REPORT
ON ACTIVITIES OF THE FEDERAL ENVIRONMENTAL, INDUSTRIAL AND NUCLEAR SUPERVISION SERVICE OF RUSSIA IN 2009

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TABLE OF CONTENTS

Introduction ......................................................................................................................... 5

I. General Characteristic Of The Federal Environmental, Industrial And Nuclear Supervi-
sion Service ....................................................................................................................... 6

1.1. Tasks and Main Areas of Activities ............................................................................ 6
1.2. Organizational Structure of the Federal Environmental, Industrial and Nuclear
Supervision Service ........................................................................................................ 9

II. Regulatory Activities .................................................................................................... 12

2.1. Legal and Regulatory Control .................................................................................... 12
2.2. Control and Supervision, Licensing and Permitting Activity ..................................... 15

2.2.1. Nuclear Power Plants ........................................................................................ 15
2.2.2. Nuclear Fuel Cycle Facilities ............................................................................ 18
2.2.3. Nuclear Research Installations .......................................................................... 25
2.2.4. Nuclear Power Installations of Ships and Life Support Facilities ......................... 27
2.2.5. Radiation Hazardous Facilities .......................................................................... 27
2.2.6. Systems of State Accounting and Control of Nuclear Materials, Radioactive
Substances and Waste ................................................................................................. 33

2.2.6.1. Systems of State Accounting and Control of Nuclear Materials ............... 33
2.2.6.2. The system of State Accounting and Control of Radioactive Sub-
stances and Radioactive Waste ............................................................................. 34

2.2.7. Mining facilities .................................................................................................. 34

2.2.7.1. Coal Industry .......................................................................................... 34
2.2.7.2. Ore Mining and Non-metallic Industry, Facilities of Underground
Construction ......................................................................................................... 38

2.2.8. Survey Activities and Safe Use of Mineral Wealth ............................................. 42
2.2.9. Facilities of Oil and Gas Producing Industry ....................................................... 44
2.2.10. Petrochemical, Oil and Gas Refining Industry Facilities, and Petroleum
Product Supply Facilities ............................................................................................ 45
2.2.11. Trunk Pipeline Transport and Gas Underground Storage Facilities .................... 48
2.2.12. Metallurgical and Chemical Recovery Industries and Facilities ......................... 50
2.2.13. Gas Distribution and Gas Consumption Facilities ............................................ 52
2.2.14. Explosive and Chemically Hazardous Production and Special Chemistry
Facilities ....................................................................................................................... 53
2.2.15. Production, Storage and Application of Industrial Explosives ......................... 56
2.2.16. Transportation of Hazardous Substances .......................................................... 58
2.2.17. Explosion Hazardous Facilities of Vegetable Raw Material Storage and
Processing .................................................................................................................... 59
2.2.18. Facilities with Pressure Equipment .................................................................... 61
2.2.19. Facilities Whereat the Permanent Hoisting Mechanisms and Elevating
Structures are Used .................................................................................................... 63
2.2.20. Electrical Power Plants, Boiler Houses, Electrical and Thermal Installa-
tions and Grids ........................................................................................................... 67

2.2.21. Hydraulic Engineering Structures .................................................................... 69
2.2.22. State Civil Construction Supervision in Construction, Modernization and
Overhaul of Capital Construction Facilities ................................................................ 73
2.2.23. Limitation of Negative Man-Caused Environmental Impact .................................. 75
2.3. Organization and Results of Review ........................................................................... 76
  2.3.1. Safety Review of Nuclear Facilities ....................................................................... 76
  2.3.2. Industrial Safety Review ...................................................................................... 79
  2.3.3. State Environmental Impact Assessment .............................................................. 81
2.4. Registration of Facilities in the State Register of Hazardous Industrial Facilities .......... 82
2.5. Declaration of Industrial Safety .................................................................................. 84
2.6. Scientific and Technical Support of Regulatory Activity .......................................... 85
  2.6.1. Research in Nuclear and Radiation Safety ............................................................ 85
  2.6.2. Research in the Field of Industrial Safety .............................................................. 88
  2.6.3. Research in the Field of Safety of Electrical and Heat Installations and Grids ............................................................................................................... 90
  2.6.4. Research Works in the Field of Restriction of Adverse Man-Induced Impact on the Environment ................................................................. 91
2.7. Public Information .................................................................................................... 91
III. Information On Payments For Negative Man-Induced Impact On The Environment .... 93
IV. International Cooperation ............................................................................................. 95
  4.1. International Cooperation in the Field of Nuclear Supervision ............................... 95
  4.2. International Cooperation in the Field of Industrial Supervision ......................... 106
  4.3. International Cooperation in the Field of Environmental Supervision ................... 111
V. Personnel Policy .......................................................................................................... 113
VI. Information And Technical Support Of The Activities ............................................ 116
VII. Financing Of Activities .............................................................................................. 118
Conclusion ...................................................................................................................... 119
INTRODUCTION

This Report provides information on the activities of the Federal Environmental, Industrial and Nuclear Supervision Service (Rostechnadzor) in the year 2009, which relates to the sphere of activities, main tasks and authorities of Rostechnadzor; management and organizational structures of Rostechnadzor system; the status and ways of enhancing the legal basis of the Rostechnadzor activities; the status of control, supervisory, licensing and permitting activities of Rostechnadzor; analysis (assessment) of safety and emergency vulnerability of the productions and facilities supervised by Rostechnadzor, including analysis of adverse man-caused impact on the environment; results of expert review activities; the status of registration of hazardous production facilities and declaration of industrial safety; main results of scientific and technical support of Rostechnadzor activities; public awareness of Rostechnadzor activities; Rostechnadzor international cooperation with foreign countries and international organizations; personnel policy of Rostechnadzor; information and technical support and financing of Rostechnadzor activities.
I. GENERAL CHARACTERISTIC
OF THE FEDERAL ENVIRONMENTAL, INDUSTRIAL
AND NUCLEAR SUPERVISION SERVICE

1.1. Tasks and Main Areas of Activities

The Federal Environmental, Industrial and Nuclear Supervision Service was formed
under Decree of the President of the Russian Federation No. 649 of 20.05.04 “Issues of
Structure of Federal Executive Power Authorities” by transforming the Federal Industrial
Supervision Service and the Federal Nuclear Supervision Service into the Federal
Environmental, Industrial and Nuclear Supervision Service governed by the Government
of the Russian Federation.

Decree of the President of the Russian Federation No. 724 of 12.05.2008 “Issues of the
system and structures of federal executive bodies”, and Resolutions of the Government
of the Russian Federation No. 404 of 29.05.2008 “On the Ministry of Natural Resources
and Environment of the Russian Federation” and No. 401 of 30.07.04 “On the Federal
Environmental, Industrial and Nuclear Supervision Service” (in the versions of Resolutions
of the Government of the Russian Federation No. 23 of 21.01.2006, No. 335 of 29.05.2006,
and No. 677 of 19.08.2009) established that the Federal Environmental, Industrial and
Nuclear Supervision Service is under the jurisdiction of the Ministry of Natural Resources
and Environment of the Russian Federation.

Under the Regulations for the Federal Environmental, Industrial and Nuclear Supervision
Service approved by the resolution of the Government of the Russian Federation, the Federal
Environmental, Industrial and Nuclear Supervision Service is a federal executive authority
which performs the functions of control and supervision in the sphere of safe operations con-
nected with the use of mineral wealth, industrial safety, safety in atomic energy utilization (ex-
cluding the activities of development, manufacture, testing, operation and utilization of nucle-
lar weapons and military nuclear power installations), safety of electrical and heat installations
and networks (except for domestic installations and networks), safety of hydraulic structures
(except for navigation hydraulic facilities as well as hydraulic structures, supervisory authorities
of which are delegated to the local government), safety of production, storage and use of indus-
trial explosive materials and special functions in the field of state security in the above area; as
well as environmental protection to the extent of restricting adverse man–induced impact, also
in the sphere of its competence as concerns waste management, and the functions related to
arrangement and conducting state environmental impact assessment at the federal level.

Inasmuch as it concerns the functions of monitoring and supervision in the established
sphere of activities, the Federal Environmental, Industrial and Nuclear Supervision Service
exercises the powers of the bodies, which act in the international agreements of the Russian
Federation as the bodies taking the necessary measures aimed at fulfillment of the obliga-
tions of the Russian Federation ensuing from the above mentioned agreements.

The Federal Environmental, Industrial and Nuclear Supervision Service carries out its activity directly and through its territorial bodies in cooperation with other federal executive authorities, executive authorities of the subjects of the Russian Federation, local governments, public associations and other organizations.

The Federal Environmental, Industrial and Nuclear Supervision Service exercises control and supervision over:

- observance of the codes and standards in the field of atomic energy, terms and conditions of the permits (licenses) for the right to carry out activities in the field of atomic energy;
- nuclear, radiation, technical and fire safety (at nuclear facilities);
- physical protection of nuclear installations, radiation sources, storage facilities for nuclear materials and radioactive substances, systems of unified state control and accounting of nuclear materials, radioactive substances and radioactive waste;
- fulfillment of international commitments of the Russian Federation in the field of safety assurance in the use of atomic energy;
- compliance with industrial safety requirements for design, construction, operation, preservation and liquidation of hazardous industrial facilities, for manufacture, assembling, alignment, maintenance and repairs of the equipment used at hazardous industrial facilities, for transportation of dangerous substances that are used at hazardous industrial facilities;
- observance, within its competence, of the safety requirements in electric power engineering (technical control and supervision in electric power engineering);
- safe conduct of activities related to the use of mineral wealth;
- compliance with fire safety requirements for underground facilities and blasting operations;
- observance by owners of hydraulic structures of safety standards and rules for hydraulic technical structures other than navigation hydraulic facilities or those hydraulic structures in respect of which the supervisory authority was delegated to local governments;
- observance, within its competence, of the requirements of the law of the Russian Federation in the field of waste management;
- timely return of irradiated fuel assemblies of nuclear reactors and their processing products to the vendor country, with which the Russian Federation has an international contract providing for import of irradiated fuel assemblies of nuclear reactors for temporary technological storage and processing on a product return basis (within its competence);
- mining rescue operations to the extent of the state and readiness of paramilitary mountain rescue units for mitigation of accidents at the serviced facilities;
- completeness and quality demonstrated by public authorities of the RF subjects in exercising of their powers in the field of state environmental impact assessment with the right of sending improvement notices in respect of the violations found, as well as calling to account the officials executing the duties related to fulfillment of the delegated authorities;

by Resolution of the Government of the Russian Federation No. 333 of 04.05.2008 the authorities of the Federal Environmental, Industrial and Nuclear Supervision Service related to anti-terrorist actions were established;

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by Resolution of the Government of the Russian Federation No. 303 of 16.05.2005 the functions of the Federal Environmental, Industrial and Nuclear Supervision Service with regard to assuring biological and chemical safety of the Russian Federation were established;

by Resolution of the Government of the Russian Federation No. 537 of 25.08.2005 the functions of the Federal Environmental, Industrial and Nuclear Supervision Service related to the implementation of the Comprehensive Test Ban Treaty were established;

it is established by Resolution of the Government of the Russian Federation No. 54 of 01.02.2006 that the Federal Environmental, Industrial and Nuclear Supervision Service is a federal executive body authorized to exercise state construction supervision, and it organizes scientific and methodological support for state construction supervision in the Russian Federation;

it is established by Resolution of the Government of the Russian Federation No. 864 of 19.11.2008 that the Federal Environmental, Industrial and Nuclear Supervision Service exercises state control (supervision) over the activity of self-governing organizations in the field of engineering investigations, architectural and structural design, construction, reconstruction, major overhaul of capital construction facilities, as well as registering of the above mentioned organizations.

The Federal Environmental, Industrial and Nuclear Supervision Service carries out licensing of activities in the field of atomic energy use and licensing of other activities within the competence of the Service in accordance with the legislation of the Russian Federation.

The Federal Environmental, Industrial and Nuclear Supervision Service grants permits for:

the right to conduct activities in the field of atomic energy utilization for employees of nuclear facilities;

use of specific types of engineered devices at hazardous production facilities;

operation of supervised hydraulic structures;

releases and discharges of contaminants to the environment and harmful physical impacts on the atmospheric air;

transboundary transport of waste, ozone destroying substances and products contained therein;

import of toxic substances to the Russian Federation, their export from the Russian Federation and their transit across the territory of the Russian Federation;

use of industrial-purpose explosive materials and operations involving the above mentioned materials;

construction of waste storage facilities within its competence;

approves waste generation standards and sets limits for waste emplacement; also organizes receipt and review of reports on waste generation, decontamination and emplacement, which are submitted on a notification basis by small and medium size businesses that generate waste in their production or other activities;

registers hazardous industrial facilities and maintains the state register of such facilities;

maintains the state accounting of facilities that produce adverse impact on the environment and harmful impact on the atmospheric air;

maintains the state cadastre of waste and state-level accounting in the field of waste management, as well as performs activities on certification of hazardous waste of hazard class I–IV;
performs audits (inspections) to make sure that the requirements of the law of the Russian Federation, regulatory legal acts, codes and standards in the established sphere of activities are followed by legal entities and physical bodies.

The Federal Environmental, Industrial and Nuclear Supervision Service approves:
- skilled manuals on managerial and specialists’ (employees’) positions which determine qualification requirements for the employees, who are to obtain a permit for execution of activities in the field of atomic energy use;
- lists of radioisotope products whose import and export are not subject to licensing.

The Federal Environmental, Industrial and Nuclear Supervision Service:
- arranges and carries out the state environmental impact assessment at the federal level according to the procedure established by the legislation of the Russian Federation;
- arranges and ensures functioning of the system of monitoring nuclear facilities in case of emergencies (emergency response);
- establishes, develops and supports functioning of the automated information and analytical system which serves, among other things, the purposes of the unified state automated system of radiation situation monitoring in the territory of the Russian Federation;
- directs the activities of the functional subsystems for monitoring of chemically hazardous and highly explosive facilities as well as for nuclear- and radiation hazardous facilities as part of the unified state system for prevention and elimination of emergencies;
- according to the procedure established by the legislation of the Russian Federation, places orders and makes government contracts as well as other civil agreements for supplies of goods, execution of works, delivery of services to meet the needs of the Service, as well as for research and development works for the state needs in the specified sphere of activities;
- functions as main administrator and recipient of the federal budget assets envisaged for maintenance of the Service and implementation of the functions assigned to the Service;
- arranges reception of citizens, ensures timely and thorough consideration of verbal and written applications of citizens, relevant decision-making and making replies to the applicants within the dates established by the legislation of the Russian Federation;
- ensures (within its competence) protection of information classified as state secret;
- ensures mobilization preparedness of the Service, as well as monitoring and coordination of activities of supervised organizations in respect of their mobilization preparedness;
- arranges professional training for the employees of the Service Headquarters, their refresher courses, advanced training and on-the-job training;
- cooperates (subject to applicable regulations) with the public authorities of foreign countries and international organizations in the specified sphere of activities;
- according to the legislation of the Russian Federation, carries out activities related to compilation, storage, accounting and utilization of the archive documents generated in the course of the Service’s activity;
- exercises other authorities in the specified sphere of activities if such authorities are envisaged by the federal laws, regulatory legal acts of the President of the Russian Federation or the Government of the Russian Federation.

1.2. Organizational Structure of the Federal Environmental, Industrial and Nuclear Supervision Service

In 2009 the activities the Federal Environmental, Industrial and Nuclear Supervision Service (hereinafter referred to as Rostechnadzor) completed transition from the three-tier management system (the Headquarters — interregional territorial departments (offices) in
the federal regions — territorial bodies of federal subordination) to the two-tier system (the Headquarters — territorial bodies of federal subordination).

Order No. 342 of 23.12.2008 of the Ministry of Natural Resources and Environment of the Russian Federation (Minprirody of Russia) established the Scheme of allocation of Rostechnadzor territorial bodies, which envisages reduction of the number of Rostechnadzor territorial departments from 84 to 38.

Appropriate organizational and staffing measures were completed by 1st July 2009 according to the procedure established by the legislation of the Russian Federation.

Division of authorities and a new organizational structure of Rostechnadzor territorial bodies and Headquarters created the conditions ensuring a comprehensive approach to the organization of supervision activities, avoiding internal duplication of functions, strengthening control and coordination of activities of territorial departments in federal regions, approximating control and supervision, licensing and permitting activities to the supervised facilities in the regions, and also raising the efficiency of cooperation with authorized representatives of the President of the Russian Federation in the federal regions, with territorial bodies of federal executive authorities and executive authorities of the subjects of the Russian Federation.

The organizational structure of Rostechnadzor is represented by departments of the Headquarters, 7 interregional territorial departments for nuclear and radiation safety supervision and 31 territorial departments for industrial and environmental supervision.

The Rostechnadzor system also includes 3 subordinated federal state unitary enterprises and 13 federal state enterprises.

Organizational Structure of the Federal Environmental, Industrial and Nuclear Supervision Service effective in 2009 is shown in Fig. 1.

![Organizational Structure](image)

Fig. 1. Organizational Structure of the Federal Environmental, Industrial and Nuclear Supervision Service

In line with the resolution of the Government of the Russian Federation No. 677 of 19.08.2009 “On introduction of changes in some acts of the Government of the Russian Federation on the issue of the maximum number of employees of the Federal Environmental,
Industrial and Nuclear Supervision Service in the sphere of environmental management”, the number employees of Rostechnadzor Headquarters was increased by 200 persons.

For the purpose of implementation of the authorities assigned to Rostechnadzor under the Order No. 482/ls of 16.10.2009 “On the establishment of the structure of the Headquarters of the Federal Environmental, Industrial and Nuclear Supervision Service” the departments of the Headquarters were arranged discipline-wise: 5 general departments, 2 departments for nuclear supervision, 4 departments for industrial supervision, and a department for environmental supervision and payment administration (Fig. 2).
II. REGULATORY ACTIVITIES

2.1. Legal and Regulatory Control

In the framework of improving the regulatory legal basis of safety regulation and control and supervision in the established sphere of activity the work was underway in 2009 in the following major directions:

- participation in development of legislative and other regulatory legal acts related to implementation of the established tasks and authorities of Rostechnadzor;
- development and adoption of guidances in the fields of activities of the organizations supervised by Rostechnadzor;
- development of proposals on introduction of changes in the current legislative and other regulatory legal acts.

According to the Plan of rule-making activity of the Ministry of Natural Resources and Environment of Russia (Minprirody/MNR) enacted by the Order of the Ministry No. 7 of 20.01.2009, of the 59 documents that were to be developed by the Ministry in 2009, Rostechnadzor was designated responsible for 13 documents and co-responsible for 30 documents.

For the purpose of implementation of the Plan of rule-making activity of Minprirody of Russia Rostechnadzor issued Order No. 52 of 09.02.2009 (hereinafter referred to as the Order) “On the organization in the Federal Environmental, Industrial and Nuclear Supervision Service of the activity to implement the Plan of rule-making activity of the Ministry of Natural Resources and Environment of the Russian Federation for 2009”.

Over the time period from May 2008 to December 2009 2 laws concerning the principal directions of activity of legal regulation of environmental, industrial and nuclear safety were adopted, 4 draft laws are under review by the State Duma and the Government of the Russian Federation, and 2 draft laws are pending approval of the interested federal executive bodies.

16 resolutions of the Government of the Russian Federation were adopted in the sphere of activity of Rostechnadzor, and among them:
- resolution of the Government of the Russian Federation No. 204 of 10.03.2009;
- resolution of the Government of the Russian Federation No. 782 of 02.10.2009;
- resolution of the Government of the Russian Federation No. 783 of 02.10.2009;
- resolution of the Government of the Russian Federation No. 783 of 02.10.2009;

2 draft resolutions of the Government of the Russian Federation are currently under review by the Government of the Russian Federation, and 6 draft resolutions are pending approval of the interested federal executive bodies.
In 2009 Rostechnadzor carried out a considerable amount of work, at the direct request from the Minprirody of Russia, with regard to review of draft acts prepared by other federal executive authorities (Ministry of Industry and Trade (Minpromtorg) of Russia, Ministry of Energy (Minenergo) of Russia, Ministry for Regional Development (Minregion) of Russia, Ministry of Internal Affairs (MVD) of Russia).

Minprirody of Russia approved and registered with the Ministry of Justice of Russia 4 administrative regulations in the sphere of activities of Rostechnadzor:

orders of the Minprirody of Russia No. 117 and Ministry of Transportation of Russia No. 66 of 27.04.2009;
order of the Minprirody of Russia No. 172 of 29.06.2009;
order of the Minprirody of Russia No. 202 of 30.06.2009;

Approved and submitted for registration with the Ministry of Justice was the order of the Minprirody of Russia No. 413 of 15.12.2009 “Administrative regulation for execution by the Federal Environmental, Industrial and Nuclear Supervision Service of the state function of state control and supervision over the implementation by the owners of hydraulic structures and operators of safety norms and regulations (except for navigation hydraulic facilities or hydraulic structures in respect of which the supervisory authority was delegated to local governments).

Rostechnadzor is directly involved in the development of administrative regulations for the fulfillment of state functions and services in accordance with the plan approved by the Governmental Commission on Conducting the Administrative Reform.

10 administrative regulations in the sphere of activity of Rostechnadzor are currently under development with the Minprirody of Russia. 10 regulatory legal acts were developed, approved and registered with the Ministry of Justice of Russia in 2009:

order No. 17 of 23.01.2009;
order No. 392 of 13.05.2009;
order No. 393 of 13.05.2009;
order No. 588 of 30.06.2009;
order No. 739 of 25.08.2009;
order No. 759 of 31.08.2009;
order No. 784 of 09.09.2009;
order No. 788 of 09.09.2009;
order No. 816 of 24.09.2009;
order No. 830 of 01.10.2009.

In 2009 Rostechnadzor prepared and submitted drafts of 4 orders that establish federal norms and regulations in the field of nuclear energy to the Minprirody of Russia for approval.

“Safety regulations for decommissioning of vessels and other watercraft with nuclear installations and radiation sources” were prepared for publication.

6 draft federal norms and regulations were published in 2009.
6 safety regulations were approved by Rostechnadzor in 2009.

The following documents were developed and prepared for approval:

“Regulations for development of quality assurance programmes in designing and engineering of the items to be delivered to nuclear facilities”;

“Rules for transferring nuclear materials to the category of radioactive waste”;

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“Regulations for improving the accuracy of prognostic assessments of radiation characteristics of environmental contamination and radiation burden on personnel and population”;

“Regulations for the content and composition of radiation safety report in the organizations using radionuclide sources”.


On 15.04.2009 Minprirody of Russia approved the Plan of first priority regulatory legal acts in the sphere of competence of the Ministry of Natural Resources and Environment of the Russian Federation that should be reworked in accordance with the order of the Government of the Russian Federation No. SS-P4-969 of 24.02.2009. Rostechnadzor was co-responsible in respect of some items of the above mentioned plan and took part in development of the documents related to its competence. Totally 44 regulatory legal acts were to be reworked, and 27 of them in the sphere of competence of Rostechnadzor. As the final result, 31 regulatory legal acts were reworked including 21 belonging to the sphere of activity of Rostechnadzor.

On 15.09.2009 the Plan for reworking departmental regulatory legal acts was received by Rostechnadzor pertaining to the competence of the Minprirody of Russia, with the target dates by the end of 2011, which plan calls for reworking 71 regulatory legal acts related to the sphere of activity of Rostechnadzor.

In fulfillment of the Federal Law No. 172-FZ of 17.07.2009 “On the anti-corruption review of regulatory legal acts and draft regulatory legal acts” the Legal Department of Rostechnadzor prepared and submitted for approval to the Minprirody of Russia draft order of Rostechnadzor “On the organization of work for conducting anti-corruption review of regulatory legal acts and draft regulatory legal acts issued by the Federal Environmental, Industrial and Nuclear Supervision Service”. The above mentioned order established the Procedure for conducting anti-corruption review of regulatory legal acts and draft regulatory legal acts issued by Rostechnadzor for the purpose of identifying corruptogenic factors and their subsequent elimination.

In the framework of claim administration in the sphere of activity of Rostechnadzor and also the in the sphere of activity related to reviewing the judgments and dispositions in administrative cases, order No. 660 of 30.07.2009 was issued “On the implementation of some provisions of the Code of Administrative Offenses of the Russian Federation by the Federal Environmental, Industrial and Nuclear Supervision Service and its territorial bodies”. In 2009 Rostechnadzor received 12 appeals by way of subordination against judgments in administrative offenses that were passed by officers of Rostechnadzor territorial departments, inter alia:

appeals against judgments in administrative offenses connected with violation of industrial safety requirements stipulated by part 1 article 9.1 of the Code of Administrative Offenses of the Russian Federation (hereinafter called KoAP RF) — 5;

appeals against judgments in administrative offenses connected with violation of requirements of design documentation and regulatory documents in the field of construction as stipulated by part 1 article 9.4 of KoAP RF — 2;

appeals against judgments in administrative offenses connected with violation of the established procedure of construction, reconstruction, overhaul of capital construction project and its commissioning as stipulated by part 1 article 9.5 of KoAP RF — 4;
appeal against judgments in administrative offenses connected with violation of regulations for using fuel and energy, regulations for construction and operation of fuel and energy consuming installations, heating grids, facilities for storage, maintenance, distribution and transportation of energy, fuel and fuel processing products as stipulated by part 1 article 9.11 of KoAP RF — 1.

