



FEDERAL ENVIRONMENTAL, INDUSTRIAL AND NUCLEAR SUPERVISION SERVICE OF RUSSIA (ROSTECHNADZOR)

Role of Regulatory Body in the Safe use of Atomic Energy

Ho Chi Minh, November 19, 2014



Prime objectives:

- Health and life protection
- Environment preservation
- Property protection
- Nuclear science and technology development promotion
- Promotion of international regime strengthening

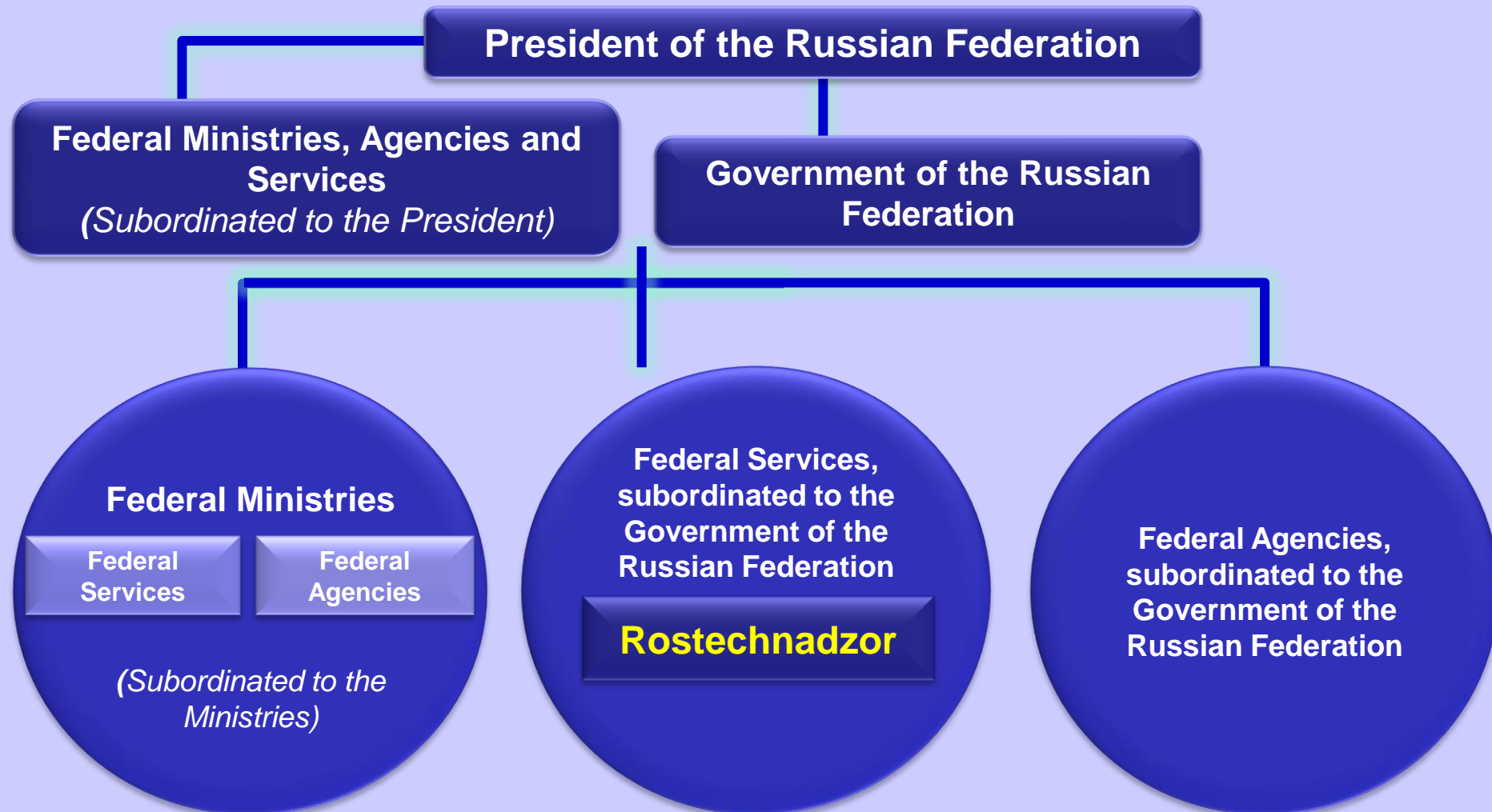


Appropriate State Nuclear Safety Regulatory Authorities

- establishment and maintenance of conditions of comprehensive protection of the society and state from inadmissible radiation impact
- prevention of uncontrolled proliferation and use of nuclear material and radioactive substance

