FINAL REPORT

PEER APPRAISAL OF THE ARRANGEMENTS IN THE MURMANSK REGION (RUSSIAN FEDERATION) REGARDING THE PREPAREDNESS FOR RESPONDING TO A RADIATION EMERGENCY

15 – 26 October 2007
Murmansk, Murmansk Region, Russian Federation

International Atomic Energy Agency

ACKNOWLEDGEMENT

The mission team gained access to all principal organizations, which provided excellent cooperation and valuable input at all levels. The time spent with organizational counterparts in Moscow and in Murmansk was extremely productive. The professional interest and involvement on the part of representatives from critical response organizations with whom the mission team interacted was vital to the success of this mission. The mission team wishes to extend its special appreciation for the positive and active involvement of Professor L. A. Bolshov, Director of Nuclear Safety Institute of the Russian Academy of Sciences (IBRAE RAN), for the excellent preparation of the mission and of Mr. Yu. A Evdokimov, the Governor of the Murmansk Region, for providing access and consultation opportunity to all the organizations playing important roles in the regional nuclear or radiological emergency preparedness and response system. The visits provided valuable insights into the challenges faced by the regional government, as well as the locally operating federal institutions to provide the necessary capabilities to cope with the consequences of any nuclear or radiological accident.

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1. INTRODUCTION

1.1. Background

Article III.A.6 of the IAEA Statute specifies two main functions the IAEA is authorized to perform in relation to safety:

- to "establish or adopt, in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned, standards of safety for protection of health and minimization of danger to life and property"; and
- to "provide for the application of these standards" through, inter alia, the rendering of safety review services/appraising compliance.

The obligations, responsibilities and requirements for preparedness for and response to radiation emergencies are set out in the Safety Standards, No. GS-R-2 Requirements for "Preparedness and Response for a Nuclear or Radiological Emergency" [1]. The IAEA General Conference, in resolution GC(46)/RES/9, encourages Member States to "implement the Safety Requirements for Preparedness and Response to a Nuclear or Radiological Emergency". In addition, the national arrangements should be compliant with the International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources, Safety Series No. 115. IAEA, Vienna (1996) [2].

In 2003, the IAEA published a document titled "Method for Developing Arrangements for Response to a Nuclear or Radiological Emergency" (EPR-METHOD) [3], with the aim of fulfilling, in part, the IAEA's function under Article 5 of the Assistance Convention to provide a compendium of best practices for planners aiming to comply with IAEA Requirements [1]. These documents are the most important IAEA standards to be used when building up the national nuclear and radiological emergency response system.

While each Member State is responsible for conducting periodical appraisal of its emergency preparedness and response capabilities, the IAEA can also conduct, at the request of the Member State, an independent Emergency Preparedness Review (EPREV).

EPREV missions may assess a country's Emergency Preparedness and Response (EPR) capabilities in its totality or may focus on specific aspects of the subject. In case of this EPREV Peer Appraisal Mission [mission], the IAEA was requested to review the situation regarding nuclear and radiological emergency preparedness in a specific region (Murmansk [Region]) after the implementation of a targeted EPR system upgrading project.

The Northern Dimension Environmental Partnership Support Fund (NDEP) was established in 2002 to tackle major environmental challenges in north-western Russia. The NDEP Nuclear Window deals specifically with the legacy of the Soviet fleet of nuclear submarines, ships and coastal maintenance bases. The NDEP is managed by the European Bank for Reconstruction and Development (EBRD).

One of the important projects funded by the NDEP Nuclear Window was the enhancement of the radiation monitoring and emergency preparedness in the Region (NDEP-003 project).

The main objective of the project was the modernization of an early warning system on sites where nuclear submarine decommissioning, spent nuclear fuel (SNF) and radioactive waste (RW) management activities are being undertaken within the NDEP. The objectives also

encompass establishing the means to ensure effective response capabilities to manage radiation emergencies and mitigate their consequences in the Region.

An important goal of the project was also to ensure provisions for comprehensive information for the local population and authorities as well as for the international public and authorities on the radio-ecological situation including accidental releases in the Region.

The Government of the Region was the Grant Beneficiary and the Energy Safety Analysis Center of Nuclear Safety Institute of the Russian Academy of Sciences (IBRAE RAN) was the main Contractor (contract signed on 1 November 2005). The project was about to be completed in December 2007.

Following the suggestion of EBRD, the Russian Authorities have requested an IAEA Emergency Preparedness Review. EBRD fully supported this initiative and was convinced that important lessons can be learnt from this exercise.

In a letter dated 17 May 2007, the Deputy Director of ROSATOM, under Article (5) (a) of the Assistance Convention, requested IAEA assistance in assessing emergency preparedness and response arrangements in the Murmansk Region of the Russian Federation (RF). In this regard it was requested that the IAEA should conduct a peer review vis-à-vis the relevant international standards.

Upon the above request of the RF and following the relevant IAEA Guidelines (Emergency Preparedness Review Team Guidelines), a well defined appraisal procedure was initiated. This included the following steps:

- A set of self-assessment questionnaire, designed for the specific purpose, was filled by representatives of the RF nuclear and radiological emergency system and sent to the IAEA during Spring 2007. (NOTE: the self-assessment obtained for the whole federal emergency management system was used as initial information only, as local/regional capabilities may differ considerably from the national arrangements.)
- During August 2007 the Terms of Reference were developed and adopted in cooperation with the project counterpart, Energy Safety Analysis Centre of IBRAE RAN.
- The mission was implemented during the period 15 – 26 October, 2007.

The overall objective of this mission was the assessment of compliance of the available EPR system with international standards, specifically with recommendations of the IAEA Safety Standards Series document No. GS-R-2 (‘Preparedness and Response for a Nuclear or Radiological Emergency’, IAEA, Vienna, 2002) [1].

The requested assessment was limited to nuclear and radiological emergency preparedness of the Region, with special regard to the situation prevailing as a ‘radiation legacy’ of the nuclear fleet operation and the intended decommissioning and cleanup of some of its affected sites. Consequently the specific objectives of the mission were as follows:

1. To provide an assessment of the Region’s capability to respond to possible nuclear and radiological emergencies, taking into account the specific conditions of the Region. (This also involved observing an exercise carried out during the EPREV mission.)

2. To assess the Region’s capability to respond to nuclear and radiological emergencies at facilities during planned future decommissioning and cleanup operations, identifying shortcomings as well as good practices in the system.

3. To assist the Region in the development of interim arrangements to promptly respond to a nuclear or radiological emergency. This includes suggesting steps that can be taken immediately to better use existing response capabilities.

4. To provide a basis upon which the Region can develop a longer-term programme to enhance their ability to respond to nuclear and radiological emergencies.

5. To substantiate a decision regarding the upgrading of early warning and emergency response systems in other parts of RF (specifically in the Archangelsk Region), similar to the NDEP-003 project.

In addition to the usual issues above which the IAEA normally assesses in similar missions, there was strong interest in determining the level of compliance between the objectives of the NDEP-003 project and the relevant international requirements regarding response to nuclear and radiological emergencies.

1.2. Scope

The mission was carried out in accordance with the guidelines developed for the EPREV services. As part of the methodology, a questionnaire was filled out, addressing the main issues and requirements of GS-R-2 [1].

Emergency arrangements were assessed at local and regional levels, specifically:

- Emergency management
- Overall emergency preparedness
- Law enforcement
- Radiation protection
- Medical response
- Public information
- Regional capability to support and provide training to local response teams

Although the mission was related to the NDEP-003 project, the mission's scope of activity extended beyond the scope of the project in the sense that more general aspects (e.g. threat assessment, legal framework, assignment of responsibilities, functional and infrastructural requirements, training and exercises etc.) were also addressed. The NDEP-003 project was considered only with regard to its impact on the emergency preparedness status in the Region. However, a detailed assessment of the project implementation was not the task of the mission.

The review consisted of:

- reviewing and verifying the statements (Performance Indicators) made by the RF counterpart by filling out the self assessment questionnaires;
- determining if the arrangements for preparedness and response for radiation emergencies within the Region were in conformity with the International Requirements [1]. (In this context, a "radiation emergency" means the same as a "nuclear or radiological emergency".);
- identifying methods and means of meeting the International Requirements (in short term, as well as longer term) and other good practices. The EPR-METHOD [3], the EPR-FIRST RESPONDERS [4] and the expertise of the mission team members provided the basis for these recommendations.

The review mission was designed to cover all aspects of arrangements for emergency preparedness and response and included: on-site (facility), off-site (local) and regional emergency response and preparedness arrangements for all radiation emergencies that may affect the Region.

When determining the scope of the mission, certain limitations had to be taken into consideration: the mission had to be completed within 10 working days, which included also time to be allocated for participation in an emergency exercise. In order to focus the effort and to provide mission findings that would be generally applicable to the existing preparedness and response system in the Region, the arrangements for dealing with two different types of situations warranting emergency preparedness were examined:

- the ability of a facility in threat category I, II and III (note that Region has many facilities falling into these threat categories) to respond. Facilities in these threat categories and nearby jurisdictions, in accordance with IAEA Requirements [1], must have robust emergency response arrangements that should be subject to the regulatory system. The emergency arrangements of several licensees were examined;
- the ability to respond to a radiological emergency (at conducting activities in threat category IV and V) that could occur anywhere in the Region. These arrangements include local emergency services having the basic ability to recognize a radiation emergency and to take appropriate immediate action, and the ability of regional and federal officials to support local response organizations. The arrangements to respond locally, regionally and on federal level to a radiological emergency in the Region were examined.

Both reviews were used to benchmark emergency preparedness arrangements for these two different regulatory and operational environments, and generalized findings were subsequently developed.

The members of the mission team (see Appendix II) were selected on the basis of their relevant experience in the above-mentioned areas.

It was not possible to visit facilities other than those listed in Section 1.4. or perform other verification activities. The collected data and analysis contained in this report rely on relevant documentation provided and interviews with representatives of key response organizations and on personal impressions obtained during the visits to different sites and institutions. The mission concentrated on those areas which the team viewed as crucial to the establishment of a solid interim emergency response capability.

1.3. Process

The general schedule for the mission is shown in Table 1. The mission team visited the authorities and facilities in accordance with the schedule prepared by the local counterpart (based on the Terms of Reference) and conducted interviews and discussions. Some facilities in the Closed Administrative and Territorial Formations (CATFs) were not accessible for the foreign members of the team (Mr. Kenigsberg, Mr. Zombori), these places were assessed by the Russian member of the EPREV team (Mr. Kutkov). Notes were taken during the visits and consolidated during regular work meetings of the team members. Major findings and recommendations were entered into the extended assessment worksheet prepared for the mission's purposes.

Table 1. Mission Schedule

Date	Subject
Day 1 15 October	**Arrival in Moscow** **Visit and discussions in IBRAE RAN (Moscow)** Determining the detailed mission plan and the institutions to be considered for reviewing
Day 2 16 October	Traveling to Murmansk
Day 3 17 October	**Plenary discussions with all participants (Murmansk, Regional Government's Office)** Review of the schedule and presentations by the IAEA team and the counterparts, adopting the visit plan, discussions on the legal framework, etc.
Day 4 and 5 18-19 October	**Regional, local and facility response review and assistance team** Meeting with representatives of federal and regional organizations (Government of the Murmansk Region as well as with local/facility radiological emergency response officials mentioned in subsection 1.3)
Day 6 and 7 22-23 October	**Regional, local and facility response review and assistance team** Meeting with federal and regional organizations as well as local/facility radiological emergency response officials (cont'd)
Day 8 24 October	Participation in the regional field and table-top **exercises**
Day 9 25 October	Exercise-related discussions (evaluation) General meeting with all response organizations – address on high priority issues **Final Meeting**: IAEA team and local host discuss report and findings – addressing unresolved issues
Day 10 26 October	**Departure**

The major organizations with which the mission team interacted were:

- Energy Safety Analysis Centre of IBRAE RAN — technical support organization for the Government of the Murmansk Region and the main Contractor of the NDEP-003 project;
- Government of the Murmansk Region – in overall charge for the protection of the population in the Region, the Grant Beneficiary of the NDEP-003 project;
- State Authority for the Affairs of Civil Defense, Extraordinary Situations and Disaster Relief of the Murmansk Region – the regional EMERCOM (EMERCOM-MR) organization (responsible for e.g. operating 24/7 contact point, exchange of information, evaluation of the situation in preparation of decision making, implementation of protective measures of general public etc.);
- Murmansk Branch of Ministry of the Russian Federation for the Affairs of Civil Defense, Extraordinary Situations and Disaster Relief – the Federal EMERCOM (MB-EMERCOM) organization, in overall charge for the protection of the public, in general, and for the implementation of the measures in the Closed Administrative and Territorial Formations (CATFs), they provide fire protection and rescue services of

CATFs and coordinate and cooperate with other federal institutions, like Hydromet, special forensic teams and the Federal Medical and Biological Agency of the Ministry of Health;

- Centre of Information Acquisition and Processing of Murmansk Department of Federal Service for Hydrometeorology and Environmental Monitoring (MDHEM, Hydromet) in the Region – a regional branch of the Federal Meteorological Service, the primary operator of the upgraded Automatic Radiation Monitoring System (ARMS) of the NDEP-003 project and provider of the first prognostic calculations in case of a major atmospheric release;
- Murmansk Branch of Federal Service for Supervision over Consumers Rights Protection and Human Welfare (MB Rospotrebnadzor) – a regional branch of the federal organization responsible for the control of radiation sources and contamination of unknown origin;
- Regional Medical and Sanitary Division No. 120 of Federal Medical and Biological Agency of the Ministry of Health – a federal organization for sanitary services and medical support of workers and the public in CATFs in case of normal operation and in emergency;
- Murmansk Territorial Centre for Medicine of Catastrophes – a regional organization of emergency medical services for the general public;
- FSUE ATOMFLOT – a State enterprise for servicing nuclear powered icebreakers (maintenance, loading, unloading of nuclear fuel, handling radioactive waste);
- FSUE SevRAO (Northern Federal Facility for Radioactive Waste Management) – a State enterprise to provide infrastructure for management of radioactive waste and spent nuclear fuel from submarines and remediation of radiation-hazardous facilities in the northern territories of Russia;
- FSUE NERPA Shipyard – the main enterprise in the Region engaged in NS decommissioning, operating a number of sites where different activities involving sources of radiation are carried out. In addition to decommissioning activities, various activities related to SNF and radioactive waste management are taking place at those sites;
- Administration of Snezhnogorsk – one of the CATFs which belongs to NERPA Shipyard.

