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Technical Academy
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STATE ATOMIC ENERGY CORPORATION «ROSATOM»

Assistance in the Development of the Nuclear Security Infrastructure in Newcomer Countries

Russian Federation Approach to the Development of the Nuclear Security Infrastructure and Support to Member States

Nuclear security is a State responsibility, and developing and implementing an effective national nuclear security infrastructure is a key requirement for any State wishing to embark on a nuclear power programme (NSS19).

- The Russian Federation, being responsible vendor of nuclear material and nuclear technologies for a number of new overseas nuclear facilities, recognizes importance of establishing sustainable national nuclear security regimes in the Member States.
- Assistance to States in establishing and maintaining of highly professional, qualified and experienced human resources is one of our priorities.
- Since 2017, the Russian Federation has been providing on annual basis voluntary contributions to the IAEA, in kind and funding, for implementation of TC projects related to nuclear infrastructure establishment. These funds, according to the IAEA-Russian Federation agreement, are being used for training and development of human resources in the States that are constructing or planning to construct nuclear power plants.

Goal of Nuclear Infrastructure Model

- Nuclear infrastructure model is a target state of the national nuclear infrastructure, in the relation to the considered element of nuclear infrastructure, implementation of which should ensure the safe, secure and cost-effective development of the national nuclear power programme in the country.
- The goal of the Model element in the nuclear security area is to assist States embarking on the nuclear power programme development in establishing and developing an effective nuclear security regime, especially at the initial stage of its development.
- The Model represents approaches to the development of legal and regulatory framework and human resources.

Source: F.I. Karmanov, Nuclear Infrastructure Model of a Nuclear Power Program of a Newcomer Country, Rosatom Technical Academy, November 2019

Complete / Holistic Picture

1. Why the element “Nuclear security and physical protection” is needed?
2. Main participating organizations and their functions / responsibilities.
3. Necessary legislative and regulatory framework for creating and maintaining the nuclear security regime.
4. Components of each element.
5. Necessary human resources and required competencies.
6. Interaction with vendor and possible assistance.
7. Development over time and in relation with key phases of the project.
8. Element availability criteria and supporting documents.
9. Examples of implementation of an element in the Russian Federation or other countries.
10. Relevant IAEA publications.

