NATIONAL
ATOMIC ENERGY
AGENCY

National Report of Poland

on Compliance with the Obligations of the Convention on Nuclear Safety

Polish 6th national report as referred to in Article 5 of the Convention on Nuclear Safety

July 2013

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POLAND

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Introduction

This report has been prepared, according to the guidelines established by the Contracting Parties under Article 22, to fulfill the obligations of the Article 5 of the Convention on Nuclear Safety (CNS), signed by Poland on 20th September 1994 in Vienna and ratified by the President of the Republic of Poland on 10th May 1995. Present Report is the sixth one, following national reports issued in September 1998, October 2001, September 2004, September 2007 and August 2010. Previous reports were presented during Review Meetings of the Contracting Parties of the Convention on Nuclear Safety held in Vienna in 1999, 2002, 2005, 2008 and 2011. Moreover in May 2012 Poland prepared special report describing "post-Fukushima" actions which was presented during 2nd CNS Extraordinary Meeting held in Vienna in August 2012.

Although Poland is a contracting party without nuclear installations in the sense of the Article 2(i) of the Convention, in the current report as well as in the previous ones, information regarding application of provisions of the Convention for Polish nuclear installations (research reactor and spent fuel storages) is presented. Obviously compliance with all articles referring to establishment, functioning and independence of the Regulatory Body (which in Polish case is the National Atomic Energy Agency - PAA) is also described. Moreover taking into consideration governmental decision on embarking on nuclear power extensive development of Polish legal framework was performed over last couple of years resulting in amendment of Atomic Law (passed by Parliament in 2011) and issuing a number of Council of Ministers regulations establishing more detailed safety requirements. This report presents current legal status of Polish regulatory framework but it must be taken into account that most of the newly introduced safety requirements (especially those referring to siting and design requirements) have not yet been used in practice.

During the 5th review meeting no recommendations were given to Poland in reference to our current nuclear program however two challenges were identified in connection with future plans of introducing nuclear power:

- To ensure adequate funding of the Regulator Body so that it can undertake the necessary work to license NPPs.
- To establish the necessary legal, regulatory and other infrastructural elements and personnel competences in all areas related to siting, constructing, operating, decommissioning and regulating any proposed NPPs.

The latter one was identified as **common challenge for all Contracting Parties** embarking on nuclear power.

Abovementioned challenges has been very seriously taken by the Polish government and PAA itself. Results of activities focused on development of legal and regulatory framework as well as human resources development (especially in regulatory body) are described in following subsections of the report and in annexes.

In this part of the report it is worth to mention one of the most important happenings since 5th CNS Review Meeting. The **IRRS mission has been conducted in Poland in Spring 2013**. Team of international senior safety experts led by Mr. Robert Lewis (USA, NRC) and Mr. Karol Janko (Slovak Republic, UJD) spent two weeks in Warsaw to review Poland's regulatory framework for nuclear and radiation safety and its effectiveness. The mission took place from 15 to 24 April.

The IRRS review comparing the Poland regulatory framework for nuclear and radiation safety against the IAEA Safety Standards addressed **all facilities and activities regulated by PAA**, including research reactor, radioactive waste management facilities and radiation source facilities. In addition, the IRRS review addressed **preparations for the development of the nuclear power program** from the regulatory point of view.

On the basis of the **draft mission report** it is worth to mention that the IRRS review team observed several good practices including: introducing changes to the Atomic Law Act and regulations, including those related to decommissioning, at an early stage in the NPP program; leveraging the considerable experience of senior management of the PAA in regulatory issues, and personally mentoring new inspectors; broad public consultations concerning the development of regulations and laws with the institutions engaged in the Polish Nuclear Power Programme and the public; and PAA's proactive coordination approach with Poland's Office of Technical Inspection.

On the other hand the IRRS team identified expected growth of PAA over the next few years as an ongoing challenge for PAA's leadership, and source of complexities with regard to the planned regulation of nuclear power. The IRRS team offered several recommendations and suggestions on how to address these challenges. The team observed that the leadership of PAA is very engaged in operational activities, which given the current size of PAA program, has enabled a healthy focus on both safety issues and corporate governance. However in the future there will be increasing demands on PAA's management as PAA's programs expand. A further challenge relates to knowledge management issues, e.g., the retirement of many senior managers and staff having experience in Poland's prior nuclear power program.

In order to position PAA to address its growth and additional responsibilities, and to maintain its strong focus on safety for currently regulated facilities and activities, the IRRS team advised PAA to:

- Establish and frequently review the nexus between PAA's organizational goals and objectives, and resource planning (staffing and external support strategies);
- Consider strengthening and documenting PAA's management system; and
- Develop and strengthen internal guidance to document authorization processes, review and assessment, and inspection procedures.

Particular IRRS team findings (recommendations, suggestions and good practices) relevant to given article of the Convention are inserted in the text of report in appropriate subsections. However it must be underlined that **all references to IRRS results are based on draft mission report** as final version was not published at the moment of concluding of this national report. Final results of IRRS mission together with PAA position on all suggestions and recommendations as well as implementing action plan will be published as soon as possible and hopefully before 6th CNS review meeting.

COMPLIANCE WITH ARTICLES 6 – 19

1.1. Article-by-article review

Article 6. Existing nuclear installations

Each Contracting Party shall take the appropriate steps to ensure that the safety of nuclear installations existing at the time the Convention enters into force for that Contracting Party is reviewed as soon as possible. When necessary in the context of this Convention, the Contracting Party shall ensure that all reasonably practicable improvements are made as a matter of urgency to upgrade the safety of the nuclear installation. If such upgrading cannot be achieved, plans should be implemented to shut down the nuclear installation as soon as practically possible. The timing of the shut-down may take into account the whole energy context and possible alternatives as well as the social, environmental and economic impact..

At the moment Poland has no nuclear installations according to definition in Article 2(i) of the Convention. There is neither NPP in operation nor in construction in Poland. The one planned in Żarnowiec (construction of two units of WWER-440/V213, started in 1985, and terminated in 1990) was finally cancelled in the year 1991. At present time Poland has only one research reactor in operation (the others, operated in the past, had been either permanently shut down or decommissioned - see **Annex no.1** for details).

Regarding future nuclear power programme *Resolution no. 4/2009 of the Council of Ministers of January 13th, 2009 on nuclear power development activities* stated among others that:

- Nuclear Power Program for Poland will be prepared and implemented (after public discussion and government's approval);
- Government Commissioner for Nuclear Power in Poland will prepare Nuclear Power Program for Poland (1st draft of this document was published in August 2010);
- PGE Polska Grupa Energetyczna SA (Polish Energy Group SA) will play a leading role in the implementation of Nuclear Power Program for Poland;
- At least 2 nuclear power plants will be built; first NPP will be commissioned in 2020.

These statements are still valid, however more realistic date of commissioning of the first NPP is not until mid-2020s. **Annex no. 4** gives information on the implementation of nuclear power in Poland prepared by Ministry of Economy for the needs of this national report.

Article 7. Legislative and regulatory framework

Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of nuclear installations. The legislative and regulatory framework shall provide for:

i. the establishment of applicable national safety requirements and regulations;

ii. a system of licensing with regard to nuclear installations and the prohibition of the operation of a nuclear installation without a licence:

iii. a system of regulatory inspection and assessment of nuclear installations to ascertain compliance with applicable regulations and the terms of licences;

iv. the enforcement of applicable regulations and of the terms of licences, including suspension, modification or revocation.

7.1. National safety requirements and regulations

The issues of nuclear safety of nuclear facilities are regulated in the Act of 29 November 2000 "*Atomic Law*" (Journal of Laws of 2012, item 264, as amended). The Atomic Law and its supporting regulations contain provisions that regulate the requirements related to:

1. radiological protection (of staff, society and patients);
2. nuclear and radiation safety,
   - including safety of nuclear facilities,
   - including proceeding with nuclear material and sources of ionising radiation,
   - related to radioactive waste and spent nuclear fuel,
   - related to transport of nuclear material and radioactive sources, and spent nuclear fuel and radioactive waste,
   - including assessment of radiation level and emergency actions,
3. physical protection (of nuclear facilities and nuclear material);
4. non-proliferation of nuclear material and technology (safeguards);
5. civil liability for nuclear damage.

Annexes no. 2 & 3 give summary of entire Atomic law and complete list of supporting regulations issued by Council of Ministers, Minister of Health, Minister of Internal Affairs, Minister of Finances and Minister of Environment.

The act incorporates a number of international regulations, such as:

- Convention on Early Notification of a Nuclear Accident, Vienna, 26 September 1986 (Journal of Laws of 1998, No. 31, item 216) (INFCIRC/335);
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, Vienna, 26 September 1986 (Journal of Laws of 1998, No. 31, item 218) (INFCIRC/336);
- Convention on Nuclear Safety, Vienna, 20 September 1994 (Journal of Laws of 1997, No. 42, item 262) (INFCIRC/449);
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Vienna, 5 September 1997 (Journal of Laws of 2002, No. 202, item 1704) (INFCIRC/546);
- Convention on the Physical Protection of Nuclear Material, including annexes I and II, open for singing in Vienna and New York on 3 March 1980 (Journal of Laws of 1989, No. 17, item 93)(INFCIRC/274/Rev.1);

- Amendment to Convention on Physical Protection of Nuclear Material, Vienna, 8 July 2005 (GOV/INF/2005/10-GC(49)/INF/6);
- Treaty on the Non-Proliferation of Nuclear Weapons, Moscow, Washington, London, 1 July 1968 (Dz. U. 1970, No. 8, item 60) (INFCIRC/140), and resulting acts:
    - Agreement between the Kingdom of Belgium, Kingdom of Denmark, Federal Republic of Germany, Ireland, Republic of Italy, Great Duchy of Luxembourg, Kingdom of Netherlands, European Atomic Energy Community and International Atomic Energy Agency, on Implementation of Article III, Sections 1 and 4, of the Treaty on Non-Proliferation of Nuclear Weapons, Brussels, 5 April 1973 (Dz. U. 2007, No. 218, item 1617);
    - Additional Protocol to the Agreement between the Republic of Austria, Kingdom of Belgium, Republic of Finland, Kingdom of Denmark, Federal Republic of Germany, Republic of Greece, Ireland, Republic of Italy, Great Duchy of Luxembourg, Kingdom of Netherlands, Republic of Portugal, Kingdom of Spain, Kingdom of Sweden, European Atomic Energy Community and International Atomic Energy Agency, on Implementation of Article III, Sections 1 and 4, of the Treaty on Non-Proliferation of Nuclear Weapons, Vienna, 22 September 1998 (Dz. U. 2007, No. 156, item 1096);
- Vienna Convention on Civil Liability for Nuclear Damage, Vienna, 21 May 1963 (Journal of Laws of 1990, No. 63, item 370)(INFCIRC/500);
- Joint Protocol Relating to the Application of the Vienna Convention and Paris Convention (on liability for nuclear damage), Vienna, 21 September 1988 (Journal of Laws of 1994, No. 129, item 633) (INFCIRC/402);
- Protocol Amending the Vienna Convention on Civil Liability for Nuclear Damage (Journal of Laws of 2011, No. 4, item 9) (INFCIRC/556).

In addition, the Republic of Poland is a party to the Treaty Establishing the European Atomic Energy Community (Euratom). Based on the treaty, a number of directives have been adopted and implemented in the Polish legal system, including but not limited to:

- Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers resulting from ionising radiation (OJ L 159 of 29.06.1996, page 1; OJ Polish version, chapter 5, vol. 2, page 291),
- Council Directive 89/618/Euratom of 27 November 1989 on informing the general public about health protection measures to be applied and steps to be taken in the event of radiological emergency (OJ L 357 of 07.12.1989, page 31; OJ Polish version, chapter 15, vol. 1, page 366),
- Council Directive 90/641/Euratom of 4 December 1990 on the operational protection of outside workers exposed to the risk of ionising radiation during their activities in controlled areas (OJ L 349 of 13.12.1990, page 21, as amended, OJ Polish version, chapter 5, vol. 1, page 405, as amended).
- Council Directive 97/43/Euratom of 30 June 1997 on health protection of individuals against the dangers of ionising radiation in relation to medical exposure

and repealing directive 84/466/Euratom (OJ L 180 of 09.07.1997, page 22, as amended; OJ Polish version, chapter 15, vol. 3, page 332, as amended).

- Council Directive 2003/122/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel (OJ L 337 of 05.12.2006, page 21),
- Council Directive 2006/117/Euratom of 22 May 2003 r. on the control of high-activity sealed radioactive sources and radioactive waste (OJ L 346 of 31.12.2003, page 57; OJ Polish version, chapter 15, vol. 7, page 694),
- Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations (OJ L 172 of 2.7.2009, page 18, and OJ L 260 of 3.10.2009, page 40),
- Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (OJ L 199 of 2.8.2011, page 48) – during the implementation process.

7.2. Licensing system for nuclear installations

The Act of Atomic Law requires (Art.4.1 p.2) a separate licence for construction, commissioning, operation and decommissioning of any nuclear installation, issued by the President of PAA. The requirements, concerning documentation to be submitted by an applicant and the procedure to be followed to obtain an appropriate licence, have been established in the *Council of Ministers Regulation* on *the documents required for licence application submitted for the practices that involve or could involve radiation exposure or for the notification of such practices,* last amendment on 27 May 2009 (OJ no 71 item 610). The general procedure of licensing nuclear installation (including power and research reactors, radioactive waste and spent fuel management facilities), in the phases of construction, commissioning, operation, decommissioning or closure is described below.

Applications for a licence or for an official opinion related to a nuclear installation must be submitted to PAA President. It applies also, with some modifications, to the stage of siting, which does not require PAA President's licence, but only official opinion of this Authority (see reporting on Article 17 for details). Before applying for a licence, the investor may apply to the Agency's President for a general assessment of the planned organizational and technical solutions and draft versions of documents to be submitted along with the application. In case of the construction licence, the application with an abbreviated safety report is immediately published in the Public Information Bulletin. Members of the public have the right to make submissions and observations within 21 days.

Draft licences and opinions are prepared by the PAA Department for Nuclear Safety, on the basis of review and assessment of safety documentation supplied by the applicant and also on the basis of inspections performed by PAA regulatory inspectors in applicant's premises if necessary. The reports from each of inspections, performed by PAA inspectors in nuclear installations upon the Chief Nuclear Regulatory Inspector's or the Agency President's order, are submitted to the Chief Nuclear Regulatory Inspector and to the Agency's President. While performing the review and assessment tasks, PAA may use external experts or consultant organizations, but only on the condition that those experts or organizations are free from conflict of interest, i.e. they are not employed by or otherwise

dependent on applicant/licensee. A draft licence or opinion, if accepted by Chief Nuclear Regulatory Inspector, is submitted to the Agency's President for endorsement and for the official granting to the applicant. Before that, the Agency's President has to apply to the Council for Nuclear Safety and Radiological Protection to state its opinion on the draft licence. Within one month from receiving this opinion, the Agency's President sends the draft licence to the applicant, who can submit his reservations within another month.

In the siting stage of a nuclear installation (including NPPs, research reactors and spent fuel storages), the authority competent to issue the decision on terms of building and area development conditions on the site of a future nuclear facility, issues this decision after obtaining the Agency President's positive opinion on the matters concerning nuclear safety and radiological protection (Art.36). The "siting report" developed by the applicant is reviewed by the Agency's President in the course of the proceedings for granting a construction licence (art. 35b.3). Before applying for a nuclear facility construction licence, the investor can apply to the Agency's President for a preliminary assessment of the site of a future nuclear facility (Art. 36a).

Apart from issuing licences, the Agency's President approves some documents important for nuclear safety of nuclear installations:

- documentation of safety classification of nuclear installation's systems, structures and components (Art. 36j.3),
- documentation of integrated management system of the organizational entity conducting activities involving exposure and consisting in construction, commissioning, operation or decommissioning of nuclear facilities (Art. 36k.3),
- nuclear facility commissioning programme (Art. 37a.2),
- nuclear facility commissioning report (Art. 37b.2),
- detailed periodical safety review plan (Art. 37e.3),
- periodical safety review report (Art. 37e.5),
- nuclear facility decommissioning programme (Art. 38b),
- nuclear facility decommissioning report (Art. 38c.1).

Modernization of any nuclear facility system, structure or component important for the nuclear safety and radiological protection, and each reactor start-up following such modernization or fuel load requires a written consent of the Agency's President (Art. 37d).

The authorization process applies also to the staff of a nuclear facility. According to Art.12 of the Atomic Law Act in any facility performing activities involving radiation exposure, the position important for ensuring nuclear safety and radiological protection have to be occupied exclusively by an individual possessing appropriate authorization issued by the Agency's President. Licences for such positions are granted on the basis of the qualification process, established by the Council Ministers' Regulation, issued pursuant to Art. 12b of the Act, and of the exams performed by the Commission for Qualification of Staff for the Posts Important for Nuclear and Radiation Safety, appointed by the PAA President. The Atomic Law provides also for a separate authorization (on similar conditions) of staff performing activities important from the viewpoint of nuclear safety and radiological protection in any organizational entity conducting activities involving exposure and consisting

in commissioning, operation or decommissioning of a nuclear power plant (Articles 12c – 12e of the Atomic Law).

Moreover, according to Art.11 of the Act, employees of a nuclear facility have to be duly trained, according to the program prepared by the facility manager, to possess and maintain the knowledge of nuclear safety and radiological protection regulations appropriate for their positions, as well as appropriate skills and qualifications. In nuclear power plants the short- and long-term training plans have also to be endorsed by the PAA President (Article 11b of the Atomic Law).

7.3. Prohibition of the operation without a licence

According to the Art. 2 of the Atomic Law Act, activities involving real and potential exposures to ionising radiation shall be permitted after undertaking the measures defined in appropriate regulations, aimed at ensuring the safety and protection of human life and health, as well as protection of property and the environment.