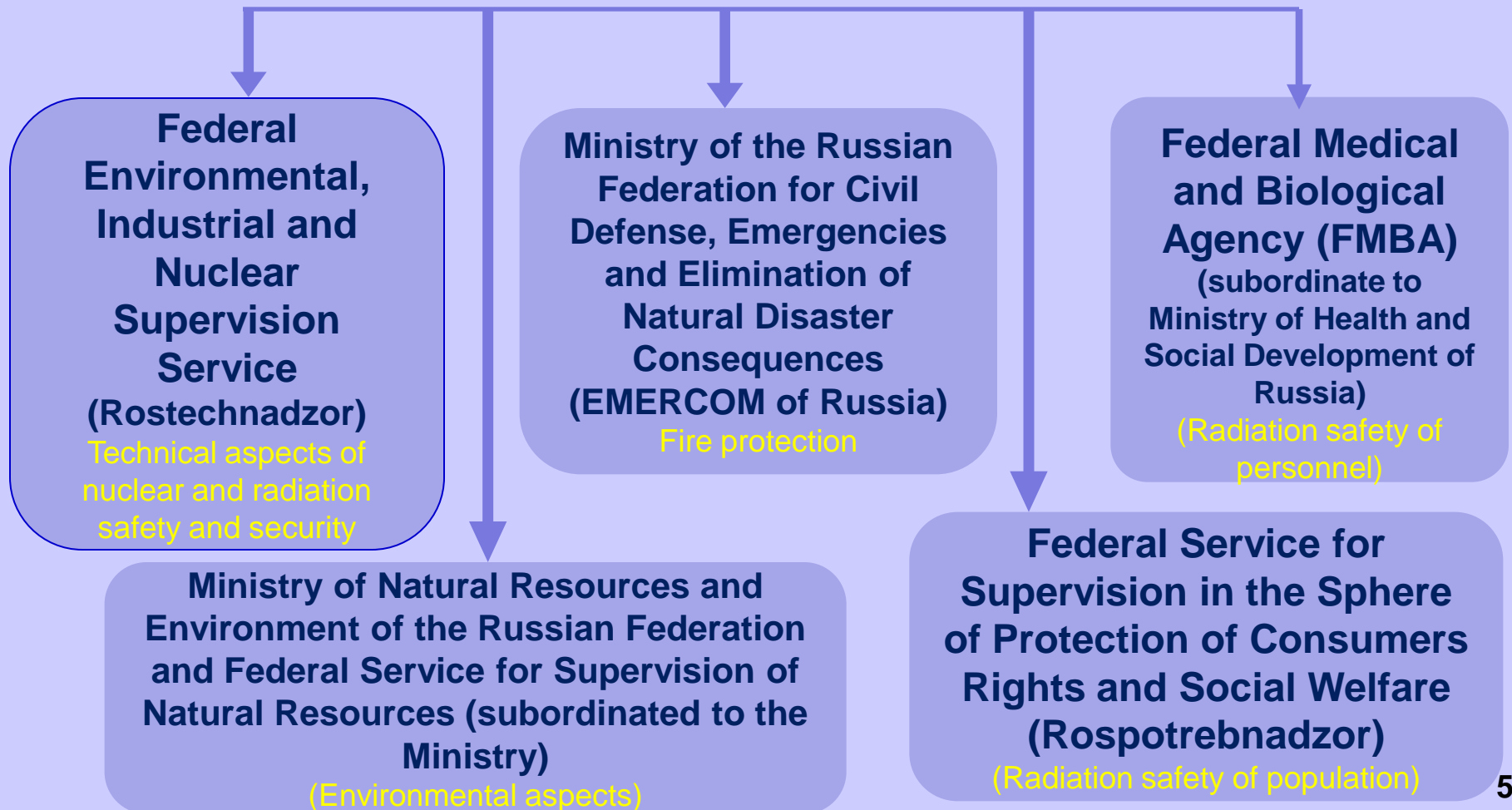


Structure of the executive authorities in the Russian Federation





Bodies for State Safety Regulation in Atomic Energy Use





Organization Chart of Rostekhnadzor

HEADQUARTERS

CHAIRMAN

6 Deputy Chairmen

Deputy Chairman for Nuclear Safety Supervision

**6
Functional Departments**

**3
Departments for nuclear and
radiation safety regulation
(132 staff members)**

**6
Departments for Industrial
Supervision**

TERRITORIAL DEPARTMENTS

**6
Interregional Territorial Departments for
Nuclear and Radiation Safety Supervision
(942 staff members)**

**24
Territorial Departments for Industrial
Supervision**

TECHNICAL SUPPORT ORGANIZATIONS

**Scientific and Engineering
Center for Nuclear and
Radiation Safety
(~350 staff members)**

**VO "Safety"
(~700 staff members)**

**Technical Support Organizations
for Industrial Safety Supervision
Issues**



TSOs Main Missions



VO Safety



SEC NRS

Safety Review

Drafting Regulations and Guides

Refresher Training, Postgraduate Training and Education Development

R&D in the field of nuclear and radiation safety

Publishing Activity

Emergency preparedness and response

Inspections and Oversight over safety sensitive equipment manufacturing, assessment of compliance

