importance of correct safety classification of components.

Changes since the initial IRRS mission

Suggestion 21: The Policy Statement on the Application of PSA and Risk-Informed Methods for NPPs has been updated to contain all the aspects and utilization of PSA. Several guidelines to cover the subjects have been issued and others are under preparation.

Suggestion 22: A pilot study has not been performed, however, requirements have been established to require the operator to evaluate all the plant events and other issues using probabilistic methods. In addition, Rosenergoatom maintains PSAs for each of their facilities. Rostekhnadzor receives the results of the above assessments and also has access to the PSA models. Presently Rostekhnadzor has Level 1 PSA models to analyze all internal event sequences, except fires and flooding.

Status of the findings in the initial mission

Suggestion 21 is closed on the basis of progress made and confidence in effective completion. A new Policy Statement and a number of guides have been issued or are under development.

Suggestion 22 is closed. The use of PSA at the power plants has been extended to address the intended elements listed in the suggestion.

6.3. RESEARCH REACTORS

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R17	Recommendation: MNRE should establish explicit requirements to ensure that the results and analyses of all stages of the commissioning programme are submitted for review and assessment to Rostekhnadzor.
S23	Suggestion: Rostekhnadzor should as part of the licence condition, request the operators of nuclear research facilities to submit the safety analysis report for review after its <u>periodic</u> revision.
R18	Recommendation: In the licence review of each research reactor, Rostekhnadzor should consider the need to establish an independent safety committee supporting the reactor manager, and if appropriate, include the requirement of such a safety committee in the licence OLC.

Changes since the initial IRRS mission

Recommendation 17: The federal safety regulations on research reactors have recently been amended to include requirements on the submission to Rostekhnadzor of the programmes of the first criticality and power start-up tests as part of the licensing documentation. The programmes are assessed by Rostekhnadzor after having it reviewed by Rostekhnadzor's TSOs. The amended federal regulation is expected to become effective in 2014. As an example for the review and assessment of the commissioning programme results the three stage commissioning process of the PIK research reactor was mentioned, where a scientific technical council considered was tasked to assess and validate these results.

Suggestion 23: Periodic Safety Review of all nuclear facilities – including nuclear research facilities – is required by the federal legislation to be performed once in every 10 years of operation whenever the operating license of the facility is valid for more than 10 years. Scope of the safety review is defined in the federal regulations (recently modified and to become effective in 2014) and in a recently issued Rostekhnadzor order. The length of the validity time of a nuclear research facility license is usually shorter than the periodic safety review period (typically it is 5 years) thus safety reassessment of the research facilities is typically performed more frequently than once in 10 years. The Safety Analysis Reports modified as the result of the Periodic Safety Review or the renewed license applications are to be submitted for review to Rostekhnadzor.

Recommendation 18: According to the present regulations and practice operating organizations (that often operate several nuclear research facilities at a single site) establish so called “nuclear safety

service groups” and “radiation safety service groups” to assess the respective aspects of the safe operation of the research facilities and to advise the top management of the operating organization on various related issues. Among others these include commissioning of the facility, change of operating limits and conditions, programme and safety of experiments, and event investigations. The service groups are subordinated to the top management of the operating organizations and have no dependence on the management of the operated nuclear research facilities. Furthermore, nuclear safety commissions have been formed that assess the safety performance of the research reactors and report their observations annually. Representatives of Rostekhnadzor were at the firm opinion that the existing system of advisory assistance to the management of nuclear research facilities is adequate and sufficient; establishment of another safety committee would have no added value.

Status of the findings in the initial mission

Recommendation 17 is closed on the basis of progress made and confidence of effective completion since the respective regulations that require the submission of the commissioning programmes have been duly amended and their entering into force is foreseen in the near future.

Suggestion 23 is closed on the basis of progress made and confidence of effective completion as the federal regulations that will become effective soon ensure the periodic submission of safety analysis reports of nuclear research facilities to Rostekhnadzor.

Recommendation 18 is closed as the benefits offered by it can be achieved also by the existing advisory arrangements and no further changes are needed in this respect.

6.4. FUEL CYCLE FACILITIES

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S24	Suggestion: Rostekhnadzor should continue to explore how probabilistic assessment techniques can be developed and used to assess the safety of category 1 fuel cycle facilities.

Changes since the initial IRRS mission

Suggestion 24: Legal and regulation requirements on the use of PSA for nuclear fuel cycle facilities are in effect for supervision of the facilities as well as for evaluation of beyond design basis accidents. However, for lack of sufficient probabilistic data, experience and methodological guidance, results of general application of probabilistic assessment methods are not considered sufficiently reliable by Rostekhnadzor experts. In most cases, requirements on probabilistic assessment are formally fulfilled, whereas reliable application of such methods is only expected within 2-3 years’ time. In contrast, probabilistic methods are widely used to assess the risk associated with external events leading to beyond design basis accident (BDBA). Rostekhnadzor in a policy statement expressed its determination to use risk-informed methods in the safety assessment of all types of nuclear facilities.

Status of the findings in the initial mission

Suggestion 24 is closed on the basis of progress made and confidence of effective completion as the conditions of and intentions for using PSA techniques are given, the first results are available and further progress is expected in the near future.

6.5. INDUSTRIAL, MEDICAL AND RESEARCH FACILITIES

There were no findings in this area in the initial IRRS mission.

6.6. WASTE FACILITIES

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R19	Recommendation: MNRE and Rostechnadzor should develop requirements for the safety assessment and safety case for different types of radioactive waste management facility that do not yet have proper requirements. These requirements to be developed should address separately the facilities that already exist and those that will be built in the future. In implementing this recommendation, Rostechnadzor should consider the current actual status of existing radioactive waste storage facilities intended either for interim use only, or for final disposal.

Changes since the initial IRRS mission

Recommendation 19: Rostechnadzor informed the IRRS team that currently a number of federal regulations pertaining to waste management are either being developed or at the approval stage in accordance with a work plan established by Rostechnadzor. These federal regulations prescribe waste management requirements for the safety assessment and the safety case for activities at all facilities including disposal facilities.

The team was provided with proposed regulatory changes which include the requirements for the safety assessment and the safety report. Special attention will need to be given to the definition of the regulatory framework for the review and assessment of existing facilities in order to justify their possible evolution.

Status of the findings in the initial mission

Recommendation 19 is closed based on the progress made and confidence in effective completion as described above.

New observations from the follow-up mission

Disposal of Liquid Radioactive Waste

The IRRS mission in 2009 became aware that there is a special method used by the Russian Federation to dispose low and intermediate level radioactive liquid waste into the deep geological formations, so called “Borehole Injection” and it has been practiced at three different sites. The 2009 IRRS review team could not find the regulatory basis for the long term assessment of the impacts into the human health and environment and its connection to the safety assessment. The 2009 IRRS review team had a short look at the Safety Assessment report for the Krasnoyarsk facility, and could not find the clear safety justification for disposal of liquid radioactive waste at that site. This practice has been considered by the team to have potential important environmental and safety impact, and need further investigation.

During this follow up mission, the team was informed that the license conditions issued by Rostechnadzor for the three disposal sites include provisions for the operator to:

- revise the safety assessment report for operation of the liquid radioactive waste deep disposal facility and submit it to Rostechnadzor;
- make analysis of the current safety status and predictive calculations;
- revise and submit to Rostechnadzor instructions and procedures on the issues of radiation safety, radiation monitoring, control and accounting of radioactive substances and radioactive waste; and
- assess the possibility of lifetime extension.

In 2010, the Russian Federation started negotiations with the IAEA to organize an international peer review of the practice of deep borehole injection of liquid radioactive waste. The objective of the review was to make an independent international review of the practice of deep borehole injection of

liquid radioactive waste in collector beds in the Russian Federation. In the course of the peer review such disposal activities were reviewed, with a special focus on the issues of safety assessment and safety case for this practice including long-term effects on health and environment.

From the advance reference material provided and the discussions held, the IRRS team understood that the peer review report (when published) would present comments and recommendations to the Russian Federation on the practice of liquid waste deep disposal and associated safety case. It is expected that the outcome of the report will address the following items in the safety case:

- a better understanding of the evolution of the liquid radioactive waste disposal system including the processes that affect the emplaced waste and geological environment;
- the analysis of reliability and effectiveness of liquid radioactive waste deep disposal facility closure system and analysis of its long-term safety; and
- the analysis of errors and uncertainties.

Observation: The team was informed that the license conditions issued by Rostekhnadzor for the three disposal sites where deep borehole injection of liquid radioactive waste is conducted include provisions for the operator to improve the safety assessment and safety case of this practice. It is important that the outcome of the recent international peer review of this practice is considered to better assess the long term safety of the practice of deep borehole injection of liquid radioactive waste

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: SSR-5 requirement 12 states that “A safety case and supporting safety assessment shall be prepared and updated by the operator, as necessary, at each step in the development of a disposal facility, in operation and after closure. The safety case and supporting safety assessment shall be submitted to the regulatory body for approval. The safety case and supporting safety assessment shall be sufficiently detailed and comprehensive to provide the necessary technical input for informing the regulatory body and for informing the decisions necessary at each step.”
RF3	Recommendation: Based on the recommendations of the IAEA independent peer review on the deep well injection practice for the liquid radioactive waste in the Russian Federation, Rostekhnadzor should require its licensees to develop an action plan based on these recommendations including the revision of their safety case and, depending on the results, take the appropriate regulatory measures.

6.7. TRANSPORT

There were no findings in this area in the initial IRRS mission.

6.8. NEW OBSERVATION

New observations from the follow-up mission

Observation: As a follow-up to the TEPCO Fukushima Daiichi accident, Rostekhnadzor issued requirements for the scope and content of an accident analysis developed taking into account the ENSREG methodology and requested the operating organizations to re-assess the safety of the NPPs sites – including power reactors, spent fuel pools and dry storage facilities – and research reactors in order to verify robustness of these facilities and, as necessary, propose potential improvements to enhance prevention of severe accidents and mitigation of their consequences. However, the safety re-assessments have not been extended to nuclear fuel cycle facilities in graded manner as it was done for the research reactors.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 4, Requirement 2: Scope of the safety assessment states: <i>A safety assessment shall be carried out for all applications of technology that give rise to radiation risks; that is, for all types of facilities and activities.</i>
(2)	GSR Part 4, Requirement 4 para 4.5 states: <i>The safety assessment has to address all radiation risks that arise from normal operation (...) and accident conditions (...).</i>
SF1	Suggestion: Rostekhnadzor should require, as a follow-up to the TEPCO Fukushima Daiichi accident, the licensees to conduct additional safety analysis for the major nuclear fuel cycle facilities that may pose offsite radiological risk.

7. INSPECTION

7.1. GENERAL

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R20	Recommendation: The Government of the Russian Federation should pursue all means to make changes in Federal law No. 294 that would establish the necessary conditions for supervision of nuclear and radiation safety in accordance with the IAEA safety standards. In the same connection other currently existing limitations on independent inspection activities should also be eliminated.
S25	Suggestion: Rostekhnadzor should consider developing a programme or process to ensure resident inspector objectivity for continuing unbiased and fully independent assessment of the licensee's safety performance.
R21	Recommendation: Rostekhnadzor should thoroughly evaluate its approach to the inspection function to determine if the current approach is creating a situation where Rostekhnadzor inspections are providing a substitute for quality control measures, which are the primary responsibility of the operating organization. The Rostekhnadzor should initiate changes to its inspection programme procedures as appropriate.
R22	Recommendation: Rostekhnadzor should evaluate its approach to the inspection function and determine if it should include more observation and assessment of practical activities conducted by the licensee instead of mostly focusing on document/procedure compliance. This would increase the efficiency and effectiveness of the inspection programme.

Changes since the initial IRRS mission

Recommendation 20: A new Article was issued to the Federal Law in 2011 to provide a legal framework for inspection of NPPs. The revised law provided for continuous inspections, annual inspections, as well as for unscheduled inspections for certain specified conditions such as, for example, in response to receiving information regarding potential violations at NPPs. In addition, the Government of the Russian Federation approved a Decree in April 2012, which determined the procedure for and provided the list of the facilities where continuous state supervision is established. The Russian Federation also issued a Decree in October 2012, which established procedures to facilitate the periodic inspection of certain nuclear facilities including NPPs. Finally, Rostekhnadzor developed Administrative Regulations to provide direction for completion of the inspection activities as permitted by the laws and Decrees noted above.

The oversight program consists of continuous inspections performed by site resident inspectors, targeted inspections that are scheduled and performed on a periodic basis, and unscheduled

inspections that are performed in response to situations and events that require an inspection follow-up. The IRRS team interviewed officials from Rostechнадзор Headquarters that are responsible for management and oversight of the inspection program; met with the Regional Director responsible for inspection of all nuclear facilities in the Don Territory; and, also met with four of the resident inspectors assigned to the Novovoronezh NPP to independently assess their ability to schedule and conduct inspections as needed. The team also reviewed the logbook used to record the results of the inspections conducted by the resident inspectors at the Novovoronezh NPP. While there is a need to coordinate the targeted (or periodic) inspection schedule with the local prosecutor's office, the team determined that the combination of diverse inspection activities, including the continuous inspections, ensured that Rostechнадзор was not limited in its ability to conduct inspections of NPPs as needed. The team learned that some regional directors have been quite effective in working with their local prosecutors to expand the number of targeted inspection activities, and would encourage Rostechнадзор to continue to develop these close relationships to further expand the ability to conduct targeted inspections as needed.

Suggestion 25: Rostechнадзор developed and implemented a number of legal and administrative requirements to ensure the objectivity of state officials conducting oversight activities at NPPs. For example, a Federal Law was issued in November 2011, to provide direction that actions performed by state regulatory bodies in executing their responsibilities were commensurate with the potential hazards associated with operation of nuclear facilities and also noted that the regulatory activities were financed from the federal budget to ensure objectivity. In addition, the aforementioned Government Decree issued in October 2012, established that supervision activities were to be performed in accordance with the Administrative regulations to be issued by Rostechнадзор. The Administrative regulations establish the requirements and procedures for conducting oversight activities at NPPs. In addition, a Government Decree was issued in March 2013 to establish procedures for the licensing of nuclear facilities; Administrative Regulations to perform these functions are being revised.

In addition to the laws and regulations noted above, Rostechнадзор performs a number of activities on an on-going basis to provide oversight and to ensure inspector objectivity. Some of these activities include: periodic site visits by regional management to assess inspector performance, semi-annual inspector counterpart meetings to conduct training and share best practices, periodic inspections by resident inspectors at NPPs other than their permanently assigned site, and targeted inspections by regional and headquarters experts to provide an independent (from the resident inspectors) assessment of NPP performance. As noted above, the team interviewed a number of individuals responsible for management and conduct of inspection at NPPs and they uniformly reported that they did not perceive inspector objectivity to be a problem.

Recommendation 21: A number of legal and administrative requirements were implemented since the 2009 IRRS mission to clarify the intent to the inspection program to ensure that inspection activities were not a substitute for quality assurance activities. For example, an Article was added to the Federal Law in November 2011 that described the purpose and intent of state supervisory (i.e. inspection) activities as designed to prevent and detect violations of regulatory requirements in nuclear activities. In addition, a Government decree was issued in October 2012 to establish the procedure for federal state oversight and it included requirements for inspection activities to confirm adherence to license conditions and regulatory requirements and a separate Government Decree was issued in April 2012 and it noted that state supervision or inspection activities were to confirm that license conditions and legal requirements were met. In addition, Rostechнадзор developed Administrative Regulations to establish guidance and requirements for the conduct of inspections.

As discussed above, the IRRS team met with multiple individuals responsible for managing and conducting inspection activities at NPPs and they indicated that inspection activities were performed consistent with the Administrative Requirements established by Rostechнадзор which highlighted specific areas to be reviewed in support of the revised legal standards described above. Rostechнадзор also noted that inspectors had received periodic training on the inspection requirements and expectations at semi-annual counter-part meetings.

Recommendation 22: A Government Decree was issued in October 2012 to stipulate, in part, that inspection activities should verify fulfillment of license conditions, including among other things, the performance of maintenance and repair of equipment, testing of equipment, and the adequacy of information submitted. As previously discussed, Rostekhnadzor developed and maintained Administrative Regulations to address requirements for the conduct of inspections and held semi-annual training meetings for the inspectors. During the interviews discussed above, the IRRS team was informed that inspectors were expected to observe practical activities in addition to performing document reviews. The resident inspectors described their routine activities and they included verification of the condition of equipment in their assigned units. In addition, Rostekhnadzor indicated that it had initiated practice of benchmarking NPP inspection activities with inspectors from Finland and France and extended the joint inspections to other types of facilities.