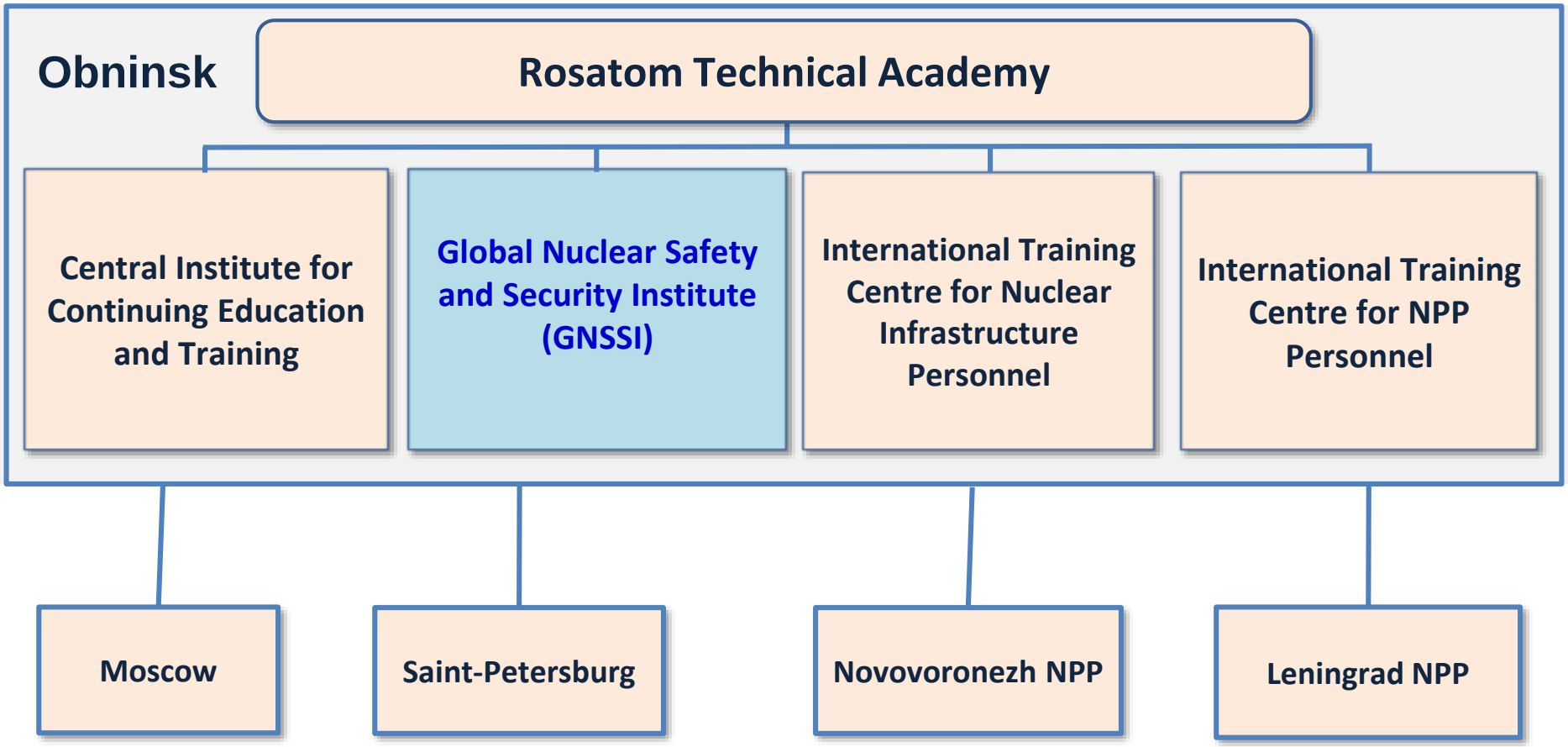
Source: F.I. Karmanov, Nuclear Infrastructure Model of a Nuclear Power Program of a Newcomer Country, Rosatom Technical Academy, November 2019

Nuclear Infrastructure Model of a Nuclear Power Programme

Forms of Assistance

- Consulting: visits of Russian experts, seminars with representatives of organizations of the recipient State with the nuclear security functions;
- Training: basic and specialized training courses, internships, workshops;
- Assistance in the establishment of national Nuclear Security Support Centers;
- Assistance in developing training programmes and teaching materials for training courses;
- Training of instructors;
- Scientific and technical visits to the Russian organizations and institutions.

Rosatom Technical Academy – a Unique Training Centre for the Atomic Industry



Experience and Facilities

- Since 2004, more than 1100 specialists from 67 IAEA Member States have been trained at 53 International Courses at the Global Nuclear Safety and Security Institute (GNSSI)
- The Institute has a modern base for training in the field of physical protection and nuclear security