Inspections during the lifecycle



- a state authority for nuclear safety regulation
- a regulatory and competent authority according to the Conventions

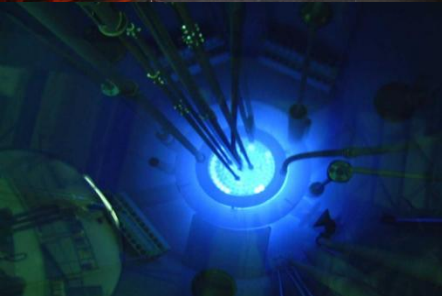
Main Safety Regulatory Functions

Safety regulations development and enactment

Licensing of activities in the field of nuclear energy use

Supervision of nuclear and radiation safety and physical protection

Emergency preparedness and response



34 operating NPP units

4 NPP units under preparation for decommissioning

7 NPP units under construction

1122 equipment design and manufacturing plants

665 engineering, design and expert organizations

17 nuclear fuel cycle plants and **109** facilities, incl. but not limited:

15 production reactors

26 nuclear material processing facilities

12 installations for R&D using NM

99 storage facilities for NM, SNF and RW

65 nuclear research installations

4506 radiation-hazardous facilities
(including RW storage facilities)

24 nuclear fleet facilities: **11** nuclear ice breakers (**4** – in operation, **2** – reserved, **4** – shut-down, **1** under construction),

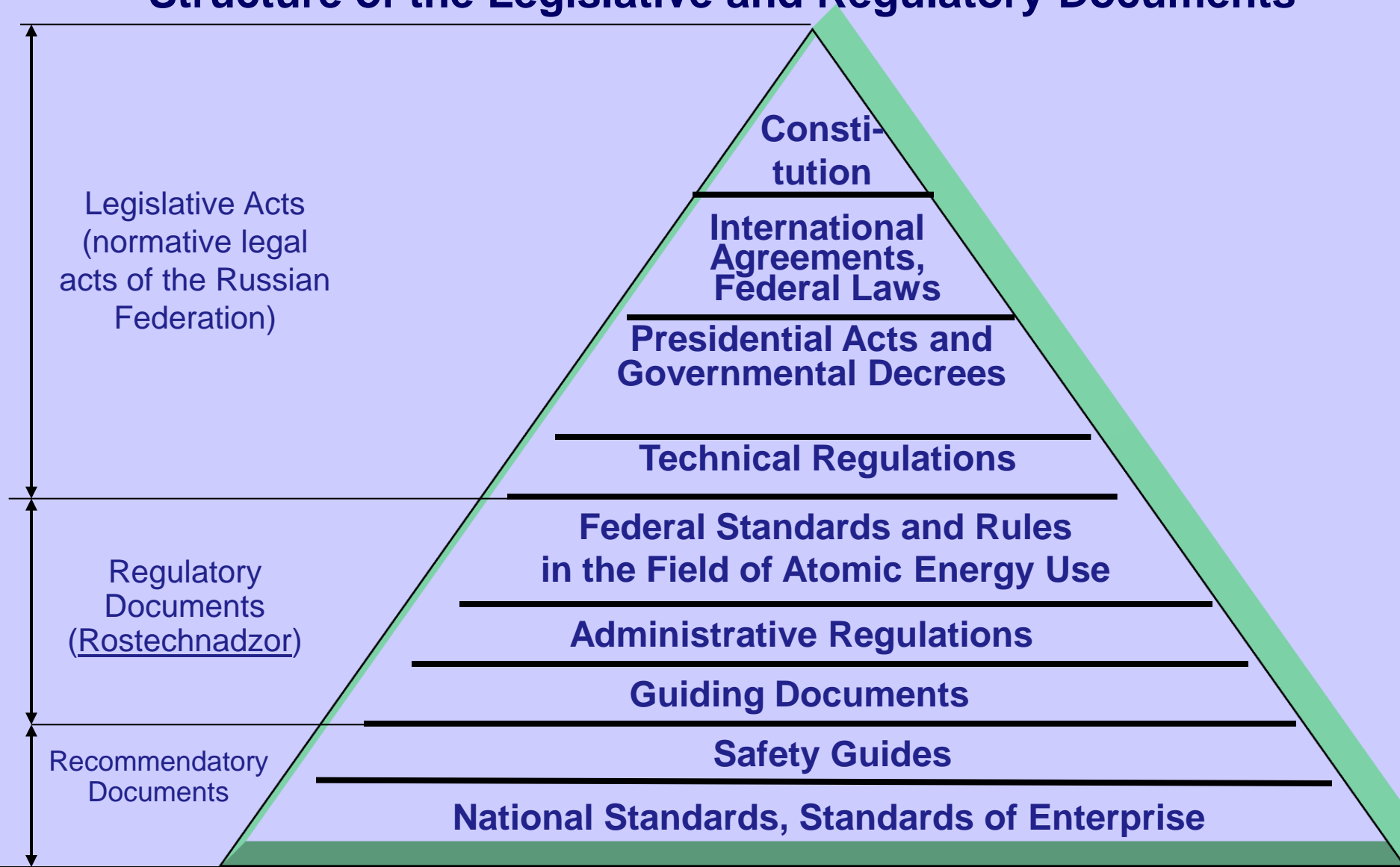
5 nuclear service vessels, **2** nuclear material storages,