The Art. 4.1 p.2 requires that each subsequent stage, i.e. construction, commissioning, operation and decommissioning, requires separate licences, granted by the PAA President after ascertaining that the requirements and conditions relevant to radiation and nuclear safety at the given stage were met and fulfilled. Pursuant to Art. 34, no activities consisting in construction, commissioning, operation or decommissioning of nuclear facilities can be conducted by an organizational entity which fails to comply with the requirements concerning nuclear safety, radiological protection, physical protection and nuclear material safeguards. It means, in particular, that the operation of a nuclear installation without a licence is prohibited.

The applicant/licensee must submit at each of the stages, together with his application for the licence to the PAA President, a proper safety documentation for the nuclear facility. Results of the review and assessment of this documentation provide the regulatory body with the basis for preparation of a licence with relevant requirements and conditions.

The head of the organisational entity, who without the required licence, or in violation of the conditions attached to such a licence, engages in the construction, commissioning, operation and decommissioning of a nuclear facility, is subject to fine penalty (Art.123), imposed by the Chief Nuclear Regulatory Inspector.

7.4. Regulatory inspections and assessment of nuclear installation

According to the Act of Atomic Law, Regulatory Body responsibilities include in particular conducting inspections in nuclear facilities and in other facilities possessing (or involved in activities with) nuclear materials, ionizing radiation sources, radioactive waste and spent nuclear fuel (Art.64.4 p.2). To perform regulatory tasks, the PAA President uses regulatory inspectors, who are under direct control of Chief Nuclear Regulatory Inspector. Nuclear regulatory bodies can carry out (Art. 65a.):

1. periodical inspections – as per inspection plan approved by Chief Nuclear Regulatory Inspector in agreement with Agency's President or by the Agency's President;

2. ad-hoc inspections – whenever circumstances arise which may have a substantial impact on the nuclear safety and radiological protection at a nuclear facility subject to inspection
3. continuous inspections - at nuclear power plants by virtue of permanent authorization

In the context of conducted inspection the regulatory Inspectors are entitled to (Art.66.1):

- access at any time to the means of transport and to the sites, facilities and premises of organizational units, where nuclear materials, ionizing radiation sources, radioactive waste or spent nuclear fuel are produced, used, stored, disposed or transported (in particular – to nuclear installations),
- access to the documents and other data carriers relevant for nuclear safety and radiological protection in inspected organizational unit,
- request copies of the documents and data carriers mentioned above to be produced or provided,
- check whether the activity / practice referred to in Art. 4.1 of the Atomic Law (subject to obtain licence or to be notified to the regulatory body) is conducted in compliance with the nuclear safety and radiological protection regulations and with the requirements and conditions specified in the licence,
- conduct, if necessary, independent technical and dosimetric measurements,
- request written or oral information, when it is necessary for clarifying a concern,
- collect samples for laboratory tests,
- inspect the site, facilities, premises and installations of the inspected organizational entity and its transport vehicles,
- record the processes and results of inspection using audio-visual recording systems,
- secure and request securing (confirming security) documents and other proofs,
- during inspections of nuclear power plants – to request the assistance of expert laboratories and organizations authorized by the Agency's President, and during inspections of other organizational entities – to request the assistance of experts, specialists and laboratories.

The manager of facility being inspected is obliged (Art. 66.2) to take all necessary measures to allow the nuclear regulatory authorities to carry out the inspection. The employees of the unit being inspected have to give the inspectors oral or written explanations on the questions related to the subject of inspection. Should an inspection reveal a direct threat to nuclear safety or radiation protection, the President of PAA, the Chief Nuclear Regulatory Inspector or regulatory Inspectors are obliged by Art. 68 of the Act to give immediately applicable injunctions or interdictions to impose emergency measures designed to eliminate the danger.

In the performing regulatory inspection also the international guidelines and experience from former inspections of nuclear facilities are taken into account. The primary purpose of regulatory inspection is the independent determination of how the licensee complies with the general nuclear safety and radiation protection requirements, with the licence terms, additional regulatory requirements and good engineering practices; the inspection also is a check of the implementation of the QA programme.

Radiological Protection Department and Nuclear Safety Department have specific procedures and instructions regarding regulatory inspections. Inspections need to be planned (excluding necessary ad-hoc inspections), authorized by the PAA's President or the Chief Nuclear Regulatory Inspector, each of it prepared by the leading inspector, proceeded following prepared specific instruction and properly documented. This process ensures the effectiveness of routine regulatory inspections. The programme and scope of such inspections is formulated prior to visiting the site, relevant procedures are evoked or, if necessary, prepared by the inspectors. The personnel designed to carry out each inspection is selected and notified beforehand to provide adequate time to become acquainted with applicable instructions and appropriate background material. Inspection need to be properly reported, which includes naming inspectors, informants, describing scope of the inspection, procedure and results of the inspection, issued orders, bans or recommendations and conclusions of the inspection. When it is necessary post-inspection notice shall be issued by the Chief Nuclear Regulatory Inspector.

7.5. Enforcement provisions

The Act of Atomic Law gives regulatory body adequate powers to enforce compliance with safety requirements imposed by laws, regulations and licence conditions (Art. 5.5). According to its Art. 5.11 the PAA President may revoke a licence or modify it as needed. In particular Agency's President shall revoke a licence if nuclear safety and radiation protection requirements imposed by applicable regulations and by the terms of licence have not been fulfilled. Depending of regulatory assessment of situation the following enforcement actions can be undertaken:

(1) oral or written immediately applicable order (Art.68),

(2) issuance of a written order or a recommendation to the licensee (Art.68a, Art. 68b),

(3) ordering the licensee to curtail activities (Art.37b.1, Art. 37c.3),

(4) suspension or revoking the licence (Art.5.11),

(5) financial penalty collected by mean of administrative execution proceedings (Art.123),

(6) punishment by fine or detention (Art. 127).

(7) recommendation of prosecution through the courts of law.

The regulatory inspectors have been equipped by Art.68 of the Act of Atomic Law with the authority to take on-the-spot decisions.

Article 8. Regulatory body

1. ***Each Contracting Party shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 7, and provided with adequate authority, competence and financial and human resources to fulfil its assigned responsibilities.***
2. ***Each Contracting Party shall take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.***

8.1. Establishment of the regulatory body

8.1.1. Legal foundations and statue of the regulatory body

The President of the National Atomic Energy Agency (PAA) constitutes the central organ of the governmental administration, competent for nuclear safety and radiological protection. The activities of the President of National Atomic Energy Agency are regulated on the basis on the Act of Parliament on the Atomic Law (article 110) and its secondary legislation. The President of the National Atomic Energy Agency as the central organ of public administration is independent in taking decisions with regard to tasks entrusted to him on the basis of the Atomic Law Act. Since 1 January 2002 the supervision over the PAA President has been exercised by the Minister competent for the environmental matters on the basis of Article 28, Section 3 of the Act of Parliament on Governmental Administration Departments of 4 September 1997 and article 109 section 4 of the Atomic Law. PAA President is appointed for indefinite period of time. The Agency's President is nominated and recalled by the Prime Minister (Art.109.2).

Recommendation from the IRRS mission's draft report on the legal foundations of the regulatory body: "The Government should develop procedures and requirements to ensure that removal of persons with executive safety responsibility within PAA is not subject to unwarranted political influence"

The Agency's President is executing his tasks through the National Atomic Energy Agency (PAA) with particular involvement of nuclear regulatory inspectors and the Chief Nuclear Regulatory Inspector in execution main regulatory supervision and control functions: rules setting (regulations and guides), review and assessment, authorization, inspection and enforcement as well as emergency preparedness and response (see 8.1.4 and 8.1.4 - Fig.1. below) The PAA's internal organization is determined by Order No 69 of the Minister of Environment of 3 November 2011 on Granting Statute to the National Atomic Energy Agency (pursuant to Article 113 Section 1 of the Atomic Law). This Order also determines organizational entities which are included in the PAA's structure and perform particular functions.

8.1.2. Mandate, mission and tasks

Mandate, authority and particular responsibilities of PAA are defined in the Chapter 13 of the Atomic Law Act. In accordance with the Article 110 of the Atomic Law the scope of activities of the Agency's President includes the tasks that involve ensuring national nuclear safety and radiological protection, in particular:

1) preparation of draft documents related to national policies involving nuclear safety and radiological protection, taking into account the programme for nuclear power development and both internal and external threats,
2) exercising regulatory control and supervision over the activities leading to actual or potential ionizing radiation exposure of humans and environment, including the issuance of decisions on licences and authorizations and other decisions, as provided in this Act,
3) promulgation of technical and organizational recommendations concerning nuclear safety and radiological protection,
4) performing the tasks involving the assessment of national radiation situation in normal conditions and in radiation emergency situations, and the transmission of relevant information to appropriate authorities and to the general public,
5) performing the tasks resulting from the obligations of the Republic of Poland concerning accountancy and control of nuclear materials, physical protection of nuclear materials and facilities, special control measures for foreign trade in nuclear materials and technologies, and from other obligations resulting from international agreements on nuclear safety and radiological protection,
6) activities connected with public communication, education and popularization, scientific, technical and legal information concerning nuclear safety and radiological protection, including activities consisting in providing the general public with information about ionizing radiation and its impact on human health and the environment and about feasible measures to be implemented in the event of radiation emergency – excluding the promotion of the use of ionizing radiation, and in particular, the promotion of nuclear power sector;
7) cooperation with governmental and local administration authorities in matters involving nuclear safety and radiological protection, and in matters concerning scientific research in nuclear safety and radiological protection;
8) performing the tasks involving national and civil defence and the protection of classified information, which result from other regulations,
9) preparing opinions, for the purposes of governmental and local administration, concerning nuclear safety and radiological protection with regard to the proposed technical activities involving peaceful uses of atomic energy;
10) cooperation with suitable foreign national entities and international organizations within the scope stated herein;
11) developing the drafts of legal acts on the issues covered by this Act and conducting the process of establishing their final form, according to the procedures established in the working rules for the Council of Ministers,
12) issuing opinions on the draft legal acts developed by authorized bodies,
13) submitting to the Prime Minister annual reports on the activities of the Agency's President and the assessments of the status of national nuclear safety and radiological protection.

PAA's internal document entitled "Mission, Vision and Operational Strategy of the National Atomic Energy Agency" determines the objectives, requirements and efforts undertaken to ensure that any activity which might lead to ionising radiation exposure is handled in a manner safe for the staff and the society.

8.1.3. Authorities and responsibilities

The Atomic Law requires that **activities involving real and potential ionising radiation exposures** from man-made radioactive sources, nuclear materials, equipment generating ionizing radiation, radioactive waste and spent nuclear fuel, **are supervised** and **controlled** by the State and can be permitted on the condition of employing regulatory means for the safety and health and life protection of humans, and also for the protection of property and environment (Art.2). This includes the **obligation of obtaining an appropriate licence**, excluding the cases when such activities may be performed on the basis of notification or do not have to be licensed or notified according to the criteria established in the regulation of the Council of Ministers of 6 August 2002 (amended in 2004), based on the Article 6.1 of the Atomic Law.

Under the Atomic Law (Article 4), the following activities / practices involving exposures require a licence or notification (with reservation as above):

1) manufacturing, processing, storage, disposal, transport or use of nuclear materials, radioactive sources, radioactive waste and spent nuclear fuel, as well as the trade in these materials, and also isotopic enrichment,

2) construction, commissioning, operation and decommissioning of nuclear facilities,

3) construction, operation, closure and decommissioning of radioactive waste repositories,

4) production, installation, use and maintenance of the equipment containing radioactive sources and trade in such devices;

5) commissioning and use of the equipment generating ionizing radiation;

6) commissioning of laboratories and workrooms using ionizing radiation sources, including X-ray laboratories;

7) intentional addition of radioactive substances in the processes of manufacturing consumer products and medical devices, medical devices for in-vitro diagnostics, equipment for medical devices, equipment for medical devices for in-vitro diagnostics, active medical devices as defined in Act of Parliament on Medical Devices of 20 May 2010 (Journal of Laws of the Republic of Poland No 107 Item 679) and trade in such products, and also the import into the Republic of Poland's territory, and export from this territory, of consumer and medical products to which radioactive substances have been added;

8) intentional administration of radioactive substances to humans and animals, for the purposes of medical or veterinary diagnostics, therapy or research

According to Article 5, Articles 36-39 and Article 63 of the Atomic Law Act, legal authority to issue licences, binding opinions and to perform regulatory control of the siting, design, construction, commissioning, operation and decommissioning of nuclear installations in Poland is given to the President of the National Atomic Energy Agency.

The President of the National Atomic Energy Agency issues the licences and accepts the notifications related also to other activities / practices that are listed above, with only the

following exceptions: the licences for commissioning and use of X-ray equipment for medical purposes[1] and for commissioning of the laboratories using such equipment are issued by the state regional sanitary inspector or – for organizational units subordinated or supervised by the Minister of National Defence, the commander of the military preventive medicine centre, or – for organizational units subordinated or supervised by the minister for internal affairs – the state sanitary inspector in the Ministry of Internal Affairs.

As a consequence of the above exceptions also the **supervision and control** in the area of nuclear safety and radiological protection over the activities / practices resulting in actual or potential ionizing radiation exposures of people and environment, are executed by (Art. 6.2):

1) **"regulatory bodies" (as defined below) – in the cases** when the licence is issued or notification accepted by the President of the Agency;
2) regional sanitary inspector, commander of the military preventive medicine centre or state sanitary inspector in the Ministry of Internal Affairs and Administration in the sphere of activities / practices licensed by these bodies.

According to definitions in the Art.64.1 of the Act of Atomic Law, the "regulatory bodies" consist of:

1) the President of PAA, as the supreme nuclear regulatory body,
2) Chief Nuclear Regulatory Inspector, as the higher-level body in relation to the nuclear regulatory inspectors,
3) regulatory inspectors.

Atomic Law Act defines tasks of the regulatory bodies in its Chapter 9. They include in particular (Art.64.4):

- **issuing licences and other decisions** in issues related to the nuclear safety and radiological protection, according to the principles and methods established by the Act;
- **conducting inspections** in nuclear facilities and organizational units which possess nuclear materials, ionizing radiation sources, radioactive waste and spent nuclear fuel,
- **issuing on-the-spot orders** if during the inspection it is found that nuclear safety and radiological protection are endangered,
- **approving training programs** developed by the managers of organizational units operated on the basis of a licence (except the training programs developed by the managers of organizational units using X-ray equipment for medical purposes).

8.1.4. Organizational structure of the regulatory body

The current structure of the PAA (Fig. 1) is determined by :

1) Act of Parliament the Atomic Law

[1] In the following scope: medical diagnostics, invasive radiology, surface radiotherapy and radiotherapy for non-cancerous diseases.

2) Order No 69 by the Minister of Environment of 3 November 2011 on Granting Statute to the National Atomic Energy Agency;
3) Order no 4 by the President of National Atomic Energy Agency of 4th November 2011 on Establishing Organizational Bylaws of the National Atomic Energy Agency.

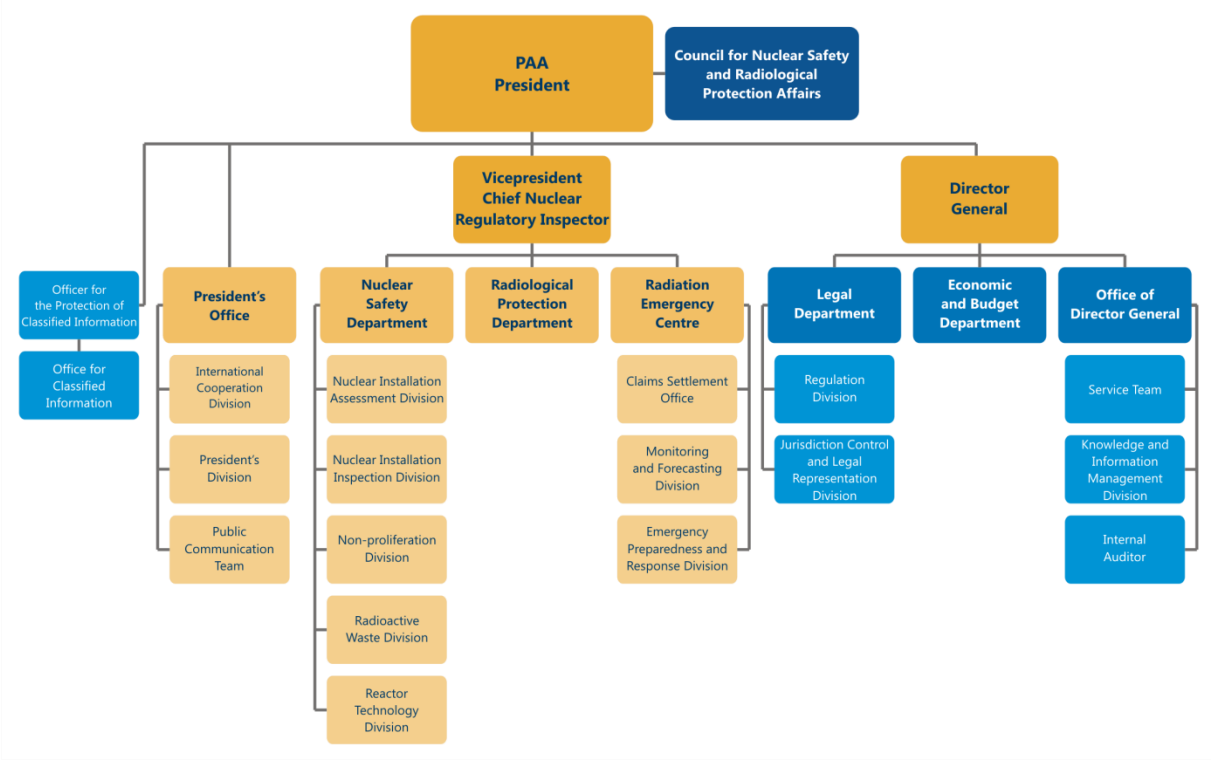

Fig. 1. *Organizational Structure of National Atomic Energy Agency*

8.1.5. Human resources development

In 2009 PAA started self-assessment process which included an identification of the PAA needs in the Polish Nuclear Power Programme. As a result of this process, a document entitled "Guidelines for programme of necessary actions to be taken in the National Atomic Energy Agency" was prepared. The needs for recruitment and training of the staff were identified, so that PAA could meet the requirements of a nuclear regulatory body posed by the Polish Nuclear Power Program. In June 2011 the document entitled "A few notes on the tasks, organization, development and financial issues of the National Atomic Energy Agency (Nuclear Regulatory Body) in the perspective of the construction of a nuclear power plant in Poland" summed up the results of analyses performed with regard to necessary organizational changes and development of the staff. These analyses took into account expected new tasks of the regulatory body relating to safety analyses and assessment of documentation submitted by an investor/operator in order to obtain opinion and license of the PAA President at different stages of the nuclear power plant life. The identification of the need for additional staff was the result of comparison of the workforce of similar regulatory bodies in other states possessing a nuclear power sector with the number of the PAA staff. On the basis of this analysis the plans and costs of the staff development were identified till the end of 2014. According to estimates the number of jobs in PAA should be increased by 39 new positions.

