



**INTEGRATED
REGULATORY
REVIEW SERVICE
(IRRS)
FOLLOW-UP
TO
UKRAINE**

Kiev, Ukraine

22 to 26 November 2010



DEPARTMENT OF NUCLEAR SAFETY AND SECURITY



INTEGRATED REGULATORY REVIEW SERVICE IRRS

Under the terms of Article III of its statute, the International Atomic Energy Agency (IAEA) has the mandate to establish or adopt, in consultation and, where appropriate, in collaboration with competent organizations, standards of safety for protection of health and minimization of danger to life and property (including such standards for labour conditions), and to provide for the application of these standards to its own operations as well as to assisted operations and, at the request of the parties, to operations under bilateral or multilateral arrangements or, at the request of a State, to any of that State's activities concerning peaceful nuclear and radiation activities. This includes the publication of a set of Safety Standards, whose effective implementation is essential for ensuring a high level of safety. As part of its providing for the application of safety standards, the IAEA provides Safety Review and Appraisal Services, at the request of Member States, which are directly based on its Safety Standards.

In the regulatory framework and activities of the regulatory bodies, the IAEA has been offering, for many years, several peer review and appraisal services. These include: (a) the International Regulatory Review Team (IRRT) programme that provides advice and assistance to Member States to strengthen and enhance the effectiveness of their legal and governmental infrastructure for nuclear safety; (b) the Radiation Safety and Security Infrastructure Appraisal (RaSSIA) that assesses the effectiveness of the national regulatory infrastructure for radiation safety including the safety and security of radioactive sources; (c) the Transport Safety Appraisal Service (TranSAS) that appraises the implementation of the IAEA's Transport Regulations; (d) the Emergency Preparedness Review (EPREV) that is conducted to review both preparedness in the case of nuclear accidents and radiological emergencies and the appropriate legislation; and (e) the International Physical Protection Advisory Service (IPPAS) that is conducted to review the effectiveness of State systems of physical protection and to provide advice and assistance to strengthen and enhance these systems.

The IAEA recognized that these services and appraisals had many areas in common, particularly concerning the requirements on a State to establish a comprehensive regulatory framework within its legal and governmental infrastructure and on a State's regulatory activities. Consequently, the IAEA's Department of Nuclear Safety and Security has developed an integrated approach to the conduct of missions on legal and governmental infrastructure to improve their efficiency, effectiveness and consistency and to provide greater flexibility in defining the scope of the review, taking into account the regulatory technical and policy issues.

The new IAEA peer review and appraisal service is called the Integrated Regulatory Review Service (IRRS). The IRRS is intended to strengthen and enhance the effectiveness of the State's regulatory infrastructure in nuclear, radiation, radioactive waste, transport safety and nuclear security, whilst recognizing the ultimate responsibility of each State to ensure the safety of nuclear facilities, the protection against ionizing radiation, the safety of radioactive sources, the safe management of radioactive waste, the safe transport of radioactive material and nuclear security. The IRRS is carried out by comparisons against IAEA regulatory safety standards and against international legal instruments and IAEA guidance on nuclear security with consideration of regulatory technical and policy issues.

The new regulatory service is structured in modules that cover general requirements for the establishment of an effective regulatory framework, regulatory activities and management systems for the regulation and control in nuclear safety, radiation safety, waste safety, transport safety, emergency preparedness and response and nuclear security. The aim is to make the IAEA services more consistent, to enable flexibility in defining the scope of the missions, to promote self-assessment and continuous self-improvement, and to improve the feedback on the use and application of the IAEA Safety Standards. The modular structure also enables tailoring the service to meet the needs and priorities of the Member State. The IRRS is neither an inspection nor an audit but is a mutual learning mechanism that accepts different approaches to the organization and practices of a national regulatory body, considering the regulatory technical and policy issues, and that contributes to ensuring a strong nuclear safety regime. In this context, considering the international regulatory issues, trends and challenges, and to support effective regulation, the IRRS missions provide:

- a balance between technical and policy discussions among senior regulators;
- sharing of regulatory experiences;
- harmonization of the regulatory approaches among Member States; and
- mutual learning opportunities among regulators.

Regulatory technical and policy discussions that are conducted during IRRS missions take into account the newly identified issues coming from the self-assessment made by the host organization, visits to installations to observe inspections and interviews with the counterparts.

Other legally non-binding instruments can also be included upon request of the Member States, such as the Code of Conduct (CoC) on the Safety and Security of Radioactive Sources, which was adopted by the IAEA Board of Governors in 2004 and for which more than 85 Member States have written to the Director General of the IAEA committing themselves to implementing its guidance, and the Code of Conduct on the Safety of Research Reactors, which was adopted by the IAEA Board of Governors in 2005.

The IRRS concept was developed at the IAEA Department of Nuclear Safety and Security and then discussed at the 3rd review meeting of the Contracting Parties of the Convention on Nuclear Safety in 2005. The meeting acknowledged the importance of the IAEA regulatory peer reviews now recognized as a good opportunity to exchange professional experience and to share lessons learned and good practices. The self-assessment performed prior to the IAEA peer review mission is an opportunity for Member States to assess their regulatory practices against the IAEA safety standards. These IAEA peer review benefits were further discussed at the International Conference on 'Effective Nuclear Regulatory Systems' in Moscow in 2006, at which note was taken of the value of IRRS support for the development of the global nuclear safety regime, by providing for the sharing of good regulatory practices and policies for the development and harmonization of safety standards, and by supporting the application of the continuous improvement process. All findings coming from the Convention on Nuclear Safety review meetings and from the Moscow conference are inputs for the IRRS to consider when reviewing the regulatory technical and policy issues.

The first IRRS missions were held in Romania and the United Kingdom in 2006. The first full scope mission was held in November 2006 in France. In March 2007, the French Nuclear Safety Authority (ASN) organized an international workshop in Paris, France, to disseminate the lessons learned from the first full scope IRRS mission, to share experiences from the 2006 missions and to provide information to Member States interested in availing of this service. The workshop, which was attended by more than 100 participants representing 35 countries, emphasized the importance of IRRS missions as a key tool in enhancing the effectiveness of a regulatory body and noted that

such IRRS missions have begun a positive process for nuclear and radiation safety throughout the world.

In addition, the results of the IRRS missions will also be used as effective feedback for the improvement of existing safety standards and security guidance and the development of new ones, and to establish a knowledge base in the context of an integrated safety approach. Through the IRRS, the IAEA assists its Member States in strengthening an effective and sustainable national regulatory infrastructure thus contributing towards achieving a strong and effective global nuclear safety and security regime.

The Global Nuclear Safety Regime has emerged over the last ten years, with international legal instruments such as safety Conventions and Codes of Conduct and significant work towards a suite of harmonized and internationally accepted IAEA safety standards. The IAEA will continue to support the promotion of the safety and security Conventions and Codes of Conduct, as well as the application of the IAEA safety standards and security guidance in order to prevent serious accidents and continuously improve global levels of safety.



REPORT

**INTEGRATED REGULATORY REVIEW SERVICE (IRRS)
FOLLOW-UP**

**REPORT TO
THE GOVERNMENT OF UKRAINE**

**Kiev, Ukraine
22 to 26 November 2010**





REPORT

INTEGRATED REGULATORY REVIEW SERVICE (IRRS)

FOLLOW-UP

REPORT TO

THE GOVERNMENT OF UKRAINE

Kiev, Ukraine

Mission date: 22 to 26 November 2010

Regulatory body: State Nuclear Regulatory Committee of Ukraine (SNRCU)

Location: SNRCU Headquarters, Kiev, Ukraine

Regulated facilities and practices: Nuclear power plants, research reactors, fuel cycle facilities, medical and industrial sources, waste management facilities, decommissioning, transport of radioactive materials, communication and public information.

Organized by: International Atomic Energy Agency (IAEA)

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IAEA-2010

Issue date: 2011-08-31

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

CONTENTS

EXECUTIVE SUMMARY	1
I. INTRODUCTION	4
II. OBJECTIVE AND SCOPE	5
III. BASIS FOR THE REVIEW	6
1. LEGISLATIVE AND GOVERNMENTAL RESPONSIBILITIES	8
1.1. GENERAL.....	8
1.2. LEGISLATIVE	8
2. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY	15
3. ORGANIZATION OF THE REGULATORY BODY	17
3.1. STAFFING AND TRAINING.....	17
4. ACTIVITIES OF THE REGULATORY BODY	20
4.1. AUTHORIZATION.....	20
4.2. REVIEW AND ASSESSMENT.....	27
4.3. DEVELOPMENT OF REGULATIONS AND GUIDES	28
4.4. INSPECTION AND ENFORCEMENT	29
5. TRANSPORT OF RADIOACTIVE MATERIAL	33
5.1. LEGISLATIVE AND GOVERNMENTAL RESPONSIBILITIES.....	33
6. EMERGENCY PREPAREDNESS	34
6.1. GENERAL REQUIREMENTS	34
6.2. FUNCTIONAL REQUIREMENTS	35
7. RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING	38
7.1. NATIONAL WASTE MANAGEMENT POLICY AND STRATEGY.....	38
7.2. GENERAL SAFETY PROVISIONS FOR RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING	40
7.3. CLEARANCE REGIME FOR RADIOACTIVE WASTE AND DISCHARGE OF RADIOACTIVE MATERIALS.....	41
7.4. NEAR-SURFACE DISPOSAL OF RADIOACTIVE WASTE	42
7.5. GEOLOGICAL DISPOSAL OF RADIOACTIVE WASTE	43
7.6. DECOMMISSIONING OF NUCLEAR AND OTHER FACILITIES CONTAINING RADIOACTIVE MATERIALS.....	44
8. MANAGEMENT SYSTEM	46
POLICY DISCUSSIONS	48
APPENDIX I – LIST OF PARTICIPANTS	53
APPENDIX II – MISSION PROGRAMME	54
APPENDIX III – MISSION COUNTERPARTS	56
APPENDIX IV – RECOMMENDATIONS / SUGGESTIONS / GOOD PRACTICES OF THE IRRS UKRAINE 2010 FOLLOW-UP MISSION	58
APPENDIX V – REFERENCE MATERIAL PROVIDED BY SNRCU	59
APPENDIX VI – IAEA REFERENCE MATERIAL USED FOR THE REVIEW	61
APPENDIX VII – SNRCU ORGANIZATIONAL CHART	63

EXECUTIVE SUMMARY

At the request of the Government of Ukraine, an international team of experts visited the State Nuclear Regulatory Committee of Ukraine (SNRCU) from 9 to 20 June 2008 to conduct an Integrated Regulatory Review Service (IRRS) mission. The SNRCU is the competent authority in matters pertaining to nuclear safety and radiation protection in Ukraine. The mission was conducted under the auspices of the EC-IAEA-Ukraine Joint Project on Safety Evaluation of Ukrainian Nuclear Power Plants. The purpose of the mission was to conduct a review against IAEA safety standards of the Ukraine national governmental and regulatory infrastructure for nuclear and radiation safety.

In September 2009 the Government of Ukraine requested a follow-up mission to review measures undertaken by Ukraine to address the recommendations and suggestions arising from the June 2008 IRRS mission. The follow-up mission was conducted under the auspices of IAEA Technical Cooperation (TC) national project UKR/9/028 on strengthening nuclear and radiation safety infrastructure. The scope of the IRRS follow-up mission covered the regulatory aspects of the facilities and practices regulated by SNRCU, including nuclear power plants, medical practices, waste facilities, decommissioning, transport of radioactive materials, emergency preparedness and public information. In addition, there were policy discussions covering assignment of responsibilities between SNRCU and other regulators and SNRCU feedback on their experience of self-assessment against the requirements contained in the IAEA Standard ‘Governmental, Legal and Regulatory Framework for Safety’ (GSR Part 1).

The follow-up review was conducted from 22nd to 26th November by an IRRS team comprising eight senior regulatory experts from six Member States, one observer from the European Commission (EC), two IAEA staff members and an IAEA administrative assistant.

Prior to the mission, SNRCU provided the IRRS Review Team with supporting information and documentation as advance reference material (ARM). Amongst other documentation, the ARM included a status report of actions so far undertaken further to the 2008 IRRS and a comprehensive self-assessment against the new GSR Part 1 and other relevant Standards, made using the IAEA self-assessment tool (SAT).

The IRRS follow-up mission included a series of interviews and discussions with key personnel at SNRCU, the Office of the Deputy Prime Minister, Ministry of Health (MH) and Ministry for Emergency Situations and the State Scientific and Technical Centre, Nuclear and Radiation Safety (SSTC NRS).

Following the 2008 IRRS SNRCU established an action plan for all recommendations and suggestions arising from the mission. In October 2008 this action plan was approved by an Order of the Cabinet of Ministers of Ukraine which requires cooperation among the central executive authorities in the implementation of the action plan. SNRCU is well advanced in the execution of this action plan. The team concluded that SNRCU had endeavoured to address all the recommendations and suggestions from the 2008 IRRS mission and there has been significant progress in many areas and notable improvements have been achieved.

Notable Strengths Identified During the IRRS 2008

The team confirmed SNRCU’s strengths, as identified during the IRRS 2008 mission and in particular: SNRCU is effectively regulating nuclear and radiation safety; is de facto an independent regulatory body and has taken effective action towards achieving transparency and communication with the public and Parliament.

Notable Achievements Identified During the IRRS Follow-up 2010

During the IRRS follow-up mission a number of achievements were identified which include:

- good working relationship with Ukrainian Parliament, Government and ministries with shared responsibilities;
- improvements to the organisational structure of SNRCU;
- improvements in assuring independence of TSO;
- successful completion of a series of missions on safety assessment of NPPs under the joint project Ukraine-EC-IAEA;
- internal arrangements have been effective on monitoring legislative initiatives concerning SNRCU both by state authorities and members of the parliament;
- new or amended legislative acts, orders and agreements in relevant areas, using where appropriate, legal mechanisms to expedite the promulgation of the amended acts and orders;
- strategy on radioactive waste management approved by the Ukrainian Government and National environmental programme on radioactive waste management approved by the Law of Ukraine;
- improvement of the Management System of the SNRCU.

Recommendations and Suggestions IRRS 2008

The 2008 IRRS Report included recommendations or suggestions where improvements were necessary or desirable to further enhance the legal and regulatory framework for safety.

Recommendations and Suggestions IRRS Follow-up 2010

During the follow-up mission the IRRS team found that a number of the recommendations and suggestions of the 2008 report had been fully addressed and therefore could be considered closed. SNRCU should be commended for this, especially given the economic challenges in the last several years. However, there are some recommendations that remain to be fully resolved. Also, the team identified a number of new issues which have resulted in further recommendations and/ or suggestions to support continuous improvement. In particular, the IRRS team considers it important that SNRCU should:

- develop a plan and carry out consistency and gap analyses of already existing legislation and use the results as far as feasible for further improvement of legislative framework in relevant areas;
- continue close working relationship with Ukrainian Government and Parliament to ensure that:
 - intended changes in the state administration organization will reflect properly the specific features of nuclear regulator and that the already achieved level of independence of SNRCU is maintained;
 - the efforts to provide SNRCU with adequate financial resources, taking into consideration the Resolution of the President of Ukraine 1035/2010 will continue;
 - the efforts to provide financial resources for the replacement of obsolete equipment being used in radiology and radiotherapy will continue;
 - the efforts to provide financial resources for the establishment of credible dosimetry services and associated facilities will continue;

- a specialized agency to deal with the long-term management of radioactive waste is established in foreseeable future;
- continue close working relationship with Ukrainian Ministry of Health to ensure that the established mechanisms for implementation of effective cooperation in regulating and controlling radiation protection, waste safety and other common activities will be further enhanced;
- further enhance control of contractors and subcontractors at NPP;
- continue development of guidance for licensees in area of the content of application for authorization;
- continue development of its approach to safety assessment;
- continue development of regulatory documents in the area of assessment and authorization of operators' organizational changes and guidance for the operators in this area;
- further enhance its review and assessment capability as "intelligent customer";
- complete the introduction of risk-informed criteria in the inspection programme and further improve access for all inspectors to the database system for the tracking and trending of inspection findings;
- continue development of regulatory and internal documents concerning enforcement;
- continue harmonization of regulatory documents issued by the SNRCU and Ministry of Health in the area of emergency preparedness and response;
- continue development of regulatory and internal documents in the area of geological disposal of radioactive waste and for decommissioning of nuclear facilities.

Of the 2008 recommendations not yet fully implemented, the IRRS team nevertheless considers that SNRCU has made considerable progress. For example, SNRCU has greatly improved the relationship with Ministry of Health, other agencies and the TSOs. In addition, the respective responsibilities (including aspects of independence) have been clarified.

In assessing the progress made by SNRCU since the 2008 mission, the review team took into account the difficult circumstances recently faced by Ukraine arising from the global economic crisis and thus the limited resources available for some undertakings.

As with the 2008 mission, there was a strong consensus among all of those participating in the follow-up review that the IRRS missions in Ukraine have contributed to the continuous improvement of the Ukraine regulatory infrastructure for safety and effective regulatory oversight.

The IRRS Review Team appreciated the extensive preparation by SNRCU management and staff at all levels. This greatly facilitated the effective conduct of the interviews and review of supporting materials. It was also noted that all counterparts were open and transparent in their exchanges with the review team. Throughout the review the administrative and logistical support was outstanding and the team was extended full cooperation in technical regulatory and policy discussions.

The IRRS Review Team findings are summarized in Appendix IV.

I. INTRODUCTION

BACKGROUND

IRRS MISSION 2008

At the request of the Government authorities of Ukraine, an international team of experts visited the State Nuclear Regulatory Committee of Ukraine (SNRCU) from 9 to 20 June 2008 to conduct a full scope Integrated Regulatory Review Service (IRRS) mission. SNRCU is the competent authority in matters pertaining to nuclear safety and radiation protection in Ukraine. The mission was conducted under the auspices of the EC-IAEA-Ukraine Joint Project on Safety Evaluation of Ukrainian Nuclear Power Plants.

The purpose of the mission was to conduct a review against IAEA Safety Standards, of the Ukraine national governmental and regulatory infrastructure for nuclear and radiation safety, and to exchange information and experience in the regulation of areas considered by IRRS. The areas reviewed were: nuclear power plants, medical practices, waste facilities, decommissioning, transport of radioactive materials, emergency preparedness and public information. In addition, the regulatory technical and policy issues considered in the 2008 review provided a greater understanding of regulatory issues that may have international implications and that assist in addressing specific technical issues relevant to the regulation of nuclear, radiation, radioactive waste and transport safety.