1.4. Input and guidance for the assessment

The mission was conducted in accordance with the **Terms of Reference (ToR)**, (Appendix III), developed and adopted with IBRAE RAN in August 2007.

An important input for the assessment of the country's radiological emergency preparedness and response capabilities was provided by the **self–assessment questionnaires** containing the evaluation prepared by Mr. Boris Petrov (Emergency Response Centre of MINATOM), in preparation for the Regional Coordination Meeting of the regional TC project RER9091 in May 2007.

A set of documents (decrees, regulations, procedures, presentation materials etc.) was sent by IBRAE RAN and made available for the EPREV team members prior to the mission.

EBRD provided important documents regarding the NDEP-003 project objectives and technical specification.

The assessment was mainly based on visits to different organizations participating in the regional nuclear and radiological emergency response system and on interviews with official representatives of these organizations.

1.5. Regional Table-Top and Field Radiological Emergency Exercise

After initial negotiations, the dates of the mission were determined in order to make it possible for the team to observe a regional exercise, designed to test regional emergency response capabilities, with special regard to newly established infrastructural elements (upgraded automatic monitoring system, mobile laboratories, video conferencing, decision aiding software and consulting). This exercise was carried out on 24 October 2007 with the participation of all regional and federal agencies having a role in nuclear and radiological emergency response.

2. SUMMARY OF FINDINGS

2.1. Historical background and present situation

From the point of view of nuclear activities the Kola Peninsula is a unique place. Its geographic (the northwestern tip of RF), demographic (sparsely populated) and climatic (mild winter with unfrozen sea) characteristics made it one of the strategically most important areas of the former Soviet Union. Because of its significance, the RF has also been exploiting beneficial circumstances for certain nuclear applications. This place became the base of the Soviet (later RF) Northern Fleet and also the base of many civilian shipping activities (fishing, trade, ice breaking etc.). Since the mid 50's, nuclear technology (reactors) has been used more intensively by both the military and civilian naval communication. The most typical civilian use was powering ice-breakers, whereas the Navy has been using nuclear reactors mainly in its submarines. A whole industry has been built up for the maintenance of these applications, which includes fueling/refueling of ships and submarines, management of spent nuclear fuel and generated radioactive waste. A schematic geographic distribution of the civil sector of nuclear facilities in the Region which occupies the Kola Peninsula is given in Figure 1.

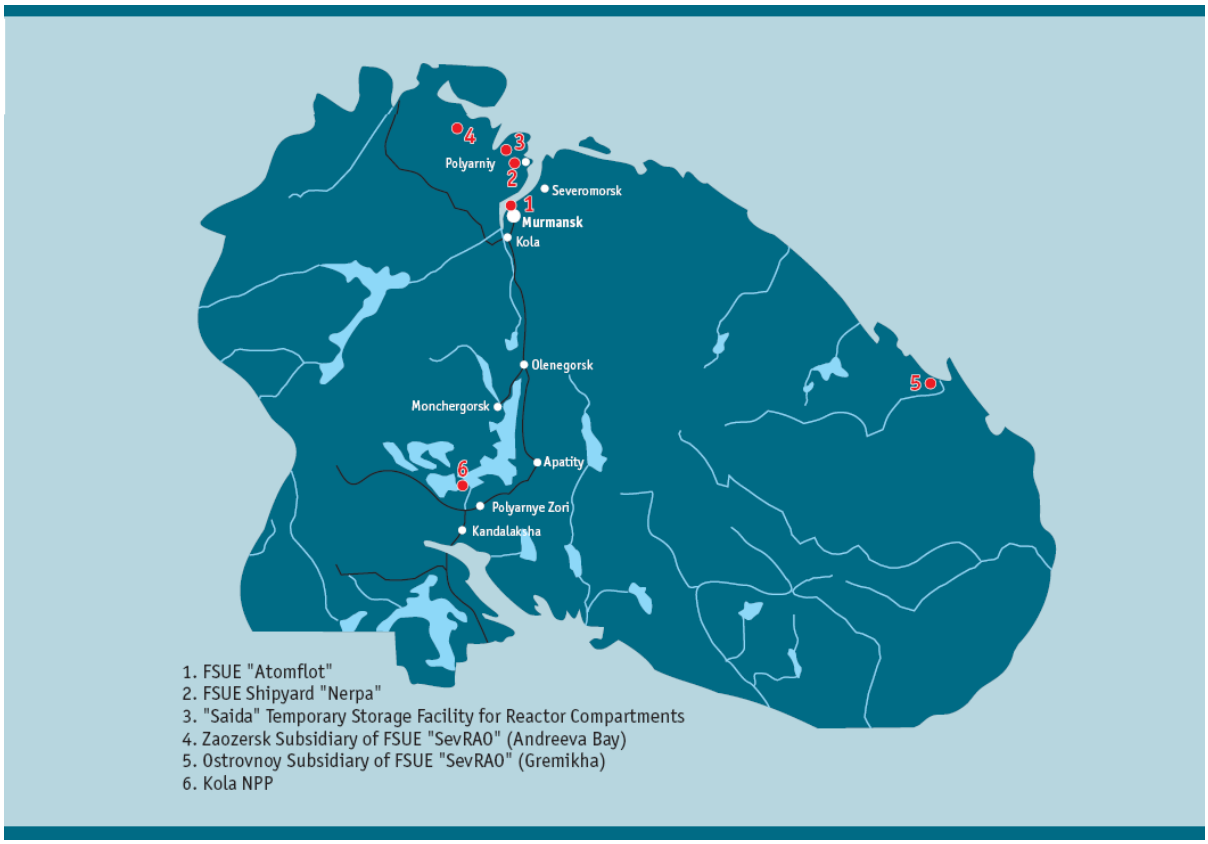


Figure 1. Nuclear activities in the Kola Peninsula

Whilst the icebreaker maintenance work has always been carried out by a civilian enterprise (FSUE ATOMFLOT), the activities associated with the submarines were managed by the Navy up to the mid 90's. Thereafter the tasks of decommissioning, SNF handling and waste management of disused submarines (the so-called 'radiation legacy' issues) were transferred to civilian enterprises: NERPA Shipyard became responsible for dismantling and SevRAO was commissioned to deal with the SNF and radioactive waste management problems.

Although these activities came under the supervision of civilian authorities (e.g. ROSATOM) they operate within certain inherited frameworks. The plants, workshops and docks are under strict security control, so are the settlements where most of the workers of these enterprises live. These symbiotic complexes of workplaces and settlements are called Closed Administrative and Territorial Formations, or CATFs (Russian abbreviation is ZATOs). These administrative arrangements have significance from a nuclear or radiological emergency management point of view: the CATFs are relatively independent from the regional government and are not accessible by the regional civil defense organization. Therefore the CATFs are obliged to operate their own emergency response system.

Another site of nuclear activity is Polyarnie Zory, where the Kola Nuclear Power Plant, a complex of 4 WWER units (440 MWe each), operates since the early 70's.

Beside the nuclear activities mentioned above, the Region has also needs to be prepared for any emergency involving other types of radiation sources. There are a number of applications where such sources of ionizing radiation are used (e.g. the Sr-90 containing radioactive thermo-generators, or RTGs, in the lighthouses along the coastline, the usual industrial, medical and research applications etc.).

FSUE ATOMFLOT

While the icebreaker fleet is operated by the Murmansk Shipping Company, the responsibility of maintenance rests with FSUE ATOMFLOT. FSUE ATOMFLOT is based close to Murmansk (2 km north of the city, on the eastern side of Kola Bay), managing fuel and radioactive waste matters of the icebreakers. For temporary storage there are five service and storage boats for nuclear waste and used fuel assemblies. The five boats are moored at the FSUE ATOMFLOT site, and may also be used for transporting SNF and radioactive waste or, should the necessity arise, provide maintenance for nuclear icebreakers at sea. The service ship *Imandra* has storage room for unused and used fuel assemblies; *Lotta* has application-designed containers for storing used fuel assemblies; the tanker *Serebryanka* has storage capacity for liquid nuclear waste; *Volodarsky* has storage room for low- and medium level radioactive waste; *Lepse* has storage tanks for used and partly destructed fuel assemblies.

About half the fuel assemblies are sent to Ozersk (Mayak) for reprocessing, the transport is carried out by rail. Approximately 35% of all the fuel assemblies that are stored in two of these service ships are of the type that cannot be reprocessed, and will therefore not be dispatched to Mayak.

FSUE ATOMFLOT has constructed a safe, on-land storage facility that will significantly decrease the danger of storing radioactive waste in the Murmansk area. This is the first container-type storage facility for SNF in RF. Its view from Murmansk Fjord is given in Figure 2. The container-type SNF storage facility is meant to store fuel which currently cannot be reprocessed. The fuel can be stored at the facility for up to 50 years.

Figure 2. The container-type SNF storage facility at FSUE ATOMFLOT site

The facility is designed to hold 50 TUK-120 ferroconcrete containers. The transportation assemblage guarantees nuclear and radiation safety during transportation, loading and unloading of SNF and during SNF storage operations.

The TUK-120 cask was specially developed to transport and store SNF from nuclear vessels. It includes three hermetically sealed barriers that guarantee secure storage of SNF. During development of the TUK, research was carried out into long-term dry storage of SNF which proved that storing SNF in an inert medium and preventing moisture from entering the cask's environment would see storage lifetimes limited only by normative demands on control of the fuel state, and could reach 50 years of safe storage time. Following a positive testing program, the container was certified to Russian and international standards. The containers are built to withstand fire, flooding, and major shocks like aircraft impact.

A new plant at FSUE ATOMFLOT performs an innovative cleansing technology based on evaporation of liquid radioactive waste. The cleansed water can be used as cooling water, thereby reducing the amount of radioactive water discharged into the Murmansk Fjord. The precipitate is stored with solid low- and medium radioactive waste. The facility is able to cleanse saline waste.

The total amount of solid radioactive waste generated annually by the nuclear-powered civil vessels at FSUE ATOMFLOT, is about 100 cubic meters solid radioactive waste with a total radioactivity of about 10 GBq. The distribution between the waste categories is as follows: low level radioactive waste – 70% volume and 10% activity; medium level radioactive waste – 20% volume and 30% activity; high level radioactive waste - 5% volume and 60% activity. The system of characterization of liquid and solid radioactive waste established in RF is based on its specific activity as given in SPORO-2002 [5] and is presented in Table 2. It differs from that recommended by the IAEA[6].

Table 2. Classification of liquid and solid radioactive waste on its specific activity

Category	Specific activity, Bq/g		
	Beta-emitters	Alpha-emitters	
		non- transuranics	transuranics
Low level RW	exemption level[(a)]-1E3	exemption level[(a)]-1E2	exemption level[(a)]-1E1
Intermediate level RW	1E3-1E7	1E2-1E6	1E1-1E5
High level RW	>1E7	>1E6	>1E5

[(a)] Exemption level for solid radioactive waste is equal to that given by BSS [2]; for liquid RW it is equal to reference level of radionuclide concentration in drinking water multiplied by factor of 10.

The following operational action levels of ambient dose rate at 0.1 m from the surface of the considered material are used for preliminary characterization of the gamma-emitting RW:

- Low level RW: 0.001 mSv/h - 0.3 mSv/h;
- Intermediate level RW: 0.3 mSv/h - 10 mSv/h;
- High level RW: > 10 mSv/h

The operation of the icebreaker fleet is also not without risk. Some serious accidents concerning Russian civil nuclear-powered vessels were reported:

- 1966 – A major discharge of radioactivity from the reactor section aboard the icebreaker Lenin;
- 1988 - A reactor melt-down was narrowly avoided while the icebreaker Rossia replaced the fuel assemblies in Murmansk;
- 1990 - A fire aboard of one of the icebreakers during its stay in the dry dock in the central harbor of Murmansk. The fire broke out during repairs.
- 1993 - A leakage in the cooling system of one of the nuclear reactors on the icebreaker Arktika, during its operation in the Kara Sea.