In respect of 6 appeals Rostechnadzor terminated case review due to 4 cases having been referred to court, and 2 appeals being past the period of appeal. In respect of 4 appeals the judgments in administrative offenses were affirmed, in respect of one appeal the penalty was reduced, and in respect of the other the judgment in administrative offense was discharged.

In 2009 the Legal Department of the Headquarters represented the interests of Rostechnadzor in 116 legal proceedings. In 96 civil cases legal proceedings were completed, in 95% civil cases the court affirmed the position of Rostechnadzor as justified. In 5% civil cases decisions were not in favor of Rostechnadzor, though it should be noted that those were civil cases of wage recovery.

In 2009 the Legal Department of Rostechnadzor represented the interests of Rostechnadzor in the Supreme Court of the Russian Federation:

- on the application of JSC “Milk Combine “Yuzhno-Sakhalinsky” (hereinafter called the Applicant) for invalidating the order of the Federal Environmental, Industrial and Nuclear Supervision No. 557 of 08.06.2006 “On establishing the date of penalty payment for detrimental impact on the environment”;
- on the application from I.S. Sokolov for invalidating in part of paragraph three item 4, item 5, paragraph one and two of item 9 of the Method of conducting competition for refilling a federal civil service job vacancy in the Federal Environmental, Industrial and Nuclear Supervision Service, which was enacted by the order of the Federal Environmental, Industrial and Nuclear Supervision Service No. 907 of 20.11.2008.

With regard to the above mentioned cases the orders issued by Rostechnadzor were affirmed by the Supreme Court of the Russian Federation.

For the purpose of development, optimization and efficient cooperation between the legal department of the Headquarters and Rostechnadzor territorial bodies, Rostechnadzor issued order No. 1046 of 22.12.2009 “On the organization of work related to representation of the interests of the Federal Environmental, Industrial and Nuclear Supervision Service and its territorial bodies in the courts of the Russian Federation”.

The said order will facilitate shaping uniform court practices, and also conduct the analyses, methodology and legal support of activities of territorial bodies with the aim of improving the claim administration activity of Rostechnadzor.

2.2. Control and Supervision, Licensing and Permitting Activity

2.2.1. Nuclear Power Plants

General information

In 2009, the Federal Environmental, Industrial and Nuclear Supervision Service (hereinafter referred to as Rostechnadzor) conducted regulation of nuclear and radiation safety at 10 operating nuclear power plants (NPPs). Apart from that, in 2009 supervision was undertaken over the implementation of the norms and regulations and validity conditions at 1,160 (1,062) enterprises involved in designing and manufacturing equipment for nucle-
ar power plants and nuclear research reactors, reviewing design, engineering and process
documentation and the documents validating nuclear and radiation safety of nuclear pow-
er plants and nuclear research reactors (the figures in brackets here and below refer to the
data of 2008).

**Licensing activity**

In 2009 Rostechnadzor Headquarters issued 48 (49) licenses to the operating organiza-
tion JSC “Concern “Energoatom” and the organizations engaged in designing, engineer-
ing, manufacturing equipment for power generating units of nuclear power plants, safety re-
view, etc. Apart from that, 71 licenses were reissued in connection with the transformation
of FSUE “Concern “Rosenergoatom” to JSC “Concern “Energoatom”.

In the framework of implementation of the “Program of activity of the State nuclear en-
ergy corporation “Rosatom” for a long-term period (2009–2015)” enacted by the resolu-
licenses were issued for new power generating units of nuclear power plants and 4 licenses
for siting power generating units of nuclear power plants.

Interregional territorial departments (ITD) for nuclear and radiation safety supervision
issued 839 (297) licenses to the organizations that carry out activities and deliver services to
nuclear power plants.

In accordance with the Regulations for issuing permits for the right to conduct opera-
tions in the field of atomic energy employees of nuclear power plants were tested and per-
mits for the right to work in the field of atomic energy: Rostechnadzor Headquarters —
22 (32) employees of the operating organization belonging to managerial staff of nuclear
power plants. Territorial departments issued 159 (213) permits to the operating staff of nu-
clear power plants for the right to run technological process.

**Inspection activity**

In 2009 the Department organized and conducted 3 comprehensive inspections with the
participation of ITD NRS and Scientific and Engineering Centre for Nuclear and Radiation
Safety (SEC NRS): Kursk NPP, Rostov NPP and JSC “Concern “Energoatom”, and also
target inspection to check the preparedness of Rostov NPP power unit No. 2 for physical
start up. As a result of inspection of JSC “Concern “Energoatom” 18 violations were found
in respect of the requirements of federal norms and regulations in the field of atomic energy,
and improvement notice was issued and penalty imposed on the legal body in the amount
of 40,000 rubles.

ITD NRS carried out 2,561 target and routine inspections of the status of nuclear, ra-
diation and technical safety of nuclear power plants. In the course of inspections 577 vio-
lations of the requirements of federal norms and regulations and validity conditions were
found in the activity of the operating organization and an improvement notice was issued
to clear the said violations.

On the whole, safety status of nuclear power plants was found satisfactory, no serious vi-
olations with regard to safety assurance were revealed. Measures were developed to elimi-
nate the deficiencies revealed by inspection. Implementation of the above mentioned meas-
ures will be controlled.

1,255 (1,573) inspections (bracketed figure refers to the 2008 data) were carried out at
the organizations (enterprises) engaged in engineering or manufacturing equipment and
making reviews in 2009. The inspections revealed 491 (841) violations of requirements of
the norms, regulations and validity conditions of licenses for engineering and manufactur-
ing equipment. The bulk of supervision was devoted to implementation of the norms and regulations, validity conditions of licenses for engineering and manufacturing the equipment intended for completion of the Rostov NPP Unit 2, Kalinin NPP Unit 4, Beloyarsk NPP Unit 4, upgrading and extension of service life of the operating nuclear power plants.

**Operational occurrences at nuclear plants**

No occurrences ranked as accidents in operation of nuclear power plants took place in 2009. 29 operational occurrences to be accounted for as per the “Provisions on the order of investigation of and accounting for operational occurrences at nuclear power plants” (NP-004-08) took place, which is nine occurrences less than in 2008.

All operational occurrences were classified as level zero INES (International nuclear event scale). There were no violations of safe operation limits and conditions.

At the NPPs with VVER, RBMK, BN-600 reactors the total number of occurrences decreased as compared with 2008. No operational occurrences were registered at the Beloyarsk NPP in 2009.

The power units that feature the greatest number operational occurrences are the Novovoronezh NPP Unit 3 (VVER-440), Kola NPP Unit 3 (VVER-440), Leningrad NPP Unit 3 (RBMK), Smolensk NPP Unit 1 (RBMK) — three accountable operational occurrences took place at each of the above mentioned power units.

All operational occurrences at the NPPs were properly investigated, and appropriate corrective measures were developed and implemented in order to prevent recurrence of similar events. Investigation reports were reviewed by the Department for Safety Regulation of Nuclear Power Plants and Nuclear Research Installations and forwarded to SEC NRS for detailed analysis.

**Radioactive releases and discharges**

In the reporting period, gas and aerosol releases from NPPs were below permissible release level (PR) and did not exceed 16.1 % PR in inert radioactive gases (IRG) (Bilibino NPP), 10.9 % PR in I-131 (Novovoronezh NPP), 13.3 % PR in Co-60 (Kursk NPP), 15 % PR in Cs-134 (Novovoronezh NPP), and 8.9 % PR in Cs-137 (Novovoronezh NPP).

There were no cases of exceeding the values of radionuclide release control levels established by SR AS-03.

The volumes of liquid environmental discharges and radionuclide ingress in surface water as compared to the permissible discharge (PD), which is calculated and established for every NPP are summarized in table 10.

The data for all the NPPs excluding the Bilibino NPP are indicated in Cs-137, which is the major (up to 70 %) contributor to the summary activity of water discharge. For the Bilibino NPP the radioactivity data for water discharge are indicated in Co-60, whose contribution to the summary activity makes up 75 %.

Actual values of radionuclide activity in liquid discharges from the NPPs was below the permissible values and did not exceed 14.9 % PD (Balakovo NPP).

**Radioactive waste**

The filling degree of liquid radioactive waste storage facilities (LRWF) at the NPPs equaled an average of 58.7 %. Still, LRWF of the Smolensk NPP and Leningrad NPP were 83.3 % and 80 % full, respectively.

The filling degree of solid radioactive waste storage facilities (SRWF) at the NPPs equaled an average of 62 %. Still, SRWF of the Kursk NPP and Leningrad NPP were 87.8 % and 84.7 % full, respectively.
Radiation burden on the station and external personnel

Collective and average individual dose values for personnel and the persons assigned to work at the NPPs in Russia are indicated in table 13.

Maximum individual radiation doses were received in the reporting period by the station personnel (4.44 mSv) and external personnel (3.29 mSv) at the Bilibino NPP.

In the reporting period there were no registered instances at NPPs in Russia of exceeding the average value of radiation dose limit for Group A personnel in any consecutive 5 years as established by NRB-99/2009 at 20 mSv per year or the yearly controlled level established by JSC “Concern Energoatom” at the same 20 mSv per year.

Radiation safety problems and radioactive waste management problems were identified in the course of comprehensive inspection of JSC “Concern “Energoatom” in October 2009 and reflected in Act No. 03-09 EA. With regard to the above deviations JSC “Concern “Energoatom” developed compensating measures and work is underway to eliminate the deviations thus found.

2.2.2. Nuclear Fuel Cycle Facilities

In 2009 Rostechnadzor supervised 14 nuclear fuel cycle facilities (NFCF), 59 research and development and design organizations, organizations that fulfill the works and deliver services to NFCF including those that are engaged in transportation and storage of nuclear materials and carry out other works for the nuclear fuel cycle facilities, whose activity was licensed by the Rostechnadzor Headquarters.

The indicators of licensing and supervisory activities over the period under review are rather stable on the whole. The number of operational occurrences at NFCF, violations of the norms and regulations in the field of atomic energy and validity conditions of the licenses issued by Rostechnadzor, as well as the number of improvement notices following the facts of operational occurrences have been showing a general tendency to decline over the last three years.

In 2009 no accidents occurred at nuclear fuel cycle facilities. 8 operational occurrences took place during the year at nuclear fuel cycle facilities, which occurrences were classified as level zero INES (International nuclear event scale) — “not significant for safety”.

Decommissioning of production uranium-graphite nuclear reactors

At the present time 12 production uranium-graphite nuclear reactors are shut down including 10 reactors at the stage of decommissioning.

All the production uranium-graphite nuclear reactors are brought to nuclear-safe condition and are at the stage of preparation for long-term cooling. Radiation situation in the last years at the production uranium-graphite nuclear reactors, which are in the process of decommissioning, is characterized as stable; effective personnel exposure dose never exceeds the established limits.

No operational occurrences were registered involving the systems and equipment important for safety.

Decommissioning of nuclear fuel cycle facilities

Decommissioning of open industrial reservoirs designed for storage of liquid radwaste continued at FSUE GHK, FSUE PO Mayak and JSC SHK according to the existing design.

For decommissioning of the JSC HMZ nuclear installation a license was obtained by the JSC TVEL operator for “Decommissioning of a complex with nuclear materials designed
for reprocessing of nuclear materials and fabrication of nuclear fuel located in the territory of the JSC “Chemical-metallurgical plant” industrial site.

 Decommissioning was carried out at JSC GMZ of the radwaste tailings storage of the former uranium mining enterprise in accordance with the design that passed the state environmental impact assessment.

 **Spent nuclear fuel (SNF) management**

 Spent fuel from foreign NPPs was not delivered to FSUE GHK and FSUE PO Mayak in 2009.


 Construction of a complex of “dry” storage facilities for irradiated fuel assemblies of VVER-1000 and RBMK-1000 reactors at the site of FSUE GHK continues to the approved design.

 No violations of safe operation limits were recorded in the reporting period.

 Radiation burden on personnel, levels of radioactive contamination of the equipment, territory, and dose rate in the adjacent territory are below the limits established by NRB–99.

 **Production of nuclear fuel at JSC MSZ and JSC NZHK**

 No cases of emergency deviations from the preset modes in operation of process equipment occurred at the above mentioned facilities, nor failures of instrumentation and control circuits, which might lead to exceeding the radiation and nuclear safety norms.

 Radiation burden on personnel, levels of radioactive contamination of the equipment, territory, and dose rate in the adjacent territory are below the limits.

 All nuclear hazardous areas are equipped with alarm annunciation systems on the basis of alarm systems DRG-1M.

 **Operation of production reactors**

 Technical condition of the production uranium-graphite reactor (CUGR) ADE-2 was inspected by commission.

 Two reactors (CUGR ADE-4 and ADE-5) located at the site of JSC SHK reactor plant were shut down in 2008.

 General overhaul continued at FSUE PO Mayak reactor LF-2 in 2009.

 No cases of violations of nuclear safety or emergency radiation monitoring norms and conditions were registered at the reactor plants in 2009.

 **Radio-chemical and chemical-metallurgical production facilities**

 No deviations of the process parameters from the preset values were identified in the reporting period at RHZ JSC SHK and RHZ FSUE SHK; process equipment operated without any disturbances.

 The status of the existing nuclear and radiation safety system at RHZ JSC SHK and RHZ FSUE SHK in the reporting period on the whole meets the requirements of the acting norms and regulations in the field of atomic energy.

 Radiation situation in the reporting period is characterized as stable.

 Radiation burden on personnel does not exceed base limits. In the reporting period radioactive releases and discharges do not exceed the established levels.
FSUE PO Mayak developed the “Control levels of harmful releases to atmospheric air for PO Mayak plants for 2009”.

At plant No. 20 (chemical-metallurgical plant) LRW discharge to water basin V-9 was stopped.

At FSUE PO Mayak plant No. 22 the necessary scheduled activities were fulfilled to improve operation safety of FSUE PO Mayak hydraulic structures and LRW storage ponds, backfilling of SRW burial sites, and also rehabilitation of contaminated areas.

At FSUE PO Mayak plant No. 45:

in the framework of fulfilling the tasks of reconstruction of the radioisotope production LRW handling system a technical assignment was developed for the design and an action plan was prepared for the «Installation of the pilot system for effluents purification from alpha-emitting radionuclides», a contract was made with LLC «New ecological technologies» and research and development activity is underway devoted to purification of the plant’s alpha-containing LRW.

At FSUE PO Mayak plant No. 157:

inspections by commissions of burial sites and storage facilities were conducted according to the technical condition inspection schedules for the burial sites and SRW storage facilities; inspection results were reflected in inspection reports;

mandatory radiation control was arranged during radwaste handling;

rehabilitation activities were undertaken in the territories of burial sites; in order to control water effluents TsZL specialists developed contaminants identifying methods for the plant.

At FSUE PO Mayak plant No. 235:

construction continues of the first-phase combined sewerage system with removal of the treated effluent water to the left-bank channel;

backfilling of water basin V-9 (Lake Karachay) is underway;

construction of a cementation system for liquid and medium-level waste has started;

“Radiation monitoring regulations (program) for laid up solid radwaste ground burial sites of FSUE PO Mayak plant for the time period 2009–2012” was developed;

sanitary and epidemiological conclusions for the work with radioactive waste were renewed.

Isotope separation production facilities

JSC PO EHZ introduced a new technological process using nuclear materials, i.e. de-fluorination of depleted uranium hexafluoride, for transforming the depleted uranium hexafluoride into a form which would be safer for long-term storage, i.e. triuranium octoxide.

No disturbances were recorded in the operation of systems and equipment important for safety in 2009. The requirements established for nuclear and radiation safety and radiation monitoring were observed.

The existing nuclear and radiation safety system at ZRI FSUE SHK in the reporting period on the whole met the requirements of the acting norms and regulations in the field of atomic energy.

Radiation situation in the departments of ZRI FSUE SHK remained stable.

Summary values of alpha- and beta-active nuclides in the drain water supplied to industrial sewerage system were kept at lowest controllable levels. Monthly operational rates of radionuclide releases to the atmosphere were not exceeded.

No deviations of the process parameters from the preset values were identified in the reporting period; process equipment operated without any disturbances.
The plan of administrative and technical activities to enhance nuclear and radiation safety at JSC AEHK was fulfilled on the whole.

No deviations were identified in the reporting period from the preset operational modes.

In the reporting period JSC UEHK completed a considerable amount of work with regard to upgrading the separation equipment; continued effort is made to change the equipment for safer items; the system of engineering and technical nuclear and radiation safety features is being improved.

Sublimate production facilities

No deviations of the process parameters from the preset values were recorded at the sublimate production facilities JSC SHK and JSC AEHK in the reporting period; process equipment operated without failure, no cases of exceeding reference levels of personnel effective dose were registered in the reporting period.

Summary values of alpha- and beta-active nuclides in the drain water supplied to industrial sewerage system were kept at lowest controllable levels. Monthly operational rates of radionuclide releases to the atmosphere were not exceeded.

Personnel radiation levels were below the regulated rates.

The existing nuclear and radiation safety system in the reporting period on the whole met the requirements of the acting norms and regulations in the field of atomic energy.

Uranium mining production facilities

JSC PPGHO, JSC Khiagda and JSC Dalur carried out their activity in compliance with Rostechnadzor licenses.

Radiation situation demonstrated dynamic reduction of radiation burden on personnel. No disturbances were recorded in the operation of systems and equipment important for safety.

No radiation accidents, radiation incidents, non-radiation occurrences were registered in the reporting period.

Pilot operation of two local sorption installations was conducted at JSC Dalur. Construction of a new local sorption installation was launched.

Radioactive waste management. Releases and discharges

At JSC SHK storage of solid radwaste is arranged in special storage facilities.

In order to assure compliance with the requirements of federal norms and regulations and establish storage life of SRW, and for the purposes of storage safety analysis, a comprehensive engineering radiation survey was carried out at the filled and operating facilities. Measures were developed to prepare the facilities for final decommissioning.

LRW is supplied for storage to LRW storage reservoirs.

Medium-level process LRW are pretreated and removed to disposal in geological formations at the rate of accumulation.

Technological processes of LRW pretreatment for disposal in geological formations comply with the regulations.

As a result of production activity the main subdivisions of FSUE GHK generate liquid and solid radioactive waste of different specific activity and radioactive gas/aerosol effluents. Processing, temporary storage and disposal of radioactive waste are arranged at the facilities of the Isotope-chemical plant (IHZ).

The quantity and quality of LRW are consistent with the regulatory values established by process regulations.
No releases or discharges exceeding the established regulatory values were registered at
the FSUE GHK Reactor plant in 2009.

Gaseous and liquid radionuclide effluents to the environment do not exceed the regulatory values established for the plant.

The quantity of waste supplied to disposal at IHZ does not exceed the established regulatory values.

The cases of excessive specific activity or excessive contamination on external surfaces of transportation containers/collectors and transport were not registered.

In the process of decommissioning nuclear installations JSC HMZ makes fragmentation, sorting and packaging of radionuclide contaminated elements of equipment, pipelines and isolation valves.

Solid radwaste generated as a result of activity of JSC PO EHZ is disposed of in solid radwaste disposal trench.

The results of uranium monitoring in atmospheric effluents show that the operation of the enterprise does not have radiation effect on the environment and population in excess of the established regulatory values.

Discharge of process drains to the hydrographic grid was not effected at JSC AEHK in 2009.

No disturbances were registered in radwaste handling operations that might impair radiation safety.

At JSC NZHK radwaste storage at the tailings storage facility is arranged basing on the “Tailings storage facility section 2 project”. Water is tapped and water samples are analyzed on a regular basis: tailings, filtering, clarified water and water of the hydrographic grid. Observation well network serves to systematically control contaminants in aquifers.

Radioactive releases do not exceed the established regulatory values.

No disturbances were registered in the activity of JSC NZHK related to radwaste handling that might impair radiation safety.

The bulk of radioactive waste is generated at the JSC PPGHO as a result of hydrometallurgical processing of uranium ore.

All mine water is supplied to the mine water purification plant at GMZ and is used in the GMZ process cycle after purification.

Actual releases and discharges did not exceed the established limits in the reporting period.

The status of high-level radioactive waste storage tanks at FSUE PO Mayak — as of 01.12.2009 the number of empty tanks in the storage facilities was 13 items including 3 tanks under repair.

The quantity of high-level radwaste was reduced during the year due to the operation of vitrification furnace.

Radiation situation in the storage facilities and inside the territory on the whole meets regulatory requirements.

Plant 22 conducts the activities of controlling hydraulic structures and water sampling in all special industrial water basins.

Solid radwaste management procedure is established by the standard of the enterprise, which regulates the requirements for collection, temporary storage, transportation and reduction (combustion or press compaction) and emplacement of SRW packages in the disposal facility.

Actual gaseous waste release at JSC UEHK is far below the permissible value.
At JSC Dalur in the conditions of underground leaching, considering closed process cycle, generation of LRW is impossible. The enterprise developed and prepared a system of collection, temporary storage and transportation of SRW for disposal to a specialized organization on a contractual basis.

At JSC CHMZ the radwaste generated by the enterprise is classified as low-level waste. The tailings storage facility located at the JSC CHMZ serves for collection and long-term storage of insoluble residue of drain pulp and some other SRW. Contaminated metal scrap is transferred to decontamination. Radwaste is transferred for disposal to the divisions and branches of RosRAO.

Collection, processing, temporary storage, transportation and disposal of radwaste in conducting research and development work at JSC GNTz NIIAR on the whole meet the requirements of norms and regulations in the field of atomic energy.

Radwaste management at JSC MSZ on the whole meets safety requirements and validity conditions of the Rostechnadzor license. JSC MSZ has three tailings storage facilities — laid up, in the process of decommissioning (to be shut down) and operational. Solid radwaste is removed to the GUP MosNPO Radon branch. Liquid radwaste undergoes treatment predominantly by liming and is then transferred to the plant’s operating liquid radwaste storage.

**Nuclear material handling during transportation**

Transportation of nuclear materials in the Russian Federation is carried out by all kinds of transport — automobile, railway, water (sea) and air. Safety requirements are regulated by federal norms and regulations in the field of atomic energy “Safety regulations for transportation of radioactive materials” (NP-053–04).

Nuclear materials are transported in transportation casks which are certified by GK “Rosatom” verifying compliance of the design and transportation conditions with the requirements of NP-053–04.

The activity of returning to the Russian Federation of nuclear materials, which were previously exported for operation of nuclear research installations, was continued. In 2009 irradiated fuel assemblies were imported from Romania, Poland and Latvia, and spent nuclear fuel of research reactors was transported by air from Romania and Libya. Import of spent nuclear fuel of the research reactor “Maria” (Poland) was undertaken for the first time on a sea vessel that was specially reequipped for transportation of spent nuclear fuel on sea vessel, and also scheduled import of irradiated fuel assemblies was carried out from the NPP in Bulgaria.

Measures that were taken in the reporting period by Operators and Rostechnadzor (in the sphere of their competence) in order to improve the level of nuclear and radiation safety of nuclear fuel cycle facilities

The following designing and construction/installation works were carried out at FSUE PO Mayak in 2009 in order to enhance safety of the activity of the enterprise related to atomic energy:

Action was taken to resolve environmental problems connected with the current and historic activities of FSUE PO Mayak.

Technical maintenance and repairs of the equipment important for safety were carried out at FSUE GHK in 2009.

All preventive maintenance works related reloading, inspection, repairs and technical maintenance of the ADE-2 reactor basic equipment were completed at the ADE-2 reactor in the reporting period.
Replacement of gas centrifuges in the electric shop continues at JSC EHZ.

Expansion of Chelnok-5 section was completed at JSC AEHK, and the work continued to design and construct uranium hexafluoride waste conversion facility Kedr.

The work to prepare two shutdown reactors ADE-4 and ADE-5 for decommissioning was underway, reconstruction of the DAV-90 units’ load/unload elements was in progress.

Integrated trial run of the pilot commercial system for electrochemical decontamination of metal scrap was carried out.

The following activities were completed at JSC PPGHO in 2009:

- construction of a new sulfuric acid plant was completed and the plant was accepted for operation;
- work is in progress to shield the bowl of RW storage facility “Medium” and build up the dam of the tailings storage facility.

**NFCF Nuclear and Radiation Safety Challenges and Their Resolution Status**

It is necessary to arrange and carry out the work as required for preparation of the shutdown production uranium graphite reactors for decommissioning.

The problem of ensuring safety during the long-term storage of uranium hexafluoride waste (UHFW) at open sites of nuclear fuel cycle facilities is still pressing.

Aging of buildings and structures of a number of facilities in the industry, insufficient financing available for repairs, reconstruction and decommissioning can eventually affect nuclear and radiation safety in operation of nuclear facilities and management of radioactive materials and radioactive substances.

The following can be mentioned among the deficiencies and key problems of nuclear and radiation safety of nuclear cycle facilities:

- continued ingress of liquid radioactive substances into the open industrial water basins/ponds at FSUE SHK, FSUE GHK, and FSUE PO Mayak without a proper definition of the legal status of the water basins or regulatory legal conditions of their use by the above mentioned enterprises;
- continued accumulation and interim storage of DAV-90 irradiated fuel assemblies without reprocessing at FSUE PO Mayak, FSUE SHK, and FSUE GHK;
- continued long-term storage of spent nuclear fuel of AMB type in the storage facilities of FSUE PO Mayak and the Beloyarsk NPP without fuel reprocessing;
- to this date not all nuclear fuel cycle facilities (NFCF) collect and condition radioactive waste in full compliance with the requirements of regulatory documents.