In 2008 the IRRS mission activities took place mainly at SNRCU headquarters in Kiev. There were interviews and discussions with staff at the Ministries of Health, Fuel and Energy, Emergency Situations, and Environmental Protection. In addition, there were discussions, with emphasis on nuclear and radiation safety, with NAEK Energoatom, plant managers and staff of the NPP in South Ukraine and staff from technical support organizations, namely, the State Scientific and Technical Center for Nuclear and Radiation Safety (SSTC) and the Marzeev Institute. In Kharkiv, discussions were held with staff of industrial and medical facilities; RADON pre-disposal waste management facility and decommissioning and remediation organizations. An emergency response drill at a research reactor was observed. The IRRS Team Leader and the IRRS Team Coordinator also met with the Head of the Parliamentary Committee for Energy Policy making of Ukraine.

FOLLOW-UP IRRS MISSION 2010

In September 2009 the Government authorities of Ukraine requested a follow-up mission to review measures undertaken by Ukraine to address the recommendations and suggestions arising from the June 2008 IRRS mission. The follow-up mission was conducted under the auspices of IAEA Technical Cooperation (TC) national project UKR/9/028 on strengthening nuclear and radiation safety infrastructure. The scope of the IRRS follow-up mission covered the regulatory aspects of the facilities and practices regulated by SNRCU, nuclear power plants, medical practices, waste facilities, decommissioning, transport of radioactive materials, emergency preparedness and public information. In addition, there were policy discussions covering new build, assignment of responsibilities between SNRCU and other regulators and SNRCU feedback on their experience of self-assessment against GSR Part 1.

The follow-up review was conducted from 22nd to 26th November by an IRRS team comprising eight senior regulatory experts from six Member States, one observer from the European Commission (EC), two IAEA staff members and an IAEA administrative assistant.

II. OBJECTIVE AND SCOPE

An IRRS follow-up mission continues the work of improving regulatory effectiveness by reviewing progress in response to IRRS mission recommendations and suggestions. A follow-up mission may identify new good practices and enables the exchange of information and experience among counterparts and the IRRS team with a view to contributing to harmonizing regulatory approaches and creating mutual learning opportunities among regulators.

This mission covered all areas included in the main IRRS mission in 2008. The follow-up IRRS mission was structured to review the progress in implementing improvements in response to the recommendations of the 2008 IRRS mission taking into account areas of significant change since the last mission.

As stated in the main mission the key objectives of this mission were to enhance safety by:

- Providing the host country (regulatory body and governmental authorities) with a review of their nuclear and radiation safety regulatory technical and policy issues;
- Providing the host country with an objective evaluation of their nuclear and radiation safety regulatory practices with respect to international safety standards;
- Contributing to the harmonization of regulatory approaches among Member States;
- Promoting sharing of experience and exchange of lessons learnt;
- Providing key staff in the host country with an opportunity to discuss their practices with reviewers who have experience of other practices in the same field;
- Providing the host country with recommendations and suggestions for improvement;
- Providing other States with information regarding good practices identified in the course of the review;
- Providing reviewers from States and the IAEA staff with opportunities to broaden their experience and knowledge of their own field; and
- Providing the host country through completion of the IRRS questionnaire with an opportunity for self-assessment of its activities against international safety standards.

III. BASIS FOR THE REVIEW

A) PREPARATORY WORK AND IAEA REVIEW TEAM

The preparatory work for the mission was carried out by the SNRCU National Liaison Officer Ms. Anna Gorashchenkova, the IRRS IAEA Coordinator Ms. Adriana Nicic, NSNI/ IAEA and the IRRS Deputy Coordinator Mr. Stephen Evans, NSRW/IAEA.

A preparatory meeting was held in Vienna, in September 2010 with the participation of the IRRS Team Leader, Ms. Dana Drabova, Chairperson, Czech State Office for Nuclear Safety (SÚJB), Mr. S Bozhko, Deputy Chairperson, Ms. L Zeniuk and Ms. A Gorashchenkova of SNRCU together with the IRRS Follow-up Team Coordinator, Deputy Team Coordinator and IAEA administrative assistant. In addition, the meeting was attended by Mr. G Caruso, Section Head, Regulatory Activities, NSNI, Mr. M Recio, Section Head, TC Europe and Mr. Andrei Chupov, Project Management Officer, TC Europe. The preparatory meeting reviewed the status of implementation of the SNRCU actions relating to the 2008 IRRS recommendations and progress with the self-assessment. Further to this review, the scope of the follow-up mission, including policy matters was determined. Advance reference material and the logistics of the mission were agreed. In addition, the participants agreed that the results of the follow-up IRRS will be used to inform the 2011 TC project workplan and the 2012-2013 TC programme.

Discussions led to agreement that policy issues to be covered during the follow-up mission would address new build, assignment of responsibilities between SNRCU and other regulators and SNRCU feedback on their experience of self-assessment against GSR Part 1.

In accordance with the request from SNRCU and taking into account the scope of the follow-up mission, it was agreed that the IAEA review team would comprise eight IAEA external experts from six Member States (Bulgaria, Belgium, Czech Republic, Hungary, Pakistan and the United States), two IAEA staff, one observer from the European Commission and one IAEA administrative assistant (see Appendix I). The mission programme and the SNRCU counterparts were discussed and agreed (see Appendix III).

A significant amount of work was carried out by the reviewers and by IAEA staff prior to the mission in order to prepare initial impressions about the ARM, to review the SNRCU self-assessment, to prepare material for conducting interviews and to identify any further relevant material which may be required during the mission.

An IRRS Team meeting was conducted on Sunday 21st November by the IRRS Team, together with designated SNRCU representatives, to discuss the specifics of the mission, the programme and to clarify the basis for the review, background, context and objectives of the IRRS and to confirm the methodology for the review and the preparation of the mission report. The SNRCU Liaison Officer presented the logistical aspects of the follow-up mission.

B) REFERENCES FOR THE REVIEW

The main reference documents provided by SNRCU for the review mission are indicated in Appendix V. The most relevant IAEA Safety Standards and other reference documents used for the review are indicated in Appendix VI.

C) CONDUCT OF THE REVIEW

The entrance meeting for the follow-up mission was held on Monday 22 November 2010 with the participation of the IRRS Team, SNRCU Chairperson Ms. Olena Mykolaichuk, Deputy SNRCU Chairperson Mr. Sergiy Bozhko, Ms. Olga Makarovska and other SNRCU senior management and staff. Also in attendance were representatives of the Ministries of Emergency Situations and Health. Opening remarks were made by Ms. Mykolaichuk, Mr. Bozhko, Ms. Drabova, Mr. Satorius and Ms. Nicic.

During the mission, a systematic review was conducted of all areas covered during the IRRS 2008 with the objective to review SNRCU's progress in response to the 2008 IRRS mission recommendations and suggestions as well as identifying new good practices. The review was conducted through meetings, interviews and discussions with personnel from SNRCU, the Ministries of Health and Emergency Situations, Research Centre of Radiation Medicine AMS of Ukraine and the Office of the Deputy Prime Minister and SSTC NRS. In addition, the ARM and other documents made available during the mission were reviewed by the international experts.

The IRRS Team performed its activities based on the Mission Programme given in Appendix II.

The exit meeting was held on Friday 26th November 2010 with the SNRCU Chairperson Ms. Olena Mykolaichuk, Deputy SNRCU Chairperson Mr. Sergey Bozhko, Ms. Olga Makarovska and other SNRCU senior management and staff. Also in attendance were representatives of the Ministries of Emergency Situations and Health. Opening remarks were made by Ms. Mykolaichuk, Mr. Bozhko, Ms. Drabova and Mr. Satorius. Closing remarks were made by Ms. Drabova, Mr. Satorius and Ms. Nicic. The draft IRRS Follow-up mission report was handed over to SNRCU at the end of the meeting.

1. LEGISLATIVE AND GOVERNMENTAL RESPONSIBILITIES

1.1. GENERAL

As an IRRS Mission follow-up, the Cabinet of Ministers of Ukraine (CMU) issued Resolution 1307 of 08.10.2008, called “Action Plan on Implementation of IAEA IRRS Mission Recommendations and Suggestions”. The Action Plan has been developed by the joint efforts of all authorities concerned with the leading role played by SNRCU.

The Action Plan consists of 17 specific measures focusing on the implementation of IRRS findings with an implementation timeframe to 2011. It should be noted that the Action Plan takes account of both recommendations and suggestions, giving equal priority to both. The CMU Resolution supports timely implementation of mission findings and ensures appropriate coordination and allocation of responsibilities amongst the different players.

Measures were distributed for implementation among different authorities, as the main responsibility remained with the SNRCU - eight measures (39 recommendations and suggestions), Ministry of Health - five measures (nine recommendations and suggestions) and Ministry of Emergencies – four measures (six recommendations and suggestions). Certain responsibilities were also vested with the Ministry for Fuel and Energy, Ministry of Environmental Protection, Ministry of Justice, Ministry of Finance, Ministry of Economy. All authorities involved were obliged, twice per year (January and July) to prepare and submit to the SNRCU, reports on Resolution fulfillment. The SNRCU has the responsibility to review and summarize the reports, the final version being transferred to the CMU.

Based on CMU Resolution 1307, most authorities concerned prepared their own internal Action Plans or Plan Programmes to fulfill mission findings. The SNRCU internal Action Plan has been approved by Deputy Chairman Mr. Sergey Bozhko and has been periodically assessed for implementation. In addition, the status of implementation of IRRS recommendations and suggestions has been periodically reviewed at SNRCU Board meetings.

1.2 LEGISLATIVE

By the issuance of Resolution 1307, the CMU showed its clear commitment to the further improvement of nuclear and radiation safety in the country and ensuring compliance with internationally accepted standards. This leads to direct control by the CMU over the implementation of mission findings in such a way demonstrating its priority to safety at the governmental level.

The IRRS Review team was provided with the self-assessment performed by SNRCU. The team noted the unambiguous commitment by Ukrainian counterparts to openness and transparency, as the self-assessment has been performed using the GS-R-1 requirements and later on repeated with the use of newly published GSR Part 1. However, the responses were brief and in many cases incomplete, which required extended interviews and further efforts by the reviewers in order to understand the situation and determine their own view on progress.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

R1	Recommendation: When further developing the legal system, the Government should ensure that all nuclear and radiation safety legislation is consistent and that established practices that have proved to be effective are preserved unchanged.
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Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestion:

2008 Recommendation 1 (R1): During the IRRS Mission in 2008, the team noticed that there were good basis in place for the creation of an independent and sustainable Ukrainian nuclear regulatory system. The team acknowledged the large SNRCU efforts to effectively manage various legal provisions governing nuclear and radiation facilities and activities, which are specified by numerous laws.

In response to IRRS mission findings, CMU Resolution 1307 specified a series of actions, which focused on review of draft laws related to permit activities in the nuclear field, preparation of amendments and supplements to the decision making process, amendment of radioactive waste (RAW) management related laws, including environmental the programme on RAW management, etc. (CMU Resolution, p. 2 and p. 3).

However, the team identified that the CMU Resolution did not identify any plans or activities on reviewing the existing laws for consistency. The team checked whether at least, the inconsistencies listed in the 2008 mission report had been addressed and found that 2 out of 3 have been eliminated, namely:

1. Nuclear Law - Article 23 specified that “The State regulation of the safety in the use of nuclear energy is carried out by the Ministry for Protection of the Environment and Nuclear Safety of Ukraine (MPENS) the Ministry of Public Health of Ukraine and other State authorities in accordance with the law of Ukraine”. By the Act on Amendment and Supplements (AAS) of the Nuclear Law of 31 May 2009, the text has been refined and the new text says “State regulation on nuclear and radiation safety is carried out by the authorities of the executive power, according to the legislation of Ukraine”. In such a case, the inconsistency has been eliminated.
2. The Nuclear Law specified that the State Chief Inspector is appointed by MPENS while in the Provisions of SNRCU it is clearly stated that he/she is appointed by the Chairperson of SNRCU. With the AAS of the Nuclear Law of 31 May 2009, the requirements for appointment of the State Chief Inspector have been removed. In such a way, the inconsistency has been eliminated and the Provisions of SNRCU remain valid.
3. The Law on Radioactive Waste Management - Article 8 specifies that “The state regulation of safety in the area of radioactive waste management is carried out by the Ministry of Environmental Protection and Nuclear Safety, the Ministry of Health Protection, the Ministry of Internal Affairs, and other bodies of the state executive power according to the legislation”. SNRCU has prepared amendments to the Law on Radioactive Waste Management, Article 8. Those changes have been submitted to the Ministry of Justice on 05.11.2010.

Finally, team opinion is that a thorough consistency and gap analyses would be of great benefit, especially when preparing a separate law on the Regulatory Body (see R2).

The SNRCU has invested considerable resources in improving its management of legislative acts, in order to maintain the system in good working state and where necessary, to improve existing legislation. A challenging task has been to prepare amendments to existing laws within the responsibility of SNRCU and at the same time strictly monitor the changes proposed by other bills affecting SNRCU regulatory activities. The main objective of the second task has been to prevent inadvertent effects on regulatory activities, resulting in changes to the overall governmental approach in certain areas, as for example, inspection practices.

The team and the counterparts discussed the issue of establishment of a common Law or Codex, which should incorporate all aspects on the use of nuclear energy, including responsibilities of the State and the respective State institutions. The idea of such a Codex is grounded in the energy strategy of the country. As identified during the discussions, the leadership is with the Ministry of

Fuel and Energy and the work proceeds quite slowly. Recently, the concept of such a document has been developed and is under review by the CMU. The concept should be approved by all parties before it is forwarded for development. If such a document is drafted in due course, all parties should take care to ensure clear separation between regulatory and promotion functions.

Significant progress has been identified in the SNRCU internal arrangements on monitoring legislative initiatives. A well-structured system was established to identify and follow legal initiatives concerning SNRCU activities, both by state authorities and members of the Parliament. The system ensures that bills not sent for coordination by SNRCU, are detected in a timely manner, reviewed for implications, and commented upon as necessary. The team noted several cases, where SNRCU had identified that draft regulatory requirements in other areas might contradict existing nuclear safety and radiation protection regulatory requirements. These cases had been quickly detected and prevented. Examples may be given of the Law of Ukraine on Key Principles of State Supervision (control) in the Area of Economic Activity and the Law on Lobbying.

On a regular basis, SNRCU is continuously improving the existing nuclear and radiation safety requirements. A plan for the period 2008-2012 (Strategy) is in place to upgrade the system on nuclear and radiation safety regulation. According to that plan, annual plans are being developed for the respective year. The list of legislative acts and regulations developed and approved by SNRCU for the period 2008-2010 is presented in an Appendix V.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Recommendation 1 (R1): Closed – the current status of progress gives confidence that the action will be completed in a reasonable timeframe.

Significant progress has been identified in the SNRCU arrangements on monitoring and developing legislative acts. The team identified the need for further systematic review to verify consistency in existing laws in the area of safe use of nuclear energy.

NEW RECOMMENDATIONS, SUGGESTIONS & GOOD PRACTICES OF THE 2010 IRRS FOLLOW-UP MISSION	
(1)	<p>BASIS: GS-R-1 § 2.2 states that <i>“There are certain prerequisites for the safety of facilities and activities. These give rise to the following requirements for the legislative and governmental mechanisms of States:</i></p> <p><i>(1) A legislative and statutory framework shall be established to regulate the safety of facilities and activities”.</i></p>
SF1	<p>Suggestion: Consistency and gap analyses of existing legislation should be conducted. The results of the analyses should be taken into consideration when preparing the new separate law on the Regulatory Authority of Ukraine.</p>

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION	
R2	<p>Recommendation: The Government of Ukraine should define and guarantee the statute of the SNRCU in Law.</p>
S1	<p>Suggestion: The Parliament and the Government are presently establishing common requirements and processes for the functioning of the state administration. In this context, the specific functions, responsibilities, characteristics and needs of a regulatory authority, in particular for the current case the SNRCU should be taken into account. In doing so the practices and legal arrangements in European countries may be of support and the draft law prepared by SNRCU may be used as a basis.</p>

Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestion:

2008 Recommendation 2 (R2): The draft law on the “National Regulatory Authority on Nuclear and Radiation Safety” has been developed by the SNRCU. The bill has gone through two full rounds of coordination with the ministries and other central authorities of the executive power. Review comments of respective authorities have been duly considered. Latest coordination process was done in June 2009.

The adoption of the law by Parliament was postponed due to a sequence of unforeseen events. First of all, there has been an ongoing initiative of the Parliament and the Government to establish unified criteria, processes and requirements towards the functioning of the state administration. In this respect, the Law on the National Nuclear and Radiation Safety Authority was awaiting the Law on State Administration (LSA) in order to ensure conformity and consistency. The draft Law on State Administration received the appropriate comments by SNRCU, which were in conformity with the IRRS recommendation R2 from 2008, that new LSA should take into account the specific functions, responsibilities, characteristics and needs of a regulatory authority, in particular for the current case the SNRCU.

2008 Suggestion 1 (S1): When the LSA was in an advanced stage of discussion by Government, changes in the Constitution of Ukraine took place, which transferred the coordination and management of central authorities of the executive power from the CMU to the President. Following the Constitutional changes, the LSA has to be reviewed and published, which will further delay the Law on the National Nuclear and Radiation Safety Authority.

As the CMU Resolution 1307 clearly specifies time limits for implementation of the actions, the SNRCU, by a letter, has requested the extension of the time limit. This extension was granted as now the time limits are being linked to the adoption of the LSA.

However, the SNRCU should undertake a thorough review of the existing laws and ensure that all responsibilities and functions of the SNRCU are appropriately translated into the new Law on the National Nuclear and Radiation Safety Authority. Furthermore, SNRCU should take the appropriate steps to amend the existing laws that describe their responsibilities in such a way that they only refer to the main law in this respect – the Law on the National Nuclear and Radiation Safety Authority.

In addition, as a result of the constitutional changes, the SNRCU has to prepare new Rules of Procedure for the organization, is to be approved by the President of Ukraine. Those Rules of Procedure should clearly identify SNRCU as “The National Nuclear and Radiation Safety Authority”.

A concern to the team was discovered through media publications that were suggesting the new Law on State Administration is not fully considering the concept of effectively independent Regulatory Authorities. It is important that the decisions of the SNRCU should not be subject to any influence, by a Minister or any other source. The Government of Ukraine, when approving the Law on State Administration should ensure that the already achieved level of independence of SNRCU is sustained.