Status of the findings in the initial mission

Recommendation 20 is closed on the basis that an adequate legal framework and operating practices have been established as described above to allow Rostekhnadzor to conduct inspections of Nuclear Power Plants at their discretion.

Suggestion 25 is closed on the basis of progress made and confidence in effective completion. Many legal and administrative requirements were modified in addition to the planned and systematic activities noted above to ensure inspector objectivity.

Recommendation 21 is closed on the basis that legal changes have been implemented to clarify the role of the inspector in assessing compliance with legal requirements and other license conditions.

Recommendation 22 is closed on the basis that administrative orders have been issued to define the expectations for inspection activities and by the on-going actions to provide oversight and training of inspectors.

New observations from the follow-up mission

Observation: The team observed, based on interviews with Rostekhnadzor management and staff, that Rostekhnadzor initiated an activity to benchmark and share best practices in inspection and assessment with foreign regulatory bodies, including France and Finland. These activities also included observation of exercises in emergency preparedness and response.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1, Requirement 14, para 3.2 (e).
GPF1	Good Practice: Rostekhnadzor has initiated joint inspection activities with foreign regulatory bodies to share best practices and experience in nuclear facilities supervision.

7.2. NUCLEAR POWER PLANTS

There were no findings in this area in the initial IRRS mission.

7.3. RESEARCH REACTORS

There were no findings in this area in the initial IRRS mission.

7.4. FUEL CYCLE FACILITIES

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S28	Suggestion: Rostechnadzor should consider whether there is benefit in including in its comprehensive inspection teams some inspectors with detailed regulatory experience of other types of nuclear facilities to provide fresh insights and transfer good practice.

Changes since the initial IRRS mission

Suggestion 28: The newly amended administrative regulations of Rostechnadzor make it possible to involve inspectors of various expertise and experience into comprehensive inspections of nuclear installations. In practice, when Rostechnadzor organizes a comprehensive inspection of a fuel cycle facility Rostechnadzor headquarter requires the regional offices to nominate inspectors to take part in the inspection. Regional offices are supposed to send inspectors with expertise and experience adequate to the scope of the inspection. Yet it is to be noted the fuel cycle facilities of large variety are being supervised by Rostechnadzor and therefore inspectors with narrow, specialized expertise in facilities different from the one to be inspected may be inappropriate for the task. Therefore, although the possibility of the suggested actions has been established and considered by Rostechnadzor, its practical application has its limitations.

Status of the findings in the initial mission

Suggestion 28 is closed as the suggested action has been made possible by the respective regulations and its practical application has been considered by Rostechnadzor.

7.5. INDUSTRIAL, MEDICAL AND RESEARCH FACILITIES

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S29	Suggestion: Rostechnadzor headquarters should complement and broaden its instructions on inspections to support full compliance assurance by a graded approach throughout the regions.

Changes since the initial IRRS mission

Suggestion 29: Rostechnadzor's instructions for inspection of certain specific types of activities with radioactive sources are the same as in 2009. Since 2009 Governmental Decree established the issues to be checked during the inspections by Rostechnadzor. Also during the reported period Rostechnadzor received the power to issue guides. This provides a good basis for Rostechnadzor to complement and broaden instructions on inspections of the activities with radioactive sources to support full compliance assurance by a graded approach throughout the regions.

Status of the findings in the initial mission

Suggestion 29 remains open. Instructions (guides) on inspections for certain specific activities with the radioactive sources have to be broadened.

7.6. WASTE FACILITIES

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S26	Suggestion: Rostechnadzor should also consider planning for inspections a period longer than one year to provide a comprehensive view over all the issues to be reviewed and progress made by the inspected facilities in the medium and long term.
S27	Suggestion: Rostechnadzor should consider documenting its new practice with respect to comprehensive inspections so that inspection of licensees or operating organizations are separate from, and independent of, any internal audit of regional offices.

Changes since the initial IRRS mission

Suggestion 26: Rostekhnadzor develops annual inspection plans and indicated that they consider the results of previous inspections, plans inspections every year and reported that they consider previous inspection results when developing the plan for the upcoming year. In addition, Rostekhnadzor reported that they issued a comprehensive long term inspection plan in February 2011 to cover the period from 2012 to 2016 for comprehensive inspections of nuclear power plants. Rostekhnadzor is planning to extend this comprehensive inspections planning practice to other facilities including radioactive waste management facilities.

Suggestion 27: In October 2012, a Government Decree was issued to stipulate the types of issues to be independently checked during inspections of operating facilities. In addition, Rostekhnadzor prepares scheduled plans to cover inspection of licensed facilities. These inspection plans are separate from periodic self-assessment and checks performed by Rostekhnadzor Headquarters of Territorial Offices.

Status of the findings in the initial mission

Suggestion 26 is closed on the basis of progress made and confidence in effective completion of inspection planning for Nuclear Power Plants. This practice of comprehensive inspections is expected to be expanded to include radioactive waste management facilities.

Suggestion 27 is closed based on the development of detailed plans for inspection of licensed facilities that are separate from internal self-assessment activities.

7.7. TRANSPORT

There were no findings in this area in the initial IRRS mission.

8. ENFORCEMENT

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S30	Suggestion: MNRE should initiate changes to the respective legislation in order to ensure that Rostekhnadzor has the ability to issue to major operating organizations appropriate enforcement actions that are commensurate with the seriousness of the non-compliances.
S31	Suggestion: Rostekhnadzor should clarify the actual legal background of enforcement, and should make it clear to every member of the regulatory body having any role in enforcement activities.
S32	Suggestion: Rostekhnadzor management should emphasize the use of sanctions on the licence rather than on individuals as a means of holding the licensee accountable for preventing recurrence of non-compliances. This management policy should be clearly communicated to Rostekhnadzor inspection staff.

Changes since the initial IRRS mission

Suggestion 30: Legal changes were implemented that increased the fines for violations commensurate with their safety significance and to introduce new penalties for violations that had the potential to adversely affect people and the environment. The increased penalties provided Rostekhnadzor with a more effective enforcement tool and also increase the ratio of penalties between individuals and legal entities to about 1:10.

Suggestion 31: Seminars (lessons) are regularly arranged for Rostekhnadzor inspectors on subject of enforcement. The aim of the lessons is to clarify specific legislative provisions in relation to conducting inspections and applying sanctions. In addition to these internal documents (instructions), information letters were issued to assist staff in process of imposing enforcement actions.

During the Novovoronezh visit it was confirmed by the site inspectors that the regular seminars are

useful training and benchmarking events.

Suggestion 32: Now, when applying sanctions to enforce compliance with the safety regulations and license conditions, Rostekhnadzor uses sanctions in a much more balanced way. For example, in 2013 in the sector of radioactive sources, there were 49 sanctions for the legal entities and 86 for individuals.

Fines are imposed on a case by case basis on either individuals or on legal entities, or on both. The objective is to use the enforcement tool to achieve the highest level of future compliance and preventing future violations. Semi-annual seminars (lessons) and internal documents (instructions, information letters) mentioned in relation to Suggestion 31 help train inspectors on this revised enforcement policy.

Status of the findings in the initial mission

Suggestions 30, 31, and 32 are closed based on legislative changes and improvements in the use of enforcement as a regulatory tool to deter future violations

9. REGULATIONS AND GUIDES

9.1. GENERAL

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R23	Recommendation: MNRE and Rostekhnadzor should coordinate to provide for developing and implementing a process for the systematic and periodic review of the regulations and safety guides to update them as appropriate, based on the results of such review.

Changes since the initial IRRS mission

Recommendation 23: At the time of the initial IRRS mission Rostekhnadzor did not have a formal process or system to update regulations and guides. By the order of Rostekhnadzor, the review of the regulations is envisaged every five years.

Since there are about ninety such regulations that are subject to the five-year periodicity requirement, Rostekhnadzor needed to prioritize their review efforts to that they could meet the timely update conditions imposed by this law. The IRRS team was informed that the first priority was given to the inclusion of lessons learned from the Fukushima event to regulations and guides. The next highest priority is to review and update the oldest regulations to the standard of existing Federal Regulations of the Russian Federation. This action is required by an Order from the President of the Russian Federation. Once the top two highest priority review and update projects are complete, Rostekhnadzor indicated that they plan to complete review and updating of the remaining documents. The IRRS team was informed, that since 2011 the technical support organisation (SEC NRC) has been assigned this task. It is expected that the reviews will update the guides and regulations based on operating experience and other relevant changes consistent with IAEA standards.

A draft ten-year plan to accomplish this task has been developed and is currently awaiting final approval from Rostekhnadzor. The plan includes a review and (if needed) update of 86 existing regulations in addition to the development of 19 new regulations. This plan provides sufficient justification that Rostekhnadzor is sufficiently on-track to satisfy this 2009 IRRS review team recommendation and Rostekhnadzor is encouraged to complete the review and approval of the document update plan in a timely manner so that this important review activity can begin.

Status of the findings in the initial mission

Recommendation 23 is closed on the basis of the progress made and confidence in effective completion.

9.2. NUCLEAR POWER PLANTS

There were no findings in this area in the initial IRRS mission.

9.3. RESEARCH REACTORS

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R24	Recommendation: Rostekhnadzor should specify the contents of the OLCs to be elaborated by operators of nuclear research facilities and to be submitted to Rostekhnadzor for review and assessment.

Changes since the initial IRRS mission

Recommendation 24: An action plan on revision of the federal rules and regulation was developed that also foresees specification of the contents of OLC's for nuclear research facilities. The issue will be taken into account in the on-going revision of the standards due in 2014.

Status of the findings in the initial mission

Recommendation 24 remains open since changes in the legal framework to comply with the suggestion are still under development.

9.4. FUEL CYCLE FACILITIES

There were no findings in this area in the initial IRRS mission.

9.5. INDUSTRIAL, MEDICAL AND RESEARCH FACILITIES

There were no findings in this area in the initial IRRS mission.

However, the IRRS team noted that new guides for radioactive sources were issued after 2009:

- Provisions on Composition and Content of Report on Radiation Safety Status in Organizations Employing Radionuclide Sources RB-064-1, 2010;
- Provisions on Structure and Content of Safety Analysis Report on Radiation Sources RB-064-11, 2011;

In addition, Federal norms and rules in the sphere of atomic energy use for radioactive sources came into force:

- "General Provisions for the Safety of Radiation Sources", NP-038-11, 2011;
- "Basic Rules for Radioactive Materials and Radioactive Waste Accounting and Control in the Entity", NP-067-11, 2011.

9.6. WASTE FACILITIES

2009 mission RECOMMENDATIONS, SUGGESTIONS	
R25	Recommendation: MNRE should coordinate with FMBA to develop regulations that provide for the practical application of clearance criteria and clearance levels associated with activities under Rostekhnadzor's responsibility and control, including requirements for the release of installations and sites from regulatory control.

Changes since the initial IRRS mission

Recommendation 25: For clearance purpose, Rostekhnadzor applies the levels of minimal significant specific activity (MSSA) established in the regulation in force in the country. For the definition of radioactive waste, and as complement to the Law on Radioactive Waste Management, the Decree of the Government of the Russian Federation N 1060 "Criteria for classification of solid, liquid and gaseous waste as radioactive waste and criteria for classification of radioactive waste as special

radioactive waste and removable radioactive waste, and criteria for classification of removable radioactive waste” was adopted on 19 October 2012.

The team was informed that Rostekhnadzor developed and approved in 2012 the safety guide on "Final Inspection and Clearance of Nuclear Research Installations from the Federal State Supervision in the Field of the use of Atomic Energy", which establishes recommendations for complete (unconditional) or partial (conditional) release of nuclear research installation (NRI) under decommissioning. The team was also informed that Rostekhnadzor is developing two regulations (NP): one on decommissioning of all nuclear and radiation installations and the other one specific for decommissioning of radioactive waste management storage facilities. These regulations will require the establishment of safety criteria for the end point of decommissioning as well as procedures for the monitoring of compliance with them.

Status of the findings in the initial mission

Recommendation 25 remains open considering that despite the establishment of the minimal significant specific activity (clearance levels) and criteria for classification of radioactive waste, Rostekhnadzor should collaborate with FMBA to develop the requirements for the establishment of safety criteria for the release of regulatory control of sites and facilities.

9.7. TRANSPORT

2009 mission RECOMMENDATIONS, SUGGESTIONS	
S33	Suggestion: MNRE should take initiative to establish a law for the transport of all dangerous goods (including radioactive material) with the responsibilities of all parties involved and the process of issuing certificates for packages, shipment, etc in accordance with para 802 of the IAEA Regulations for the Safe Transport of Radioactive Material, TS-R-1.
S34	Suggestion: Rostekhnadzor should coordinate with the relevant authorities to update the “State variations” for the Russian Federation in the ICAO – Technical Instruction (international regulations for the transport of dangerous goods by air).

Changes since the initial IRRS mission

Suggestion 33: Rostekhnadzor has considered the suggestion, and assessed the need for a national law for the transport of all dangerous goods. The assessment concluded that despite the lack of such an integrated law, the current settings for regulating transport of radioactive material are adequate. Moreover, transport of radioactive material represents less than 1 percent of the total transport of dangerous goods.

Suggestion 34: Rostekhnadzor reviewed the State variation against the ICAO technical instructions. It was found out that it needs to be updated to clarify that a Rostekhnadzor authorisation is needed for air transport of radioactive sources (in addition to nuclear material, already mentioned). It is the responsibility of the Ministry of Transport to do this update, and Rostekhnadzor has sent a letter to suggest it. During the discussions, it was agreed that closer cooperation between Rostekhnadzor and the Ministry of Transport could facilitate this update to happen. The current revision of the national safety regulations for transport of radioactive material is another reason to strengthen the relationship with the Ministry of Transport, which is addressed in Suggestion 5 and partly justifies that it remains open.

Status of the findings in the initial mission

Suggestion 33 is closed as the initiative to draft an integrated law on transport of dangerous goods is not in the mandate of Rostekhnadzor.

Suggestion 34 is closed as Rostekhnadzor has alerted the Ministry of Transport about the need to update the State variation. Moreover, the broader concern of coordination with relevant authorities is addressed in suggestion 5.

New observations from the follow-up mission

Observation: The IRRS team was informed that the national safety regulations for transport of radioactive material needed revision to be fully in line with the latest version of the international transport regulations, which are based on the relevant IAEA Safety Standards (formerly TSR 1, currently SSR-6). To ensure timely alignment of national regulations with international regulations, Rostechndzor has initiated the revision of national safety regulations for transport of radioactive material as soon as SSR-6 started to be drafted, in 2010. As a result of this proactive approach, there is now a final draft of the revised national regulation, fully in line with SSR-6, two years before the revised international regulations, also based on SSR-6, will be published. The team considered this anticipation as very positive.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GSR Part 1, Requirement 33
GPF2	Good Practice: The proactive approach taken by Rostechndzor, in coordination with the other national organizations concerned, to revise the national regulations of the Russian Federation for transport of radioactive material in parallel to the revision of the relevant IAEA Safety Standards (SSR-6) is a good practice.

10. EMERGENCY PREPAREDNESS AND RESPONSE

The following BASIS applies to all the recommendations, suggestions and good practices in this section and shall not be repeated at the particular observations:

BASIS: GS-R-2 § 3.8 states that *“The regulatory body shall require that arrangements for preparedness and response be in place for the on-site area for any practice or source that could necessitate an emergency intervention. [...]The regulatory body shall ensure that such emergency arrangements are integrated with those of other response organizations as appropriate before the commencement of operation.”*

10.1. GENERAL REQUIREMENTS

Basic responsibilities

Rostechndzor is the regulatory body for the state safety regulation in atomic energy use. The Unified Russian State System for Emergency Prevention and Elimination (RSChS/URSSEPE) is founded and functioning according to the Federal Law "On Public and Territory Protection against Natural and Man-induced Emergencies". EMERCOM is the standing body for RSChS control. EMERCOM coordinates the activity of all ministries, agencies and organizations which relates to off-site emergency preparedness and response. Rostechndzor is a member of the RSChS and leads the activities related to the control of nuclear and radiological facilities.

The Health Ministry is responsible for all health-related aspects of EPR, both on-site and off-site. For example, its regulations contain extensive requirements on systems, equipment, organisation, plans, radiation monitoring networks, and even containment and ventilation system design associated with EPR, as well as a mention of the need for physical security. During inspections of nuclear facilities, EMERCOM inspectors inspect sprinkler systems, Ministry of Health inspectors inspect dosimeters, radiation detection equipment and fixed radiation monitoring networks. However, Rostechndzor has signed a cooperation Agreement with FMBA for the revision of regulatory requirements and the inspection of nuclear facilities.