To ensure radiation safety of NFCF personnel and public, targeted budgetary financing is needed to resolve the problems related to reprocessing and disposal of the great amount of radioactive waste accumulated over many years of operation of these enterprises. The primary concerns are construction of radwaste vitrification plants, construction of LRW cementation systems, as well as development of medium and low-level waste reprocessing facilities.

SRW conditioning plants do not exist at many NFCF. SRW containers that are brought to storage do not often meet the safety criteria established by regulatory documents. Justified SRW storage time is not established. SRW processing plants should be constructed.

Solving the radwaste management problems, primarily the problems that were left unresolved by historic activities, is being planned in the framework of the federal targeted program.

The absence of the Federal Law on spent fuel and radioactive waste management that would establish the base principles of spent fuel and radwaste management and allocate au-
authorities and responsibilities to the bodies and organizations involved, as well as lack of any state concept for long-term storage/burial of spent fuel and radwaste also are significant deficiencies affecting efficient and safe spent fuel management.

It is important to develop and enact a federal law on the status and safe utilization of the territories and facilities exposed to radioactive contamination as a result of historic defense-related activity of the production association “Mayak”. The work related to the above problems was rather intensive in the industry.

Nonetheless, despite the above mentioned deficiencies, the status of nuclear and radiation safety at nuclear fuel cycle enterprises and facilities licensed by Rostechnadzor is generally assessed as satisfactory.

The terms and conditions governing the permitted activities at NFCFs in 2009 were mainly compliant with the requirements of applicable regulatory and technical documentation on nuclear and radiation safety.

2.2.3. Nuclear Research Installations

General information

In 2009 the Federal Environmental, Industrial and Nuclear Supervision Service (Rostechnadzor) performed regulation and supervision of nuclear and radiation safety of 75 nuclear research installations (NRI) in 19 operating organizations (OO) of various ministries and departments.

In the reporting year the Rostechnadzor Headquarters granted 33 licenses to operating organizations. The interregional territorial departments for nuclear and radiation safety supervision granted 10 licenses for activities at nuclear research installations.

Rostechnadzor issued licenses for the right to work in the field of atomic energy to the employees (personnel) of nuclear fuel cycle installations. In the reporting period the permits were obtained by — 13 top managers of nuclear fuel cycle installations (32 in 2008) from the Headquarters; — 67 employees of nuclear fuel cycle installations (87 in 2008) from ITD.

Inspection activity

In the reporting period 297 inspections (224 in 2008) were carried out to check the status of nuclear, radiation and technical safety of nuclear research installations.

466 (447 in 2008) violations of the requirements of the federal rules and regulations and other regulatory documents in the field of atomic energy were found by the inspections.

Orders were issued to clear 466 positions of improvement notices. Administrative sanctions were imposed on one occasion as a 3,000 rubles penalty.

The main cause of violations of regulatory requirements is insufficient control on the part of NRI management over the implementation of the necessary changes ensuing from the new NRI safety requirements.

Operational occurrences at nuclear research installations

Information of operational occurrences at nuclear research installations is reflected in operation and weekly ITD reports, reports of operating organizations on the investigation of operational occurrences at NRI, annual reports of operating organizations on NRI safety status.

In the reporting period no nuclear, radiation or technical accidents occurred at the supervised NRI. 13 operational occurrences were registered at nuclear research installations (24 in 2008) classified according to the “Regulations for the procedure of investigation and
accounting of operational occurrences at nuclear research installations” (NP-027-01). All NRI operational occurrences were classified as level zero INES (International nuclear event scale). There were no violations of safe operation limits and conditions.

Most operational occurrences (category P09) were due to NRI automatic trips caused by voltage oscillations and (or) maloperation of external power supply equipment (46 % of the total number of occurrences). That kind of occurrences do not lead to exceeding the safety limits and conditions of NRI or other nuclear facilities, which are located in the territory of the operating organization, though they affect operational stability of the NRI and cause lay-over of the NRI experimental facilities.

All operational occurrences at the NRI were properly investigated, and appropriate corrective measures were developed and implemented in order to prevent recurrence of similar events. Operational occurrences reports were reviewed by the Department for Safety Regulation of Nuclear Power Plants and Nuclear Research Installations and forwarded to SEC NRS for detailed analysis.

**Radioactive releases and discharges**

No radioactive substances were released or discharged to the environment at the Rostechnadzor supervised NRIs in quantities exceeding the established values, and radiation situation did not exceed natural background.

**Radiation burden on the station and external employees (personnel)**

No cases of occupational overexposure were observed during operational occurrences. Radiation burden on the permanent and temporary personnel was below the limits of control levels established at the enterprises.

**Nuclear fuel and radioactive waste management**

Management of fresh and spent nuclear fuel, radioactive waste and sources of ionizing radiation in operating organizations satisfies the requirements of norms and regulations in the field of atomic energy in general. One of the safety assurance problems is the problem of spent nuclear fuel and radioactive waste removal from the territory of operating organization and their subsequent disposal. The primary concern is the high cost of services charged for that kind of work by specialized facilities.

**Analysis of the operating organizations’ activity**

Operating organizations conduct the work related to technical re-equipment, safety, physical protection of nuclear materials and nuclear research reactors. According to the license conditions the work is conducted to analyze safety status of NRI complexes for compliance with the requirements of new enacted regulatory documents in the field of atomic energy. Nuclear safety commissions of operating organizations conduct internal safety inspections of NRIs on a yearly basis. All the supervised NRIs have emergency and emergency situation response plans; operating organizations have accident management plans and employees (personnel) and population protection plans. Emergency drills are conducted on a regular basis.

**General Assessment of Nuclear and Radiation Safety of NRI**

The status of nuclear, radiation and technical safety of NRIs is characterized as satisfactory on the basis of NRI licensing results and outcome of completed inspections. The system of regulatory documents on NRI safety meets the current IAEA requirements on the whole, and NRI inspection programs are consistent with international practices.
2.2.4. Nuclear Power Installations of Ships and Life Support Facilities

General features of marine nuclear installations

In 2009 Rostechnadzor exercised state regulation of safety and nuclear and radiation supervision of nuclear power installations of ships and life support facilities and also organizations that fulfill the work and deliver services for operating organizations.

Under the state supervision are 10 nuclear-powered vessels and 5 nuclear service ships (hereinafter referred to as NS vessels) of FSUE “Atomflot” with the State Nuclear Power Corporation “Rosatom”.

FSUE “Atomflot” operates and also provides for basing of nuclear-powered vessels and nuclear service ships, repairs of equipment of nuclear power installations, storage and reprocessing of radioactive waste (hereinafter called radwaste), transportation/loading and technological operations with nuclear fuel.

The status of nuclear and radiation safety at FSUE “Atomflot” meets the requirements of the federal norms and regulations in the field of atomic energy.

State supervision covers complexes of bench-prototypes of nuclear power installations of ships in the organizations of FSUE “A.P. Alexandrov NITI” and FSUE GNTs RF-FEI. No violations of federal norms and regulations in the field of atomic energy were found during operation of bench-prototypes.

No accidents or emergencies occurred in 2009.

Radiation safety assurance and organization of radiation control in the supervised organizations are arranged in accordance with the requirements of regulatory documents. No cases of occupational overexposure were recorded in the reporting period. Radiation burden on the permanent and temporary personnel was below the limits of control levels. Safety of personnel and public in terms of exposure to radiation factors was assured.

No unauthorized releases or discharges of radioactive waste were revealed. No radioactive contamination was recorded at the facilities or adjacent territories.

The status of nuclear and radiation safety and nuclear power installations of ships meets the requirements of the federal norms and regulations in the field of atomic energy and is assessed as satisfactory.

2.2.5. Radiation Hazardous Facilities

General Description of Nuclear Facilities

As of December 31, 2009 interregional territorial departments (offices) for nuclear and radiation safety supervision supervised 2,271 organizations (2,252 organizations in 2008), enterprises and institutions, which conducted their activities in the field of atomic energy and incorporated 4,738 stationary radiation sources, 1,438 radioactive substances and radioactive waste storage facilities, where operations were conducted with radioactive substances (RS), radioactive waste (radwaste) and radionuclide sources (RnS).

Among the supervised facilities were enterprises of aviation, metallurgical, shipbuilding, ship-yard and chemical industries, mining and processing industries, enterprises of the fuel and energy complex, geological and scientific organizations, military units and organizations of the Armed Forces of the Russian Federation, medical institutions, customs authorities and other organizations (hereinafter called organizations).

The total number of supervised organizations that operated in the field of atomic energy has stabilized and only slightly differs from previous reporting periods.

Nearly 40 % of the total number of supervised organizations do not have any departmental affiliation (JSC, closed JSC, LLC or organizations of other patterns of ownership).
Hence the problem of recognizing such organizations as operating organizations. At the same time the status of operating organization is one of the prerequisites for obtaining a license to operate in the field of atomic energy.

The total number of supervised organizations includes 49 regional and departmental information and analytic centers (RIATs, VIATs) belonging to the system of state control and accounting of radioactive substances and radwaste.

In 2009 the supervisory activity was focused on:
- inspecting potentially most hazardous radiation sources, radioactive substances and radioactive waste storage facilities, systems and means of radiation safety assurance;
- inspecting (monitoring) radiation hazardous activities carried out by organizations including the activities related to decommissioning of non-utilized or non-serviceable high-power radioisotope facilities and radioisotope thermoelectric generators (RITEG), timely recharging of the operating facilities and devices;
- supervision of RIATs activity and the system of physical protection of radioactive sources and radioactive waste storage facilities.

Over the reporting period 510 licenses were issued to organizations and 5680 permits to officials for the right to operate in the field of atomic energy.

The main activities of supervised organizations are:
- operation of radiation sources;
- operation of radiation substances and radwaste storage facilities.

State supervision covers:
1. Medical, scientific, research laboratories and other facilities, where operations with open radionuclide sources are practiced.
2. Complexes, facilities, devices, equipment and items with closed radionuclide sources including:
   - technological and medical irradiating installations;
   - fault detectors;
   - radioisotope instruments and other sources;
   - RITEGs.
3. Radioactive substances storage facilities including:
   - specialized storage facilities located mainly in Izotop organizations;
   - non-specialized storage facilities located at nuclear facilities.
4. Radioactive waste storage facilities including:
   - specialized storage facilities of FSUE “RosRAO” and Chepetsk mechanical plant;
   - non-specialized storage facilities located at nuclear facilities;
   - storage facilities containing radionuclide waste only of natural origin.

Inspection activity

State supervision over the status of radiation safety at radiation hazardous facilities was conducted by nearly 200 inspectors from 7 radiation safety supervision departments, 56 radiation inspection departments, 11 departments of nuclear and radiation safety and other directions of supervision, which were assigned these responsibilities by the management of interregional territorial departments for nuclear and radiation supervision (ITD NRS).

In 2009 2,212 inspections were conducted (2,869 inspections in 2008) of the status of radiation safety and physical protection at radiation hazardous facilities including 13 comprehensive, 1,962 target and 237 routine inspections.

The inspectors exercising supervision of radiation safety have practical experience from 1 to 10 years. Professional level of the inspectors is improved mainly through self-studies.
as part of the system of technical training, and also in workshops devoted to studying legal acts of the Russian Federation, regulatory documents on radiation safety, orders and resolutions of Rosatechnadzor.


Cooperation was in the format of joint inspections, accident investigation boards, control of import/export of radioactive substances and radwaste to the supervised territory and outside the territory; information exchange on the issues related to the sphere of competence of either party; development and implementation of joint plans, control of the implementation of radiation safety measures.

As a rule, inspections were carried out according to the schedule of activities of Rosatechnadzor. The main type of inspections during the supervision were target inspections (over 88% of the total number), which involved inspection of radiation safety issues according to the Type program of target inspection of the status of radiation safety at national projects (RD-07-13-2001).

Totally 2,831 safety violations were identified in the process of supervisory activities. Enforcement measures imposed following the results of the inspections were timely, adequate and effective.

The analysis of the causes of safety violations based on the results of supervisory activities is given below.

Classification of violations

Violations connected with the implementation of requirements in respect of:
1. Radiation safety — 1,825.
2. Physical protection — 344.
3. Accounting and control of radioactive substances and radwaste — 662.

The bulk of the identified violations of radiation safety requirements are administrative violations (44%) connected with the availability and maintenance of administrative/organizational documentation.

Inadequate implementation practices, absence of proper control, low documentation management culture are the causes of violation of federal norms and regulations in the field of atomic energy.

The activities of the supervised organizations are affected by structural changes in a number of organizations. In that case average time in service for one job position or one workplace does not, as a rule, exceed 2–3 years.

High personnel turnover in key job positions leads to inferior radiation safety, and eventually high percentages of human factor violations.

In the reporting period the focus of attention was on the quality of training and refresher training of the management and specialists of supervised organizations in the framework of procedure of issuing permits for the right to operate in the field of atomic energy.

In the reporting period 44 Class P-2 violations occurred in the operation of nuclear facilities.

The violations were connected with:
violation of process requirements by the personnel engaged in discharging ionizing radiation sources — 1 case;
road accident in transportation of UKT-1F — 1 case;
rupture of logging probe in geophysical survey incorporating radioisotope radiation sources — 19 cases (causes: tear and wear of some elements of logging probes, which cannot be identified during preparation for geophysical works, unsatisfactory preparation of wells, violations of technological practices during the works, geological complications);
quality of radiation monitoring when preparing metal scrap (identification of orphan ionizing radiation sources) for shipment to processing at LLC “Amurmetal” (Komsomolsk-on-Amur) — 20 cases (identification of local ionizing radiation sources in the metal scrap intended for removal to reprocessing);
other violations — 3 cases.

Control of the investigation process and subsequent analysis by the departments of investigation reports submitted by organizations showed that:
there were cases of personnel errors and violations of requirements for radiation-dangerous works;
violations were found with regard to requirements of regulatory documents on safe fulfillment of radiation-dangerous works;
measures designed to eliminate the causes and prevent violations were formal in nature, reporting documentation does not follow the established formats;
the deadlines established for investigation and delivery of current information are allowed to be missed, while conclusions of the board do not reflect actual causes of violations.

In the reporting period:
1. Overriding of the basic radiation dose limits for personnel and public was not recorded.
2. Inadmissible discharges and releases of radioactive substances did not occur.
3. Theft, loss or unauthorized use of radioactive substances were not revealed.
4. Unauthorized intrusion into the territory of a nuclear facility or unauthorized access to radioactive substances were not recorded.

Radwaste and radioactive sources management

On the territory of the Russian Federation collection, transportation, processing, conditioning and storage of radwaste were effected by FSUE MosNPO “Radon”, branches of the Federal Unitary Enterprise “Radioactive Waste Management Organization” “RosRAO” (FSUE “RosRAO”).

Transfer of radwaste by organizations, radwaste acceptance and storage by FSUE “RosRAO” branches were conducted according to the requirements of technical regulatory documents. Radiation environment at the facilities and in the control area is monitored by radiation monitoring laboratories. Radiation parameters exceeding permissible levels or environmental contamination were not registered.

In the reporting period replacement of old radiation equipment was continued. The rate of replacement depends on financial capabilities of the supervised organizations. Medical facilities of the country hold about 300 radiation heads of gamma-therapeutic instruments Rocus and Agate with depleted uranium protection.

Production facilities hold about 10,000 gamma flaw detectors and protective containers for ionizing radiation sources, whose biological shielding contains depleted uranium. Most gamma-therapeutic instruments and gamma flaw detectors are past their assigned service life and should be removed from service in the nearest future. In the territory of JSC “NIITFA” the mass of depleted uranium in the items and separate elements is continuously growing as a result of RITEG disassembly. Many items of protective equipment of depleted uranium are
municipal property or property of legal entities. There is reason to believe that the number of disposal requests from the owners will grow in the nearest future due to the end of assigned service life of the items and removal from service. Due to the absence of the system of collection and disposal of the above items they were occasionally found in metal scrap collection stations; finding them at the metal scrap recycling plants cannot be ruled out. JSC NIITFA and JSC VO Isotop have accumulated over 70 ton of depleted uranium protection.

The problem of disposal of depleted uranium items is still pressing and has not be resolved in the reporting period.

**Safety assurance of radiation hazardous facilities (RHS)**

Nuclear and radiation safety assurance in the organizations is compliant with the norms and requirements of regulatory documents.

The existing systems and components ensuring radiation safety (systems for transportation and fastening of closed radionuclide sources, radiation sources control, signalization and radiation accident alert, interlocks, physical barriers, power, heat, water and gas supply systems, ventilation and fire safety systems) mainly comply with the design and regulatory requirements and are in good working order.

Maintenance and replacement of overage equipment in oncologic dispensaries were conducted by specialized organizations holding relevant licenses and accredited laboratories.

Analysis of the implementation of radiation safety requirements demonstrates that capabilities of supervised organizations are not equal.

In most organizations operation of radioactive sources and management of radioactive substances and radwaste meets the requirements of regulatory documents in the field of atomic energy. Still FSUE “Hydrographic Enterprise” supervised by Far Eastern Interregional Territorial Department (FEITD) and North-European Interregional Territorial Department (NEITD) and FSUE “RNTs “Prikladnaya Khimiya” supervised by NEITD have not demonstrated notable improvement in radiation safety arrangements.

The bulk of the violations that were not remedied on time are mainly connected with insufficient finances available with the organizations for construction and installation, removal of radioactive sources from service, procurement of radiation equipment, replacement of overage closed radionuclide sources and transfer for long-term storage (disposal) of radioactive waste, maintenance and technical examination of the equipment and systems ensuring radiation safety.

That is primarily characteristic of state-financed organizations under federal control, state-financed organizations of the subjects of the Russian Federation, as well as some joint stock companies.

Radiation monitoring (RM) in the supervised organizations was carried out taking into account the RHF category in terms of potential radiation hazards and class of activity by regular radiation monitoring services or assigned responsible persons and sometimes by other organizations licensed by Rostechnadzor for that kind of services.

Radiation burden on personnel in 2009 did not exceed reference levels.

Reference levels established for the controlled parameters of radiation factors were not exceeded. Radionuclide discharges and releases in the environment did not exceed the permitted values.

Qualification level of personnel involved in RHF operation and monitoring of radiation safety is established in the course of inspections and complies with the current applicable requirements.
The measures aimed at improvement of RHF physical protection included the measures of administrative nature (documents development and review) and engineering nature (improvement of security alarm system, protection barriers, security forces, etc.). The status of physical protection in the supervised organizations ensures integrity of radioactive sources, radioactive substances and radwaste. Radiation sources are stored in specially allotted and furnished premises equipped with the alarm system, which is controlled from the security console. Organizations are making analysis of the existing physical protection systems for their compliance with the requirements of federal norms and regulations and measures are being taken to clear the deficiencies and faults found by the inspections.

The level of preparedness for elimination of radiation accidents and their effects is defined by the availability of the list of potential accidents during the licensed activity and their anticipated effects, availability of sufficient and adequate equipment and emergency stock compliant with the approved specification, training program and methods of emergency drills, and the skills acquired by personnel in the course of the drills.

All organizations developed action plans for personnel protection, have emergency response instructions for personnel, envisaged emergency stock, whose volume is defined in consultation with the Federal Supervision Service for Consumer Rights Protection and People Welfare. These documents define emergency situations (fragments of initiating events) and personnel actions in case of emergency.

The analysis of the inspection activity in 2009 shows that the main factors adversely affecting the status of radiation safety of radiation hazardous facilities are:

- depreciation of machinery and equipment used in activities with radioactive substances (RS) and radioactive waste (RW);
- the need to remove from service overage high-power radioisotope installations and overloading of operating radioisotope installations;
- noncompletion of the system of state accounting and control of radioactive substances and radwaste in the subjects of the Russian Federation;
- occasionally inferior quality performance of the organizations that deliver services to operating organizations;
- persistent disposal problem of depleted uranium items;
- unused and unserviceable RITEG disposal problem (including failed items);
- the problem of accumulation and unjustifiably long storage in organizations of the sources that are past their assigned service life mainly due to limited financial possibilities;
- replacement/extension of assigned service life of closed radionuclide sources of metrological designation in military units;
- absence of legal status of underground nuclear blasting facilities.

The analysis of radiation environment shows that:

- the systems and elements important to safety (travel and fixation of radionuclide sources, control of radioactive sources, radiation accident signalization and alarm annunciation, interlocks, physical barriers, power, heat, water and gas supply and ventilation, etc.) assured safety of personnel and the public;
- radiation burden on personnel did not exceed reference levels, which is evidence of reliability of the existing protection against external radiation;
- radiation hazardous facilities have a number of radiation safety systems that do not fully meet the requirements of the existing regulatory documents and require replacement or upgrading;
- radiation safety requirements are being implemented by organizations, the violations observed did not lead to overexposure of personnel or the public;
radiation factors produced by technological processes at workplaces (releases, discharges, contamination, induced activity) do not have impact on the public or personnel in excess of permissible values.

As a result of completed inspections and reviews the status of radiation safety at the organizations operating radioactive sources is characterized as satisfactory.

In the reporting period the activity aimed at construction of RAIS 3.0 regulator information system was continued.

On the whole Interregional Territorial Departments carried out their activities governed by the authority as defined by the Regulations for the Federal Environmental, Industrial and Nuclear Supervision Service, which allowed maintaining the achieved safety level of radiation hazardous facilities.

2.2.6. Systems of State Accounting and Control of Nuclear Materials, Radioactive Substances and Waste

2.2.6.1. Systems of State Accounting and Control of Nuclear Materials

In the framework of supervision of the state nuclear materials accounting and control system the Federal Environmental, Industrial and Nuclear Supervision Service exercises supervision of 54 organizations comprising 284 nuclear materials balance areas (MBA). In total, 24 organizations and 88 MBAs are classified as nuclear materials category 1, 2 organizations and 11 MBAs — as category 2, 3 organizations and 13 MBAs — as category 3, and 25 organizations and 172 MBAs — as category 4.

Totally in 2009, 86 target and 157 routine inspections were conducted to check the status of nuclear materials accounting and control. Nearly 16 % inspections (39) were carried out using technical aides (inspection measurements by non-destructive test instruments). 197 violations of federal norms and regulations and 43 violations of license conditions were revealed. One administrative penalty was imposed in the total amount of 30,000 rubles.

Analysis of the implementation of requirements for nuclear materials control and accounting in organizations

The analysis of all the violations observed demonstrates that the majority of violations were related to the access control system, measurement system, nuclear materials accounting and control arrangements in the organization. The results of the analysis are presented in the table.

<table>
<thead>
<tr>
<th>Violation category</th>
<th>Percentage, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>General accounting and control requirements</td>
<td>5</td>
</tr>
<tr>
<td>Organization of nuclear materials balance areas</td>
<td>6</td>
</tr>
<tr>
<td>Access control system</td>
<td>13</td>
</tr>
<tr>
<td>Measurement system</td>
<td>18</td>
</tr>
<tr>
<td>Nuclear materials transfers</td>
<td>6</td>
</tr>
<tr>
<td>Physical inventory</td>
<td>14</td>
</tr>
<tr>
<td>Maintenance of accounting and reporting documentation</td>
<td>14</td>
</tr>
<tr>
<td>Organization of accounting and control system</td>
<td>21</td>
</tr>
<tr>
<td>Personnel training and testing</td>
<td>3</td>
</tr>
</tbody>
</table>

Theft, loss or unauthorized use of radioactive substances were not registered in 2009.
The deficiencies observed in the nuclear materials accounting and control systems were caused by:
- insufficient attention on the part of the management to the issues of nuclear materials accounting and control;
- low level of knowledge and inadequate training and education of personnel in the field of nuclear materials accounting and control;
- inadequate quantity and quality of guidances related to nuclear materials accounting and control practices;
- unharmonized and controversial industry standards inconsistent with the federal norms and regulations.

### 2.2.6.2. The system of State Accounting and Control of Radioactive Substances and Radioactive Waste

In the framework of supervision of the system of state accounting and control of radioactive substances and radioactive waste the Federal Environmental, Industrial and Nuclear Supervision Service supervises 1,352 facilities.

Totally 845 inspections were carried out over the year, which served to check the status of accounting and control of radioactive substances and radioactive wastes. 735 violations of federal norms and regulations and license conditions were observed. Four administrative penalties were imposed in the total amount of 12,500 rubles.

Analysis of the implementation of requirements for control and accounting of radioactive substances and radioactive waste.

The analysis of all violations observed demonstrates that the majority of violations were related to the radioactive substances and radioactive waste measurement system, keeping accounting documents and submission of reporting documents, requirements for radioactive substances and radioactive waste accounting and control arrangements in the organization.

**The deficiencies in the radioactive substances and radioactive waste accounting and control systems were caused by:**
- insufficient attention on the part of the management to the issues of radioactive substances and radioactive waste accounting and control;
- low level of knowledge and inadequate training and education of personnel in the field of radioactive substances and radioactive waste accounting and control;
- absence of guidances related to radioactive substances and radioactive waste accounting and control practices at the facilities.

### 2.2.7. Mining facilities

#### 2.2.7.1. Coal Industry

In 2009, 157 (operating) mines, 185 open pit mines, and 62 enrichment and briquetting factories were subject to the state control in the field of industrial safety. Also, 815 controlled facilities were in operation. The overall coal output in 2009, as compared to 2008, decreased by 17.68 million tons and amounted to 301.79 million tons (108.41 million tons were mined underground, and 193.38 million tons — from open pits). The average headcount of the employees involved in the coal industry amounted to 184,370.