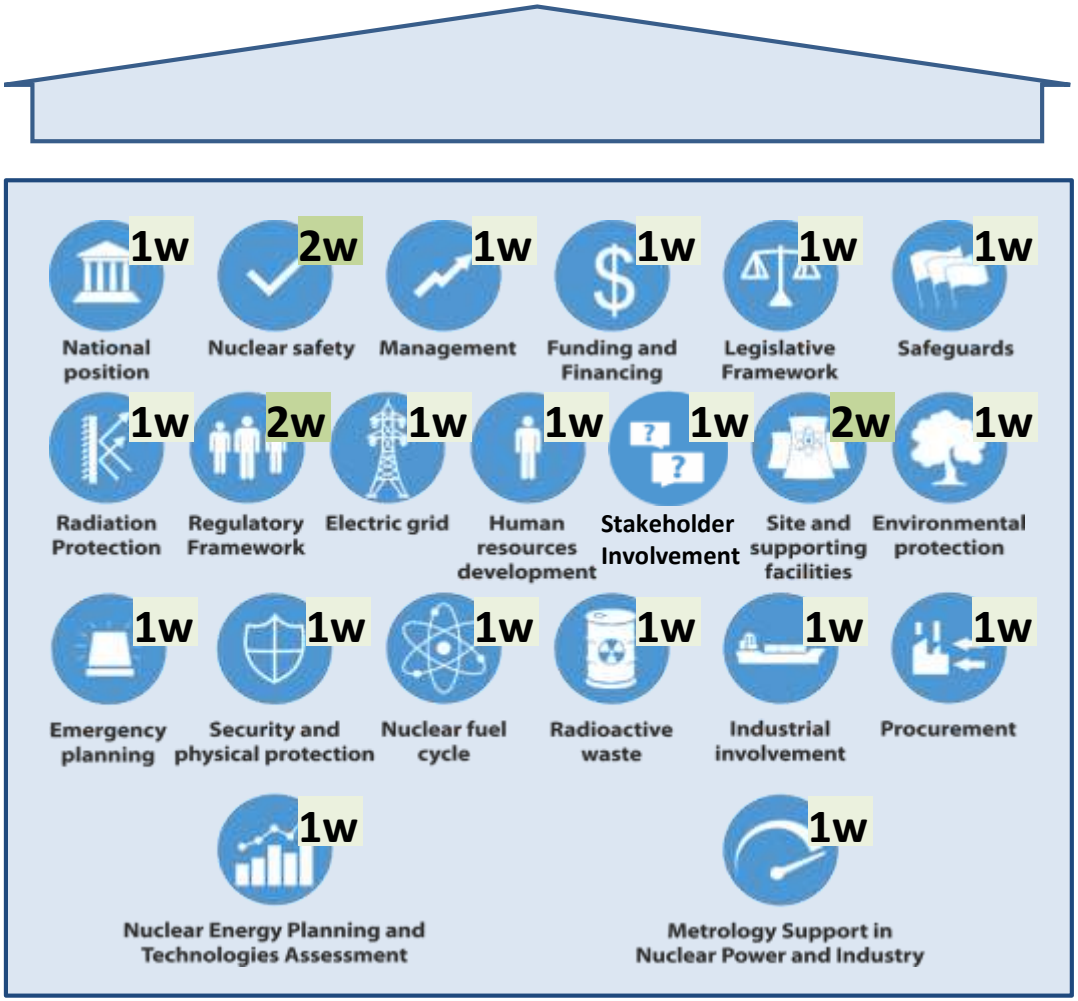
Name	Total
Classrooms equipped with advanced technical means	11
Training laboratories	8
Computer classrooms	4
Modular classroom	1
Modular pedestrian and vehicle access point	1
Training facilities for engineering and technical systems of physical protection	2
Facility for guard force training	1
Test facility for physical protection technical means	1
Gym	1
Interactive fire range	4

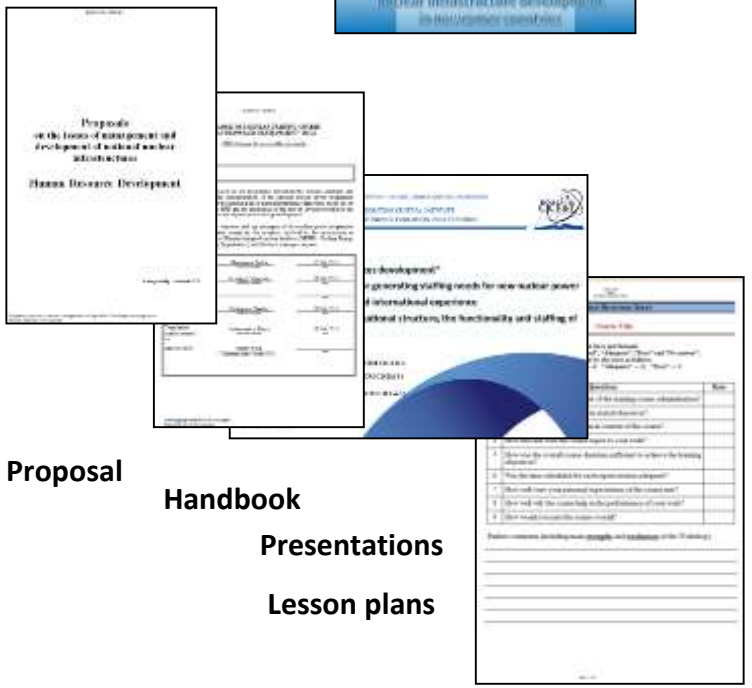
Classrooms, laboratories and training landfill are equipped with the most various technical means of physical protection of the world's leading manufacturers