Coordination between the various regulatory authorities is required through a consultative process that includes a mandatory review by all ministries and agencies that have a stake in the matter. For example, the organizations that must sign the emergency plan of the facilities include heads of territorial bodies of EMERCOM, the Federal Security Service of Russia, Russian Ministry of Internal Affairs, Federal Bio-Medical Agency of Russia, Hydrometeorology and Environmental Monitoring

Agency, organization, the developer of the nuclear power plant design, and submitted for approval to the operating organization

Observation: The basic responsibilities are regulated through about 40 acts (laws, governmental decrees, international conventions, norms and rules, and sanitary regulations and orders) issued by different competent authorities. In the area of EPR, the regulatory authority is divided between several authorities. There is potential for overlaps of responsibilities in some areas related to the EPR.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GS-R-2 § 3.4 states that <i>“Legislation shall be adopted to allocate clearly the responsibilities for preparedness and response for a nuclear or radiological emergency and for meeting the requirements established in this Safety Requirements publication.”</i>
SF2	Suggestion: Rostechnadzor is encouraged to review in cooperation with other federal bodies and, if required, to revise EPR requirements for the licensees, in order to eliminate potential overlaps and to harmonize them with IAEA requirements.

Assessment of hazards

The hazard assessment for facilities is done within the scope of the SAR. Special requirements on the content of the threat assessment are developed separately for different types of facilities and practices. The operating organization proposes what emergency planning category they belong to (1 to 4) and the size of the planning zones. Both parameters are determined on the basis of criteria defined in the regulations. These criteria are not consistent with GS-R-2. Rostechnadzor (through the TSO) reviews the calculations but does not approve the zone sizes.

At the moment, there is no guidance on the development and use of the results of the hazard assessment e.g. on how to determine planning zones. Rostechnadzor is in the process of developing a guide but the draft was not available during the review.

Observation: The development of a guide on the development and use of the results of the hazard assessment is near completion. The facility categorization in OSPORB -99/2010 is not fully consistent with IAEA requirements.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GS-R-2 § 3.14 states that <i>“In designing a threat category I, II or III facility “[a] comprehensive safety analysis is carried out to identify all sources of exposure and to evaluate radiation doses that could be received by workers at the [facility] and the public, as well as potential effects on the environment...”</i>
(2)	<i>“In the threat assessment any populations at risk shall be identified and, to the extent practicable, the likelihood, nature and magnitude of the various radiation related threats shall be considered. The threat assessment shall be so conducted as to provide a basis for establishing detailed requirements for arrangements for preparedness and response by categorizing facilities and practices consistent with the five threat categories”</i>
(3)	BASIS: GS-R-2 § 3.17 states that <i>“In a threat assessment, facilities, sources, practices, on-site areas, off-site areas and locations shall be identified for which a nuclear or radiological emergency could warrant: (a) Precautionary urgent protective action, (b) Urgent protective action, (c) Agricultural countermeasures, countermeasures to ingestion and longer term protective measures, and (d) Protection for the workers</i>
(4)	BASIS: GS-R-2 § 3.6 states that <i>“For the purposes of the requirements nuclear and radiation related threats are grouped according to the threat categories shown in Table I. The five threat categories in Table I establish the basis for developing generically</i>

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

	<i>optimized arrangements for preparedness and response.”</i>
SF3	Suggestion: Rostekhnadzor is encouraged to complete the guidance document on the development of a hazard assessment and the determination of planning zone sizes in line with the international guidance.
SF4	Suggestion: Rostekhnadzor is encouraged to negotiate with the Ministry of Health for a revision of the categorization of facilities based on potential hazard to make it consistent with the requirements contained in GS-R-2.

10.2. FUNCTIONAL REQUIREMENTS

Establishing emergency management and operations

Regulations clearly state the requirement for an emergency response organization at NPP for emergency management, in compliance with existing federal laws. Other norms and rules address the requirement, albeit in a more general way, for other nuclear and radiological facilities or practices.

This is verified/reviewed by Rostekhnadzor during the licensing process, in the periodic review of plans and procedures, in inspections and during emergency exercises. Exercises are further discussed below.

Identifying, notifying and activating

Regulations require notification to happen within 1 h from event detection. This is not fully consistent with GS-G-2.1, which suggests that notification should occur within 15 minutes after classification, which itself must be completed within 15 minutes after detecting the event.

Regulations contain an event classification system that related to activation level of the on-site emergency organization and that is based exclusively on dose rate measurements and iodine concentration in the facility and in the environment. This is not consistent with GS-R-2, which calls for a classification scheme based on facility conditions and system parameters. The IRRS team was informed that regulations are being revised to incorporate symptom-based classification levels consistent with IAEA requirements and guidance.

Observation: The classification system is not consistent with the IAEA requirements. The regulation on the time limit for notification is longer than the suggested timing contained in IAEA guides.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GS-R-2 para.3.5 states that <i>“The operator of a facility or practice in threat category I, II, III or IV shall make arrangements for the prompt identification of an actual or potential nuclear or radiological emergency and determination of the appropriate level of response. This shall include a system for classifying all potential nuclear and radiological emergencies that warrant an emergency intervention to protect workers and the public, in accordance with international standards²¹, which covers emergencies of the following types at facilities (1–4) and other emergencies such as (5) below: (1) General emergencies, (2) Site area emergencies, (3) Facility, (4) Alerts, (5) Other emergencies.</i>
(2)	BASIS: GS-R-2 § 4.70 states that <i>“The operators of facilities in threat category I, II or III shall make arrangements to assess promptly: abnormal conditions at the facility; exposures and releases of radioactive material; radiological conditions on and off the site; and any actual or potential exposures of the public. These assessments shall be used for mitigatory actions by the operator; emergency classification, urgent protective actions to be taken on the site, the protection of workers and recommendations for urgent</i>

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	<i>protective actions to be taken off the site”.</i>
(3)	BASIS: GSG-2.1 TABLE 12. states the need to “ <i>classify the emergency in < 15 min and notify local authorities in <15 min after classification</i> ”.
RF4	Recommendation: Rostekhnadzor should complete the revision of the regulation on emergency classification based on plant parameters, ensuring that it is consistent with GS-R-2 requirements.
SF5	Suggestion: Rostekhnadzor should consider updating its emergency notification timing requirements to bring them more in line with the suggested timing contained in GS-G-2.1.

Taking mitigatory actions

Laws and regulations contain requirements and details on the mitigation measures to be considered. In fact, NPPs and other facilities are protected by special firefighting units of EMERCOM, which should deal with an initial fire until the time when the external resources are available, especially in the case of an extensive fire. Regulatory requirements regulations also contain design requirements for facilities to have appropriate means to fight fires.

This is verified through drills and exercises. Most exercises must have a firefighting component. Fire fighting compliance is verified by EMERCOM inspectors. Fire inspections are not carried out jointly with Rostekhnadzor. The IRRS team was also informed that the EMERCOM also carries out inspection of the fitter firefighting systems (sprinklers).

Taking urgent protective action

Intervention criteria for the protection of the public in a radiation emergency are set by the Ministry of Health (Rospotrebnadzor). Rostekhnadzor coordinates with Rospotrebnadzor but has no jurisdiction over this issue. The levels used are based on the old ICRP recommendations (ICRP 63) and are not consistent with GS-R-2. The IRRS team was informed that Rostekhnadzor is aware of the issue and has written a letter to Rospotrebnadzor to bring this to their attention.

Observation: The criteria for protective actions in use in the Russian Federation are not consistent with the latest IAEA requirements.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSG-2 TABLE 3. <i>Generic criteria for protective actions and other response actions in emergency exposure situations to reduce the risk of stochastic effects.</i> Note that GS-R-2 is being updated into GSR Part 7 and will reflect these new generic criteria.
SF6	Suggestion: Rostekhnadzor is encouraged to work with Rospotrebnadzor on the harmonization of the response criteria with the most recent IAEA requirements.

Providing information and issuing instructions

Rostekhnadzor does not have regulatory authority over this aspect. This is controlled by the EMERCOM regulations and through bilateral agreements between Rosenergoatom and local authorities.

Protecting emergency workers

The requirement to protect nuclear facilities emergency workers is defined in the regulations. The radiation protection measures are determined depending on the tasks to be fulfilled, for example:

- Implementation of emergency-restoration activities;
- Decontamination of contaminated areas (rooms, buildings, NPP territory);
- Acquisition and shipment of radioactive waste;
- Rehabilitation (if necessary) of the contaminated territory.

Limits for emergency workers in normal and emergency situations are set by FMBA. If dose limits are to be exceeded, FMBA has the approval authority.

FMBA establishes age restrictions for emergency workers. For example, people under 30 years may not become emergency workers. However, Rostekhnadzor documents determine who is an emergency worker according to their position. These two requirements may lead to inconsistency, for example, if a worker in a designated emergency worker position is less than 30.

Observation: There are potential overlaps and inconsistencies in the regulations for the protection of emergency workers.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

(1)	BASIS: GS-R-2 § 4.57 states that “Arrangements shall be made to designate as emergency workers those who may undertake an intervention to do the following: (a) To save lives or to prevent serious injury, including severe deterministic health effects; (b) To take actions to avert a large collective dose; or (c) To take actions to prevent the development of catastrophic conditions.”
SF7	Suggestion: Rostekhnadzor is encouraged to review the regulations, identify possible overlaps and, if required, harmonize emergency worker regulations in cooperation with FMBA and Rospotrebnadzor and to ensure that they are consistent with the requirements of GS-R-2.

Assessing the initial phase

Although the operating organization does monitor the plant safety critical parameters, this is not taken into account in the assessment of the initial phase for the purpose of emergency declaration. GS-R-2 contains requirements for the determination of Emergency Action Levels (EAL) based on plant safety parameters as well as radiation levels. In the Russian Federation, parameters to be used for the assessment of the initial phase are exclusively based on dose rate and activity concentration of iodine-131 in the air. This finding has been discussed above under *Identifying, notifying and activating*.

Keeping the public informed

There is no regulatory requirement issued by Rostekhnadzor on the need for licensees to inform the public during an emergency. In the Russian Federation, this is the responsibility of the EMERCOM, Rosenergoatom or Rosatom (depending on the facility).

Mitigating the non-radiological consequences of the emergency and the response

This is not under the jurisdiction of Rostekhnadzor.

Conducting recovery operations

Requirements regarding recovery activities for federal agencies are issued by the Ministry of Healthcare and Social Development of the Russian Federation. They cover State Non-Budgetary Funds, their territorial offices and organizations affected by emergencies. They include the creation

and support the subsystem of Social Protection of the Population Suffered from Emergencies within the Russian System of Prevention and Response to Emergencies. The criteria, requirements and processes for recovery are issued by the Federal Supervision Service for Consumer Rights Protection and People Welfare.

Rostekhnadzor coordinates with these agencies but has no direct regulatory authority in this area

10.3. REQUIREMENTS FOR INFRASTRUCTURE

Authority

This issue was addressed in the General Requirements subsection above.

Organisation

Regulations contain the requirements for the staffing of licensee emergency organisations. For NPP the requirements define the number of staff, their qualification, equipment, trainings, etc. For NFCF, the requirements are more general. The regulatory authority verifies the fulfilment of the requirements during inspections.

Coordination of emergency response

Regulations contain general requirements for the operating organization to notify and inform the local authorities. This is verified in the review of the plan and during exercises, which periodically involve off-site authorities.

Plans and procedures

Detailed requirements for the contents of emergency plans are contained in the regulations, addressing each type of facilities and practices. They also contain a detailed list of the organizations that must sign the plan. The verification of plans is done by Rostekhnadzor within the scope of the licensing process, during inspections and following exercises.

Observation: Regulations contain very detailed requirements and guidance on the contents of emergency plans for all types of activities

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GS-R-2 § 5.13 states that <i>“Plans or other arrangements shall be made for co-ordinating the national response to the range of potential nuclear and radiological emergencies. These arrangements for a co-ordinated national response shall specify the organization responsible for the development and maintenance of the arrangements; shall describe the responsibilities of the operators and other response organizations; and shall describe the co-ordination effected between these arrangements and the arrangements for response to a conventional emergency”.</i>
(3)	BASIS: GS-R-2 § 5.14 states that <i>“Each response organization “shall prepare a general plan or plans for coordinating and performing their assigned functions”.</i>
GPF3	Good practice: The requirements for the emergency plans contents for all types of activities and practices are clearly and extensively defined in regulations.

Logistical support and facilities

The regulatory requirements for equipment and facilities are listed in several norms and rules. Facilities and equipment relevant to EPR are periodically inspected by Rostekhnadzor, FMBA and the EMERCOM. In addition, resident inspectors from Rostekhnadzor have the authority to inspect equipment and facilities at any time.

Training, drills and exercises

Requirements for training, drills and exercises and their frequency are set in the federal regulations; they address design basis and beyond design basis accidents. The emergency drills shall be periodically performed. The frequency and process of their performance is included in an annual plan

approved by the operating organization. The plan is annually sent to the regulatory authority. Before the conduct of a drill or exercise (about 3 weeks earlier), the operating organization sends an official letter to Rostekhnadzor to advise them to be prepared to participate. The regulatory authority participates in emergency drills and exercises.

The IRRS team observed at exercise at the Novovoronezh NPP and at the Rostekhnadzor Analytical Information Centre. Rostekhnadzor participated with the role to perform independent monitoring of the correctness of the actions performed by the emergency staff of the NPP and for independent analysis and prognosis. During this exercise, it became obvious that the communication system between Rostekhnadzor headquarters and the NPP not only provide for an effective transfer of emergency information and plant parameters during an emergency, but also provide a very good platform for the conduct and monitoring of exercises by the licensee. At the moment, the optical fibre optics network of Rosenergoatom is used for data transfer. Rostekhnadzor plans to install an independent transmission system to ensure a highly reliable, redundant communication network.

Rostekhnadzor recently introduced a new methodology for the evaluation of exercises. This methodology is based, in part, on EPR Exercises 2005, which calls for exercises to test performance in realistic scenarios. This new tool is in the process of being implemented; performance-based exercises are not yet the norm. Nevertheless, the introduction of a systematic approach to exercise evaluation is considered a very positive development.

Observation: The introduction of a systematic methodology for exercise evaluation is a positive step, which could enhance the previous procedurally-based through the introduction of a more systematic and performance-based evaluation approach. Rostekhnadzor does not systematically evaluate emergency exercises at non-NPP facilities.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GS-R-2 para.3.5 states that <i>“The regulatory body shall require that the emergency arrangements shall be tested in an exercise before the commencement of operation [of a new practice]. There shall thereafter at suitable intervals be exercises of the emergency [arrangements], some of which shall be witnessed by the regulatory body.”</i>
SF8	Suggestion: Rostekhnadzor is encouraged to review and enhance its exercise evaluation methodology and include a performance-based approach for all aspects of the emergency functions, consistent with the guidance provided in EPR Exercise 2005.
RF5	Recommendation: Rostekhnadzor should evaluate exercises involving facilities other than NPP.
GPF4	Good practice: The introduction of a systematic exercise evaluation tool is considered a good practice.

Quality assurance programme

Regulations contain quality assurance requirements for nuclear facilities; they specifically address the reliability of systems (elements) important to nuclear safety, including all support materials, equipment, communication systems and facilities necessary for emergency response. There is a general Quality Assurance Plan (QAP), which contains all elements of the activity (self assessment, improvements, emergency preparedness, etc.). Additionally special task-oriented QAP are established (operations with of nuclear fuel, treatment of RAW, emergency preparedness). The QAP is a mandatory document for obtaining a license. The effectiveness of the QAR is verified during inspections. There are also requirements for the operating organization to develop a methodology for assessing their QAP.

This is applicable also to all other nuclear and radiological activities and practices.

10.4. ROLE OF THE REGULATORY BODY DURING RESPONSE

The role of Rostekhnadzor during an emergency is to monitor and verify the actions of the licensee and provide an independent analysis and prognosis of the emergency situation to the government authorities. Based on the Novovoronezh exercise observed by the IRRS team, both at the NPP and at Rostekhnadzor headquarters in Moscow, the Rostekhnadzor team has the human resources, competence, equipment and systems to very effectively perform their response tasks. In particular, the IRRS team noted that the Rostekhnadzor emergency arrangements include highly qualified and professional staff who are demonstrably very familiar with the procedures, programmes, tools and NPP parameters. Part of the emergency staff is from the TSO, which enhances the technical capabilities of the team. The Rostekhnadzor team was able to quickly and precisely assess that the actions of the licensee, in this exercise, were delayed in some cases. As stated above, the data transfer system is highly effective, and Rostekhnadzor is in frequent communication with the other main emergency organizations.