NERPA Shipyard

Federal State Unitary Enterprise Ship Repair Yard "NERPA" (FSUE SRY “NERPA”) is located in the Kut armlet of Kola Bay 30 km to northwest from Murmansk, 73 km by road. It was established in 1964. Since 1994 SRY "NERPA" was appointed as the main enterprise on Kola Peninsula for dismantlement of nuclear submarines that were put out from the Navy division. The dismantling of the nuclear submarines started in 1995. For the execution of this task at the enterprise, a dismantlement complex with American technological facilities was built. Commissioning of this complex allows speeding up and making the dismantling process cheaper. Its design capacity is 6 submarines per year. Now the metal cutting complex with high-capacity guillotine is in operation (73 tons of scrap metal per hour). Delivery of metal scrap is made by floating vessel or by automobiles. Shipment to consumers of scrap metal received by recycling ships and vessels is carried out round the clock.

The amount of work for NERPA is considerable. The Russian Navy built 249 nuclear submarines and five nuclear powered surface ships between 1955 and 2004. 192 of them have

been taken out of service. In the Northern Fleet alone, 116 submarines have been decommissioned and await dismantlement. Of these, 36 still have their spent nuclear fuel on board.

The FSUE SRY NERPA is associated with the city of Snezhnogorsk, a settlement of about 14,000 people, as a CATF.

SevRAO State Enterprise

The State Enterprise SevRAO was established to provide infrastructure for nuclear submarine decommissioning, management of radioactive waste and spent nuclear fuel and remediation of radiation-hazardous sites and facilities in Northern RF. SevRAO is the main institution responsible for handling the 'radiation legacy' problems and operates under the supervision of ROSATOM. Its headquarters are in Murmansk, but the actual activities are carried out at 3 major sites outside Murmansk.

Andreeva Bay is situated on the north-western side of the Kola Peninsula. Now it is the 1st branch of SevRAO. Andreeva Bay is 55 kilometers east of the Russian-Norwegian border. The total radioactivity of spent nuclear fuel and radioactive waste in storage at Andreeva Bay reaches approximately 10^{18} Bq, or some 27 million curies. To put this figure in perspective, the overall radioactivity of released radioactive substances during the Chernobyl accident was around 50 million curies. Because of leaks in the Andreeva Bay site's buildings and facilities, the environment is subject to radioactive contamination through the migration of radioactive substances into groundwater, seawater and the surrounding atmosphere. Among the most contaminated sites at the base are the former SNF storage facility (Building 5), the dry storage tanks (Tanks 2A, 2B and 3A) and the territory around them, the solid radioactive waste storage facility (Building 7 and its facilities 7A, 7B, 7D, and 7F), and the liquid radioactive waste storage facility (Building 6).

Gremikha, a former naval coastal maintenance base, is a remote, hard-to-reach site east of Murmansk. It has been used to store (under questionable conditions) those reactor units (of metal-cooling type) that could not be sent to Mayak for reprocessing. The management of these reactors will be one of the most important issues to be solved.

Sayda Bay storage facility is planned to receive the first reactor compartments. The first batch consisting of eight reactor compartments from nuclear submarines was delivered to the long-term onshore storage facility in Sayda Bay in 2006. The first stage of the facility will be able to accommodate 30 empty reactor compartments. The tests of the German-sponsored equipment have been successfully completed. The reactor compartments will be shipped with the help of a floating dock from the NERPA Shipyard.

The completed facility should be able to receive 120 reactor compartments as well as radioactive waste from the nuclear service ships. The end of the construction is scheduled for 2008. The project will solve the problem of safe storage for the reactor compartments, 70 of which are currently stored afloat in Sayda Bay. The Russian Research Center 'Kurchatov Institute' and the German Energiewerke Nord GmbH (EWN), are supervising the project.

One of the biggest challenges faced by RF today is finding secure and reliable storage for RW and the SNF produced by the Northern Fleet. Programs like the Masterplan for Northwest Russia, developed by the Russian government and the American Military Environmental Co-operation (AMEC) program, have addressed this issue for years and AMEC has built special

containers for the Navy in which RW and SNF are shipped for reprocessing. Nevertheless, the problem is widespread and a final solution for the waste must be found.

Nuclear and radiological emergency preparedness in the Region

In principle, on-site emergency plans exist in all the organizations dealing with SNF and RW. These plans are necessary conditions of getting licensed. Each institution mentioned above maintains local emergency response organizations and they seem to have been tested regularly during drills and exercises. This is especially important since the regional government has limited influence and access to the enterprises and to the closed communities (CATFs) that are under the supervision of the federal authorities. Enterprises and the closed communities were established in areas far from other settlements due to security and safety reasons. They were established to be able to respond locally to different types of emergencies on their own without significant support from regional authorities.

The Government of the Region is in the overall charge of the response, however its means and mandates are limited by the limited access to the CATFs, on the one hand, and by the possible overruling by the federal authorities, on the other hand. One of the main issues to be investigated was the ability of coordination and cooperation between the response organizations at different levels (on-site, local (CATF), regional and federal). The large-scale radiological emergency exercise organized in coincidence with the mission helped getting a first-hand impression about this coordination.

Infrastructure elements and impact of the NDEP-003 project

The NDEP was established in 2002 to tackle major environmental challenges in north-western Russia. The NDEP Nuclear Window deals specifically with the legacy of the Soviet fleet of nuclear submarines, ships and coastal maintenance bases. The NDEP is managed by EBRD.

One of the important projects funded by the NDEP Nuclear Window is the enhancement of the radiation monitoring and emergency preparedness in the Region (NDEP-003 project).

The main objective of the project is the modernization of an early warning system on sites where nuclear submarine decommissioning, SNF and RW management activities are to be undertaken within the NDEP. The objectives also encompass establishing the means to ensure an effective emergency capabilities and arrangements to manage emergencies and their consequences in the Region.

An important goal of the project is also to ensure provisions for comprehensive information for the local population and authorities, as well as for the international public and authorities on the radio-ecological situation, including accidental releases in the Region.

The Government of the Region is the Grant Recipient and the Energy Safety Analysis Center of IBRAE RAN is the main Contractor (contract signed on 1 November 2005). The project was to be completed in December 2007.

Following EBRD’s suggestion, the Russian Authorities have requested an IAEA Emergency Preparedness review. EBRD fully supported this initiative and has been convinced that important lessons can be learnt from this assessment.

2.2. Main findings

The legal framework and the system of responsibilities stem from the constitution. The Constitution of the RF establishes the federal structure of the country as defined in Chapter 3 (see also Annex 1 for details). The Region is one of about 90 administrative areas of the RF (Article 65 of the Constitution of the RF). The jurisdictions and administrative areas of the RF are separated in some areas. The jurisdiction of the RF includes, among others, *nuclear power-engineering, fission materials* (Article 71, point *i*), *defense and security; military production* (Article 71, point *l*), meteorological service, standards (Article 71, point *p*). The joint jurisdiction of the RF and the administrative areas of the RF includes, among others, *carrying out measures against catastrophes, natural calamities, epidemics, elimination of their aftermath* (Article 72, point *h*). Outside the limits of authority of the RF and the powers of the RF on issues under joint jurisdiction of the RF and the administrative areas of the RF, the administrative areas of the RF shall possess full State power (Article 73).

Based on the experience gathered, documents received, visits and interviews conducted, the team drew the following general conclusions regarding the status of nuclear and radiological emergency preparedness in the Region:

Positive findings, good practices:

- The RF is one of the most experienced countries in the world in using nuclear and radiation technology for peaceful, as well as for military purposes. It has a solid legal, scientific and technological basis and background of pursuing these practices. It also has many decades experience regarding the establishment and operation of nuclear reactors and radioactive sources, with competence in the field of safety enhancement and emergency response. The overall legal framework of the RF guarantees that the relevant requirements and responsibilities are clearly defined. The institutional infrastructure in the country also provides a firm basis to respond successfully to any technological challenge the nuclear applications may pose (e.g. waste management, emergency response operations, risk and consequence assessment etc.).
- The local government is fully aware of the special safety issues and concerns of the Region. Evidence of commitments to nuclear and radiological safety and maintaining a high level of emergency preparedness was received from the highest level of the local administration.
- Facility response plans, procedures, resources (manpower and infrastructure elements) are in place.
- The on-site and off-site organizations are committed and trained.
- A good level of competence regarding professional staff was experienced by the EPREV team during discussions in the various institutions.
- Despite the complexity of responsibilities, there seems to be good coordination and cooperation between the enterprises, the CATF management, the federal response organizations and the emergency response system of the regional government. There is a good working relationship with the Navy as well.
- A 3-level radiation monitoring system exists: technological (on-site), local public and regional. This system has been enhanced by the NDEP-003 project.
- The NDEP-003 project has a remarkable impact on the level of preparedness for emergency response. All new elements seem to function: Automatic Radiation Monitoring System (ARMS), data exchange, video conferencing, mobile labs, remote expert assistance etc. No complaint has been registered about it from the end-users, the system

was fully functional and very impressive during the emergency exercise. The new system can be a model for other, similar, upgrading projects.

- The emergency exercise showed that the regional crisis management committee is well established and directed, its members are committed and competent in the field of activities they represent.

Issues of concern:

- The Region – due to its heavy involvement in nuclear applications and the abundance of radioactive materials described above - is one of the potentially hazardous places of the country. It consists of a number of inhabited "spots" with high military or industrial activity separated by large uninhabited territories. This special situation justifies particular attention regarding emergency preparedness and response.
- There is a separation of mandates and responsibilities between federal and administrative area's authorities in control over different practices and protection of the public, workers, and environment in case of radiological emergency. For example:
    - *Radiation sources used for medical, industrial, research purposes are under the control of regional authorities;*
    - *Kola Nuclear Power Plant is under federal responsibility and control, with limited access by the regional government;*
    - *Nuclear icebreakers, operated and serviced by FSUE ATOMFLOT and Murmansk Shipping Company are under federal responsibilities and control with limited access by the regional government;*
    - *SNF from icebreakers managed by FSUE ATOMFLOT is under federal responsibility and control (with limited access by the regional government);*
    - *SNF from submarines managed by SevRAO and NERPA is under federal control (coordination with the regional government);*
    - *RW from submarines managed by SevRAO and NERPA is under federal responsibility and control (coordination with the regional government);*
    - *Operating reactors of the submarines and ships are under federal responsibility and control (with no access by the regional government).*
- Due to the complex and complicated control system, the emergency preparedness system also seems to be separated: federal authorities, local (regional) governmental agencies, the enterprises and the CATFs all have their own organizations to be activated in case of a nuclear or radiological emergency:
    - Federal authorities and response organizations of Federal EMERCOM are responsible for preparedness and response in case of emergency with involvement of radiation sources (facilities) under federal subordination (NPP, storages of nuclear materials, Navy, etc). Their responsibilities cover the protection of citizens of CATF (if existing), workers and the environment inside the Emergency Planning Zones (e.g. 30 km zone around NPP). Regional response organizations support off-site response. The significance of local response is due to security reasons, isolation of the CATF and the limited means of rapid deployment of remote responders;
    - Regional authorities and response organizations of Regional EMERCOM are responsible for preparedness and response with involvement of radiation sources (facilities) under regional subordination (mining, constructing industry, medicine, education, etc.). Their responsibilities cover the protection of the public outside the CATF, workers and environment outside Emergency Planning Zones of federal enterprises. Federal response organizations support this activity.

In such a complicated system there is also a potential danger of overlapping responsibilities, unnecessary duplication or gaps in performing emergency response.

- The EPREV team could not gain a comprehensive picture of the total emergency management structure. This may be due to lack of transparency or just because of the short duration of the mission.
- Based on the observation of the emergency exercise and related discussions there are no clearly defined Operational Intervention Levels (OILs), required by the international standards [1] that would be the basis for speedy decisions in an emergency situation. For instance, criteria for iodine prophylaxis for the citizens of CATF are based on the classification of the event at adjusted radiation facilities (nuclear hazardous enterprise). Administration of CATF, federal licensee and response organizations are working there in close contact and have resources for adequate response. Otherwise, release of iodine from nuclear icebreakers at Murmansk Harbor or at the FSUE ATOMFLOT site could lead to lengthy evaluation and decision making.
- The dose guidance levels applied for emergency workers did not comply with international recommendations and are much lower than those established in the Basic Safety Standards (BSS) [2].
- Some special issues raised concern; e.g. FSUE ATOMFLOT has no fire brigade on-site and there are no special arrangements regarding the use of off-site services. This problem is enhanced by the difficult road access, especially in wintertime.
- The team could not get a clear answer to questions such as: what procedure is to be followed in case of an accident with a ship/submarine cruising somewhere along the coast, whether it is treated as a category I or category IV threat, who is responsible for protection of the public and how etc.
- The generally observed use of a mixed system of radiological units (becquerels and curies, roentgens and sieverts etc.) was found by the EPREV team to be a potentially dangerous practice, especially in case of an emergency, where clear and unambiguous communication of radiological quantities has an increased importance and where a misunderstood or misinterpreted value may lead to wrong decisions. This is not only non-compliant with international standards but, most probably, it contradicts the country's metrology law.
- With the implementation of the NDEP-003 project, a multitude of prognostic calculations and consequence analyses conducted by federal organizations (the local Hydromet, IBRAE, 'Typhoon' in Obninsk etc.) became available. This may lead to redundant information and advice, possibly overlapping or even contradicting, from different organizations involved in the assessment. No clear procedure on how to prioritize these assessments was demonstrated during the discussions and the exercise.
- The emergency exercise held during the mission was well designed and successfully implemented. Its greatest achievement was the demonstration of the new functions of the upgraded IT system. However, it did not reveal much about the decision making process, the decisions were 'pre-fabricated' and only demonstrated in line with pre-defined, unchangeable scenario. A real exercise should challenge the decision makers by forcing them to make their own judgments, based on the dose criteria and measured values (operational intervention levels).