The IRRS team is of the opinion that SNRCU has appropriately addressed the intention of the recommendation, namely achieving and strengthening not only de facto, but also de jure independence of the nuclear safety regulatory authority. However the final implementation of the recommendation is not within the authority of SNCRU, it will be done as part of the general process of preparing national legislation.

The IRRS team is also of the opinion that any intended changes in the Ukrainian State administration structure should be done with due attention to the independence of the nuclear safety regulatory authority.

Follow-up IRRS Mission 2010 'Conclusions':

2008 Recommendation 2 (R2): Open – in progress.

2008 Suggestion 1 (S1): A draft Nuclear Law has been developed. Adoption of this law has been delayed due to changes in the Constitution and respective delay of the Law on State Administration.

NEW RECOMMENDATIONS, SUGGESTIONS & GOOD PRACTICES OF THE 2010 IRRS FOLLOW-UP MISSION

(1) **BASIS: GS-R-1 § 2.2 (2) states that** *“A regulatory body shall be established and maintained which shall be effectively independent of organizations or bodies charged with the promotion of nuclear technologies or responsible for facilities or activities. This is so that regulatory judgments can be made, and enforcement actions taken, without pressure from interests that may conflict with safety.”*

SF2 **Suggestion:** The Government of Ukraine, when approving the Law on State Administration, should ensure the already achieved level of independence of SNRCU is maintained.

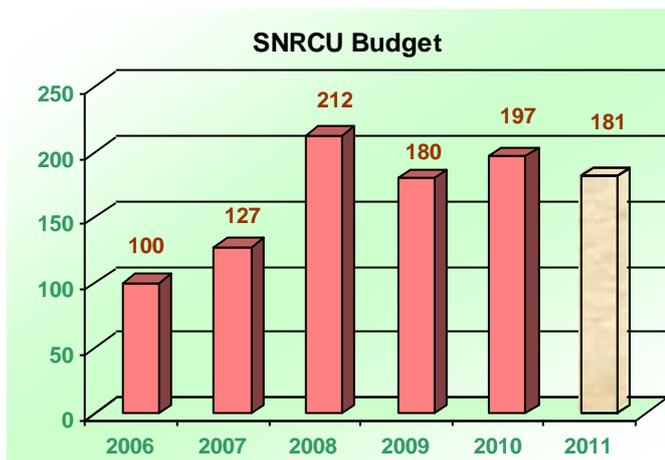
RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

S2 **Suggestion:** The existing trend of continuous increase of budget and expert salaries should be preserved in order to retain staff, to allow SNRCU to achieve a level of financing in accordance with best international practice and to allow SNRCU to fund its involvement in international activities, training, review and assessment, public communications, etc.

Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestions:

2008 Suggestion 2 (S2): As identified in the 2008 mission report, significant progress has been achieved in SNRCU financing. This has resulted in stability inside the organization and to a large extent supported the effective implementation of the assigned functions.

Inevitably, the global economic crisis has directly affected the SNRCU budget. The budget requested by the SNRCU was reduced in the process of negotiation with the Ministry of Finance. For example, the initially requested budget in 2010 was about UAH25.5 million while the approved budget was around UAH21.1 million. The diagram shows the trend in the SNRCU budget in recent years. As seen from the diagram, the budget reduction was largest in 2009. This has compelled SNRCU to reconsider its priorities and plans.



As seen from the diagram, the budget reduction was largest in 2009. This has compelled SNRCU to reconsider its priorities and plans.

Regardless of financial difficulty in 2009-2010, SNRCU still manages to cover all areas of regulatory oversight. The team considers that a challenge will be to maintain the number and motivation of employees and at the same time fully implement the regulatory inspection programme.

By CMU Resolution 809 of 10 September 2008, the basic salary of state employees at the headquarters in Kiev was increased by 50%. This was a good step towards the implementation of

the IRRS Suggestion 2, in its part related to staff retention. In practice, however, the real average payment did not increase (2008 - 638\$, 2009 - 549\$ and 2010 - 637\$), but this step secured the payments to remain at the approximately same level, taking into account the difficult financial situation during the crisis.

Following the Washington Summit (12-13 April 2010, Washington, USA) organized by US President Barack Obama, the President of Ukraine issued Resolution 1035 of 15 November 2010, on “National Action Plan in Respect of the Washington Summit Working Plan 2010 – 2012”. According to the Resolution, Ukraine confirms the necessity to improve international cooperation and consolidate its efforts with the world community aimed at implementation of comprehensive activities in response to current nuclear safety challenges. The Resolution specifies that the Foreign Ministry of Ukraine, together with the central authorities of the executive power, by 1st of March 2012 shall prepare a National Report about the state of implementation of the agreements reached at the Washington Summit.

It should be stressed that paragraph 7 of the above mentioned Resolution refers to further enhancement of State nuclear and radiation safety regulation and strengthening of the independence of the SNRCU. The Resolution includes two specific tasks, namely:

1. to analyze the state of implementation of the decision of the Ukrainian National Council of Safety and Defence, which was put into force in the stated order and dated 13 October, 2010, in part of concentration of functions of nuclear and radiation safety regulation within one central executive body – the State Nuclear Regulating Committee of Ukraine; to prepare and to submit corresponding propositions in the stated order.
2. To take the appropriate actions to secure SNRCU with adequate financial, material and human resources in order to be able to carry out its assigned tasks and functions.

Point 1 of paragraph 7 of this Resolution clearly specifies the need for concentrating of responsibilities in nuclear and radiation safety in one regulatory body, which has to be the SNRCU. The responsibilities for timely implementation of that requirement were vested with the Cabinet of Ministers of Ukraine, with a time limit of 31 December 2010.

Point 2 of paragraph 7 of the Resolution makes provision for adequate financial and human resources to the SNRCU. In consequence, SNRCU has prepared a new budget request. If this request is fulfilled, the team understands that the 2011 budget will be more effective in delivering the SNRCU’s responsibilities and programme than the 2010 and 2009 ones.

The team appreciated the efforts of Ukrainian Government to provide SNRCU with appropriate funding. Unfortunately, due to the financial crisis the good intentions have not yet been completely implemented in practice.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Suggestion 2 (S2): Open – in progress.

It was noted that the SNRCU budget has no changes in the financing of training and retraining activities and international cooperation. The budget still does not ensure sufficient funding of SNRCU active involvement in international activities, or the training of regulatory staff on best international practices. Thus, SNRCU will have to continue to rely on international support programmes.

NEW RECOMMENDATIONS, SUGGESTIONS & GOOD PRACTICES OF THE 2010 IRRS FOLLOW-UP MISSION

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| (1) | BASIS: GS-R-1 § 2.2 (4) states that <i>“The regulatory body shall be provided with adequate authority and power, and it shall be ensured that it has adequate staffing and financial resources to discharge its assigned responsibilities.”</i> |
|-----|--|

**NEW RECOMMENDATIONS, SUGGESTIONS & GOOD PRACTICES OF THE 2010
IRRS FOLLOW-UP MISSION**

SF3 **Suggestion:** The Government of Ukraine should continue its efforts to provide SNRCU with adequate financial resources, taking into consideration the Resolution of the President of Ukraine 1035/2010.

2. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

- R3 **Recommendation:** SNRCU and the Ministry of Health should agree a memorandum of understanding clarifying the responsibilities of each of the authorities as well as the mechanisms for implementation of effective cooperation in regulating and controlling radiation protection, waste safety and other common activities that could arise.

Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestions:

2008 Recommendation 3 (R3): CMU Resolution 1307 explicitly requires the establishment of a formal agreement in the form of a Memorandum of Understanding (MoU) between the Ministry of Health (MH) and the SNRCU. Both organizations had jointly developed document No.28/82 in February 2009 on ‘Provisions on Interaction between State Nuclear Regulatory Committee of Ukraine and the Ministry of Health on the Issues of State Regulation of Radiation Safety’. To secure the legally binding character of the MoU, the document was reviewed, approved and registered by the Ministry of Justice (registration № 197/16213 of 03.03.2009). This document provides a mechanism for carrying out joint activities by SNRCU and MH at both the Headquarters level and at the level of State Inspectors and regional sanitary-epidemiological stations, enabling the prompt solution of challenging issues that may arise in the regulation of radiation facilities.

Inspectors from all authorities take part in joint team inspections related to events investigation, knowledge and qualification verification, as well as in joint acceptance commissions at sites and practices. Moreover, the two organizations also participate in the commissions on investigation of radiation accidents at medical facilities as well as sharing in knowledge checks on radiation safety. The development of licensing commissions at the regional level is also being envisaged by both the organizations.

The radiation safety of patients is seen as one of the most challenging areas for cooperation. Considerable effort has been spent by the staff of both organizations in order to ensure close cooperation while at the same time preventing overlapping of activities. For this purpose, analyses have been carried out to identify problem areas. Based on the analysis an improvement action plan was developed, and approved by a Joint Council.

To be more effective in the fulfillment of the MoU, an inter-organizational working group has been established as the administrative body of the MoU.

One of the achievements of the joint work is the consensus on coordination of drafts of all legal acts, being prepared by the one or the other organization. A good example is the joint document on clearance and exemption.

The proactive approach of SNRCU has also led to active cooperation and the signing of framework contracts with some of the MH TSOs, namely:

- State organization “Institute for Hygiene and Medical Radiology” known as the Marzeev Institute; and;
- State organization “Scientific Centre for Radiation Medicine”.

In such a way, close cooperation is ensured between the experts responsible for preparation of the technical basis of decisions or legislative documents. Most expert discussions between SNRCU and MH are held with the participation of the experts of these scientific organizations.

Joint work between the SNRCU and MH is being carried out in the area of safe management of radioactive waste (RAW). In this area, the leadership role is taken by SNRCU but MH is actively involved in the process. The licensing conditions being prepared by the SNRCU are being reviewed by MH and there are also plans for joint activities in the review of the existing Sanitary Radiation Protection Rules, where MH would lead and the SNRCU will take part with experts.

There is no formal written procedure which explicitly clarifies the responsibilities of each authority. However, discussion with the representatives of both organizations revealed that each organization understands its respective responsibilities in regulating radiation protection and other common activities. There are certain areas of mutual cooperation where progress appears to be slow, especially where it is difficult to reach a common view. However, when consensus is reached, matters proceed more speedily. Such is the example of Emergency Planning and Preparedness, where there has been considerable delay in the agreement on the need to change intervention levels, as specified by the “Law on Public Protection from Radiological Impact”.

In general, improved cooperation has been observed between the two organizations. However, continuing to strengthen cooperation between the organizations is necessary to ensure the common objective of safety of the public, patients and environment from the harmful effect of radiation. It should also be noted that Presidential Resolution No. N-1035/2010 of 15 November 2010 explicitly requires the concentration of all nuclear and radiation safety responsibilities in one authority.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Recommendation 3 (R3): Closed - Actions have been implemented by SNRCU in line with recommendation of the 2008 IRRS Mission.

3. ORGANIZATION OF THE REGULATORY BODY

3.1. STAFFING AND TRAINING

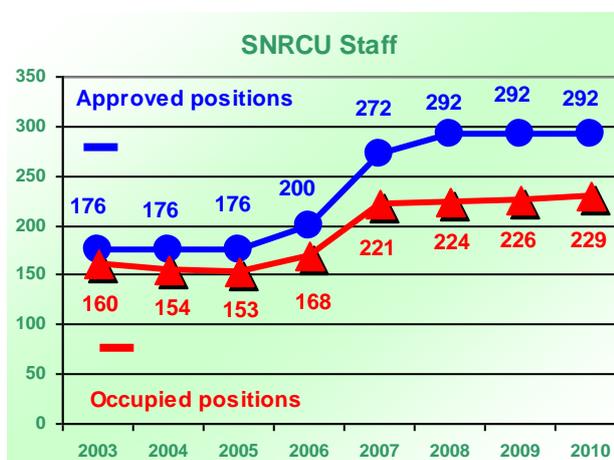
RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

S3 **Suggestion:** The SNRCU should continue its efforts to attract suitable qualified staff and fill the outstanding vacancies at the earliest opportunity commensurate with its human resource management policy. Measures should be identified to reduce the high staff turn-over in some fields.

Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestions:

2008 Suggestion 3 (S3): The responsibilities of SNRCU staff towards society, place higher demands on their qualifications and experience, which are accurately and clearly defined for each particular position. At the time of the follow-up, the approved number of staff positions at SNRCU was 292, including 189 State Inspectors. From the 292, 161 positions are in Kiev headquarters, 35 at NPP regional inspectorates and 96 in local radiation protection inspectorates. During the 2008 Mission, the team identified that there were 68 vacancies, most of which in the department for safety assessment, central nuclear inspectorate and regional radiation inspections.

Due to global economic constraints the CMU issued Resolution 1036 of 26.11.2008 on maintaining staff numbers within the framework of already occupied positions at the time of the Resolution (November 2008). In practice this meant that no new recruitments were allowed, except for replacement of existing staff.



Despite these restrictions, the IRRS Team noted that the situation did not change significantly. At November 2010, available vacancies were 63, of which 45 vacancies are at headquarters and 18 at regional offices. Furthermore, in March 2010 the Ministry of Finance requested the reduction of the overall complement of staff by 37 people and one deputy chairman. In order to maintain the existing staff levels, the SNRCU was permitted to retain staff on the basis that salaries were not increased. This was done by the SNRCU management. The IRRS Team believes the SNRCU decision was appropriate in order to maintain adequate staffing levels.

To limit loss of knowledge due to retirement SNRCU requested that the Government grant an exemption regarding appointment restrictions. SNRCU analyses revealed that employment of new young experts is needed to replace retiring experienced inspectors. To eliminate possible gaps in the organization, SNRCU needs to implement its succession plan and personnel training activities, irrespective of the difficulties. In this respect, SNRCU has been granted the exemption and recently started the recruitment of new staff.

Recruitment at SNRCU is a competitive process in accordance with state requirements. The main requirements for candidates are to possess the necessary qualifications, professional experience and personal qualities to enable them to deal professionally with the job requirements and work dedicatedly to serve the public interests, while strictly and impartially implementing the legislation. The IRRS Team was informed that applications for announced vacancies have been received.

Follow-up IRRS Mission 2010 'Conclusions':

2008 Suggestion 3 (S3): Open – in progress.

Due to the moratorium on recruitment and the limited budget, the implementation of the 2008 suggestion (S3) is still in progress. See also 2010 Suggestion (SF3).

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

- R4 **Recommendation:** The practice of direct payment for 'state safety expertise' to technical support organization by utilities might be seen as affecting the independence of judgement of safety assessors. Safety assessment process should be fully transparent and effectively regulated, including financial aspects, by SNRCU. The SNRCU should seek and apply arrangements that demonstrate in an unambiguous and transparent manner the effective independence of its technical support organizations and consultants.

Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestions:

2008 Recommendation 4 (R4): The 2008 IRRS Team noted two main concerns: first – there is a direct payment by the licensees to the TSO and second – that since 2005 the State Scientific and Technical Centre “Nuclear and Radiation Safety” (SSTC NRS) was working not only for SNRCU but also for the licensees.

The Team discussed with the SNRCU the independence and financial arrangements of the SNRCU TSO (i.e. SSTC NRS). Corresponding discussions were also held with the Deputy Director of SSTC NRS. The IRRS Team identified many improvements in the area of transparency and the procedure of assigning expert reviews.

Responsibility to decide on an expert review lies solely with the SNRCU. When it is determined that expert advice is needed (on the basis of legal requirements) SNRCU contacts the licensee (utility or its respective unit, NPP, etc.) and informs him that such expertise is needed in order to inform the regulatory decision. According to the Nuclear Law of Ukraine, the licensee is obliged to cover the expenses for such expertise. SNRCU informs the licensee in writing, of their responsibility to cover the respective costs. According to the team, the approach by which licensees cover the costs for regulatory or TSOs work is acceptable and does not lead to conflict of interest.

A contract is made between the TSO and the respective licensee for the implementation of the assessment in order to secure the legal responsibilities of both sides. SNRCU does not sign the contract, but they are involved in the contracting through the drafting of Terms of Reference (ToR) for the expertise i.e. scope, technical requirements, deadlines, etc. Furthermore, the contracting parties must apply SNRCU procedures for the preparation of contractual documents.

The IRRS Team noted that possible conflicts in contract price are avoided by the use of a special procedure on how to determine workload (man days) and the daily rates of the experts involved. This procedure is approved by SNRCU, the Ministry of Fuel and Energy and the Ministry of Labour and Social Policy.

When the contract is completed, SNRCU reviews the contract report for conformity with the ToR and for quality and may approve it or return it to SSTC NRS for further work. It is worth mentioning that there have been cases when the contract report has been returned for further work, occasionally, more than once. Finally, the SSTC NRS is paid only after the contract report has been approved by SNRCU. According to the Law and the contract, the licensee is not in a position to refuse payment, irrespective of the expertise results. In addition to its preparatory work (ToR, contract review, etc.) SNRCU is proactively carrying out monitoring of fulfillment of the procedure as well as follow-up review, including discussions with the licensees. The review team considers

that the implemented approach establishes an adequate mechanism to guarantee the leading role of SNRCU and reduces to minimum, the interference of the licensee in the contracted expertise.

Additionally, as a response to the 2008 IRRS mission and as a result of discussions at both the political and technical level, it was agreed that SSTC NRS may perform work on direct contracts (i.e. not requested by SNRCU) for the licensees. Meanwhile, SSTC NRS adopted a series of actions and procedures to secure independence of expert divisions working for SNRCU from the one working for the licensees and to avoid conflict of interests.

Finally, when the work was almost completed, a decision was taken to suspend any work done by SSTC NRS for the licensees in Ukraine. The SSTC NRS order No.141 of 01.10.2010 approved new Rules of Procedure on SSTC NRS, including new policy, namely “SSTC NRS does not perform work upon request of commercial organizations, results of which, according to the legislation of Ukraine, are subject to mandatory state expert review”. SSTC NRS intentions are to compensate income loss by more active involvement of the company at the international market. The IRRS Team noted the recent approval of SSTC NRS as an associated member of the European Technical Support Organizations’ Network - ETSON.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Recommendation 4 (R4): Closed - the action is complete and has delivered the intended objective.