10.5. SUMMARY

The review shows that, in general, the regulatory framework associated with EPR is adequate and provides a good basis for the development of appropriate EPR arrangements by the licensees. There are, however, some areas requiring improvements. As part of module 10 of the IRRS, the team has identified three recommendations, seven suggestions and two good practices:

- The recommendations relate to the need for a symptom-based emergency classification system, initial assessment procedures by the licensees that cover plant parameters as the basis for the emergency classification and the requirement to ensure that exercise evaluations are carried out for facilities other NPP.
- In general, the suggestions relate to the need to continue harmonization of regulations and regulatory processes with FMBA and other relevant organizations, consideration for reviewing the timing of emergency notifications, and the need to consider introducing performance-based exercise evaluations.
- The good practices take note of the comprehensiveness of the regulations and guidance on the development of emergency plans and of the introduction of a systematic exercise evaluation tool.

11. REGULATORY IMPLICATIONS OF THE TEPCO FUKUSHIMA DAI-ICHI ACCIDENT

11.1. IMMEDIATE ACTION TAKEN BY THE REGULATORY BODY

In the Russian Federation, activities are undertaken at a national level to ensure the emergency preparedness of nuclear plants and steps are taken to ensure safety of the personnel, the public and the environment. The plans and measures to protect the public in case of accidents at NPPs are developed by the executive authorities of appropriate Subjects of Russian Federation with involvement of NPPs.

On 12 March 2011, after the accident at the Fukushima Daiichi NPP in Japan was first reported, the emergency operations center, a part of the RSPEE, launched monitoring and prediction with respect to the development of the accident consequences in the border areas. Information on the accident, including measures taken to confine its consequences, were collected by Rosatom and posted it on its website. Rosatom also held press conferences and issued press releases.

In March/April 2011, focused inspections were conducted at all NPP sties by Rosenergoatom and Rostekhnadzor to assess the adherence to the design safety requirements in relation to beyond design basis accidents (defined as postulated initiating events of probability higher than once in million years and considered in addition to the design basis accidents which are prescribed by regulations). Specifically, the following areas were assessed:

- protection against extreme natural and man-made hazards (and their combinations),

- management of station blackout and loss of heat sinks conditions; and
- management of accident scenarios involving fuel damage beyond the design limits.

These inspections led to the conclusion that power reactors, spent fuel pools and dry storage facilities at all NPP sites are robust and there is sufficient protection against the design basis accidents and some beyond design basis accidents. Rostekhnadzor observed, however, that the beyond design basis for certain external events at certain sites needs to be updated and additional measures should be considered to strengthen protection against severe accidents and, as necessary mitigate their consequences. Rostekhnadzor thus recommended that a systematic and comprehensive re-assessment need be performed to identify any potential improvements at all sites. In parallel to these inspections, emergency response drills were conducted at all operating NPPs for accident scenarios involving loss of power and loss of heat removal capability.

In June 2011 Rostekhnadzor issued requirements for the scope and content of an accident analysis developed taking into account the ENSREG methodology with objective to (i) assess compliance with all applicable rules and norms, and to (ii) verify robustness of power reactors, spent fuel pools and dry storage facilities at all NPP sites against extreme external hazards, including natural and man-induced events more severe than those that have historically been regarded as credible and combinations of these events. In August 2011 Rosenergoatom completed the re-assessment requested by Rostekhnadzor and demonstrated that the core cooling design features at all operating NPPs are sufficient to provide protection for the design basis accidents and to manage certain beyond design basis accident scenarios. Additional measures, however, were recommended by Rosenergoatom to strengthen the reactor design basis to prevent severe accidents and, as necessary, mitigate their consequences in order to meet regulatory targets for probabilistic safety goals and enhance emergency management programs. Particular attention was paid to postulated accident scenarios at the multi-unit sites. Similarly, it was concluded that additional safety measures need to be implemented at spent fuel pools and dry storage facilities. Rosenergoatom also recommended accelerating removal of spent fuel from spent fuel pools and dry storage facilities at selected sites.

Where summarizing the immediate steps taken by the Russian Federation in the wake of the TEPCO Fukushima Daiichi accident, it is important to mention that Rosatom, which is responsible for the fulfilment of the Russian Federation's obligations arising out of the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, was exchanging information with the IAEA's Incident and Emergency Center, and other foreign partners. Furthermore, Rostekhnadzor was engaged in an active dialog with the neighbouring countries and international community as a whole on issues of ensuring safety of the Russian NPPs in operation or under construction, including the NPPs built in other countries.

CONCLUSION [1]

The IRRS team considers that the action taken by Rostekhnadzor immediately after the TEPCO Fukushima Daiichi accident was timely and effective. The operating organization demonstrated that the NPP sites are safe and decided to accelerate the removal of spent fuel from spent fuel pools from selected NPP sites to the centralized dry storage facilities.

11.2. TECHNICAL AND OTHER ISSUES CONSIDERED IN THE LIGHT OF THE ACCIDENT

The technical issues learned from the initial lessons arising from the TEPCO Fukushima Daiichi accident were first considered in defining the requirements for the safety re-assessment of the Russian NPPs and then addressed in the assessment reports submitted by Rosenergoatom. In September/November 2011, Rostekhnadzor, with involvement of its technical support organization, reviewed the proposed plan of improvements which was then finalized and released in March 2012. The plan includes some novel approaches to further enhance reactor safety and proposes a set of improvements activities, applicable to all NPP sites including spent fuel pools and waste storage facilities, which can be generalized as follows:

- deployment of emergency mitigating equipment enabling to arrange, if necessary, make-up water supply for the cooling of the reactor core (and steam generators), spent fuel pools and storage facilities;
- installation of alternative means of water supply to reactor core (RBMK-type reactors) and spent fuel pools;
- feasibility studies for additional passive (air) cooling of the reactor core (RBMK-type reactor);
- installation of equipment and/or systems to improve retention of radioactive material and to limit radioactive releases in case of an accident;
- installation of instrumentation and equipment for assuring monitoring and control of severe accident conditions;
- installation of hydrogen concentration monitoring and emergency removal systems at those power units where such systems were not foreseen by the design; and
- installation of systems for, as necessary, controlled and filtered discharge from the containment (VVER-type reactors).

Furthermore, the plan outlines a set of generic activities to improve severe accident management capabilities at all NPPs, such as:

- revision of limiting (bounding) scenarios, leading to fuel damage beyond the maximum design limit (i.e. severe accident scenarios), for the development of accident management measures;
- completion of the analysis of radiation consequences of severe accidents;
- revision of emergency documentation in order to include multi-unit accident scenarios; and
- revision of beyond design basis accident management manuals to include activities related to the management of accidents caused by loss of power supply and/or heat removal (taking into account multi-unit scenarios).

Subsequently, Rosenergoatom performed the safety re-assessment of all NPPs under construction to verify their robustness through analysis of external initiating events, loss of ultimate heat sinks, extended station blackout, and severe accident management. As a result, Rosenergoatom proposed installation of some additional design features, in particular mobile emergency mitigating equipment, and revised the design documentation. Rostekhnadzor has reviewed this analysis and the design documentation, and amended construction and commissioning licence accordingly.

The safety reviews have not been extended to new (planned) reactor designs accident, recognizing that the new plants are safer than operating units due to (i) increased safety margins for extreme external events, (ii) combination of passive and highly-reliable safety systems, and (iii) equipment redundancy and separation of systems important to safety. The safety reviews will be conducted as part of the licensing process.

In November 2012, the organizations operating research reactors completed safety assessments for the facilities that pose potential off-site radiological risk in case of emergency situations (greater than 60 MWt). These assessments have been carried out taking into account the IAEA guidelines for complementary safety assessments of research reactors based on the lessons learned from the

TEPCO Fukushima Daiichi accident. The analysed accident scenarios included combinations of external hazards, leading to blackout conditions. In April 2013, Rostechnadzor, with involvement of its technical support organization, completed the review of these reports. The review concluded that, in general, existing equipment and administrative measures provide sufficient protection against beyond design basis accidents and severe accidents.

CONCLUSION [2]

The IRRS team considers that Rostechnadzor initiated a systematic and comprehensive re-assessment of safety of the NPP and research reactor sites, including spent fuel pools and storage facilities, to demonstrate that the cooling design features for these facilities are sufficient to provide protection for the design basis accidents and some beyond design basis accident scenarios. However, additional measures were identified by the operating organization and accepted by Rostechnadzor to strengthen the ability to prevent severe accidents and, as necessary, mitigate their consequences.

11.3. PLANS FOR UPCOMING ACTIONS TO FURTHER ADDRESS THE REGULATORY IMPLICATIONS OF THE ACCIDENT

The NPPs reviews conducted by Rosenergoatom have covered all important issues related to the lessons learned from the Fukushima accident - such as external initiating events, loss of ultimate heat sinks, extended blackout, and severe accident management - and identified the respective areas of improvements for NPPs and research reactors. The improvement program for the NPPs sites (reactors, spent fuel pools and storage facilities) includes short-, medium- and long-term actions which extend until 2021.

The safety re-assessment for research reactors, which was conducted in a risk-informed manner, also covered all essential issues stemming from the TEPCO Fukushima Daiichi accident. As a result of this review, Rostechnadzor recommended updating the Safety Analysis Reports and operating documentation for the research reactors, including spent fuel pools.

It is important to mention that the safety re-assessment was not extended to other nuclear facilities to verify their protection against external hazards, including natural and man-made events.

The findings of the NPPs reviews conducted by Rosenergoatom in the wake of the TEPCO Fukushima Daiichi accident gave also rise to the systematic re-assessment of Rostechnadzor regulatory framework as applied to severe accidents. This work was initiated in October 2012 focusing primarily on improving regulatory strategy and approaches through strengthening Federal norms and rules, and safety guidelines in relation to severe accidents prevention and management at NPPs sites. Rostechnadzor concluded that requirements in the following areas need to be amended: (i) external natural and man-made hazard, siting, seismic design; content of safety analysis reports; and personnel protection plans (on-site emergency response). Furthermore, Rostechnadzor recognized that it would be desirable to develop regulatory guidelines for beyond design basis accidents (including severe) management. In developing these proposals, particular attention was paid to the following technical issues:

- limiting (bounding) scenarios for beyond design basis accidents (including severer accidents) for evaluation of operability condition of essential safety systems and technical parameters for accident management;
- technical means to ensure effective management of beyond design basis accidents (including severe accidents) and elimination of their consequences;
- availability of essential safety functions in case of a failure of normal operating and safety systems which ensure heat removal from the reactor core and nuclear fuel storage facilities; and
- provisions to control accident conditions and means for post-accident monitoring.

In addition, the assessment of research reactors revealed that applicable regulatory requirements should be strengthened in the following areas (i) emergency power supply, (ii) instrumentation for severe conditions, (iii) effectiveness of reactor shutdown system for extreme process system conditions, (iv) management of severe accident conditions arising at the multi-facilities sites; and (v) interdepartmental information exchange.

Rostechnadzor has undertaken considerable efforts to benchmark the results of re-assessments of safety of Russian nuclear facilities against international experience. It published benchmarking of its activities, stemming from lessons learned from the TEPCO Fukushima Daiichi accident, against the IAEA Nuclear Safety Plan. The benchmarking table sets out specific actions for completion, or completed, within the timeframe 2012-2016. It covers the four major concerns needed to be addressed by the international community, namely: (i) strengthening defence-in-depth of operating facilities, (ii) enhancing emergency preparedness, (iii) improving regulatory framework and (iv) enhancing international collaboration.

Rostechnadzor also collaborated closely with the IAEA, in particular on peer reviews including IRRS and OSART, and held two bilateral meetings with the French and Finnish regulators.

CONCLUSION [3]

The IRRS team considers that Rostechnadzor has applied considerable efforts to learn from the TEPCO Fukushima Daiichi accident in order to improve safety of the NPP and research reactor sites, including spent fuel pools and dry storage facilities. Further actions were taken to strengthen the regulatory framework in order to prevent severe accidents and, as necessary, mitigate their consequences.

11.4. CONCLUSIONS BY REVIEWED AREAS

Module 1: Responsibilities and Functions of the Government

The IRRS team discussed the responsibilities and functions of the Russian Federation Government with Rostechnadzor, and reviewed legal documents establishing basis for regulatory framework for safety. The Russian Federation has an appropriate governmental, legal, and regulatory framework in place for the regulation of nuclear installations, including conditions under emergency or accident situations. Legal conditions are clearly defined for all competent state authorities supervising safety. Provisions have been made for coordination among all the competent state authorities, as well as the license holders for nuclear installations, in case of emergencies or accidents.

CONCLUSION [4]

The IRRS team considers that the necessary governmental legal and regulatory framework exists, responsibilities and functions are properly allocated among the relevant authorities, and the regulatory body is committed to act as necessary.

Module 2: Global Nuclear Safety Regime

The Russian Federation is Contracting Party to all important conventions related to safety including the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in Case of a Nuclear Accident. The Russian Federation has demonstrated openness for, and involvement in international peer review missions organized under the umbrella e.g. of IAEA/OSART or WANO activities related to nuclear activities.

The Russian Federation fulfills its obligations towards the Convention on Nuclear Safety by continuous participation in activities related to the implementation of the Convention. The Russian Federation submits national reports and participates in the meetings of the Contracting Parties on a regular basis. In addition the Russian Federation promotes international cooperation in the area of

nuclear programs within the framework of IAEA, OECD NEA, and VVER Regulators Forum and within some bilateral platforms for cooperation.

New observations from the follow-up mission

Observation: The Russian Federation prepared proposals for improvements in the international regulatory regime of ensuring the nuclear safety and sent them to the leaders of major countries, and to the IAEA Director General. In June 2011, at the IAEA Ministerial Conference on Nuclear Safety, the Russian delegation officially unveiled the package of its proposals on making amendments to the Convention on Nuclear Safety. These amendments envisaged a greater government responsibility for timely and sufficient emergency response to minimize the consequences of an accident, and to include the requirement for the necessary infrastructure to be established in the countries planning to build nuclear facilities. The Russian proposals for the amendments to the Convention on Nuclear Safety were considered in the final Conference Declaration and in the IAEA Nuclear Safety Action Plan adopted at the 55th Session of the IAEA General Conference in September 2011.

The Russian Federation was the first Member State that demonstrated strong commitment to the IAEA Nuclear Safety Action Plan by benchmarking of their activities against the IAEA Action Plan. The main objectives was to reflect domestic and international work performed against the IAEA Action Plan, and to identify specific actions initiated or performed in support of the IAEA Action Plan by all stakeholders, including operators, and regulatory and emergency planning organizations. Reporting on progress against the IAEA Action Plan was also established as a requirement for National Reports to the 6th Review Meeting of the CNS. Contracting Parties were requested to address each of the 12 actions of the Plan in their reports.

FOLLOW-UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	BASIS: GSR Part 1, requirement 14, para 3.2 (e).
GPF5	Good Practice: The Russian Federation, through its leadership and collaboration with various international stakeholders, has contributed effectively to the development of measures and programmes that may strengthen the global safety regime in the wake of the TEPCO Fukushima Daiichi accident.

CONCLUSION [5]

The IRRS team considers that the Russian Federation fulfils its respective international obligations, participates in the relevant international arrangements, including international peer reviews, and promotes international cooperation to enhance safety globally.

Module 3: Responsibilities and Functions of the Regulatory Body

Rostekhnadzor has a clear separation from organizations or bodies having responsibilities for operation or promotion.

Rostekhnadzor as an independent regulatory body that is responsible for regulating nuclear safety has sufficient legal power to take timely actions in case of an emergency or accident as demonstrated by the response to the Fukushima accident.

Rostekhnadzor has adequate tools and operates an effective system enabling a) to communicate with a license holder(s) during an emergency and b) also to evaluate the situation based on real time information and data. Operability of communication means for public informing in case of accident are assured through various multiply backed up communication means operated under the Unified State System for Emergency Prevention and Elimination (USSEPE) (vehicles with loudspeakers,

electric sirens, radio communication, TV, mobile phone (SMS) notification, and other communication means). Rostekhnadzor is a part of the USSEPE.

The Information Analytical Centre (IAC) has been established to ensure necessary technical capabilities of Rostekhnadzor during emergencies. IAC has functions of an emergency response centre which incorporates also a public relation and mass media communication group. Provision of information concerning the release of radiation and the potential effect on the public is not assigned to Rostekhnadzor and is ensured by other components of USSEPE. Coordination for public information between all relevant organizations in emergency or accident situation is ensured according to the USSEPE plans. During an emergency Rostekhnadzor/IAC monitors the information provided to the public and can perform necessary corrective steps if necessary.