„A few notes on the tasks, organization, development and financial issues of the National Atomic Energy Agency" document also contains financial issues showing an estimate of the PAA expenditures in next years. These expenditures include, among other things, costs connected with hiring new staff in the PAA. A need was also identified (without presenting a financial estimate) to raise salaries in nuclear regulatory body in order to enhance its competitiveness in the labour market, which is necessary for the recruitment of new employees and for the retention of trained staff. The funds (called "specific provision") for hiring 39 employees were provided by the Government, based on the Act of Parliament of 13 May 2011 amending (among others) the Act of Atomic Law 2000. This Act established limits for appropriate salaries of 39 new employees for each year in the period of 2012 till 2021. Employment process is in progress.

Recommendation from the IRRS mission's draft report on human resources development: "PAA should further develop a staffing plan for the current and future scope of regulatory functions that aligns the number of staff necessary and the essential knowledge, skills and abilities for them to implement the organizational goals and priorities. Such a staffing plan should leverage internal resources and external support."

In accordance to this recommendation the detailed strategy of human resources and employment management will be introduced in 2014. As of 29 November 2012 individual professional development programmes were introduced for employees.

Suggestion from the IRRS mission's draft report regarding attracting experienced staff: "The government should consider strategies and mechanisms to enable PAA to attract and retain high quality trained personnel."

8.1.6. Competence development and maintenance

Most of the regulatory functions are performed by Nuclear Safety Department and Radiological Protection Department. 23 regulatory inspectors are hired in those departments. Specific conditions must be fulfilled and trainings (theoretical and practical) attended to become regulatory inspector. Inspectors can be qualified as a nuclear regulatory inspector degree I (activities) or degree II (nuclear installations). A detailed training programme and internships are determined individually for each candidate by the Chief Nuclear Regulatory Inspector, who assigns a mentor from amongst experienced nuclear regulatory inspectors to assist a candidate in order to ensure an adequate course of practical, on-the-job training . Nuclear regulatory inspectors and other staff of Nuclear Safety Department and Radiological Protection Department attend internal, national and international trainings and workshops to gain experience and share their knowledge. PAA President concluded agreements on cooperation with US Nuclear Regulatory Commission and French Nuclear Safety Authority which enable exchange of technical information, cooperation in research on nuclear safety and trainings. 4 PAA employees have already taken trainings in USA thanks to this agreement. PAA is actively recruiting new staff in these departments to prepare itself to the regulatory role in the Polish Nuclear Power Programme.

Good practice has been observed during the IRRS mission and included in the draft report: "senior management of the PAA has long experience and practice, in regulatory issues, and personally mentors and develops new inspectors".

8.1.7. Financial resources

The President of PAA is an administrator of his own part of the state budget - "National Atomic Energy Agency." All fees and penalties provided for in the Atomic Law Act constitute income of the state budget and cannot be used directly for the maintenance of the nuclear regulatory body. As was mentioned above, the latest amendment of the Atomic Law Act established the maximum limit of expenditure from the state budget to finance the hiring of additional 39 employees in the PAA.

It was suggested in the IRRS mission's draft report that: "The government should consider strategies and mechanisms to enable PAA to attract and retain high quality trained personnel."

8.1.8. Management system

System of procedures and orders of the PAA President and Director General ensure the performance of tasks necessary for the supervision of nuclear safety and radiological protection. It also enables continuous review and improvement of performance. Current management system of the PAA is based on several documents, there is no leading document that merges whole management system. The need for adopting integrated management system was identified during self-assessment and IRRS mission.

Recommendations from the IRRS mission's draft report:

"PAA should reflect the safety goals throughout its management system documentation and identify the processes used to achieve its mission, vision, and goals, including;

1) *a process for internal communication;*
2) *an explicit process for organizational change;*
3) *an explicit method for performing management system reviews."*

"PAA senior management should promote an awareness of internal safety culture and ensure that it is appropriately reflected within its management system."

8.1.9. Transparency and openness

The scope of activities of PAA includes the tasks that involve activities connected with public communication, education and popularization, scientific, technical and legal information concerning nuclear safety and radiological protection, including activities consisting in providing the general public with information about ionizing radiation and its impact on human health and the environment and about feasible measures to be implemented in the event of radiation emergency. PAA performs the aforementioned tasks by:

- maintaining an updated Internet website containing a map showing gamma radiation dose rate in the whole territory of Poland;
- publishing a quarterly entitled "Nuclear Safety and Radiological Protection";
- publishing quarterly communications to the general public about national radiation situation, also about radioactive contamination levels in normal conditions and in emergency;
- preparation of annual reports on the activities of the Agency's President.

PAA also informs interested parties and the public of the principles and criteria for safety used as the basis for its regulations and guides, and of important changes in the regulatory framework by communications and releases, press conferences, annual regulatory body PAA report, brochures and also via the website of PAA http://www.paa.gov.pl This website contains updated information including applicable Acts of Parliament, regulations and drafts of laws and provisions

8.1.10. External technical support and advisory committees

Atomic Law Act as amended in 2011, provides that The Council for Nuclear Safety and Radiological Protection acts as the consulting and opinion-giving body of the Agency's President. The Council consists of 6 experts on nuclear safety, radiological protection and research reactors. The main task of the Council is in particular issuing opinions following the request of the Agency's President with regard to: draft versions of licences to conduct activities, draft versions of legal acts drawn up by the Agency's President, draft versions of organizational and technical recommendations issued by the Agency's President.

PAA does not have any formal agreements with Technical Support Organizations. However PAA uses the support from various external organizations or experts when needed. PAA cooperate inter alia with Office of Technical Inspection, Institute of Heat Engineering of Warsaw University of Technology and National Centre for Nuclear Research. Nevertheless the need to have support from national and international TSO's is recognized. It complies with the cited below suggestion from the IRRS mission:

Suggestion from the IRRS mission's draft report: "PAA should consider reviewing the availability of external support across the range of technical and other disciplines needed to support the delivery of regulatory functions relating to the NPP programme, especially the early steps of the licensing process (review of site documentation; organizational capability and preliminary safety analysis report) "

8.2. Status of the regulatory body

The PAA independence in performing its functions is assured by the law. The President of the National Atomic Energy Agency constitutes the central organ of the governmental administration, competent for nuclear safety and radiological protection matters to the extent specified in this Act" (Article 109 of the Atomic Law Act).

Independence of the regulatory body is guaranteed by clear separation of promotional and regulatory functions:

1. matters related to social and economic use of Nuclear Energy are within the scope of activities of Minister of Economy (pursuant to the Act on Governmental Administration Departments)

2. nuclear safety and radiological protection matters are within the scope of activities of PAA President (pursuant to the Atomic Law Act)

Regulatory decision made by the PAA President cannot be affected by any other organ of governmental administration. This authority is ensured by the Atomic Law. The President of PAA and other nuclear regulatory bodies are independent in performing their regulatory functions, in particular regulation of activities involving exposure (issuance of licences and receipt of notifications) and inspection functions determines President's independence in "exercising regulatory control and supervision over the activities leading to actual or potential ionizing radiation exposure of humans and environment, including the

issuance of decisions on licenses and authorizations and other decisions, as provided in this Act" (Article 110, Section 2 of Atomic Law) and no other organ can supervise their regulatory decisions except for the Administrative Courts of Law.

Minister of Environment provides administrative supervision of PAA's President and vests the statue of the Agency. PAA President reports annually to the Prime Minister of Poland.

Supreme Audit Office (NIK) which is the top independent state audit body whose mission is to safeguard public spending, have inspected PAA preparations to its role in Polish Nuclear Power Programme. 3 main tasks were audited – preparation of new regulations, human resources development and organizational changes in PAA. NIK gave PAA positive opinion on every audited task and did not point to any irregularities.

Article 9. Responsibility of the licence holder

Each Contracting Party shall ensure that prime responsibility for the safety of a nuclear installation rests with the holder of the relevant licence and shall take the appropriate steps to ensure that each such licence holder meets its responsibility.

According to the Atomic Law Act, the head of organizational entity authorized to conduct activities consisting in construction, commissioning, operation or decommissioning of nuclear facilities shall be responsible for nuclear safety, radiological protection, physical protection and nuclear material safeguards (Art.35.1). In Poland, the applicant or licensee during siting, design, construction and commissioning is called the investor and during operation and decommissioning is referred to as the operating organization.

The financial provisions to cover the possible harms caused by a nuclear accident have been arranged according to Vienna Convention to which Poland is a Party, by means of obligatory third party responsibility insurance required from the nuclear installation's operator, according to *the Council of Ministers' regulation on obligatory third party liability insurance of nuclear installation operator* (Art.103.4), issued on 23.04.2004.

Article 10. Priority to safety

Each Contracting Party shall take the appropriate steps to ensure that all organizations engaged in activities directly related to nuclear installations shall establish policies that give due priority to nuclear safety.

As stated in Article 9 the prime responsibility rests on the head of a licensed organizational entity. In addition to the investor's or operator's obligations, other persons (organizations) involved in the project of a nuclear installation are responsible, in accordance with their duties, for ensuring compliance with the nuclear safety and radiation protection requirements (Art.35.3.).

The Atomic Law Act requires that, beginning from site selection, through construction, commissioning and in operation, such technical and organizational measures shall be taken in accordance with the most updated scientific and technical knowledge, that are necessary to eliminate, in all operational stages of a nuclear facility and in emergency situations, the harmful effects to the facility staff, the public and the environment (Art.35.4.).

Furthermore any organization involved in construction, operation or decommissioning of nuclear facilities shall have an integrated management system which includes quality policy and quality assurance programme (Art. 36k.). The definition of Integrated Management

System included in Atomic Law gives the priority to nuclear safety by making sure that all decisions are adopted on the basis of the results of nuclear safety analysis, radiological protection, physical protection and the protection of nuclear materials.

Article 11. Financial and human resources

1. Each Contracting Party shall take the appropriate steps to ensure that adequate financial resources are available to support the safety of each nuclear installation throughout its life.

2. Each Contracting Party shall take the appropriate steps to ensure that sufficient numbers of qualified staff with appropriate education, training and retraining are available for all safety-related activities in or for each nuclear installation, throughout its life.

11.1.Financial Resources

11.1.1.Financial provisions to ensure safety of nuclear installation throughout its lifetime

According to Article 38g section 1 item 2 of the Atomic Law Act the licence to conduct activities consisting in constructing, commissioning, operating and decommissioning of nuclear facilities shall only be granted to organizational entity which has sufficient funding to cover the costs of nuclear safety, radiological protection, physical protection and nuclear material safeguards at subsequent stages of the nuclear facility operation, until the facility is decommissioned and in the case of a licence granted to build the nuclear facility has sufficient funding to finish the construction.

In order to confirm that the required funding, to cover the costs of nuclear safety, radiological protection, physical protection and nuclear material safeguards at subsequent stages of the nuclear facility operation, until the facility is decommissioned, is available, the following documents shall be enclosed to the application: documents confirming the availability of funding, and in particular, bank account statement, bank guarantee or insurance guarantee, financial report featuring estimated costs and expenditure which need to be incurred.

In order to confirm that the required funding for construction of the nuclear facility is available the following documents shall be enclosed to the application: documents confirming the availability or possibility of obtaining funding to finish the construction including the financial plan and financial report featuring estimated costs and expenditure which need to be incurred.

The operator's policy regarding appropriate funding of its activities should therefore take into account the above principles. PAA will be assessing financial provision with other documentation required in the licensing process.

Civil liability for nuclear damage is also provided by the Atomic Law Act. Article 101 provides that exclusive liability for nuclear damage caused by a nuclear incident in nuclear installation or related to this installation, shall be borne by the operator, with the exception of damage caused directly by acts of war or armed conflict. The operator’s liability for nuclear damage shall be limited to the amount equivalent to SDR 300,000,000.

11.1.2.Financial provisions during the period of commercial operation for decommissioning and management of spent fuel and radioactive waste from nuclear installations

Principles for financing safety improvements to the nuclear installation over its operational lifetime, are ensured by the ability to enforce necessary actions by the Agency's President. Renovation of any nuclear facility system, structure or component important for the nuclear safety and radiological protection, and each reactor start-up following fuel load or renovation of any system, structure or component shall require a written approval of the Agency's President (Article 37d. of the Atomic Law). If it is considered necessary from the viewpoint of nuclear safety, radiological protection, physical protection and nuclear material safeguards – especially based on the conclusions from the periodical safety review, the Agency's President is authorized to amend the conditions of activities covered by the licence (Article 39h.1). Article 38d provides for the system of financing the costs of the spent nuclear fuel and radioactive waste disposal and the costs of nuclear power plant decommissioning. In order to cover the costs of the spent nuclear fuel and radioactive waste disposal and the costs of nuclear power plant decommissioning, the organizational entity which was authorized to operate a nuclear power plant shall make quarterly payments to a "decommissioning fund", with dedicated bank account assigned to the found. Resources collected on the account can be deposited on fixed-term deposit accounts or invested in bonds emitted by the Minister competent in the matters of public finance.

Amount of the fee to be paid for the decommissioning fund was determined by Regulation of the Council of Ministers of 10 October 2012 on the amount of contributions to cover the cost of the final management of spent fuel and radioactive waste, and to cover the costs of decommissioning a nuclear power plant made by the organizational entity, which has received a licence for the operation of a nuclear power plant (Journal of Laws of 2012, item 1213) and is set to PLN 17.16 for each MWh of electricity produced in a nuclear power plant.

In determining the amount of payments for the decommissioning fund the Council of Ministers took into account expected: life of a nuclear facility, the amount of radioactive waste including spent nuclear fuel produced by the facility, the final cost of disposal of the waste, and the cost of decommissioning a nuclear facility. It should be also noted that with the progress in the implementation of the Polish Nuclear Energy Programme in the future it may be necessary to amend the amount of payments to the decommissioning fund. Deadline for payments was determined on the fifteenth day of the month following the quarter to which the payment relates, as from the first day of the quarter following the quarter in which the nuclear power plant produced the first MWh of energy, until the start of the decommissioning.

Resources collected on the decommissioning fund may only be allocated to cover the cost of the final radioactive waste and spent nuclear fuel disposal from those plants and to cover the costs of decommissioning the nuclear facility. Therefore, withdrawal of resources from the decommissioning fund will take place only after approval granted by the President of the PAA.

In order to allow the President of the PAA to supervise organizational entity's obligation to make payments to the decommissioning fund, the manager of the organizational unit holding a licence for operation or decommissioning of a nuclear power plant will have to submit quarterly reports to the President of the PAA stating the amount of payments to the decommissioning fund and the amount of megawatt hours of electricity produced in this quarter. The report shall be produced according to the model prescribed in the Regulation of the Council of Ministers of 27 December 2011 on the model of the quarterly report on the amount of contributions paid to the decommissioning fund (Journal of Laws of 2012, item

43), no later than the twentieth day of the month following the quarter, which it relates to. In the event that organizational entity delays in making payments for at least 18 months, the President of the PAA will be entitled to stop operation of a nuclear power plant.

11.2. Human Resources

The requirements concerning competence of the part of the staff of investor/operator are specified in the Atomic Law Act:

„Article 12c.1. In any organizational entity conducting activities involving exposure and consisting in commissioning, operation or decommissioning of a nuclear power plant, all positions important from the viewpoint of nuclear safety and radiological protection shall be occupied exclusively by individuals possessing an appropriate authorization.

2. The activities referred to in Section 1 herein shall include activities directly related to the management and operation of a nuclear power plant, and the management of nuclear fuel and radioactive waste at a nuclear power plant.

3. The authorizations referred to in Section 1 herein shall be granted by the Agency's President of by way of administrative decision, to individuals who:

1) have full legal capacity;

2) hold a medical certificate on the absence of contraindications for work in occupational exposure conditions issued according to the regulations issued under Article 229 § 8 of the Labour Code Act of 26 June 1974;

3) hold a medical certificate concerning the absence of mental disorders listed in the Protection of Mental Health Act of 19 August 1994 (Journal of Laws No. 111, Item 535, with later amendments), and the absence of any psychological disorders;

4) have a higher education degree and professional experience necessary to be authorized to conduct the relevant activities at a nuclear power plant;

5) successfully passed the post-training examination, both theoretical and practical, referred to in the regulations issued under Article 12d, Section 8;

4. The authorizations referred to in Section 1 herein shall be granted for the period of 3 years.

Regulation by the Council of Ministers of 10 August 2012 on activities important for nuclear safety and radiological protection in an organizational unit conducting activity which consists in commissioning, operations or decommissioning of a nuclear power plant, specifies inter alia: list of activities important for nuclear safety and radiological protection in an organizational unit; detailed conditions and procedure for granting by the President of PAA authorizations to perform those activities and required programmes of trainings, including practical trainings and forms of trainings organized. Types of activities which require authorizations are as follows: management of the organizational unit, management of commissioning and operation of NPP, operating supervision and control (of the reactor and operations with the fuel). Candidates who apply for the authorizations to perform those activities need to undertake trainings specified in the above regulation. Scope of the practical and theoretical training depends on the type of activity.