The mission team formulated recommendations and suggestions based on the findings. The recommendations need to be addressed in order to conform to IAEA Requirements [1]. To help implement the recommendations, the mission team has issued recommendations for ways of meeting the IAEA Requirements or for other good practices.

The summary findings are divided into two groups:

- **Interim** findings that can and should be addressed immediately, through interim (immediate) actions, using existing capabilities, to significantly improve response capabilities. These findings should be addressed within one year.
- Findings pertaining to national/regional/local response organization/coordination, which should be addressed through the **longer term actions**.

2.3. Interim (immediate) actions

1. OILs should be developed and made known to all responding organizations.

2. The criteria and modes of implementation of iodine prophylaxis for the Murmansk population should be developed.

3. The dose guidance levels for the emergency workers should be harmonized with the international recommendations.

4. The fire protection of the FSUE ATOMFLOT facilities does not seem to be satisfactory. An arrangement to provide instant help from Murmansk government is necessary. This may require the improvement of the access route (road improvement and/or an alternative route).

5. The road conditions may also be crucial in case of the CATFs involvement. If there is a need to provide assistance to them or to evacuate the population, such problems (narrow, low quality roads) may prevent a successful response. These issues should be carefully considered and road conditions should be improved.

6. Radiological quantities should be used according to international standards and the prevailing national metrological regulations (which are hopefully consistent with international standards).

7. The prioritization of redundant assessment results should be developed as part of the preparedness efforts (and not during an emergency).

8. It is suggested that the regional EMERCOM organization (State Authority for Civil Defense, Emergency Public Protection and Fire Safety of Murmansk Region) investigate the possibility of using some of the functions and tools of the newly established IT system (e.g. video conferencing) for the management of responses to other types of emergencies. This may require the extension of the system to include (modularly) signal processing from other monitoring systems (e.g. fire monitoring).

9. Establish training courses for mass media to build competence in radiation protection area and capabilities for plain language explanation to the public regarding the problems related to the basics of radiation protection and safety.

2.4. Long-term actions

1. It is very probable that the structural changes, if found necessary by the proposed organizational scheme review, will take a longer time. This is a long-term task, not the

least, because it requires coordination with the facility, local/regional and federal institutions and agencies.

2. To enhance capabilities for first response to radiological emergency, a local system of professional training for all responding parties should be established. The materials of the IAEA Workshops on First Response to a Radiological Emergency based on IAEA Manual for First Responders to a Radiological Emergency, EPR-First Responders, 2006 [4], could be a good basis for conducting these courses.
3. More exercises should be conducted to become more familiar with the new, upgraded emergency management support system and to exercise the decision-making process. The exercises should be focused on solving problems occurring during the response and on decision-making rather than on only demonstrating capabilities of parties involved in off-site or on-site response.
4. Formal agreement concerning emergency initiation and notification, and exchange of information during an emergency should be developed between the Murmansk government and federal authorities which have jurisdiction over nuclear and radiation facilities in the Region.

3. DETAILED FINDINGS

3.1. Introduction

The mission team's detailed evaluation of the regional emergency preparedness and response system is based on information provided by local and federal Government officials, facility managers and representatives that the mission team interviewed. Due to the time constraint of finalizing the mission within 10 days, it was not possible to verify the information provided. Consequently, information provided by officials from different response organizations may not be consistent. This is, in part, due to the fact that the nuclear and radiological emergency preparedness and response arrangements are currently being upgraded and, in some cases, the information may reflect intentions rather than existing conditions, and contradictions are certainly more due to lack of knowledge than intention to mislead.

The following sections address the main issues of the IAEA Requirements [1] concerning the basic responsibilities, assessment of threats, response functions and infrastructure.

3.2. Basic responsibilities

Regarding the requirements set out in [1] for basic responsibilities, the following appraisal criteria were investigated:

- Establish or identify an existing governmental body or organization to act as a national co-coordinating authority;
- Clearly assign the functions and responsibilities of users and response organizations and ensure they are understood by all response organizations;
- Establish a regulatory and inspection system that provides reasonable assurance that emergency preparedness and response arrangements are in place for all facilities and practices.

3.2.1. Current situation

Regarding national and regional coordination:
The Russian State Disaster Management System (RSDMS) regulates all relations between government, non-government, civil and military organizations. The system contains the following levels:
Federal level: Government Commission for Disaster Management and the Emergency Management Commissions in the federal agencies.
The Government Commission consists of representatives of the Federal Ministries, Agencies and Departments in rank of Deputy Minister (Head). The main operational body of RSDMS is the Ministry of the Russian Federation for the Affairs of Civil Defense, Extraordinary Situations and Disaster Relief (EMERCOM).
Regional level (including administrative areas of the RF): EMERCOM Regional Centres.
Territorial Level (within the borders of administrative areas of the RF): Emergency Management Commissions of the executive agencies in administrative area.
Local level (district, town or municipality): Commission of the local community administrations.

On-site level (within an industrial or public facility): On-site Emergency Management Commissions.
Federal Atomic Energy Agency responsible for coordination of preparedness and response to nuclear and radiological emergencies.
In the **Murmansk Region** the Regional Coordinating Authority is the Emergency Commission of Murmansk, headed by the first deputy Governor of the Region.

Regarding the assignment of responsibilities:
The **operator** is responsible for on-site response including personnel protection.
The **local authorities** are responsible for urgent protective measures for the population.
The operator shall notify the local authorities in case of actual radioactive release. The operators and the local authorities have coordinated emergency response plans. Each facility being under the federal jurisdiction should have its own certified site emergency response team or service contract with ROSATOM regional emergency response unit (this is a mandatory condition of license). ROSATOM regional emergency response units are responsible for transportation accidents and provision of assistance to operators and local authorities.
In the Region, the Federal Ministry of Emergency Situation (EMERCOM) has the basic responsibility for the implementation of decisions taken by the Commission. They provide fire fighting and rescue services. They coordinate and cooperate with other federal institutions, like Hydromet, "Medicine of Catastrophe", forensic teams and a special medical branch and sanitary service of the Federal Ministry of Health. In parallel, the Murmansk government operates its own EMERCOM (operating e.g. 24/7 contact point, exchange of information, evaluation of the situation in preparation of decision making). The local EMERCOM has the responsibility and necessary infrastructure for provision of prompt information and instruction to the public. The new information centre and the other infrastructural elements installed under the NDEP-003 project serve this purpose. The decision making body is the Emergency Commission of Murmansk.

Regarding the regulatory and inspection system:
State regulation of atomic energy safety use: is conducted by the following authorities:

1. Federal Service for Ecological, Technological and Atomic Supervision (ROSTEKHNADZOR);
2. Ministry of Health and Social Development of the Russian Federation
   - Federal Service for Supervision over Consumers Rights Protection and Human Welfare;
   - Federal Medical and Biological Agency;
3. Ministry of the Russian Federation for the Affairs of Civil Defense, Extraordinary Situations and Disaster Relief (EMERCOM).

State management of atomic energy use:

1. Russian Federal Agency for Atomic Energy (ROSATOM)
   - Concern “Rosenergatom”;
2. Ministry of Defense of the Russian Federation;
3. Ministry of Health and Social Development of the Russian Federation;
4. Ministry of Industry and Energy of the Russian Federation:
   - Federal Energy Agency;
   - Federal Industry Agency;
   - Federal Agency for Technical Regulation and Metrology;
5. Ministry of Transport of the Russian Federation:
   - Federal Maritime and River Transport Agency;
6. Ministry of Education and Science of the Russian Federation:
   - Federal Education Agency (Rosobrazovanie);

- Federal Science and Innovations Agency (Rosnauka);

7. Ministry of Regional Development of the Russian Federation:
   - Federal Agency for Construction and Communal Services;
8. Ministry of Natural Resources of the Russian Federation:
   - Federal Subsoil Resources Management Agency;
9. Russian Academy of Sciences.

Federal law No. FZ-68/1994 ('Protection of the public and territories against emergency situations and natural disasters'), regulating the operation of EMERCOM, guarantees that the requirements are met. There is a special arrangement for CATFs.

3.3. Assessment of threats

Regarding requirements set out in [1] for threat assessment, the following appraisal criterion was investigated:

- Perform threat assessments for the facilities and activities in the State, categorize them in accordance with the five threat categories in Table I of GS-R-2.

3.3.1. Current situation

Russian "Basic Sanitary Rules for Ensuring Radiation Safety" (OSPORB-99) [7] establishes classification of nuclear and radiation facilities based on the level of their radiation hazard. This categorization is the basis for construction of new facilities and for emergency preparedness at existing facilities.
OSPORB-99 [7] is a facility oriented regulation and does not categorize activities which could give rise to a nuclear or radiological emergency that would warrant urgent protective action in an unforeseeable location (threat category IV of GS-R-2). Activities not normally involving sources of ionizing radiation, but which yield products with a significant likelihood of becoming contaminated as a result of events at other threat facilities (threat category V of GS-R-2) are also not categorized. Paragraph 7.7 of “Radiation Safety Standards” (NRB-99) [8] says that local authorities, together with supervisory organs, are responsible for the protection of the public in case of any emergency situation. This is not fully compatible with GS-R-2, so this criterion is only partially met.
A categorization of sources exists, but it is not fully in compliance with the threat categorization in the IAEA standards. This is the basis for emergency planning. In this system there is no category that would be equivalent to categories IV and V. For these cases, no special planning exists. There is some planning for specific issues (e.g. emergency on ship or during transport of SNF), but there are gaps in the system of planning.

3.3.2. Recommendation

It is recommended that the RF reviews and revises the threat categorization system to include proper planning for IV and V threat categories at the level of local authorities.

3.4. Establishing emergency management and operations; authority, organization and coordination of emergency response

Regarding requirements set out in [1] for establishing emergency management and operations, the following appraisal criterion was investigated:

- Make arrangements to coordinate the emergency response of all off-site response organizations with the on-site response to include a command and control system for the local and national response to any nuclear or radiological emergency.

3.4.1. Current situation

The coordination of activities of the off-site response organizations with on-site response is the responsibility of the Emergency Situation Commission. The level of coordination depends on the emergency scale - local, regional, interregional, transboundary, etc. ROSATOM's emergency response units have the obligation to support local authorities with personnel and equipment.
This criterion is fully met.

Facility response plans and response organizations exist (they are necessary conditions for obtaining license). There are predefined procedures for different types of radiation emergencies. These include provision of information from the facility to the regional authorities. This is an especially important arrangement in case of CATFs that rely mainly on on-site and local off-site response capabilities. If needed, additional resources (from e.g. EMERCOM) can be mobilized, based on special arrangements. EMERCOM has the emergency plans of all the facilities including those located in CATFs. The emergency plans of the license application must be cleared by all off-site organizations participating in emergency response.

3.5. Identifying, notifying and activating

Regarding requirements set out in [1] for identifying, notifying and activating the following appraisal criteria were investigated:

- Establish a 24 hours/day, 7 days/week contact point;
- Make aware of radiological hazards for on-site managers of facilities (e.g. scrap metal processing facilities) and national border control authorities;
- Make sure first responders are aware of: the signs and symptoms, the appropriate notification and other immediate actions warranted if an emergency is suspected;
- Establish a system for promptly initiating an off-site response in the event of an emergency;
- Ensure response organizations have sufficient personnel;
- Inform the IAEA and other States of the State's single warning point of contact, responsible for receiving emergency notifications and information from other States and the IAEA.

3.5.1. Current situation

Establishing 24 hours/day, 7 days/week contact point

24/7 services exist (at least in 11 regional centres) with several hundred personnel forming the so-called Nuclear Emergency Response Units. In Murmansk the local EMERCOM operates it. The CATFs have their own 24/7 operating contact points.
This criterion is fully met.

Making aware of the radiological hazards for on-site managers of facilities (e.g. scrap metal processing facilities) and national border control authorities

Customs have radiation portal monitors and simple radiometers. The Federal Custom Service has an agreement with ROSATOM and can ask for support and advice from regional ROSATOM emergency response units. Scrap reprocessing facilities have radiation portal monitors and simple radiometers for input control and radiometric laboratories for output control.

Scrap metal is not reprocessed in the Region, but the collected metal is transported out of the Kola Peninsula. There are strict requirements for dealers to monitor incoming material for radiation. This regulation led to a drastic decrease of the source-in-scrap-metal problem. Rail transport of scrap metal is monitored by portal monitors. Transports are also monitored at national borders.
On national level, this criterion is fully met.