CONCLUSION [6]

The IRRS team considers that Rostekhnadzor as an independent regulatory body has the appropriate legal authority and responsibility to take timely actions during an emergency or accident condition.

Module 4: Management System of the Regulatory Body

The Rostekhnadzor Management System is still under development (as described under Recommendation 8). The Rostekhnadzor policy and intention regarding the development of the Management System is to follow all the rules and requirements of international guidance and it is expected to be continuously assessed and improved so that the implications of any future incident or accident are appropriately addressed. The Management System is expected to ensure a long-term and balanced management commitment to provide sufficient resources and competence, to promote safety culture, to promote transparency and openness and to develop and maintain open and constructive relations with regulators in neighbouring countries. Currently all these activities are addressed in certain forms and it is foreseen that establishment of the Management System will ensure the necessary integration.

The improvement program for the NPPs sites includes short-, medium- and long-term actions which extend until 2021 (the timeline for each phase, however, is not defined). Rosenergoatom has made considerable progress in implementing immediate and some short-term actions. Completion of committed improvements is continuously followed and evaluated by Rostekhnadzor, and provisions have been made to include these activities in the routine compliance assessment program.

The scope of the proposed regulatory work to address implications of the Fukushima-Daiichi accident appears to be very comprehensive. However, Rostekhnadzor has no consolidated action plan that would link all proposed improvements in a systematic manner, identify roles and responsibilities, and provide a timeline for document development and implementation. This may delay the full implementation of the lessons learned from the Fukushima-Daiichi accident and may lead to some gaps in the approach taken by Rostekhnadzor to address them.

CONCLUSION [7]

The IRRS team has identified under Recommendation 8 that the management system requires further development. During this development, given the scale and duration of proposed Fukushima improvement initiatives, it is important that Rostekhnadzor develops processes and procedures to continuously monitor and evaluate the progress made by the operating organization, and to develop and implement new safety requirements and guidelines in relation to severe accidents prevention and management at nuclear facilities.

Module 5: Authorization

Rostechnadzor, in co-operation with other Russian Federation Governmental Partners, has established a number of new requirements designed to enhance the authorization process for nuclear facilities. The new requirements include activities such as, for example, graded application of periodic safety assessments of nuclear facilities and use of PSA insights when evaluating regulatory implications of operating events.

In relation to NPPs under construction, Rosenergoatom verified their robustness through analysis of external initiating events, loss of ultimate heat sinks, extended station blackout, and severe accident management. Rosenergoatom proposed installation of some additional design features and revised the design documentation. Rostechnadzor has reviewed this analysis and the design documentation, and after granting necessary approvals amended construction and commissioning licence accordingly.

With respect to research reactors, Rostechnadzor also reviewed the safety re-assessments which were conducted by operating organizations and covered all essential issues stemming from the Fukushima accident. As a result of this review, Rostechnadzor recommended updating the Safety Analysis Reports and operating documentation for the research reactors, including spent fuel pools. The operating licences were amended accordingly.

CONCLUSION [8]

The IRRS team considers that the status of the existing Rostechnadzor's authorization process is appropriate. The process allows for timely and effective feedback of operating experience, including implementation of necessary improvements to enhance safety of nuclear facilities.

Module 6: Review and Assessment

Shortly after the Fukushima accident, Rostechnadzor issued requirements for the scope and content of an accident analysis developed taking into account the ENSREG methodology.

Rosenergoatom completed the re-assessment requested by Rostechnadzor and demonstrated that the core cooling design features at all operating NPPs, and those under construction, are sufficient to provide protection for the design basis accidents and to manage certain beyond design basis accident scenarios. Additional measures, however, were recommended by Rosenergoatom to strengthen the reactor design basis to prevent severe accidents and, as necessary, mitigate their consequences in order to meet regulatory targets for probabilistic safety goals and enhance emergency management programs. The safety reviews have not been extended to new (planned) reactor designs accident. Rostechnadzor will review the reactor designs within the licensing process after receipt of a relevant licensee's application recognizing that the new plants are safer than operating units due to (i) increased safety margins for extreme external events, (ii) combination of passive and highly-reliable safety systems, and (iii) equipment redundancy and separation of systems important to safety.

Similarly, the organizations operating research reactors completed safety assessments for the facilities that pose potential off-site radiological risk in case of emergency situations (greater than 60 MWt). These assessments have been carried out taking into account the IAEA guidelines for complementary safety assessments of research reactors based on the lessons learned from the TEPCO Fukushima Daiichi accident.

Rostechnadzor, with involvement of its technical support organization, completed the review of these reports and concluded that the cooling design features for safety of the NPP and research reactors sites, including spent fuel pools and storage facilities, are sufficient to provide protection for the design basis accidents and some beyond design basis accident scenarios. Additional measures were identified by the operating organization and accepted by Rostechnadzor to strengthen the ability to prevent severe accidents and, as necessary, mitigate their consequences.

CONCLUSION [9]

The IRRS team considers that the existing status of Rostekhnadzor's reviews and assessments is appropriate. Rostekhnadzor is committed to act, and further actions have been planned and partly initiated to enhance reviews and assessments through improvements to the regulatory document framework for severe accidents prevention and mitigation, and emergency preparedness.

Module 7: Inspection

Immediately after the TEPCO Fukushima Daiichi accident, focused inspections were conducted at all NPP sites by Rosenergoatom and Rostekhnadzor to assess the adherence to the design safety requirements in relation to beyond design basis accidents. In parallel to these inspections, emergency response drills were conducted at all operating NPPs for accident scenarios involving loss of power and loss of heat removal capability.

These inspections supported a conclusion that power reactors, spent fuel pools and dry storage facilities at all NPP sites are robust and there is sufficient protection against the design basis accidents and some beyond design basis accidents. Rostekhnadzor observed, however, that the beyond design basis for certain external events at certain sites needs to be updated and additional measures should be considered to strengthen protection against severe accidents and, as necessary mitigate their consequences. Rostekhnadzor thus recommended that a systematic and comprehensive re-assessment need be performed by Rosenergoatom to identify any potential improvements at all sites. Rostekhnadzor independently reviewed the results of the assessment and made recommendations that were integrated into the final assessments and action plans.

During the tour of the Novovoronezh NPP, the licensee demonstrated the ability to supply water to primary and secondary system components using portable equipment and multiple water sources. Rostekhnadzor performed targeted inspections, led by the territorial offices, of the post-Fukushima response activities. The team determined that Rostekhnadzor provided effective oversight and response to enhance site preparedness for severe accidents in response to the Fukushima event.

CONCLUSION [10]

The IRRS team considers that the status of the existing inspection practices of Rostekhnadzor is appropriate. They allow for timely and effective safety verification of operating nuclear facilities from the perspective of lessons learned from the TEPCO Fukushima Daiichi accident.

Module 8: Enforcement

Legislation in the Russian Federation has been modified in recent years to improve the use of enforcement as a tool to ensure compliance and prevent future violations. Rostekhnadzor headquarters and territorial bodies are able to use enforcement to ensure compliance with license conditions and requirements. This includes ability of Rostekhnadzor to ensure that any corrective actions, including those initiated by the TEPCO Fukushima Daiichi accident lessons learned, were implemented by the authorized parties.

CONCLUSION [11]

The IRRS team considers that the existing status of enforcement practice is appropriate. Rostekhnadzor has all the powers to exercise a graded enforcement policy whenever necessary and in particular in a situation similar to the TEPCO Fukushima Daiichi accident.

Module 9: Regulations and Guides

The findings of the NPPs reviews conducted by Rosenergoatom in the wake of the TEPCO Fukushima Daiichi accident gave rise to the systematic re-assessment of Rostekhnadzor regulatory document framework as applied to severe accident prevention and mitigation, and emergency preparedness. Rostekhnadzor concluded that requirements in the following areas need to be amended: (i) external natural and man-made hazard, siting, seismic design; content of safety analysis reports; and personnel protection plans (on-site emergency response). Furthermore, Rostekhnadzor recognized that it would be desirable to develop regulatory guidelines for beyond design basis accidents (including severe) management and emergency response.

In addition, as a result of the assessment of research reactors conducted by the operating organizations Rostekhnadzor concluded that regulatory requirements should be strengthened in the following areas (i) emergency power supply, (ii) instrumentation to monitor key safety parameters during severe accident conditions, (iii) effectiveness of reactor shutdown system for extreme process system conditions, (iv) management of severe accident conditions arising at the multi-facilities sites; and (v) interdepartmental information exchange.

These regulations and guides are in various stages of development.

CONCLUSION [12]

The IRRS team considers that Rostekhnadzor is committed to act, and further actions have been planned and partly initiated to improve Regulations and Guides applicable to severe accidents prevention and mitigation, and emergency preparedness.

Module 10: Emergency Preparedness and Response

In the area of EPR, Rostekhnadzor has worked with operating organisations to identify additional emergency arrangements needed, including mobile power and pump equipment. Earthquake considerations have been reviewed and requirements for emergency preparedness modifications have been assessed. The result has in most cases been mainly the acquisition of emergency mobile equipment, the updating of emergency procedures and symptom-based-beyond-design-basis-accident management procedures, and their coordination within the emergency management framework. This was witnessed in part by the team during the Novovoronezh exercise.

CONCLUSION [13]

The IRRS team considers that the regulatory body has committed to act as necessary, and the appropriate actions have been recognized and initiated.

APPENDIX I - LIST OF PARTICIPANTS

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APPENDIX II - MISSION PROGRAMME

MOSCOW, Saturday, 9 November 2013		
	Airport pick-up and transfer to the hotel	
MOSCOW, Sunday, 10 November 2013		
14:00–18:00	Initial Team Meeting (meeting room at Hotel Swissotel Krasnye Holmy)	<i>IRRS Team, LO</i>
MOSCOW, Monday, 11 November 2013		
10:00–10:45	Entrance Meeting Opening Remarks from the Rostekhnadzor Opening Remarks from the IAEA Opening Remarks from the Team Leader	<i>IRRS Team, LO and Russian Counterpart</i>
10:45–12:30	Russian Presentations on: Major regulatory changes in field of atomic energy use in the Russian Federation from 2009 until now, Status of implementation of the IRRS recommendations and suggestions, Self-Assessment of IRRS Modules Emergency Preparedness and Response and Regulatory Implications of the Fukushima accident	
14:00–17:30	Initial parallel interview sessions with the counterpart	<i>IRRS Team, Russian Counterpart</i>
17:30–18:30	Daily Team Meeting	<i>IRRS Team, LO</i>
MOSCOW, Tuesday, 12 November 2013		
09:30–12:00	Parallel interview sessions with the counterpart	<i>IRRS Team, LO and Russian Counterpart</i>
13:30–16:30	Parallel interview sessions with the counterpart Bilateral meetings with stakeholders (Emercom, Rosatom, FMBA, other authorities as necessary)	<i>IRRS Team, LO and Russian Counterpart</i>
16:30–18:00	Daily Team Meeting	<i>IRRS Team, LO</i>
14:00	Departure to airport (R. Lorson, P.Krs, H.Reponen- Novovoronezh NPP and J.F.Lafortune Novovoronezh Emergency Centre) Flight YQ 777 to Novovoronezh at 18:00	
MOSCOW, Wednesday, 13 November 2013		
09:00–12:00	Parallel interview sessions with the counterpart Policy Issues Discussions	<i>IRRS Team, LO and Russian Counterpart</i>
09:00–12:00	Emergency exercise (Information and Analytical Centre of Rostekhnadzor)	

13:30–16:00	Parallel interview sessions with the counterpart Bilateral meetings with stakeholders (Emercom, Rosatom, FMBA, other authorities as necessary)	<i>IRRS Team, LO and Russian Counterpart</i>
16:00	Delivery of the written preliminary findings to the TL	<i>IRRS Team</i>
16:00–17:30	Daily Team Meeting discussions of the preliminary findings	<i>IRRS Team, LO</i>
20:45	Arrival to Moscow by flight YQ 724 from Novovoronezh (R.Lorson, P.Krs, H.Reponen; J.F.Lafortune) Transportation to the hotel	
MOSCOW, Thursday, 14 November 2013		
09:30–12:00	Final parallel interview sessions with the counterpart, finalization of findings	<i>IRRS Team, LO and Russian Counterpart</i>
13:30–16:00	Final parallel interview sessions with counterparts Counterpart's clear awareness of the findings from the experts	<i>IRRS Team, LO and Russian Counterpart</i>
16:30	Delivery of final findings to be discussed in the team meeting	
16:30–18:00	Daily Team Meeting, discussion of final findings	<i>IRRS Team, LO</i>
MOSCOW, Friday, 15 November 2013		
09:30–12:00	Drafting of the report	<i>IRRS Team</i>
13:30–17:00	Drafting of the report	<i>IRRS Team</i>
MOSCOW, Saturday, 16 November 2013		
10:00–12:00	Drafting of the report	<i>IRRS Team,</i>
13:30–17:00	Daily Team Meeting	<i>IRRS Team</i>
MOSCOW, Sunday, 17 November 2013		
10:00–12:30	Drafting of the report	<i>IRRS Team</i>
14:00–00:00	Finalizing the report Submission of the draft report to Rostekhnadzor for comments	<i>IRRS Team</i>
MOSCOW, Monday, 18 November 2013		
9:00–13:00	Discussion of the draft report and development of comments	<i>Russian Counterpart</i>
13:15	Comments on the draft report from the counterparts transmitted to the TL	<i>Russian Counterpart</i>
13:15–15:00	Team discussions of the comments	<i>IRRS Team</i>
15:00–19:00	Plenary discussions of the comments and their resolution	<i>IRRS Team, LO and Russian Counterpart</i>
19:30	Official Farewell Dinner (with DDG Flory)	<i>IRRS Team, LO and Russian Counterpart</i>

MOSCOW, Tuesday, 19 November 2013		
10:00	Exit Meeting Starts (all counterparts and Rostekhnadzor Senior Management and Invited Stakeholders)	<i>IRRS Team, LO and Russian Counterpart</i>
13:00–14:00	Press Conference (Zurich meeting room at Hotel Swissotel Krasnye Holmy)	
	Preparation of the Press Release	
MOSCOW, Wednesday, 20 November 2013		
10:00	Hotel pick-up and transfer to the airport	

APPENDIX III - MISSION COUNTERPARTS

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**APPENDIX IV - RECOMMENDATIONS (R) AND SUGGESTIONS (S) FROM THE
PREVIOUS IRRS MISSION THAT REMAIN OPEN**

Section	Module	R/S	Recommendations/Suggestions
1.1.	NATIONAL POLICY AND STRATEGY	R2	<u>Recommendation:</u> The Government of the Russian Federation should develop and implement a financing mechanism which ensures adequate resources for nuclear and radiation safety regulation including competent staff and the necessary financing for independent safety reviews that are a prerequisite for licensing decisions, taking into account the increasing amount of nuclear energy utilization in the Russian Federation.
1.2.	ESTABLISHMENT OF A FRAMEWORK FOR SAFETY	S2	<u>Suggestion:</u> The coordination between the different regulatory authorities should go further than developing bilateral agreements. In particular, common actions, such as inspections, could help avoiding conflicting requirements being placed on the authorised parties.
1.2.	ESTABLISHMENT OF A FRAMEWORK FOR SAFETY	S3	<u>Suggestion:</u> As part of continuous improvement, Rostechnadzor, FMBA and Rospotrebnadzor should analyze the experience gained in the practical application of their agreements and, if appropriate, use this experience for the development of a joint proposal to adapt the necessary provisions of the State to better consolidate the coordination approach.
1.2.	ESTABLISHMENT OF A FRAMEWORK FOR SAFETY	S4	<u>Suggestion:</u> Rostechnadzor is encouraged to extend its cooperation agreement with EMERCOM beyond NPPs to other facilities.
1.2.	ESTABLISHMENT OF A FRAMEWORK FOR SAFETY	R4	<u>Recommendation:</u> MNRE should take into account that, for improvement and development of the federal legislation and optimization of the structure of the State authorities, it is necessary to consider the issue of effective distribution of all regulatory functions (competent authority approvals) addressed in the IAEA Regulations for the Safe Transport of Radioactive Material, TS-R-1, para 802, namely approval for packages, shipments, special form material, special arrangements etc. between independent federal executive authorities.
1.2.	ESTABLISHMENT OF A FRAMEWORK FOR SAFETY	S5	<u>Suggestion:</u> MNRE and Rostechnadzor should take initiative to enhance their cooperation with the Ministry of Transport, EMERCOM and FMBA to avoid the duplication of the functions of competent authorities, e.g. by establishing of a Memorandum of Understanding.