The general condition of industrial safety in the coal industry facilities has improved in 2009, as compared to 2008. In 2009, nine accidents occurred at the enterprises under supervision, two accidents involving group casualties, and two group casualties without accidents (12 persons were injured in accidents and group casualties, 5 of them were fatally injured). The total number of fatally injured was 48 persons.
The year 2008 saw 12 accidents, 5 accidents with group casualties, and 2 group casualties without accidents (43 persons were injured in accidents and casualties, 14 of them were fatally injured). The total number of fatally injured was 53 persons. With the decrease of accident rate by 25%, the fatal injury rate dropped by 10%. In the reporting year, 8 of 9 accidents occurred underground, and 1 — on the surface. The overall damage incurred by accidents amounted to 619,194,000 rubles.

In 2009, the number of accidents due to sudden coal, rock and gas bursts, bounces, sloughing, and lining failures was smaller, yet the number of fires, flashes, and gas and dust explosions rose.

In the course of underground works, the number of fatal injuries caused by rock collapses, transportation accidents, and falls increased, however, the number of fatal injuries caused by electric shock and operation of machines and mechanisms decreased. In open pit mining, the number of fatal injuries caused by electric shock and operation of machines and mechanisms increased, while the number of those, caused by falls and contamination, decreased.

<table>
<thead>
<tr>
<th>Territorial Body</th>
<th>Number of accidents</th>
<th>Number of fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
<td>2009</td>
</tr>
<tr>
<td>1. South-Siberian Department</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>2. Transbaikalia (Zabaikalskoye) Industrial Environmental Supervision Department (IESD) (Buryatia)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>3. Yenisei IESD (Khakassia)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4. Lower Don Department</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>5. Sakhalin region IESD</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>6. Far-Eastern IESD</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>7. Lena IESD (Sakha Republic)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>8. Ural IESD</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9. Pechora IESD</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total in the coal-mining industry:</strong></td>
<td><strong>12</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal production, millions of tons</th>
<th>Number of accidents</th>
<th>Number of fatally injured, persons</th>
<th>Fatal injury rate, persons per million of tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>254.2</td>
<td>34</td>
<td>115</td>
<td>0.45</td>
</tr>
<tr>
<td>2001</td>
<td>266.4</td>
<td>34</td>
<td>107</td>
<td>0.40</td>
</tr>
<tr>
<td>2002</td>
<td>234.2</td>
<td>27</td>
<td>83</td>
<td>0.35</td>
</tr>
<tr>
<td>2003</td>
<td>270.3</td>
<td>30</td>
<td>99</td>
<td>0.37</td>
</tr>
<tr>
<td>2004</td>
<td>284.5</td>
<td>33</td>
<td>148</td>
<td>0.52</td>
</tr>
<tr>
<td>2005</td>
<td>300.2</td>
<td>27</td>
<td>107</td>
<td>0.36</td>
</tr>
<tr>
<td>2006</td>
<td>294.1</td>
<td>23</td>
<td>68</td>
<td>0.23</td>
</tr>
<tr>
<td>2007</td>
<td>316.0</td>
<td>21</td>
<td>232</td>
<td>0.73</td>
</tr>
<tr>
<td>2008</td>
<td>319.47</td>
<td>12</td>
<td>53</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>2009</strong></td>
<td><strong>301.79</strong></td>
<td><strong>9</strong></td>
<td><strong>48</strong></td>
<td><strong>0.15</strong></td>
</tr>
</tbody>
</table>
Analysis of Basic Indicators of Supervisory activity

<table>
<thead>
<tr>
<th>Indicators of supervisory and monitoring activity</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of organizations under supervision (juridical persons)</td>
<td>758</td>
<td>822</td>
</tr>
<tr>
<td>Number of facilities under supervision</td>
<td>869</td>
<td>815</td>
</tr>
<tr>
<td>Number of inspectors (actual), persons</td>
<td>159</td>
<td>150</td>
</tr>
<tr>
<td>Number of inspections held</td>
<td>17,861</td>
<td>14,174</td>
</tr>
<tr>
<td>Number of violations revealed</td>
<td>104,042</td>
<td>90,669</td>
</tr>
<tr>
<td>Administrative penalties imposed, total</td>
<td>6,278</td>
<td>5,221</td>
</tr>
<tr>
<td>Including fines</td>
<td>6,103</td>
<td>5,003</td>
</tr>
<tr>
<td>Total sum of fines imposed, thousand rubles</td>
<td>18,777.9</td>
<td>1,202,342.7</td>
</tr>
<tr>
<td>Cases handed over to law-enforcement bodies against infringers of industrial safety requirements</td>
<td>107</td>
<td>84</td>
</tr>
</tbody>
</table>

Analysis of generalized causes of accidents and fatal casualties in coal-mining facilities indicates that the majority of those are associated with unsatisfactory process and production discipline, violation of controllability over labor safety, and lack of effective departmental monitoring at work sites, insufficient professional training of the executors. In 2009, the basic factors of fatal traumatism during underground works included sloughing, lining failures, transportation accidents, and falls. In open pit mining and on the surface, those included operation of machines and mechanisms, and electric shock.

The causes of injuries were improper organization of work, violation of work process and of the requirements of design-engineering documentation by the executors, poor knowledge of industrial safety requirements.

In the mines, the causes of accidents leading to fires, flashes of gas and coal dust are gas pollution of mine tunnels, improper airing. Collapses of coal, rock and lining are caused by violations of mining operation certificates, improper organization of work. All process operations feature low level of production monitoring.

The primary tasks that should be fulfilled in coal-mining industry and that directly affect the state of industrial safety consist in reconstruction and technical re-equipment of mines and open pit mines. As far as the mines are concerned, renovation of key assets (replacement of primary airing ventilators, stationary machines and equipment, fitting out the mines with new air and gas monitoring equipment, fire-resisting belts, solving the problems of degassing coal beds for stabilizing gas situation) and the use of new technologies and machinery for mining works are the issues of first priority.

Description of Major Accidents that Occurred in 2009

14.02.2009. The accident in LLC “Voroshilov Mine” of JSC Prokopievskugol (Prokopiesk) — explosion of methane-air mixture in isolated area of taking-out gallery II of Goreliy site from crosscut No. 17 at horizon —40m “North”. When carbon oxide was detected in taking-out gallery II of the mine, the paramilitary rescue unit was summoned up for “Fire” accident. Two workers of the Prokopievsk Branch Paramilitary Rescue team who examined the accident section found themselves in the explosion area. The source of the heat pulse was activation of the seat of fire No. 378 written-off on 29.11.1959, its transfer through worked-out space to horizon +60 m, and its development during mining works in taking-out galleries I and II.

Causes of the accident:
1. Accumulation of explosive concentration of methane in not worked-out part of taking-out gallery II due to violation of coal recovery process by hydraulicking system in section No. 12 and erection of not blastproof bulkheads not envisaged in the recovery section certificate.

2. Performing of second working beneath the written-off fire without development of additional measures, when the path of the written-off fire was actually connected with the second working in taking-out galleries I and II.

3. Lack of control over self-heating seat of coal in an isolated area of worked-out horizon, although subterranean survey was performed, gas anomalies were detected on 23.10.2008, and temperature rise was observed during work in taking-out gallery I of Goreliy site.

06.04.2009. The accident at Korkinskaya mine of coal-mining JSC Chelyabinsk Coal Company — during the delivery from the dismantling chamber of face No. 52 of linear frame of belt conveyor “Anzhera-26,” the flash of methane-air mixture occurred in the ventilation gallery when the winch was turned on. Four persons got burns of a different extent of severity.

Causes of the accident:
1. Sudden release of methane in ventilation gallery of face No. 52 exceeding permissible concentrations.
2. Violation of electrical equipment explosion safety in ventilation gallery of face No. 52 in the location that was not determined by the commission.
3. Connection of starting equipment and use of winches in the ventilation gallery in the absence of automatic stationary methane monitoring equipment and the equipment for automatic disconnection of electrical power from the loads if methane concentration is impermissible.

01.05.2009. The accident in LLC “Sakhalinugol-6” of Management Company “Sakhalinugol” (Sakhalin). During the operation of coal-plough machine in the upper part of face 822, the coal collapsed causing damage of the power cable and, as a result, the arc discharge and subsequent ignition of methane-air medium and fire of the coal beds. At the moment of the accident six persons were in the area, one of whom got burns on his arms and face.

Causes of the accident:
1. Cable damage by collapsing coal and generation of electrical arc discharge.
2. Sudden increase in methane escape in the upper part of face 822 due to dip of the main roof with simultaneous appearance of ignition source.
3. Ignition of methane-air medium and coal beds at the junction of face 822 and ventilation gallery 822.

The following is required for improvement of industrial safety in coal-mining industry and with the purpose of perfection and enhancement of emergency protection effectiveness:
1. Increase the share of degassing in gas balance of the mines by introducing various degassing methods.
2. Equip belt conveyors with fire-resistant belts (of TG, TS types).
3. With the aid of branch basin R&D, design and technological institutes:
   develop and introduce technologies for reducing endogenous fire hazard of worked-out areas of breakage faces;
   promote the research of the processes of methane accumulation and burning in worked-out areas, and its transfer into operating mines where explosion hazard exists;
conduct the survey for optimal technical decision pertaining to reconstruction of ventilation schemes and conversion of inclined fields of operating mines to gradient airing scheme providing safer rescue operations and greater degree of controllability of ventilation modes;

ensure field supervision by design organizations over implementation of design solutions pertaining to commissioning in accordance with the developed projects required for ensuring industrial safety of capital construction facilities.

4. Modernize the resource base of branch basin R&D, design and technological institutes for further scientific, design, and research activity for the purpose of ensuring safe mining operations in highly gas-bearing coal beds.

5. Develop and deploy in the coal mines dust removal units for mining recovery equipment enabling localization and removal of coal and rock dust in the cutting area of the coal-plough machine driven element to reduce the dustiness in mine tunnels during preparatory and second working.

6. Complete the equipping of coal mines with:
   new generation air-gas monitoring equipment;
   dust and explosion safety monitoring equipment for mine tunnels;
   supervisory control, accident warning systems, equipment for searching people who met with an accident;
   geoseismic monitoring systems.

7. Develop process flow sheets of opening-up and preparing the recovery fields for ensuring safe escape of the people from the mine in case of an accident during the period of self-rescue breathing apparatus protective operation, or take measures to develop other more reliable self-rescue means.

8. Develop the system of education, training and refresher training of mining industry specialists.

2.2.7.2. Ore Mining and Non-metallic Industry, Facilities of Underground Construction

In 2009, the state mining supervision in the facilities of mining raw material production and processing, as well as in the facilities of underground construction, was exercised in 6,605 organizations.

In all, 133 underground mines, 7,140 ore mining pits of the ferrous, non-ferrous, gold mining industries, and generally used mineral pits, 1,807 concentration, crushing, grading and sintering factories, 325 underground construction facilities of transport and special purpose were supervised.

13,063 facilities under supervision were in operation. As compared to 2008, the annual output of the mining mass increased by 62.9 million m$^3$ and in 2009 it amounted to 1,532.8 million m$^3$, including:

- in mines—125.0 million m$^3$ (103 % of 2008 level);
- in open pits — 1,407.8 million m$^3$ (90 % of 2008 level).

The average payroll number of the staff in the mining industry was 571,385 persons.

The activity of the mining supervision bodies in 2009 was directed at detection and prevention of causes and conditions leading to accidents and occupational injuries, enhancement of the state supervision over fulfillment of the requirements of safe mining activities.

In 2009, 14,547 examinations were performed; 99,516 failures to comply with the safety regulation were ordered to be rectified. In accordance with the Code of Administrative Infractions, 4644 administrative penalties were imposed, among those 4590 juridical per-
sons, managers and specialists of the supervised organizations were called to administrative account, and the cases of 91 persons were handed over to the investigating authorities.

<table>
<thead>
<tr>
<th>Basic Indicators of the Supervisory and Monitoring Activity of Territorial Bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators of supervisory and monitoring activity</td>
</tr>
<tr>
<td>Number of organizations under supervision</td>
</tr>
<tr>
<td>Total number of workers in organizations under supervision, persons</td>
</tr>
<tr>
<td>Number of inspectors (actual)/by-workers, persons</td>
</tr>
<tr>
<td>Number of inspections held</td>
</tr>
<tr>
<td>Number of violations revealed</td>
</tr>
<tr>
<td>Number of persons called to administrative account for violations of safety regulations</td>
</tr>
<tr>
<td>Total sum of fines imposed, thousand rubles</td>
</tr>
<tr>
<td>Cases handed over to investigation bodies against infringers</td>
</tr>
</tbody>
</table>

It should be noted, that, compared to 2008, the number of workers in relation to whom punitive measures were taken in accordance with the Code of Administrative Infractions of the Russian Federation decreased by 12 %, and the sum of fines decreased by 16 %.

The decrease in the number of inspections in the reporting period was due to uneven operation of supervised enterprises.

In 2009, the indicators of supervisory activity intensity were slightly lower. This was caused by the increase in the number of supervised facilities and the decrease in the number of inspectors involved in supervision over ore-mining and non-metallic industrial facilities. On the whole in the industry, basic indicators of supervisory and monitoring activity as per one inspector practically remained at the same level. This is associated with undertaken measures for enhancing the efficiency of supervisory activity: more rational use of working hours owing to long-term planning of supervisory activity, high-quality examination of supervised enterprises, raising the level of inspectors’ competence, and other factors.

The decrease in quantitative indicators of supervisory activity is caused by departure from the practice of evaluating the inspector’s activity by gross number of detected violations but paying more attention to the depth and significance of the issues of ensuring industrial safety raised by Rostechnadzor officials. Based on the analysis, the most frequent violations include deviations from the design during operation of the facility, failure to implement roof timbering and control, ventilation designs during operation of the pit transport.

At present, due to lack or economy of financial assets, facility owners practically do not solve the problems associated with liquidation of hazardous production facilities: timely development and review of design documentation for liquidation of hazardous production facilities, carrying out technical works for liquidation, etc. As a result, the hazardous production facilities become unsupervised and pose certain hazard to human lives and the environment. Such a situation became possible due to the fact that the existing legislative and regulatory technical documentation lacks clear requirements regulating the issues of liquidation of hazardous production facilities, including those pertaining to the deadlines after decommissioning of hazardous production facilities, and specific administrative responsibility of the owners of the enterprises operating hazardous production facilities for failure to fulfill the requirements of regulatory and legislative documents on the issues of liquidation of hazardous production facilities.
Industrial safety level in a number of ore-mining and non-metallic industrial facilities continues to go down, which is due to obsolescence and aging of basic production assets of mining, crushing and sorting equipment, buildings and structures during the setback in production caused by the world financial crisis.

2009 was marked by growth of accident and injury rate at hazardous production facilities of ore-mining industry: 71 fatalities versus 63 in 2008, and 9 accidents in 2009 versus 7 in 2008.

In principle, the main causes of injuries and accidents have common nature of their origin: insufficient proficiency level of immediate work doers, low quality of engineering support of mining operations complemented with unsatisfactory level of labor and process discipline, and serious deficiencies in the function of the production control.

**Accident rate in 2009.**

Nine accidents occurred in 2009. The number of accidents, compared to 2008, rose by 2 cases (23%).

The share of accident rate in the mining industry and in construction of various underground structures in 2009 amounted to 5.7% of the total number of accidents in the facilities supervised by Rostechnadzor.

The material damage incurred by accidents amounted to 6.409 million of rubles (290.86 million of rubles in 2008).

In the accidents, 10 persons were injured, 5 of them fatally injured, while in the previous year 4 were injured and 2 were fatally injured.

In 2009, the accident rate of open-cut mining activities was twice as high as in 2008 (4 accidents in 2009 versus 2 accidents in 2008). The accident rate for the underground displayed the tendency towards the growth: 5 accidents occurred (in 2008 there were 4 accidents, and 2 accidents — in 2007). No accidents occurred at crushing and concentration factories.

In 2009 two accidents resulted from fires.

Two accidents occurred in open pits during operation of mining transport and were associated with falls of dump trucks from the banks.

It should be noted that none of the accidents were associated with faulty technical condition of the engineered features.

Two accidents were caused by rock failures, and one resulted from bounce effects.

In 2009, the accidents were, for the most part, caused by organizational factors, inefficiency or lack of production control over observation of industrial safety requirements, violations of safety regulations, process and labor discipline, careless or unauthorized actions of the work doers.

In 2009, 71 persons were fatally injured at ore mining facilities (versus 63 in 2008), which constituted 14.1% of the total number of events registered by Rostechnadzor.

Analyzing the spread of the fatal injury cases among the mining industry branches, it should be noted that the number of fatal injuries in the gold mining and processing facilities significantly increased. The growth of fatal injury rate was also observed at the ferrous metallurgy facilities, and construction material mining and reprocessing enterprises.

Fatal injury rate still remains high in the agrochemical complex.

In 2009, fatal injury rate decreased at non-ferrous metallurgy and nickel mining facilities.

During the period under review, the most injury-risk works were underground mining activities, in the course of which 37 incidents occurred. Fatal injury rate at concentration, crushing and sorting factories more than doubled (9 incidents in 2009 versus 4 — in 2008). Fatal injury rate in open pit mining remained at the previous level.

In 2009, the most injury-risk factors were loose rock pieces, as well as those related to operation of process transport and equipment.
As a result of rock failures 18 persons were injured in 2009.  
20 persons were killed while operating motor transport, bulldozers, and railroad transport.  
The casualties primarily resulted from:
  - collisions of vehicles, bulldozers and railway transport with the personnel due to negligence of elementary safety and traffic regulations and were caused by both drivers and the injured persons;
  - downfall (upset) of vehicles from the banks and open pit roads.
In 2009, the injury rate due to falling from a height increased almost two-fold. 13 persons were fatally injured due to this cause in 2009.
The main cause of injuries consisted in most blatant violations of the industrial safety both by the managerial personnel and by the injured persons themselves, disregard of individual protection means and elementary safety requirements, working without guard railings, deficiencies in organization of works.
Fatal injury rate due to misuse of engineered features is still high. In 2009, the injury rate caused by this factor increased (13 casualties versus 9 in 2008).
In 2009, the fatal injury rate connected with electric shock remained at the previous level. Six persons were fatally injured due to this cause in 2009, which amounts to 8.5 % of the total number of casualties caused by production-related accidents in the mining branch.
For the most part, these injuries were the sequence of non-compliance with organizational-technical provisions ensuring safety of work during maintenance and examination of electrical equipment and grids.
Analysis of generic causes of casualties, following the review of investigation reports, showed that the casualties resulting from organizational (organizational-technical) factors made up the overwhelming majority.
The great part of technical causes consists of deviation from the requirements of design and process documentation, non-compliance of design solutions with production and safety assurance conditions, as well as of unsatisfactory technical condition of engineering structures, use of faulty equipment. About 80% of technical causes are related to human factor, i.e., over 92% of all casualties relate to human factor, which is a dominating one among the causes of fatal injuries.
Distribution of primary causes of accidents and fatal injuries is as follows:
  - 15% — violations of work processes;
  - 27% — improper organization of works;
  - 30% — ineffective production control;
  - 18% — breaches of production discipline;
  - 10% — poor knowledge of safety codes.
As before, the main causes of accidents and fatal injuries were low level of engineering culture of the production, weak labor and process discipline, insufficient effectiveness of the function of the production control in the hazardous production facilities, in some cases, the lack of deep analysis of the causes of investigated cases of injuries and accidents, the use of simplified formal measures following the investigation performed, as well as, in a number of cases, low quality or the absence of working documentation for the main and ancillary production processes.
Mine-rescue services of mining activities are rendered by branch paramilitary rescue services of Federal State Department Paramilitary Mine-Rescue Units in Construction Management, FSUE SPO Metallurgbezopasnost, rescue services of mining enterprises, rescue units of joint-stock companies of Agrohimbezopasnost of JSC Agrohiminvest, JSC “Industrial Safety,” and LLC “Emergency Service of Siberian Paramilitary Mine-Rescue Units”.

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As compared to 2008, the technical outfit of rescue teams of Federal State Department Paramilitary Mine-Rescue Units in Construction Management improved significantly. Obsolete oxygen breathing apparatuses, oxygen and air boosters, as well as operational motor vehicles were completely replaced.

New air boosters of KDV-30 type, three-stage Junior compressors, and four-stage Nardi Atlantik E-100 compressor, blast-proof helmet-worn rechargeable battery lights SGG-9G, mine-rescue communication means were introduced. All units were provided with modern multi gas analyzers of MX2100 type for rapid air analysis, and Gas Badge devices. Individual protection means (special clothing and footwear, including those used for work with hazardous chemicals) were renewed as scheduled.

Computerization of the development of accident elimination plans at mining facilities continues. Internet system “Joint Database for Accident Elimination Plan” incorporating the module of automatic renewal, receipt, and transmission of the database was developed. FSUE SPO Metallurgbezopasnost developed and conducted field tests of emergency rescue installation ASU-1. Since 2008 these installations have been delivered to the branch paramilitary rescue units.

In 2009, in accordance with the instruction of Office of Government of the Russian Federation, ref. No. P16-29880 dated 07.09.2009, concerned federal executive authorities were preparing the materials on transferring Federal State Department Paramilitary Mine-Rescue Units in Construction Management and FSUE SPO Metallurgbezopasnost under the jurisdiction of EMERCOM of Russia.

At present, professional paramilitary rescue units render services to 978 hazardous production facilities.

The primary problem degrading the effectiveness of professional paramilitary rescue units’ activity in rescuing human lives, accident elimination, conducting preventive and technical works aimed at accident prevention at customer enterprises is incomplete manning of professional paramilitary rescue units rendering services to major mining and metallurgical enterprises, which leads to lower combat readiness in rescuing human lives and accident elimination.

2.2.8. Survey Activities and Safe Use of Mineral Wealth

In the course of monitoring actions in the area of safe conduct of works related to the use of mineral wealth, survey support of mining works, Rostechnadzor territorial bodies paid the primary attention to availability at the organizations of licensing documentation envisaged by the legislation, including licenses for using mineral wealth and conducting surveys, mining allotment documentation, established geologic and survey documentation, as well as to safe condition of mining allotments, conduct of mining activities in accordance with the design documentation for development of mineral deposits and plans for mining activity development, mining-environmental monitoring at the deposits under development, proper protection of buildings, structures and natural facilities against adverse impact of mining, proper arrangement and subsequent monitoring of works in hazardous areas, arrangement of observations of shifting of strata and earth surface, fulfillment of the established requirements for liquidation and preservation of excavations and mine tunnels, execution by survey services of specialized surveys, including profiling of vertical pit-shafts, verification of geometrical elements of lifting complexes, etc. Special purpose inspections of fulfillment of the established requirements to safe keeping of facilities located at the sites of mineral deposits were conducted.
In the reporting year, the supervised enterprises were checked for licensee’s observation of the license requirements and conditions when performing surveying activity. The main of the detected violations of the license requirements and conditions are as follows: mine survey services of the organizations lack specialists having postsecondary vocational education in “mine survey” specialty; tardy professional development of personnel involved in mine survey activity; metrological verification of mine survey instruments and tools are not performed on time; mining works are carried out in hazardous areas and with violations of the established requirements.

Most frequent violations include: failure to timely prolong the license for mine survey activities; mineral wealth users do not have the design documentation for mine survey activities; lack of books of geological and mine survey instructions and hazardous areas, registration logs of geodetic and mine survey reference grid condition; violation of timeframes and procedures of observations of undermined facilities and the condition of pit ledges, slopes, banks, and dumps; lack of proper production control over mine survey activities; violations of the established requirements when keeping the logs of field measurements and calculations; poor quality of preparing mining graphic documentation. In some cases, deviations from the requirements of regulatory documents were revealed in subcontractors’ substantiation of adjusted borders of mine allotments at open mining facilities.

Monitoring of observation of the established requirements for liquidation of the facilities of mineral wealth use revealed some cases when, due to lack or economy of financial assets, mining facility owners did not solve the problems associated with timely development, approval, and implementation of the projects of liquidation of facilities of mineral wealth use. As a result, the hazardous production facilities become unsupervised and pose potential hazard to human health, lives and the environment.

In accordance with the current legislation liquidation and preservation of mining enterprises and facilities shall be carried out at the expense of the enterprises using mineral wealth. However, the procedure for creating liquidation funds of the enterprises from the commencement of mineral deposit development, build-up and use of their assets is not established.

Control over mining activities in hazardous areas became weaker at Kotinskaya mine; the projects for mining activities in hazardous areas were not revised at JSC Raspadskaya, Taldinskaya-West 1 and Taldinskaya-West 2 mines (South-Siberian Department).

Organizations involved in extraction of alluvial gold (North-Eastern, Far-Eastern Departments) and generally-found minerals (Upper Don Department) conducted geological and mine survey activity randomly and not in full scope.

One of the primary problems pertaining to mine survey support of mining activity at controlled enterprises continues to be the shortage of specialists having postsecondary vocational education in “mine survey” specialty. The practice, when one surveyor renders contracted services to several enterprises, still exists, which deteriorates the quality of mine surveys.

A number of enterprises supervised by South-Siberian Department (JSC Suez-Kuzbass, LLC Prokopievskoye, JSC Yuzhkuzbassugol Management Company, JSC Yuzhniy Kuzbass Management Company, JSC SDS-Ugol, and other) are not manned with surveyors in accordance with the manning tables. Geological services of the enterprises are not fully manned.

Rostechnadzor territorial bodies note deterioration of quality of geological support of mining activities.