4. ACTIVITIES OF THE REGULATORY BODY

4.1. AUTHORIZATION

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

- S4 **Suggestion:** SNRCU should consider further development especially in the context of new build in exercising regulatory oversight over the existence of a suitable management system of organizations carrying out activities on the premises of NPPs for all stages in the lifetime of a facility.
- S5 **Suggestion:** SNRCU should consider the issuance of a formal document describing in detail what is expected to be included in the application for authorization for the most common specific cases of applications.
- S6 **Suggestion:** The Government should consider enacting legislation that assigns responsibility to SNRCU for the authorization of siting and design of new reactor units.
- S7 **Suggestion:** In licensing operating personnel, the SNRCU should consider covering additional posts and activities that may have substantial influence on the safety of a nuclear power plant.
- R5 **Recommendation:** SNRCU should have the authority to approve the operators' organizational changes. Due consideration should be given to the assessment of the impact of such changes on safety. Conditions and requirements of such an authorization should be elaborated.
- S8 **Suggestion:** The current time constraints related to decision making by SNRCU during the licensing process should be revised in order to relieve undue pressure on SNRCU.

Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestions:

2008 Suggestion 4 (S4): The SNRCU has determined that this recommendation has not been completely addressed and therefore remains open. A concept of state regulation has been elaborated and is currently being coordinated amongst the involved state institutions, including the Ministry for Fuel and Energy. Upon acceptance of the concept by the parties, a document will be formulated to facilitate the oversight of the quality systems of organizations (contractors and subcontractors) performing activities at NPP's at all stages of a facility's lifetime. Following completion of the interactions between involved parties, agreement on the document and successful implementation of the procedures, SNRCU expects to complete the actions necessary to close this suggestion.

2008 Suggestion 5 (S5): In its self-assessment SNRCU determined that this suggestion was implemented. SNRCU has developed a document entitled "Sample List of Documents to be Submitted Certifying the Safety of Nuclear Installations at Certain Stages of Life Cycle". This document constitutes a comprehensive description for the authorizations involving construction, commissioning, and operational life cycles of an NPP. The list is available through the website of SNRCU.

2008 Suggestion 6 (S6): SNRCU has determined that this suggestion is closed. The process of

licensing the site of a new NPP has four major steps the first of which is the approval by the Cabinet of Ministers of a feasibility study. The feasibility is to be reviewed and accepted by all involved authorities including SNRCU, and this is where the nuclear regulatory body can exercise its responsibility for nuclear safety. The design document of a new NPP is subject to a similar comprehensive review with the participation of SNRCU. Both the site and the basic characteristics of a new design are approved by the Verhovna Rada (Parliament) of Ukraine. SNRCU does not issue the licence for site or design, the first licence issued by SNRCU in case of a new NPP is the construction license.

2008 Suggestion 7 (S7): SNRCU considers this suggestion implemented. As a follow up of this suggestion SNRCU has initiated a change in the respective law in order to determine further posts and activities that need a licence. These include certain positions in research reactors and selected senior managers of the NPPs. SNRCU concluded that those NPP operational personnel needing to be licensed remained unchanged namely; reactor operator, chief control room operator and unit shift supervisor.

2008 Recommendation 5 (R5): In its self-assessment, SNRCU determined that this recommendation was not fully implemented and remains under development. Efforts to successfully complete activities have focused on conforming to IAEA document GS-R-3; however, progress has been hampered by the economic challenges being experienced in Ukraine as well as other areas of the world.

2008 Suggestion 8 (S8): The law regulating the licensing activity has been amended in such a way, that the time available for the nuclear regulatory body to assess a licence application is two years and this period of time, in case of necessity, may be extended by another year.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Suggestion 4 (S4): Open – in progress. The team agrees with SNRCU’s determination that this suggestion is not closed and remains under implementation. The team further agrees that given the successful completion, as anticipated by SNRCU, closure may be successful. The IRRS Team however, has determined that while SNRCU is authorized to perform inspections at NPPs, it has no full authority to effectively control contractors and subcontractors to the NPPs. SNRCU recognizes the importance of this issue; however, there has so far been no effective solution elaborated for this problem.

2008 Suggestion 5 (S5): Open – in progress. Since the list of documents to be submitted for obtaining an authorization or licence is still under discussion and shall be formally issued only after harmonization of the opinions, the team considers this issue still open.

2008 Suggestion 6 (S6): Closed - The team concludes that this suggestion is closed. SNRCU has well defined roles in the authorization processes of the site for a new NPP unit as well as of the design of a new reactor.

2008 Suggestion 7 (S7): Closed - This suggestion was intended to request that SNRCU consider licensing additional staff that may have substantial influence on the safety of NPPs. SNRCU did give consideration to this suggestion, including whether the post of turbine operators warranted being required to be licensed by the regulatory body. Its conclusion was that because they were not considered to be involved in the operation of safety related equipment associated directly with the reactor; those positions did not require being licensed. While the team could not disagree with SNRCU’s position on this matter; nevertheless, the team considered that SNRCU should remain mindful of the linkage between the operation of the turbine and the reactor in LWPWR reactors. Nevertheless, the team concluded this suggestion is closed.

2008 Recommendation 5 (R5): Open – in progress. Since no legislative action is necessary for the successful closing of this recommendation, development of regulatory documents has been undertaken that would require operators to request and receive approval prior to making

organizational changes related to their safety organization. Expected completion of the original draft of the product is anticipated for mid-2011. As it completes the final document, SNRCU should ensure operators are made aware of the appropriate level and degree of detail expected when requesting approval from the regulatory body for organizational changes.

2008 Suggestion 8 (S8): Closed - The timeframe defined by the law for closing a licensing process is sufficient for a due assessment and decision-making in all practical cases.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

S9 **Suggestion:** As a matter of priority SNRCU should consider adopting a graded approach for licensing conditions and requirements for radiation sources commensurate with the magnitude and nature of the associated hazard.

S10 **Suggestion:** The Government of Ukraine should enact legislation to ensure that the financial obligations for the management of orphan sources do not discourage the reporting of the discovery of such sources (including those identified by scrap dealers).

Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestions:

2008 Suggestion 9 (S9): As part of adopting a graded approach for licensing conditions and requirements for radiation sources commensurate with the magnitude and nature of the associated hazard, SNRCU has developed a plan for development of documents on licensing conditions for various medical facilities. Requirements and conditions for radiotherapy, approved by the Order of the SNRCU No.193 and registered in the Ministry of Justice of Ukraine (No.31/14722) in 2008, are already in place. Requirements and conditions of safety (licensing conditions) on fulfillment of activities in radionuclide radiography, approved by the Order No.121 of SNRCU dated November 2010, registered in the Ministry of Justice of Ukraine No.950/18245 in October 2010, are now being implemented. Draft requirement and conditions of safety (licensing conditions) on fulfillment of activities with linear accelerators have been prepared and are under review at the SNRCU. Development of licensing conditions for brachytherapy, for diagnostic radiology and x-ray industrial radiography is also part of the development plan of 2010-2011. In the development of a prospective plan for the licensing conditions, SNRCU has adopted a graded approach taking into consideration importance of the activities in terms of risk to the public, patients and the environment.

It has been observed by the team that SNRCU has shown seriousness in development and execution of this plan and financial resources against each activity had also been identified. The development of technical conditions to be introduced in licenses is sub-contracted to the competent organizations within Ukraine such as technical supports organizations. These organizations develop these licensing conditions by incorporating technical details, safety precautions, monitoring, calibration, reporting etc. requirements. These technical specifications and proposed licensing conditions are then internally reviewed by the SNRCU and submitted to the Ministry of Health for review/consent. After incorporating the comments from the MH, the documents are sent to the Ministry of Justice. This document preparation process thus involves various stakeholders and may result in greater acceptability during the implementation phase and therefore seems effective.

2008 Suggestion 10 (S10): The Government of Ukraine has revised the Resolution of the Cabinet of Ministers on Physical Protection of 2003 with that of No. 414 of 2010 to address the issue of illicit trafficking and to explicitly define the role and responsibility for inspection, temporary storage and safe management of orphan sources by the relevant organization/person(s). The revised Resolution among other provisions also specifies that the person who finds and reports orphan sources does not have the financial liability as well as other matters related to management of such source. All the financial obligations related to inspection, temporary storage and safe disposal will

be borne by the local authorities, within the jurisdiction of which the source is found. However, after investigation, the dispatcher/owner of the scrap from which the source is retrieved will be held responsible for the financial obligations regarding safe management of such orphan source(s). Further, if any such source is found during border transportation, then the cargo company will be held responsible to bear all the consequential expenses regarding safe management of such sources. Thus, this new regulation relieved the reporting persons (including scrap dealers) of responsibility for any financial obligations in cases of reporting of orphan sources and therefore this should encourage reporting of orphan sources in future.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Suggestion 9 (S9): Closed - The process for development of licensing conditions for radiation facilities seems realistic and also presents a graded approach for licensing conditions development in line with issue of the IRRS suggestion.

2008 Suggestion 10 (S10): Closed - The revision of Resolution of the Cabinet of Ministers is very concise and clear in case of defining responsibility for orphan sources reporting and thus facilitates reporting of orphan sources.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION	
S11	<p><u>Suggestion:</u> For the licensing conditions for medical facilities SNRCU should consider:</p> <ul style="list-style-type: none"> - including a requirement for the licensee to submit within a determined period a statement concerning patient dose determination, including methodology and protocols on equipment testing. - developing a formal strategy on the requirement for calibration of dosimetry systems. <p>During the primary licensing process SNRCU should consider developing a national strategy of replacement of the equipment not in compliance with the adopted standards, with a transition period based on social and economic factors.</p>
S12	<p><u>Suggestion:</u> The Ministry of Health should consider providing to SNRCU information on withdrawn sanitary passports, as withdrawing of the passport can be initial evidence of non-compliance of the practice licensed with the regulatory requirements.</p>
S13	<p><u>Suggestion:</u> The SNRCU should review the justification from exemption of dental radiology from licensing.</p>

Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestions:

2008 Suggestion 11 (S11): The suggestion was to implement detection and control over patient doses. During the last two years SNRCU developed strategy for assessment and control of patient doses. Developing and putting into force licensing conditions for the different types of activities in medical use of the radiation sources is one part of the strategy. The licensing conditions are requirements for the patient dose determination, including methodology and protocols of equipment testing and requirements for calibration of dosimetry system. Formally this strategy is described in the “Strategy plan for the development regulations (licensing conditions) for medical facilities”. Requirements for teletherapy are already in force, draft regulation for medical accelerators is prepared, and other regulations are planned to be issued in 2011-2012. Calibration requirements compliance is supervised by the State Metrology Service.

Specific conditions are introduced in to the licence granted to a medical facility. This condition requires the licensee to provide measurement and control of installation parameters that may impact

upon patient dose. The licensee can do measurements and control of “dose forming parameters of installation” by himself or purchase this service from another facility. In either case, the equipment and methodology are subject to approval by and the supervision of State Metrology Service. Formally this strategy is set out in the protocol of the Licensing Board. Compliance with this specific condition is supervised by SNRCU inspectors.

For replacement of equipment not in compliance with the adopted standards, a comprehensive plan has been prepared by the Ministry of Health and assessment of equipment to be replaced has been done, however, replacement is based on the availability of funds from the Government.

2008 Suggestion 12 (S12): SNRCU and Ministry of Health on issues of state regulation of radiation safety has jointly issued Order No.28/82 in 2009 registered in the Ministry of Justice of Ukraine, which defines provisions on interaction between the two organizations. Discussions by the IRRS team with the representatives of both organizations during this Follow-up Mission revealed that there is effective interaction between SNRCU and the Ministry of Health both at the Headquarters as well as at the Regional Offices level. Information on withdrawal of sanitary passports is one of the issues immediately reported by the Sanitary Inspectors to the State inspectors of the SNRCU under the provision of the joint Order (For more details of interaction between SNRCU and MH, please see status of implementation of R-3).

2008 Suggestion 13 (S13): Generally dental radiology is subject to licensing as per Resolution of the Cabinet of Ministers No.912 of 2002(amended in 2005 and 2007) on the “Permissive Activity in the Sphere of Nuclear Energy Use” which also provides a list of equipment and sources which are exempted from the licensing but are under registration and regulatory surveillance by the SNRCU. Exemption is granted on the basis that the radiation risk to individuals caused by the exempted practice or source is sufficiently low. Now under the 2010 amendment of the legislation, only criteria for the exemption are to be determined by the Cabinet of Ministers of Ukraine, whereas, the SNRU will prepare the list of exempted items including modern dental radiology equipment with doses below the defined levels. However, use of obsolete dental X-ray apparatus with relatively higher doses is still subject to licensing by the SNRCU.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Suggestion 11 (S11): Open – in progress. The suggestion is open because the replacement of obsolete equipment needs financial commitment by the government of Ukraine.

2008 Suggestion 12 (S12): Closed - A mechanism of exchange of information between SNRCU and MH on the issues of safety significance and the issue of withdrawing of sanitary passports, at the level of regional sanitary inspectors and State inspectors of SNRCU has been introduced.

2008 Suggestion 13 (S13): Closed - As per law of Ukraine, dental radiology is subject to licensing by the SNRCU and the cases where exemption is granted is on the basis of low radiation dose considered to be within the acceptable limit. The exempted facilities are also under regulatory control (through registration) and subject to supervision by SNRCU inspectors.

NEW RECOMMENDATIONS, SUGGESTIONS & GOOD PRACTICES OF THE 2010 IRRS FOLLOW-UP MISSION

- (1) **BASIS: GS-R-1 § 6.17 states that** *“Government and, as appropriate, concerned organizations shall therefore pay attention to, and provide for, among other things, the following:*
(5) appropriate medical resources; and
(6) international co-operation.

SF4 **Suggestion:** The Government of Ukraine should ensure availability of adequate financial resources for the replacement of obsolete equipment being used in radiology and radiotherapy either through national resources or through international cooperation.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

R6 **Recommendation:** The Government should ensure the methodological unity of dose monitoring in Ukraine as well as the establishment of a national dose registry.

Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestions:

2008 Recommendation 6 (R6): Establishment of a central dose registry, under the auspices of the Radiological Protection Institute of the Academy of Medical Sciences of Ukraine, was approved under the Law in 2001 but no funds were allocated for the realization of such facility. The SNRCU has also written a letter (No.40065/1/1-09 in July 2009) to the Cabinet of Ministers and the Ministry of Health on the establishment of central dose registry, however, no practical measures at the national level are observed towards the establishment of a unified dose monitoring system and establishment of national dose registry.

Discussions were held during the follow-up mission between the IRRS team and the representatives of the relevant national organizations such as Ministry of Health, SNRCU and the Radiation Research Centre. All organizations have realized and emphasized the need for a unified dose monitoring system and establishment of a central dose registry. The discussion also revealed that some activities which don't involve significant funding have been carried out by the SNRCU and the Ministry of Health with the lead role taken by SNRCU. These activities include:

- Acquiring data of dosimetry laboratories in the county.
- Development of qualification criteria for a dosimetry laboratory by SNRCU in collaboration with MH and the Radiation Research Centre.
- Development of quality assurance requirements for the dosimetry services.
- Discussion in the Council of Radiation Protection Experts of Ukraine. The council agreed on the establishment of national dose registry and also emphasized the need for revision of the law of Ukraine of 2001; however, establishment of a full-fledged dose registry system cannot be accomplished without a financial resources commitment by the government.

Follow-up IRRS Mission 2010 'Conclusions':

2008 Recommendation 6 (R6): Open: Due to unavailability of financial resources a unified dose monitoring system has not yet been implemented and the establishment of a national dose registry has also not been accomplished.

NEW RECOMMENDATIONS, SUGGESTIONS & GOOD PRACTICES OF THE 2010 IRRS FOLLOW-UP MISSION

(1) **BASIS: GS-R-1 § 6.17 states that** “Government and, as appropriate, concerned organizations shall therefore pay attention to, and provide for, among other things, the following:

(2) dosimetry services;

(3) calibration and radio-analytical services;”

RF1 **Recommendation:** Government of Ukraine should ensure availability of appropriate financial resources for the establishment of dosimetry services and associated facilities for unified dose monitoring.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

R7 **Recommendation:** It is recommended that the regulatory provisions dealing with exemption and clearance be reviewed and revised, where necessary, to bring them in line with the BSS. RS-G-1.7 (guidance on the application of the concepts of exclusion, exemption and clearance) should also be taken into account.

Current Status of Implementation of the IRRS 2008 Recommendations/Suggestions:

2008 Recommendation 7 (R7): A new document; “Procedure for Clearance and Exemption from Regulatory Control in Frames of Practical Activity”, HII 306.4.159-2010 was developed and approved by SNRCU Order of 1 July 2010 No. 84, registered in the Ministry of Justice of 20 August 2010 No. 718/18013. The procedural part of the document has been drafted by SNRCU, while the generic clearance levels have been set by the Ministry of Health based on the IAEA safety guide RS-G-1.7. The procedure defines clearance and exemption. For clearance it allows not only use of generic clearance levels, but also facility and activity-specific values. These specific values are proposed and justified by the operator and have to be agreed by SNRCU and the Ministry of Health. Then SNRCU issues the regulatory decision approving these specific clearance values.

It can be summarised that the section of the recommendation dealing with clearance has been implemented. Concentration values of exemption levels as defined in the IAEA BSS (Safety Series No. 115) are currently not included in regulations of the Ministry of Health OCIIY-2005 (Sanitary Rules). These Sanitary Rules are planned to be revised on the basis of experience and revised IAEA BSS (DS 379) after its official publication.

Follow-up IRRS Mission 2010 ‘Conclusions’:

Recommendation 7 (R7): Open – in progress. The part of the recommendation dealing with clearance is closed. The part of the recommendation dealing with exemption is however, still under implementation.

4.2. REVIEW AND ASSESSMENT

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

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| S14 | Suggestion: SNRCU should consider the enhancement of its review and assessment capacity and programme to ensure the most effective regulatory decisions are made taking into account the advice of its external consultants. |
| S15 | Suggestion: SNRCU should consider formalizing a process for ensuring that technical support organizations involved in the regulatory review have enough staff with appropriate competencies. This should include explicit understanding of SNRCU safety regulations and requirements and their application during regulatory review, as well as the quality management provisions foreseen for the review process. It is further suggested that SNRCU implements a formal procedure for the periodic evaluation of the competence of staff of technical support organizations involved in regulatory review activities. By this procedure, SNRCU experts would be directly involved in the implementation of the evaluation. |

Current Status of Implementation of the IRRS 2008 Recommendations/Suggestions:

2008 Suggestion 14 (S14): SNRCU determined that this suggestion was fully implemented. However, there is no obvious difference in the SNRCU's present capacity to conduct review and assessment with that at the time of the 2008 mission. There are 45 posts vacant in SNRCU (although obviously only part of them may be related to the supervision of NPPs), which fact may also hinder the extension of the review and assessment activity. SNRCU is satisfied with its role in absorbing the results of the international assistance. Moreover, SNRCU considers that its review and assessment capacity has been increased due to the international assistance. Fulfillment of Suggestion 2 pertaining to the financing of SNRCU may also efficiently contribute to the closing of this issue.