Section	Module	R/S	Recommendations/Suggestions
1.5.	SYSTEM FOR PROTECTIVE ACTIONS TO REDUCE EXISTING OR UNREGULATED RADIATION RISKS	S6	Suggestion: The Government of the Russian Federation should develop and implement the necessary legal and regulatory framework for the control and supervision of the remediation to be undertaken for the identified past practices and installations that need remedial actions. This should include the necessary steps to identify all entities responsible for decontamination. The government should set financial requirements and mechanisms for the remediation activities, for clearance from the regulatory control and for the establishment of the institutional control where needed.
1.5.	SYSTEM FOR PROTECTIVE ACTIONS TO REDUCE EXISTING OR UNREGULATED RADIATION RISKS	S7	Suggestion: MNRE and Rostekhnadzor are encouraged to establish formal cooperation and exchange of information with EMERCOM and other responsible authorities to provide an effective State system for gaining control over orphan radioactive sources. This should be done through clear allocation of responsibilities and definition of mechanisms of coordination and interaction of national competent authorities.
1.6.	PROVISIONS FOR DECOMMISSIONING OF FACILITIES AND THE MANAGEMENT OF RADIOACTIVE WASTE AND SPENT FUEL	R5	Recommendation: MNRE should promote the elaboration and approval of an overall legal and regulatory framework for decommissioning in accordance with the IAEA Safety Standards.
3.2.	STAFFING AND COMPETENCE OF THE REGULATORY BODY	R6	Recommendation: MNRE and Rostekhnadzor should develop and submit to the Government of the Russian Federation a proposal on the human resources required to cope with the nuclear regulatory duties foreseen in relation with construction of the new reactors also in view of the requirement of not jeopardizing the supervision of the safety of existing nuclear facilities.
3.2.	STAFFING AND COMPETENCE OF THE REGULATORY BODY	S10	Suggestion: MNRE and Rostekhnadzor are should develop and implement a systematic approach to training, following the IAEA guidance in this field.
4.	MANAGEMENT SYSTEM OF THE REGULATORY BODY	R8	Recommendation: MNRE and Rostekhnadzor should establish their respective comprehensive management systems in accordance with IAEA GS-R-3 and amend RD-03-29-2008 in order to reflect current organizational structure. The management system of regulatory body should provide a clear description of the regulatory review and inspection processes, as well as for the analysis of reportable

Section	Module	R/S	Recommendations/Suggestions
			events.
4.	MANAGEMENT SYSTEM OF THE REGULATORY BODY	S15	Suggestion: Rostekhnadzor should develop a quality declaration that reflects the current activities.
5.1.	AUTHORIZATION. GENERAL	R9	Recommendation: MNRE and Rostekhnadzor should evaluate its practice of licensing third party/external organizations that provide services and products to licensees to ensure that this approach is not contrary to the principle that the licensee's primary responsibility to ensure safety lies with the licensee.
5.5.	INDUSTRIAL, MEDICAL AND RESEARCH FACILITIES	S17	Suggestion: Rostekhnadzor should establish and implement criteria, internal procedures and guidance on the types, number and validity of licences that are needed by applicants, and in particular should consider if licensing is needed for all or only some of the stages in the life-time of a facility where radioactive sources are handled, i.e. siting, construction, operation and decommissioning.
5.6.	WASTE FACILITIES	S19	Suggestion: Rostekhnadzor should include in all licence for operation of radioactive waste management facilities the waste activity and volume limits for the facility and other limits, conditions and controls needed for the safe operation of the facility.
6.1.	REVIEW AND ASSESSMENT. GENERAL	S20	Suggestion: Rostekhnadzor should ensure effective oversight of licensee safety culture, including the development and implementation of a method to systematically assess indicators addressing safety culture.
7.5.	INDUSTRIAL, MEDICAL AND RESEARCH FACILITIES	S29	Suggestion: Rostekhnadzor headquarters should complement and broaden its instructions on inspections to support full compliance assurance by a graded approach throughout the regions.
9.3.	REGULATIONS AND GUIDES. RESEARCH REACTORS	R24	Recommendation: Rostekhnadzor should specify the contents of the OLCs to be elaborated by operators of nuclear research facilities and to be submitted to Rostekhnadzor for review and assessment.
9.6.	REGULATIONS AND GUIDES. WASTE FACILITIES	R25	Recommendation: MNRE should coordinate with FMBA to develop regulations that provide for the practical application of clearance criteria and clearance levels associated with activities under Rostekhnadzor's responsibility and control, including requirements for the release of installations and sites from regulatory control.

APPENDIX V - RECOMMENDATIONS (RF), SUGGESTIONS (SF) AND GOOD PRACTICES (GPF) FROM THE 2013 IRRS FOLLOW-UP MISSION

Section	Module	RF/SF/GPF	Recommendations, Suggestions or Good Practices
1.1.	NATIONAL POLICY AND STRATEGY	RF1	Recommendation: The Government of the Russian Federation should rectify the salary gap that exists between the employees of Rostekhnadzor and the operating organisations to make sure that Rostekhnadzor is able to recruit and retain competent staff, especially inspectors.
1.1.	NATIONAL POLICY AND STRATEGY	RF2	Recommendation: The Government of the Russian Federation should authorize Rostekhnadzor to assist foreign regulatory bodies of countries that are acquiring Russian nuclear technologies and provide Rostekhnadzor with dedicated resources to organize these activities.
6.6.	WASTE FACILITIES	RF3	Recommendation: Based on the recommendations of the IAEA independent peer review on the deep well injection practice for the liquid radioactive waste in the Russian Federation, Rostekhnadzor should require its licensees to develop an action plan based on these recommendations including the revision of their safety case and, depending on the results, take the appropriate regulatory measures.
6.8.	REVIEW AND ASSESSMENT. NEW OBSERVATION	SF1	Suggestion: Rostekhnadzor should require, as a follow-up to the TEPCO Fukushima Daiichi accident, the licensees to conduct additional safety analysis for the major nuclear fuel cycle facilities that may pose offsite radiological risk.
7.1.	INSPECTION. GENERAL	GPF1	Good Practice: Rostekhnadzor has initiated joint inspection activities with foreign regulatory bodies to share best practices and experience in nuclear facilities supervision.
9.7.	REGULATIONS AND GUIDES. TRANSPORT	GPF2	Good Practice: The proactive approach taken by Rostekhnadzor, in coordination with the other national organizations concerned, to revise the national regulations of the Russian Federation for transport of radioactive material in parallel to the revision of the relevant IAEA Safety Standards (SSR-6) is a good practice.
10.1.	EMERGENCY PREPAREDNESS AND RESPONSE. GENERAL	SF2	Suggestion: Rostekhnadzor is encouraged to review in cooperation with other federal bodies and, if required, to revise EPR requirements for the licensees, in order to eliminate potential overlaps

Section	Module	RF/SF/GPF	Recommendations, Suggestions or Good Practices
	REQUIREMENTS		and to harmonize them with IAEA requirements.
10.1.	EMERGENCY PREPAREDNESS AND RESPONSE. GENERAL REQUIREMENTS	SF3	Suggestion: Rostekhnadzor is encouraged to complete the guidance document on the development of a hazard assessment and the determination of planning zone sizes in line with the international guidance.
10.1.	EMERGENCY PREPAREDNESS AND RESPONSE. GENERAL REQUIREMENTS	SF4	Suggestion: Rostekhnadzor is encouraged to negotiate with the Ministry of Health for a revision of the categorization of facilities based on potential hazard to make it consistent with the requirements contained in GS-R-2.
10.2.	EMERGENCY PREPAREDNESS AND RESPONSE. FUNCTIONAL REQUIREMENTS	RF4	Recommendation: Rostekhnadzor should complete the revision of the regulation on emergency classification based on plant parameters, ensuring that it is consistent with GS-R-2 requirements.
10.2.	EMERGENCY PREPAREDNESS AND RESPONSE. FUNCTIONAL REQUIREMENTS	SF5	Suggestion: Rostekhnadzor should consider updating its emergency notification timing requirements to bring them more in line with the suggested timing contained in GS-G-2.1.
10.2.	EMERGENCY PREPAREDNESS AND RESPONSE. FUNCTIONAL REQUIREMENTS	SF6	Suggestion: Rostekhnadzor is encouraged to work with Rospotrebnadzor on the harmonization of the response criteria with the most recent IAEA requirements.
10.2.	EMERGENCY PREPAREDNESS AND RESPONSE. FUNCTIONAL REQUIREMENTS	SF7	Suggestion: Rostekhnadzor is encouraged to review the regulations, identify possible overlaps and, if required, harmonize emergency worker regulations in cooperation with FMBA and Rospotrebnadzor and to ensure that they are consistent with the requirements of GS-R-2.
10.3.	EMERGENCY PREPAREDNESS AND RESPONSE. REQUIREMENTS AND INFRASTRUCTURE	GPF3	Good practice: The requirements for the emergency plans contents for all types of activities and practices are clearly and extensively defined in regulations.
10.3.	EMERGENCY PREPAREDNESS AND RESPONSE. REQUIREMENTS AND INFRASTRUCTURE	SF8	Suggestion: Rostekhnadzor is encouraged to review and enhance its exercise evaluation methodology and include a performance-based approach for all aspects of the emergency functions, consistent with the guidance provided in EPR Exercise 2005.

Section	Module	RF/SF/GPF	Recommendations, Suggestions or Good Practices
10.3.	EMERGENCY PREPAREDNESS AND RESPONSE. REQUIREMENTS AND INFRASTRUCTURE	RF5	Recommendation: Rostekhnadzor should evaluate exercises involving facilities other than NPP.
10.3.	EMERGENCY PREPAREDNESS AND RESPONSE. REQUIREMENTS AND INFRASTRUCTURE	GPF4	Good practice: The introduction of a systematic exercise evaluation tool is considered a good practice.
11.4.	GLOBAL NUCLEAR SAFETY REGIME	GPF5	Good Practice: The Russian Federation, through its leadership and collaboration with various international stakeholders, has contributed effectively to the development of measures and programmes that may strengthen the global safety regime in the wake of the TEPCO Fukushima Daiichi accident.

APPENDIX VI - REFERENCE MATERIAL PROVIDED BY ROSTECHNADZOR

№ п/п	Наименование документа на русском языке Title of the document in Russian	Наименование документа на английском языке Title of the document in English
Раздел I. Основные материалы / Part I. Basic Materials		
1.1	<u>Отчет по самооценке «Реализация рекомендаций и предложений миссии МАГАТЭ «Комплексная оценка регулирующей деятельности в Российской Федерации»</u>	<u>Self-Assessment Report "Implementation of Recommendations and Suggestions of the Integrated Regulatory Review Service (IRRS) Mission To The Russian Federation"</u>
1.2	<u>План действий по результатам расширенной пост - миссии МАГАТЭ «Комплексная оценка регулирующей деятельности в Российской Федерации»</u>	<u>Action Plan Following the Results of the IAEA Extended Post-Mission "Integrated Regulatory Review in the Russian Federation"</u>
1.3	<u>Ответы на вопросник модуля «Аварийное реагирование и готовность»</u>	<u>Answers to the Emergency Preparedness and Response Module</u>
1.4	<u>Ответы на вопросник модуля «Уроки аварии на японской АЭС «Фукусима-Дайичи» для органа регулирования»</u>	<u>Answers to the Tailored Module to Address the Regulatory Implications of the Fukushima Accident</u>
Раздел II. Федеральные законы Российской Федерации / Part II. Federal Laws of the Russian Federation		
2.1	<u>Федеральный закон от 21.11.1995 № 170-ФЗ «Об использовании атомной энергии»</u>	<u>Federal law of 21.11.1995 No.170-FZ "On atomic energy use"</u>
2.2	<u>Федеральный закон от 11.07.2011 № 190-ФЗ «Об обращении с радиоактивными отходами и о внесении изменений в отдельные законодательные акты Российской Федерации»</u>	<u>Federal law of 11.07.2011 No. 90-FZ "On management of radioactive waste and amendment of some acts of law of the Russian Federation"</u>
2.3	<u>Федеральный закон от 04.05.2011 № 99-ФЗ «О лицензировании отдельных видов деятельности»</u> Статья 2	<u>Federal law of 04.05.2011 No. 99-FZ "On licensing of certain types of activities"</u> Article 2
2.4	<u>Федеральный закон от 30.11.2011 № 347-ФЗ «О внесении изменений в отдельные законодательные акты Российской Федерации в целях регулирования безопасности в области использования атомной энергии»</u>	<u>Federal law of 30.11.2011 No.347-FZ "On the amendments to individual legislative acts of the Russian Federation for the purpose of safety regulation in the field of use of atomic energy"</u>
2.5	<u>Федеральный закон от 18.07.2011 № 242-ФЗ «О внесении изменений в отдельные законодательные акты Российской Федерации по вопросам осуществления государственного контроля (надзора) и муниципального</u>	<u>Federal law of 18.07.2011 No. 242-FZ "On amendments to certain legislative acts of the Russian Federation on issues of implementation of government control (supervision) and municipal control"</u> Article 13

№ п/п	Наименование документа на русском языке Title of the document in Russian	Наименование документа на английском языке Title of the document in English
	контроля» Статья 13	
2.6	Федеральный закон от 09.01.1996 № 3-ФЗ «О радиационной безопасности населения»	Federal Law of 09.01.1996 No. 3-FZ "On Public Radiation Safety"
2.7	Федеральный закон от 26.12.2008 № 294-ФЗ «О защите прав юридических лиц и индивидуальных предпринимателей при осуществлении государственного контроля (надзора) и муниципального контроля» Статьи 7, 9(части 4, 6.4)	Federal law of 26.12.2008 No. 294-FZ "On protection of rights of legal entities and individual entrepreneurs when exercising government control (supervision) and municipal control" Articles 7, 9 (parts 4, 6.4)
2.8	Федеральный закон от 01.12.2007 № 317-ФЗ «О Государственной корпорации по атомной энергии «Росатом» Статья 8	Federal Law of 01.12.2007 No. 317-FZ "On the State Corporation for Atomic Energy "ROSATOM"" Article 8
2.9	Федеральный закон от 07.12.2011 № 420-ФЗ «О внесении изменений в Уголовный кодекс Российской Федерации и отдельные законодательные акты Российской Федерации» Статья 1, Часть 144	Federal law of 07.12.2011 No. 420-FZ "On amendments to the criminal code of the Russian Federation and certain legislative acts of the Russian Federation" Article 1, Part 144
2.10	Федеральный закон от 31.07.1998 № 145-ФЗ «Бюджетный кодекс Российской Федерации» Статья 46, Пункт 1	Federal law of 31.07.1998 No. 145-FZ "Budgetary code of the Russian Federation" Article 46, Para 1
2.11	Федеральный закон от 26.06.2008 № 102-ФЗ «Об обеспечении единства измерений»	Federal law of 26.06.2008 No. 102-FZ "On ensuring the uniformity of measurements"
2.12	Федеральный закон от 02.07.2013 № 159-ФЗ «О внесении изменений в статьи 25 и 26 Федерального закона «Об использовании атомной энергии»	Federal law of 02.07.2013 No. 159-FZ "On revising Articles 25 and 26 of the Federal law "On atomic energy use""
Раздел III. Нормативные правовые акты Российской Федерации / Part III. Regulatory Legal Acts of the Russian Federation		
3.1	«Основы государственной политики в области обеспечения ядерной и радиационной безопасности Российской Федерации на период до 2025 года» № Пр-539	Fundamentals for the state policy in the field of nuclear and radiation safety ensuring of the Russian Federation for the period till 2025. No.Pr-539