Making sure first responders are aware of: the signs and symptoms, the appropriate notification and other immediate actions warranted if an emergency is suspected.

Professional emergency response units of ROSATOM have full knowledge and proper equipment to recognize radiological threat. Special fire brigades have proper equipment and general knowledge to recognize dangerous items. Police and medical personnel, in general, can recognize items marked with signs of radioactivity.

In the Region, professional emergency response organizations are fully aware of the signs and symptoms. They are properly equipped. The plans and procedures contain the requirements and rules of notification. The knowledge of local responders is, however, limited.
The criterion is only partially met.

Establishing a system for promptly initiating an off-site response in the event of an emergency

Operators of I - II category facilities have local warning systems and procedures to promptly initiate off-site response.
The criterion is met at operator level.
The NDEP-003 project is a major contribution to the practical implementation of this requirement.
This criterion is met, also on regional level.

Ensuring response organizations have sufficient personnel

ROSATOM professional emergency response units and facility emergency response units are properly staffed and trained.

Due to the nature of the CATFs establishment and activity this is guaranteed on a local level. There are, however, indications that the regular (federal and local) services in the Region would be in lack of manpower and equipment in case of a large-scale general emergency corresponds to activities of threat categories IV and V.
This criterion is partially met.

Informing the IAEA and other States of the State's single warning point of contact responsible for receiving emergency notifications and information from other States and the IAEA

On national level this warning point is defined. The Situation Crisis Centre of ROSATOM is the single official national warning point for the IAEA. There are regional agreements for direct receipt of notification from Norway and Finland in case of a radiation emergency on their territories.
The criterion is fully met.

3.6. Taking mitigatory action

Regarding requirements set out in [1] for taking mitigatory action, the following appraisal criteria were investigated:

- Make arrangements to provide prompt expertise and services in radiation protection to local officials and first responders to actual or potential emergencies involving practices in threat category IV.
- The operator of the practice in threat category IV shall be given basic instructions.
- Make arrangements to initiate a prompt search and issue a warning to the public in the event of loss of a dangerous source.
- Make arrangements for mitigatory action to prevent an escalation of the threat; to return the facility to a safe and stable state; to reduce the potential for releases of radioactive materials or exposures; and to mitigate the consequences of any actual releases or exposures.

3.6.1. Current situation

Making arrangements to provide prompt expertise and services in radiation protection to local officials and first responders to actual or potential emergencies involving practices in threat category IV

Regional ROSATOM emergency response units have the obligation to provide expertise and services for local authorities in case of a radiation emergency.

In the Region, CATFs are properly covered. The new mobile laboratories of the NDEP-003 project are a remarkable improvement in available capabilities in other areas. The local government and local branches of federal services have limited resources. In addition, CATF, Navy and facility experts can be involved in a general emergency response. All elements of the NDEP-003 project are enhancing this capability.
This criterion is met.

Giving the operator of the practice basic instructions in threat category IV

Facilities which use radioactive sources have basic instructions as mandatory license conditions. Transportation of radioactive materials and sources must be supported by

documentation containing instructions for first responders and these activities are under the control of the regional ROSATOM emergency response units. Therefore this criterion is fully met.

In Murmansk, operators of nuclear powered vehicles, transporters of nuclear spent fuels, radioactive waste and radioactive sources are all licensed for the practice; the emergency plan is a condition of the license.

Making arrangements to initiate a prompt search and issuing a warning to the public in the event of loss of a dangerous source

Although there is no IAEA originated information available on this topic, RF's presentation (Regional Coordination Meeting, Vienna, 2005) stated that this criterion was fully met. Response to some past emergencies (stolen and found radioisotope thermoelectric generators or RTGs) shows that the arrangements are in place. The operator informed the law enforcement agency and, in parallel, the local EMERCOM. Then local EMERCOM initiated the response, including informing local fire brigades and local medical services for expected symptoms of overexposure. The perpetrators were found in a hospital; the stolen source was also found.
This criterion can be considered as being met.

Making arrangements for mitigatory action to prevent an escalation of the threat; to return the facility to a safe and stable state; to reduce the potential for releases of radioactive materials or exposures; and to mitigate the consequences of any actual releases or exposures

It is the responsibility of the on-site response unit and special technical support units. The criterion is fully met.

Just as everywhere else, in the Region fulfillment of this requirement is part of the emergency plans and a condition of the license. The infrastructural improvement provided by the NDEP-003 project is an enhancement in fulfilling this requirement.

3.7. Taking urgent protective action

Regarding the requirements set out in [1] for taking urgent protective action, the following appraisal criteria were investigated:

- Adopt national intervention levels for taking urgent protective action in accordance with international standards;
- Make arrangements for effectively making and implementing decisions on urgent protective actions to be taken off-site;
- Make arrangements to ensure the safety of all persons on-site in the event of a nuclear or radiological emergency.

3.7.1. Current situation

Adopting national intervention levels for taking urgent protective action in accordance with international standards

Generic Intervention Levels (GILs) adopted in RF are in compliance with international standards (BSS) regarding the intervention levels. They are to be applied on a regional level, as well.
This criterion is fully met.

Making arrangements for effectively making and implementing decisions on urgent protective actions to be taken off-site

Local authorities in the vicinity of I - II OSPORB-99 [7] category facilities have a "Population Protection Plan" coordinated with the facilities' "Personnel Protection Plan".
The criterion is fully met.

Making arrangements to ensure the safety of all persons on-site in the event of a nuclear or radiological emergency

I - IV OSPORB-99 category facilities [7] have a "Personnel Protection Plan" which is mandatory for the license.
This criterion is fully met.

3.8. Providing information, issuing warnings and instructions to the public

Regarding requirements set out in [1] for providing information, warning and instructions to the public, the following appraisal criterion was investigated:

- Make arrangements to provide prompt warning and instructions to the permanent, transient and special population group or those responsible for them and to special facilities in the emergency zones upon declaration of an emergency class.

3.8.1. Current situation

This is implemented according to the "Population Protection Plan" coordinated with the facilities' "Personnel protection plan".
In the CATFs there is a standard warning system (stationary loudspeakers around the settlement, cable TV and internet site). In Murmansk, the information to the general public is done partly by the local EMERCOM (precautionary measures) and by the Governor's office (official announcements by the Governor or his/her press office).
The criterion is fully met.

3.9. Protecting emergency workers

Regarding requirements set out in [1] for providing protection to emergency workers, the following appraisal criterion was investigated:

- Make arrangements for taking all practicable measures to provide protection for emergency workers and response personnel.

3.9.1. Current situation

The facilities' "Personnel Radiation Protection Plan" provides proper instructions for the emergency response units. Emergency workers and other specialists involved have protective clothes, respiratory protection and personal dosimeters.
Specifically in the Region, iodine prophylaxis, chemical protection, sorbents (Prussian blue) and protective clothing are available in the CATFs and at the facilities. Direct reading operational dosimeters are also available.
The criterion is fully met

3.10. Assessing the initial phase

Regarding requirements set out in [1] for assessing the initial phase, the following appraisal criterion was investigated:

- Establish default operational intervention levels (OILs) for radiological emergencies.

3.10.1. Current situation

Values recommended by the IAEA were adopted for use by ROSATOM's professional emergency response units. So some values exist, but they are not fully consistent with the international recommendations. Facilities have operational indicators that are occasionally set to indicate technological limit violations (facility conditions), but not as a radiation protection operational limit. No OILs exist in the country for making decisions regarding protection of the general public.
This requirement has not yet been fully implemented

3.10.2. Recommendation

The OILs should be developed (preferably in compliance with international standards) and made known to all responding organizations. The procedures on how to measure different samples to be compared with OIL should be exercised.

3.11. Managing medical response

Regarding requirements set out in [1] for managing medical response, the following appraisal criteria were investigated:

- Make arrangements for general practitioners and emergency staff to be made aware of the medical symptoms of radiation exposure and of the appropriate notification procedures if a nuclear or radiological emergency is suspected;
- Make arrangements, at national level, to provide initial treatment for people who have been exposed or contaminated.

3.11.1. Current situation

Making arrangements for general practitioners and emergency staff to be made aware of the medical symptoms of radiation exposure and of the appropriate notification procedures if a nuclear or radiological emergency is suspected

Basic knowledge of medical symptoms of radiation exposure is part of education and re-training programs for general practitioners and emergency staff in the RF.
Specifically, general practitioners working in the CATFs are trained on this subject.

General practitioners in Murmansk have very limited knowledge about the specific symptoms of radiation injuries. The service of Medicine of Catastrophe has 4 brigades for radiological matters (mainly radiologists from oncology clinics). The time from notification to deployment is 4-6 hours. Medical staff should not enter the inner cordoned area, they take the victims from the rescue teams, and their response is coordinated with the EMERCOM first responders.
This criterion is met.

Making arrangements, at national level, to provide initial treatment for people who have been exposed or contaminated

On national level this criterion is fully met. The responsibility and the operation of the special medical units are coordinated by the Federal Medical-Biological Agency.

On regional level, the local hospital (in Murmansk) activates the specialized medical service upon information from EMERCOM. If victims are contaminated, there are facilities to decontaminate them. In case of serious radiation injuries the victims can be treated in Moscow or in St. Petersburg. There are sufficient quantities of stable iodine for staff of the local clinics and for patients (but not for the whole population).

3.12. Keeping the public informed

Regarding requirements set out in [1] for keeping the public informed, the following appraisal criterion was investigated:

- Make arrangements for providing useful, timely, truthful and consistent information to the public, responding to incorrect information and rumors, responding to requests for information from the public and from the media.

3.12.1. Current situation

This is basically the responsibility of the designated public relations officer (Press Secretary) of any given ‘Emergency Situation Commission’.

In Murmansk, information management is the responsibility of the Governor's office. The press center is in the building of the Regional Government, it maintains a roster of journalists who are invited at the press conferences, regularly held in case of an emergency situation. Regional EMERCOM has also responsibilities, especially regarding the initial information and instructions towards the public.
The criterion is fully met.

3.13. Taking agricultural countermeasures against ingestion and longer term protective actions

Regarding requirements set out in [1] for taking agricultural countermeasures against ingestion and longer term protective actions the following appraisal criteria were investigated:

- Adopt national intervention and action levels for agricultural countermeasures;
- Make arrangements, concentrating on the use of existing capabilities, for taking effective agricultural countermeasures.

3.13.1. Current situation

Adopting national intervention and action levels for agricultural countermeasures

This criterion is fully met; the national intervention and action levels are in compliance with international recommendations.

Making arrangements, concentrating on the use of existing capabilities, for taking effective agricultural countermeasures

There is no information available on this topic. Nevertheless RF's representative on the Regional Coordination Meeting in Vienna, 2005, stated that this criterion was fully met.
Regarding conditions in the Kola Peninsula, the local agricultural activity is rather limited (milk, eggs, poultry, game, wild berries, mushrooms and fish). In case of emergency, effective countermeasures are planned to be introduced for the control of local foodstuffs.
This criterion can be considered as being met.

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

Regarding requirements set out in [1] for mitigating non-radiological consequences of the emergency and response, the following appraisal criterion was investigated:

- Make arrangements for responding to public concern in an actual or potential nuclear or radiological emergency.

3.14.1. Current situation

There is no information available on this topic. Nevertheless, RF's representative on the Regional Coordination Meeting in Vienna, 2005, stated that this criterion was fully met.

In the Region, the "Medicine of Catastrophe" organization has a brigade specialized in providing psychological counseling and support to the public in case of an emergency. The information strategy of the Governor's office also takes account of this issue and addresses it.
This criterion can be considered as being met.

3.15. Requirements for infrastructure

Regarding requirements set out in [1] for infrastructure, the following appraisal criteria were investigated:

- Develop emergency plans that are consistent with the threats and coordinated with all response organizations;
- Operating and response organizations shall develop procedures needed to perform their response functions;
- Provide, concentrating on the use of existing capabilities, adequate tools, instruments, supplies, equipment, communication systems, facilities and documentation;
- Identify facilities at which the following will be performed: (a) coordination of on-site response actions; (b) coordination of local off-site response actions (radiological and conventional); (c) coordination of national response actions; (d) coordination of public information; (e) coordination of off-site monitoring and assessment;
- Make arrangements, concentrating on the use of existing capabilities, for the selection of personnel and training;
- Conduct exercises and drills to ensure that all specified functions required to be performed for emergency response and all organizational interfaces for the facilities in threat categories I, II and III and the national level programmes for threat categories IV and V are tested at suitable intervals;
- Make arrangements to ensure the availability and reliability of all supplies, equipment, communication systems and facilities needed during an emergency.

3.15.1 Current situation

Developing emergency plans that are consistent with the threats and coordinated with all response organizations

An emergency plan is mandatory for the operator license. No license is issued without a proper facility emergency plan. The local government also has its own regional emergency plan. Procedures are developed for each activity area of responders.
This criterion is fully met.

Need to develop procedures for operating and response organizations to perform their response functions

This criterion is fully met; written procedures are necessary requirements of issuing the license.

Providing adequate tools, instruments, supplies, equipment, communication systems, facilities and documentation

Emergency response units of ROSATOM have proper tools, instruments, equipment, supplies, communication systems and documentation.