Training Classrooms and Laboratories

Outdoor Training Area Equipped with Physical Protection Systems

A Set of Training Courses for the Support to the Nuclear Infrastructure Development





Proposal

Handbook

Presentations

Lesson plans

Evaluation form

Professional Training Programmes

The following aspects are taken into consideration in the development of training programmes:

- Organizational structure and staffing of organizations involved in the development of nuclear power programmes, primarily nuclear power plants and Centers of nuclear science and technologies;
- Qualification requirements for specific job positions;
- Requirements for education and professional training in specific positions;
- Possible scope and duration of training.

Categories of Personnel to be Trained in the Physical Protection

- Senior managers of security divisions;
- Analysts and designers of physical protection systems;
- Experts on installation and maintenance of physical protection equipment;
- Operators of physical protection system;
- Guards and response forces;
- Staff responsible for the transport of nuclear and other radioactive material;
- Specialists of corporate and facility level control;
- Information and computer security specialists.

Training Activities Implemented for Countries Embarking on Nuclear Power (1)

- Workshops on systematic approach to physical protection and nuclear material accounting and control (PP and NMAC) education and training, Nuclear Institute “Sosny”, Belarus, 2009 - 2012.
- Development of training material on physical protection and nuclear material accounting and control for Training Center of the Institute of Nuclear Physics, Kazakhstan, 2010-2014.
- Train-the-trainers courses (basic provisions and best practices) on physical protection and nuclear material accounting and control, Russia, 2008- 2015.
- Development and Implementation of a pilot course on practical training of instructors in nuclear material accounting and control, 2015.
- Development of training material for the courses ‘Information protection’ and ‘Nuclear security systems and measures for a new nuclear facility’.

Training Activities Implemented for Countries Embarking on Nuclear Power (2)

Conducted in 2019:

- 24 training courses with the participation of employees of Belarus NPP, 74 persons were trained.
- International training course of establishment of the physical protection system of nuclear power plants for representatives of Army of People's Republic of Bangladesh, 8 persons were trained.
- Training course "Inspection of physical protection systems at nuclear facilities with technical visit to the training area created in collaboration with the IAEA" for representatives of the Plurinational State of Bolivia, 10 persons were trained.
- Training course "Implementation and operation of sets of engineering and technical means of physical protection" for the CIS Anti-terrorist Center, 6 persons were trained.

Main Topics of the Courses on Physical Protection for Member States

- Physical protection of nuclear facilities;
- Physical protection of radioactive sources, storage facilities for radioactive substances;
- Design, implementation and operation of engineering and technical means of physical protection of nuclear facilities;
- Facility's physical protection status monitoring;
- Inspection of physical protection systems of nuclear facilities.

Main Topics of Training Courses on Information Security of Nuclear Facilities for Member States

- Information security culture;
- Basics of information security;
- Computer security assessments at nuclear facilities;
- Basics of information security of industrial control systems;
- Information security administration in automated systems;
- Computer network security;
- Information security in automated physical protection systems.