№ п/п	Наименование документа на русском языке Title of the document in Russian	Наименование документа на английском языке Title of the document in English
3.2	<u>Указ Президента РФ от 23.06.2010 № 780 «Вопросы Федеральной службы по экологическому, технологическому и атомному надзору»</u>	<u>Ordinance of the President of the Russian Federation of 23.06.2010 No. 780 "Issues of the Federal Environmental, Industrial and Nuclear Supervision Service"</u>
3.3	<u>Постановление Правительства РФ от 01.03.2013 № 173 «Об утверждении Положения об особенностях стандартизации продукции (работ, услуг) для которой устанавливаются требования, связанные с обеспечением безопасности в области использования атомной энергии...»</u>	<u>The RF Government Decree of 01.03.2013 No. 173 "On approval of provisions for specific standardization of the products (works, services) safety requirements for which are established in connection with the use of atomic energy..."</u>
3.4	<u>Постановление Правительства РФ от 19.03.2001 № 204 «О государственном компетентном органе по ядерной и радиационной безопасности при перевозках ядерных материалов, радиоактивных веществ и изделий из них»</u> Пункты 1, 2	<u>The RF Government Decree of 19.03.2001 No.204 "About the state competent authority in charge of nuclear and radiation safety at transportation of nuclear materials, radioactive substances and the derived products"</u> Paras 1, 2
3.5	<u>Постановлением Правительства РФ от 29.03.2013 № 280 «Об утверждении Положения о лицензировании деятельности в области использования атомной энергии»</u>	<u>The RF Government Decree of 29.03.2013 No. 280 "On licensing activities in the field of atomic energy use"</u>
3.6	<u>Постановление Правительства РФ от 23.04.2013 № 362 «Об особенностях технического регулирования в части разработки и установления государственными заказчиками, федеральными органами исполнительной власти, уполномоченными в области государственного управления использованием атомной энергии и государственного регулирования безопасности при использовании атомной энергии, и Государственной корпорацией по атомной энергии «Росатом» обязательных требований в отношении продукции, для которой устанавливаются требования, связанные с обеспечением безопасности в области использования атомной энергии, а также процессов проектирования (включая</u>	<u>The RF Government Decree of 23.04.2013 No. 362 "On specific features of technical regulation pertaining to developing and establishing by the state customers, federal executive bodies authorized in the field of state administration of atomic energy use and state safety regulation in atomic energy use and the State Atomic Energy Corporation "Rosatom" the mandatory requirements for the products subject to requirements related to safety assurance in the field of atomic energy use, as well as the processes of designing (including survey), production, construction, installation, pre-commissioning, operation, storage, transportation, marketing, disposal, removal and burial of the stated products"</u>

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	изыскания), производства, строительства, монтажа, наладки, эксплуатации, хранения, перевозки, реализации, утилизации и захоронения указанной продукции»	
3.7	Постановление Правительства РФ от 23.04.2012 № 373 «Об утверждении Положения о режиме постоянного государственного надзора на объектах использования атомной энергии»	The RF Government Decree of 23.04.2012 No.373 "About approval of the provision on the regime of permanent state supervision at nuclear facilities"
3.8	Постановление Правительства РФ от 30.04.2013 № 387 «Об утверждении Положения об отнесении юридического лица к организации научно-технической поддержки уполномоченного органа государственного регулирования безопасности при использовании атомной энергии»	The RF Government Decree of 30.04.2013 No. 387 "On Approval of Regulation for Qualifying Legal Entity as Technical Support Organization for Authorized State Safety Regulatory Body in Atomic Energy Use"
3.9	Постановление Правительства РФ от 30.07.2004 № 401 «О Федеральной службе по экологическому, технологическому и атомному надзору»	The RF Government Decree of 30.07.2004 No.401 "About The Federal Environmental, Industrial and Nuclear Supervision Service"
3.10	Постановление Правительства РФ от 14.06.2001 № 462 «Об утверждении Положения об осуществлении контроля за внешнеэкономической деятельностью в отношении оборудования и материалов двойного назначения, а также соответствующих технологий, применяемых в ядерных целях» Пункты 1,24, 29, 36, 44	The RF Government Decree of 14.06.2001 No. 462 "On approval of the regulation on the control over external economic activity in respect of dual-purpose equipment, materials and associated technologies used for nuclear purposes" Paras 1,24, 29, 36, 44
3.11	Постановление Правительства РФ от 29.06.2011 № 523 «О федеральной целевой программе “Преодоление последствий радиационных аварий на период до 2015 года”» Паспорт Программы: цели и задачи	The RF Government Decree of 29.06.2011 No. 523 "On the Federal Targeted Program “Overcoming Consequences of Radiation Accidents for the Period till 2015”" Datasheet of the Program: objectives and task
3.12	Постановление Правительства РФ от 20.07.2013 № 612 «Об аккредитации в области использования атомной энергии»	The RF Government Decree of 20.07.2013 No. 612 "On accreditation in the field of atomic energy use"
3.13	Постановление Правительства РФ от 25.07.2012 № 767 «О проведении первичной регистрации радиоактивных	The RF Government Decree of 25.07.2012 No. 767 "On initial registration of radioactive waste"

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	<u>ОТХОДОВ»</u>	
3.14	<u>Постановление Правительства РФ от 30.12.2003 № 794 «Об утверждении Положения о единой государственной системе предупреждения и ликвидации чрезвычайных ситуаций»</u>	<u>The RF Government Decree of 30.12.2003 No. 794 "On the unified state system of prevention and liquidation of emergency situations"</u>
3.15	<u>Постановление Правительства РФ от 10.09.2012 № 899 «Об утверждении Положения о передаче радиоактивных отходов на захоронение, в том числе радиоактивных отходов, образовавшихся при осуществлении деятельности, связанной с разработкой, изготовлением, испытанием, эксплуатацией и утилизацией ядерного оружия и ядерных энергетических установок военного назначения»</u>	<u>The RF Government Decree of 10.09.2012 No. 899 "About approval of the regulations on the transfer of radioactive waste for disposal including radioactive waste generated during implementation of activity related with development, manufacturing, testing, operation, dismantlement and disposition of nuclear weapon and nuclear power installations of military purposes"</u>
3.16	<u>Постановление Правительства РФ от 15.10.2012 № 1044 «О федеральном государственном надзоре в области использования атомной энергии»</u>	<u>The RF Government Decree of 15.10.2012 No.1044 "About the federal state supervision in the field of use of atomic energy"</u>
3.17	<u>Постановление Правительства РФ от 19.10.2012 № 1069 «О критериях отнесения твердых, жидких и газообразных отходов к радиоактивным отходам, критериях отнесения радиоактивных отходов к особым радиоактивным отходам и к удаляемым радиоактивным отходам и критериях классификации удаляемых радиоактивных отходов»</u>	<u>The RF Government Decree of 19.10.2012 No. 1069 "Criteria for classification of solid, liquid and gaseous waste as radioactive waste, criteria for classification of radioactive waste as special radioactive waste and removable radioactive waste, and criteria for classification of removable radioactive waste"</u>
3.18	<u>Постановление Правительства РФ от 22.10.2012 №1079 «О внесении изменений в Положение о признании организации пригодной эксплуатировать ядерную установку, радиационный источник или пункт хранения и осуществлять собственными силами или с привлечением других организаций деятельность по размещению, проектированию, сооружению, эксплуатации и выводу из эксплуатации ядерной установки, радиационного источника или пункта хранения, а также деятельность по обращению с ядерными</u>	<u>The RF Government Decree of 22.10.2012 No. 1079 "On amendments to the regulations on recognition of an organization as qualified to operate a nuclear installation, a radiation source, or a storage facility, and to conduct activities, without or with subcontracting, involving sitting, designing, construction, operation and decommissioning of a nuclear installation, a radiation source, or a storage facility, and activities involving handling of nuclear materials and radioactive substances"</u>

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	<u>материалами и радиоактивными веществами»</u>	
3.19	<u>Постановление Правительства РФ от 19.11.2012 №1184 «О регистрации организаций, осуществляющих деятельность по эксплуатации радиационных источников, содержащих в своем составе только радионуклидные источники четвертой и пятой категорий радиационной опасности»</u>	<u>The RF Government Decree of 19.11.2012 No. 1184 "Of the government of the Russian Federation on registration of organizations that conduct activities involving operation of radiation sources containing radiation hazard category 4 and 5 radionuclide sources only"</u>
3.20	<u>Постановление Правительства РФ от 19.11.2012 № 1185 «Об определении порядка и сроков создания единой государственной системы обращения с радиоактивными отходами»</u>	<u>The RF Government Decree of 19.11.2012 No.1185 "On establishing a process and timeframe for creation of a unified state system for management of radioactive waste"</u>
3.21	<u>Постановление Правительства РФ от 19.11.2012 № 1186 «Об утверждении Положения о возврате в Российскую Федерацию отработавшего закрытого источника ионизирующего излучения, произведенного в Российской Федерации, и возврате отработавшего закрытого источника ионизирующего излучения в страну поставщика закрытого источника ионизирующего излучения»</u>	<u>The RF Government Decree of 19.11.2012 No. 1186 "On approval of the regulations for return of a spent sealed ionizing radiation source produced in The Russian Federation to the Russian Federation, and for return of a spent sealed ionizing radiation source to the sealed ionizing radiation source supplier country"</u>
3.22	<u>Постановление Правительства РФ от 19.11.2012 № 1187 «Об утверждении Правил отчисления национальным оператором по обращению с радиоактивными отходами части поступающих при приеме радиоактивных отходов от организаций, не относящихся к организациям, эксплуатирующим особо радиационно опасные и ядерно опасные производства и объекты, средств в фонд финансирования расходов на захоронение радиоактивных отходов»</u>	<u>The RF Government Decree of 19.11.2012 No. 1187 "On approval of rules for partial allocation to RW disposal fund by national operator for management of radioactive waste of the RW acceptance fees paid by organisations other than those operating particularly hazardous radiological and nuclear facilities"</u>
3.23	<u>Постановление Правительства РФ от 19.11.2012 № 1188 «О порядке осуществления государственного учета и контроля радиоактивных отходов, в том числе регистрации радиоактивных</u>	<u>The RF Government Decree of 19.11.2012 No. 1188 "Procedure for the state radioactive waste accounting for and control, including the registration of radioactive waste and radioactive waste</u>

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	отходов и пунктов хранения радиоактивных отходов, органом государственного управления в области обращения с радиоактивными отходами»	storage facilities, by the state administrative body in the field of radioactive waste management"
3.24	Постановление Правительства РФ от 03.12.2012 № 1249 «О порядке государственного регулирования тарифов на захоронение радиоактивных отходов»	The RF Government Decree of 03.12.2012 No. 1249 "About the procedure of state regulation of tariffs for radioactive waste disposal"
3.25	Постановление Правительства РФ от 30.12.2012 № 1488 «Об утверждении Положения об особенностях обеспечения единства измерений при осуществлении деятельности в области использования атомной энергии»	The RF Government Decree of 30.12.2012 No. 1488 "On approval of regulations on specific features of ensuring uniformity of measurements while carrying out activities in the field of atomic energy use"
3.26	Постановление Правительства РФ от 01.12.1997 № 1511 «Об утверждении Положения о разработке и утверждении федеральных норм и правил в области использования атомной энергии»	The RF Government Decree of 01.12.1997 No. 1511 "About approval of the provision on development and approval of Federal Rules and Regulations in the sphere of use of atomic energy"
3.27	Распоряжение Правительства РФ от 20.03.2012 № 384-р «О национальном операторе по обращению с радиоактивными отходами»	The RF Government Executive Order of 20.03.2012 No. 384-r "About the Federal State Unitary Enterprise "National Operator for Radioactive Waste Management"
3.28	Распоряжение Правительства РФ от 23.04.2012 № 610-р «Об утверждении перечня объектов использования атомной энергии, в отношении которых вводится режим постоянного государственного надзора»	The RF Government Executive Order of 23.04.2012 No. 610-r "To approve the enclosed list of nuclear facilities to be subject to the regime of permanent state supervision"
Раздел IV. Соглашения о взаимодействии / Part IV. Agreements on Interactions		
4.1	Соглашение о взаимодействии МЧС и Ростехнадзора от 28.02.2008 № 2-4-38-2/КП-32/203	Agreement on interactions between the Ministry of the Russian Federation for Civil Defense, Emergencies and Elimination of Consequences of Natural Disasters and Federal Environmental, Industrial and Nuclear Supervision Service in the field of state regulation of safety of nuclear power plants of 28.02.2008 No. 2-4-38-2/KP-32/203
4.2	Соглашение между Ростехнадзором и ФМБА от 28.12.2010 о взаимодействии в области государственного регулирования радиационной	Agreement of 28.12.2010 "On interactions between the Federal Environmental, Industrial and Nuclear Supervision Service and the Federal Medical and Biological

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	<u>безопасности при использовании атомной энергии</u>	<u>Agency in the field of state regulation of radiation safety in the course of use of atomic energy"</u>
4.3	<u>Приказ ФМБА России и Ростехнадзора от 19.03.2012 № 52/169 «Об утверждении Административного регламента взаимодействия Федерального медико-биологического агентства и Федеральной службы по экологическому, технологическому и атомному надзору при проведении совместных плановых проверок в отношении юридических лиц и индивидуальных предпринимателей»</u>	<u>Federal Medical and Biological Agency and Federal Environmental, Industrial and Nuclear Supervision Service Order of 19.03.2012 No. 52/169 "On Approval of Administrative Regulations for Interactions Between the Federal Medical and Biologic Agency and the Federal Environmental, Industrial and Nuclear Supervision Service in the Course of Implementation of Joint Scheduled Checking in Respect to Legal Entities and Individual Entrepreneurs"</u>
4.4	<u>Приказ Ростехнадзора и Роспотребнадзора от 30.05.2012 № 315/588 «Об утверждении Административного регламента взаимодействия Федеральной службы по экологическому, технологическому и атомному надзору с Федеральной службой по надзору в сфере защиты прав потребителей и благополучия человека в части осуществления федерального государственного санитарно-эпидемиологического надзора при строительстве»</u>	<u>Federal Environmental, Industrial and Nuclear Supervision Service of Russia and Federal Supervision Service For Consumer Rights Protection And Human Welfare Order of 30.05.2012 No. 315/588 "On Approval Of Administrative Regulations For The Cooperation Of The Federal Environmental, Industrial And Nuclear Supervision Service With The Federal Supervision Service For Consumer Rights Protection And Human Welfare Concerning Federal State Sanitary And Epidemiological Supervision Of Construction"</u>
Раздел V. Нормативные правовые акты Ростехнадзора и других ведомств / Part V. Regulatory Legal Acts of the Russian Federation		
5.1	<u>Приказ Ростехнадзора от 24.01.2011 № 27 «Об утверждении порядка разработки федеральных норм и правил в области использования атомной энергии в Федеральной службе по экологическому, технологическому и атомному надзору и требований к их оформлению и изложению»</u>	<u>Rostechnadzor Order of 24.01.2011 No. 27 "On Approval of Procedure of Development of Federal Codes and Regulations in the Field of Atomic Energy Use in the Federal Environmental, Industrial and Nuclear Supervision Service and the requirements for their Drawing Up and Formulation"</u>
5.2	<u>Приказ Ростехнадзора от 03.02.2012 № 80 «Об утверждении Положения о системе управления качеством Федеральной службы по экологическому, технологическому и атомному надзору в области</u>	<u>Rostechnadzor Order of 03.02.2012 No. 80 "About Approval of the Provision on Quality Management System of the Federal Environmental, Industrial and Nuclear Supervision Service in the Field of State Regulation of Safety in the Use of Atomic</u>

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	<u>государственного регулирования безопасности при использовании атомной энергии»</u>	<u>Energy"</u>
5.3	<u>Приказ Ростехнадзора от 18.04.2013 № 165 «Положение об Информационно-аналитическом центре Федеральной службы по экологическому, технологическому и атомному надзору»</u>	<u>Rostechнадzor Order of 18.04.2013 No. 165 "Provisions on Information and Analytical Center of the Federal Environmental, Industrial and Nuclear Supervision Service</u>
5.4	<u>Приказ Ростехнадзора от 07.06.2013 № 248 «Об утверждении Административного регламента по исполнению Федеральной службой по экологическому, технологическому и атомному надзору государственной функции по федеральному государственному надзору в области использования атомной энергии»</u>	<u>Rostechнадzor Order of 07.06.2013 No. 248 "On Approval of Administrative Regulations for the Federal Environmental, Industrial and Nuclear Supervision Service to Perform its State Function of Supervising Activities in the Field of Atomic Energy Use"</u>
5.5	<u>Приказ Ростехнадзора от 21.12.2011 № 721 «Об утверждении Административного регламента по предоставлению Федеральной службой по экологическому, технологическому и атомному надзору государственной услуги по выдаче разрешений на право ведения работ в области использования атомной энергии работникам объектов использования атомной энергии»</u>	<u>Rostechнадzor Order Of 21.12.2011 No. 721 "On Approval of Administrative Regulations for the State Service to be Provided by the Federal Environmental, Industrial and Nuclear Supervision Service for Issuing Permits to Nuclear Facility Employees for Activities in the Field of Atomic Energy Use"</u>
5.6	<u>Приказ Ростехнадзора от 14.12.2012 № 728 «О порядке предоставления эксплуатирующей организацией в уполномоченный орган государственного регулирования безопасности документов, содержащих результаты периодической оценки безопасности ядерной установки, пункта хранения и обосновывающих безопасность их эксплуатации, и требования к составу содержанию этих документов»</u>	<u>Rostechнадzor Order Of 14.12.2012 No. 728 "On approval of the Procedure for submission of documents containing results of a safety review of a nuclear installation or a storage facility and substantiating operating safety thereof by an operator of the nuclear installation or the storage facility to the authorized State Nuclear Safety Regulator, and requirements to the list and contents of the documents to be submitted"</u>
5.7	<u>Приказ Ростехнадзора от 01.10.2013 № 436 «Об утверждении Регламента Информационно-аналитического центра Федеральной службы по экологическому, технологическому и атомному надзору»</u>	<u>Rostechнадzor Order of 01.10.2013 No. 436 "Regulations for functioning of the Information and Analytical Center of the Federal Environmental, Industrial and Nuclear Supervision Service"</u>