One of the primary tasks of the state mining supervision bodies aimed at enhancement of industrial safety at supervised enterprises consists in ensuring that mining activities are
carried out in accordance with approved design documentation, as well as in improving the quality of the design documentation and providing strict adherence to its requirements.

Submission by organizations of inadequate data about minerals prospected, extracted from, and remaining in the deposits, late definition of hazardous areas, distortion of mine survey documentation, and its inconsistency with actual condition of excavations, loss of mine survey information shall be legislatively referred to gross violations of license requirements and conditions by the licensee involved in mine survey activities.

2.2.9. Facilities of Oil and Gas Producing Industry

In 2009, 13 large holdings and 165 oil and gas producing companies produced oil and gas in the Russian Federation in 2008.

Operating oil well stock is about 160 thousand wells.

In 2009, 488.5 million tons of oil with gas condensate were produced, in 2009, production volume rose by 1.2 % as compared to 2008 value.

Gas production in Russia last year fell by 12.1 % as compared to the preceding year and amounted to 584 billion m³.

In 2009, the scope of exploratory drilling reduced by 41.2 %. Altogether 267.9 thousand meters were drilled. In 2009, advance in production drilling decreased by 3.5 % as compared to 2008 and amounted to 14,090.9 thousand meters. Reduction in drilling scope has been registered for the first time in the last five years.

In 2009, 17 accidents occurred at the oil and gas producing facilities, which is 7 cases more than in the previous year; 16 fatal injury incidents, three of them being group injury cases happened, which is 8 incidents more than in 2008 (Fig. 3).

Contracted service-rendering companies and affiliated companies of the mineral wealth users appear in all registered cases of accidents and occupational injuries.

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**Fig. 3.** The dynamics of oil and gas production, accidents, and occupational injuries from 2005 through 2009
### Accidents at the Oil and Gas Producing Enterprises

<table>
<thead>
<tr>
<th>Types of Accidents</th>
<th>Number of accidents by years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2003</td>
</tr>
<tr>
<td>Open blows and blowouts</td>
<td>8</td>
</tr>
<tr>
<td>Explosions and fires at the facilities</td>
<td>6</td>
</tr>
<tr>
<td>Falling of oil (operation) derricks, destruction of their parts</td>
<td>2</td>
</tr>
<tr>
<td>Falling of block-and-tackle systems during deep drilling and underground well repairs</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

### Total Number of Fatal Injuries by Supervised Branches

<table>
<thead>
<tr>
<th>Supervised branches</th>
<th>Number of fatal injuries by years, persons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2003</td>
</tr>
<tr>
<td>Oil production</td>
<td>23</td>
</tr>
<tr>
<td>Gas production</td>
<td>2</td>
</tr>
<tr>
<td>Geological prospecting</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>27</strong></td>
</tr>
</tbody>
</table>

Analysis of monitoring and supervisory activity indicates that in recent years, considering the reforming of the territorial bodies and transfer of mineral wealth protection functions, this activity has been significantly curbed, which, in many respects, had an effect on accident and fatal injury level at hazardous production facilities of the oil and gas producing complex in 2009. The effectiveness of supervisory activity is ensured by higher exactness of the inspectors.

Conducted in 2009 were comprehensive inspections of oil companies JSC Rusneft, JFC Novatech, and JSC TNK-BP and special purpose inspections of Operators within the frameworks of produce-sharing agreements — ExxonNeftegaz Ltd, Total PPP.

The following problems shall be related to unsettled ones: incidents associated with oil leaks from field pipelines; slow rates of pipeline repair, replacement, diagnostics, and inhibitory protection; replacement of obsolete and aged equipment. The issue of operating oil and gas wells with untight casing pipes is also a problem.

In 2009, oil and gas producing organizations were issued with 85 licenses for operation of explosive and fire-hazardous production facilities; on six occasions the Applicants were refused the issue of a license. Manufacturers and Vendors were issued with 574 permits for use of technical device, on 85 occasions they were refused. 815 industrial safety review reports were registered and approved, on 42 occasions approvals were denied.

### 2.2.10. Petrochemical, Oil and Gas Refining Industry Facilities, and Petroleum Product Supply Facilities

In 2009, the number of organizations supervised by Rostechnadzor, which are operating hazardous production facilities of petrochemical, oil and gas refining industry facilities, and petroleum product supply facilities was 7,084, including 283 organizations operating
oil and gas refinery facilities, 155 petrochemical facilities, 6,918 petroleum products supply organizations operating 970 petroleum storage depots, 2,787 combustible lubricants storage facilities, and 3,161 filling stations.

13 accidents occurred in 2009 at the mentioned facilities, which is similar to accident rate of 2008. Two accidents entailed personnel injuries (13 people were injured, three of whom — fatally).

The total material damage incurred by accidents amounted to 145 million rubles, which is three times less than the damage incurred in 2008 (417 million rubles).

According to the performed analysis, among all accidents that occurred in 2009, six (46 %) were associated with explosions, the share of which, as compared to 2008, increased from 39 to 46%. At the same time, the share of accidents entailing fires decreased by 7 %, while the share of accidents associated with releases of dangerous agents and destruction of technical devices remained unchanged.

Analysis of the results of investigation of technical causes of the accidents that occurred in 2009 indicates that 50 % of accidents (5 out of 10) were caused by loss of sealing and destruction of technical devices at hazardous production facilities. The share of established technical causes of the accidents due to unsatisfactory condition of technical devices increased, as compared to 2008, from 42.8 to 50.0 %.

Improper technical management arrangement and insufficient control over technical condition of technical devices should be noted among organizational causes of the accidents.

Such accidents occurred at LLC Uralorgsintez, LLC Stavrolen, JSC Taimyr Fuel Company, LLC LUKOIL-Permnefteorgsintez, and JSC Ufimskiy NPZ.

Accidents continued to occur at petroleum storage depots during draining-and-filling operations and tank cleaning (Yalutorovo petroleum storage depot of JSC Gazpromneft-Tyumen, LLC Lanta Petroleum).

In 2009, the number of fatalities decreased by 2.8 (5 in 2009 versus 14 — in 2008). The number of incidents involving group casualties increased by 1.6 versus 2008 (5 cases in 2009). The total number of injured in these incidents in 2009 was 12 persons, including 4 fatally injured (in 2008 — 13 persons, including 10 fatally injured).

In 2009, 4 fatalities were registered at oil refining enterprises, which is 1.75 less than in 2008, one fatality occurred at petrochemical enterprise. No fatalities were registered at petroleum product supply facilities.

In 2009, the traumatic factors of the fatalities were burning injuries, the share of which decreased twofold versus 2008 and comprised 40%. Traumatic factors associated with falling from height amounted to 40% versus 14% in 2008. In the reporting period one person was injured as a result of destruction of technical devices.

It should be noted, that all fatal incidents occurred at hazardous facilities of oil refining enterprises — in LLC Slavyansk Bitumen Plant (2 incidents) and LLC LUKOIL-Permnefteorgsintez (2 incidents).

Basic types of violations that resulted in fatal injuries were violations of the procedure for preparing and carrying out extremely hazardous works and improper control on the part of the officials responsible for arrangement of work and production control.

In the reporting year, Rostechnadzor territorial bodies conducted 7,922 examinations of supervised petrochemical, oil and gas refining industry organizations and petroleum product supply organizations, in the course of which 62,113 violations of industrial safety requirements were revealed and ordered to be eliminated, among those 1,876 violations re-
lated to license requirements and conditions. After finding out that there was danger to life and health of the employees staying in the hazardous factors’ affected zone, 31 statements were issued for evacuating the people from the hazardous area and 2,788 orders were issued on imposition of administrative penalties, including 46 orders on the temporary ban on activities. 2,725 juridical persons and officials were brought to administrative responsibility for violations of industrial safety requirements. Total sum of imposed fines amounted to 10,460,000 rubles. 50 cases on violators of industrial safety requirements were submitted to law enforcement bodies.

The typical violations revealed were associated with failure to fully accomplish the plans of actions aimed at bringing hazardous production facilities in compliance with industrial safety requirements ineffective arrangement and exercising of production control; failure to keep with the time schedule for technical diagnostics of the equipment with expired rated service life.

In addition, violations related to failure to comply with the procedure for personnel training and qualification, keeping technical documentation and carrying out hazardous works, lack of insurance against liability for damnification in case of an accident; other violations of the requirements of the legislation of the Russian Federation were also revealed.

Equipment aging, that takes the lead over the rate of its renewal, still constitutes the main problem and negatively affects safety condition of supervised facilities.

In 2009, 33,181 industrial safety reviews were conducted, 27,698 (83.5 %) of those were aimed at assessment of the remaining life of technical devices. On the whole, the quality of expert assessments provides reliable view of the equipment technical condition for making a decision on equipment decommissioning or repair.

Rostechnadzor considers that the strategic directions for enhancement of industrial safety level at the supervised companies comprise reconstruction and technical upgrading based on the state-of-the-art science and technology achievements; establishment of mechanisms for stimulation and control over implementation of upgrading and development programs; placing barriers on the path to implementation of the industrial facilities’ extensive operation policy (working at full stretch); decommissioning of unpromising industrial facilities.

Vertically integrated companies determined the priorities and urgent tasks of step-by-step modernization of oil refining and petrochemical industries.

In 2009, as JSC Slavneft-Yaroslavnefteorgsintez proceeded with implementation of stage II of the “Program for Reconstruction and Technical Re-Equipment for the Period till 2010,” 5.4 billion dollars were spent for capital construction and technical re-equipment of production facilities. In 2009, hydrogen generation plant was commissioned; retrofitting of diesel fuel hydrofining installation LCh-24/7 for producing fuel of 10 ppm sulfur content was completed.

At JSC Achinskiy NPZ a new plant for hydrosulfuric gas disposal and granular sulfur production was commissioned.

Grand total of annual expenditures for construction, reconstruction, modernization, and maintaining steady operation of facilities at JSC Syzranskiy NPZ exceeded 1.8 billion rubles. Construction of isomerization plant and modernization of the plant for sulfuric acid production by wet catalysis technique continue.

Advanced development of oil refining facilities in the Far-Eastern Federal District involves implementation by JSC NK Rosneft and JSC Alliance Group of JSC RN-Komsolskiy NPZ and JSC Khabarovsky NPZ of reconstruction and modernization programs aimed at development of secondary refining processes.
In 2009, construction of Ethylene-500 plant continued at JSC Kazanorgsintez. At JSC Nizhnekamskneftehim construction of ABS-plastic and linear alkylbenzene production facilities, and pre-commissioning of polyethylene production facilities continued.

At JSC Ufaneftehim construction of elemental sulfur granulation plant was completed; delayed carbonization plant was commissioned. Expansion of hydrocracking system section 1000 — hydrogen generation plant is underway. At JSC Ufimskiy NPZ work was done on technical re-equipment of catalytic cracking plant G-43-107/M-1. At JSC Novoil reconstruction of LCh-24/7 ZHEKSA plant of gas catalytic production facility and technical re-equipment of 22-4 plant of fuel production facility were completed.

At JSC Salavatnefteorgsintez construction of Polyethylene production facility was completed; reconstruction of Carbamide production facility is underway.

At JSC Caustic works aimed at increasing vinyl chloride production capacity are underway (the design documentation passed the public examination).

At the same time, to ensure safety at hazardous production facilities measures aimed at enhancing the level of industrial safety were developed and are being implemented; production control was arranged.

Virtually in all supervised organizations appropriate structures were established and persons responsible for establishing and exercising production control were appointed. In the context of implementation of production control, the total number of measures aimed at assurance of industrial safety exceeded 42 thousand; 24,468 verifications of compliance with industrial safety requirements were performed.

Industrial safety control systems were deployed in major companies LUKOIL, Rosneft, Sibur, oil refining enterprises of Bashkortostan Republic: JSC Ufaneftehim, JSC Ufimskiy NPZ, JSC Novo-Ufimskiy NPZ, and JSC Ufaorgsintez.

Industrial safety control systems constitute an integral part of production control, forming the basis for ensuring its steady functioning and development, directed at personal responsibility of each person for prevention of accidents and casualties.

2.2.11. Trunk Pipeline Transport and Gas Underground Storage Facilities

As of 01.01.2009, the total length of the linear part of trunk pipelines exceeded 242 thousand km, of which:

- trunk gas pipelines — 166 thousand km;
- oil-trunk pipelines — 52.5 thousand km;
- trunk product pipelines — 21.836 thousand km;
- ammonia pipelines — 1.4 thousand km.

At present, more than 7,000 facilities supervised by Rostechnadzor are in operation within the trunk pipeline transportation system.

Basic assets of the pipeline transport, as is the case with the entire technosphere, are ageing. The basic trunk pipeline systems were built in the 1960-ies — 1980-ies. By now, about 40 % of the trunk pipeline length have been in operation for over 30 years. This requires stricter control over trunk pipeline condition presuming modern diagnostics, monitoring, overhauling, and reconstruction.

Thanks to joint effort of Rostechnadzor and the Operators of trunk pipeline transport hazardous production facilities, the accident rate at supervised facilities has dropped by a value of more than 1.8 since 2001.

In 2009, gross material damage incurred by accidents amounted to 371 million rubles.
Table

Dynamics in the Level of Accountable Events at Trunk Pipeline Transport Facilities during the period 2001–2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Accidents</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>52</td>
<td>8</td>
</tr>
<tr>
<td>2002</td>
<td>43</td>
<td>9</td>
</tr>
<tr>
<td>2003</td>
<td>52</td>
<td>5</td>
</tr>
<tr>
<td>2004</td>
<td>48</td>
<td>6</td>
</tr>
<tr>
<td>2005</td>
<td>45</td>
<td>4</td>
</tr>
<tr>
<td>2006</td>
<td>40</td>
<td>7</td>
</tr>
<tr>
<td>2007</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td>2008</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>2009</td>
<td>28</td>
<td>1</td>
</tr>
</tbody>
</table>

Analysis of failures in the linear part of trunk gas pipelines demonstrated that one of the primary causes of its destruction is stress corrosion cracking (SCC) of the pipes on the external, cathode-protected surface. For the most part, SCC-cased destruction is typical for pipelines with the diameter from 700 to 1420 mm. More than 80% of pipeline destructions with SCC signs were observed in the pipes with the diameter 1020–1420 mm.

Insufficient gas pipeline protection against corrosion is primarily a consequence of film insulating coating quality loss in gas pipelines built 15 and more years ago.

If during the period 1991–1996 the share of SCC-caused accidents in the total accident rate balance of JSC Gazprom constituted about one quarter, and from 1998 to 2003 the accidents of this kind amounted to a third of the total number, then in 2008 the share thereof exceeded 50%.

As a rule, the combined impact of three factors causes pipe metal stress corrosion fracture:

- metal quality — availability of structural causes contributing to formation of embryonic microcracks;
- corrosive environment, its contact with metal surface and interaction with metal structure;
- corresponding level of effecting stresses.

Provoking of SCC crack initiation is due to a combination of several factors:

- the presence of mechanical effect traces on the pipe (dents), the dimensions of which are within tolerance limits, and the time when they were inflicted cannot be determined;
- flaws of steelmaking origin;
- pipe service loads due to changes of operating pressure;
- stressed state of the pipeline section created during construction (deviation of pipe axes).

The most efficient method to cope with SCC consists in comprehensive pipeline diagnostics incorporating the measures of in-tube monitoring with the use of cross-section measuring projectile (for detecting the pipe restrictions, dents and corrugations), ultrasonic flaw-detection projectiles (for detecting corrosion flaws, metal lamination and other discontinuity flaws), magnetic flaw-detection projectiles (for detecting flaws in circular welds), geophysical flaw-detection projectiles (for defining the route profile, pipeline laying depth, soil continuity and density along the pipe perimeter), external acoustic emission testing for...
metal fracturing, and electromeometric measurements (determination of the pipeline insulation condition if electrochemical protection is available).

Analysis of the accidents caused by defects of construction and assembly work shows that the root cause consists in deviation from design solutions in the course of construction, failure to follow welding process, low level of functional quality control by persons responsible, insufficient technical supervision over construction. In 2008 this was the cause of three accidents, and in 2009 — of four accidents.

There are cases, when technical devices that did not pass the required compliance confirmation procedures and had no Rostechnadzor permits for use at hazardous production facilities, were used at trunk pipeline construction and maintenance facilities.

Measures taken by Rostechnadzor compelled JSC Gazprom to develop an efficient mechanism for monitoring the observation of current codes at the company’s facilities, and eliminating the detected violations.

When comprehensive examinations of JSC Gazprom are conducted in 2010, attention should be paid to implementation of the measures envisaged in these documents.


Besides, attention should be paid to most typical violations and problems affecting industrial safety of trunk pipeline transport facilities:

- insufficient scope and level of comprehensive diagnostic operations;
- provision of the necessary scope of pipeline overhauling;
- insufficient level of teleautomatics and automation at trunk pipeline transport facilities;
- insufficiency of measures taken by the Operators of trunk oil pipelines for protection against the attempts of oil thefts;
- authorization for independent work granted to personnel insufficiently trained in their profession.

Measures taken in 2009 aimed at improvement of organizational structure for supervision over trunk pipeline transport facilities enhanced the capabilities of supervision over operating organizations through transition from territory-based supervision to supervision over juridical persons.

2.2.12. Metallurgical and Chemical Recovery Industries and Facilities

In 2009, ferrous metallurgy production output amounted to 86.1 % of 2008 output, at that, production of pig iron totaled 43.9 million tons, steel — 59.2 million tons, rolled ferrous metal — 50.8 million tons, steel pipes — 6.655 million tons.

In non-ferrous metallurgy the primary aluminum production output in 2009 amounted to 91.1 % of 2008 output, refined copper — 99.2 %, nickel — 97.5 %.

In 2009, equipment modernization and reconstruction, introduction of modern technologies went on at metallurgical and chemical recovery enterprises.

In 2009, eight fatalities (as compared to 15 in 2008) and four group incidents, in which 10 persons were injured, were registered at the supervised metallurgical and chemical recovery enterprises and industries. There were two accidents (four accidents in 2008), the economic damage of which made up 29,156 thousand rubles.
Table

Total Number of Accidents at Metallurgical Facilities by Types

<table>
<thead>
<tr>
<th>Accident types</th>
<th>Number of accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
</tr>
<tr>
<td>Destruction of buildings and engineering structures</td>
<td>2</td>
</tr>
<tr>
<td>Destruction of technical equipment</td>
<td>2</td>
</tr>
<tr>
<td>Total:</td>
<td>4</td>
</tr>
</tbody>
</table>

Analysis of the accidents demonstrated that they were caused by design deficiencies and violations in the course of construction and equipment operation.

On 24.10.2009, destruction and subsequent collapse of reinforced concrete structures of the bridging of block No. 2 in alumina production wet grinding section. Collapse area was 540 m².

Table

Total Number of Fatalities at Metallurgical and Chemical Recovery Facilities by Injury Factors

<table>
<thead>
<tr>
<th>Injury factors</th>
<th>Number of facilities, persons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
</tr>
<tr>
<td>Moving and rotating mechanisms</td>
<td>3</td>
</tr>
<tr>
<td>Melt and slag release and gas explosion</td>
<td>6</td>
</tr>
<tr>
<td>Falling of the injured and objects from height</td>
<td>3</td>
</tr>
<tr>
<td>Effect of gases</td>
<td>2</td>
</tr>
<tr>
<td>In-shop transport</td>
<td>1</td>
</tr>
<tr>
<td>Total:</td>
<td>15</td>
</tr>
</tbody>
</table>

The main injury factors were: falling of the injured persons and objects from height (37.5 %), melt and slag releases and gas explosions from metallurgical units (25.0 %), impact of moving and rotating equipment parts (12.5 %), in-shop transport (12.57 %), and effect of process gases (12.5 %).

Most of fatal incidents occurred at metallurgical enterprises under the supervision of Priokskoye and West Urals Departments of Rostechnadzor (2 fatalities in each).

Analysis of fatality cases demonstrated that their main causes consisted in unsatisfactory arrangement and accomplishment of maintenance and repair activities (66.6 %); unsatisfactory technical condition of equipment (16.7 %); design deficiencies of equipment (16.7 %).

The primary causes of group incidents were technology violations in metallurgic processes (50 %) and unsatisfactory arrangement and execution of maintenance and repair activities (50 %).

The majority of the injuries occurred in blast-furnace production (3 fatalities) and steel production industry (3 fatalities and 3 group incidents with 8 injured).

As was demonstrated by the scheduled examinations of industrial safety condition in the companies with vertically integrated control systems — JSC Mechel and JSC RUSAL — conducted in 2009, efficient industrial safety control systems providing the involvement of officials at all management levels have not so far been established in these companies.

Efficient functioning of industrial safety control systems will allow the operating organizations to assess the industrial safety conditions at their enterprises in a more workmanlike manner, liven up the work of all structural units of management, and formulate the aims and policy in industrial safety domain.
As of 01.01.2010, Rostechnadzor bodies established supervision over 1,567 juridical persons engaged in the activity at metallurgical and chemical recovery facilities. In 2009, Rostechnadzor territorial bodies carried out 4,649 examinations at supervised metallurgical and chemical recovery enterprises and facilities; 34,571 violations of industrial safety codes were revealed and orders for elimination thereof issued; temporary ban was imposed on activities of 28 plants and facilities because of gross violations of operation regulations; 1,344 persons were brought to administrative responsibility, which included fines imposed on 1,313 managers and specialists in accordance with item 1 of article 9.1 of the Code of Administrative Infractions of the Russian Federation to the sum of 3,024.1 thousand rubles.

### 2.2.13. Gas Distribution and Gas Consumption Facilities

Gas pipelines of the gas distribution and gas consumption system (the length of which is 740 thousand km) supply gas to 24 thousand industrial enterprises, 430 fossil fuel power plants, 64 thousand gas-fuelled heating and industrial boiler houses. 20 thousand hazardous production facilities are being operated in the field of liquefied hydrocarbon gas use. About 69 thousand hazardous production facilities for gas distribution and gas consumption are registered in the State Register.

In 2009, 38 accidents and 6 incidents with fatalities occurred at gas distribution and gas consumption facilities. As compared to 2008, the accident rate rose insignificantly (35 accidents and 5 fatalities in 2008).

The economic damage incurred by the accidents that occurred in 2008 exceeded 2.5 billion rubles.

#### Table

<table>
<thead>
<tr>
<th>Accident types</th>
<th>Number of accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
</tr>
<tr>
<td>Mechanical damages of buried gas pipelines</td>
<td>17</td>
</tr>
<tr>
<td>Explosions during ignition of gas-consuming facilities</td>
<td>5</td>
</tr>
<tr>
<td>Mechanical damages of gas pipelines caused by motor transport</td>
<td>6</td>
</tr>
<tr>
<td>Corrosion damages of external gas pipelines</td>
<td>1</td>
</tr>
<tr>
<td>Breaks of welded joints</td>
<td>2</td>
</tr>
<tr>
<td>Damages caused by natural events</td>
<td>1</td>
</tr>
<tr>
<td>Gas inflammation during execution of gas dangerous works</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

#### Table

<table>
<thead>
<tr>
<th>Injury factors</th>
<th>Number of fatally injured, persons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
</tr>
<tr>
<td>Poisoning with materials of incomplete gas combustion</td>
<td>1</td>
</tr>
<tr>
<td>Resulting from air-gas mixture explosion</td>
<td>1</td>
</tr>
<tr>
<td>Thermal impact</td>
<td>1</td>
</tr>
<tr>
<td>Asphyxiating impact of gas</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>
The accident rate at the gas distribution and gas consumption facilities remains at the previous level, however the number of fatalities increases. Fatalities were caused by poisoning with combustion materials in the boiler house (2 persons), injuries resulting from air-gas mixture explosion (1 person), asphyxiation during gas dangerous work in the well (2 persons), thermal impact during work with open flame in the pit (1 person).

In 2009, the most severe accident occurred on the high-pressure buried gas pipeline (700 mm in diameter) at the location: Moscow, Ozernaya ulitsa, bldg. 46. On 08.06.2009, Moscow Interregional Territorial Department of Rostechnadzor completed technical investigation of the causes of the accident. The Commission came to a conclusion that the accident that occurred on 10.05.2009 was caused by an instantaneous (avalanche-like) crack development in the material of the pipe. The cause of the accident was unsatisfactory arrangement of construction and assembly works and violations in the course of the pipeline operation. Rostechnadzor submitted the materials of technical investigation to investigating bodies.

Failure to meet the deadlines for submitting investigation materials to the Service still remains one of the significant deficiencies. Investigation materials were submitted with delays by Industrial Environmental Supervision Division (IESD) for Lipetsk Region, IESD for Kabardino-Balkaria Republic (in both cases), West Urals Department, and IESD for Orenburg Region.

Analysis of the materials received from territorial bodies demonstrated that after the provisions of the Town-Planning Code of the Russian Federation had been put in force, the quality of construction of gas distribution and gas consumption hazardous production facilities deteriorated. Current procedure of acceptance and commissioning of built gas distribution and gas consumption facilities does not ensure the required quality of the facilities subject to commissioning. Lack of control over the quality of the public examination of the design documentation alongside with the potential for exerting administrative pressure on construction supervision bodies of the subjects of the Russian Federation lead to significant deterioration in construction quality of the facilities.

The organizations carrying out excavating works do not always observe the requirements of the Gas Distribution Network Protection Rules.

Unstable operation of a number of enterprises and a deficit of financial assets restrain the implementation of measures aimed at maintaining proper technical conditions of production facilities. Insufficient financing of reconstruction works is most acute at the facilities belonging to housing and communal services, Ministry of Defense, educational institutions.