According to Article 11 of the Atomic Law also other employees of an organizational entity conducting activities involving exposure are covered by training programme. This is an

internal training which is ensured by the head of entity after a prior verification of the training programme by PAA. The training programme is an element of documentation submitted by an applicant in order to obtain the PAA President's license for the performance of activities involving exposure and is subject to analysis and assessment by the PAA departments conducting appropriate analyses and regulatory safety assessment of the activities specified in the application for a license – i.e. depending on whether it concerns nuclear facilities or activities with radioactive sources: the Nuclear Safety Department or Radiological Protection Department. In case of nuclear power plants - trainings involving performance of tasks and activities using simulators of the actual nuclear installations operating at the given nuclear power plant, and for research reactors - trainings involving specialist software that imitate the operation of equipment and research reactor, should be undertaken. The head of the organizational unit shall draw up short-term personnel training plans at least once every 3 years, as well as long term personnel training plans at 10 year intervals.

Ministry of Economy is currently working on the Plan for the development of human resources for the purposes of nuclear energy, which will assess Poland's needs for experts in nuclear science and technology. The Plan will also look at the issue of creating incentives to attract and retain high quality personnel, including the creation of incentives to bring back to the country specialists educated in connection with the construction of the Żarnowiec NPP who now have international experience in the construction and operation of NPPs and have worked for foreign and international institutions related to nuclear energy.

PAA prepared its own human resources plan and is currently employing new staff. For more details see description of compliance with Article 8 – regulatory body.

Currently, several majors/specialties directly related to nuclear energy are already available at Polish universities, although presently there is no comprehensive system of staff training. Moreover, recognizing the role of science in the nuclear power development the Minister of Economy has asked Minister of Science and Higher Education to establish a strategic project considering "Technologies supporting the development of safe nuclear power". The Minister of Science has devoted 50 mln PLN for the activity. 10 scientific projects have been announced and now all of them are in the operation phase.

Article 12. Human factors

Each Contracting Party shall take the appropriate steps to ensure that the capabilities and limitations of human performance are taken into account throughout the life of a nuclear installation.

Polish regulatory system takes human factors into account both on the level of Atomic Law Act and the Regulation of the Council of Ministers of 31 August 2012 on nuclear safety and radiological protection requirements which must be fulfilled by a nuclear facility design.

According to Article 36c section 1 item 3 of the Atomic Law Act nuclear facility design shall include solutions that safeguard reliable, stable, easy and safe operation of the nuclear facility, with particular attention to factors related to man-machine cooperation between personnel and operating systems, structures or components.

Also to ensure that the personnel working at a nuclear facility has all necessary knowledge and practice the head of organizational entity licensed to operate a nuclear facility is obliged to ensure preliminary and periodic trainings for workers at intervals defined in the

licence, at least every 5 years (Atomic Law Act Art. 11). For nuclear power plants these trainings shall address among others:

- general radiological protection procedures;
- procedures of conducting workplace-specific tasks and activities;
- performance of tasks and activities using simulators of the actual nuclear installations.

The head organization is also obliged to prepare short-term personnel training plans at least once every 3 years and long term personnel training plans at 10 year interval. Those plans have to be approved by the President of PAA.

The Regulation on nuclear facility design provides more specific regulations. It states that the design shall apply solutions concerning safety level sequences (defence-in-depth concept) in order to prevent any possible negative consequences caused by human error during nuclear facility operations or during the performance of maintenance activities concerning operations, including nuclear facility repairs and modernization (§. 4.2.4)).

Furthermore the nuclear facility shall be designed to minimize the possibility and limit the consequences of human error, with particular consideration being given to the spatial layout of the nuclear facility and to ergonomic (§. 43.1.).

Article 13. Quality assurance

Each Contracting Party shall take the appropriate steps to ensure that quality assurance programmes are established and implemented with a view to providing confidence that specified requirements for all activities important to nuclear safety are satisfied throughout the life of a nuclear installation.

The Atomic Law Act requires (Art.7.2) that every holder of licence issued by the President of PAA is obliged to establish and implement quality assurance programme. Submission of this programme document as attachment to the application for the licence is prerequisite to obtain the licence. The programme is subject to review by regulatory body together with safety analysis report. Practical implementation of the programme is subject of control by regulatory body inspectors.

According to the Atomic Law (Art. 36k.) QA programme is a part of an integrated management system of nuclear facility. In order to ensure implementation and documentation of the system as a whole, the integrated management system should include actions that are taken directly by the licence holder as well as other actions crucial for nuclear safety and radiological protection that are taken by contractors and subcontractors. Integrated management system is defined via documentation that includes:

1) quality policy;
2) quality assurance programme;
3) description of the management system;
4) description of the organizational structure;
5) description of responsibilities, duties, authorizations of and interdependencies between personnel involved in management, implementation and assessment operations;
6) description of interdependencies between external entities;
7) description of organizational entity processes along with explanations concerning preparation, revision, implementation, documentation, assessment and improvement of the nuclear facility daily operations;

8) safety classification of nuclear facility systems, structures or components;
9) preliminary safety report and final safety report.

Integrated management system records have to be submitted to the President of PAA for approval along with application for a license.

The QA programme should describe the ways of assuring that all quality-related activities will be performed in the properly controlled conditions, i.e. by properly qualified personnel using appropriate tools, equipment, methods and technological processes and under suitable environmental conditions, so that the required quality is attained and may be verified by inspection or test. Review and assessment of this programme shall be carried out by the regulatory body at all stages of the licensing process, i.e. prior to and during the construction, during commissioning and operation. If necessary, suitable conditions and requirements will be included in the licence.

The regulatory body, through the requirements concerning the preparation and implementation of the QA programme, obliges the applicant/licensee, as well as his vendors, to plan, perform, verify and document all their activities in an organized and systematic way. An effective QA programme, established and implemented by the licensee, allows the regulatory body to obtain satisfactory confidence in the quality of nuclear facility's equipment and in the quality of all performed activities. The regulatory body satisfies itself that the licensee has established and implemented and effective QA programme by audits, document reviews and inspections of work.

Article 14. Assessment and verification of safety

Each Contracting Party shall take the appropriate steps to ensure that:

i. comprehensive and systematic safety assessments are carried out before the construction and commissioning of a nuclear installation and throughout its life. Such assessments shall be well documented, subsequently updated in the light of operating experience and significant new safety information, and reviewed under the authority of the regulatory body;

ii. verification by analysis, surveillance, testing and inspection is carried out to ensure that the physical state and the operation of a nuclear installation continue to be in accordance with its design, applicable national safety requirements, and operational limits and conditions.

14.1. Assessment of safety

Article 36d of the Atomic Law provides that before applying for a nuclear facility construction licence to the Agency's President, the investor shall carry out nuclear safety analyses, taking into account the technical and environmental factors, and shall have them verified by independent entities which are by no way involved in the design process of the future nuclear facility. Based on the safety analysis results, the investor shall draw up a preliminary safety report to be forwarded to the Agency's President along with the application for the construction licence.

Detailed requirements on the scope of the safety report are provided in Regulation of the Council of Ministers of 31 August 2012 on the scope and method for the performance of safety analyses prior to the submission of an application requesting the issue of a license for the construction of a nuclear facility and the scope of the preliminary safety report for a nuclear facility. Safety analyses shall comprise deterministic analyses and probabilistic

analyses. Safety report is required only with the submission for the construction licence. During the operation performing periodical safety review is required.

Guides and internal procedures on reviewing the safety assessment reports will be prepared by the PAA. It complies with the **suggestions** from the IRRS mission's draft report:

- *The regulatory body PAA should develop procedures covering the review and assessment of new facilities, design modification and SAR amendments for research reactors.*
- *PAA should consider defining a strategy for production or endorsement of internal guidance which specifies the principles, requirements and associated criteria for safety used to inform regulatory judgements, decisions and actions taken during the review and assessment of material submitted as part of licence applications.*

According to Article 37e of the Atomic Law head of the organizational entity shall perform periodical safety review. The exact time interval will be stated in the licence but should not exceed 10 years. Detailed periodical safety review plan needs to be approved by the PAA's President. Based on the periodical safety review, the head of organizational entity shall draw up a periodical safety review report to be submitted to the Agency's President for approval until by the deadline stated in the licence for the nuclear facility operation. Regulation by The Council of Ministers of 27 December 2011 on periodical safety review of a nuclear facility provides for a detailed scope of periodical safety review of a nuclear and a scope of periodical assessment report.

14.2. Verification of safety

Safety of nuclear installation during its operation is under constant verification performed by the licensed operator and by the regulatory body - PAA. Main responsibilities of licensee for performing verification of safety are stated in the Regulation of the Council of Ministers of 11 February 2013 on requirements regarding commissioning and operation of nuclear installations.

The Regulation states that operation of nuclear installation has to be conducted accordingly to the operational limits and conditions which are determined in the licence. These conditions cover among others requirements for inspection and oversight of systems, structures or components which are important regarding nuclear safety and radiological protection. Moreover the head of organizational entity licensed to operate a nuclear facility is obliged to prepare a programme of maintenance, repairs, oversight and inspection of these important systems and components. This programme has to consider ageing processes.

Regarding regulatory verification of safety the nuclear regulatory bodies (the PAA President, Chief Nuclear Regulatory Inspector and nuclear regulatory inspectors) in accordance with Article 64 Section 4 of the Atomic Law Act, must first of all:

1) issue the licences (the PAA President) and other decisions in the matters involving nuclear safety and radiological protection, according to the principles and procedures established by the Act,
2) conduct inspections in nuclear facilities and in organizational entities which hold nuclear materials, ionizing radiation sources, radioactive waste and spent nuclear fuel.

Particular powers of a nuclear regulatory body were specified in Article 66 Section 1 of the Atomic Law Act. In accordance with this Article, in the context of regulatory control, nuclear regulatory bodies are authorized to:

1) around-the-clock access to the sites, facilities, premises and transport vehicles of the inspected organizational entities, being suitably equipped to do so;
2) scrutinize the documentation, logbooks and other data carriers concerning nuclear safety and radiological protection in the inspected organizational entity;
3) request copies of the documents and data carriers referred to in Item 2 to be produced or provided;
4) verify whether the activities of the inspected organizational entity are conducted in compliance with nuclear safety and radiological protection regulations and with the requirements and conditions established in the licences;
5) conduct independent technical and dosimetric measurements, whenever needed,
6) request written or oral information in matters under scrutiny, and to interview the head and personnel of the inspected organizational entity, as well as external workers and apprentices;
7) collect samples for laboratory tests;
8) inspect the site, facilities, premises and installations of the inspected organizational entity and its transport vehicles;
9) record the processes and results of inspection as referred to in Item 8 using audio-visual recording systems;
10) secure and request securing (confirming security) documents and other proofs;
11) during inspections of nuclear power plants – to request the assistance of expert laboratories and organizations authorized by the Agency's President and during inspections of other organizational entities – to request the assistance of experts, specialists and laboratories.

The head of inspected entity is obliged to enable nuclear regulatory bodies the performance of inspection ensuring suitable conditions for the inspection. In accordance with Article 37 of the Atomic Law Act inspection concerns producers and suppliers of nuclear facility systems, structures or components , as well as contractors for systems, components and works important for the nuclear safety, radiological protection and safe operation of installations referred to in the regulations issued under Article 5, Section 4 of the Technical Inspection Act of 21 December 2000, carried out or provided during construction, fitting, commissioning, operation and decommissioning of a nuclear facility. The inspection referred to above consist in checking selected nuclear facility systems, structures or components which are ready or being made, as well as works which are being performed at the nuclear facility.

The head of organizational entity conducting activities involving exposure and consisting in the operation of nuclear facility is obliged to regularly forward the nuclear facility operating parameters which are important for the nuclear safety and radiological protection to the Agency's President.

The nuclear regulatory body possesses appropriate legal measures which enable it to respond to situation when the head of an organizational entity does not comply with the binding provisions of law concerning the performance of activities involving exposure. The nuclear regulatory body may first of all use legal measures specified in Chapter 9 of the Atomic Law Act i.e. injunctions and interdictions (Article 68 of the Atomic Law Act), decisions

to eliminate non-conformances (Article 68b of the Atomic Law Act), post-inspection decisions (Article 69 of the Atomic Law Act), recommendations (Article 68a of the Atomic Law Act). The above measures are used if any non-conformances and irregularities are found during inspection and are intended to:

1) eliminate direct threat to nuclear safety and radiological protection (injunctions and interdictions)
2) eliminate non-conformances if it has been found that factual and legal status is not in compliance with conditions specified in the license or in provisions regulating activities covered by the license (decisions to eliminate non-conformances)
3) eliminate other errors or failures than those specified in Item 2 (post-inspection decisions),
4) improve the status of nuclear safety or radiological protection in the inspected entity (recommendations).

The nuclear regulator may also charge the authorized party with a fine in cases specified in Article 123 of the Atomic Law Act. Fines are imposed in the form of administrative decision.

Article 15. Radiation protection

Each Contracting Party shall take the appropriate steps to ensure that in all operational states the radiation exposure to the workers and the public caused by a nuclear installation shall be kept as low as reasonably achievable and that no individual shall be exposed to radiation doses which exceed prescribed national dose limits.

The radiological protection issue at the national level is addressed in the chapter 3 of *Atomic Law Act* and several relevant secondary regulations in which internationally endorsed criteria and standards had been incorporated. The Act takes into account the *Basic Safety Standards for radiation protection* (BSS- *International Basic Safety Standards for Protection against Ionizing Radiation and for the safety of Radiation Sources, IAEA Safety series No.115* based on ICRP 60/72). It is aimed at ensuring the compliance with the provisions of the *EURATOM Treaty* and appropriate EU directives. Besides of the *Directive 96/29/EURATOM on basic safety standards in health services, for the protection of workers and of the members of the public against the ionizing radiation risks*, the Atomic Law provisions introduce the requirements contained in other EU directives, relevant for the protection of workers and general public. They provide for the fundamental set of nuclear safety and radiological protection requirements. Detailed requirements, concerning specific facilities and activities conducted by individual licensee are specified in the licensing conditions. These conditions take into account the results of assessments and analyses performed to establish the operational conditions and limits assumed in safety reports for these facilities and activities.

Dose limits are established strictly according to the EU Directive 96/29 EURATOM in the governmental regulation on ionising radiation dose limits, first issued on 28 May 2002, replaced by its updated version on 18 January 2005. The effective dose limit for workers is 20 mSv per year (or equivalent dose for the lens of eye – 150 mSv per year, for the skin 500 mSv per year and for the hands, forearms, feet and ankles – 500 mSv per year), it is allowed however to exceed it up to the 50mSv in calendar year provided that in any five-year period of his occupational exposure the worker shall not exceed effective dose of 100 mSv (average

value of 20 mSv yearly). The same limits are for apprentices and students over 18 years old. For this category for age between 16 and 18 years old yearly limit is 6 mSv/y , for younger than 16 years – 1 mSv/y – the same as for general public. If the worker is pregnant woman, the limitation of her doses has to be such as her child to be born does not exceed the dose of 1 mSv. In special circumstances, strictly defined by law, the limits above may be exceeded with exclusion of apprentices, students and pregnant women. For population equivalent dose limits are 15mSv per year for the lens of eye and 50 mSv per year for skin; the limit of 1 mSv per year may be exceeded provided that in five-year period the effective dose shall not exceed 5 mSv. Workers exposures are subject to optimisation. For this purpose the radiation protection targets may be established by the management of facility. They are not subject to review or endorsement by the regulatory authority. On the contrary, the discharges of effluents to the environment are under control by the regulatory body and numerical values of relevant limits are usually included into the terms of licence. For the purpose of protection of population groups living in vicinity of nuclear facility the zone of limited use is established within such distance from the facility, that the effective dose at its perimeter does not exceed the value of 0.3 mSv.

Under the Atomic Law, the responsibility for compliance with the nuclear safety and radiological protection requirements rests upon the manager of the organizational unit conducting activities / practices involving exposure (Art.7). This exposure must not exceed the dose limits described above, established in the regulation issued under the Art. 25.1 of the Atomic Law. At the same time the principle of exposure optimization must be observed (Art.9). This means that the activity should be conducted in such way that – after reasonable consideration of economic and social factors – the number of exposed workers and members of general public and their doses are as low as reasonably achievable. According to this principle, **the manager** of the organizational unit shall perform an **assessment of the employees' exposure.** If it seems to be necessary from the exposure optimization analysis – the director shall establish the authorized limits **for the workers' exposure (dose constraints)** to ensure that their ionising radiation doses will be not greater than these **limits**, which in turn are lower than **dose limits**. If the authorized limits are established in the licence, the licensing authority has to be notified of the possibility of their overrun by the organizational unit manager. The assessment of the employees' exposure is based on the spot-check individual dose measurements or dosimetric measurements in the workplace. The workers whose exposure – according to the manager's assessment – can exceed 6 mSv in one year in the terms of effective dose or three tenths of dose limit values for skin, limbs and eye lens in terms of equivalent dose, shall be subject to the exposure assessment based on systematic individual dose measurements (category A workers). For these workers the organizational unit director is obliged to maintain a register of their individual doses based on systematic measurements and doses' assessment conducted by accredited entities. The data concerning these exposures must be relayed systematically (in compliance with the requirements established in the *Regulation of the Council of Ministers of 23 March 2007 on the requirements for the individual doses registration*) to the authorized medical practitioner, who maintains medical records of these workers, and also to the Central Dose Register of the PAA President.