2 RW storages, **1** floating liquid RW processing plant,

1 floating power unit (under construction), **2** prototype benches

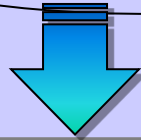


Structure of the Legislative and Regulatory Documents

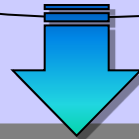




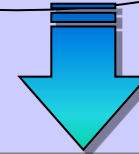
**Legislative basis in the field
of nuclear energy use**



**Federal Law
“On the Use of
Atomic
Energy”**



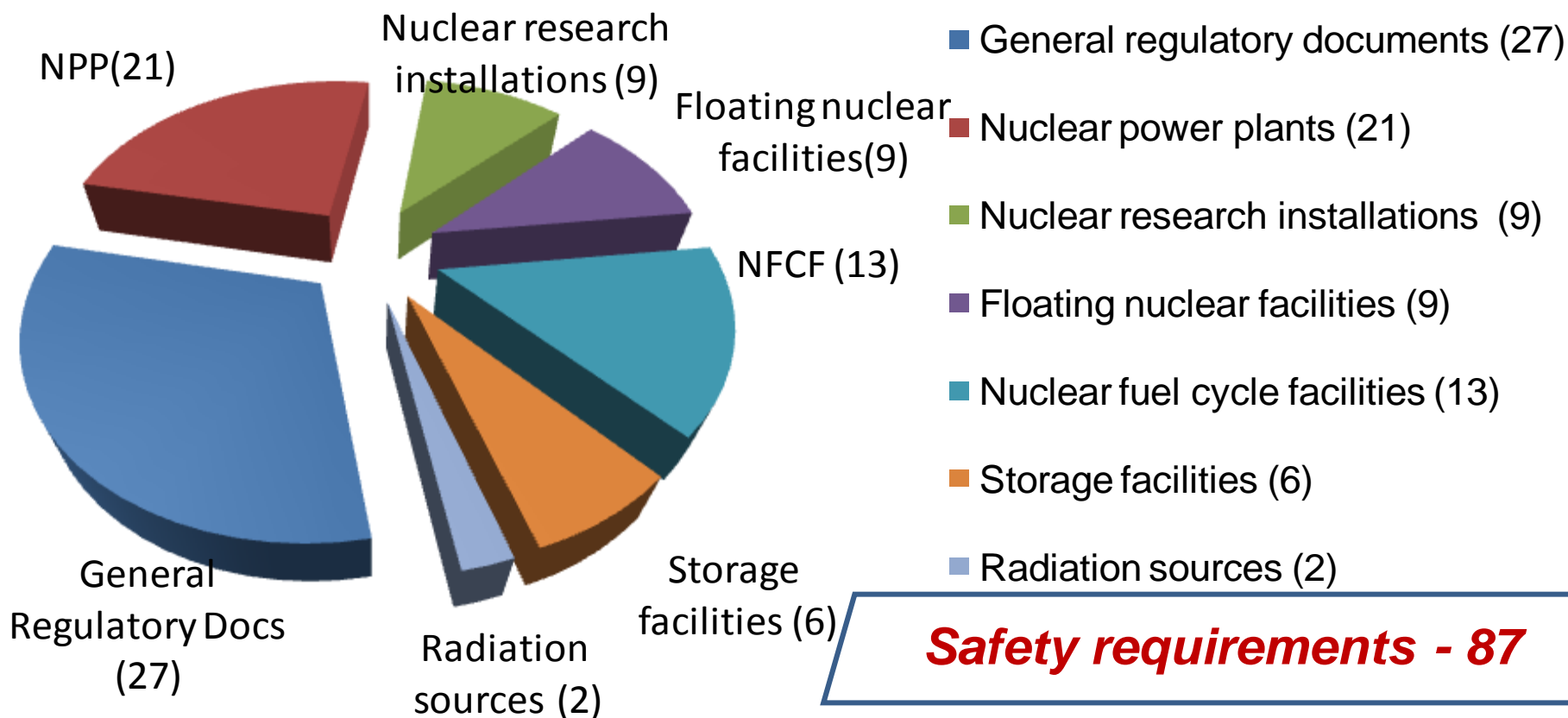
**Federal Law
“On
Radioactive
Waste
Management”**