2008 Suggestion 15 (S15): This suggestion was addressed by SNRCU coordinating with the Technical Support Organization (in this case, the State Scientific and Technical Center on Nuclear and Radiation Safety (SSTC NRS)) in the development of a training process that included specified training (with a formal training syllabus that focused on areas of importance such as understanding regulations, standards and rules), workshops, coaching, and finally, an examination that tested knowledge to a standard for success. This training process, which was formalized through procedures by SSTC NRS, was reviewed and endorsed by SNRCU and approved for use. SNRCU maintains a continuing involvement in this process by its inclusion in the SSTC NRS training oversight committee that reviews, among other items, the progress of training and performance results. Based on this effort, SNRCU considered this suggestion closed.

Follow-up IRRS Mission 2010 'Conclusions':

2008 Suggestion 14 (S14): Open: The IRRS team reaffirms the suggestion that SNRCU should consider the enhancement of its review and assessment capability in order to improve SNRCU's status as an "intelligent customer".

2008 Suggestion 15 (S15): Closed - The focus of this suggestion was primarily that SNRCU consider training the Technical Support Organization staff that support the regulatory review process. Specifically, training should be in the area of SNRCU safety regulations and requirements and their application during the review process. The team concluded these criteria were successfully met by SNRCU. Further, it was suggested that SNRCU experts be directly involved in the implementation of training, and SNRCU's inclusion in the SSTC NRS Oversight Committee demonstrates their involvement.

4.3. DEVELOPMENT OF REGULATIONS AND GUIDES

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

S16 **Suggestion:** SNRCU should give consideration to the order of priority when modifying regulatory documents.

Current Status of Implementation of the IRRS 2008 Recommendations/Suggestions

2008 Suggestion 16 (S16): Considerable progress was noted by the IRRS Team in the area of prioritization of legislative acts. The SNRCU has invested in improvement of its internal system for the management of legislative acts. The SNRCU initiated a lengthy process to upgrade the existing legislative structure, with due consideration being given to priorities and specifics of various areas, such as safety and security of nuclear installations, safety of sources, safe management of RAW, physical protection, etc. A plan for the period 2008-2012 (Strategy) is in place to upgrade the system of nuclear and radiation safety regulation. The Strategy is being periodically reviewed and updated, according to changes of policy and priorities.

The Strategy was developed with the active participation of all appropriate experts and in accordance with the Ukraine Energy Strategy, approved by the CMU in March 2006. The Legislative Strategy specifies the priorities for further development of the legislative framework. According to that Strategy, annual plans are being developed for the respective year. Those plans will be approved by the SNRCU Council on Legislation.

The IRRS follow-up review team has reviewed the plan for the year 2010. In the opinion of the team, the annual plan on legislative improvements is quite ambitious and would require considerable SNRCU staff commitment. The 2010 annual plan (including all initiatives to be started in 2010) includes more than 50 legal acts to be reviewed in detail or developed. It covers the following areas:

- New Nuclear Law;
- Development or review of seven acts to be issued by the CMU;
- Development or review of various SNRCU acts, including:
 - 23 on safety of nuclear installations;
 - 3 on transport;
 - 1 on emergency preparedness;
 - 3 on safeguards;
 - 5 on physical protection;
 - 7 on safety of sources;
 - 5 on safe management of RAW.

Annual plans are published at the SNRCU webpage.

Follow-up IRRS Mission 2010 'Conclusions':

2008 Suggestion 16 (S16): Closed.

4.4. INSPECTION AND ENFORCEMENT

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

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| S17 | Suggestion: SNRCU should consider developing a programme to optimize the objectivity of NPP inspectors to ensure continuing unbiased and fully independent assessments of the operator's safety performance. |
| S18 | Suggestion: SNRCU should consider actions to balance the compensation of inspectors assigned to headquarters with that of inspectors assigned to NPPs, in order to attract and retain high quality inspectors for assignment to headquarters. |
| S19 | Suggestion: SNRCU should consider enhancing its existing training programme for newly hired inspectors with extensive utility experience to include instruction, guidance and coaching to provide insights for the inspectors on the SNRCU's role as a regulator at a level that ensures sufficient preparedness for serving as an effective inspector. |
| R8 | Recommendation: SNRCU's current regulations do not provide guidance on the criteria used for initiating an 'ad hoc' or short notice inspection after being made aware of an abnormal occurrence that warrants immediate investigation. SNRCU should supply criteria for this decision-making procedure so that such short notice inspections may be initiated in a consistent and repeatable manner. |
| S20 | Suggestion: SNRCU should consider improving access for all inspectors to the database system for the tracking and trending of inspection findings and should make it available for use as a trending tool for individual NPPs and for assisting in inspection planning. |

Current Status of Implementation of the IRRS 2008 Recommendations/Suggestions:

2008 Suggestion 17 (S17): SNRCU's self-assessment concluded this suggestion should be closed. Actions to enhance objectivity have been implemented by SNRCU. These include inspections at NPPs in a manner such that visiting resident inspectors from other NPPs are regularly assigned to take part in the annual comprehensive inspections. International assistance is also available in certain cases, as well as having staff from the TSO (SSTC NRS) accompany inspectors to provide expert advice during the inspection activities. Co-operation with these staff during inspections also contributes to the objective and unbiased inspection findings. These activities have been formalized by SNRCU order as an improvement of inspection activities at NPP sites.

2008 Suggestion 18 (S18): By a CMU Resolution 809 of 10 September 2008, the tariff payment of state employees from the headquarters in Kiev was increased by 50%. This was a good step towards achieving a good balance between headquarters and site inspectors.

However, in practice, the real average payment of headquarters inspectors did not increase (2008 - 638\$, 2009 - 549\$ and 2010 - 637\$), but the increased tariff payment ensured that salaries remain at approximately the same level, taking into account the difficult financial situation during the crisis.

It is worth mentioning that headquarters inspectors receive a better salary than the average for the sector and more than similar positions in other state authorities. Proposed further improvements of salaries should lead to sustainability inside the organization and may significantly contribute to knowledge preservation.

2008 Suggestion 19 (S19): SNRCU determined this suggestion was implemented and should be closed. SNRCU expanded the methodology of the training programme of newly hired site inspectors

and made changes to its procedure for the training of SNRCU on-site inspectors (regardless of previous experience, whether employed by the operator or other organization), adopting an approach consistent with IAEA-TECDOC-1254/R.

2008 Recommendation 8 (R8): SNRCU determined this recommendation was fully implemented based on activities undertaken by the Committee. SNRCU identified that current legislation neither prohibited nor provided for “ad hoc” or short notice inspections following awareness of an abnormal occurrence that warrants immediate investigation. Accordingly, SNRCU documents were silent on the use of these inspections being performed. In order to clearly provide for this inspection option, SNRCU has added a provision to their regulations that lays out the option of using additional “ad hoc” or short notice inspections.

The team acknowledges that efforts are underway by SNRCU to develop risk-informed improvements in the inspection programme that will add risk-informed criteria for inspection guidance. If these risk-informed improvements contain decision-making criteria, addition of this technique, if done with decision-making criteria for “ad hoc” inspection will add enhancements that would aid in the closure of this recommendation.

2008 Suggestion 20 (S20): SNRCU’s self-assessment determined that this suggestion had not been fully implemented and should remain open. SNRCU has taken part in the development of several databases that are intended to enhance the inspection process. One database makes available to the inspectors the technical decisions taken by the licensees and authorized by SNRCU. This database has been developed in co-operation with international organizations and is based on internet access and is operational. Another database, still under development, contains results of inspections performed by SNRCU in various NPPs.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Suggestion 17 (S17): Closed - This suggestion recognized that the objectivity of inspector is an important attribute in assuring unbiased and fully independent assessments of the operator’s safety performance. SNRCU has taken several effective initiatives as listed in the suggestion status earlier in this section. Those initiatives include formalizing inspection programme improvements in discussions at an SNRCU Board meeting on January 15, 2009, as well as approval of the inspection programme improvements in an SNRCU order dated January 19, 2009.

2008 Suggestion 18 (S18): Open – in progress. Given the limited budget, the suggestion implementation is still in progress. See also 2010 Suggestion 2.

2008 Suggestion 19 (S19): Closed - The team determined this suggestion related to Suggestion 17. Specifically, while the hiring of inspection staff with extensive operator experience adds a significant resource of technical talent, training and coaching in the proper approach as a member of the regulatory body is necessary for these individuals to operate independently, objectively, and unbiased as members of the regulatory body.

As documented under the suggestion status, SNRCU has taken action to address this suggestion by enhancing its inspection training programme. The programme enhancements take advantage of international recommendations as well as that of domestic experience. The new methodology has been applied already in the case of a newly hired site inspector. The standard programme for inspectors working in headquarters has also been renewed.

2008 Recommendation 8 (R8): Open - in progress: While SNRCU has taken some actions to effectively resolve this recommendation, these actions (as described in the current status paragraph) have not yet fully addressed all aspects of the recommendation. Specifically, the actions taken do not contain guidance on the criteria to be used for initiating “ad hoc” or short notice inspections, nor outline a decision-making process. While some level of correlation has been developed between categories of violations and “ad hoc” or short notice SNRCU inspection action, that correlation consists of broad and non-specific criteria. Without adequate decision-making criteria for

consistent start points for the initiation of “ad hoc” or short notice inspections, the intent of the recommendation is not fully implemented.

The team acknowledges that efforts are underway by SNRCU to develop improvements in the inspection programme that will add risk-informed criteria for inspection guidance. Moreover, the Integrated Oversight System is now under development (Board SNRCU Decision No. 12 28 May 09). This system foresees monitoring of the operator performance indicators and provides criteria for appropriate regulatory decisions (including ‘ad-hoc’ inspections). The recommendation could be resolved in frames of implementation of this new system.

2008 Suggestion 20 (S20): Open – in progress. While SNRCU has made progress by making available some inspection enhancing information to its inspection staff to improve the inspection programme, more is planned. Included is information that will provide inspectors information for tracking and trending of inspection findings. This latter initiative should provide the basis to close this suggestion.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

R9	<u>Recommendation:</u> The Government should, at the earliest opportunity, take steps to reconsider substituting sanctions against individuals with sanctions against legal entities. The policy of fining individuals may discourage the staff of nuclear facilities from reporting on deficiencies related to safety.
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Current Status of Implementation of the IRRS 2008 Recommendations/Suggestions:

2008 Recommendation 9 (R9): Based on its self-assessment, SNRCU has determined this recommendation should be closed. The Government of Ukraine proposes to supplement previously approved legislation to be able to impose penalties upon holders of licenses for violations, as the preferred manner to address such matters. Currently, a draft Resolution of the Cabinet of Ministers of Ukraine is being considered that will formally adopt this change. Pending the Cabinet of Ministers’ approval, SNRCU has developed draft procedures to implement the Resolution. However, these procedures retain the flexibility to impose fines on certain individuals in cases involving, for example, repetitive or wilful violations.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Recommendation 9 (R9): Open – in progress. This recommendation was developed to request that the Government of Ukraine consider sanctions be taken against legal persons (i.e. holders of licenses) rather than against individuals in order not to discourage the staff of nuclear facilities from reporting safety issues. While significant effort has been taken to date by SNRCU to accomplish all facets of the recommendation, the resolution is currently awaiting the approval of the Cabinet of Ministers of Ukraine and the subsequent incorporation of the SNRCU procedures that implement the resolution should follow.

As documented earlier in this section of the report, SNRCU has decided that the application of sanctions to individuals should remain an option. The IRRS team accepted the arguments behind this, but stated that a firm distinction should be made among the involved facilities and in case of major nuclear facilities (like NPPs, fuel manufacturers, nuclear waste management sites) to the effect that penalizing of individuals should not be normally imposed.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

R10 **Recommendation:** SNRCU should prepare more detailed guidance or procedures for enforcement (e.g.: stop work, limiting actions) to radiation safety inspectors establishing in writing how they must proceed.

Current Status of Implementation of the IRRS 2008 Recommendations/Suggestions:

2008 Recommendation 10 (R10): SNRCU has determined this recommendation should not be closed. The SNRCU's status of this item is currently in the same process as described in Recommendation 9. Specifically, the draft Resolution of the Cabinet of Ministers of Ukraine will also permit SNRCU to resolve and implement Recommendation 10. Also, as described in Recommendation 9, pending the Cabinet of Ministers' approval, SNRCU has developed draft procedures that will implement the Resolution and permit eventual closure of Resolution 10.

Follow-up IRRS Mission 2010 'Conclusions':

2008 Recommendation 10 (R10): Open – in progress. In addition, the team has similar concerns with the implementation of this recommendation as it relates to individual sanctions as referred to in Recommendation 9.

5. TRANSPORT OF RADIOACTIVE MATERIAL

5.1. LEGISLATIVE AND GOVERNMENTAL RESPONSIBILITIES

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

S21	Suggestion: The SNRCU should develop a guide on quality management systems for the safe transport of radioactive material taking into account the latest advice of the international organizations including the IAEA.
S22	Suggestion: The SNRCU should develop a guide (regulation) taking into account the IAEA Safety Guide “Compliance Assurance for the Safe Transport of Radioactive Material”, No. TS-G-1.5.

Current Status of implementation of the IRRS Mission 2008 Recommendation/Suggestions:

2008 Suggestion 21 (S21): Development of this document is underway according to para. 3.25 of the “Plan of Normative Regulation of SNRCU for 2010”. In the context of this work and according to para II.6 of the “Plan of Applied Research in the area of Nuclear Regulation for 2010”, at the request of SNRCU the SSTC performed an “Analysis of IAEA Documents on Safety Assessment during Transportation of Radioactive Material and Requirements to the Management System of Transportation of Radioactive Materials”, where a comparative analysis of Ukrainian legislation and IAEA documents was performed. The report, including recommendations on the implementation of management system for transport of radioactive material and implementation of a compliance assurance programme was finalized on 13 July 2010. The regulatory document is scheduled to be developed during 2011.

2008 Suggestion 22 (S22): Development of this document is underway according to para. 3.26 of “Plan of Normative Regulation of SNRCU for 2010”. (See also S21). The regulatory document is scheduled to be developed during 2011.

Follow-up IRRS Mission 2010 ‘Conclusions’:

The IRRS Team noted that, Ukraine has in the period since the 2008 IRRS, adhered to the ADN (International Convention on the Carriage of Dangerous Goods by Inland Waterways) on 28 January 2010.

The SNRCU issued the following regulatory documents:

- Advisory material for the nuclear and radiation safety regulations during radioactive materials transportation (PBPRM-2006, approved by the Cabinet of Ministers on 20 November 2009) [IAEA TS-G-1.1]
- Guidelines for the development of a radiation protection programme for the transport of radioactive material (approved by the order No. 101 of SNRCU, 2 August 2010) [IAEA TS-G-1.3]

2008 Suggestion 21 (S21): Open – in progress.

2008 Suggestion 22 (S22): Open – in progress.

Note: According to TS-R-1, compliance assurance is meant to be a systematic programme of measures applied by a competent authority aimed at ensuring the provisions of the Transport Regulations are met in practice. Therefore the outcome of SSTC’s analysis is also to be taken into account in the further development of the management system of the SNRCU.

6. EMERGENCY PREPAREDNESS

6.1. GENERAL REQUIREMENTS

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

R11 **Recommendation:** To meet the IAEA requirements on categorization of threats, the Ministry of Health should take the necessary steps in order to harmonize the Sanitary Regulations (DSP-05 [VK#27]) with NP 083-2004 [VK#25].

Current Status of implementation of the IRRS Mission 2008

Recommendation R11 (R11): Assessment of threat categories of nuclear and radiation facilities is required by the “Plan of Response on Radiation Accident NP-306.5.01/3/083-2004” issued by SNRCU and is in accordance with GS-R-2. The Plan introduces a five-threat category system identical to GS-R-2 on the basis of the radiation hazard in case of emergency.

The Ministry of Health established in Sanitary Regulation DSP-05, three categories of nuclear and radiation facilities. In DSP-05 there is no category equivalent to Threat Categories IV and V.

On the basis of review of both documents (NP-306.5.01/3/083-2004 and DSP-05) and discussions with the representatives of SNRCU and Ministry of Health, it was clarified that the categorization of DSP-05 has a much wider application than NP 083-2004. Whereas, NP 083-2004 is focused on radiation related threats and for developing generically optimized arrangements for preparedness and response (as required in GS-R-2), DSP-05 mainly considers the operational potential effect on the population during normal operation for all kinds of hazardous installations, as well as in emergencies. Therefore, the categorization in DSP-05 is general and universal and is applicable to all types of sites and facilities – chemical, nuclear, medical, research, etc. This categorization must be taken into account during the site selection process and construction of new facilities, as well as for emergency preparedness at existing facilities. Even for nuclear installations, category I defined by DSP-05 includes not only NPP’s, but also facilities for extraction and reprocessing of uranium ore, facilities for reprocessing of spent nuclear fuel, etc. Category I defined in NP-306.5.01/3/083-2004 did not include these facilities.

SNRCU and the Ministry of Health have started discussions to address any contradictions in the interpretation and implementation of NP-306.5.01/3/083-2004 and DSP-05. Several meetings have been conducted. As a result, the Ministry of Health is expected to perform the necessary steps in order to harmonize the Sanitary Regulation (DSP-05) with the NP 083-2004. During recent meetings, agreement was reached that the Ministry of Health will develop a supplementary methodological guideline to harmonize the existing Sanitary Regulation (DSP-05) with NP 083-2004 and with GS-R-2. These decisions have been presented at the meeting of the SNRCU Consultancy Council for Radiation Protection held on 19 November 2010. Although the Ministry of Health stated that this issue is not urgent, the deadline set by the Cabinet of Ministers, to submit proposals on harmonization of the Sanitary Regulations (DSP-05) with NP 083-2004 is the end of 2010.

Follow-up IRRS Mission 2010 ‘Conclusions’:

Recommendation 11 (R11): Open – in progress. The planned guide is expected to resolve the main issues of inconsistency and misunderstanding. The harmonization process has to continue.