To match the methods of exposure assessment to the expected exposure level for workers, two categories of workers are established: category A (for workers who may be exposed to an effective dose exceeding 6 mSv/y or to an equivalent dose exceeding three-tenths of the dose limits for eye lens, skin and limbs) and category B (for workers who may

be exposed to an effective dose exceeding 1 mSv/y or to an equivalent dose exceeding one-tenth of the dose limits for eye lens, skin and limbs).

The data related to the doses obtained by workers classified (by their supervisor) as “category A workers” is collected since year 2003 in the Central Dose Register of the President of the National Atomic Energy Agency. These data are based on the measurements of whole-body effective dose or effective dose to a specified exposed body part (e.g. the hands). Exceptionally, in the cases of exposures to radioactive contamination from the so-called unsealed sources, the assessment of committed dose from internal contamination is performed. Radiation dose measurements are performed by specialized laboratories.

The Central Dose Register is kept in the form of an electronic data-base comprising electronic registration cards, separate for every “category A worker”. Data are stored until the worker reaches the age of 75 years, but not shorter than for 30 years from the end of the calendar year in which the last entry concerning the given worker has been made.

The total number of workers classified as “category-A workers” and recorded in the Central Dose Register exceeded 4700. The data show that approximately 97% of category-A workers did not exceed the lower limit for this category of exposure (6 mSv/y) and 99.4% did not exceed the 20 mSv/a limit. Each case of exposure exceeding the annual dose limit of 20 mSv is subjected to a detailed investigation by regulatory inspectors.

Head of organizational entity, prior to employing a worker in radiation exposure conditions, shall apply to the PAA President for the information from the Central Dose Register on the doses received by this worker in the calendar year in which the application is submitted, and also in the period of the four preceding calendar years. All employers of the category A workers are obliged to submit the dose data of their employees yearly before 15 April next year, and each time after the dose limits were exceeded or the employee finished its employment.

Article 16. Emergency preparedness

1. ***Each Contracting Party shall take the appropriate steps to ensure that there are on-site and off-site emergency plans that are routinely tested for nuclear installations and cover the activities to be carried out in the event of an emergency.***
2. ***For any new nuclear installation, such plans shall be prepared and tested before it commences operation above a low power level agreed by the regulatory body.***
3. ***Each Contracting Party shall take the appropriate steps to ensure that, insofar as they are likely to be affected by a radiological emergency, its own population and the competent authorities of the States in the vicinity of the nuclear installation are provided with appropriate information for emergency planning and response.***
4. ***Contracting Parties which do not have a nuclear installation on their territory, insofar as they are likely to be affected in the event of a radiological emergency at a nuclear installation in the vicinity, shall take the appropriate steps for the preparation and testing of emergency plans for their territory that cover the activities to be carried out in the event of such an emergency.***

Regulation of the Council of Ministers of 20 February 2007 on the emergency plans for radiation emergency (issued on 23 December 2002, OJ (Dz.U.2002) no 239, item 2033, last amendment in 2007, OJ (Dz. U. 2007) no 131 item 912), defines the responsibilities, scope, requirements and general rules of cooperation in a case of radiation emergency. According to this regulation, the plans on different levels (facility level, province level, national level) and appropriate emergency preparedness arrangements have to be in place and maintained by the organizations and bodies responsible for directing actions aimed at eliminating the threat and its consequences, and in particular - for implementation of intervention measures in case of radiation emergency with consequences beyond the site where it has occurred. The same bodies are responsible for systematic testing of these plans and arrangements within the prescribed time-intervals as established by the Atomic Law for national level (Art.96) and by the regulation of the Council of Ministers on the emergency plans for radiation emergency.

There are emergency plans for spent fuel and radioactive waste management facilities localized at Świerk site and for the National Radioactive Waste Repository in Różan. The external transportation of radioactive waste is essential for these plans. The plans include internal (radiation protection and decontamination service) and external communication and cooperation (President of the National Atomic Energy Agency, Province Governor office and services, State Regional Sanitary Inspector, police, fire-department).

The Atomic Law Act requires that during on-site radiation emergency, the actions aimed at the elimination of the threat and its consequences shall be directed by the facility manager (licensee). During radiation emergency on regional scale actions including intervention measures shall be directed by the governor of a province (Voivode) in co-operation with the proper State Regional Sanitary Inspector. On national level this is responsibility of the Minister of Interior, with the PAA President assistance. This minister is obliged by Law (Art.96.2 of Atomic Law) to perform exercise to test the national level radiation emergency preparedness plan at least once every 3 years. According to present requirements (Art.96.1 of Atomic Law, Regulation of the Council of Ministers on the emergency plans for radiation emergency) the frequency of testing of the relevant plans at regional (provincial) and facility level must be established within each particular plan by the province governor or the facility manager respectively. In practice such exercises are performed every one-two years for the facility and every one-three years for the province.

As there is no NPPs in Poland and existing other nuclear facilities are sited far from the national borders, it is rather unlikely that Poland could create immediate radiation threat to a neighbouring country. Also the NPPs in neighbouring countries are not located in the close vicinity to Poland's borders. However appropriate arrangements have been made to be able to respond adequately to even very unlikely radiation emergency situation. According to the Atomic Law the PAA President is responsible for performing the tasks concerning the assessments of national radiation situation in normal conditions and in radiation emergency situations, and the transmission of relevant information to appropriate authorities and to the general public.

For the purpose of information gathering and of assessment and forecasting of radiation situation development, the President of PAA has established **the Radiation Emergency Centre** "CEZAR" being one of the departments **in the PAA structure,** which operates **National Contact Point** (for domestic matters and for EC, IAEA, CBSS, NATO, and bilateral agreements) and has direct access to the data from the Country-wide system

for early detection of radioactive contamination (early warning radiation monitoring system), the meteorological data as well as appropriate computerized tools (decision support systems e.g. RODOS, ARGOS), relevant data bases, and the staff adequately trained to operate these tools, to perform analysis and prognosis and to formulate recommendations for decision makers.

CEZAR operates also the **International and Domestic National Warning Point** (NWP) working on 24h a day/7 days a week basis. It serves as a channel of exchanging information on radiation emergencies with IAEA in Vienna, EC, CBSS, NATO and neighbouring countries according to international conventions and bilateral agreements.

Poland has signed bilateral agreements on early notification of a nuclear accident and on cooperation in nuclear safety and radiological protection with Denmark (1987), Norway (1989), Austria (1989), Ukraine (1993), Belarus (1994), Russian Federation (1995), Lithuania (1995), Slovak Republic (1996), Czech Republic (2005) and Germany (2009).

Poland participates in international projects in the emergency preparedness area, therefore Radiological Emergency Centre CEZAR of PAA regularly participates in many international exercises and tests organized by IAEA (CONVEX level 1, 2 and 3), EU (ECURIE level 1 and 3), , NEA-OECD (INEX-4 in 2011), Council of Baltic Sea States (CBSS) EGNRS (Expert Group for Nuclear and Radiation Safety), and within bilateral agreements with neighbouring countries. Each year CEZAR participates in several domestic exercises on the national or regional level.

Article 17. Siting

Each Contracting Party shall take the appropriate steps to ensure that appropriate procedures are established and implemented:

i. ***for evaluating all relevant site-related factors likely to affect the safety of a nuclear installation for its projected lifetime;***

ii. ***for evaluating the likely safety impact of a proposed nuclear installation on individuals, society and the environment;***

iii. ***for re-evaluating as necessary all relevant factors referred to in sub-paragraphs (i) and (ii) so as to ensure the continued safety acceptability of the nuclear installation;***

iv. ***for consulting Contracting Parties in the vicinity of a proposed nuclear installation, insofar as they are likely to be affected by that installation and, upon request providing the necessary information to such Contracting Parties, in order to enable them to evaluate and make their own assessment of the likely safety impact on their own territory of the nuclear installation.***

17.1. Evaluation of site related factors

Atomic Law (Article 35b) provides that nuclear facilities shall be located within an area which ensures that nuclear safety, radiological protection and physical protection requirements are fulfilled during commissioning, operation and decommissioning of the

facility, and that emergency measures can be effectively implemented in response to any radiation emergency.

According to the Atomic Law the licence holder (investor) being liable for nuclear safety, should independently evaluate the terrain for the prospect site of a nuclear facility using methods of evaluation which yield quantifiable results and appropriately reflect the actual conditions of such terrain. Such an evaluation is the prerequisite for selecting the site for a nuclear facility, and concerns:

1) seismic, tectonics, geological, geo-engineering, hydrogeological, hydrological and meteorological conditions;

2) man-made external incidents;

3) external incidents attributed to the forces of nature;

4) population density and land development;

5) conditions for the employment of emergency measures in response to radiological emergency;

The investor need to prepare the results of the evaluation of a terrain for the prospect site of a nuclear facility, together with results of tests and measurements that are the basis for such evaluation, in the form of a site evaluation report. The site evaluation report will be subject to assessment by the PAA President, in the course of the procedure for issuing a licence for construction for a nuclear facility. No separate siting licence will be introduced. Before applying for a nuclear facility construction licence, the investor can apply to the Agency's President for a preliminary assessment of the site of a future nuclear facility.

In accordance with Article 35b point 4 of the Atomic Law on 10th of August 2012, Regulation by the Council of Ministers on detailed scope of assessment with regard to land intended for the location of a nuclear facility, cases excluding land to be considered eligible for the location of a nuclear facility and on requirements concerning siting report for a nuclear facility, came into force (hereinafter called Siting regulation).

Provision for all site related factors affecting the safety of nuclear installation are provided by § 45 of the Regulation of the Council of Ministers of 31 August 2012 on nuclear safety and radiological protection requirements which must be fulfilled by a nuclear facility design(hereinafter called Design regulation). In multi-unit nuclear power plants the systems, structures and components important for ensuring nuclear safety and radiological protection cannot be shared by two or more reactors, unless it is demonstrated that for all reactors, in operational states, including maintenance activities in the scope of operation, repairs, modernisation and during the considered accidents, the requirements on nuclear safety and radiological protection shall be met, and in the event of a severe accident of one reactor, the orderly shut-down, cooling and discharge of post-shut-down heat will be ensured for the remaining reactors.

Design provisions used against:

- fire, explosion etc – provisions are stated in the chapter 8 of the section IV of the Regulation of the Council of Ministers of 31 August 2012 on nuclear safety and

radiological protection requirements which must be fulfilled by a nuclear facility design called **Requirements on the fire protection and the prevention of explosions**. Systems, structures and components of the nuclear facility important for ensuring nuclear safety and radiological protection shall be designed and distributed so as to minimise the probability of fire and explosion caused by external or internal events. Redundancy, diversity and physical separation of those systems are required. Fire barriers, fire detection systems, fire alarms and the extinguishing of fires at the nuclear facility shall be designed on the basis of the analyses on fire threat of the nuclear facility indicating required fire resistance, need for application and output. §32.2 of the Design regulation provides that Nuclear power plant and research reactor shall be designed so as to prevent the occurrence of severe accidents (inter alia hydrogen explosion, steam explosion), which could lead to a premature failure of the primary reactor containment, or it shall be demonstrated that the probability of occurrence of such accidents is so small that it is not necessary to include it in the design. Provision against hydrogen explosion are also stated in §76.1 - the reactor containment system design shall provide for, as required, systems used for limiting, reducing and controlling the quantities of products of fission, hydrogen, oxygen and other substances, which may be released into the reactor containment.

- Aircraft crash – provisions are stated in the § 33 of the Regulation of the Council of Ministers of 31 August 2012 on nuclear safety and radiological protection requirements which must be fulfilled by a nuclear facility design. Design solutions ensuring NPPs safety in case of a large civilian aircraft crashing into it are required. Design should ensure that with limited operator's actions: the reactor core continues being cooled or the primary reactor containment remains intact and the cooling of spent nuclear fuel or the integrity of the spent nuclear fuel pool is maintained. Moreover § 67 of this regulation provides that two reactor containments should be constructed. Presence of the secondary containment increases nuclear safety and resistance to aircraft crash.
- External flooding – provisions are stated in the §23 of the Design regulation. In the event of locating the nuclear facility in the areas where the probability of flooding is once every 1000 years or more than once every 1000 years, the nuclear facility shall be designed in a manner to prevent the negative consequences brought about by floods or flooding. When designing anti-flooding protection for a nuclear facility, consideration shall be given to the maximum water surface ordinate level with the probability to occur once every 1000 years.
- Severe weather conditions, earthquakes, heavy rains:
  Following provisions can be found in the Polish regulations:
  <u>Siting regulation:</u>

  § 5. The land shall not be considered to fulfill location requirements with regard to a nuclear facility location in case of the following factors:

  2) in the location ground of a nuclear facility in the distance which is less than 20 km from the borders of planned placement of a nuclear facility there is an active fault or fault in relation to which the probability of activation is more than once in 10,000 years and such activation could cause a threat to nuclear safety of a nuclear facility;

3) in the location region there has been an earthquake of 8 grade in EMS-98 scale within the last 10,000 years or there is the probability of earthquake with the same scale which is more than once in 10,000 years;

4) there is the possibility of earthquake with the occurrence probability being more than once in 10,000 years and with the scale below 8 EMS-98, which will prevent the safe operation of a nuclear facility;

Design regulation:

§21. 1. Nuclear facility shall be designed so as to ensure its nuclear safety in case of the occurrence of seismic events and their consequences.

3. When designing a nuclear facility, consideration shall be given to design seismic events with the shock repetition once every 10 000 years, which generates the highest horizontal ground acceleration spectra. The design seismic event shall define: the shock type and mechanism, its location, magnitude, duration, spectral parameters, vertical and horizontal ground acceleration spectra and the seismic moment tensor.

4. When a nuclear facility is in danger of an induced earthquake taking place, natural and induced earthquakes scenarios shall be taken into account for the purpose of identification of design seismic event.

5. Nuclear facility design solutions shall ensure that in case of a design seismic event taking place, referred to in Section 3, systems, structures and components of the nuclear facility which are important for performing fundamental safety functions shall resist stress arising from such event, so that the nuclear facility could attain the state of safe switch-off.

6. The requirement defined in Section 5 shall be performed in particular by seismic

classification of systems, structures and components of the nuclear facility depending on their required resistance to seismic stress, taking into account implemented safety functions, and by defining the appropriate technical requirements depending on seismicity class.

§22. 1. The nuclear facility design shall take into account the capability of its systems, structures and components important for performing fundamental safety functions, to resist the consequences of seismic events which are more severe than design seismic event, so as to demonstrate that they will not be suddenly damaged, even in the case of design stress being slightly exceeded.

2. In designing the facility for seismic events, an assumption will be made for the loss of electrical power supply to the nuclear facility from external power grids as a result of seismic shocks; including pre-emptive shocks and aftershock.

- External events and events resulting from human activities are taken into consideration in determining the Postulated Initating Events adopted for the performance of the safety analyses.

Regulatory control and review – as Poland does not have any Nuclear Facilities according to definition in Article 2 of the Convention, therefore no control or review have been carried.

17.2. Impact of the installation on individuals, society and environment

No specific criteria have been set in the regulations and the Atomic Law, only general requirements have been provided. § 9 of Regulation of the Council of Ministers of 31 August 2012 on nuclear safety and radiological protection requirements which must be fulfilled by a nuclear facility design provides that nuclear facility design shall ensure the limitation of releases of radioactive substances beyond the reactor containment in case of the occurrence of accident conditions so that in the event of:

1) design basis accidents, there is no need to take any intervention measures beyond the limits of the restricted-use area;

2) extended design conditions, there is no need to take:

a) early intervention measures beyond the limits of the restricted-use area of the nuclear facility during the releases of radioactive substances from the nuclear facility,

b) medium-term intervention measures at any time whatsoever beyond the limits of the emergency planning zone,

c) long-term intervention measures beyond the limits of the restricted-use area of the nuclear facility

Moreover in the nuclear facility design consideration shall be given to the interaction between the nuclear facility and the environment (§ 17 of the Design regulation). The characteristics of the planned site and the region of the nuclear facility location should determine the impact of the nuclear facility on the environment. The interactions should in particular take into consideration:

1) defining the transfer of radioactive substances to persons belonging to the general population and the environment, including the spreading of radioactive substances in the air, surface water and groundwater;

2) in terms of possible impact on intervention measures and risk assessment for given persons belonging to the general population and the population as a whole in case of accident, such as:

a) population distribution around the nuclear facility,

b) the use of land and water,

c) communication routes.

To ensure the nuclear safety and radiological protection the nuclear facility design shall provide for components of equipment used for the purpose of monitoring ionising radiation in the operational states and during and after the considered accidents (§ 123 of the Design regulation).

17.3.Re-evaluation of site related factors

Not applicable as Poland does not have any Nuclear Facilities according to definition in Article 2 of the convention. Although in 2015 review and assessment of the Research Reactor Maria will be made, in the process of granting new licence for the research reactor. It complies with the r*ecommendation from the IRRS mission's draft report: "As part of the upgrading of MARIA research reactor to comply with the Atomic Law Act by 2015, PAA should conduct a full safety evaluation of the application".*

17.4. Consultation with other Contracting Parties likely to be affected by the installation

To ensure nuclear and radiological safety, the Republic of Poland signed a number of international bilateral agreements. Agreements concerning early notification of nuclear accident and exchange of information and experience were executed with the neighbouring countries under international Convention on Early Notification of Nuclear Accident, i.e. with Russian Federation (it refers to the zone of 300 km from the Polish border, this area encompasses the Kaliningrad Oblast), Lithuania, Belarus, Ukraine, Slovakia, Czech Republic, Austria, Denmark, Norway and Germany (30 July 2009).