**Federal Law
“On Radiation
Safety of
Population”**



Federal Regulations in the Field of Atomic Energy Use



Safety Guides – 84



Licensing of Activities in Atomic Energy Use

- Permit (license) authorizing to perform activities in the field of atomic energy use is a properly executed document confirming the right to perform activity of certain type provided that safety of atomic energy facilities and activities is ensured.
- Operating organizations and those performing activities and providing services to operating organizations in the field of atomic energy use implement their activity on the basis of licenses.
- No activity in the field of atomic energy uses is permitted without license.



List of Activities in Atomic Energy Use to Be Licensed

- ✓ Siting, construction, operation and decommissioning of nuclear installations, radiation sources, nuclear material and radioactive substance storage facilities, and radioactive waste storage facilities.
- ✓ Nuclear material and radioactive substance management, including that when exploring and mining uranium ores, producing, using, processing, transporting and storing nuclear materials and radioactive substances.
- ✓ Radioactive waste management during storage, processing, transportation and disposal.
- ✓ Use of nuclear materials and/or radioactive substances during R&D.



List of Activities in Atomic Energy Use to Be Licensed (Cont'd)

- ✓ Design and engineering of nuclear installations, radiation sources, nuclear material and radioactive substance storage facilities, and radioactive waste storage facilities.
- ✓ Design and manufacture of equipment for nuclear installations, radiation sources, nuclear material and radioactive substance storage facilities, and radioactive waste storage facilities.
- ✓ Review of design, engineering and process documentation, documents justifying nuclear and radiation safety of nuclear installations, radiation sources, nuclear material and radioactive substance storage facilities, and radioactive waste storage facilities, activities on nuclear material, radioactive substance and radioactive waste management.



Requirements for the set of documents justifying nuclear and radiation safety for siting of nuclear facility (NPP unit)

- **Feasibility study (report) materials related to justifying siting of facility**
- **Preliminary safety analysis report (within the scope containing all the substantiations of the selected site required by the applicable regulatory documentation, including safety-related aspects, general description of a nuclear facility and its safety for the environment and public, as well as preliminary safety analysis and physical protection analysis report)**
- **General quality assurance program QAP (G);**
- **Quality assurance program for construction QAP(C);**
- **PSA for level one NPP unit.**