6.2. FUNCTIONAL REQUIREMENTS

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION	
R12	Recommendation: The Ministry of Health should harmonize the Sanitary Regulations with the Law on Human Protection Against Impact of Ionizing Radiation to avoid misunderstanding in its use for decision making during the emergency response.
S23	Suggestion: The Ministry of Health and SNRCU should jointly implement the Precautionary Action Zones (PAZ) / Urgent Planning Zones (UPZ) concept for taking urgent protective actions.

Current Status of implementation of the IRRS Mission 2008

Recommendation 12 (R12): To avoid misunderstanding and conflict between the two national documents, Law 2397-III and NRBU-97, SNRCU and the Ministry of Health started discussions. Several meetings were held. As a result, the Ministry of Health has committed itself to perform the necessary steps in order to harmonize the intervention levels in the Law 2397-III with the values in NRBU-97. To achieve this harmonization, the Ministry of Health will introduce a request for amendment of Law 2397-III to the National Commission for Radiation Protection (NCRP). The NCRP is led by a Member of the Ukrainian Parliament (Verhovna Rada). The Legal Committee of the NCRP has the legislative right to initiate changes in the law and will formalize a draft amendment of the law.

The dead line to initiate the harmonization of Law 2397-III with the NRBU-97 is set by the Cabinet of Ministers before the end of 2010.

The 2008 IRRS mission reported that the intervention levels in several documents were contradictory. This aspect was investigated thoroughly by the Institute for Radiation Protection on behalf of the Ministry of Health.

The national (Ukrainian) and international general intervention levels for taking protective actions are summarized in **Table No.1**.

Table No.1. National and international intervention levels for taking protective actions.

Protection measure	Ukrainian law	NRBU-97		BSS, GS-R-2 Optimised levels
		lower level	upper level	
Sheltering	5 mSv 14 d (projected dose)	5 mSv 14 d (avertable dose)	50 mSv 14 d (avertable dose)	10 mSv 2 d (avertable dose)
Temporary evacuation	50 mSv 14 d (projected dose)	50 mSv 14 d (avertable dose)	500 mSv 14 d (avertable dose)	50 mSv 7 d (avertable dose)
Iodine prophylaxis	50 mGy ? d (children)* 200 mGy ? d (adults)* (absorbed dose)	50 mGy 14 d (children) 200 mGy 14 d (adults) (avertable dose)	200 mGy 14 d (children) 500 mGy 14 d (adults) (avertable dose)	100 mGy ? d* (avertable dose)
Resettlement	-	0.05 Sv 1 a	0.05 Sv 1 a	1 Sv whole life (avertable dose)
	-	0.2 Sv whole life	1 Sv the whole life	
Temporary resettlement	-	5 mSv 1 m	30 mSv 1 m	30 mSv 1 m (avertable dose)
		0.1 Sv resettlement	1 Sv resettlement	-

*period not defined

Table No.1 provides the values in the various documents all of which use a different basis and thus, may not be directly compared. Law 2397-III Human Protection against Impact of Ionizing Radiation implies the projected doses, the NRB-97 defines the avertable doses and the IAEA defines the optimized avertable doses.

The NRB-97 has two levels: Level 1 - lower conditionally / provisionally justified level and Level 2 – upper unconditionally / implicitly justified level. If the projected doses in an emergency are equal or higher than the doses in Level 2 protection measures must be implemented without delay or further justification, i.e. the implementation is mandatory and justified. If the projected doses in an emergency are between Level 1 and Level 2, the protection measures should be implemented after justification, which takes into account other factors including social, economic and other relevant factors into account. If the projected doses in an emergency are less than Level 1 no protection measure should be implemented. The Ministry of Health stated that this differentiated approach is based on the experience of Ukraine with response to the Chernobyl accident and concluded that, in their view, there is no contradiction with BSS.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Recommendation 12 (R12): Open – in progress. The legislative proposal was described but no documents were provided to the IRRS Team. The process has to continue.

Current Status of implementation of the IRRS Mission 2008

2008 Suggestion 23(S23): In accordance with Articles 2 and 25 of the Law “On State Local Administration” and Article 8 of the Law “On Civil Defence of Ukraine” the local administration is responsible for protection of the population in case of emergency. In case of emergency at an NPP the operator takes all measures to protect on-site personnel and promptly inform the off-site officials to implement the urgent protective measures within the 30 km zone.

In accordance with the Ukrainian regulation NRB-97, the Sanitary Regulations DSP-05 and the Law of Ukraine “On Use of Nuclear Power and Radiation Safety” special zones are created as follows:

- sanitary protected zone;
- surveillance zone.

A sanitary protected zone is defined during the design of all facilities, including nuclear facilities. Once defined, the size of this zone may not be reduced. Within this zone, settlement is prohibited and it is prohibited to construct buildings and other constructions which are not connected with the operation of the (nuclear) facility. A special methodology for establishment of the zone has been developed. The size of this zone is defined in accordance with the Methodology for Calculation of the Dangerous Substances Concentrations in Air as a Result of Releases from Enterprises (OND-86). For NPP's the size of the sanitary protected zone may not be less than 3 km.

A surveillance zone is created around the sanitary protected zone and is defined as a zone where the potential influence to the population from the nuclear facility is expected. The size of the zone is defined by the Resolution of the Cabinet of Ministries No.1432 from 26 October 2001 and should be not less than 30 km or 50 km depending upon the nuclear facility.

All administrative territories that fully or partially fall in the surveillance zone must develop their emergency response plans in accordance with the NP-306.5.01/3/083-2004.

There have been no actions for this suggestion, because after the careful analysis, the Ministry of Health and SNRCU are convinced that the philosophy of these zones is in compliance with the PAZ/UPZ concept for taking urgent protection action defined in GS-R-2 despite the different name. The IRRS team agrees.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Suggestion 23(S23): Closed.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION	
R13	<u>Recommendation:</u> The SNRCU in cooperation with the Ministry of Health should establish requirements for the conduct of protective actions that will guarantee sufficient protection of responders and avoid delay in implementation of urgent protection actions, e.g. life saving. To avoid undue delay in implementing urgent protection actions, a procedure should be developed to ensure that authorizations that allow responders to receive doses above dose limits are issued promptly.
S24	<u>Suggestion:</u> The Ministry of Health should consider harmonization of the system of intervention levels used for protection of emergency workers during response to emergencies with the BSS and GS-R-2.

Current Status of implementation of the IRRS Mission 2008

Recommendation 13 (R13): With amendment No.560 dated 30 July 2009 the Minister of Health updated Order No.189 dated 3 September 2000 on “Approval of the Procedures for Providing Information within the Functional Subsystem of the Ministry of Health in the Frame of Governmental Information Analytical System on Emergency Issues”. The amended order sets a fixed time of 45 minutes for authorization that allows the responders to an emergency to receive doses above the dose limits. The recommendation is fulfilled.

Follow-up IRRS Mission 2010 ‘Conclusions’:

Recommendation 13 (R13): Closed.

Current Status of implementation of the IRRS Mission

2008 Suggestion 24 (S24): The Ministry of Health has considered and analyzed the suggestion. However, they conclude the contradiction is not relevant in practice and they cannot find the background for the Level 2 mentioned in the IRRS report. Levels 1 and 2 are defined as intervention levels and action levels to protect members of the public and are specified separately for different protective actions and remedial actions (see Table 1). The position of Ministry of Health is that the suggestion is based on a misunderstanding. The Section 7 of Sanitary Regulation NRBU-97 and the Section 13 of Sanitary Regulation DSP-05 use the Level 1 and Level 2 in the same way and refer to the intervention levels for implementation protection measures. The doses of 100 mSv and 500 mSv are oriented to the protection of emergency workers.

BSS 115 is under revision at the moment. The IRRS team agrees that, until the finalization of the revision of BSS, no further action from Ukrainian regulators is needed in relation to this suggestion.

Follow-up IRRS Mission 2010 ‘Conclusions’:

2008 Suggestion 24 (S24): Closed.

7. RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING

7.1. NATIONAL WASTE MANAGEMENT POLICY AND STRATEGY

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

- | | |
|-----|--|
| R14 | Recommendation: The Government should approve as soon as possible the revised National Programme on Radioactive Waste Management and the funding mechanism necessary to guarantee its implementation. |
| S25 | Suggestion: The Strategy on Radioactive Waste Management under development by the Ministry of Emergency Situations in cooperation with other interested parties and in the frame of a TACIS Project should be finalized and approved as soon as possible by the Government. |

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Recommendation 14 (R14): Resolution of the Cabinet of Ministers of Ukraine of 19 August 2009 No. 990-p approved the Strategy on radioactive waste management. Implementation of this strategy started in 2010 and will be performed in three stages. Tasks and measures of first stage, with a duration until 2017, will be implemented within the national environmental programme on radioactive waste management (National Programme), approved by the Law of Ukraine of 17 September 2008 No. 516.

The National Programme defines short-term tasks and measures for about 10 years, till 2017. The document covers also responsibility and financial arrangements for RAW management measures. The experts involved in the TACIS project No. U4.03/04 have reviewed the document.

To solve tasks and measures of the National Programme, in 2009 the mechanism for accumulating costs for the State Fund of Radioactive Waste Management pursuant to the principle ‘waste generator pays’ was established. This Fund was established by the Law of Ukraine “On Changes to some Laws of Ukraine on Radioactive Waste Management” approved on 17 September 2008 under No. 515-VI. In accordance with the adopted regulations, all enterprises and organizations in the territory of Ukraine whose activities result or may result in the generation of radioactive waste must pay fees to this Fund. They receive guarantees from the State that it will ensure safe management of radioactive waste, including its disposal.

All waste streams are dealt with in the National Programme. For example, for salt melt from NPPs two options are under consideration: to process the waste at the NPP sites or to transport the waste at the Vector site and to process it there. Experiences from other countries are under investigation (Russia, Bulgaria).

The Ministry of Emergencies together with the Ministry of Fuel and Energy is developing general waste acceptance criteria for near-surface disposal. The Ministry of Emergencies has created a working group dealing with this issue. Other working groups deal with design and selection of waste overpacks and with the selection of waste treatment and conditioning technologies.

Other waste streams considered in the National Programme are institutional waste and waste from military projects.

The fulfilment of tasks defined by the National Programme is reviewed and reported to the Government twice a year by the Ministry of Emergencies and, if needed, the Programme may be updated once a year.

2008 Suggestion 25 (S25): The National Strategy on radioactive waste management has been approved by the Cabinet of Ministers on 19 August 2009 (Resolution No. 990-p “On approval of

Strategy on Radioactive Waste Management in Ukraine”). The Strategy deals with long-term issues and therefore has been developed for 50 years. The document has been prepared within the framework of the TACIS project No.U4.03/04 with the participation of experts from France, Germany, the Netherlands, Sweden and the UK. The National Strategy is linked to the National energy strategy to assure sustainable development of nuclear energy in Ukraine.

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Recommendation 14 (R14): Closed.

2008 Suggestion 25 (S25): Closed.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

R15 **Recommendation**: In order to provide an organizational framework for the safe management of disposed radioactive waste cognisant of the safety of future generations, it is recommended that Government assigns executive responsibility to a specialized agency to deal with the long-term management of radioactive waste.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Recommendation 15 (R15): The Resolution of the Cabinet of Ministers of Ukraine of 19 August 2009 No. 990-p approved the Strategy on radioactive waste management. Implementation of this strategy started in 2010 and will be performed in three stages.

The National Strategy also contains provisions on the creation of a National waste management agency. This agency will have the responsibility for long-term storage and disposal of all radioactive waste in Ukraine.

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Recommendation 15 (R15): Open – in progress. According to the governmental order, SNRCU together with other governmental authorities involved is preparing supporting documents related to the establishment of this agency. It is expected that the agency will be established soon.

7.2. GENERAL SAFETY PROVISIONS FOR RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

- S26a ***Suggestion:** The SNRCU should strengthen work directed at introduction of principle of optimisation at practice, where tendency when exposure doses during normal operation are much lower than established “control levels” for such practice or facility.
- S26 **Suggestion:** The SNRCU should initiate a process to review and update the existing classification system for radioactive waste. It would be reasonable to classify radioactive waste on the basis of considerations of its long term safety, i.e. its disposal, so as to keep consistency among the different stages of radioactive waste management. Such a classification system would facilitate communication and information exchange among Member States, and eliminate some of the ambiguity that now exists in the Ukrainian classification schemes for radioactive waste.

***NOTE:** Due to a technical oversight this suggestion was omitted from the final version of the 2008 IRRS mission report. The suggestion was reviewed by the IRRS Team during the 2010 follow-up mission and their observations and conclusion are included in this report.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Suggestion 26a (S26a): According to the SNRCU letter of 5 March 2009 No. 24-20/1269 specialized enterprises UkrDO “RADON” revised and optimized “control levels” of exposure doses of personnel taking into account achieved radiation safety with the purpose of the practical implementation of the optimization principle.

The optimisation of radiation protection has been demonstrated for the example of UkrDO RADON enterprise in Dnepropetrovsk. The “control levels” decreased from 15 mSv/y (2004-2005) to 4 mSv/y (2010). For the time being only RADON enterprise in Kiev uses control level higher than 5 mSv/y. In this case the annex to the operational licence No. 000801 requires the operator to optimize “control levels” by 1 March 2011.

The “control levels” take also the activities of UkrDO “RADON” enterprises related to the recovery of orphan sources into consideration.

2008 Suggestion 26 (S26): According to the initiative of the Ministry of Emergencies an interagency working group (Ministry of Health, Ministry of Emergencies, SNRCU, Ministry of Energy, TSOs) was established with the purpose of development of regulatory document on “Conditions for RAW Management at the Territory of the Exclusion Zone” (in addition to Sanitary Regulations – 2005). One of the purposes of this document is to complement the existing waste classification taking into account the final step in waste management – disposal.

As a result this inter-agency working group has prepared a draft of hygienic norm on “Conditions for RAW Management at the Territory of the Exclusion Zone”. This norm considers IAEA Guide on “Classification of Radioactive Waste” (GSG-1) and implements it for the types of disposal facilities. According to the National Programme it is considered that near-surface disposal facilities for all relevant waste streams from Ukraine will be placed in the Exclusion Zone. Above the framework of the IAEA guide the indicative concentration activities of LLW, ILW and HLW are listed (about 2-5 orders, 5-8 orders and more than 8 orders of magnitude higher than exemption levels). The identified waste classes are linked to different disposal options. This addition to the Sanitary Rules is expected to be officially issued by the end of 2010.

In the framework of co-operation between the Ministry of Emergencies and the EC in framework of the Action Programme 2008, a development of specific recommendations concerning revision of

radioactive waste classification is foreseen. This waste classification will be implemented for all waste streams available.

Follow-up IRRS Mission 2010 'Conclusions'

2008 Suggestion 26a (S26a): Closed - "Control levels" have been optimized in 5 of 6 RADON enterprises in Ukraine and in some cases reduced. It is expected that the promotion of an ALARA culture will continue and not only in RADON enterprises.

2008 Suggestion 26 (S26): Closed.

7.3. CLEARANCE REGIME FOR RADIOACTIVE WASTE AND DISCHARGE OF RADIOACTIVE MATERIALS

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

R16 **Recommendation:** The SNRCU should initiate a process to review and update the procedures for the authorization, control and recording of radioactive discharges from medical practices. It should also request each RADON facility in the next review of its safety assessment report to develop or review the justification, safety assessment and procedures for the control and recording of radioactive discharges to the environment as needed and in accordance with international recommendations.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Recommendation 16 (R16): Requirements on management and control of discharges are included into special licence conditions of relevant medical institutions. In the process of development of licensing requirements for nuclear medicine (planned for 2011) corresponding requirement will be included.

A similar process has been initiated for six regional RADON plants in Kyiv, Odessa, Kharkiv, Dnipropetrovsk, Lviv and Donetsk. These plants are incorporated into the state corporation Ukrainian State Radon Association UkrDO "RADON". Each plant has its own service area. Solid radioactive waste, biological waste contaminated with radioactive materials and disused ionizing radiation sources from each region of the country are transferred to the RADON plants. The plants do not accept liquid waste. Radioactive waste is accepted only after solidification and stored as solid waste. The liquid waste produced by plants is stored in the dedicated tanks. Solid waste is stored in the containers in the storage facilities for solid waste. Biological waste is placed separately from solid waste in special storage facilities. Spent ionizing radiation sources are stored shielded in the storage facilities for solid waste as the ordinary solid waste, or without shielding in special disposal boreholes.

SNRCU has requested the operator of RADON waste storage and "legacy waste" disposal facilities to perform a reassessment of safety in accordance with rules and standards on nuclear and radiation safety. In the case of Lviv RADON and Odessa RADON facilities special conditions for safety reassessment have already been included in their operating licenses.

It is expected that for all RADON facilities new licenses with special conditions will be issued by the end of 2011.

Follow-up IRRS Mission 2010 'Conclusions'

2008 Recommendation 16 (R16): Closed.

7.4. NEAR-SURFACE DISPOSAL OF RADIOACTIVE WASTE

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

- S27 **Suggestion:** SNRCU might consider initiating the review of regulatory documents dealing with dose constraints applicable to different stages in the life time of a near-surface disposal facility, taking due account of the relevant IAEA safety standard.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Suggestion 27 (S27): At the time of the IRRS follow-up mission the reviews of NRBU-97/D-2000 and OCIIY-2005 (Sanitary Rules) were underway (see also S26) within the development of hygienic norm on “Conditions for RAW Management at the Territory of the Exclusion Zone”. The draft includes a dose constraint of 0.5 mSv/y for normal evolution scenario for a member of critical group of public. This value is related to the specific conditions of the Exclusion Zone – no public in the distance of 1 km from disposal facility up to the border of Exclusion Zone. For the operational and post-control period the values defined in NRBU-97/D-2000 are valid for other facilities outside the Exclusion Zone. For so called alternative scenarios a dose limit of 1 mSv/y and for inadvertent human intrusion a dose limit of 50 mSv/y is applicable (see NP 306.4.149-2008).

This addition to the Sanitary Rules is expected to be officially issued by the end of 2010 (same document as referred to in S26).