Due to the fact that the number of nuclear power plants operate in close vicinity of the territory of Poland, the cooperation with nuclear regulators of the neighbouring countries, conducted in accordance with the mentioned intergovernmental agreements, is an essential element of Polish radiological safety. While assessing possible radiation events, partners of the said agreements use consolidated criteria provided for by so called the International Nuclear Event Scale - INES, which was developed by the IAEA.

In accordance to Polish Nuclear Power Programme number of trans-boundary consultations were held and they delayed the approval of the PNPP. Specific information can be found in the Annex no. 4 section - Cross-border consultations of the Polish Nuclear Power Program and the Environmental Impact Assessment.

Article 18. Design and construction

Each Contracting Party shall take the appropriate steps to ensure that:

i. the design and construction of a nuclear installation provides for several reliable levels and methods of protection (defence in depth) against the release of radioactive materials, with a view to preventing the occurrence of accidents and to mitigating their radiological consequences should they occur;

ii. the technologies incorporated in the design and construction of a nuclear installation are proven by experience or qualified by testing or analysis;

iii. the design of a nuclear installation allows for reliable, stable and easily manageable operation, with specific consideration of human factors and the man-machine interface.

General provisions for the nuclear facility design are provided by Article 36c of the Atomic Law. More detailed requirements are contained in the Regulation of the Council of Ministers of 31 August 2012 on nuclear safety and radiological protection requirements which must be fulfilled by a nuclear facility design. This regulation is based on IAEA Safety Standards (in particular SSR 2/1), WENRA recommendations, European Utility Requirements for LWR NPPs and relevant regulatory provisions and requirements binding in particular UE countries.

18.1. Implementation of defence in depth

General provisions for the defence in depth concept are provided by the Atomic Law. Article 36c section 2 says that nuclear facility design shall take into account the sequence of safety levels to prevent deviations from normal operating conditions, anticipated operational occurrences and design basis accidents, as well as severe accidents beyond basis of the nuclear facility design, and if any of the foregoing deviations, incidents or accidents cannot be prevented – to control them and to mitigate radiological impact of the emergency. This

requirement is described broader in the Regulation on nuclear safety and radiological protection requirements which must be fulfilled by a nuclear facility design. § 3 of this regulation develops five safety levels, as well as functions and actions that should be taken at each level. Sequence of protective barriers ensuring the maintenance of radioactive substances at given points of the nuclear facility and preventing their uncontrolled release to the environment, such as: nuclear fuel material (fuel matrix), fuel cladding, pressure boundary of the reactor cooling circuit and reactor containment need to be implemented in the nuclear facility design. In all circumstances, fundamental safety functions of the plant should be performed.

Defence in depth is also included in other requirements for facility design. General requirements provides that the design shall ensure:

1) high level of quality of the nuclear facility in order to minimize the occurrence of failures and deviations from normal operation and to prevent accidents;

2) technical solutions for controlling nuclear facility behaviour during and after the occurrence of a postulated initiating event, with the use of the built-in safety properties of the nuclear facility and appropriate components of the nuclear facility equipment

3) nuclear facility control by applying automatic actuation of safety systems in a manner limiting operator's activities in the earlier phase of the postulated initiating event, as well as the control of the nuclear facility by the operator;

4) as far as it is practically possible, equipment and procedures permitting the controlling of the course of accident and limiting its consequences;

5) multiple technical solutions in order to ensure the performance of each of the fundamental safety functions, attaining in this manner protective barrier effectiveness and limiting the consequences of postulated initiating events.

The nuclear facility design shall apply solutions concerning safety level sequences in order to prevent:

1) the strain of the integrity of protective barriers;

2) the failure of one or more protective barriers;

3) the failure of the protective barrier resulting from the failure of another protective barrier or system, structure or component of a nuclear facility;

4) any possible negative consequences caused by human error during nuclear facility operations or during the performance of maintenance activities concerning operations, including nuclear facility repairs and modernization.

18.2. Incorporation of proven technologies

Under the provision of the Article 35b of the Atomic Law it is required that in the design and construction process of a nuclear facility, no solutions or technologies shall be used which have not been demonstrated to be appropriate in practice in other nuclear facilities, or by means of tests, studies and analyses.

Integrated management system need to be presented by the licensee when applying for the licence to conduct activities involving exposure and consisting in construction, commissioning, operation or decommissioning of nuclear facilities. Producers and suppliers of nuclear facility systems, structures or components, as well as contractors for construction

works at the nuclear facility shall have appropriate quality systems implemented for the services they provide.

During construction and manufacture of the facility systems, installations and components nuclear regulatory inspectors and inspectors from Office of Technical Inspection will conduct inspections to ensure that high technological standards are met at every step of the construction. Experience of the Office of Technical Inspection inspectors will be a big asset in the inspection process.

Equipment qualification is also required. The safety system necessary for the nuclear facility to attain a safe shut-down and remain in this state shall be designed so as to permit it to perform its functions when fulfilling the single failure criterion and even when any other component of this system or of the auxiliary system required for it to function is excluded from operation.

Requirements regarding reliability and periodic testing of the control and measuring devices and systems are provided by the Regulation on nuclear safety and radiological protection requirements which must be fulfilled by a nuclear facility design.

18.3. Design for reliable, stable and manageable operation

§ 43 of the Regulation on nuclear safety and radiological protection requirements which must be fulfilled by a nuclear facility design provides that nuclear facility shall be designed so as to minimize the possibility and limit the consequences of human error, with particular consideration being given to the spatial layout of the nuclear facility and to ergonomics. It should be ensured that operator has conditions provided to undertake needed actions. Nuclear facility design solutions shall minimise the probability of situations which require intervention measures by the nuclear facility operator over a short period of time; however, if such intervention measures are taken by the operator, the solutions shall ensure that:

1) the operator has at his disposal sufficient time to take the right decisions and measures;

2) the necessary information for the operator to make the right decision is presented in a simple and unequivocal manner;

3) following the accident, in the main control room or the back-up control room and in the route leading to the back-up control room, there is an acceptable occupational environment in terms of radiological protection and work health and safety.

§ 44 of the Design regulation gives special attention to the design of the main control room and back-up control room in accordance to human factors and man-machine interaction. Back-up control room is required in the design of the NPP and should be physically separated from main control room, as to ensure the safety of the plant in case if all the necessary actions for ensuring safety cannot be undertaken from the main control room. Control room shall be designed to provide operators with comprehensive picture of the state and functioning of the nuclear facility and complex but easy to understand information.

Probabilistic safety analysis will be conducted and included in the Safety Analysis Report and will take into account inter alia possible workers errors.

Article 19. Operation

Each Contracting Party shall take the appropriate steps to ensure that:

i. the initial authorization to operate a nuclear installation is based upon an appropriate safety analysis and a commissioning programme demonstrating that the installation, as constructed, is consistent with design and safety requirements;

ii. operational limits and conditions derived from the safety analysis, tests and operational experience are defined and revised as necessary for identifying safe boundaries for operation;

iii. operation, maintenance, inspection and testing of a nuclear installation are conducted in accordance with approved procedures;

iv. procedures are established for responding to anticipated operational occurrences and to accidents;

v. necessary engineering and technical support in all safety-related fields is available throughout the lifetime of a nuclear installation;

vi. incidents significant to safety are reported in a timely manner by the holder of the relevant licence to the regulatory body;

vii. programmes to collect and analyse operating experience are established, the results obtained and the conclusions drawn are acted upon and that existing mechanisms are used to share important experience with international bodies and with other operating organizations and regulatory bodies;

viii. the generation of radioactive waste resulting from the operation of a nuclear installation is kept to the minimum practicable for the process concerned, both in activity and in volume, and any necessary treatment and storage of spent fuel and waste directly related to the operation and on the same site as that of the nuclear installation take into consideration conditioning and disposal.

The most comprehensive answers to all of the recommendations listed in Article 19 of the Convention can be obtained from the Regulation of the Council of Ministers of 11 February 2011 on requirements regarding commissioning and operation of nuclear installations. Almost every point from the Convention is put there as a single requirement for the licensee.

19.1. Initial authorization

The abovementioned Regulation lists the necessary tests and hold points of the commissioning process. At the end of every stage of the commissioning the licensee has to present documented results of the tests to the PAA President to get approval for continuation.

The Regulation of the Council of Ministers of 2 December 2002 on the documents required with the application for the licence for activities involving the exposure to ionizing radiation or with the notification of such activities states that an application for a license to operate a nuclear installation has to include among other documents written report from the commissioning tests.

19.2. Operational limits and conditions

According to the Regulation regarding documents required with the application for the licence it is the licensee who presents proposed operational limits and conditions with the application for commissioning. The President of PAA has right to modify them (Regulation on requirements regarding commissioning and operation of nuclear installations), taking into account operational experience or modifications of systems or structures.

Operational limits and conditions are revised during the commissioning and operation.

19.3. Procedures for operation, maintenance, inspection and testing

All necessary procedures will be prepared in later stage of Polish nuclear programme. At this moment the Regulation on requirements regarding commissioning and operation of nuclear installations states which types of procedures have to be included in the installation's documentation.

19.4. Procedures for responding to operational occurrences and accidents

See above.

19.5. Engineering and technical support

During the construction of Olkiluoto 3 significant share of work was done by Polish companies e.g. Polbau, Elektrobudowa, Energomontaż-Północ, KMW Engineering. Thanks to this experience big part of building can be done with the help of Polish engineers. However there are very few experts in the field of design of nuclear power reactors and as well there is lack of experienced operational staff.

Due to these reasons PGE EJ 1, which is a special purpose vehicle responsible for preparing the investment process and construction of the first nuclear power plant in Poland, in May 2013 signed an agreement with Polish universities to promote education and research in the field of nuclear power.

19.6. Reporting of incidents significant to safety

The Atomic Law Act states that "the head of organizational entity conducting activities involving exposure and consisting in commissioning, operation or decommissioning of nuclear facilities shall immediately notify the PAA President, the regional governor, district or municipal authorities competent for the area where the facility is located, as well as municipal authorities of the adjacent areas on all emergencies related to actual or potential nuclear hazards". He also shall publish or update information concerning hazardous nuclear emergencies within the last 12 months in the facility's official website and shall forward it to the Agency's President (Article 35a).

19.7. Operational experience feedback

During operation of a nuclear facility, an organisational unit operating a nuclear facility will be obliged to, on an ongoing basis, include its experience gained in the course of operating a nuclear facility as well as experience resulting from operation of other nuclear facilities by other organisational units.

19.8 Management of spent fuel and radioactive waste on the site

Requirements for the on-site handling of spent fuel and radioactive waste are listed in the Regulation of the Council of Ministers of 3 December 2002 on radioactive waste and spent nuclear fuel.

Furthermore the Regulation on requirements regarding commissioning and operation of nuclear installations states that the collection, segregation, processing, movement and storage, on the facility site, and preparation for transport outside the nuclear facility site of radioactive waste and spent nuclear fuel during commissioning or operation of the nuclear facility shall be in accordance with the radioactive waste and spent nuclear fuel safe management programme.

1.2. Concluding summary on the fulfilment of the obligations

Based on the presented evaluation, it can be concluded that **Polish regulations and practices continue to be in compliance with the obligations of the Convention** to the extent applicable to Poland, and further progress is underway in the view of Polish nuclear power programme.

Compliance with Convention on Nuclear Safety (and other instruments of international nuclear safety regime) was one of the key criteria when Poland was conducting works on the development national legal and regulatory framework as preparation to introduce nuclear power programme. Consequently in the future during continuation of these efforts, especially in the field of human resources development, CNS guidelines as well as IRRS mission results will be always taken into account.

Regarding the “post Fukushima” activities it must be taken into account that Poland is a country which on one hand has no existing NPPs but on the other hand is preparing to launch national nuclear power programme in near future. In this complex situation Polish response to lessons arising from Fukushima Daiichi accident can be divided in to two parts.

Firstly - nuclear installations existing in Poland (research reactor and spent fuel storages) were subject to safety reassessment in areas connected with natural events and with loss of external power. Scope and extent of those analysis were limited in comparison to stress tests applied to all European NPPs but sufficient according to graded approach principle. It is worth to mention that due to Polish participation in GTRI spent fuel repatriation programme amount of spent fuel was significantly reduced over last couple of years making this kind of threat negligible. Detailed description of activates performed by Polish nuclear facilities operators were provided in national report for 2nd CNS Extraordinary Meeting.

Secondly - as one of the milestones of Polish nuclear power programme development legal framework was prepared by amending act of Parliament - Atomic Law and drafting of number of supporting regulations to be issued by Council of Ministries (e.g. on siting requirements, on design requirements and on scope of safety analysis to be performed prior to license application). Final stage of drafting of above mentioned documents has overlapped with nuclear accident in Japan. This situation allowed us to reconsider proposed requirements in the view of first outcomes of stress tests and other initial analysis of Fukushima Daiichi accident. Due to the fact that legislation prepared by Polish regulatory body PAA was based on international guidelines (IAEA, WENRA, ENSREG and NEA/OECD) and dedicated only to generation III/III+ reactors not many changes were needed. However minor adjustments were introduced referring for example to requirements regarding plant behavior in situation of loss of external power supply. It is well understood that process of identifying all lessons learned from Fukushima Daiichi accident will be long lasting activity. Poland is a member of all essential international bodies (working under auspices of IAEA, EC, WENRA, NEA/OECD) aiming at implementation of international nuclear safety and security regime and is highly motivated to fully implement all results of international reviews of events in Japan to enhance safety of future Polish NPPs.

Currently Poland is working, together with other European Community countries, on draft proposal for a Council Directive amending Directive 2009/71/EURATOM establishing a Community framework for the nuclear safety of nuclear installations. Main incentive to start work on the amendment of so called “European safety directive” was accident in Fukushima Daiichi NPP. Current version of proposed amendment put focus on issues like: strengthening

the role and independence of national regulators; enhancing transparency; strengthening existing and introducing new safety objectives. As soon as formal procedure within European institutions is finished effort on national level will be launched to implement this directive into Polish law.

Annex no. 1

POLAND

Installations (other than defined in the article 2(i) of the Convention on Nuclear Safety)

Research reactors

The only Polish **operational reactor „MARIA”** is a high flux **channel-pool type** one, of nominal thermal power **30 MW** (**first criticality date 1974/18/12**), at present operating at about 20 MW thermal power and used mostly to isotopes production, silicon doping and physical experiments. It was operating at the time of entering into force of the Convention, after an extensive process of upgrading. In the years 1999-2002 a process of conversion from 80% to 36% enriched fuel of reactor core was completed. Conversion of reactor core to LEU fuel is ongoing. As for May 2013, 10 out of 22-23 fuel assemblies in the core (depending on reactor cycle) were LEU fuel assemblies (two of them are under tests). Full conversion is expected by the year 2015. The conversion of the reactor core necessitated modernization of the fuel channels' cooling systems which began in the end of May 2013. Main point of this modernization is change of the pumps for new ones.

The facility, **operated by the National Centre for Nuclear Research NCBJ** (former Institute of Atomic Energy IEA and Institute for Nuclear Studies IPJ merged in 2011), is subject to process of its constant upgrading and accommodation to actual tasks. All principles enumerated in Article 19, concerning its operation are observed. The exchange of experience (art.19 (vii)) is naturally limited as the design of the reactor is very specific.

The spent fuel from this reactor is stored in a technological pool connected to the reactor pool inside the reactor building (AR, wet type of storage).

The first research **reactor “EWA”** (pool type) 10 MW_{th} (first criticality date **1958/06/14**), used for isotopes production and physical experiments in horizontal channels, was shut down and unloaded of fuel in 1995. Its **decommissioning** process, authorized under general permission issued to its **operator (IEA)** - in 1997, recently has reached the end of its **2nd stage**, according to IAEA definition. The spent fuel unloading, decontamination and the majority of dismantling works were performed by IEA before the year 2002, when the facility was handed over together with spent fuel facilities to the newly created State owned public utility enterprise Radioactive Waste Management Plant (ZUOP). Since the beginning of the 2002 ZUOP has been continuing of EWA decommissioning works and operating 2 separate facilities that used to contain all EWA reactor spent fuel (AFR, wet type of storage), before their repatriation to Russian Federation GTRI (see more information below) initiative. **Currently no spent fuel is stored at Świerk site, beside that in MARIA reactor technical pool.**

The former **critical assembly “ANNA”** (first criticality date **1963/01/01**), **zero-power reactor “AGATA”** (pool type, first criticality date **1973/05/05**) and **small power (100 kW_{th}) reactor ”MARYLA”** (pool type, first criticality date **1967/02/01**) long ago had been **permanently shut-down**, unloaded of fuel and **dismantled**.

Both reactors as well as the spent fuel storages are sited at nuclear research centre in Świerk, where also waste treatment and storage facilities for ILW and LLW are located. High activity spent sealed sources are also temporarily stored at Świerk.

Spent fuel facilities and GTRI

Before the year 2009 spent fuel elements from the MARIA reactor was stored in the MARIA reactor operated by IEA (**AR, wet**) and spent fuel storage facility operated by ZUOP. Spent fuel from EWA reactor (HEU and LEU fuel) was stored in two spent fuel storages operated by ZUOP. Within the framework of GTRI Poland implemented RRRFR Programme (Russian Research Reactor Fuel Return Programme). In the years 2009-2010 five spent fuel shipments were performed and all HEU EWA SF and most of the MARIA SF (80% enrichment) was shipped back to Russian Federation. In September 2012 transport of 60 HEU MARIA SF and of all LEU EWA SF was shipped to Russia. Time schedule of another part of RRRFRP is currently under negotiations.