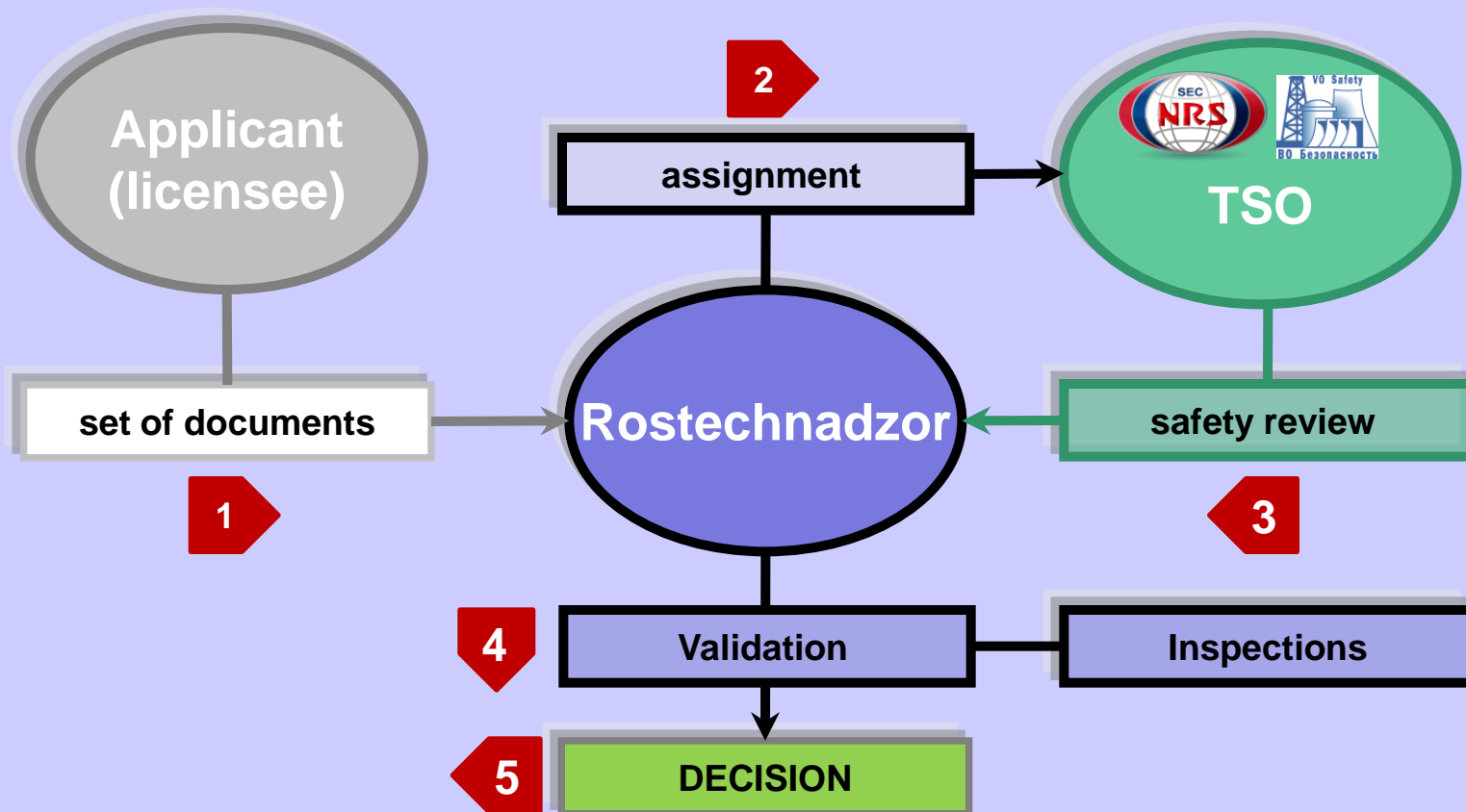


Set of documents justifying nuclear and radiation safety during NPP unit Construction:

- **NPP Preliminary Safety Analysis Report**
- **Overall Quality Assurance Program – QAP(O)**
- **Quality Assurance Program for Construction – QAP(CS)**
- **Design documentation** (including designs of reactor installation, safety related systems and physical protection, reports on research and development activities, reports on tests performed in accordance with PSAR of NPP)
- **Probabilistic Safety Analysis of Level 1 (PSA-1)**



Safety Review and interaction with TSO





State Supervision of Nuclear and Radiation Safety

- **Federal state supervision in the field of atomic energy use;**
 - **Permanent state supervision regime.**
-
- **analyzing information on safety status of facilities;**
 - **inspections and analysis of their results;**
 - **applying sanctions provided by law in case of violations revealed.**



State Permanent Supervision Regime at Nuclear Facilities

Government

Decree

Provision on the regime of permanent state supervision at nuclear facilities

approval

**List of nuclear facilities
subject to the regime of permanent state supervision
(HIGH-THREAT FACILITIES)**

Rostekhnadzor

**PERMANENT
SUPERVISION**

*permanent presence
of authorized officials*

**43 ORGANIZATIONS (73 AFFILIATES)
operating HIGH-THREAT FACILITIES:**

- nuclear installations
- radiation sources
- nuclear material storage facilities
- radioactive waste storages



Assistance to counterparts in developing their national nuclear energy infrastructures

- Comprehensive approach (19 elements as per the IAEA Milestones in the Development of National Infrastructure for Nuclear Power)**
- Agreement between Rostekhnadzor and State Atomic Energy Corporation “Rosatom” on cooperation in assistance activities related to development of national nuclear power infrastructure in the countries that decided to construct Russian designs (October 3, 2012)**
- Rostekhnadzor authorized by the Government of the Russian Federation to assist in the development of national nuclear and radiation regulatory systems in the countries which plan to construct Russian design nuclear facilities (Decree dated April 15, 2014)**

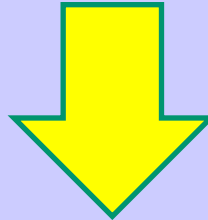


Legal Framework for Cooperation between Regulatory Bodies:

INTERGOVERNMENTAL
AGREEMENT ON COOPERATION
IN THE FIELD OF PEACEFUL USE
OF ATOMIC ENERGY

and

INTERGOVERNMENTAL
AGREEMENT ON COOPERATION
FOR CONSTRUCTION OF NUCLEAR
POWER PLANT



*INTER-AGENCY AGREEMENT BETWEEN
REGULATORY BODIES ON COOPERATION IN
THE FIELD OF NUCLEAR AND RADIATION
SAFETY REGULATION*