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Suggestion 27 (S27): Closed.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

- R17 **Recommendation:** The safety assessment for the near-surface disposal facilities SWR-1 and SWR-2 at the Vektor site does not fully comply with the requirements of WS-R-1, § 3.4 (a) and HII 306.3.02/3.038-2000. In respect of the post-closure safety of these two disposal facilities the SNRCU should request that a full scope safety assessment be performed.
- R18 **Recommendation:** The environmental assessment of neither the SWR-1 and SWR-2 facilities nor the LOT 3 facility, which are located at the same Vektor site, does not assess their joint impact on the members of the critical group and therefore the requirement on the overall safety assessment, as defined in WS-R-1, § 3.4 (c) is not completely fulfilled. Therefore the regulatory body should require the operator in the future licensing documentation to consider the possible integrated impact of all facilities at the Vektor site to people and the environment.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Recommendation 17 (R17): The main radioactive waste management enterprises in the Exclusion Zone are the State Specialized Enterprises (SSE) “Complex”, “Technocenter” and the Chernobyl NPP. SSE “Technocenter” carries out activities on design and construction of three near-surface disposal facilities - TPB-1 (SWR-1), TPB-2 (SWR-2) and COICTPB (LOT-3), and the facilities technologically related to them at the “Vektor” site.

SSE “Technocenter” company will submit a report with the safety analysis of near surface disposal facilities SWR-1 and SWR-2 to the SNRCU in due time to obtain an operational license.

Meanwhile, the licence No. 000894 has been issued on 2 July 2009 for the same company for the operation of two units of LOT-3 disposal facility. The licence contains requirements for the preparation of a detailed safety assessment considering operational experiences, real waste properties, derivation and justification of scenarios leading to potential and current exposure of humans, analysis of uncertainties and sensitivities for parameters, model and scenario etc. So far, the repository will be operated according to the results of the preliminary safety assessment based on conservative assumptions also used for the derivation of Waste Acceptance Criteria (WAC).

2008 Recommendation 18 (R18): The operator of all those facilities, SSE “Technocenter” company, has to perform an overall safety assessment of all facilities at Vektor site – SWR-1, SWR-2 and LOT3. This condition is included in the annex, dated 2 December 2009, to the construction licence No. 000142.

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Recommendation 17 (R17): Closed.

2008 Recommendation 18 (R18): Closed.

7.5. GEOLOGICAL DISPOSAL OF RADIOACTIVE WASTE

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION	
S28	<u>Suggestion:</u> When developing the planned regulatory document “Requirements on the Structure and Contents of the Safety Analysis Report for a Geological Repository at Different Lifecycle Stages” the IAEA safety standards should be taken into consideration.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Suggestion 28 (S28): The National Programme (Task 11) covers R&D works for the development of a geological repository (site selection process). These works are planned till 2017 and are funded according to the National Programme. It is expected that safety assessments will be performed for three potential sites.

The regulatory document on “Requirements on the Structure and Contents of the Safety Analysis Report for a Geological Repository at Different Lifecycle Stages” is planned to be prepared in 2012 and to be in line with the relevant IAEA safety standards:

- DS 334 (Safety Guide on Geological Disposal of Radioactive Waste),
- DS 354 (Safety Requirements on Disposal of Radioactive Waste),
- DS 355 (Safety Guide on the Safety Case and Safety Assessment for Radioactive Waste Disposal).

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Suggestion 28 (S28): Open – in progress.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION	
S29	<u>Suggestion:</u> SNRCU should, when reviewing regulations, consider the possibility of including a requirement for a comprehensive monitoring programme covering all phases of the lifetime of a geological repository and on passive safety features during the post-closure period.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Suggestion 29 (S29): It is planned to develop requirements for the structure and the content of the environmental monitoring programme for a geological repository. The work is expected to be performed in 2012.

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Suggestion 29 (S29): **Open** (in association with tasks defined in S28).

7.6. DECOMMISSIONING OF NUCLEAR AND OTHER FACILITIES CONTAINING RADIOACTIVE MATERIALS

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

R19 **Recommendation:** The SNRCU should include, in the future revision of regulations, special requirements for the release of NPP sites from regulatory control after decommissioning in accordance with the IAEA Safety Standards.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Recommendation 19 (R19): There is an agreement between the SNRCU and the Institute of Radiation Protection (TSO of the Ministry of Health) on the development of the regulations setting requirements for the release of NPP sites from regulatory control. The deliverable will have the format of a draft of SNRCU regulation and should be ready in September 2011. The draft regulation will not cover the Chernobyl NPP site, but a separate document dealing with this matter has already been developed (Levels for limited exemption for ChNPP site and materials from regulatory control).

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Recommendation 19 (R19): **Open – in progress.** Substantial progress has already been made, especially for the ChNPP.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

S30 **Suggestion:** Existing experience in regulating decommissioning of NPP should be extended, applying a graded approach, to other facilities such as radioactive waste management facilities including storage facilities, research laboratories, irradiators, etc.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Suggestion 30 (S30): The section with requirements on decommissioning of facilities with ionizing radiation sources taking into account IAEA WS-R-5 was included in the draft of the new version of “Requirements and Conditions for Safety (licensing conditions) for Performing Activity on the Use of Ionizing Radiation Sources”. Another normative document on general safety provision for fuel fabrication facility contains in its Chapter X provisions for decommissioning of this type of installation.

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Suggestion 30 (S30): **Closed.**

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

- S31 **Suggestion:** Currently there are two legal documents containing provisions for NPP decommissioning - HII 306.2.02/1.004-98 and HII 306.2.141-2008. However, the latter one does not contain as much detail as the previous one, such as the justification of the decommissioning option selection. The SNRCU should consider retaining and updating the detailed information available in HII 306.2.02/1.004-98 in future regulatory documents on decommissioning.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Suggestion 31 (S31): The SNRCU plans to develop a new regulatory document on NPP decommissioning in 2011. Therefore, the responsible SNRCU department has requested financial funding for this task together with tasks under S28 and S29.

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Suggestion 31 (S31): Open.

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

- R20 **Recommendation:** The SNRCU should revise regulations relating to decommissioning to bring them into line with paras 4.4., 4.5. and 5.8 of WS-R-5.

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Recommendation 20 (R20): SNRCU staff reviewed this recommendation after the IRRS mission and came to the conclusion that the responsibilities of the operator are clearly defined in the laws of Ukraine “On the Use of Nuclear Energy and Radiation Safety” and “On Permitted Activity in the Area of Nuclear Energy Use” and are in line with paras 4.4 and 4.5 of WS-R-5. Therefore, it has been concluded that there are no gaps in the national legal system with respect to this matter. The IRRS Team concluded that this part of the recommendation is closed.

The site characterisation is performed during the design of the nuclear installation as required by Art. 37 of the Law of Ukraine "On the Use of Nuclear Energy". However, the requirement of para 5.8 of WS-R-5 (using the baseline survey of the site, including information on the radiological conditions, to determine the background conditions for the end state) will be included in the document on the release of NPP sites from regulatory control (see R19).

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Recommendation 20 (R20): Open in part (see above) with regard to tasks related to R19.

8. MANAGEMENT SYSTEM

RECOMMENDATIONS AND SUGGESTIONS OF THE 2008 IRRS MISSION

- S32 **Suggestion:** In the process of continuous improvement of the quality management system, the SNRCU should consider the continuation of its efforts towards ensuring full compliance with the IAEA safety requirements as established in GS-R-3.
- S33 **Suggestion:** SNRCU should consider effectively communicating to all levels of its staff the values, mission, vision and goals of the organization. These values, mission, vision and goals can be included in a top level quality management document or set out as a separate document.
- S34 **Suggestion:** In the quality management system, SNRCU should consider establishing 'review and assessment' as a separate main process as defined by the legislation and in accordance with the IAEA safety standards

Current Status of implementation of the IRRS Mission 2008 Recommendations/Suggestions:

2008 Suggestion 32 (S32): SNRCU revised its General Quality Management Manual (GQMM) (version 1) and produced version 2 in July 2008 (SNRCU Order No. 143). The purpose of the version 2 of the GQMM was to address the requirements of ISO 9001-2001, taking into consideration other management system requirements, such as IAEA safety standard GS-R-3. The scope of the GQMM was limited to the SNRCU activities in the head-quarters.

In December 2008 SNRCU produced version 3 of the GQMM (SNRCU Order 202) in order to address organizational and legislative changes, such as the fact that the regional inspection offices acquired the status of legal entity. The GQMM was further revised in 2010, as the result of the annual independent audit (which took place in July 2009). The modifications of the manual were related to changes in the SNRCU organizational structure which took place in 2010. The latest version (version 3 amended by a list of changes) of the manual is based on the requirements of ISO 9001-2008.

The QMS of SNRCU was certified by an accredited certification body in 2008 for compliance with ISO 9001:2001 requirements and in July 2009 for compliance with ISO 9001:2008 requirements. The certification addresses the regulatory services in the area of nuclear and radiation safety conducted by SNRCU headquarters and does not address the activities conducted by the regional inspection offices.

Since 2008 IRRS mission, SNRCU has put efforts in trying to address the recommendations and suggestions made by the IRRS team. The SNRCU QMS has been assessed for compliance with GS-R-3 in the process of self-assessment and by using the SAT questionnaires. A lot of efforts were spent on further improvement of the system.

In general, the progress is satisfactory with respect to the ISO 9001-2008 requirements, as demonstrated by the obtained certificates, but additional work has still to be done for proving compliance with IAEA safety standards in the area of integrated management system.

2008 Suggestion 33 (S33): Since the 2008 IRRS mission, SNRCU has reviewed its top tier documents to ensure that organisational values, mission, vision and goals are consistent and easy to understand. The Quality Management Policy is part of the GQMM and includes mission and goals and the ways of their achievement. According to this document, SNRCU shall be able to effectively and efficiently fulfil the entrusted functions. QMS is identified as the proper tool for continuous improvements and providing customers with quality service. The policy promotes openness and

transparency, continuous analysis of SNRCU goals achievement, permanent examination of customers' needs, maintaining of open and fare dialogue and relationship with all partners and interested parties, etc.

In May 2008 SNRCU Board recommended the adoption of an “SNRCU policy in the area of safety provision of nuclear energy use and promotion of safety culture”. This policy was adopted and enacted by the SNRCU Order of 16.02.2009 No. 33 and is included in Section 6 of the current version of the General Quality Management Manual. The policy promotes establishment of a strong safety culture inside SNRCU which to promote improvement of safety culture at licensees. According to the policy, “Each SNRCU employee, irrespective of the occupied position, shall promote a positive attitude of licensees towards safety and has to draw the attention of licensees' management to the positive examples of safety culture, promoting its further development and wide use”.

Additionally, organisational values are established at national level concerning all civil servants and then further developed inside the QMS documents. All documents are easily accessible to SNRCU employees.

2008 Suggestion 34 (S34):

SNRCU revised its General Quality Management Manual (GQMM) (version 1) and produced version 2 in July 2008 (SNRCU Order No. 143). The purpose of the version 2 of the GQMM was to address the requirements of ISO 9001-2001, taking into consideration other management system requirements, such as IAEA safety standard GS-R-3.

The GQMM is supported by three specific manuals, which address some of the core regulatory processes: Quality Manual for Licensing Activities, Quality Manual on Supervision Activity and Quality Manual on Rule-making Activity, which were revised and issued in December 2008 SNRCU (SNRCU Order 202).

The Review team and SNRCU responsible staff discussed in detail the place of the review and assessment process within the structure of the SNRCU QMS. SNRCU has decided to define only three core processes, namely licensing, inspection and enforcement and rule-making. All other regulatory activities were defined as support processes, such as emergency planning and preparedness, public communication, training, financial and supply issues, etc.

Concerning the review and assessment process, the review team identified that review and assessment has not been included as a core process or even a support process in the QMS. SNRCU decided to include it as sub-processes in all main processes, where such review and assessment of licensee documents is needed. To ensure consistency, the SNRCU developed and adopted a series of internal documents in this area; e.g. “Methodology for Assessment of Expertise of Nuclear and Radiation Safety”, intended to describe part of the review and assessment process used by SNRCU. The Review team opinion is that whilst review and assessment is a widely accepted international practice as a core process, it is for the national regulatory body to determine how to manage review and assessment within its own regulatory activities. However, both parties agreed that all regulatory review and assessment activities have to be part of the QM system.

Follow-up IRRS Mission 2010 ‘Conclusions’

2008 Suggestion 32 (S32): Open – in progress. Parties agreed that further activities towards achieving and proving full compliance with GS-R-3 would be beneficial for the continuous improvement of effectiveness and efficiency inside the organization.

2008 Suggestion 33 (S33): Closed.

2008 Suggestion 34 (S34): Closed.

POLICY DISCUSSIONS

Policy Discussion 1: Building New Nuclear Units in Ukraine

Background

Legislative background

Regulatory decisions and licensing of a new nuclear power plant have their legislative basis within the laws of Ukraine, resolutions of the Cabinet of Ministers of Ukraine and normative documents issued by the SNRCU and by the civil construction authority. The licensing process of both the site and the design of a new nuclear power unit involve the following four steps:

- assessment of the feasibility study of the planned action with the participation of all involved authorities;
- environmental impact assessment;
- consultative referendum in conformance with the Aarhus convention;
- public hearings related to trans-boundary effects in conformance with the Espoo Convention.

In the licensing of the site and design, SNRCU has a role in the assessment of the feasibility study. The construction of a new reactor unit can only commence with the issuance of a construction licence by SNRCU.

Technical background

Commencement of construction of Units 3 and 4 of the Khmelnytsky NPP began in 1985 and 1986, respectively, but was interrupted in 1990 following a national moratorium on construction of NPPs. By the time of interruption, 75% of the construction for Unit 3 had been completed and 28% for Unit 4. The moratorium was lifted in 1993; however, the construction of these two units has not been restarted. In 2005, the Cabinet of Ministers of Ukraine made a decision on the continuation of the construction works and the related preparations have been initiated. In the years of 2008 – 2009 it has also been decided that the units shall be provided with nuclear reactors of the type VVER-1000/V392.

It is to be noted that the premises and civil constructions have originally been designed and partially constructed to house reactors of the type VVER-1000/V320 – a type substantially different from the VVER-1000/V392. An assessment of condition and capabilities of the civil constructions has been initiated, which provided results in 2009 at a time when the decision on the reactor type has already been made.

Discussion

SNRCU has identified the following issues related to the possible continuation of the construction of Units 3 and 4 of Khmelnytsky NPP:

- The technical characteristics of the reactor type originally planned to be installed (V320) and the actually planned one are substantially different.
- The assessment of the premises and civil constructions has been performed with the assumption that the original reactor type will be installed. However, the characteristics of the new type have not been accounted for.
- The decision on the type of reactor appears to have been taken without due consideration of the results of the civil construction assessment.

The IRRS team members expressed their views that to satisfy the explicit expectations of both the international nuclear community and the general public, newly built nuclear reactor units should be

the most advanced technical type and incorporate the best safety equipment available in the nuclear market. Thus, it is essential that the selected reactor type be assessed from the point of view of whether it can be upgraded to satisfy these expectations.

Furthermore, the premises and civil construction for the new units are likely to need a reassessment to demonstrate their suitability for the installation of the selected (and possibly further upgraded) reactor type.

The IRRS team suggested that an invitation of an international peer-review team might effectively contribute to the clarification of the above issues. IAEA has ample experience in organizing such peer-reviews.

Policy Discussion 2: Responsibilities of SNRCU and other authorities with certain regulatory functions

System of allocation of responsibilities

Article 23 of the Law on Nuclear Energy Use and Radiation Safety specifies that “state regulation of nuclear and radiation safety is provided by authorities according to the legislation of Ukraine”. Based on that requirement, functions and responsibilities of state authorities are described in their Statutes (Provisions). Statutes are adopted by the President (formerly by the CMU).

Responsibilities of the various authorities in respect to nuclear and radiation safety

Responsibilities to provide state regulation of the safety of nuclear energy use are vested in the State Nuclear Regulatory Committee of Ukraine by its Statute. No other Statute includes such a statement.

Statutes of several other authorities include certain responsibilities in the field of nuclear safety and radiation protection, namely:

- * Ministry of Environmental Protection - protection of public and the environment against adverse effects of ionizing radiation, including management (operation) of the state radiation monitoring system
- * Ministry of Health and State Sanitary Epidemiological Service - develop, approve and enforce radiation safety requirements; take part in the state regulation of radiation safety jointly with other central and local authorities; draw up conclusions regarding categorization of radiation contamination territories; issue sanitary passports; carry out sampling of radioactive contamination of water, soil and foodstuffs; agree on dose constraints and give consent to radiation documents and emergency plans.
- * State Committee of Industrial Safety, Labour Protection and Mining Supervision –responsible for industrial safety
- * Ministry of Emergencies – national competent authority for emergencies, including nuclear and radiation emergencies
- * Ministry of Regional Development and Construction - construction licences.

To ensure cooperation and clear allocation of responsibilities, SNRCU has signed MoU with the respective authorities, including:

- * Ministry of Environmental Protection on cooperation on issues of protection of nuclear facilities personnel, radioactive waste management facilities, uranium facilities and sources, population and the environment from the impact of ionizing irradiation as of 16 June 2004 № 241/105;
- * Ministry of Emergencies on interaction in fire safety provision in the area of nuclear energy use as of 27 February 2004 № 39;

- * State Committee of Ukraine on Construction and Architecture on interaction on provision of nuclear and radiation safety in the area of nuclear energy use during construction works as of 20 January 2004 № 5;
- * Joint order of the SNRCU and the Ministry of Health № 28/82 of 12/02/2009 on interaction on state regulation of nuclear and radiation safety, including MoU with two MH TSOs (scientific centers);
- * Joint order of the SNRCU and the State Committee of Health and Safety at Work № 23/48 of 01/03/2010 on interaction on health and safety at work in the sphere of nuclear energy use.

One of the challenges faced by SNRCU is to submit to the Cabinet of Ministers of Ukraine a proposal to concentrate all nuclear and radiation safety responsibilities and functions in one state authority. This requirement comes from the Resolution of the President of Ukraine of 15.11.2010 and the deadline for the proposal is 31.12.2010.

Using the availability of leading experts from various (mostly EU) countries, the SNRCU requested advice on how to proceed to ensure maximum effectiveness and efficiency.

Oral presentations were made on the current arrangements in several countries, namely:

- * Czech Republic – Ms. Dana Drabova;
- * Belgium – Mr. Luc Baekelandt;
- * Bulgaria – Mr. Nikolay Vlahov.

Experience and practices from the US and Pakistan were also shared by the experts.

Based on the discussions, it was concluded that most countries were at one time in a similar situation to SNRCU and the difficulties encountered forced them to merge all nuclear and radiation safety functions into one single organization. This has been done for instance, in the Czech Republic in 1994, in Belgium 1994, and in Bulgaria in 2002. However in Bulgaria, some responsibilities in medical radiation protection still remain with the Ministry of Health.