The NDEP-003 project largely contributed to the improvement of the infrastructure. Stationary and mobile monitoring systems, communication tools, evaluation and prognostic software are upgraded and made available to the various organizations involved in the response.

The criterion is met.

Identifying facilities at which the following will be performed: (a) coordination of on-site response actions; (b) coordination of local off-site response actions (radiological and conventional); (c) coordination of national response actions; (d) coordination of public information; (e) coordination of off-site monitoring and assessment

No information was available on this topic during the mission, but RF's presentation (Regional Coordination Meeting, Vienna, 2005) stated that this criterion was fully met. According to this statement, the following facilities are available:
(a) On-Site Emergency Management Commission room. (I - II category facilities have a shelter place);
(b) Local Emergency Management Commission room;
(c) Crisis Center of Rosenergoatom (for NPP accidents), Situation Crisis Center of ROSATOM;
(d) Public relations team/officer;
(e) If more than one agency involved - designated assessment group.

In Murmansk, the following facilities are available: (a) the facility's emergency room; (b) the integrated system (Regional Crisis Centre) consisting of the SCC of the government, the local EMERCOM, and the MDHEM (Hydromet, as a source of information); SCC of ROSATOM, Federal EMERCOM and Roshydromet; (d) regional government; (e) local branch of MDHEM (Hydromet).
This criterion can be considered as being met.

Making arrangements, concentrating on the use of existing capabilities, for the selection of personnel and training

No information was available on this topic during the mission. Russia's presentation (Regional Coordination Meeting, Vienna, 2005) stated that this criterion was fully met. ROSATOM has a good base for selecting and training personnel.
This criterion can be considered as being met.

Conducting exercises and drills to ensure that all specified functions required to be performed for emergency response and all organizational interfaces for the facilities in threat categories I, II and III and the national level programmes for the threat categories IV and V are tested at suitable intervals

Exercising and special job-related drills are part of the preparation for every dangerous operation involving nuclear fuel (emergency preparedness measures included). Each organization has a schedule for regular exercises. Larger scale field or table top exercises are organized occasionally based on a pre-defined schedule (at least once a year).
This criterion is fully met.

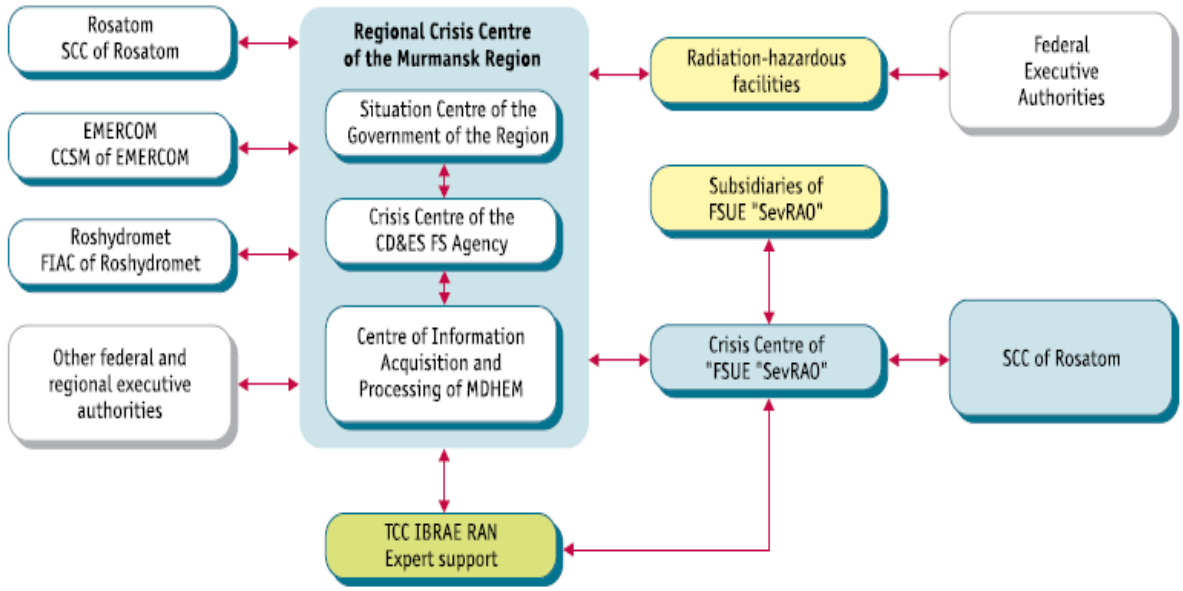
Making arrangements to ensure the availability and reliability of all supplies, equipment, communication systems and facilities needed during an emergency

Compliance with this requirement is ensured by the Quality Assurance system which is mandatory for the license. This is an ongoing activity, with varying actual levels of availability and quality of all supplies, equipment, communication systems and facilities. The NDEP-003 project provided a strong boost in this regard.
This criterion is fully met.

APPENDIX I – ORGANIZATION OF RESPONSE TO A RADIATION EMERGENCY AT REGIONAL LEVEL – FROM THE NDEP-003 PROJECT PERSPECTIVE

The Project is unmatched in Russia in terms of the covered territory, the number of radiation hazardous facilities and facilities participating in the international and Russian programs aimed at NS decommissioning and management of SNF and RW.

The implementation of the Project will provide Murmansk Region with an up-to-date systems of radiation monitoring, informational, analytical and real-time expert support of executive authorities in planning and implementation of adequate protection measures in case of radiation accidents.



Functional diagram of emergency response system of the Murmansk Region

The following organizations are participating in the Murmansk regional emergency response system:

At national level:

- ROSATOM: Situational and Crisis Centre (SCC) of ROSATOM;
- Federal EMERCOM Crisis Management Center (CCSM);
- Roshydromet (Federal Information Acquisition Centre of Roshydromet);
- Technical Crisis Center (TCC) of IBRAE RAN;
- Other federal and regional executive authorities;

At regional level:

- Situation Centre of the Government of the Region;
- Crisis Centre of the Civil Defense & Emergency Situation & Fire Safety Agency;
- Centre of Information Acquisition and Processing of Murmansk Department of Federal Service for Hydrometeorology and Environmental Monitoring (MDHEM);

At facility level:

- Radiation hazardous facilities of FSUE SevRAO;
- Crisis Centre of FSUE SevRAO.

APPENDIX II — MISSION TEAM COMPOSITION

Vladimir Kutkov	Senior Scientific Officer, Radiation Protection Specialist, Russian Research Center "Kurchatov Institute", Moscow, Russian Federation
Jakov Kenigsberg	Professor of Radiation Hygiene, National Commission of Radiation Protection under Council of Ministers, Minsk, Republic of Belarus
Peter Zombori	Team Leader, Emergency Response Specialist, International Atomic Energy Agency

APPENDIX III - TERMS OF REFERENCE

of an IAEA Emergency Preparedness and Response Review (EPREV) mission

to Murmansk Region (Russian Federation)

BACKGROUND:

The Northern Dimension Environmental Partnership Support Fund (NDEP) was established in 2002 to tackle major environmental challenges in north-west Russia. The NDEP Nuclear Window deals specifically with the legacy of the soviet fleet of nuclear submarines, ships and coastal maintenance bases. The NDEP Support Fund is managed by the European Bank for Reconstruction and Development (EBRD).

One of the urgent projects funded by the NDEP Nuclear Window is the enhancement of the radiation monitoring and emergency preparedness in the Murmansk region (the NDEP-003 project).

The main objective of the project is the modernization of an early warning system on sites where nuclear submarine decommissioning, SNF and RW management activities are to be undertaken within the NDEP. The objectives also encompass establishing the means to ensure an effective emergency response to manage emergencies and mitigate the consequences of these accidents in the Murmansk region.

An important goal of the project is also to ensure provisions for comprehensive information for the local population and authorities as well as for international public and authorities on the radio-ecological situation including accidental releases in the Murmansk region.

The Government of the Murmansk Region is the Grant Recipient and the Energy Safety Analysis Center of IBRAE RAN is the main Contractor (contract signed on 1 November 2005). The project is to be completed in December 2007.

Following the suggestion of EBRD, the Russian Authorities have requested an IAEA Emergency Preparedness review. EBRD fully supports this initiative and is convinced that important lessons can be learnt from this exercise.

It would be interesting to know how well the project fits into the overall system of emergency preparedness and response of the Russian Federation and if the project is sustainable and susceptible of evolution or need complement.

It is finally important to stress that the findings of the IAEA Mission will provide guidance to the NDEP Donors regarding a request from the ROSATOM to fund a similar system for the Arkhangelsk Region.

MISSION OBJECTIVES:

In general EPREV missions are organized on the request of the governments of Member States to make an independent appraisal of the country's preparedness capabilities to respond efficiently to any nuclear or radiological emergency. The focus is on the assessment of compliance of the available EPR system with the international standards, specifically with the recommendations of the IAEA Safety Standards Series document No. GS-R-2 ('Preparedness and Response for a Nuclear or Radiological Emergency', IAEA, Vienna, 2002). This can

cover the whole country's capabilities or can be limited to specific areas and aspects of emergency response.

In the current case the requested assessment is limited to the nuclear and radiological emergency preparedness of the Murmansk Region, with special regards to the situation prevailing as a legacy of the nuclear fleet operation and the intended decommissioning and cleanup of some of its affected sites. Consequently the specific objectives of the mission are as follows:

1. To provide an assessment of the region's capability to respond to possible nuclear and radiological emergencies taking into account the specific conditions of the Region. (This may also involve observing an exercise planned to be carried out during the EPREV mission.)

2. To assess the Region's capability to respond to nuclear and radiological emergencies at facilities during the planned future decommissioning and cleanup operations.

3. To assist the Region in the development of interim arrangements to promptly respond to a nuclear or radiological emergency. This will include suggested steps that can be taken immediately to better use existing response capabilities.

4. To provide a basis upon which the Region can develop a longer-term programme to enhance their ability to respond to nuclear and radiological emergencies.

In addition to the usual issues above which the IAEA normally assesses in similar missions, there is a strong interest in determining the level of compliance between the objectives of the NDEP-003 project and the relevant international requirements regarding response to nuclear and radiological emergencies.

SCOPE:

The mission will be carried out in accordance with the Guidelines developed for the EPREV services. As part of the methodology a questionnaire will be filled out, addressing the main issues and requirements of GS-R-2.

Emergency arrangements will be assessed at local and regional levels, specifically:

- Emergency management;
- Emergency preparedness;
- Low enforcement;
- Radiation protection;
- Medical response;
- Public information;
- Regional capability to support and provide training to local response teams.

Although the mission is related to the NDEP-003 project the mission's scope of activity will extend beyond the scope of the project in the sense that more general aspects (e.g. threat assessment, legal framework, assignment of responsibilities, functional and infrastructural requirements, training and exercises etc.) will also be addressed. The NDEP-003 project will be considered only regarding its impact on the emergency preparedness status in the Region. The detailed assessment of the project implementation will not be the task of the mission, however.

DATES: 15 - 26 October 2007

EPREV MISSION TEAM:

Peter ZOMBORI, IAEA (Co-ordinator);
Jakov KENIGSBERG, Belarus;
Vladimir KUTKOV, Russian Federation.

HOST:

Government of Murmansk Region (Murmansk);
ROSATOM (FSUE SevRAO).

COUNTERPARTS:

1. Government of Murmansk Region;
2. FSUE SevRAO;
3. IBRAE RAN;
4. FSUE ATOMFLOT;
5. FSUE NERPA;
6. EMERCOM-MR - State Authority for the Affairs of Civil Defense, Extraordinary Situations and Disaster Relief of Murmansk Region– the regional EMERCOM;
7. MB-EMERCOM - Murmansk Branch of Ministry of the Russian Federation for the Affairs of Civil Defense, Extraordinary Situations and Disaster Relief – the Federal EMERCOM
8. MDHEM (Murmansk Regional Department on Hydrometeorology and Environmental Monitoring);
9. Regional Medical and Sanitary Division No. 120 of Federal Medical and Biological Agency of the Ministry of Health;
10. Murmansk Territorial Centre for Medicine of Catastrophes;
11. Murmansk Branch of Federal Service for Supervision over Consumers Rights Protection and Human Welfare (MB-FSSCRPM).

Conduct of mission: This mission is intended to follow the basic concept of an EPREV mission (defined in the Guidelines), which is to review all aspects of the Region's arrangements to respond to a nuclear or radiological emergency. The review is to be based principally on the international requirements in GS-R-2 and supporting IAEA guidance contained in the document EPR-METHOD ('Method for Developing Arrangements for Response to a Nuclear or Radiological Emergency', IAEA, Vienna, 2003). The team members are also to provide suggestions based on their experience and good international practices. In order to focus the effort and to provide insights that will be of immediate practical value the mission will concentrate on: a) the ability to respond to a radiological emergency (threat category IV) that occurs in a specific jurisdiction (e.g. Murmansk city) and b) and the ability of specific facilities in threat categories I, II and III to respond. The findings from these reviews can then be generalized.

In addition, the members of the team will participate, as observers, in an exercise organized during the mission period to test local capabilities to respond to a nuclear or radiological emergency.