Cooperation agreements with regulators of new-comer countries

- Turkish Atomic Energy Authority (June 2010);
- Vietnam Agency for Radiation and Nuclear Safety (October 2010);
- Ministry of Science and Technology of Bangladesh (Bangladesh Atomic Energy Regulatory Board subordinated to the Ministry) (February 2012);
- Gosatomnadzor of Belarus (December 2013)



Areas of cooperation:

- Development of legal and regulatory framework;
- Licensing procedures and review of licensees' documents (experience exchange and consultancy during NPP siting, construction, commissioning and operation);
- Inspection practices (including participation as observers in inspections at Russian NPPs carried out by Rostekhnadzor);
- Training of regulatory bodies' personnel



IAEA recommendations taken into account:

- **IAEA Safety Series SSG-16 (Establishing the Safety Infrastructure for a Nuclear Power Programme);**
- **Milestones in the Development of a National Infrastructure for Nuclear Power (NG-G-3.1)**
- **Recommendations on capacity building for safe, secure and sustainable nuclear power programmes**



Milestones

- Milestone 1: Understanding the commitment (pre-project)
- Milestone 2: Ready to request bid for the first NPP
- Milestone 3: Ready to commission and operate the first NPP

19 elements of Nuclear Infrastructure

National Position

Regulatory Framework

Financing

Safeguards

Emergency Planning

Nuclear Waste

Nuclear Safety

Stakeholder Involvement

Management

Procurement

Legal Framework

Radiation Protection

Human Resource

Security

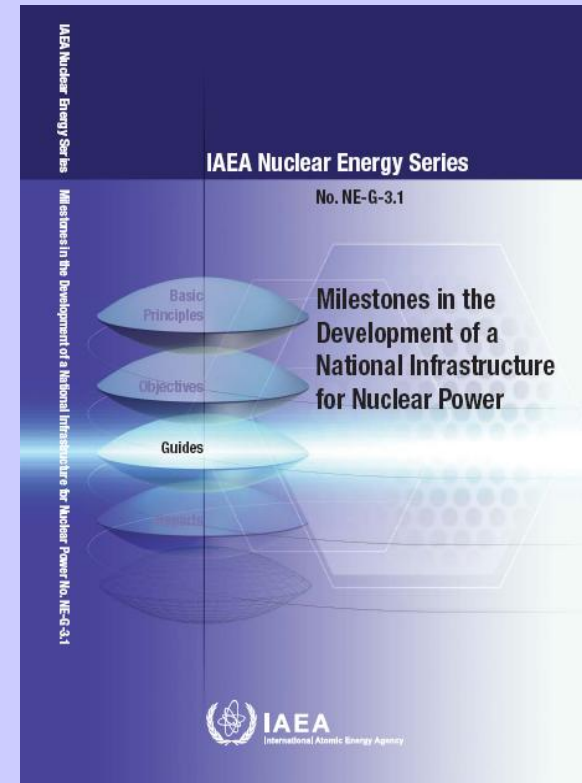
Nuclear Fuel Cycle

Environmental Protection

Sites selection

Electrical Grid

Industrial Involvement





Elements of infrastructure which require direct involvement (or participation) of nuclear regulatory body:

National Position

REGULATORY FRAMEWORK

Financing

Safeguards

Emergency Planning

Nuclear Waste

Nuclear Safety

Stakeholder Involvement

Management

Procurement

Legal Framework

Radiation Protection

Human Resource

Security

Nuclear Fuel Cycle

Environmental Protection

Sites selection

Electrical Grid

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Recent and prospective activities of Rostekhnadzor on training

2012 – development of comprehensive modular training program for personnel of regulatory bodies of new comer countries (402 academic hours + possibility of up to 1158 additional academic hours if needed);

2014-2015 – finalizing the process of setting up Rostekhnadzor's regional training center at one of the territorial departments, where NPPs are under construction and in operation



Existing training programs for regulatory body personnel:

- **Comprehensive modular training program (mentioned before);**
- **Set of basic lections related to full range of regulatory body competence (except inspection practices);**
- **Training program on fundamentals and practice of NPP construction and activities of regulatory body during NPP construction;**
- **Training program for inspectors of regulatory body, supervision of NPP operation**