Radioactive waste facilities

ZUOP operates the following installations and facilities at Świerk site and Różan site:

Świerk:

Treatment and storage of ILW and LLW liquid waste and LILW solid waste: evaporation facility and membrane separation facility, chemical treatment facilities (liquid waste), cementation unit, bituminization unit, hydraulic press (12 ton), temporary storage facility.

Różan (*the site was originally a military fort, converted to a repository in 1961)*

Near-surface repository / storage. LILW Institutional waste, SSRS, Interim storage in case of alpha waste. Low- and intermediate-level beta and gamma waste is being disposed of in a moat area (facility no. 8), and alpha-bearing waste is being placed in temporary storage in facility no.1. The PHARE project on the closure of the repository was finished in 2004. This project specifically considered the decommissioning options regarding facilities nos. 2 and 3 at the site, including waste retrieval, repackaging and re-disposal.

It is currently the only radioactive disposal site available in Poland. It is likely that another site for a national repository for future waste arising will eventually have to be found. Indeed, in 1999 Poland completed a three-year Strategic Governmental Programme covering all aspects of present and possible future radioactive waste management in the country. Not only did this Programme dealt with the siting issue regarding construction of a new storage when the Różan facility will be closed (about year 2020), but also considered the waste implications on a future national nuclear power programme (i.e. deep geological repository). This detailed examination of areas suitable for near surface repository siting resulted in 19 sites being chosen for *in-situ* geological investigations. Unfortunately, none of the local authorities concerned are currently in favour to have storage at its territory.

Uranium mining

Most mining activities took place in the south-west of the country. Mining of ore ended in 1968, and processing was terminated in 1973. There are some 100 dumps, mostly

abandoned, of waste rock and ore totalling approximately 1.4 x 10^6 m^3 as well as one tailing pond, which remediation project (partly funded by the EC) was finished in 2004.

Annex no. 2

Executive Regulations to the Act of Atomic Law

1. Regulation of the Council of Ministers of 11 February 2013 on requirements concerning commissioning and operation of nuclear facilities (JL of 2013, item 281)

2. Regulation of the Council of Ministers of 11 February 2013 on nuclear safety and radiological protection requirements for the decommissioning phase of nuclear facilities and on the content of a nuclear facility decommissioning report (JL of 2013, item 270)

3. Regulation of the Minister of Health of 21 December 2012 on granting authorizations for radiological protection inspectors in laboratories using X-ray devices for medical purposes (JL of 2012, item 1534)

4. Regulation of the Council of Ministers of 10 October 2012 on the the amounts of contributions to cover the costs of spent nuclear fuel and radioactive waste disposal and the costs of nuclear power plant decommissioning by organizational entity authorized to operate a nuclear power plant (JL of 2012, item 1213)

5. Regulation of the Council of Ministers of 31 August 2012 on nuclear safety and radiological protection requirements which must be fulfilled by a nuclear facility design (JL of 2012, item 1048)

6. Regulation of the Council of Ministers of 31 August 2012 on the scope and method for the performance of safety analyses performed before applying for a nuclear facility construction licence and on the scope of the preliminary safety report for a nuclear facility (JL of 2012, item 1043)

7. Regulation of the Council of Ministers of 10 August 2012 on detailed scope of assessment with regard to land intended for the location of a nuclear facility, requirements concerning siting report for a nuclear facility (JL of 2012, item 1025)

8. Regulation of the Council of Ministers of 10 August 2012 on activities important for nuclear safety and radiological protection in an organizational unit conducting activity which consists in commissioning, operations or decommissioning of a nuclear power plant (JL of 2012, item 1024)

9. Regulation of the Council of Ministers of 10 August 2012 on the positions important for ensuring nuclear safety and radiological protection and on radiological protection inspectors (JL of 2012, item 1022)

10. Regulation of the Council of Ministers of 24 August 2012 on nuclear regulatory inspectors (JL of 2012, item 1014)

11. Regulation of the Minister of Economy of 23 July 2012 on detailed rules and conditions for the establishment and operation of Local Information Committees and on the cooperation in the field of nuclear power facilities (JL of 2012, Item 861)

12. Regulation of the Council of Ministers of 27 December 2011 on periodical safety review of a nuclear facility (JL of 2012, item 556)

13. Regulation of the Council of Ministers of 26 March 2012 on the special purpose subsidy awarded to ensure national nuclear safety and radiological protection while using ionizing radiation (JL of 2012, item 394)

14. Regulation of the Council of Ministers of 27 December 2011 on the standard quarterly report on the amount of decommissioning fund payment (JL of 2012, Item 43)

15. Regulation of the Minister of Environment of 18 November 2011 on the Council for Nuclear Safety and Radiological Protection (JL no. 279, Item 1643)

16. Regulation of the Minister of Environment of 9 November 2011 on the standard official identity document of nuclear regulatory inspektor (JL no. 257, Item 1544)

17. Regulation of the Minister of Health of 29 September 2011 on psychiatric and psychological tests of employees performing activities important for nuclear safety and radiological protection (JL no. 220, item 1310)

18. Regulation of the Minister of Finance of 14 September 2011 on value of the minimum guaranteed amount of the third-party liability insurance for the operators of nuclear devices (JL no. 206, item 1217)

19. Regulation of the Minister of Interior and Administration of 13 April 2011 on the list of border crossings through which nuclear materials, radioactive sources, devices containing such sources, radioactive waste and spent nuclear fuel may be imported into and exported from the territory of the Republic of Poland (JL no. 89, item 513)

20. Regulation of the Minister of Health of 18 February 2011 on conditions for the safe use of ionizing radiation for all types of medical exposure (JL no. 51, item 265, as amended)

21. Regulation of the Prime Minister of 8 January 2010 on the procedures for the supervision and inspection by nuclear regulatory authorities in the Internal Security Agency, the Intelligence Agency and the Central Anticorruption Bureau (JL no. 8, Item 55)

22. Regulation of the Council of Ministers of 21 October 2008 on the authorization and approval for import into the territory of the Republic of Poland, export from the territory of the Republic of Poland and transit through this territory radioactive waste and spent nuclear fuel (JL no. 219, item 1402)

23. Regulation of the Council of Ministers of 4 November 2008 on physical protection of nuclear material and nuclear facilities (JL no. 207, item 1295)

24. Regulation of the Minister of Health of 27 March 2008 on minimum requirements for health units providing health care benefits from the X-ray, interventional radiology and radionuclide diagnosis and therapy of non-malignant diseases (JL no. 59, item 365)

25. Regulation of the Minister of Health of 27 March 2008 on the database of radiological devices (JL no. 59, item 366)

26. Regulation of the Council of Ministers of 4 October 2007 on the allocated and special purpose subsidy, fees and finance management in the state-owned public utility 'Radioactive Waste Management Plant' (JL no. 185, item 1311, as amended)

27. Regulation of the Council of Ministers of 20 February 2007 on the requirements for controlled and supervised areas (JL no. 131, item 910)

28. Regulation of the Council of Ministers of 20 February 2007 on the terms for import into the territory of the Republic of Poland, export from the territory of the Republic of Poland and transit through this territory of nuclear materials, radioactive sources and equipment containing such sources (JL no. 131, item 911)

29. Regulation of the Council of Ministers of 23 March 2007 on the requirements for the individual dose registration (JL no. 131, item 913)

30. Regulation of the Minister of Health of 2 February 2007 on the detailed requirements for the form and content of the reference and working medical radiological procedures (JL no. 24, item 161)

31. Regulation of the Council of Ministers of 2 January 2007 on the requirements concerning the content of natural radioactive isotopes of potassium K-40, radium Ra-226 and thorium Th-228 in raw materials and materials used in buildings designed to accommodate people and livestock, as well as in industrial waste used in construction industry, and the procedures for controlling the content of these isotopes (JL no. 4, item 29)

32. Regulation of the Minister of Health of 22 December 2006 on the supervision and control of observance of terms of radiological protection in the organizational units using x-ray devices for medical diagnosis, interventional radiology, surface radiotherapy and radiotherapy of non-malignant diseases (JL 2007 no. 1, item 11)

33. Regulation of the Minister of Health of 21 August 2006 on detailed safety requirements for work involving radiological devices (JL no. 180, item 1325)

34. Regulation of the Council of Ministers of 12 July 2006 on detailed safety requirements for work involving ionising radiation sources (JL no. 140, item 994)

35. Regulation of the Minister of Health of 4 May 2006 on the organization, operation mode and the specific tasks of the National Centre for Radiation Protection in Health Care (JL no. 85, item 592)

36. Regulation of the Minister of Health of 7 April 2006 on minimum requirements for health care facilities applying for authorization to conduct activities involving exposure to ionizing radiation for medical purposes, consisting in the provision of health services in the field of radiation oncology (JL no. 75, item 528)

37. Regulation of the Council of Ministers of 18 January 2005 on the emergency plans for radiation emergency (OJ No. 20, item 169, last amendment in 2007, OJ (Dz. U. 2007) no 131 item 912),

38. Regulation of the Council of Ministers of 18 January 2005 on ionizing radiation dose limits (JL no. 20, item 168)

39. Regulation of the Council of Ministers of 27 April 2004 on intervention levels for various intervention measures and criteria for cancelling intervention measures (JL no. 98, item 987)

40. Regulation of the Council of Ministers of 27 April 2004 on the determination of entities competent to inspect maximum permitted levels of radioactive contamination of foodstuffs and feeding stuffs following a radiation event (JL no. 98, item 988)

41. Regulation of the Council of Ministers of 27 April 2004 on the protection against ionising radiation of outside workers exposed during their activities in controlled areas (JL no. 102, item 1064)

42. Regulation of the Council of Ministers of 27 April 2004 on prior information to the general public in the event of a radiation emergency (JL no. 102, item 1065)

43. Regulation of the Council of Ministers of 17 December 2002 on the stations for early detection of radioactive contamination and on the units that conduct measurements of radioactive contamination (JL no. 239, item 2030)

44. Regulation of the Council of Ministers of 23 December 2002 on the requirements for dosimetric equipment (JL no. 239, item 2032)

45. Regulation of the Council of Ministers of 3 December 2002 on radioactive waste and spent nuclear fuel (JL no. 230, item 1925)

46. Regulation of the Council of Ministers of 3 December 2002 on the documents required with the application for the licence for activities involving the exposure to ionizing radiation or with the notification of such activities (JL no. 220, item 1851 as amended; last amendment: 21.04.2009)

47. Regulation of the Council of Ministers of 6 August 2002 on the cases when the exposure to ionizing radiation are exempted from mandatory licensing or notification, and on the cases when such activities can be conducted on the basis of a notification (JL no. 137, item 1153 as amended, last amendment: 01.05.2004)

Annex no. 3

Summary of the Act of Atomic Law

The Atomic Law Act, originally enacted by the Parliament of the Republic of Poland on 29 November 2000, has been amended several times in the years 2001-2010. Last minor amendment was published in Official Journal of 2012, Item 908, but the earlier amendment, which entered into force partially on 1 July 2011 and finally on 1 January 2012 (published in the Official Journal of 2011 No. 132, Item 766), introduced significant changes.

The Act is divided into 20 Chapters:

Chapter 1 entitled *"General provisions"* defines the subject and presents definitions of terms used in the text of the Law. The list of definitions of terms has been extended by those connected with safety of nuclear facilities, also some old definition has been improved for example terms "nuclear safety", "nuclear installation".

Chapter 2 entitled *"Licenses addressing nuclear safety and radiological protection issues"* lists the activities which require licenses or notifications from the point of view of nuclear or radiological safety, and activities which are prohibited. It also sets up adequate procedures regarding the licensing and defines the authorities granting licenses to perform activities. In Art. 4.1 p. 2 the licence for trial operation of a nuclear facility was removed in 2011.

Chapter 3 entitled *"Nuclear safety, radiological protection and health protection of workers"* places the responsibility for nuclear safety and radiological protection on manager of the organization pursuing the activities involving exposure and defines the scope of this responsibility, in particular in a case of ceasing activity. It formulates the requirement for justification of such activities, as well as a number of other requirements, such as supervision and inspection, the imperative to follow the "optimization principle" with regard to exposures, adequate training of workers, authorization of persons working on certain positions and performing certain activities important from the nuclear safety and radiological protection point of view, radiological safety of individuals in cases of medical exposures, occupational exposures and radiological protection of workers and external workers, and their rights. This chapter also specifies the conditions for carrying out actions aimed at elimination of radiation emergency consequences, maintaining of the central register of doses received by individuals, categorization of radiation workers (categories A and B) and requirements with regard to dosimetric equipment. Finally, it introduces a system of subsidizing certain activities in the area of nuclear and radiological safety from the State budget;

Chapter 3a entitled *"Medical application of ionizing radiation"* enumerates medical applications of ionizing radiation, and formulates principles of carrying on activities that involve patient's exposure to ionizing radiation, in particular – mandatory justification of exposure and optimization of radiological protection. It places responsibilities for patient's exposures on the authorized medical practitioner, and relevant responsibilities and duties in the area of inspection and clinical audits - on medical institutions. It defines principles and requirements for quality management system in radio-diagnostics, invasive radiology, nuclear medicine and radiotherapy, including the reference radiological procedures for standard medical exposures, the terms of issuance of relevant permits and authorizations and the authorities competent for granting them. Finally, it formulates the scope and terms of creation of the National Radiation Protection Centre in Medicine and the central data base for medical radiation facilities.

Chapter 4 entitled *"Nuclear facilities"* places the responsibility for assuring nuclear safety, radiological protection, physical protection and nuclear material safeguards on manager of the organization which holds the licence for construction, commissioning, operation or decommissioning of a nuclear facility. For the process of construction of a nuclear facility, the scope of these requirements is extended to other participants in the investment process, the obligations of the manager of the organisation or unit notwithstanding. This chapter also addresses the fundamental conditions that must be met by a nuclear facility design, the questions of licensing and regulatory review in the stages of construction, operation and decommissioning of nuclear facilities and establishing of the restricted areas around such facility, the information duties of the manager of a nuclear facility and the PAA President concerning nuclear safety and radiological protection issues, as well as formulates the right for the PAA President to curtail or suspend the operation of nuclear facility when nuclear safety may be endangered. The nuclear facility (at stage of construction, commissioning, operation and decommissioning) is required to adopt the integrated management system that, among the others, must include a quality assurance programme One of the important licence prerequisites for the applicant is to possess appropriate financial means required to ensure:

1) fulfilment of the requirements of nuclear safety, radiological protection, physical protection and nuclear material safeguards during the respective stages of operation of a nuclear installation until decommissioning is completed; specifically, the operator of a nuclear power plant has to establish a special fund to cover the costs of the final management of radioactive waste and of the decommissioning costs;
2) for the licence for construction – completion of the construction of a nuclear installation.

Chapter 4a entitled "Public communication pertinent to nuclear power facilities" contains provisions to establish Local Information Centres, Local Information Committees and Municipal Information Points, which are meant, among others, to provide information on a nuclear power facility and to monitor the activities of the operator.

Chapter 5 entitled "Nuclear materials and technologies" formulates requirements for adequate nuclear materials accountancy and their physical protection as well as for appropriate control of nuclear technologies (as required by appropriate international agreements and conventions). In particular it includes prohibition of use these materials and technologies to construct nuclear weapon or nuclear explosives; any scientific researches in this area are subject to notification to the PAA President prior their commencement. It defines also other PAA President's duties and responsibilities in this area as well as the obligations of the managers of units performing activities with nuclear materials and of other users of lend or buildings where such an activities could be possible, in connection with inspections performed by PAA, IAEA or EURATOM inspectors;

Chapter 6 entitled "Ionizing radiation sources" formulates requirements for the accountancy, and inspection with regard to radioactive sources and to equipment containing such sources or generating ionizing radiation. It includes also requirement of appropriate protection of radioactive sources against damage, theft or possessing by an unauthorized person.

Chapter 7 entitled "Radioactive waste and spent nuclear fuel" classifies radioactive wastes, states the responsibilities of the manager of the organizational unit which is handling wastes,

and addresses the questions of wastes disposal, including provisions on siting of waste repositories, and of the necessary protection of humans and of the environment.

Chapter 8 entitled “Transport of nuclear materials, ionizing radiation sources, radioactive wastes and spent nuclear fuel” formulates requirements for safe transporting of such materials and regulates the questions of their import, export and transit through the Polish territory, as well as on reporting of these activities to the PAA President;

Chapter 8a entitled “Import, export and transit through the territory of Republic of Poland of radioactive waste and spent nuclear fuel” establishes formal and organizational conditions connected with procedure of licensing above mentioned activities.

Chapter 9 entitled “Control and inspection from the viewpoint of nuclear safety and radiological protection conditions” allocates the control and inspection responsibilities to appropriate authorities, formulates these responsibilities as well as the rights of the regulatory authorities, introduces enforcement measures, and sets up qualification requirements with regard to nuclear regulatory inspectors;

Chapter 10 entitled “National radiation situation assessment” obliges the PAA President to conduct systematic assessments of the national radiation situation and formulates requirements thereof, including the use for these purposes of a dedicated Radiation Emergency Centre established within the PAA and receiving appropriate data from “stations” and “units” serving for early detection of radioactive contamination (the list of such “stations” and “units” has been established by means of the Governmental regulation) and operates the International Contact Point for early warning and information exchange with IAEA, EU and other Countries in a case of radiation emergency. It also obliges the PAA President to provide information to the general public, regional governors, Council of Ministers and/or to the chairman of the appropriate crisis management team at the national level.