All organizations confirmed that centralization of all regulatory functions in one organization brought significant enhancement of all regulatory activities. Examples are licensing (optimization of licensing regimes by issuing a single licence by one authority in respect to multiple licenses at different authorities), enforcement and inspection (achieved consistency of regulatory approach as well as regulatory requirements).

Within the discussion, it was pointed out that merging responsibilities will usually provide better services to the licensees and other stakeholders. SNRCU and the Government should note that merging is effective only where there is transfer of both functions and responsibilities and also of the experienced staff and the appropriate budgets. During such a process it is important to ensure continuity of staff and the sharing of experience and knowledge.

One important outcome of the discussions was the consensus that a measured approach should be taken to the gradual centralization of responsibilities within a single organization. Consideration should be given to country view on the arrangements in industrial safety (usually not responsibility of the nuclear regulator), emergency preparedness (always done at the national level).

Policy Discussion 3: Self-assessment policy discussion

SNRCU reported that the self-assessment process using the IAEA Methodology and the SAT software had been effective and comprehensive.

There had been difficulties with understanding some SAT questions and some of the IAEA requirements, possibly due to interpretation, or translation or by the nature of their being expressed as questions rather than ‘shall’ statements. There was useful discussion on IAEA proposals to

include 'expectations' in the next iteration of the SAT software to overcome this tendency. This was welcomed by the counterparts.

In relation to the phrasing of primary questions in the SAT, counterparts perceive there is some repetition of the requirements. It was explained there are no direct repetitions, but closely related questions appear in the core question-set and in a slightly different context, in the various thematic question-sets. There was discussion on this perception and it was explained that the new SAT question-editing software will include tools for identifying inadvertent duplication of questions before updates to SAT question-sets are circulated to Member States in future.

When SAT II is released to Member States in late 2011, Ukraine will be able to maintain its continuous programme of self-assessment using this current cycle (done for the IRRS follow-up) as the basis of future assessments.

**IRRS UKRAINE FOLLOW-UP MISSION 2010
REVIEW TEAM**



APPENDIX I – LIST OF PARTICIPANTS

INTERNATIONAL EXPERTS:

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9. Ynte STOCKMANN	<i>European Commission</i>	ynte.stockmann@ec.europa.eu

IAEA STAFF MEMBERS

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APPENDIX II – MISSION PROGRAMME

MISSION PROGRAMME		
Sunday, 21 November 2010		
17:00-19:00	<i>IRRS Team Meeting (Hotel “Dnipro”)</i>	<i>IRRS Team experts SNRCU Liaison officers</i>
Monday, 22 November 2010		
09:00-12:30	<p><i>Opening meeting</i></p> <ul style="list-style-type: none"> - <i>Welcome;</i> - <i>Introduction;</i> - <i>IRRS remarks;</i> - <i>IAEA experts introduction.</i> <p><i>SNRCU Presentations</i></p> <ul style="list-style-type: none"> - <i>General presentations</i> - <i>Presentation on Status of implementation of actions taken to address the IRRS findings</i> - <i>self-assessment results</i> <p><i>Open discussions</i></p> <ul style="list-style-type: none"> - <i>Planning of interviews;</i> - <i>Identify emerging issues</i> 	
12:30-14:00	<i>Lunch</i>	
14:00-17:00	<i>Group interviews (see Interview Scheme)</i>	
17:00-18:00	<i>IRRS Team Coordination meeting (room 523)</i>	
Tuesday, 23 November 2010		
8:30 – 17:00	<i>Group interviews (see Interview Scheme)</i>	
17:00-18:00	<i>IRRS Team Coordination Meeting (room 523)</i>	
19:00-22:00	<i>IRRS report drafting (Hotel “Dnipro” meeting room)</i>	
Wednesday, 24 November 2010		
8:30 – 16:00	<i>Group interviews (see Interview Scheme)</i>	
16:00-17:00	<i>Policy Issue: new build</i>	
17:00-18:00	<i>IRRS Team Coordination Meeting (room 523)</i>	
19:00-22:00	<i>IRRS report drafting</i>	

MISSION PROGRAMME

Sunday, 21 November 2010

Thursday, 25 November 2010

8:30 – 15:00

Group interviews (see Interview Scheme)

16:00

Mission Report Handover to SNRCU.

15:00-17:00

Policy Issues:

- *Assignment of responsibilities between SNRCU and other regulators*
- *SNRCU feedback on experience of assessment against GSR-Part I*

19:00

SOCIAL EVENT

Friday, 26 November 2010

10:00

EXIT MEETING

12:00

*Official closing.
Reception at SNRCU.*

APPENDIX III – MISSION COUNTERPARTS

IRRS	Subject Area	IRRS Experts	Lead Counterparts
I	<p><u>GENERAL REQUIREMENTS</u></p> <p>I. LEGISLATIVE AND GOVERNMENT RESPONSIBILITIES II. RESPONSIBILITIES AND FUNCTIONS FO THE REGULATORY BODY III. ORGANIZATION OF THE REGULATORY BODY VII. REGULATIONS AND GUIDES</p>	<ul style="list-style-type: none"> • Ms. Drabova • Mr. Vlahov 	<ul style="list-style-type: none"> • Ms. Makarvska • Ms. Matveeva • Ms. Kornievska • Ms. Berezhna
II	<p><u>NUCLEAR SAFETY</u></p> <p>IV. AUTHORIZATION V. REVIEW AND ASSESMENT VI. INSPECTION AND ENFORCEMENT VII. REGULATIONS AND GUIDES</p>	<ul style="list-style-type: none"> • Mr. Satorius • Mr. Lux 	<ul style="list-style-type: none"> • Mr. Bozhko • Mr. Schevchenko • Mr. Khalenko • Mr. Kostenko • Mr. Grygorash • Ms. Kutuzova
III	<p><u>RADIATION SAFETY</u></p> <p>IV. AUTHORIZATION VI. INSPECTION AND ENFORCEMENT VII. REGULATIONS AND GUIDES</p>	<ul style="list-style-type: none"> • Mr. Shah • Ms. Drabova 	<ul style="list-style-type: none"> • Mr. Riazantsev • Ms. Tripailo • Representatives of the Ministry of Health

IRRS	Subject Area	IRRS Experts	Lead Counterparts
IV	<p><u>TRANSPORT SAFETY</u></p> <p>IV. AUTHORIZATION VI. INSPECTION AND ENFORCEMENT VII. REGULATIONS AND GUIDES</p>	<ul style="list-style-type: none"> • Mr. Baekelandt 	<ul style="list-style-type: none"> • Mr. Sakalo • Ms. Romenska
V	<p><u>RADWASTE MANAGEMENT</u></p> <p>IV. AUTHORIZATION VI. INSPECTION AND ENFORCEMENT VII. REGULATIONS AND GUIDES</p>	<ul style="list-style-type: none"> • Mr. Baekelandt • Mr. Lietava 	<ul style="list-style-type: none"> • Ms. Kilochitska • Ms. Rybalka • Ms. Forostenko • Mr. Datsenko • Representatives of the Ministry of
VI	<p><u>EMERGENCY PREPAREDNESS</u></p>	<ul style="list-style-type: none"> • Ms. Nizamska 	<ul style="list-style-type: none"> • Ms. Chuprina • Ms. Dzubak • Ms. Bizhko • Representatives of the Ministry of Health
VII	<p><u>MANAGEMENT SYSTEM</u></p>	<ul style="list-style-type: none"> • Ms. Drabova 	<ul style="list-style-type: none"> • Mr. Kozulko • Ms. Bruhanova

**APPENDIX IV – RECOMMENDATIONS / SUGGESTIONS / GOOD PRACTICES OF THE
IRRS UKRAINE 2010 FOLLOW-UP MISSION**

	Areas	IAEA Comment No. R: Recommendations, S: Suggestions	Recommendations, Suggestions
1	LEGISLATIVE AND GOVERNMENTAL RESPONSIBILITIES	SF1	<u>Suggestion:</u> Consistency and gap analyses of existing legislation should be conducted. The results of the analyses should be taken into consideration when preparing the new separate law on the Regulatory Authority of Ukraine.
		SF2	<u>Suggestion:</u> The Government of Ukraine, when approving the Law on State Administration, should ensure the already achieved level of independence of SNRCU is maintained.
		SF3	<u>Suggestion:</u> The Government of Ukraine should continue its efforts to provide SNRCU with adequate financial resources, taking into consideration the Resolution of the President of Ukraine 1035/2010.
		SF4	<u>Suggestion:</u> The Government of Ukraine should ensure availability of adequate financial resources for the replacement of obsolete equipment being used in radiology and radiotherapy either through national resources or through international cooperation.
4	ACTIVITIES OF THE REGULATORY BODY	RF1	<u>Recommendation:</u> Government of Ukraine should ensure availability of appropriate financial resources for the establishment of dosimetry services and associated facilities for unified dose monitoring.

APPENDIX V – REFERENCE MATERIAL PROVIDED BY SNRCU

[1]	LAWS
	<ul style="list-style-type: none"> • <i>Law of Ukraine on Human Protection against Impact of ionizing Radiation</i> • <i>Law of Ukraine on Authorization Activity in Nuclear Energy Use</i> • <i>Law of Ukraine on Metrology and Metrological Activity</i> • <i>Law of Ukraine on arrangement of issues on Nuclear Safety Assurance</i> • <i>Law of Ukraine on Radioactive Waste Management</i> • <i>Law of Ukraine on the Use of Nuclear Energy and Radiation Safety</i>
[2]	PROCEDURES
	<ul style="list-style-type: none"> • <i>NP 306.3.04/2.002-97 Procedure For Exemption Of Radioactive Waste And Radioactive By-Materials From Regulatory Control</i> • <i>NP_017_EN Requirements to the quality assurance programme At all stages of the life cycle of nuclear installations</i> • <i>NP_037_EN on a list and requirements for structure and content of documents submitted by the operating organization to obtain a licence for the activity at a specific life cycle stage of a radioactive waste disposal facility</i> • <i>NP 306.5.04/2.060-2002 Safety Conditions And Requirements (Licensing Conditions) For Introducing Activity On Radioactive Waste Treatment, Storage, And Disposal</i> • <i>NP 306.2.106-2005 Requirements On Modifications Of Nuclear Installations And Their Safety Assessment Procedure</i> • <i>NRBU-97 Standards On Radiation Safety Of Ukraine State Hygienical Normatives</i> • <i>Nuclear And Radiation Safety Norms And Rules</i>
[3]	ORDERS
	<ul style="list-style-type: none"> • <i>ND 306.604-96Radioactive Waste Disposal In Near-Surface Storage Facilities</i> • <i>ND 306.607.95Requirements to radioactive waste management Before the final disposal of waste</i> • <i>17.05.2004 No. 87/211 Approval Of The Response Plan To Radiation Accidents</i> • <i>Order Response plan</i> • <i>02.12.2002 No 125 Order SIR licensing</i> • <i>No.141 Procedure for State Supervision on Observation of Nuclear and Radiation Safety Requirements in Nuclear Energy Use</i> • <i>QMS-02 SNRCU General Quality Management Guide Quality Management System</i> • <i>Cabinet of Ministers of Ukraine Enactment of 6 December 2000, No. 1782 Kiev On approval of the Order of licensing of particular activities in the use of nuclear energy</i> • <i>Cabinet of Ministers of Ukraine Ordinance no. 1718 dated 16 November 2000 Kiev on issues concerning the State Regulation of Activity on the use of ionizing Radiation Sources</i> • <i>Cabinet of Ministries of Ukraine Enactment of 27 December 2006, no. 1830, Kyiv, on approval of the provision on the State Nuclear Regulatory Committee of Ukraine</i>
[4]	SELF-ASSESSMENT
	<ul style="list-style-type: none"> • <i>Self-Assessment Report</i> • <i>IRRT Report 2001</i> • <i>Module I - Legislation</i> • <i>Module II - Functions</i>

	<ul style="list-style-type: none"> • <i>Module III - Organization</i> • <i>Module IV - Authorization</i> • <i>Module V – Review and Assessment</i> • <i>Module VI – Inspection and Enforcement</i> • <i>Module VII – Development of Regulations and Guides</i> • <i>Module VIII – Management System</i> • <i>Safety of Nuclear Power Plants: Design NS-R-1</i> • <i>Safety of Nuclear Power Plants: Operation NS-R-2</i> • <i>Safety of Nuclear Power Plants: Site Evaluation NS-R-3</i> • <i>Radwaste management (additional module)</i> • <i>Safety of Transport (additional module)</i> • <i>Emergency Preparedness</i> • <i>Public Relations and mass media (additional module)</i> • <i>Code of Conduct on the Safety and Security of Radioactive Sources (additional module)</i>
[5]	ANNUAL REPORT
	<ul style="list-style-type: none"> • <i>SNRCU Annual Report 2005</i> • <i>SNRCU Annual Report 2006</i> • <i>SNRCU Annual Report 2007</i>
[6]	NUCLEAR SAFETY CONVENTION
	<ul style="list-style-type: none"> • <i>Convention on Nuclear Safety Report 2004</i> • <i>Convention on Nuclear Safety Report 2005</i> • <i>Convention on Nuclear Safety Report 2007</i>

APPENDIX VI – IAEA REFERENCE MATERIAL USED FOR THE REVIEW

- [1.] **IAEA SAFETY STANDARDS SERIES GS-R-1** - *Legislative and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety*
- [2.] **IAEA SAFETY STANDARDS SERIES GS-G-1.1** - *Organization and Staffing of the Regulatory Body for Nuclear Facilities*
- [3.] **IAEA SAFETY STANDARDS SERIES GS-G-1.2** - *Review and Assessment of Nuclear Facilities by the Regulatory Body*
- [4.] **IAEA SAFETY STANDARDS SERIES GS-G-1.3** - *Regulatory Inspection of Nuclear Facilities and Enforcement by the Regulatory Body*
- [5.] **IAEA SAFETY STANDARDS SERIES GS-G-1.4** - *Documentation for use in Regulation of Nuclear Facilities*
- [6.] **IAEA SAFETY STANDARDS SERIES GS-G-1.5** - *Regulatory Control of Radiation Sources*
- [7.] **IAEA SAFETY STANDARDS SERIES GS-R-2** - *Preparedness and Response for a Nuclear or Radiological Emergency Safety Requirements*
- [8.] **IAEA SAFETY STANDARDS SERIES GS-R-3** - *Management System for Facilities and Activities*
- [9.] **IAEA SAFETY STANDARDS SERIES NS-R-1** - *Safety of Nuclear Power Plants: Design Safety Requirements*
- [10.] **IAEA SAFETY STANDARDS SERIES NS-R-2** - *Safety of Nuclear Power Plants: Operation Safety Requirements*
- [11.] **IAEA SAFETY STANDARDS SERIES NS-R-4** - *Safety of Research Reactors*
- [12.] **IAEA SAFETY STANDARDS SERIES NS-G-4.1** - *Commissioning of Research Reactors*
- [13.] **IAEA SAFETY SERIES No. 115** - *International Basic Safety standards for Protection against ionizing Radiation and for the Safety of Radiation Sources*
- [14.] **IAEA SAFETY STANDARDS SERIES TS-R-1** - *Regulations for the Safe Transport of Radioactive Material*
- [15.] **IAEA SAFETY STANDARDS SERIES WS-G-2.1** - *Decommissioning of Nuclear Power Plants and Research Reactors*
- [16.] **IAEA SAFETY STANDARDS SERIES WS-G-2.2** - *Decommissioning of Medical, Industrial and Research Reactors*
- [17.] **IAEA SAFETY STANDARDS SERIES WS-R-1** - *Near Surface Disposal of Radioactive Waste*
- [18.] **IAEA SAFETY STANDARDS SERIES WS-R-2** - *Predisposal Management of Radioactive Waste including Decommissioning*
- [19.] **IAEA SAFETY STANDARDS SERIES WS-G-2.3** - *Regulatory Control of Radioactive Discharges to the Environment*
- [20.] **IAEA SAFETY STANDARDS SERIES WS-G-2.4** - *Decommission of Nuclear Fuel Cycle Facilities*
- [21.] **IAEA SAFETY STANDARDS SERIES WS-G-2.5** - *Predisposal Management of Low and Intermediate Level Radioactive Waste*
- [22.] **IAEA SAFETY STANDARDS SERIES WS-G-2.6** - *Predisposal Management of High Level Radioactive Waste*

- [23.] **IAEA SAFETY STANDARDS SERIES WS-G-2.7** - *Management of Waste from the use of Radioactive Material in Medicine, Industry, Agriculture, Research and Education*
- [24.] **IAEA SAFETY STANDARDS SERIES WS-R-3** - *Remediation of areas contaminated by past activities and accidents*
- [25.] **IAEA SAFETY STANDARDS SERIES WS-R-5** - *Decommissioning of facilities using Radioactive Material*
- [26.] **IAEA SAFETY STANDARDS SERIES WS-G-6.1** - *Storage of Radioactive Waste*
- [27.] **IAEA SAFETY STANDARDS SERIES RS-G-1.7** - *Application of the Concepts of Exclusion, Exemption and Clearance*
- [28.] **IAEA SAFETY STANDARDS SERIES RS-G-1.8** - *Environmental and Source monitoring for Purpose of Radiation Protection*
- [29.] **IAEA SAFETY STANDARDS SERIES RS-G-1.9** – *Categorization of Radioactive Sources,*
- [30.] **Code of conduct on the Safety of Research Reactors**
- [31.] **Guidance on the Import and Export of Radioactive Sources**
- [32.] **IAEA SAFETY SERIES NO. 111-G-1.1** - *Classification of Radioactive Waste*
- [33.] **IAEA SAFETY SERIES NO. 35 – G2** - *Safety in the Utilization and Modification of Research Reactors*
- [34.] **IAEA TECDOC 1388** - *Strengthening control over radioactive sources in authorized use and regaining control over orphan source national strategies*
- [35.] **INSAG SERIES NO. 17** - *Independence in Regulatory Decision Making*
- [36.] **INSAG SERIES NO. 20** - *Stakeholder Involvement in Nuclear Issues*
- [37.] **INSAG SERIES NO. 21** - *Strengthening the Global Nuclear Safety Regime*
- [38.] **IAEA LEGAL SERIES NO.14** - *Convention on Early Notification of a Nuclear Accident and Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency*
- [39.] **IAEA SAFETY STANDARDS SERIES** – *Predisposal Management of Radioactive Waste (Draft Safety Requirements, DS353).*

APPENDIX VII – SNRCU ORGANIZATIONAL CHART