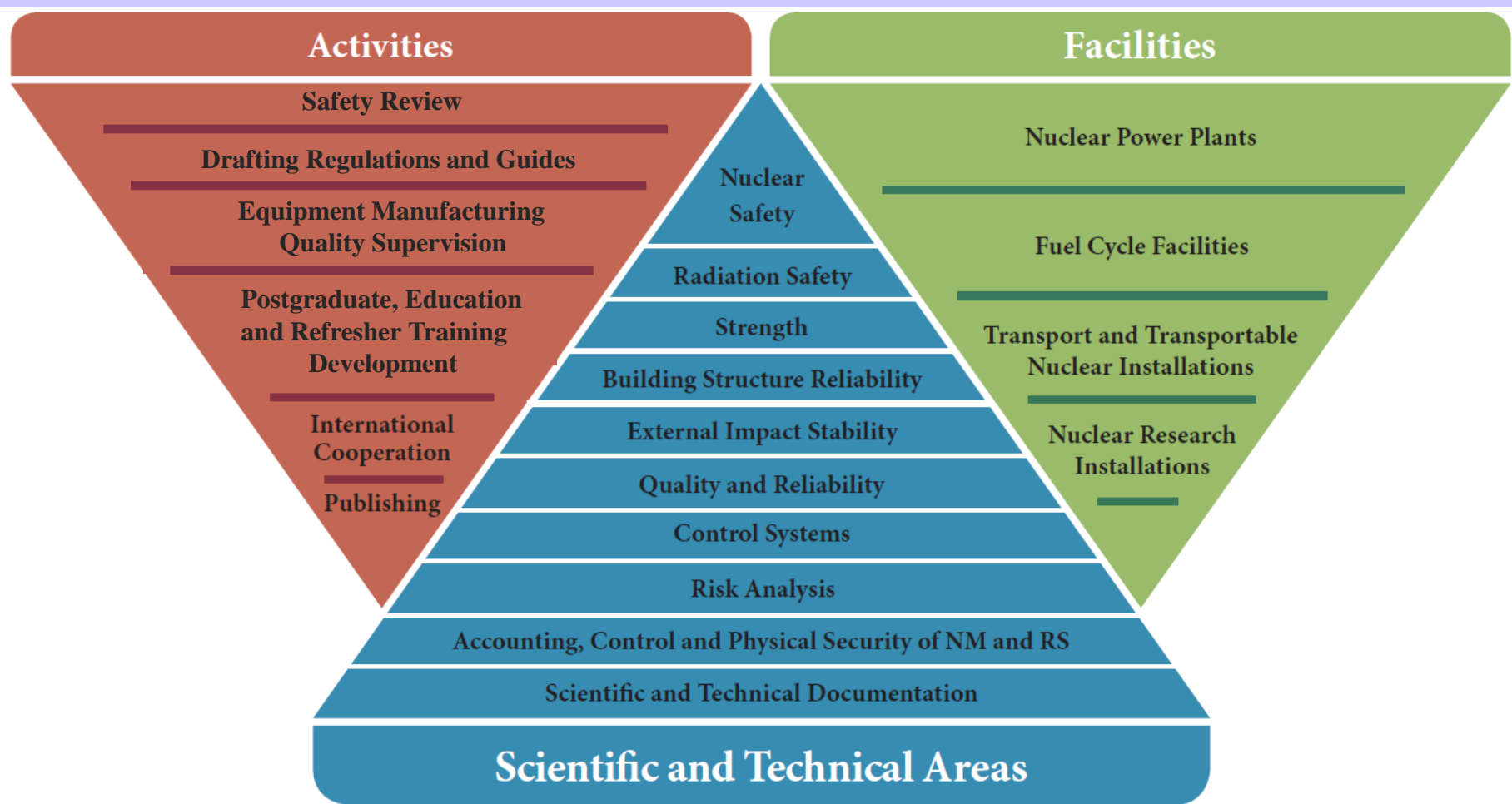
Capabilities for arranging training of foreign regulatory bodies' personnel (new-comer countries)

- Federal State Unitary Enterprise VO “Safety” (Training Center for Refresher Training in Nuclear and Radiation Safety);
- Federal Budgetary Institution “Scientific and Engineering Center for Nuclear and Radiation Safety” (SEC NRS)

(Depends on specific topics or modules of training programmes)



TSO Activities





Example of cooperation of Rostekhnadzor with Vietnam Agency for Radiation and Nuclear Safety (VARANS)

October 31, 2010 – bilateral inter-agency Agreement signed
(experience exchange, consultancy in developing regulatory documents, etc.,
including training activities)



Meeting between the management of
Rostekhnadzor and VARANS
(August 18, 2014,
Chairman of Rostekhnadzor Alexey ALESHIN and
Director General of VARANS VUONG Huu Tan)



Workshop on Experience Exchange Related to
Safety Review in the Process of Licensing the
Activities during NPP Siting and Construction
(Hanoi, September 9-10, 2014)

**THANK YOU FOR
YOUR ATTENTION!**

**295th Anniversary of industrial
safety supervision in Russia**