Wear and tear of the gas pipelines continues to be the most urgent problem. By the date of report, 28.8 thousand km of pipelines (6 % of the total length of buried gas pipelines) ran out of their rated resource. Wear and tear of gas equipment in some boiler houses reaches 75–95 %; they have been in operation for 25–30 years practically without overhaul. Replacement of the worn-out basic assets is carried out at an extremely slow pace.

There are still problem issues related to bringing gas-consuming facility safety automation in compliance with the requirements of item 5.9.11 of PB 12-529–03. Two thousand boiler houses (3.2 % of their total number) are not equipped in full with protection systems.

2.2.14. Explosive and Chemically Hazardous Production and Special Chemistry Facilities

The largest industrial centers posing potential threat in terms of chemical effects formed up in the republics of Tatarstan and Bashkortostan, the territories of Altai, Perm and Krasnoyarsk, the regions of Tula, Tyumen, Yaroslavl, Nizhniy Novgorod, Novgorod,
Volgograd, Samara, Kemerovo and Irkutsk. The number of production facilities is on the rise in the Far East and South regions.

As compared to 2008, in 2009 the number of supervised organizations engaged in industrial-safety-related activities (chemically hazardous facilities, special chemistry and dangerous substance transport facilities) amounted to 6731 (versus 6847 in 2008).

The reduction in the number of supervised facilities was mainly a result of decommissioning the ammonia refrigeration plants.

Strengthening of the state supervision over the condition of industrial safety of chemically hazardous facilities and their safe operation went along the line of more active modernization and technical re-equipment efforts.

In 2009, Rostechnadzor territorial bodies performed (and plans to perform in 2010) supervisory and monitoring functions in relation to the enterprises implementing major investment projects.

The programs of technical re-equipment, reconstruction, and modernization of production facilities have been developed and are being implemented mainly at major, steady functioning chemical enterprises, holding companies, electric power industry enterprises, for instance, JSC Mendeleevskazot, JSC Tatspirtprom, JSC “Generating Company” (Republic of Tatarstan). However, due to the economic crisis, the pace of implementing these programs slowed down.

Taking into account accomplished reconstruction and modernization of hazardous production facilities in chemical industry, it may be concluded that technical condition of the facilities has improved. At the same time, solution of reconstruction problems is still being hampered because of insufficient financing, especially of regional and municipal enterprises, and due to the world economic crisis, as well.

The status of industrial safety at the supervised chemical facilities in 2009 was qualified as satisfactory; no major man-induced accidents or acts of terrorism were registered.


The primary causes of these accidents and incidents with fatalities consisted in deviations from the requirements of the design and process documentation, violation of maintenance and repair regulations, unsatisfactory technical condition of the equipment, ineffective production control, careless or unauthorized actions of the work doers, and improper arrangement of works.

Production control is the basic element affecting the industrial safety level of the organizations. The effectiveness of production control system is assessed by the state of industrial safety level of the organization. Major production organizations and vertically integrated companies that actively deploy the industrial safety control systems and production control systems demonstrate favorable status of the industrial safety, low accident and injury rates. At large enterprises having well-developed production control structure, industrial safety control systems have been established and are effectively functioning. Regular production control services were formed at these enterprises. Works performed at these enterprises comply with the requirements of industrial safety.

Practically all of Rostechnadzor territorial bodies managed to achieve 100% development of the provisions on production control among chemical industry facilities. Supervised organizations submit reports on production control to Rostechnadzor territorial bodies at a stated time.
At the same time, analysis of the results of control and supervisory activity, as well as the analysis of accidents and injury rates, make it possible to arrive at a conclusion about insufficiency of production control effectiveness and low qualification of managerial personnel and specialists at some enterprises that are involved in operation of hazardous production facilities, especially at those, where accidents and fatal incidents occurred.

The industrial safety review is an efficient instrument for enhancing industrial safety of hazardous production facilities, making it possible to analyze the probable causes and factors triggering off the accidents, anticipate the accident aftermath and develop preventive measures for enhancing operational safety of the hazardous production facilities.

The analysis of the industrial safety review system implementation allows one to state that at present the industrial safety review has become a practice within the system of the hazardous production facility industrial safety assurance. The number of reviews has become invariable over the recent years. The overwhelming number of the industrial safety reviews deals with the engineered features.

Analysis of industrial safety review conclusions indicates that at present most of them comply with the requirements for conducting the review and executing review reports.

Once deviations are revealed, industrial safety review reports are sent back for revision.

All Operators of hazardous production facilities took out insurance against liability for damnification in the course of hazardous production facility operation; insurance agreements are concluded opportunely and prolonged in accordance with the established procedure.

Compiling of registers of insurance agreements within the frameworks of automated information-control system for industrial safety regulation, accounting for and detection of overdue policies, generation of database of enterprises are accomplished by Rostechnadzor territorial bodies.

In 2009, Rostechnadzor territorial bodies conducted examinations and assessments of industrial safety condition and emergency protection of chemically hazardous production facilities under control. The level of industrial safety and emergency protection of supervised chemically hazardous facilities is, in general, assessed as satisfactory.

All enterprises under control accomplish planned special arrangements for defending and protecting them against potential terrorist attacks. The enterprises have security guard teams; modern outdoor surveillance control systems are installed at major enterprises, which provides round-the-clock video recording of the territory behind the perimeter fence, railway and motor vehicle gates.

Water treatment facilities using chlorine for decontamination are being prepared for transition to more innocuous methods of water decontamination (use of sodium hypochlorite, ozone treatment, etc.).

There were no terrorist attacks against the facilities under control.

Accident localization plans have been developed at the facilities under control; drills and training alerts are conducted in accordance with the approved schedules. Supervision over their execution is exercised by production control personnel of the enterprises and organizations.

The emergency immunity of the supervised chemical plants is ensured by a package of relevant organizational and technical measures: the use of automated process control systems, continuous control of hazardous substance content in the working area air, development of accident localization and elimination plans, preventive work, training alerts, establishment of emergency response and rescue teams not on the regular staff at the facilities.
The measures for providing the hazardous stages of the processes and facilities with additional equipment, namely, reliable means of control, regulation, control and emergency protection systems and devices, involving production and technical facilities of the domestic machine-building complex are being effected under the supervision of chemical industry facilities.

The achieved level of supervisory activity effectiveness and significant reduction in accident and injury rates were ensured by higher exactingness of the inspectors to violators of industrial safety requirements at supervised facilities, stricter control over elimination of violations of industrial safety codes by the time fixed.

The problems related to industrial safety assurance also include significant wear of the basic production assets, insufficient financing of technical re-equipment, reconstruction, and modernization programs of operating production facilities.

There is a need for fundamental and applied research and development effort aimed at obtaining more innocuous substances and materials, introduction of current and development of new analytical monitoring techniques and systems intended for scientific, methodological, technological, and operative solution of problems related to chemical safety assurance.

More active efforts are required in technical regulation sphere. Thus, the Technical Regulation for Safety of Chemical Agents has for a long time remained at the stages of review and coordination, while its enactment is essential for the issues of chemical safety too.

The aforementioned problems are directly associated with the conditions of industrial safety and environmental well-being during operation of chemically hazardous facilities, since only adequately worked-through and comprehensively (from technical and technological viewpoint) protected processes will provide for exclusion or minimization of potential adverse impact on the environment and settlement areas intended for building in the vicinity of the facilities.

Gas emergency and rescue off-the-staff units were formed and are functioning at chemically hazardous production facilities.

The procedure for licensing chemically hazardous production facilities provides for effective influence on the state of industrial safety and makes it possible to prevent professionally unprepared organizations from carrying out the activity at hazardous production facility. On the whole, licensing practice demonstrates that holding of licenses disciplines the organizations, raises personal responsibility of managerial staff for solving technical issues aimed at modernization of equipment and processes.

2.2.15. Production, Storage and Application of Industrial Explosives

In 2009, 1,338 supervised organizations (legal entities) were involved in the activity associated with explosives, which included 1,178 organizations dealing with operation of hazardous production facilities (production, storage, application, and transportation of explosives). 5,185 explosives-handling hazardous production facilities were in operation including 1,165 explosives depots.

The volume of the explosives consumed in 2009 by the organizations involved in blasting operations reduced by 12 % as compared to 2008 and amounted to 998.784 thousand tons (versus 1,134.5 thousand tons in 2008).

The share of explosives fabricated in the vicinity of application sites increases annually. In 2009, 770.772 thousand tons of explosives (77 % of the total volume), including 469.84 thousand tons of emulsion explosives (61 % of the volume fabricated on the job sites and 47 % of the total consumption volume) were fabricated in the vicinity of the application sites.
In 2009, 3,843 examinations of supervised organizations were carried out. 17,631 violations of industrial safety requirements were revealed and orders for elimination thereof issued. Fulfillment of 7,935 requirements of earlier issued orders was checked. For committed violations, 16 temporary ban-on-activity orders were issued and sent to courts. In 2009, 888 administrative penalties including 845 fines were imposed. Total sum of recovered fines amounted to 3.86 million rubles. The cases of 12 officials were submitted to the investigation bodies (17 cases in 2008).

In spite of the actions taken, accidents and fatal incidents occurred during blasting operations and explosives handling.

In 2009, 6 accidents (6 accidents in 2008, as well) and 12 fatal incidents (20 incidents in 2008) occurred during these operations.

Accidents and fatal incidents occurred in Kemerovo region mines (4 accidents, 2 fatalities), JSC Samaranefitransgazgeofizika (1 accident), Kirovskiy mine of JSC Apatit (1 fatality), Yestyuninskaya mine of JSC Vysokogorskiy GOK (1 accident, 9 fatalities)

Analysis indicates that the overwhelming majority (over 80 %) of accidents and fatalities are a sequence of poor arrangement of works. The primary causes of accidents and injuries consist in systematic gross violations of safety requirements associated with lack of supervision and low production discipline of the personnel, irresponsibility and negligence of managers of different level, ineffective production control. Industrial safety control system becomes, actually, reserved to senior-level managers, or does not exist altogether. Committed violations are not subject to comprehensive analysis by the owners, managers, and specialists of the enterprises, no measures are developed to prevent them. The necessary amount of financing for maintaining the required level of industrial safety is not available.

However, certain problems concerning the explosives still remain unresolved. In this connection the following tasks should be regarded as priorities:

1. So far, there are no legislative bases in the sphere of state control over the explosives turnover in the Russian Federation.

In this connection further improvement of legislation in the sphere of state control over the explosives turnover, including continuation of work with the Ministry of Internal Affairs of Russia on draft Federal Laws “On the state control over explosives substances and products turnover” and “On the state control over pyrotechnical products turnover” is necessary.

2. In connection with incessant accidents and fatal incidents during blasting operations, more active efforts should be taken to introduce in gas and dust explosion hazardous mines new, safe and effective protective explosives (including non-burnable emulsive ones) and mechanical loading devices excluding potential flashes and explosions of methane-air mixture and coal dust.

3. Still urgent is the task of enhancing safety of explosive technologies for subsurface works, replacement of pneumatic loading with granulated explosives by other types of mechanical loading (emulsive, gel explosives) excluding the potential for generation of explosive dust-air mixture and static electrical charges in the work area.

4. Improvement of the equipment and technique of blasting operations requires re-training and professional development of specialists-supervisors and executors of blasting operations as well as of specialists of on-site fabrication of explosives. However, at present, there is no formally defined system of educational institutions for training, refresher training, and re-training of blaster-specialists; neither are the necessary engineering and practical training and training aids and appliances available.
2.2.16. Transportation of Hazardous Substances

The State Register of hazardous production facilities lists over 9,000 facilities associated with hazardous substance transportation.

State supervision over observation of requirements for safe hazardous substance transportation by rail and motor transport, including procedures for handling, use of containers and packages, process traffic, is aimed at prevention of accidents and casualties, enhancement of industrial safety at hazardous production facilities in accordance with the requirements of Federal Law No. 116-FZ dated 21.07.1997 “On Industrial Safety of Hazardous Production Facilities”.

No accidents or casualties were registered; the number of incidents decreased and amounted to 176 cases.

The following are generalized factors that led to incidents during transportation of hazardous substances:

unsatisfactory technical condition of track facilities equipment and violations of arrangement of shunting operations at the stations and hump yards, in non-public tracks (roads) resulting in collisions and derailment of the rolling-stock;

wear and tear of basic assets of the enterprises, first of all, of vehicles intended for transportation of hazardous substances. For the most part, incidents involving hazardous substance leaks were a sequence of unsatisfactory technical condition of tank-cars;

unsatisfactory control over the use of transportation vehicles and containers, as well as over procedures of reservoir filling and use of stop valves;

low level of labor and process discipline, insufficient workmanship of maintenance personnel, mid-level managers, as well as decline in responsibility, exactingness of enterprise managers and production control service personnel for control over observation of safety assurance requirements during transportation of hazardous substances.

Organizations, whereat incidents occurred, developed measures for eliminating the violations revealed; implementation of these measures is under control of Rostechnadzor territorial departments.

Systematic reduction in the number of incidents is a result of a series of measures for conducting examination, preventive and supervisory activity, detection of violations and taking actions to eliminate them; timely training and qualification of managers, personnel, and workers of hazardous production facilities for the issues of industrial safety; exercising by the enterprises of production control over observation of industrial safety requirements during transportation of hazardous substances, etc.

Hazardous production facilities involved in transportation of hazardous substances undergo the insurance procedure during registration with the State Register of hazardous production facilities. Activities related to review of industrial safety at hazardous substance transportation facilities were performed by the organizations holding relevant Rostechnadzor licenses for conducting the review of industrial safety.

For the purpose of maintaining preparedness for localizing and eliminating accident consequences at hazardous production facilities with well-developed railway structure, emergency and rescue units are formed; drills are regularly held to train personnel in practical actions with the roll-stock, the aim of these being verification of feasibility of plans for emergency situation prevention and elimination, determination of the degree of readiness of control, communications, warning, informing bodies, personnel and resources of the enterprises for localizing and eliminating emergency situations; improvement of the abilities
and skills of managerial personnel, structural units and specialized units, practical actions to localize and eliminate emergencies governed by accident situations.

Enterprises, whereat emergency-and-rescue units are not envisaged in the staff list, conclude agreements with emergency-and-rescue units specialized for rendering relevant services.

To maintain anti-terrorist security, major socially important enterprises instituted security guard, installed intruder alarm, and are deploying video surveillance posts; the territory has perimeter fence, and additional barriers are being installed along the rail tracks. Vehicles are screened, and technical devices are used for that purpose as well.

Access control is in effect at production areas, and they are guarded round the clock; routes for motor vehicles are defined; parking of foreign vehicles in the territories of the enterprises is forbidden.

An all-important part of control and supervision activity consists in verification of fulfillment of orders issued earlier, following the examinations; this is accomplished both through the on-the-spot checks in the supervised organizations or on the basis of the information submitted by them. Additional inspections are conducted at the enterprises that failed to fulfill the orders, and actions are taken to ban certain works and equipment manufacturing and to institute administrative proceedings against juridical persons and officials.

In the course of examinations, violations threatening traffic safety, and other violations that may have negative consequences were revealed, and orders for elimination thereof were issued. In some cases, due to gross violations of the requirements of railway equipment technical maintenance regulations threatening safe transportation of hazardous substances, decisions to withdraw personnel from worksites were taken.

In a number of cases verifications of compliance with the legislation, safety requirements at hazardous substance transportation facilities were conducted jointly with the representatives of the Office of the Public Prosecutor of the Russian Federation, Transport Departments of the Ministry of Internal Affairs of Russia.

Analysis of supervisory activity indicates that the level of industrial safety in the supervised organizations is on the whole satisfactory, which is confirmed by fewer number of severe and fatal injuries, incidents, and gross violations during transportation of hazardous substances, draining and filling operations, blasting operations, etc.

However, due to insufficient amount of financing, not all supervised organizations can afford the accomplishment of fairly money-consuming measures for safety assurance at hazardous production facilities. First of all, it concerns restoration of residual resource of worn-out transportation means, equipment, buildings and engineering structures, routine maintenance works, and overhauls.

2.2.17. Explosion Hazardous Facilities of Vegetable Raw Material Storage and Processing

In 2009, the number of organizations (juridical persons) engaged in the sphere of industrial safety activity at explosion and fire hazardous facilities for vegetable raw material storage and processing rose, just as the number of these facilities themselves did, and amounted to 4,823 and 19,747, correspondingly.

The risk of emergency due to vegetable dust explosion is minimized at the newly built and commissioned facilities owing to the use of new technologies and engineered features, and high degree of equipping the plants and facilities with emergency protection systems.
The new equipment, both domestic and foreign, having the necessary Rostechnadzor’s permits for application is used in the construction, reconstruction and technical re-equipment of the supervised facilities.

Measures are undertaken by the supervised organizations operating the hazardous production facilities to protect the facilities from the intrusion and unauthorized actions of outsiders, to be ready for the actions on localizing and eliminating accident aftermath at the hazardous production facilities, to insure the liability of the organization for causing damage during the operation of hazardous production facilities; technical certificates of explosion safety with the actions plans for bringing the hazardous production facilities into accord with the regulatory requirements to industrial safety were developed (or are in process of development).

In 2009, one accident, nine fatalities (three fatalities — in 2008) and 234 incidents were registered. No damage was inflicted to the environment and third parties as a result of the accident.

Rostechnadzor paid particular attention to control over industrial safety of the elevators and their preparedness for receiving corn crop, which contributed to the corn crop intake in 2009 without accidents or fatalities.

In 2009, the Rostechnadzor territorial bodies conducted 4,452 verifications of compliance with the industrial safety requirements established for the hazardous production facilities of vegetable raw material storage and processing.

32,610 violations were found and orders for elimination thereof issued, including 901 violations of the license requirements and conditions. 1,411 administrative penalties were imposed, including 25 administrative suspensions of the activity. The amount of the fines totaled 6,216,700 rubles.

Among the major problems arising in the industrial safety assurance of the hazardous facilities for vegetable raw material storage and processing are inefficient modernization rates of the existing production plants and basic assets of the supervised enterprises, as well as a lack, in some cases, of financial resources for ensuring the adequate level of industrial safety.

Most of the supervised enterprises actively implement measures that do not require significant financial expenditures or large-scale reconstruction of buildings or engineering structures (equipping the engineered features with explosion discharge devices, speed control relays, noria belt slack control devices, drag conveyor chain break monitoring devices, magnetic protection, etc.).

At major enterprises the production control is adequately exercised. Industrial safety control system at vegetable raw material storage and processing facilities is, in a number of cases, amounted to nothing more than the arrangement of production control.

At explosion and fire wood processing hazardous production facilities special attention is paid to the issues of training and qualification of managers, specialists, and workers of various professions in the area of industrial safety; development of technical certificates of explosion safety, accident elimination plans, aspiration grids, and pneumatic transport installations. Still unresolved is an issue of attributing (without appropriate design substantiation) fiberboard, chipboard, and plywood production shops to category B (as per the design documentation).

In spite of separate drawbacks and difficulties, legislatively established procedures for regulating industrial safety are, on the whole, observed in the supervised organizations. Rostechnadzor territorial bodies assess the condition of industrial safety at explosion and fire hazardous vegetable raw material storage and processing facilities as “satisfactory.”
One of the basic areas of the industrial safety assurance at the supervised facilities for vegetable raw material storage and processing is the development and introduction of the up-to-date technologies, equipment and control systems for process parameters and emergency protection that make it possible to minimize the risk of emergencies.

Moreover, it is reasonable to improve the regulatory and technical framework and prepare proposals for its harmonization with the applicable international standards.

Deployment of the industrial safety control system at the supervised facilities for vegetable raw material storage and processing will contribute to streamlining of the control and supervisory activity and reduce the administrative burden borne by the small and medium businesses in the Russian Federation.

2.2.18. Facilities with Pressure Equipment

27,153 organizations performing the activities in the field of industrial safety of pressure equipment supervision were controlled by the Federal Environmental, Industrial and Nuclear Supervision Service of Russia (Rostechnadzor).

In 2009, 4 fatalities were registered during operation of pressure equipment; no accidents occurred.

The dynamics of fatalities and accidents at the facilities subject to boiler equipment supervision are presented in table.

<table>
<thead>
<tr>
<th>Year</th>
<th>Accidents</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
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<tr>
<td>2002</td>
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<td>2003</td>
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<td>2004</td>
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<td>2005</td>
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<td>9</td>
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<td>2006</td>
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<td>15</td>
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<td>2007</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>2008</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2009</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

The main causes of fatalities during operation of pressure equipment consisted in the use of equipment with expired rated service life, low level of production control over observance of industrial safety requirements, violation of labor and industrial discipline.

Within the reporting period, inspectors for pressure equipment supervision carried out 20,877 inspections of supervised organizations. In the course of the inspections 135,485 violations of industrial safety requirements, including 4,185 violations of license requirements and conditions, were found and orders for correction were issued. 5,619 administrative penalties were imposed, of which 5,554 fines to the total amount of 19,211.15 thousand rubles. 20 cases of industrial safety requirements violators were submitted to the law enforcement agencies, criminal proceedings were initiated against one of them.

3,995 incidents occurred during operation of pressure equipment, of which 862 incidents were related to failures or damages of engineered features, and 3,108 incidents were related to deviations from the process mode.
The primary causes of the incidents consisted in damages of steam boiler dasher pipes and superheaters, boiler equipment fabrication related flaws, etc.

Analysis of observation of the established procedures for regulation of the industrial safety indicates that these procedures are observed in the majority of the organizations supervised. However, considerable deficiencies were also found in this activity.

One of the problems encountered in assurance of industrial safety in the organizations and enterprises pressure equipment consists in the low level of production control, especially in those organizations where the functions of persons responsible for exercising production control are entrusted with employees who perform this function as their second job. Frequent changes of specialists responsible for production control and safe operation of the equipment, as well as lack of the necessary experience and knowledge of industrial safety requirements by the specialists also produce an adverse effect.

As was established in the course of the examination of arrangement and implementation of insurance against liability for damnification during operation of facilities subject to boiler equipment supervision, variety of insurance policies leads to complications. Each insurance company has its own format of the policy and its own interpretation of the legislation requirements. In addition, insurance is often underwritten with violations of Federal Law No. 116-FZ dated 21.07.1997 “On Industrial Safety of Hazardous Production Facilities”, when the entire facility, rather than its individual sections or sites, are insured.

During operation of facilities subject to boiler equipment supervision, one of the primary problems becomes the wear of equipment that is running out of its rated lifetime. At present, in the Russian Federation the rated lifetime of about 60% of facilities subject to boiler equipment supervision (steam and hot water boilers, pressure vessels, steam and hot water pipelines) has expired.

However, in recent years, due to difficult financial standing of the organizations operating hazardous production facilities the pace of equipment replacement (if ever such replacement takes place) is very slow. For this reason the equipment with expired rated service life is time and again subject to industrial safety review, following which its operation life is extended.

In 2009, high emphasis was placed on extension of the equipment service life, its modernization and reconstruction, improving the quality of manufacture, installation and repair of facilities subject to boiler equipment supervision facilities, as well as on raising the standard of the managers’, specialists’ and maintenance workers’ knowledge of industrial safety requirements.

Some expert organizations carry out industrial safety review of facilities subject to boiler equipment supervision, although they do not have highly qualified industrial safety experts on their staff. As a result, there has been of late a noticeable tendency towards deterioration of the quality of review reports and, consequently, growth in the number of refusals of approval thereof. Thus, for instance, in 2008 the division for boiler and hoisting equipment supervision refused to approve 2 (1%) out of 223 examined review reports on industrial safety of facilities subject to boiler equipment supervision. In 2009, the share of unapproved industrial safety review reports rose to 12%.

Understaffing of organizations operating pressure equipment with trained and qualified personnel continues to be an unsettled issue. An acute shortage of specialists who received training in heat engineering and a deficit of skilled technicians, workers, and maintenance personnel lead to occurrence of emergency situations and create real threat to human lives and health.
To enhance safety during operation of pressure equipment, the activity aimed at technical re-equipment of heat power stations and boiler-houses, extension, based on technical diagnostics results, of operation life of equipment with expired service life shall be further pursued.

In the process of supervisory activity special emphasis should be placed on the establishment of effective industrial safety control systems, arrangement of efficient production control over observation of industrial safety requirements at hazardous production facilities, as well as on raising the proficiency level of specialists and personnel engaged in operation of these facilities.

2.2.19. Facilities Whereat the Permanent Hoisting Mechanisms and Elevating Structures are Used

766,103 elevating structures are operated at 85,519 supervised enterprises and organizations, it includes 237,983 cranes, 406,743 elevators, 476 overhead ropeways, 3 funiculars, 7,123 moving staircase, 20,534 automatic car lifts (towers) and 3,241 cargo-passenger civil elevators and elevators for disabled persons.

![Fig. 4. Dynamics of accident rate and fatalities in the operation of elevating structures](image)

According to the statistical data, the number of the supervised enterprises increased by 1,478 units, whereas the number of the hoisting structures increased by 9,708 units.

624 organizations that manufacture hoisting structures and 867 organizations that perform their installation and commissioning were supervised by Rostechnadzor in 2009. 113 organizations conducted the training and qualification of welders and welding engineers, 40 organizations conducted the training and qualification of NDT inspectors. Supervision over these organizations was conducted by 292 inspectors. Average load upon one inspector is 293 supervised organizations and more than 2,600 currently operating hoisting structures of any type.