Collaboration with the IAEA

- In 2011, the Practical Agreements between the IAEA, the Central Institute for Continuous Education and Training (CICE&T, which later became part of the Rosatom Technical Academy) and Rosenergoatom Concern OJSC on cooperation in the development of joint initiatives in the field of training for the development of nuclear infrastructure and capacity building in countries embarking on the development of nuclear power programmes were signed.
- In 2019, Rosatom Technical Academy was designated as the IAEA Collaborating Centre in the area of knowledge management and human resources development for nuclear energy and nuclear security.

(Photo: D. Calma/IAEA)

Training Courses in Collaboration with the IAEA

Regular training courses in collaboration with the IAEA:

- International training course on practical operation of physical protection systems at nuclear facilities;
- International training course on physical protection inspections at nuclear facilities;
- International training course on nuclear security in practice: practical training for university students*;
- International training course on the security of radioactive material in use and storage*;
- International training course on the development of a nuclear security regime for nuclear power programmes.

** - the course was conducted as regional and international*

Training Course on the Nuclear Security Regime

- Development of the concept and training material for the course ***Nuclear Security Systems and Measures for the Implementation of a National Nuclear Power Programme***
  - Identification of resource material for training and development of the course concept;
  - Drafting training programme based on the approved concept, its duration and target audience;
  - Identification of training programme elements (e.g. lectures, interactive exercises, hands-on exercises, nuclear facility visits);
  - Development of course handbooks, presentations, instructor materials, quizzes and other assessment tools;
  - Review of the draft training material by independent subject matter experts of Rosatom Corporation;
  - Implementation of a pilot course and its improvement.
- ***Providing assistance to the IAEA Member States:***
  - Transfer of the course material to the IAEA (in-kind contribution);
  - Review of the course material by the independent experts from IAEA;
  - Enhancement of the material;
  - **Implementation of the course as the IAEA annual international training course.**

The Goal of the Course on the Nuclear Security Regime

To describe and discuss phases and elements of the development and sustainable functioning of the nuclear security infrastructure for the implementation of a national nuclear power programme.

Methods and Participants

Training methods: presentations, round table discussions, group exercises using exercise book, facility visits

- Trainees are those who involved in the establishment of sustainable nuclear security infrastructure for the development and implementation of national nuclear programmes.
- Instructors are nuclear security experts from the IAEA, Egypt, France, Jordan, Germany, Netherlands, Russian Federation and Slovenia.

Couse Implementation

- The pilot course “Nuclear Security Systems and Measures for the Implementation of a National Nuclear Power Programme” was held in Obninsk from 17 to 21 October 2016. The course was attended by more than 20 Senior and Middle Managers from Bangladesh, Egypt, Indonesia, Jordan, Nigeria, Poland, United Arab Emirates, and Viet Nam.
- Second course was held in St. Petersburg from 25 to 29 September 2017. 23 participants from 17 Members States took part in the course.
- The course material was updated by the IAEA in 2018, course was renamed to “International Training Course on the development of a nuclear security regime for nuclear power programmes”.
- The third course was held from 21 to 25 May 2018 in St. Petersburg. 25 participants from 13 Member States took part in the course.
- The most recent course was held in November 2019, 32 participants from 18 Member States attended the course.
- Next course will be held in July 2020 in Vienna.

Technical Visits and Internships

- Technical visits to familiarize with the practice of training in the field of physical protection using training outdoor and indoor and laboratories of Global Nuclear Safety and Security Institute (GNSSI).
- Visits to Russian enterprises supplying physical protection equipment and related software.
- Internships at the GNSSI on the development of training documentation, training programmes and teaching materials, tests and other documentation.
- Internships at the Test and Certification Center.
- Training at the School of Nuclear Security Instructors.

Prospects of Development

Starting in 2020, it is also planned to develop teaching materials and conduct training courses for recipient states of Russian nuclear technologies on the following topics:

- Vulnerability analysis of a nuclear facility;
- Assessment of the effectiveness of physical protection systems;
- Organizational measures in the physical protection system;
- Countering the insider threat.

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Thank You!

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