№ п/п	Наименование документа на русском языке Title of the document in Russian	Наименование документа на английском языке Title of the document in English
5.8	<u>Приказ Министерства природных ресурсов и экологии Российской Федерации от 16.10.2008 № 262 Об утверждении административного регламента исполнения Федеральной службой по экологическому, технологическому и атомному надзору государственной функции по лицензированию деятельности в области использования атомной энергии</u>	<u>Ministry of Natural Resources and Ecology of the Russian Federation Order of 16.10.2008 No. 262 "Approval of Administrative Regulations for the Federal Environmental, Industrial and Nuclear Supervision Service on execution its state function for licensing activities in the field of atomic energy use"</u>
5.9	<u>Приказ Росатома от 10.10.2007 № 527 «Об утверждении Административного регламента Федерального агентства по атомной энергии по исполнению государственной функции «Выдача сертификатов (разрешений) на перевозки радиоактивных материалов и ведение их реестра»</u> Пункты 1, 3	<u>Federal Atomic Energy Agency Order of 10.10.2007 No. 527 "On Approval of the Administrative Regulation of the Federal Atomic Energy Agency With Regard To Execution of the State Function "Issue of Certificates (Licenses) for Transportation of Radioactive Materials And Keeping of Register Thereof"</u> Paras 1, 3
5.10	<u>Приказ Минздравсоцразвития РФ от 10.12.2009 № 977 «Об утверждении Единого квалификационного справочника должностей руководителей, специалистов и служащих, раздел «Квалификационные характеристики должностей работников организаций атомной энергетики»</u> Раздел III Справочника	<u>Ministry of Health and Social Development of the Russian Federation Order of 10.12.2009 No. 977 "On Approval of the Unified Skills Guide for Positions of Managers, Specialists and Employees Section "Qualification Profiles for Positions of Nuclear Energy Organizations Staff"</u> Section III of the Guide
5.11	<u>Приказ Минэкономразвития России от 30.04.2009 № 141 «О реализации положений Федерального закона «О защите прав юридических лиц и индивидуальных предпринимателей при осуществлении государственного контроля (надзора) и муниципального контроля»</u> Приложение 3	<u>Ministry of Economic Development of the Russian Federation Order of 30.04.2009 No.141 "On Implementation of the Federal Law "On Protection of Rights of Legal Entities and Individual Entrepreneurs when Implementing the State Control (Supervision) and Municipal Control"</u> Appendix 3
Раздел VI. Федеральные нормы и правила / Part VI. Federal Standards and Rules		
6.1	<u>«Общие положения обеспечения безопасности атомных станций. ОПБ-88/97»</u>	<u>General Regulations on Ensuring Safety of Nuclear Power Plants. OPB -88/97</u>
6.2	<u>Проект «Общие положения обеспечения Безопасности атомных станций, ОПБ - 88/12»</u>	<u>Draft. Federal Codes and Regulations in the Field of Atomic Energy Use. OPB - 88/12</u> Partially

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	Частично	
6.3	Положение о порядке расследования и учета нарушений в работе атомных станций (НП-004-08)	Provision on the Procedure of Investigation and Accounting of Operational Occurrences at Nuclear Power Plants (NP-004-08)
6.4	Положение о порядке объявления аварийной обстановки, оперативной передачи информации и организации экстренной помощи атомным станциям в случае радиационно опасных ситуаций (НП-005-98)	Provision For the Procedure of Announcement of Emergency, Prompt Information Communication and Arrangement for Emergency Assistance to Nuclear Power Plants in Case of Radiation-Hazardous Situations (NP-005-98)
6.5	«Типовое содержание плана мероприятий по защите персонала в случае аварии на атомной станции» (НП-015-12)	Standard content of action plan for the protection of personnel in the event of accident at nuclear power plant (NP-015-12)
6.6	«Общие положения обеспечения безопасности объектов ядерного топливного цикла (ОПБ ОЯТЦ)» (НП-016-05)	General safety provisions for nuclear fuel cycle facilities (GSP NCF) (NP-016-05)
6.7	«Общие положения обеспечения безопасности исследовательских ядерных установок» (НП-033-11) Подпункт 5.1.1	General Safety Provisions of Nuclear Research Installations (NP-033-11) Subpara 5.1.1
6.8	«Общие положения обеспечения безопасности радиационных источников» (НП-038-11)	General safety provisions for radiation sources (NP-038-11)
6.9	Положение о порядке расследования и учета нарушений в работе объектов ядерного топливного цикла (НП-047-03)	Provisions on the procedure of investigation and recording of events in operation of nuclear fuel cycle facilities (NP-047-03)
6.10	«Требования к содержанию отчета по обоснованию безопасности исследовательских ядерных установок» (НП-049-03) Подпункты 1.1-1.3	Requirements to the content of a safety analysis report for nuclear research installations (NP-049-03) Subparas 1.1-1.3
6.11	«Правила безопасности при транспортировании радиоактивных материалов» (НП-053-04)	Safety regulations for transport of radioactive material (NP-053-04)
6.12	«Требования к содержанию плана мероприятий по защите персонала в случае аварии на исследовательских ядерных установках» (НП-075-06)	Requirements for contents of the action plan for protection of personnel in case of an accident at nuclear research installations (NP-075-06)
6.13	Требования к содержанию плана	Requirements to contents of the action plan

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	мероприятий по защите персонала в случае аварии на предприятии ядерного топливного цикла (НП-077-06)	for protection of personnel in case of an accident at nuclear fuel cycle facilities (NP-077-06)
6.14	Положение о порядке объявления аварийной готовности, аварийной обстановки и оперативной передачи информации в случае радиационно-опасных ситуаций на предприятиях ядерного топливного цикла. (НП-078-06)	Provisions on procedure of the announcement of emergency preparedness, emergency situation and prompt communication of information in case of radiation hazardous situations at nuclear fuel cycle facilities (NP-078-06)
6.15	План мероприятий по действиям и защите работников (персонала) при радиационных авариях на ядерной установке судна и (или) иного плавсредства (НП-079-06)	Requirements for planning of actions and protection of employees (personnel) during radiation accidents at a ship and (or) water craft nuclear installation (NP-079-06)
6.16	Требования к системам аварийного электроснабжения атомных станций (НП-087-11)	Requirements for emergency power systems of nuclear power plants (NP-087-11)
6.17	Требования к программам обеспечения качества для объектов использования атомной энергии (НП-090-11)	Requirements to quality assurance programs of nuclear facilities (NP-090-11)
6.18	Нормы радиационной безопасности (НРБ-99/2009) Разделы 3,6	Norms of Radiation Safety (NRB-99/2009) Sections 3,6
6.19	Постановление Министерства здравоохранения Российской Федерации от 28.04.2003 № 69 «О введении в действие Санитарно-эпидемиологических правил и нормативов Санпин 2.6.1.24-03 "Санитарные правила проектирования и эксплуатации атомных станций"» Раздел 11	Ministry of Health of the Russian Federation Resolution of 28.04.2003 No. 69 for implementation of sanitary and epidemiological codes and regulations Sanpin 2.6.1.24-03 "Sanitary regulations for design and operation of nuclear power plants" Section 11
6.20	Основные санитарные правила обеспечения радиационной безопасности (ОСПОРБ-99/2009) Разделы 3,6	Main sanitary regulations of radiation safety (OSPORB-99/2010) Sections 3,6
6.21	Проект ФНП «Основные требования к вероятностному анализу безопасности атомных станций»	Draft Federal Regulations and Guides in Atomic Energy Use "General Requirements for NPP Probabilistic Safety Analysis"

Раздел VII. Справочная информация / Part VII. Additional Information		
7.1	<u>«Заявление о политике по применению вероятностного анализа безопасности и риск-информативных методов для атомных станций»</u>	<u>"Policy Statement on Application of Probabilistic Safety Assessment and Risk-Informed Methods for Nuclear Power Plants"</u>
7.2	<u>«Заключительное обследование и снятие исследовательских ядерных установок с федерального государственного надзора в области использования атомной энергии». РБ-079-12»</u>	<u>"Final Survey and Clearance of Nuclear Research Installations from the Federal State Supervision in the Field of the Use of Atomic Energy" (RB-079-12)</u>
7.3	<u>Проект «Основные рекомендации к разработке вероятностного анализа безопасности уровня 1 для блока атомной станции при внешних иницилирующих событиях природного и техногенного характера»</u>	<u>Draft "Basic recommendations for conducting Level 1 probabilistic safety analysis for nuclear power plant unit under external natural and man-caused initiating events"</u>
7.4	<u>Практическая реализация положений Федерального закона от 11.07.2011 № 190-ФЗ «Об обращении с радиоактивными отходами и о внесении изменений в отдельные законодательные акты Российской Федерации» в части создания единой государственной системы обращения с радиоактивными отходами</u>	<u>Practical implementation of the provisions of the Federal Law of 11.07.2011 No.190-FZ "On the waste management and introduction of changes in some legislative acts of the Russian Federation" with regard to the establishment of the unified state system of radioactive waste management</u>
7.5	<u>СПРАВКА об изменениях в правовом статусе, структуре и полномочиях регулирующего органа с 2009 года</u>	<u>INFORMATION on Changes in the Legal Status, Structure and Authorities of the Regulatory Body since 2009</u>
7.6	<u>Таблица «Изменения в правовом статусе, структуре и полномочиях регулирующего органа с 2009 года»</u>	<u>Table "Changes in the Legal Status, Structure and Authorities of the Regulatory Body since 2009"</u>
7.7	<u>СПРАВКА. Глубинное захоронение ЖРО в ПГЗ ЖРО</u>	<u>INFORMATION NOTE. Deep disposal of liquid radioactive waste (LRW) in deep disposal facilities for liquid radioactive waste (LRW DDF)</u>
7.8	<u>Информация о практической реализации отдельных рекомендаций и предложений миссии МАГАТЭ, проведенной в 2009 году</u>	<u>Information on practical implementation of specific recommendations and proposals of the IAEA Mission, "Integrated Regulatory Review in the Russian Federation", 2009</u>
7.9	<u>СПРАВКА по общеполитическому вопросу «Отклик на ядерное возрождение и управление человеческими ресурсами» для обсуждения в ходе пост-миссии МАГАТЭ</u>	<u>INFORMATION on the general political issue "Response to nuclear renaissance and human resources management" to be discussed in the course of IAEA IRRS Follow-up Mission</u>

APPENDIX VII - IAEA REFERENCE MATERIAL USED FOR THE REVIEW

1.	INTERNATIONAL ATOMIC ENERGY AGENCY - Governmental, Legal and Regulatory Framework for Safety, General Safety Requirements Part 1, No. GSR Part 1, IAEA, Vienna (2010).
2.	INTERNATIONAL ATOMIC ENERGY AGENCY - Management System for Facilities and Activities. Safety Requirement Series No. GS-R-3, IAEA, Vienna (2006).
3.	INTERNATIONAL ATOMIC ENERGY AGENCY - Preparedness and Response for Nuclear and Radiological Emergencies, Safety Requirement Series No. GS-R-2, IAEA, Vienna (2002).
4.	INTERNATIONAL ATOMIC ENERGY AGENCY - Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, General Safety Requirements Part 3, No. GSR Part 3 (Interim Edition), IAEA, Vienna (2011).
5.	INTERNATIONAL ATOMIC ENERGY AGENCY - Safety assessment for facilities and activities, General Safety Requirements Part 4, No. GSR Part 4, IAEA, Vienna (2009).
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 Using Radioactive Material Safety, Safety Requirement Series No. WS-R-5, IAEA, Vienna (2006).
8.	INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Nuclear Power Plants: Design, Specific Safety Requirements No. SSR-2/1, IAEA, Vienna (2012).
9.	INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Nuclear Power Plants: Commissioning and Operation, Specific Safety Requirements Series No. SSR-2/2, IAEA, Vienna (2011).
10.	INTERNATIONAL ATOMIC ENERGY AGENCY - Site Evaluation for Nuclear Installations, Safety Requirement Series No. NS-R-3, IAEA, Vienna (2003).
11.	INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Nuclear Fuel Cycle Facilities, Safety Requirement Series No. NS-R-5, IAEA, Vienna (2008).
12.	INTERNATIONAL ATOMIC ENERGY AGENCY - Disposal of Radioactive Waste, Specific Safety Requirements No. SSR-5, IAEA, Vienna (2011).
13.	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).
14.	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).
15.	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).
16.	INTERNATIONAL ATOMIC ENERGY AGENCY - Documentation Used in Regulating Nuclear Facilities, Safety Guide Series No. GS-G-1.4, IAEA, Vienna (2002).
17.	INTERNATIONAL ATOMIC ENERGY AGENCY - Arrangements for Preparedness for a Nuclear or Radiological Emergency, Safety Guide Series No. GS-G-2.1, IAEA, Vienna (2007).
18.	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).
19.	INTERNATIONAL ATOMIC ENERGY AGENCY - Commissioning for Nuclear Power Plants, Safety Guide Series No. NS-G-2.9, IAEA, Vienna (2003).

20.	INTERNATIONAL ATOMIC ENERGY AGENCY - Periodic Safety Review of Nuclear Power Plants, Safety Guide Series No. NS-G-2.10, IAEA, Vienna (2003).
21.	INTERNATIONAL ATOMIC ENERGY AGENCY - A System for the Feedback of Experience from Events in Nuclear Installations, Safety Guide Series No. NS-G-2.11, IAEA, Vienna (2006).
22.	INTERNATIONAL ATOMIC ENERGY AGENCY - Occupational Radiation Protection, Safety Guide Series No. RS-G-1.1, IAEA, Vienna (1999).
23.	INTERNATIONAL ATOMIC ENERGY AGENCY - Assessment of Occupational Exposure Due to Intakes of Radionuclides, Safety Guide Series No. RS-G-1.2, IAEA, Vienna (1999).
24.	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).
25.	INTERNATIONAL ATOMIC ENERGY AGENCY - Environmental and Source Monitoring for Purposes of Radiation Protection, Safety Guide Series No. RS-G-1.8, IAEA, Vienna (2005).
26.	INTERNATIONAL ATOMIC ENERGY AGENCY - Deterministic Safety Analysis for Nuclear Power Plants, Specific Safety Guides Series No. SSG-2, IAEA, Vienna (2010).
27.	INTERNATIONAL ATOMIC ENERGY AGENCY - Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide Series No. SSG-3, IAEA, Vienna (2010).
28.	INTERNATIONAL ATOMIC ENERGY AGENCY - Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide Series No. SSG-4, IAEA, Vienna (2010).
29.	INTERNATIONAL ATOMIC ENERGY AGENCY - Licensing Process for Nuclear Installations, Specific Safety Guide Series No. SSG-12, IAEA, Vienna (2010).
30.	INTERNATIONAL ATOMIC ENERGY AGENCY - Classification of Radioactive Waste, General Safety Guide No. GSG-1, IAEA, Vienna (2009).
31.	INTERNATIONAL ATOMIC ENERGY AGENCY - Decommissioning of Nuclear Power Plants and Research Reactors, Safety Guide Series No. WS-G-2.1, IAEA, Vienna (1999).
32.	INTERNATIONAL ATOMIC ENERGY AGENCY - Regulatory Control of Radioactive Discharges to the Environment, Safety Guide Series No. WS-G-2.3, IAEA, Vienna (2000).
33.	INTERNATIONAL ATOMIC ENERGY AGENCY - Decommissioning of Nuclear Fuel Cycle Facilities, Safety Guide Series No. WS-G-2.4, IAEA, Vienna (2001).
34.	INTERNATIONAL ATOMIC ENERGY AGENCY - Predisposal Management of Low and Intermediate Level Radioactive Waste, Safety Guide Series No. WS-G-2.5, IAEA, Vienna (2003).
35.	INTERNATIONAL ATOMIC ENERGY AGENCY - Predisposal Management of High Level Radioactive Waste, Safety Guide Series No. WS-G-2.6, IAEA, Vienna (2003).
36.	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).
37.	INTERNATIONAL ATOMIC ENERGY AGENCY - Storage of Radioactive Waste, Safety Guide Series No. WS-G-6.1, IAEA, Vienna (2006).

APPENDIX VIII - ROSTECHNADZOR ORGANIZATIONAL CHART