1,217 investigations were conducted in 2009, which was by 34 % more than in 2008. As a result of the revealed violations of the industrial safety requirements 30 production facilities were stopped for a period longer than one shift.

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Representatives of Rostechnadzor took part in 68 preliminary testing of hoisting structures, including 253 acceptances tests, 79 periodic tests, 46 type tests and 50 qualification tests.

The inspection revealed 2,955 violations of the code and regulation requirements in the manufacture of the hoisting structures (4,746 violations were revealed in 2008), for which 149 persons were held accountable, from which 126 persons incurred fines in the amount of 391 thousand rubles. 10,452 specialists were examined as regards knowledge of the codes and regulations.

28 accidents occurred in 2009 at the enterprises, where hoisting structures are being operated, which are 10 accidents less than in 2008. The material damage caused by the accidents was about 62 million rubles (whereas in 2008 it was about 165 million rubles).

16 persons were injured in 12 out of 28 accidents; 7 persons fatally injured at that. 3 accidents resulted in group casualties (the Republic of Tatarstan, the Tver and the Kemerovo Regions). As compared to 2008: the accidents entailed injuries of 24 persons (14 fatal ones), and 5 accidents resulted in group casualties.

The majority of casualties occurred during operation of tower and truck cranes (39.3 % of the total number of accidents and 32.1 % correspondingly). The accident rates during operation of tower cranes remained at the same level as compared with 2008. The number of accidents at truck cranes decreased by 40 % (from 15 to 9 cases), and at caterpillar cranes decreased by two times (from 7 to 4 cases). It should be noted that 3 accidents were occurred at gantry cranes in 2009, whereas no accidents were occurred at this type of cranes last year.

119 persons were injured during operation of hoisting structures in 2009 including 64 fatal ones, which by 19 persons less than for the same period in 2008.

52 out of 64 accidents (81.3 %) occurred during operation of erecting cranes, 9 (14 %) accidents occurred during operation of elevators and 3 (4.7 %) accidents occurred during operation of lifts (towers).

The analysis of the casualties occurred during operation of the erecting cranes allows us to conclude that the injury rates remained high during operation of truck cranes (30 % of the total number of casualties occurred at the cranes), bridge cranes (25 %) and tower cranes (25 %). Two fatal accidents occurred during operation of caterpillar cranes in 2009, which is 5 times less than in 2008. It should be also noted that the fatal injury rates at bridge cranes decreased by 41 % (from 22 to 13 cases), and at truck cranes decreased by 27 % (from 22 to 16 cases).

The number of group accidents decreased from 15 to 8. Three group accidents occurred during operation of erecting cranes by the accident. 18 persons were injured in the group accidents in 2009, including 9 fatal ones (in 2008 there were 34 and 11 persons correspondingly).

In 2009 the number of fatal accidents occurred as a result of the fall from the crane due to its improper installation steeply increased (from 1 to 6 cases) and the number of falls from the crane as a result of overloading and malfunction of the safety instruments was about two times less.

The analysis of accident and injury rates at the supervised facilities also demonstrated the number of accidents occurred through the fault of the victim being in the alcoholic intoxication state increased from 1 in 2008 to 7 cases in 2009.

The number of erecting cranes decreased by 60 units in Russia over 10 years. Average fatal injury rate per 1000 cranes was 0.218 cased in 2009.

In spite of the annual final disposition of 6–8 thousand distressed erecting cranes, the level of injury rates remains high.
Purposeful work is conducted with territorial offices of Rostechnadzor as regards the issues of supervision (control) over operation of erecting machines made according to the formerly designs and deviated from the requirements established by the current regulations.

Department of construction and general industrial supervision of the Headquarters performs in-depth explanatory work with the territorial offices as regards takeover of the facilities of the ex-Ministry of communications.

Analysis of documentation and applications received at the Department of construction and general industrial supervision from the enterprises, organizations and citizens allows to conclude that level of training of the inspector staff is insufficient, and explanatory work at the territorial office is poor.

For the time being the question of non-conformance of the imported equipment, which was operated abroad, to the regulations valid in the Russian Federation came up (towing and passenger ropeways, boilers, etc.). For a part of equipment referred to “permanent hoisting mechanisms and elevating structures” (Appendix 3 to Federal Law of 21.01.1007, No. 116-FZ “On industrial safety of hazardous industrial facilities”) there are no standards, and the validity of the Regulations does not applied to them (or no regulations have been developed) (parking complexes, side-shows, etc.) and no executive agency has been established to supervise this equipment.

Currently the technical regulations “On safety of elevators” and “On safety of machines and equipment” have been adopted. It is required to create the whole package of covering documentation, national standards and codes, rules and methods of investigations, sampling and assessment of conformity, within the time periods specified by the applicable Government decrees of the Russian Federation.

496,743 elevators including 445,386 passenger elevators, 43,278 freight elevators and 8,079 hospital elevators, were supervised by Rostechnadzor in 2009. Only 15 % of the total number of elevators was imported.

12–15 thousand elevators are put into commercial operation every year. In spite of this fact, the aging trend of the elevator park increases further due to the large volume of house building within the period from 1970 to 1985.

The elevators are operated with technically failed and disabled electrical interlocks, which result in frequent faulty operations, interruptions caused by failures and casualties in the long run.

The housing and communal services operate more than 300 thousand of passenger elevators. Addition of the newly installed elevators to the total number of elevators is about 9,000 elevators per year. The tendency of the elevators’ stock aging is still growing. In some regions the operational records of elevators that have worked their rated resources is more than 35 %. Thus, for instance, these records for Moscow make up 16 % the records for Saint Petersburg make up 40.2 %, those for Voronezh Region — 25.6 %, Volgograd Region — 26.4 %, Moscow Region — 36.3 %, Primorsky Territory — 30.3 %, Samara Region — 29.0 %.

On the whole, operation of elevators that have survived their resource throughout the country makes up 27 %.

The current situation as a result of which the service life of the elevator equipment was expired, could lead to serious accidents and injuries of people that usually take the lifts.

9 persons were fatally injured during operation of elevators in 2009, which is 2 injury more than in 2008. The major causes of casualties still comprise: non-observance of the directions for use, unsatisfactory arrangement of activities during maintenance and repair of...
elevators, violation of procedure manuals by maintenance staff, low qualification of personnel, and failure of electrical interlocks and automatic locks of the shaft doors.

More than ten years the scope of building projects placed in operation permanently increases against the reforms conducted by the government, including those related to mortgage and national regional development projects. In recent years the activity of construction has significantly decreased. In spite of this fact, the construction of Olympic sports complex and modernization of the Sochi city infrastructure is continued in the course of preparation for the Winter Games of 2014. The market of construction machinery, first of all, the tower and truck cranes, is rapidly extended.

The fleet of erecting machines is highly filled up with foreign machines, including those used ones. Thus, of the total number of hoisting mechanisms the foreign hosting structures constitute percentage-wise: cranes — 11 %, elevators — 15 %, rope-ways — 48 %, moving staircase (including moving sidewalk) — 82 % of the total number of facilities currently operated.

In some cases the hoisting foreign-made structures with the operation conditions limited by ambient air temperature are supplied to Russia under-equipped with special instruments to control the observance of such conditions.

Based on the requests of the Federal Customs Service authorities related to the importation into the Russian Federation of foreign hoisting machines without safety instruments and lack of some assemblies and mechanisms.

For the quality assurance in the maintenance and repair of foreign-made hoisting machines it is noted that only few foreign manufacturers of hosting machines have the possibility to perform the training services in the territory of the Russian Federation; it includes the training of maintenance and repair personnel (crane operators, elevator operators, repairmen, electricians, safety instrument setters).

No conditions have been created in the domestic education institutions for skilled training of foreign-made hoisting machine maintenance personnel, as they are not provided with the required training facilities and teachers.

Owners of hoisting machines have the problem related to the sending the above-mentioned personnel to a foreign country for training, which in practice is impossible for large enterprises, and much less for small and medium-sized enterprises.

At the same time it is recognized that few domestic manufacturers are ready to contest the customers, therewith having an eye to the quality, reliability and safety of hoisting machines.

The problems pertaining to ensuring of industrial safety at hazardous industrial facilities are related to continuous aging of the basic assets, technologies and technical devices, slow pace of reconstruction of outdated production facilities and untimely replacement of equipment, monitoring and automation facilities with the new ones that meet the industrial safety requirements and standards.

The technical devices are mainly brought in compliance with the requirements of regulatory and technical documentation and industrial safety requirements by means of expert-diagnostic examinations, additional equipment with the necessary devices and safety features, performance of overhaul reconditioning; however all these problems are difficult to resolve.

The main problems and risk factors affecting the status of industrial safety remain as follows:

1. High wear factor of basis production assets of equipment and technical devices applied at hazardous industrial facilities.
2. Low level of industrial and process discipline.
3. Lack of qualified specialists, poor level of the specialists’ training and advanced training, insufficient knowledge of industrial safety requirements and practical skills.
4. Unstable financial position of a number of organizations, insufficient owners’ appropriation of funds for taking measures aimed at enhancement of industrial safety status, training and advanced training of personnel, engagement of qualified specialists and employees and creation of favorable working conditions.
5. The need in strengthening of the supervisory functions at the facilities, which are included into the list of critical structures and which are privately-owned. This problem needs detailed consideration followed with clear legislative assignment of authorities on Rostechnadzor.

2.2.20. Electrical Power Plants, Boiler Houses, Electrical and Thermal Installations and Grids

The department of the state energy supervision implements control and supervision over observance of requirements for safe operation of electric and thermal power generation facilities, electrical and heat networks, energy-consuming plants, as well as for maintaining safety of structures at industrial and power engineering facilities.

The number of power engineering facilities subject to supervision by Rostechnadzor in 2009 was about 4 million including: 567 electric power plants; 266 block-stations, more than 24 thousand small (process) power stations, more than 123 thousand boiler houses, more than 890 thousand transformer plants; over 1.9 million electric power consumers; over 732 thousand thermal power consumers.

In 2009 the Department of the state energy supervision of the Headquarters took part in the complex inspections of supervised organizations.

Within the reporting period, the inspectors of the Rostechnadzor territorial offices conducted more than 126 thousand examinations to check arrangement of safe operation and the technical condition of supervised facilities.

More than 11 thousand persons were suspended from work at the power plants by the inspectors of Rostechnadzor.

More than 47 thousand protocols of administrative violations were drawn up.

In 2008, the territorial offices made 3.3 thousand statements and applications to the public authorities, public prosecutor authorities and law courts concerning electrical safety and technical condition of the electric power facilities.

The inspectors allowed operation of more than 150 thousand new and reconstructed electric plants.

Within the reporting period more than 114 thousand violations of safety rules and regulations during operation of heat-and-power equipment were found by the Rostechnadzor bodies in the course of inspections carried out to control safety status in electric utilities over the autumn–winter periods of 2008–2009 and 2009–2010; 528 legal entities and 3,270 individuals were subjected to prosecution.

It was revealed in the course of inspections that the production control was unsatisfactory at the 534 supervised power supply organizations; 794 organizations were not completely staffed with the trained and qualified specialists.

During preparation for the works in the autumn-winter period of 2009–2010, the territorial bodies of Rostechnadzor carried out examinations of 688 (61.5 %) electric power stations, 27,665 (35 %) heating plants, and 3,978 (31.2 %) heating and industrial boiler hous-
es and 1,127 (90.7 %) of electricity supply network organizations. The conducted inspections demonstrated that in most regions of the Russian Federation the preparation for the autumn-winter period was completed according to the schedule. The planned repairs of power equipment were mainly performed.

Due to major violations of industrial safety, untimely performance of diagnostics and examination in 2009 the operation of 39 boilers, 17 vessels, 68 km steam and hot water pipelines was terminated.

More than 111 thousand violations of safety codes and regulations during operation of the power equipment were revealed in the course of inspection; 3,659 managers and specialists and 382 legal entities were subjected to prosecution. Therewith it was specified that production control was unsatisfactory at the 399 supervised power supply organizations; 751 organizations were not completely staffed with the trained and qualified specialists.

In the course of inspections the representatives of the Rostechnadzor territorial bodies took part in the assessment of preparedness of the power supply organizations for operation within the autumn-winter period of 2009–2010 and in the issuance of the certificate there-to. As of November 15, 2009 there were 15,098 organizations as a whole in Russia, subject-ed to certification, where from: housing and public utilities — 14,445; power engineering utilities — 653.

The percentage of preparedness of the power supply utilities for the autumn-winter period of 2009–2010 throughout the Russian Federation was 94 %. The best indicators were recorded in the Ural Federal District (about 100 %), the worst indicators were noted in the Far Eastern Federal District (52 %).

The main reasons of the failure to receive the certificates of preparedness were: the failure to engage the Rostechnadzor specialists to the participation in the preparedness assessment committee; the absence of trained personnel; the absence (or disabled state) of reserve fuel facilities of the boiler houses; the absence of reserve power supply sources; the absence of safety devices and automatic equipment; emergency condition of buildings and structures, the absence of chemical treatment systems at the boiler houses.

From November 15 to December 31 2009, the territorial bodies were examined 231 power stations, 859 heating and industrial boiler houses and 2,728 heating boiler houses, 1,722 electric grid companies in the course of inspection of the heating period of 2009–2010. About 14.7 thousand violations of the safety codes and regulations during operation of power equipment were revealed; 107 legal entities and 549 individuals were subjected to prosecution.

Due to major violations of industrial safety, untimely performance of technical diagnostics and examination the territorial bodies suspended operation of 137 boilers, 94 vessels, 4.9 km steam and hot water pipelines.

It was revealed in the course of inspections that the production control was unsatisfactory at the 131 supervised power supply organizations; 166 organizations were not completely staffed with the trained and qualified specialists.

Thus, 167 accidents took place in 2009, including 12 group accidents (including 11 accidents with fatalities) and 115 accidents with fatalities, whereas 167 accidents occurred in 2008. The number of accidents in 2009 decreased as compared to 2008, and consequently the number of fatalities also decreased.

Information about the work conducted by the Rostechnadzor territorial bodies and data about power supply utilities, where the safety status in the preparation for the autumn-winter period of 2009–2010 was deemed unfavorable, was sent to the Supervisory Department of
the President of the Russian Federation, Ministry for Regional Development of the Russian Federation, Ministry of Natural Resources and Environment of Russia, executive authorities of constituent entities of RF and local government.

2.2.21. Hydraulic Engineering Structures

In accordance with the provision on the Federal Environmental, Industrial and Nuclear Supervision Service as edited by Ordinance of the Government of the Russian Federation No. 404 of May 29, 2008, the Federal Environmental, Industrial and Nuclear Supervision Service (hereinafter referred to as Rostechnadzor) performs the functions of control and supervision in the sphere of safety of hydraulic engineering structures (HES)/big dams (except navigable HES as well as HES that the bodies of local self-government have been authorized to supervise).

Total number of the HES systems, power engineering and water utilization systems supervised by Rostechnadzor is 37,250 including:

- 748 HES of liquid industrial wastes including: 336 HES systems of tailing pits and slurry pits of the mineral resource industry; 274 HES of the waste storages of the chemical, petrochemical and refinery industries; 100 HES systems of waste accumulators of the metallurgy industry; 38 HES systems of the waste storages of other manufacturing enterprises;
- 324 HES of the Fuel and Energy Complex, including: HPP — 113, state district power stations — 61, central heating and power plants — 138, pumped storage power plants — 3; NPP — 9;
- 36,178 HES of the water utilization system, including: under the supervision of the Ministry of Agriculture of Russia — 281, under the supervision of Federal Agency of Water Resources — 310.

According to the Russian HES Register, the safety level of the supervised HES has been assessed as follows:

- 39.4 % of the total number of HES systems are at normal safety level where HES have no defects and damage which may, as they evolve, lead to an accident, and HESs are operated in accordance with the safety codes and standards;
- 43.4 % of the HES systems are at a lower safety level where the structures are in normal technical state but with violation of operation regulations;
- 12.5 % of the HES systems are at unsatisfactory safety level which is characterized by an increased first (preventive) level of the values of safety criteria and limited function of the structures;
- 4.7 % of the HES systems are at the hazardous safety level characterized by increased maximum allowable values of the safety criteria, loss of function and inoperability.

In 2009 Rostechnadzor reviewed and approved 182 declarations of HES safety (HES complexes) and expert reports on HES declarations of safety, including:

- in the Rostechnadzor Headquarters — 122;
- in the territorial bodies — 60.

In 2009 the Department drew up and issued 86 permits for operation of HES.

In 2009 the inspectors of the Rostechnadzor territorial bodies performed 3,917 activities related to state control and supervision over the owners and operating organizations’ observance of the HES safety codes and regulations in the supervised organizations, which was 2 times as many as in 2008 (1,934)

At the same time, 17,029 codes and regulations of HES safety were revealed and subjected to be eliminated, which 2 times more than in 2008 (8,562).
The main violations were: unavailability of the corresponding working documentation — 3,210 cases (18.9%); presence of various faults, dirt, reduced capacity of water inlet and outlet structures — 1,716 cases (10.0%); unavailability of properly developed and approved HES safety criteria, safety declaration, safety monitoring instructions and design — 3,363 cases (19.7%); inconsistency with the design and regulatory documents of the operating staff’s qualification level — 1,190 cases (7.0%); unavailability of an agreed plan of accident mitigation — 1,096 cases (6.7%); unavailability of or non-compliance with safety monitoring plan of control and measuring equipment and instrumentation — 276 cases (1.6%).

The HES examinations (checkups) performed resulted in disciplinary and administrative liability of 663 officials, which was 56% more than in 2008 (425), to the total amount of 3,937 thousand rubles, which was 74% more than in 2008 (2,258); 152 organization managers were heard by the regional boards and meetings during inspections, 765 staff members were examined in the knowledge of the requirements of the HES safety codes and standards — 10 of them were not properly prepared.

To fulfill the plan of HES safety assurance activities of Minprirody of Russia for 2009 approved by Order of MNR of Russia No. 14 of 29.01.2009, as regards the performance of measures to find any HES without an owner (abandoned structures) by the Rostechnadzor territorial bodies in 2009, 6,778 orphan HES was found, which was 18% of the 36,178 total number of HES transferred by Rosprirodnadzor (RPN).

Based on the available partial information the database of 6,167 HES was composed (mainly, name, location, class and purpose of HES).

The Class of overwhelming majority of abandoned HES in accordance with SNiP 33-01–2003 “Hydraulic Engineering Structures. Basic provisions” was defined as IV (6144 HES — 99.6%, 22 HES as Class III, and one structure as Class II.

The overwhelming majority of abandoned HES (more than 95.0%) were constructed for irrigation of adjacent lands, recreation, fish-farming, stock watering, and domestic and household needs.

A share of abandoned HES of the total number of HES supervised by Rostechnadzor was 18.2%.

To ensure that in 2009 the springtime high water and flood were passed without accidents, accidents in the HES supervised by Rostechnadzor were prevented (Order of Rostechnadzor No. 51 of 09.02.2009 “On safe operation and serviceability of hydraulic engineering structures supervised by Rostechnadzor within the period of springtime high water and flood of 2009”), the effective control groups created for flood protection measures to control the safety state of HES performed the activities as regards the inspection of the implementation of the scheduled flood control measures, as well as preparedness of the supervised organization services and rescue crews for localization and elimination of emergency situations at HES.

The progress of work of the Rostechnadzor territorial bodies on preparation for flood ways in 2009, was communicated to citizens through the mass media.

The results of conducted inspections and information submitted by the supervised organizations certify that the scheduled flood control measures have been mainly performed.

The inspections didn’t find any defects of the structures, bases, hydro-mechanical equipment, washouts hazardous for structures within the offtake parts of the river bed or offtake channels.

The territorial bodies of Rostechnadzor conduct the permanent supervision over preparedness of the supervised organizations for flood routing, over the level in the water storage
and basins of water utilization purpose, the water consumption via the dam sites, as well as changes of the levels in the head race and tail race of the TPP dams, control over flood at the supervised plants of the operating HES.

When preparing for flood routing the supervised organizations and enterprises were also recommended to be guided by the performance analysis of flood protective and preventive activities in the supervised territories over the last year and by the recommendations on the decrease of emergency risks due to the springtime flood in 2009.

Besides, to fulfill Order of MNR of Russia No. 9 of 22.01.2009 “On approval of the set of measures to prevent negative impact of waters in the flood period in the Lena river basin” in May—June 2009, the territorial body of the Federal Service for Supervision in the Sphere of Natural Resource Use for the Republic of Sakha (Yakutia) with participation of the state government bodies of the Republic of Sakha (Yakutia), local government bodies and Chief Directorate of the MES of Russia for the Republic of Sakha, performed the inspection of preparedness of hydraulic engineering structures, water objects for flood discharge, availability of reserves and emergency stock of materials to prevent and eliminate possible emergencies there.

It was established in the course of inspections that operating organizations conducted the scope of activities on flood routing for decrease of emergency risks, mitigation of their consequences and damage. No failures and defects of the structures related to the possibility of accidents and emergency situations at HES were found.

As a whole the springtime flood in the Republic of Sakha (Yakutia) was passed without any accidents at the supervised HES, the measures on flood routing were completely performed by the operating organizations.

As a whole the level of preparation in 2009 for flood measures was considerably higher in the most parts of the regions as compared with the recent years, and the performed activities ensured the required safety level of HES.

Rostechnadzor took part in the development of 9 regulatory legal acts in the field of safety hydraulic engineering structures.

In 2009 according to Rostechnadzor Orders No. 35-rp of 01.06.2009 and No. 47-rp of 04.08.2009, two seminars were conducted with the state inspectors of the Rostechnadzor territorial bodies, who supervise and control the observance of the HES safety codes and regulations by the HES owners and operating organizations in the Central, North-Western, and South Federal Districts, on topic: “Improvement of state supervision and control in the field of safety of hydraulic engineering structures at the enterprises supervised by the Federal Environmental, Industrial and Nuclear Supervision Service of Russia”.

143 persons took part in the seminar: representatives of 13 Rostechnadzor territorial bodies of the Central, North-Western, and Southern Federal Districts; 9 expert and specialized organizations, analytic centers for monitoring of HES technical safety, and industry research centers.

Vital and topical issues related to the safe operation of HES were discussed during the seminar; in particular, the issues of abandoned HES and insufficient control over their technical state were considered in details.

To improve the HES reliability, safety and effectiveness of the state supervision of their safe operation, Rostechnadzor shall:

1. According to Order of MNR of Russia No. 428 of 29.12.2009 “On approval of the Plan of measures of MNR of Russia on the implementation of the Water strategy of the Russian Federation for the period up to 2020”, together with the federal executive bodies concerned,
develop and implement the measures aimed at protection of the population resident in the territories subjected to adverse impact of hazardous hydrogeological phenomena, and stable function of the relevant economic facilities, namely:

assurance of the performance reliability and safety of HES operated by the supervised organizations;
reduction of the number of emergency and abandoned HES;
improvement of the efficiency of state supervision over HES safety;
declaration of HES safety and updating of the supervised HES databases;
refilling the Russian register of HES.

2. According to the Plan of rule-making activity of the Ministry of Natural Resources of Russia for 2010, approved by Order of MNR of Russia No. 17 of 20.01.2010 Rostechnadzor shall prepare the draft government ordinance of the Russian Federation “On Introduction of Alterations in Ordinance of the Government of the Russian Federation, of February 1999 No. 237 “On Approval of the Provision for Operation of Hydraulic Engineering Structure, the permit for construction and operation of which has been canceled, as well as Hydraulic Engineering Structure to be preserved, eliminated or ownerless”, as regards specifying the procedure of state supervision and control over HES safety, as well as detailed definition of the procedure of safety assurance of abandoned HES based on the law enforcement practice.

3. According to the Plan of processing of the departmental normative legal acts pertaining to the competence of MNR of Russia, it is required to work out the following documents:
Procedure for defining the safety criteria of HES supervised to the Federal Environmental, Industrial and Nuclear Supervision Service;
Procedural instructions for control (monitoring) by the HES owners and operating organizations over the state of HES the supervision of which is conducted by the Federal Environmental, Industrial and Nuclear Supervision Service of Russia, as well as natural and man-caused effects and assessment of HES safety;
Safety regulations of the HES enterprises supervised to the Federal Environmental, Industrial and Nuclear Supervision Service.

4. To define the purpose of costs for justification of payment for the performance of state expert review of the HES declaration of safety by expert committees, expert centers included in the list of organizations (expert center), defined for the expert review of the declaration of safety related to the HES supervised by Rostechnadzor, and to ensure a uniform procedural approach to form the cost estimate for the expert review of HES declarations of safety, to develop a regulatory legal document — Recommendations for the scope of cost estimate for state expert review of HES declarations of safety.

5. To fulfill Order of the President of the Russian Federation, D.A. Medvedev, of March 16, 2009, No. 626, to examine the issue of abandoned HES, as regards the arrangement of measures to prevent any emergencies and to reduce abandoned HES, it is required to arrange the following measures according to the schedule of activities of the Rostechnadzor territorial bodies on the reduction of abandoned HES and assurance of their safety for the period up to July 1, 2011, namely:
to reveal abandoned HES and to examine them using measuring instruments;
to create database about the abandoned HES including their location, technical state, degree of potential hazard, with the participation of the FSUE “Center for laboratory analysis and technical measurements” of Rostechnadzor for technical support;
to inform the federal authorities, local government bodies, and executive government
bodies of the constituent entities of the Russian Federation, in the territory of which the abandoned HESs are located, to define an owner (operating organization); to monitor the measures to be taken by the federal executive authorities, executive government bodies of the constituent entities of the Russian Federation, and local government bodies, to define an owner (operating organization) and ensure safety of abandoned HES; to arrange the interaction between the prosecutor’s offices and judicial authorities in case of a failure of the federal executive authorities, executive government bodies of the constituent entities of the Russian Federation, and local government bodies to ensure safety of abandoned HES; to declare safety of HES supervised by Rostechnadzor.