The mission will be composed of two teams of typically 2 members:

Local and facility response review and assistance team: This team will review the facility response organizations and the ability of first responders to promptly and effectively identify and respond to nuclear and radiological emergencies, including medical preparedness and response. The review will be conducted against the IAEA requirements (GS-R-2) and guidance contained in the EPR METHOD for threat categories I, II, III and IV. This will include reviews of the capabilities of local first responders (facility personnel, police, fire and medical) in the Murmansk Region.

Regional review and assistance team: This team will review the response of regional level organizations that initiate or support local response and the ability of facilities in threat categories I, II and III to respond to an emergency. The review will be conducted against the IAEA requirements (GS-R-2) and guidance contained in the EPR METHOD document for threat categories III and V. This will focus on the off-site arrangements and regional level preparedness for threats like a) nuclear powered warships and submarines, b) nuclear installations and activities in the region and in nearby countries, c) emergency due to malicious use of radioactive sources and some special concerns (possible orphaned sources). One of the goals will be to establish clearly the roles and responsibilities of the regional organizations and their means of coordination and command and controls in order to be a basis for the team's recommendations.

Output:

A formal report that provides the following for each of the "functional" and "infrastructure" requirements in GS-R-2:

- A general description of the existing situation;
- Suggestions of interim actions that should be taken to establish and/or improve the ability to respond in the near term. Suggestions would be based on good international practice and IAEA guidance;
- Recommendations of long term actions that should be taken to meet international requirements;
- Good practices.

LOGISTICS:

The Host will provide or arrange for during the mission:

- Local transportation for each team;
- The Host will identify counterparts for each technical area in emergency preparedness and response;
- Access to places relevant from the point of view of assessment of nuclear or radiological emergency preparedness (Zaozersk branch of FSUE SevRAO, FSUE ATOMFLOT, FSUE NERPA) following the procedures set by the Russian laws;
- A workroom during the mission for team members' discussions and preparation of technical notes;
- Access to international telephone lines, Internet, e-mail, a PC, projector, printer and copier;
- The Host will also assist in making hotel arrangements.

IAEA will assume costs of travel and accommodations for the experts participating in the mission. The IAEA will provide the Host with the credentials (document details) of the team members (passport copies etc.) 45 days in advance.

BRIEFING:

The Host will provide an overview briefing of the current situation (to include responsibilities, criteria etc.) concerning response to a nuclear or radiological emergency.

INTERVIEW/FACILITY ACCESS:

The Host will make arrangements and provide a schedule for the expert teams to interview officials of the following authorities and/or have access to the following facilities:

Local and facility response review and assistance team:

- Organizations responsible for the response to a nuclear or radiological emergency in the Murmansk Region should include, if possible, the followings (this could be accomplished at combined meetings):
  - Civil defense (fire fighters);
  - Medical (first responders).

- Facilities:
  - FSUE SevRAO (Zaozersk branch);
  - FSUE NERPA;
  - FSUE ATOMFLOT.

Regional review and assistance team

- Regional level authorities/facilities that would support the local response to a radiological emergency and address regional issues to include those responsible for (this could be accomplished at combined meetings):
  - Regional decision making (coordinated response) – Regional Commission on Emergencies;
  - Regional Crisis Center;
  - Nuclear Safety Institute of the Russian Academy of Sciences (IBRAE RAN);
  - Murmansk Department of Federal Service for Hydrometeorology and Environmental Monitoring (MDHEM);
  - Department for Civil Defence, Emergency Protection of Population and Fire Safety of Murmansk region.

SCHEDULE and TEAM ASSIGNMENTS

The following is a tentative schedule, to be discussed and modified, as necessary:

Date	Subject	
Day 1 15 October	**Arrival in Moscow**	
Day 2 16 October	**Visit and discussions in IBRAE RAN (Moscow)** Determining the detailed mission plan and the institutions to be considered for reviewing Traveling to Murmansk	
Day 3 17 October	**Plenary discussions with all participants (Murmansk, Regional Government office)** Review of the schedule, presentations by the IAEA team and the counterparts, adopting the visit plan, discussions on the legal framework, etc.	
Day 4 and 5 18-19 October	**Local and facility response review and assistance team** Meeting with local/facility radiological emergency response officials (Zaozersk branch of FSUE SevRAO, FSUE ATOMFLOT, FSUE NERPA)	**National review and assistance team** Meeting with the representatives of regional organizations (Government of Murmansk Region, EMERCOM-MR, MDHEM, MB-FSSCRPM, medical organizations)
Day 6 and 7 22-23 October	**Local and facility response review and assistance team** Meeting with local/facility radiological emergency response officials (cont'd)	**National review and assistance team** Meeting with regional organizations (cont'd)
Day 8 24 October	Participation in the exercises	
Day 9 25 October	Exercise-related discussions (evaluation) **ALL** General Meeting with all response organization – address on high priority issues (possibly in 2 groups)	
Day 10 26 October	**Final Meeting**: IAEA team and local host discuss report and findings – addressing unresolved issues **Departure**	

DOCUMENTS:
The country will make available to the mission laws or decrees and International Instruments adhered to by the country (if possible in English; IAEA could provide for the translation costs) relative to:

- Radiation Safety/Nuclear Energy

The IAEA will provide the country with relevant safety standards and guidelines (also available on IAEA homepage):

- Method for developing arrangements for response to a nuclear or radiological emergency, IAEA, Vienna 2003 (EPR METHOD).
- Preparedness and Response for a Nuclear or Radiological Emergency', IAEA, Vienna, 2002 (GS-R-2).

Briefing Pack for EPREV Team

Document	Responsibility
List and description of individual organizations taking part in the emergency preparedness and response	Host
List of legislation in the area of emergency planning in Russian together with the available English translation	Host
Mission reports (RaSSIA,…)	Host
Past emergency reports	Host
Nuclear Country Profile	IAEA
General Country Profile	IAEA
Customs, holidays, working hours	Host

Documents to be handed over to IAEA coordinator one month before the EPREV mission.

REPORT CONFIDENTIALITY:

Any technical notes or other information that identify vulnerabilities will be treated as confidential information according to the IAEA's confidentiality regime.

REFERENCES

[1] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANISATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS OFFICE FOR THE COORDINATION OF HUMANITARIAN AFFAIRS, WORLD HEALTH ORGANIZATION, Preparedness and Response for a Nuclear or Radiological Emergency, Safety Standards Series No. GS-R-2, IAEA, Vienna (2002).

[2] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANISATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS OFFICE FOR THE COORDINATION OF HUMANITARIAN AFFAIRS, WORLD HEALTH ORGANIZATION, International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources, Safety Series No. 115. IAEA, Vienna. (1996)

[3] INTERNATIONAL ATOMIC ENERGY AGENCY, Method for Developing Arrangements for Response to a Nuclear or Radiological Emergency, EPR-METHOD, IAEA (2003).

[4] INTERNATIONAL ATOMIC ENERGY AGENCY, Manual for First Responders to a Radiological Emergency, EPR-FIRST RESPONDERS 2006, IAEA, Vienna (2006).

[5] R.F. MPH Sanitary Regulations of Radioactive Waste Management (SPORO-2002): Sanitary Regulations SP-2.6.6.1168-02.-M., Ministry of Health of Russia (2002) (in Russian).

[6] INTERNATIONAL ATOMIC ENERGY AGENCY, Classification of Radioactive Waste, Safety Series No. F-111-G-1.1. IAEA, Vienna (1994).

[7] R.F. MPH Basic Sanitary Regulations of Radiation Safety Assurance (OSPORB-99). Sanitary Regulations SP-2.6.1.799-99. Russian Ministry of Public Health, Moscow (1999) (in Russian).

[8] R.F. MPH Radiation safety norms (NRB-99): Hygienic Regulations SP-2.6.1.758-99. Russian Ministry of Public Health, Moscow (1999) (in Russian).

GLOSSARY

arrangements (for emergency response): The integrated set of infrastructure elements necessary to provide the capability for performing a specified function or task required in response to a nuclear or radiological emergency. These elements may include authorities and responsibilities, organization, coordination, personnel, plans, procedures, facilities, equipment or training.

dangerous source: A source that could, if not under control, give rise to exposure sufficient to cause severe deterministic health effects. This categorization is used for determining the need for emergency response arrangements and is not to be confused with categorizations of sources for other purposes.

deterministic effect: A health effect of radiation for which a threshold level of dose generally exists above which the severity of the effect is greater for a higher dose. Such an effect is described as a 'severe deterministic effect' if it is fatal or life threatening or results in a permanent injury that reduces quality of life.

emergency: A non-routine situation or event that necessitates prompt action primarily to mitigate a hazard or adverse consequences for human health and safety, quality of life, property or the environment. This includes nuclear or radiological emergencies and conventional emergencies such as fires, release of hazardous chemicals, storms or earthquakes. It includes situations for which prompt action is warranted to mitigate the effects of a perceived hazard.

emergency action level (EAL): A specific, predetermined, observable criterion used to detect, recognize and determine the emergency class.

emergency class: A set of conditions that warrant a similar immediate emergency response. The term used for communicating to the response organizations and the public the level of response needed. The events that belong to a given emergency class are defined by criteria specific to the installation, source or practice, which if, exceeded indicate classification at the prescribed level. For each emergency class, the initial actions of the response organizations are predefined.

emergency classification: The process whereby an authorized official classifies an emergency in order to declare the applicable level of emergency class. Upon declaration of the emergency class, the response organizations initiate the predefined response actions for that emergency class.

emergency plan: A description of the objectives, policy and concept of operations for the response to an emergency and of the structure, authorities and responsibilities for a systematic, co-coordinated and effective response. The emergency plan serves as the basis for the development of other plans, procedures and checklists.

(emergency) preparedness: The capability to take action that will effectively mitigate the consequences of an emergency for human health, safety, quality of life, property and the environment.

emergency procedures: A set of instructions describing in detail actions to be taken by response personnel in an emergency.

(emergency) response: The performance of actions to mitigate the consequences of an emergency on human health and safety, quality of life, property and the environment. It may also provide a basis for the resumption of normal social and economic activity.

emergency services: The local off-site response organizations that are generally available and that perform emergency response functions. These may include police, fire and rescue brigades, ambulance services, and control teams for hazardous materials.

emergency worker: A worker who may be exposed in excess of occupational dose limits while performing actions to mitigate the consequences of an emergency for human health and safety, quality of life, property and the environment.

emergency zones: The precautionary action zone and/or urgent protective action planning zone.

exposure: The act or condition of being subject to irradiation. Exposure can be either external exposure (irradiation by sources outside the body) or internal exposure (due to a source within the body).

first responders: The first members of an emergency service to respond at the scene of an emergency.

generic intervention level: The level of avertable dose at which a specific protective action is taken in an emergency or situation of chronic exposure.

generic action level: The concentration (Bq/g) of specific isotopes in food or water at which consumption should be restricted if replacement food or water is available.

initial phase: The period of time from the detection of conditions warranting the implementation of response actions that must be taken promptly in order to be effective until those actions have been completed. These actions include taking mitigatory actions by the operator and urgent protective actions on- and off-site.

intervention: Any action intended to reduce or avert exposure or the likelihood of exposure to sources which are not part of a controlled practice or which are out of control as a consequence of an accident.

intervention level: The level of avertable dose at which a specific protective action is taken in an emergency or situation of chronic exposure.

longer term protective action: A protective action, which is not an urgent protective action. Such protective actions are likely to be prolonged over weeks, months or years. These include measures such as relocation, agricultural countermeasures and remedial actions.

non-radiological consequences: Effects on humans or the environment that are not deterministic or stochastic effects. These include effects on health or the quality of life resulting from psychological, social or economic consequences of the emergency or the response to the emergency.

notification:

1. A report submitted to a national or international authority providing details of an emergency or potential emergency, for example as required by the Convention on Early Notification of a Nuclear Accident;
2. A set of actions taken upon detection of emergency conditions with the purpose of alerting all organizations with responsibility for taking emergency response actions in the event of such conditions.

notification point: A designated organization with which arrangements have been made to receive notification (see *notification*, *2.*) and to promptly initiate predetermined actions to activate part of the emergency response.

nuclear or radiological emergency: An emergency in which there is, or is perceived to be a hazard due to:

- The energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction; or
- Radiation exposure.

off-site: Outside the site area.

on-site: Within the site area.

operational intervention level (OIL): A calculated level, measured by instruments or determined by laboratory analysis that corresponds to an intervention or action level. OILs are typically expressed in terms of dose rates or activity of radioactive material released, time integrated air concentrations, ground or surface concentrations, or activity concentrations of radionuclides in environmental, food or water samples. An OIL is a type of action level that is used immediately and directly (without further assessment) to determine the appropriate protective actions on the basis of an environmental measurement.

operator (or operating organization): Any organization or person applying for authorization or authorized and/or responsible for nuclear, radiation, radioactive waste or transport safety when undertaking activities or in relation to any nuclear facilities or sources of ionizing radiation. This includes private individuals, governmental bodies, consignors or carriers, licensees, hospitals, and self-employed persons. This also includes those who are either directly in control of a facility or an activity during use (such as radiographers or carriers) or, in the case of a source not under control (such as a lost or illicitly removed or a re-entering satellite), those who were responsible for the source before control was lost over it

practice: Any human activity that introduces additional sources of exposure or exposure pathways or extends exposure to additional people or modifies the network of exposure pathways from existing sources, so as to increase the exposure or the likelihood of exposure of people or the number of people exposed.