Chapter 11 entitled “Radiation emergency management” introduces distinction between different types of radiation emergencies and list the actions to be undertaken in case of such emergencies, as well as formulates the responsibilities on all levels. It refers to the national emergency preparedness plan established through a Governmental regulation and sets up rules for the implementation of specific intervention measures (including the issue of costs to be borne in such cases). It also formulates a requirement to conduct periodic exercises to test the national emergency preparedness plan and addresses the questions of protection against the use of food and feeding stuffs which exceed the permitted levels of radioactive substances contents, both produced within the Polish territory or imported;

Chapter 12 entitled “Civil liability for nuclear damage” allocates the responsibility for nuclear damage caused to individuals, property and environment to the operator and limits its liability to 300 million SDR, allows the operator to establish a limited liability fund in case when claims exceed this figure, obliges the operator to be insured (also in case of the transport of nuclear material from a nuclear installation), sets minimal guaranteed amount of insurance and procedures for claiming the compensation, sets time limits for suing for the damage, and locates the competence in the issues of nuclear damage.

Chapter 12a entitled “Activities pertinent to the development of nuclear power” describes the activities of the minister competent for economy matters in the field of the use of atomic energy for social and economic needs of the state, especially aimed at the development of nuclear power programme. In particular, this chapter contains provisions on developing,

approving and updating of a long-term programme called “the Polish Nuclear Power Programme”.

Chapter 13 entitled “The President of the National Atomic Energy Agency” states that the President of the PAA is the central organ of the governmental organization and is nominated by the Prime Minister to whom he reports directly, on request by the Minister competent for environmental matters, who supervises PAA administratively. The President executes his tasks (which are listed in Art. 110 of the Atomic Law) through the National Atomic Energy Agency, statute of which is to be issued by the Minister for environmental matters. In addition, this chapter introduces a PAA President’s consulting and opinion-giving body, “Council for Nuclear Safety and Radiological Protection”, whose Chairman is to be appointed by the PAA.

Chapter 14 entitled “State-owned public utility “Radioactive Waste Management Plant” establishes the above named plant as a legal personality while the supervision over the plant is placed under responsibilities of the minister competent for economy matters, which will provide the plant with a statute. This chapter specifies, inter alia, that the utility will receive subsidy from the national budget for radioactive waste and spent fuel management.

Chapter 15 entitled “Penal regulations” introduces financial penalty or other means of punishment for cases of violations of rules established by this Law.

Chapter 16 entitled “Transitional, adaptive and final provisions” formulates detailed conditions for the enactment of this Law.

Annex no. 4

Prepared by Ministry of Economy

INFORMATION

on the implementation of the nuclear power in Poland

I. Current stage of works on the Polish Nuclear Power Programme (PNPP)

Preparation and implementation of such a pioneering project at the national level which is the construction of the first Polish NPP is a long and complex task. The works on creation and adoption of the programme have been conducted since 2009. Today, we are only at the beginning of the process.

It should be noted, that in the '80s of the last century the construction of the first Polish nuclear power plant in Żarnowiec was implemented (advanced to 80%). However, after the accident in the Chernobyl power plant, the government resigned from the project, which resulted, inter alia, in the migration of the majority of Polish experts in the field of nuclear energy, who left the country to work at universities and research centres. As a result, domestic universities actually ceased training in the fields connected with nuclear power. The ongoing nuclear project opens a new chapter in the Polish scientific, economic and social development.

PNPP project provides the following milestones:

Phase I – up to 31.12.2013:

- amendment and adoption of the Programme by the Council of Ministers
- enactment of the necessary legislation (amendment of the Atomic Law with its secondary regulations and so-called Nuclear Investment Law)

Phase II – 01.01.2014 - 31.12.2015:

- choosing of the nuclear power plant site
- finalizing the tender for the site survey contractor
- tender for the reactor technology for the first nuclear power plant

Phase III – 01.01.2016 - 31.12.2018:

- drafting of the project and obtaining all required licenses and approvals

Phase IV – 01.01.2019 - 12.31.2024:

- obtaining the building permission and construction of the first nuclear power plant

Phase V – 01.01.2025 - 31.12.2030:

- completion of the first nuclear power plant (2-3 units), launching the construction of a second nuclear power plant to be operational in 2031.

Current stage of PNPP implementation

1. Government

The first phase of the programme is already implemented:

- The Atomic Law amendment and so-called "Investment Law" were enacted and came into force on July 1st, 2011,
- The project of PNPP is being updated and is planned to be submitted to and adopted by the Council of Ministers in the end of the third/fourth quarter of 2013.

a) Cross-border consultations of the Polish Nuclear Power Programme and the Environmental Impact Assessment

In December 2010, Ministry of Economy began the process of public consultation of the PNPP and the strategic environmental impact assessment of the PNPP (Prognosis). Following this consultation, the cross-border consultations of the PNPP and the Prognosis were launched.

10 countries were invited to participate in the consultations: Lithuania, Latvia, Estonia, Sweden, Denmark, Germany, Austria, Czech Republic, Slovakia and Finland. Lithuania, Latvia and Estonia withdrew from participation in the consultation. The procedure was led by the General Directorate for Environmental Protection in cooperation with the Ministry of Economy. Each of the participating countries received a written response to the comments submitted to the Polish side (about 40,000 pieces of correspondence). Slovakia, Austria, Germany and Denmark have requested additional consultations in the form of meeting of experts at the intergovernmental level, which were carried out between July and December 2012. During the meetings such issues as the safety and security of Polish nuclear power plants, their siting, nuclear waste management or the position and remits of the domestic regulatory body were discussed. After each country had submitted to Poland its final statement, the official minutes were signed by both parties, what formally ended the consultation process. The last minutes were signed on the May 6th and ended the consultations with Austria as well as the consultation process in general.

Currently, Ministry of Economy works on updating the PNPP and modifying it according to conclusions from the consultations. It is expected to submit a draft PNPP for approval by the Council of Ministers at the end of the second quarter of this year.

b) Legislation

Currently, legislation on nuclear energy in Poland consists of two statutes:

- the amended Atomic Law and its secondary regulations (over 40);
- Act on the preparation and implementation of investment in nuclear power facilities and associated investments (“The investment law”).

The acts mentioned above cover all the subjects connected with the “nuclear matters”, including the development of the nuclear power programme. Moreover they are in line with all the binding international and EU regulations as well as with all update international guidelines within this scope.

Especially the “Investments law” is a statute that facilitates the process of constructing the nuclear power plant. It contains inter alia specific provisions on spatial planning, construction rules, acquisition of property rights, public procurement procedure that, in comparison with regular regulations within these scopes, reduce the time necessary for all the administrative proceedings. Moreover, the Law significantly reduced the potential investment risks.

Ministry of Economy is currently working on the next drafts which are:

- The amendment of the Atomic Law prepared in order to implement the provisions of the Council Directive 2011/70/Euratom on the safe management of spent fuel and radioactive waste;
- Regulation of the Council of Ministers on the types of technical equipment subject to technical inspection in the nuclear power plant;
- Regulation of the Minister of Economy on the technical conditions of technical inspection of the technical equipment in the nuclear power plant.

c) Management of radioactive waste

In 2013, following the adoption of the PNPP by the Council of Ministers, a preliminary draft of the National Plan of radioactive waste and spent fuel management ("National plan") will be prepared. As a governmental legal act, the National plan will be the subject of provided legislative procedure, which includes the public consultations of the draft.

At the beginning of the next decade, Poland will need a new nuclear waste repository for low and intermediate radioactive level waste, due to the fact that the nuclear waste repository in Różan, used since 1961, will be completely filled and closed.

For this reason, on October 31st, 2012, the Ministry of Economy has announced a tender for the "Development of methodology to evaluate the safety and identify the location of shallow radioactive waste repository for low and intermediate radioactive level waste." The tender was won by a consortium composed of the Polish Geological Institute - National Research Institute, Institute of Nuclear Chemistry and Technology, Institute of Geophysics of Polish Academy of Sciences, Institute of Mineral and Energy Sciences, Geological Company Geoprojekt Szczecin Sp. z o.o. [Ltd.] and Radioactive Waste Management Plant. The agreement with the contractor was signed on May 8th, 2013. The execution of the contract is financed by the National Fund for Environmental Protection and Water Management. Picking the best location will take approximately three years, the construction should start about 2018-19 and the repository should be operative by the years 2021-23.

At the same time Ministry of Economy commenced a process of public dialogue to gain an acceptance for a potential, new localization of the nuclear waste repository. Within the framework of the EU-funded IPPA (Implementing Public Participation Approaches in Radioactive Waste Disposal), the first public hearing devoted to various forms of public participation in decision-making process related to the construction of the nuclear waste repository was organized. It was attended by experts in the fields of radioactive waste management, social sciences, environmental protection and representatives of local communities.

d) Human Resources Development (HRD)

In 2009-2012, several Polish universities launched studies in the fields of nuclear power. Moreover, Ministry of Economy, in cooperation with the French Atomic Energy Commission (CEA), has implemented a series of trainings for Polish scientists working in the fields related to nuclear power (educators) from leading universities and research institutes (36 people were trained). There was the specific training for a variety of surveillance and inspection services.

Currently, the Ministry of Economy is working on the draft of HRD in Poland Plan. Preparation of the Plan includes:

- consultation meetings with representatives of entities performing tasks related to the training and upgrading of the personnel for nuclear power in Poland (Ministry of Science, Ministry of Education, PGE EJ, National Centre for Nuclear Research, Radioactive Waste Management Plant, National Atomic Energy Agency, Warsaw University of Technology);
- the research activities conducted to identify resources and staff needs of entities that carry out tasks related to the education and improvement of human resources for nuclear power in Poland;
- preparation of the educational materials (teaching aid programs for teachers, educational programs, video on NPP, educational booklet, etc.).

e) R & D

In mid-2011, the two research institutes were merged in Świerk: Institute of Atomic Energy (IEA POLATOM) and Institute of Nuclear Studies (IPJ), creating National Centre for Nuclear Research (NCBJ).

In April 2012 Institute of Nuclear Chemistry and Technology (IChTJ) and Central Laboratory for Radiological Protection (CLOR) signed with National Atomic Energy Agency agreements on experts' cooperation in the field of testing and analysis for the needs of the nuclear regulatory body. They are the basis for recognition of these units as part of a national structure supporting research.

Ministry of Economy currently catalogues all Polish scientific institutions and research institutes with expertise and capacity to participate in the nuclear power program.

f) The involvement of the domestic industry

In 2012, at the initiative of Polish entrepreneurs the EUROPOLBUDATOM cluster was created. It gathers entrepreneurs, organizations, associations, businesses and universities interested in participation in the construction of the first NPP in Poland. Its founding members are Elektromontaż Północ, Warszawskie Przedsiębiorstwo Geodezyjne S.A., Poznań University of Technology, Koszalin University of Technology, Oficyna Naukowo-Techniczna – publisher of the Nuclear Power Magazine „ProAtom" and National Centre for Nuclear Research. Cluster EUROPOLBUDATOM is the first Polish initiative, which was set up in order to work together for the development of nuclear power in the country. It's task is to promote the cooperation of the administration with the national construction companies in the new power investments in Poland.

As a part of a strategic research program commissioned by the National Centre for Research and Development (NCR&D) the research task "Study of possibilities and criteria for participation of the Polish industry in the worldwide expansion of nuclear power engineering" is being performed. The leader of a scientific network for the task execution is Warsaw University of Technology.

Ministry of Economy prepares a list of Polish companies capable to participate in the nuclear power program. The next step will be the preparation of the plan of effective support of the Polish industry participating in the Program.

g) Review of the implementation of the PNPP by the International Atomic Energy Agency (IAEA)

The IAEA has developed guidelines and milestones to help countries to introduce the nuclear power and ensure that the infrastructure required for the safe, responsible and sustainable use of nuclear technology is developed and implemented. The INIR mission reinforces constant improvement in the planning process, identifying gaps, focusing resources in national action plans, and contributing to safety by reviewing the infrastructure.

2. The investor

PGE declares that the first unit of the NPP will be ready to operate at the turn of 2023 and 2024. In early January 2013, the investor selected in the tender (public procurement procedure, type: negotiations with publication) the company Worley-Parsons to execute the research and environment examination of the future location. The contract is worth 252 million PLN. The research will last two years and will include:

• geological, hydrological, seismic research,

• environmental research,

• current land use, availability of infrastructure (including network).

In 2013, the official invitation to tender, which is a first stage of the tender for the choice of technology and financing is expected to be launched.

II. Information on informative and social activities connected with the introduction of nuclear energy in Poland

The main activity in the field of information and social communication in 2012 was a campaign “Get to know the atom. Let’s talk about Poland with energy”.

On the March 29th, 2012 Ministry of Economy commenced the informative campaign “get to know the atom. Let’s talk about Poland with energy” aimed at supplying Poles with current and thorough information about nuclear energy. It should be stressed that the campaign was strictly informative.

During the campaign the dialogue platform was established, what enabled the exchange of views and opinions between the representatives of various stakeholders’ groups, often opponents of Polish nuclear power plant. Moreover, 18 scientific centres most important for Polish nuclear power program, established the coalition of experts. This is the first time when this circle cooperates.

To enable such wide common debate, various means of communication were used, including both traditional ones, such as press, radio, various publications and modern ones (social media, debates).

The most important elements of the campaign are:

- **Website www.poznajatom.pl**, which reacts instantly at news from the nuclear industry and answers the most important questions on this controversial subject (safety, economy, technology);
- **The profile of the campaign of Facebook** www.facebook.com/poznaj.atom, a popular profile created to develop the topic and conduct discussion about nuclear energy;

- **The "Get to know the atom" blog** hosted by the scientist and proponent of the nuclear energy – Mr Adam Rajewski from the Warsaw University of Technology. The author of the blog acts on the blog platform natemat.pl – www.natemat.pl/adam.rajewski;
- **Advertising campaign in the media** - commercials in the TV, radio, press and the Internet;
- **Direct public consultations** – Ministry of Economy conducted consultations with the local authorities of the Pomeranian and Western – Pomeranian Voivodships (in April, in the "Dialog" Centre in Warsaw). The representatives of both voivodships, poviats (koszaliński, pucki and wejherowski) and communities (Choczewo, Gniewino, Krokowa and Mielno) were invited to Warsaw. Those and the future meetings should be the basis to achieve agreement between the government, the investor and the local communities;
- Various **educational publications**, such as: educational brochure popularizing the topic of energy, including nuclear energy, educational movie for teenagers, computer game about energy and educational leaflets. What is more, Ministry of Economy in cooperation with the Polish Electricians Association published such books as "The small encyclopedia of the nuclear energy" and "Let's not be afraid of the nuclear energy". Moreover, Ministry of Economy prepared the educational set for teachers and multimedia course for students;
- **Supplements to newspapers**;
- **Educational events** such as educational stand with interactive mock-up of the nuclear power plant and scientific experiments conducted by the young scientist from the University of Szczecin, presented on the local and scientific events (e.g. Volvo Gdynia Sailing Days or Dominican Fair). Ministry of Economy was also supporting the initiative of the Atomic Forum Foundation: "The atomic bus" that visited many Polish cities to popularize the topic of the nuclear energy;
- **Study visit** of the representatives of local authorities and media in Finland, which was extensively commented in the local press. The visit was an opportunity for the participants to directly observe the rules of work of the nuclear power plant and to meet their Finnish counterparts;
- **Participation in the debates, seminars, lectures and meetings** on implementation of the Polish Nuclear Power Programme (e.g. seminar in the Embassy of Germany "Nuclear energy – German experiences and Polish perspectives (May 21st, 2012) or lecture during the session of the City Council of Koszalin (February, 23th, 2012));
- **Debates** organized by the Ministry of Economy with representatives of environmental organizations, experts opponent to nuclear energy, representatives of economic corporations, professions of public trust, such as teachers, policemen, firemen, doctors as well as with sociologists and social psychologists. The aim of the debates was to work out the best way of discussing on complicated and controversial technologies and infrastructural investments such as nuclear energy development;

All the educational and informative efforts connected with the mentioned campaign were appreciated in the annual competition Marketing and Sales Magazine – Brief, which rewards people who put remarkable contribution in the development of the advertising industry,

marketing, public relations and the best projects of the year. The “Get to know the atom” campaign won the title of the Best campaign of the public sector of 2012.

Until the end of December 2012 the campaign was conducted by the private contractor chosen in the public procurement procedure. Since January 1st, 2013 all the actions within the campaign are being carried out by the Ministry of Economy itself.

III. Information on main actions and tasks of the Commissioner of the Government to the Polish Nuclear Energy as a NEPIO

All the information from the points above on the actions undertaken by the Ministry of Economy should be treated as an information on the actions of the Commissioner.

According to two legal acts that stipulates the character and remits of the Commissioner[2], the elected person is an Undersecretary of State in the Ministry of Economy. The Commissioner acts with the help of the Nuclear Energy Department of the Ministry of Economy and carries out all the tasks connected with the implementation and development of nuclear energy in Poland.

Apart from the tasks performed in 2012, in the year 2013 main tasks of the Commissioner of the Government to the Polish Nuclear Energy will be:

1. Adoption of the Polish Nuclear Power Programme by the Council of Ministers (planned in the 2nd quarter of 2013).
2. Implementation of the Council Directive 2011/70/EURATOM of July 19th, 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste.
3. Finalization of the tender for siting research for new nuclear waste repository.
4. Supporting of the investor by preparing the legal solutions facilitating the construction of the first power plant.
5. Supporting and encouraging Polish industry to participate in the development of nuclear power program
6. Cooperation with the operator of transmission network in preparation of the transmission network to transmission of power from the nuclear power plant.
7. Further educational and informative actions within the campaign “Get to know the atom” as well as promotion of the nuclear energy.
8. Hosting the INIR mission in Poland.

[2] 1. Resolution of the Council of Minister of January 13th, 2009 on the actions in the field of development of nuclear energy in Poland

2. Regulation of the Council of Ministers of May 12th, 2009 on establishing the Commissioner of the Government to the Polish Nuclear Energy