precautionary action zone: An area around a facility for which arrangements have been made to take urgent protective actions in the event of a nuclear or radiological emergency to reduce the risk of severe deterministic health effects off-site. Protective actions within this area are to be taken before or shortly after a release of radioactive material or exposure on the basis of the prevailing conditions at the facility (EALs).

protective action: An intervention intended to avoid or reduce doses to members of the public in emergencies or situations of chronic exposure.

radiation emergency: A nuclear or radiological emergency.

radiological emergency: An emergency involving an actual or perceived risk from activities that could give rise to a nuclear or radiological emergency at an unforeseeable location. These include non-authorized activities such as activities relating to dangerous sources obtained illicitly. They also include transport and authorized activities involving dangerous mobile sources such as industrial radiography sources, radio thermal generators or nuclear powered satellites.

radiological dispersal device (RDD): A device constructed by terrorists to spread radioactive materials using conventional explosives or other means.

regulatory body: An authority or system of authorities designated by the government of a State as having legal authority for conducting the regulatory process, including issuing authorizations and thereby regulating nuclear, radiation, radioactive waste and transport safety.

response organization: An organization designated or otherwise recognized by a State as being responsible for managing or implementing any aspect of a response.

significant transboundary release: A release of radioactive material to the environment that may result in doses or levels of contamination beyond national borders from the release which exceed international intervention levels or action levels for protective actions, including food restrictions and restrictions on commerce.

site area: A geographical area that contains an authorized facility, activity or source, within which the management of the authorized facility or activity may directly initiate emergency actions. This is typically the area within the security perimeter fence or other designated property marker. It may also be the controlled area around a radiography source or a cordoned off area established by first responders around a suspected hazard.

source: Anything that may cause radiation exposure — such as by emitting ionizing radiation or by releasing radioactive substances or materials — and can be treated as a single entity for protection and safety purposes. For example, materials emitting radon are sources in the environment, a sterilization gamma irradiation unit is a source for the practice of radiation preservation of food, an X-ray unit may be a source for the practice of radio diagnosis; a nuclear power plant is part of the practice of generating electricity by nuclear fission, and may be regarded as a source (e.g. with respect to discharges to the environment) or as a collection of sources (e.g. for occupational radiation protection purposes). A complex or multiple installation situated at one location or site may, as appropriate, be considered a single source for the purpose of application of international safety standards.

stochastic effect (of radiation): A radiation induced health effect, where the probability of occurrence is greater from a higher radiation dose and the severity of which (if it occurs) is independent of dose. Stochastic effects may be somatic effects or hereditary effects, and generally occur without a threshold level of dose. Examples include thyroid cancer and leukemia.

threat assessment: The process of systematically analyzing hazards associated with facilities, activities or sources within or beyond the borders of a State in order to identify:

1. Those events and associated areas for which protective actions and emergency countermeasures may be required within the State; and
2. The actions that would be effective in mitigating the consequences of such events.

transnational emergency: A nuclear or radiological emergency of actual, potential or perceived radiological significance for more than one State. This includes:

1. A significant transboundary release of radioactive material (however a transnational emergency dose not necessarily imply a significant transboundary release or radioactive material);
2. A general emergency at a facility or other event that could result in a significant transboundary release (atmospheric or aquatic) of radioactive material;
3. A discovery of loss or illicit removal of a dangerous source that has been transported across or is suspected of having been transported across a national border;
4. An emergency resulting in significant disruption to international trade or travel;
5. An emergency warranting the taking of protective actions for foreign nationals or embassies in the State in which it occurs;
6. An emergency resulting in or potentially resulting in severe deterministic health effects and involving a fault and/or problem (such as in equipment or software) that could have implications for safety internationally;
7. An emergency resulting in or potentially resulting in great concern among the population of more than one State owing to the actual or perceived radiological hazard.

urgent protective action: A protective action that, in the event of an emergency, must be taken promptly (normally within hours) in order to be effective, and the effectiveness of which will be markedly reduced if it is delayed. The most commonly considered urgent protective actions in a nuclear or radiological emergency are evacuation, decontamination of individuals, sheltering, respiratory protection, iodine prophylaxis, and restriction of the consumption of potentially contaminated foodstuffs.

urgent protective action planning zone: An area around a facility for which arrangements have been made to take urgent protective actions in the event of a nuclear or radiological emergency to avert doses off-site in accordance with international standards. Protective actions within this area are to be taken on the basis of environmental monitoring — or, as appropriate, prevailing conditions at the facility.

ABBREVIATIONS

ARMS	Automatic Radiation Monitoring System
BSS	International Basic Safety Standards
CATF	Closed Administrative and Territorial Formation
EBRD	European Bank for Reconstruction and Development
EMERCOM	Ministry of the Russian Federation for the Affairs of Civil Defense, Extraordinary Situations and Disaster Relief
EMERCOM-MR	State Authority for the Affairs of Civil Defense, Extraordinary Situations and Disaster Relief of Murmansk Region– the regional EMERCOM
EPREV	emergency preparedness review
FSUE	Federal State Unitary Enterprise
GIL	generic intervention level
IAEA	International Atomic Energy Agency
IAEA TECDOC	Publication of the IAEA series of Technical documents
IBRAE RAN	Nuclear Safety Institute of the Russian Academy of Sciences
MB-FSSCRPM	Murmansk Branch of Federal Service for Supervision over Consumers Rights Protection and Human Welfare
MB-EMERCOM	Murmansk Branch of Ministry of the Russian Federation for the Affairs of Civil Defense, Extraordinary Situations and Disaster Relief – the Federal EMERCOM
MDHEM	Murmansk Department of Federal Service for Hydrometeorology and Environmental Monitoring
OSPORB-99	Basic Sanitary Rules for Ensuring Radiation Safety
NDEP	Northern Dimension Environmental Partnership Support Fund
NPP	nuclear power plant
NRB-99	Radiation Safety Standards
OIL	operational intervention level
Region	Murmansk Region
RF	The Russian Federation
RSDMS	Russian State Disaster Management System
RTG	Radioisotope Thermoelectric Generator
RW	radioactive waste
SevRAO	Northern Federal Facility for Radioactive Waste Management
SNF	spent nuclear fuel
SRY	Ship Repair Yard
ToR	Terms of Reference
TUK	shipping packing container

ANNEX 1 — MATERIAL REGARDING DISTRIBUTION OF JURISDICTION BETWEEN FEDERAL AND REGIONAL AUTHORITIES IN THE RUSSIAN FEDERATION

CONSTITUTION OF THE RUSSIAN FEDERATION

The Constitution of the Russian Federation (was Adopted at National Voting on December 12, 1993)
The Constitution came into force on the day of its official publication.
The text of the Constitution was published in Rossiiskaya Gazeta newspaper as of December 25, 1993.
English translation - "Garant-Service"

Chapter 3. The Federal Structure

Article 65

1. The Russian Federation includes the following administrative areas:

the Republic of Adygeya (Adygeya), the Republic of Altai, the Republic of Bashkortostan, the Republic of Buryatia, the Republic of Daghestan, the Republic of Ingushetia, the Kabardino-Balkarian Republic, the Republic of Kalmykia, the Karachayevo-Circassian Republic, the Republic of Karelia, the Komi Republic, the Republic of Marii El, the Republic of Mordovia, the Republic of Sakha (Yakutia), the Republic of North Ossetia - Alania, the Republic of Tatarstan (Tatarstan), the Republic of Tuva, the Udmurtian Republic, the Republic of Khakassia, the Chechen Republic, the Chuvash Republic - Chuvashia;

the Altai Territory, the Krasnodar Territory, the Krasnoyarsk Territory, the Primorie Territory, the Stavropol Territory, the Khabarovsk Territory;

the Amur Region, the Archangelsk Region, the Astrakhan Region, the Belgorod Region, the Bryansk Region, the Vladimir Region, the Volgograd Region, the Vologda Region, the Voronezh Region, the Ivanovo Region, the Irkutsk Region, the Kaliningrad Region, the Kaluga Region, the Kamchatka Region, the Kemerovo Region, the Kirov Region, the Kostroma Region, the Kurgan Region, the Kursk Region, the Leningrad Region, the Lipetsk Region, the Magadan Region, the Moscow Region, **the Murmansk Region**, the Nizhni Novgorod Region, the Novgorod Region, the Novosibirsk Region, the Omsk Region, the Orenburg Region, the Orel Region, the Penza Region, the Perm Region, the Pskov Region, the Rostov Region, the Ryazan Region, the Samara Region, the Saratov Region, the Sakhalin Region, the Sverdlovsk Region, the Smolensk Region, the Tambov Region, the Tver Region, the Tomsk Region, the Tula Region, the Tyumen Region, the Ulyanovsk Region, the Chelyabinsk Region, the Chita Region, the Yaroslavl Region;

Moscow, St. Petersburg - cities of federal importance;

the Jewish Autonomous Region;

the Aginsk Buryat Autonomous Area, the Komi-Permyak Autonomous Area, the Koryak Autonomous Area, the Nenets Autonomous Area, the Taimyr (Dolgano-Nenets) Autonomous Area, the Ust-Ordyn Buryat Autonomous Area, the Khanty-Mansi Autonomous Area - Ugra, the Chukotka Autonomous Area, the Evenki Autonomous Area, the Yamalo-Nents Autonomous Area.

2. The admission to the Russian Federation and the creation in it of a new administrative area shall be carried out according to the rules established by the federal constitutional law.

Article 71

The jurisdiction of the Russian Federation includes:

a. adoption and amending of the Constitution of the Russian Federation and federal laws, control over their observance;
b. federal structure and the territory of the Russian Federation;
c. regulation and protection of the rights and freedoms of man and citizen; citizenship in the Russian Federation, regulation and protection of the rights of national minorities;
d. establishment of the system of federal bodies of legislative, executive and judicial authority, the rules of their organization and activities, formation of federal bodies of state authority;
e. federal state property and its management;
f. establishment of the principles of federal policy and federal programmes in the sphere of state, economic, ecological, social, cultural and national development of the Russian Federation;
g. establishment of legal groups for a single market; financial, currency, credit, and customs regulation, money issue, the principles of pricing policy; federal economic services, including federal banks;
h. federal budget, federal taxes and dues, federal funds of regional development;
i. federal power systems, **nuclear power-engineering, fission materials,** federal transport, railways, information and communication, outer space activities;
j. foreign policy and international relations of the Russian Federation, international treaties and agreements of the Russian Federation, issues of war and peace;
k. foreign economic relations of the Russian Federation;
l. **defence and security; military production**; determination of rules of selling and purchasing weapons, ammunition, **military equipment and other military property; production of poisonous substances**, narcotic substances and rules of their use;
m. determination of the status and protection of the state border, territorial sea, air space, exclusive economic zone and continental shelf of the expenditures;
n. judicial system, procurator's office, criminal, criminal procedure and criminal-executive legislation, amnesty and pardoning , civil, civil procedure and arbitration procedure legislation, legal regulation of intellectual property;
o. federal law of conflict of laws;
p. **meteorological service, standards**, metric system, horometry accounting, geodesy and cartography, names of geographical units, official statistics and accounting;
q. state awards and honourary titles of the Russian Federation;
r. federal state service.

Article 72

1. The joint jurisdiction of the Russian Federation and the administrative areas of the Russian Federation includes:

a. providing for the correspondence of the constitutions and laws of the Republics, the charters and other normative legal acts of the territories, regions, cities of federal importance, autonomous regions or autonomous areas to the Constitution of the Russian Federation and the federal laws;
b. protection of the rights and freedoms of man and citizen; protection of the rights of national minorities; ensuring the rule of law, law and order, public security, border zone regime;

c. issues of possession, use and disposal of land, subsoil, water and other natural resources;
d. delimitation of state property;
e. nature utilization, protection of the environment and ensuring ecological safety; specially protected natural territories, protection of historical and cultural monuments;
f. general issues of upbringing, education, science, culture, physical culture and sports;
g. coordination of issues of health care; protection of the family, maternity, paternity and childhood; social protection, including social security;
h. **carrying out measures against catastrophes, natural calamities, epidemics, elimination of their aftermath**;
i. establishment of common principles of taxation and dues in the Russian Federation;
j. administrative, administrative procedure, labour, family, housing, land, water, and forest legislation; legislation on subsoil and environmental protection;
k. personnel of the judicial and law enforcement agencies; the Bar, notaryship;
l. protection of traditional living habitat and of traditional way of life of small ethnic communities;
m. establishment of common principles of organization of the system of bodies of state authority and local self-government;
n. coordination of international and foreign economic relations of the administrative areas of the Russian Federation, fulfillment of international treaties and agreements of the Russian Federation.

2. Provisions of this Article shall be equally valid for the Republics, territories, regions, cities of federal importance, autonomous regions or autonomous areas.

Article 73

Outside the limits of authority of the Russian Federation and the powers of the Russian Federation on issues under joint jurisdiction of the Russian Federation and the administrative areas of the Russian Federation, the administrative areas of the Russian Federation shall possess full state power.