6. State control and supervision over the observance of the HES safety codes and regulations by HES owners and operating organizations in 2010 shall be conducted in accordance with the Plan of activities of MNR of Russia on safety assurance of hydraulic engineering structures for 2010 and Plan of scheduled inspections to be conducted by Rostechnadzor in 2010.

7. To arrange and perform the fault-free spring high water and flood routing, to prevent emergencies of HES supervised by Rostechnadzor, according to Rostechnadzor Orders No. 428 of 29.12.2009 “On Approval of the Plan of Measures of MNR of Russia on the implementation of the Water Strategy of the Russian Federation for the period up to 2020”, No. 9 of 22.01.2009 “On Approval of the Scope of Measures on Prevention of the Adverse Water Impact during the flood periods in the Lena river basin”, it is necessary to develop, arrange and conduct the activities on the fault-free high water and flood routing in 2010.

8. According to the Plan of seminars (meetings) with the officials of the Rostechnadzor territorial bodies for 2010, it is necessary to hold the seminars with the Rostechnadzor inspectors on the issues of improvement of the state supervision and control in the field of HES safety.

2.2.22. State Civil Construction Supervision in Construction, Modernization and Overhaul of Capital Construction Facilities

During 2009, the Federal Environmental, Industrial and Nuclear Supervision Service of Russia carried out supervision over 10,300 capital construction facilities in the course of construction, modernization and overhaul (13,408 in 2008). Therewith, 12,495 inspections (14,595 in 2008) performed 41,191 violations of the current urban planning legislation found (54,883 in 2008), 2,035 reports on administrative offense issued (2,991 in 2008). An extreme measure of administrative sanction such as suspension of the activity was applied in 10 cases of violations. Information on 28 facilities (15 in 2008) was forwarded to the law enforcement agencies. The amount of imposed administrative sanctions was 77,086 thousand rubles. (103,636 thousand rubles in 2008), 55,505 thousand rubles of which were collected (85,127 thousand rubles in 2008), which amounted to 72% of the fines imposed (82% in 2008). No accidents and injuries were found in 2009.

In 2009, 6,211 conclusion of compliance of the constructed, modernized and repaired capital construction facilities with the requirements of the technical regulations and design documentation were issued (6,224 in 2008).

In 2009, while performing the state supervision, the Federal Environmental, Industrial and Nuclear Supervision Service paid special attention to the supervision in the construction of Olympic Facilities in Sochi and facilities of APEC-2012 summit in Vladivostok. Thus, in 2009 for the capital construction facilities included in the Program of construc-
tion of Olympic Facilities and development of Sochi as a mountain and climatic resort, approved by Government Ordinance of the Russian Federation, No. 991 of 29.12.2008, the state construction supervision was conducted at 32 facilities. 67 inspections of the construction projects were performed, where six conclusions of compliance were issued. Based on the inspections conducted, 110 orders on the fine imposition were issued to the amount of 3,350 thousand rubles.

For the capital construction facilities of APEC-2012 summit, 11 facilities were supervised by Rostechnadzor. In all, 62 inspections were conducted, 82 regulations were issued, 462 violations were revealed, 390 violations were eliminated, 72 violations are under control. In total, based on the facts of violations revealed in the course of the state construction supervision, 4 legal entities and 24 officials were prosecuted. The amount of collected fines was 460 thousand rubles.

Within the performance of the function on keeping the register of self-regulating organizations in the field of engineering surveys, civil-structural and architectural design, construction, modernization, overhaul of the capital construction facilities as of 31.12.2009 there were 294 self-regulating organizations registered, where from 166 organizations conduct the construction work, 110 organizations are engaged in the drawing-up of the design documentation, 18 organizations perform the engineering surveys.

<table>
<thead>
<tr>
<th>District</th>
<th>Construction, Modernization, Overhaul</th>
<th>Preparation of design documentation</th>
<th>Engineering surveys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Federal District</td>
<td>67</td>
<td>50</td>
<td>9</td>
</tr>
<tr>
<td>Southern Federal District</td>
<td>18</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>North-Western Federal District</td>
<td>22</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Far Eastern Federal District</td>
<td>10</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>Northern Federal District</td>
<td>18</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Volga Federal District</td>
<td>20</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td>Ural Federal District</td>
<td>11</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>166</strong></td>
<td><strong>110</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

Number of members included in the registered self-regulating organizations is:

- in the field of construction — more than 25,000;
- in the field of preparation of design documentation — more than 11,000;
- in the field of engineering surveys — more than 1,500.

As of 31.12.2009, the total number of self-regulating organizations that filed applications for documentation review was 405.

The function on keeping the state register of self-regulating organizations in the field of engineering surveys, civil-structural and architectural design, construction, modernization, overhaul of the capital construction facilities also includes the issuance of extracts and making changes in information of the state register.
The Headquarters of Rostechnadzor worked out the Plan of inspections of the self-regulating organizations for 2010, where 12 non-commercial partnerships were included.

Some issues related to the improvement of the valid town-planning codes are still outstanding:

it is required to bring into conformity the town-planning code of the Russian Federation, Law No. 315-FZ of 01.12.2007 “On the self-regulating organizations” and Tax Code of the Russian Federation (as regards the necessity of payment and amount of state due for introduction of information about an organization into the register of self-regulating organizations. It is required to clarify, what documents the members of non-commercial partnerships could use from 01.01.2010 to confirm the declared activity to be granted the status of self-regulating organization;

administrative regulations were not approved, as regards the Rostechnadzor’s function on the state supervision over activities of self-regulating organizations in the field of engineering surveys, civil-structural and architectural design, construction, modernization, overhaul of the capital construction facilities, as well as keeping the register of the specified organizations;

no administrative regulation was approved as regards the performance of the state construction supervision;

a form of certificate of admittance to works having an impact on safety of the capital construction facilities wasn’t approved.

Priority objectives for 2010 are:

strengthening of control over the activity of the Rostechnadzor territorial bodies as regards the state construction supervision in the construction of special control facilities, including Olympic facilities in Sochi and facilities of APEC-2012 summit;

refresher training of inspectors of the state construction supervision in the Rostechnadzor territorial bodies, additional training, including the subject of fire supervision, sanitary and epidemiological surveillance, and environmental monitoring.

2.2.23. Limitation of Negative Man-Caused Environmental Impact

In accordance with the authorities assigned in 2009, Rostechnadzor issued:

limits for wastes allocation for more than 78 thousand business entities;

permits for release of contaminants into the atmospheric air for more than 27 thousand entities;

permits for release of contaminants into the water bodies for more than 15 thousand entities;

for the purpose of Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal, one order was issued to prohibit the importation of the declared type of hazardous waste to the Russian Federation, and 13 permits were issued for transboundary movement of wastes:

import of 215,968.5 thousand wastes to the Russian Federation (granulated slug generated as a result of cast iron and steel production, for use in the cement making; aluminum slugs; acid wastes for nitrobenzene making);

export from the Russian Federation of more than 2,876 thousand ton wastes (vanadium slug, lead-containing wastes, flue ash generated after coal firing at the power plants) and more than 2 thousand pieces of tires previously used;

for the purpose of the international commitments of the Russian Federation related to the Montreal Protocol on Substances that Deplete the Ozone Layer, 61 permits were issued...
for import to the Russian Federation of regulated ozone damaging substances (ODS) including recycled List A ODS (mostly gallons assembled from fire fighting means) for further regeneration, as well as those used as raw material (mostly for production of fluorine organic products), and 25 applications for permit were rejected.

As to transboundary movement of products containing no ODS, 1,683 conclusions that the products didn’t contain any ODS were made, and 450 applications for issuance of a relevant conclusion were rejected.

38 permits for import to the Russian Federation of toxic substances (mainly, sodium cyanide for gold-mining industry) and transit of toxic substances across the territory of the Russian Federation (yellow phosphorus from Kazakhstan), and 22 applications were rejected.

### 2.3. Organization and Results of Review

#### 2.3.1. Safety Review of Nuclear Facilities

**Legal basis, purpose and lines of nuclear facilities’ safety review. Formation and functioning of the review system.**

The purpose of the safety review made within the framework of the licensing procedure implemented by Rostechnadzor in atomic energy use is a comprehensive assessment of nuclear and radiation safety of siting, construction, operation and decommissioning of the nuclear facilities, as well as that of the safety analysis of the types of the activities in atomic energy use.

The need in, conditions and procedure of arrangement and conducting of the safety review in atomic energy use have been set forth by: Federal Law No. 170-FZ of 21.11.1995 “On the use of atomic energy”; The Licensing Regulations Governing the Use of Nuclear Energy approved by Resolution of the Government of the Russian Federation No. 865 of 14.07.1997; Administrative Regulations on execution of the state function of licensing activity in the field of atomic energy use by the Federal Environmental, Industrial and Nuclear Supervision Service of Russia (hereinafter referred to as Administrative Regulations).

According to the Administrative Regulations the review is conducted to check the adequacy of nuclear and radiation safety assurance justified by the applicant for a nuclear facility, radiation source, storage facility and (or) activity applied for.

The review of documents submitted for license acquisition shall be conducted by the review companies licensed by Rostechnadzor for the right of conducting reviews. The information about such review companies is placed on the Internet site (www.gosnadzor.ru).

Review of officially submitted applicant’s documents substantiating nuclear and radiation safety assurance for nuclear installations (NI), radiation sources (RS), storage facilities (SF) and (or) activities applied for shall be conducted according to the statement of work for conducting a review approved by the Rostechnadzor’s authorized officials.

The requirements of the federal rules and regulations as well as other regulatory documents in the field of atomic energy use shall constitute the review assessment criteria. The achieved science and technology level, the previous operating experience related to Russian and foreign nuclear facilities shall be considered during the review; besides, the available information about the events that took place in the Russian and foreign nuclear facilities shall be used during the review.
The Administrative Regulations envisage that if during the review the experts have any questions pertaining to justification of nuclear and radiation safety made in the applicant’s documents, the review company is entitled to discuss these questions with the applicant.

Following the review, the review company shall issue a review report approved either by the general manager of the review company or by the authorized person or official. The date when the review company makes a written notification of their issuing a review report shall be considered the review completion date.

Nuclear and radiation safety review for nuclear facilities and the activities carried out therein shall not be reduced to stating compliance (or non-compliance) with the requirements of rules and regulations in the field of atomic energy use. During the review much attention should be paid to assessment of measures envisaged for elimination and (or) compensation of non-conformances with the requirements of applicable regulatory documents.

Summary of Nuclear Facilities Safety Review in 2009

Review made by orders of NRS ITO

The summary information on topical distribution of safety reviews made by orders of the interregional territorial departments for nuclear and radiation safety supervision as well as on the number of review companies involved for this purpose is presented in the table below.

<table>
<thead>
<tr>
<th>ITO, which ordered conducting a review</th>
<th>Radiation sources</th>
<th>Nuclear installations and materials</th>
<th>Radioactive substances and waste</th>
<th>Storage facilities</th>
<th>Construction of nuclear facilities</th>
<th>Design and manufacture of equipment</th>
<th>Total number of reviews</th>
<th>Number of review companies involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>VITD</td>
<td>86</td>
<td>3</td>
<td>8</td>
<td>2</td>
<td>33</td>
<td>22</td>
<td>154</td>
<td>7</td>
</tr>
<tr>
<td>FEITD</td>
<td>18</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>DonITD</td>
<td>104</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>31</td>
<td>143</td>
<td>9</td>
</tr>
<tr>
<td>NEITD</td>
<td>39</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>74</td>
<td>111</td>
<td>231</td>
<td>5</td>
</tr>
<tr>
<td>SibITD</td>
<td>0</td>
<td>1</td>
<td>44</td>
<td>0</td>
<td>61</td>
<td>14</td>
<td>120</td>
<td>2</td>
</tr>
<tr>
<td>UITD</td>
<td>36</td>
<td>0</td>
<td>102</td>
<td>0</td>
<td>0</td>
<td>49</td>
<td>187</td>
<td>3</td>
</tr>
<tr>
<td>CITD</td>
<td>54</td>
<td>0</td>
<td>12</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>68</td>
<td>2</td>
</tr>
<tr>
<td>Total:</td>
<td>337</td>
<td>6</td>
<td>183</td>
<td>10</td>
<td>169</td>
<td>230</td>
<td>935</td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>36</td>
<td>0.5</td>
<td>20</td>
<td>1</td>
<td>18</td>
<td>24.5</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

It is apparent from the table that more than a third of nearly thousand reviews made by order of NRS ITO was connected with licensing of activities involving usage of radiation sources. The significant amount of the total number of reviews conducted falls on the safety reviews related to licensing of activities involving radioactive substances (20 %) and licensing of equipment design and manufacture (24.5 %).

Safety review made by the Scientific and Engineering Center for Nuclear and Radiation Safety (SEC NRS)

In the framework of the review activities carried out in 2009, SEC NRS conducted reviews by orders and based on the statements of work of the Rostechnadzor’s Headquarters. Besides, effort was taken to analyze scientific and technical documentation received from the operating organizations via Rostechnadzor. Altogether 220 reporting documents were is-
sued, 212 of which are the review reports of SEC NRS officially approved by Rostechnadzor according to the licensing procedure currently in force. Besides, 20 review activities were started in 2009, which are to be completed in 2010.

The distribution of the number of completed activities versus years since 2000 is shown in the Fig. 5.

![Fig. 5. Number of review reports issued by SEC NRS](image1)

The total number of the issues covered in the framework of reviews increased from 2,184 in 2008 to 2,901 in 2009. The dynamics of the total number of issues versus years is shown in the Fig. 6.

![Fig. 6. Total number of topical issues in the review reports](image2)

Distribution of safety reviews conducted in the framework of the licensing procedure in 2009 versus nuclear facilities is as follows: nuclear installations — 155; nuclear material, ra-
dioactive substances and radioactive waste storage facilities located both at nuclear power plants and fuel cycle enterprises — 48; radiation sources — 1. The 212 reviews also comprised 8 activities related to the organizations’ applications for obtaining licenses for certain activity types in the field of atomic energy use as well as for rendering of services to the operating organizations.

Of all the review reports related to nuclear plants and nuclear research installations, 16 are connected with the intention of JSC “Concern “Energoatom”, the operating organization of the Russian Nuclear Power Plants, to obtain a permit for augmenting the rated power of the NPP units and transition to the 18-months continuous operation cycle; 3 are connected with the licenses for operation of the power units in the period of the extended service life; and 11 are connected with obtaining of licenses for the next operational period.

10 review reports were developed in connection with licensing of siting and construction of new NPP units (Units 1 and 2 of Leningrad NPP-1, Units 1 and 2 of the Seversk NPP, Units 3 and 4 of the Rostov NPP, and Unit 4 of the Beloyarsk NPP).

Most of review activities related to NPPs were connected with the applications for amendment of the validity terms and conditions of licenses for operation of specific power units.

**Review of software tools used for the nuclear facilities’ calculation safety analysis**

In 2009, work was carried on with reference to review (certification) of the software tools (ST) used for nuclear facilities’ safety analysis through the ST Certification Expert Board under SEC NRS and sections thereof. As of December 2009, applicable are the certificates for 166 ST in various activity lines (neutron physics, thermal hydraulics, strength analyses, radiation safety, probabilistic safety analysis (PSA), etc.), the certificates were issued for 15 of the aforementioned software tools in 2009. The certificates for six software tools were cancelled since their validity period had expired; the certificates for two software tools were extended. Applications were received for certification of 69 more software tools being at various stages of the review process.

**Nuclear facilities’ safety review problems and solutions thereto**

The lack of highly qualified technical experts and the need in maintaining knowledge and experience of the elderly experts, who are gradually retiring, is among the significant problems associated with assurance of the adequate level of safety review in atomic energy use. SEC NRS carries out well-directed activities on increasing the number of technical specialists, who could be involved as experts, and systematic activities on hiring young specialists and improving qualification of available experts.

2.3.2. Industrial Safety Review

According to the Federal Law No. 116-FZ of 21.07.1997 “On Industrial Safety of Hazardous Industrial Facilities” (hereinafter referred to as FZ-116), the industrial safety review belongs to the activities in the field of industrial safety. The purpose of industrial safety review is to determine whether a reviewed facility complies with the industrial safety requirements imposed thereon.

The scope of industrial safety review covers:

- design documentation on extension, technical upgrading, preservation and elimination of a hazardous industrial facility;
- technical devices applied at a hazardous industrial facility;
- buildings and structures at a hazardous industrial facility;
declaration of industrial safety developed as part of design documentation for extension, technical upgrading, preservation and elimination of a hazardous industrial facility as well as other documents related to operation of a hazardous industrial facility.

Pursuant to Regulation of the Government of the Russian Federation No. 241 of 28.03.2001 “On the measures on assurance of industrial safety of hazardous industrial facilities in the territory of the Russian Federation”, the effort is still taken to develop a system of control enabling execution of industrial safety review and technical diagnostics of technical devices, equipment and structures without affecting their acceptability for subsequent use and operation (non-destructive examination) in order to decide whether to extend their safe operation life at hazardous industrial facilities (determination of the remaining life).

In 2009, the Federal Environmental, Industrial and Nuclear Supervision Service of Russia approved and registered 335,483 industrial safety review reports, approval of 10,829 review reports was rejected as they did not comply with established requirements. Distribution of approved review reports versus subject matters of industrial safety review is shown in the Fig. 7.

The main scope of review covers technical devices applied in hazardous industrial facilities.

The industrial specifics of industrial safety review activities is shown in Fig. 8.

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1 CM — coal-mining industry supervision; MM — metal mining and non-metallic industry supervision; PCh — petrochemical and oil-refining industry facilities’ supervision; PP — petroleum and gas production facilities’ supervision; EW — exploration work facilities’ supervision; TP — trunk pipeline transportation facilities’ supervision; M — metallurgical and by-product-coking industries and facilities’ supervision; GD — gas distribution and gas consumption facilities’ supervision; Ch — chemical industry and special chemistry facilities’ supervision; EM — industrial-purpose explosive material production, storage and application facilities’ supervision; T — hazardous substances transportation supervision; VM — supervision of explosive facilities for vegetative raw material storage and processing; HS — hoisting structures supervision; B — boiler supervision.
Industrial safety review of the hoisting structures is one of the most large-scale reviews (more than 100,000 review reports). Significant number of industrial safety review activities falls on the oil and gas industry, gas consumption and gas distribution facilities, petrochemical and oil-refining industry, boiler facilities, chemical industry and special chemistry facilities. The number of review reports made for the remaining lines of supervisory activities in 2009 is much less.

Preparation of draft regulatory legal acts and regulatory methodical documents on the issues related to self-regulation in the field of industrial safety review, propaganda, dataware and methodical documents to support introduction of self-regulation in the specified field were carried out in 2009 with participation of the Committee for Establishment and Development of Self-Regulatory Organizations’ Systems of the Public Council under the Federal Environmental, Industrial and Nuclear Supervision Service of Russia.

Registration of self-regulatory organizations in the field of industrial safety review has been started in the state register since October 2009.

2.3.3. State Environmental Impact Assessment

According to Decree of the Russian Federation Government No. 401 dated 30.07.2004, Rostechnadzor is an authority empowered to arrange and implement the state environmental impact assessment (SEIA) at the federal level.

The SEIA shall be carried out in compliance with Federal Law No. 174-FZ of 23.11.1995 “On Environmental Impact Assessment”, the “Regulations on the Procedure for Conducting of the State Environmental Impact Assessment” approved by Decree of the Russian Federation Government No. 698 of 11.06.1996, the “Regulations on the peculiar properties of the state environmental impact assessment of design documentation for the Olympic facilities to be constructed and reconstructed and subject to major overhaul on the lands of the special nature reserves of federal importance” approved by Decree of the Russian Federation Government No. 824 of 17.10.2009, and the Administrative Rules for the Federal Environmental, Industrial and Nuclear Supervision Service’s exercising the state function related to arrangement and conducting of the state environmental impact assessment of the federal level approved by Order of the Ministry of Natural Resources and Environment of the Russian Federation No. 283 of 30.10.2008.

The SEIA is arranged and implemented by the Department for State Environmental Impact Assessment and Payment Administration as well as by the relevant review divisions of the Rostechnadzor regional bodies. The actual total number of the employees involved in arrangement and implementation of the state environmental impact assessment makes up 6 persons working in the Department for the State Environmental Impact Assessment and Payment Administration and 223 persons working in the review divisions of the Rostechnadzor regional bodies.

Rostechnadzor’s fulfillment of the state function related to arrangement and implementation of the SEIA is characterized by the following indicators:

a) total number of materials submitted for the SEIA — 2,938;
b) the number of materials accepted for SEIA — 2,050, including:
   the number of approved SEIA conclusions (reports) — 1,948 (positive — 1,820; negative — 113; SEIA completed without any result — 15);
   the number of materials, for which SEIA is to be performed (the order on SEIA arrangement is available) — 102;
c) the number of SEIAs that haven’t yet been started — 888, including:
refusals in SEIA performance — 712;
the number of materials being under review (there is no order on SEIA arrangement) — 176.

The number of materials submitted to Rostechnadzor for the state environmental impact assessment within 2009 has reduced to a forth as compared to 2008, which is due to the fact that Federal Law No. 309-FZ of 30.12.2008 “On revisions to Article 16 of Federal Law “On Environmental Protection” and specific legislative acts of the Russian Federation” came into effect on 10.01.2009, thus excluding from the SEIA scope the materials for justification of the license for activities related to collection, use, neutralization, transportation, and emplacement of hazardous waste, which formerly constituted the main subject matter of the SEIA.

The correlation between the approved positive and negative SEIA conclusions was not changed despite the fourfold reduction in the scope of materials submitted for review.

In 2008, the cash inflow predicted by Rostechnadzor for the SEIA made up 200 million rubles. Actually for the 12 months of 2009 the settled bills amounted to 56 million rubles. Failure to implement the predicted values was caused primarily by the fourfold reduction in the total number of materials submitted for the SEIA; and secondly, by reduction in the cost of every SEIA connected with reduction in the scheduled percentage of overheads supporting the process of SEIA arrangement and implementation from 209 to 104 %.

Rostechnadzor participated in implementation of the Programme on Construction of Olympic facilities and Development of Sochi as a Mountain and Climatic Resort approved by Regulation of the Government of the Russian Federation No. 991 of 29.12.2007 (hereinafter referred to as the Programme).

The SEIA of the design documentation developed in the framework of the Programme was arranged and implemented by the Department of the State Environmental Impact Assessment and Payment Administration and the North-Caucasus Interregional Office of Rostechnadzor.

Exercising of the state function related to arrangement and implementation of the SEIA of the design documentation developed in the framework of the Programme fulfillment by the Headquarters and the North-Caucasus Interregional Office of Rostechnadzor within 2009 is characterized by the following indicators:
total number of materials submitted for the SEIA — 183;
SEIA reports approved (total) — 87, including:
those with positive conclusion — 83;
those with negative conclusion — 4;
returned without any result on request of the SEIA customer — 21;
number of facilities, for which refusals in SEIA performance were given — 39.

2.4. Registration of Facilities in the State Register of Hazardous Industrial Facilities

In pursuance of Federal Law No. 116-FZ of 21.07.97 “On Industrial Safety of Hazardous Industrial Facilities”, the Federal Environmental, Industrial and Nuclear Supervision Service carries out the state function related to registration of hazardous industrial facilities (HIF) and maintaining of the state register of hazardous industrial facilities.

The state register of HIF comprises maintaining of departmental and territorial sections thereof.
All sections of the state register of HIF are maintained based on the unified regulatory-and-methodical and software principles.

The departmental sections of the state register are maintained by: the Ministry of Defense of the Russian Federation, the Federal Service of Punishment Execution, the Federal Security Service of the Russian Federation, the Federal Custodial Service of the Russian Federation, the Foreign Intelligence Service of the Russian Federation, the Main Office of the Special Programmes of the President of the Russian Federation, and The Federal Agency of Special Construction of the Russian Federation.

In 2009, the territorial sections of the state register were maintained in 78 subjects of the Russian Federation comprising 31 regional bodies of the Federal Environmental, Industrial and Nuclear Supervision Service of Russia.

As of early 2010, the information on 298,567 HIFs operated by 124,671 organizations was recorded in the state register. The data on 291,926 HIFs operated by 122,179 organizations were registered in the territorial sections. 6,641 HIFs (2.27 %) operated by 2,492 organizations (1.9 %) were registered in the departmental sections. The quantitative distribution of the registered HIFs and operators thereof in the federal districts of the Russian Federation is presented in Fig. 9.

![Quantitative distribution of the registered HIFs and operators thereof in the federal districts](image)

Fig. 9. Quantitative distribution of the registered HIFs and operators thereof in the federal districts

The overwhelming majority of the registered hazardous industrial facilities — 54.17 % (161,745 HIFs) — is represented by the facilities of hazard type 3, which do not contain any hazardous substances defined by the Federal Law “On Industrial Safety of Hazardous Industrial Facilities”, Type 1 facilities, where the number of hazardous substances is equal to or exceeding the amount established in Appendix 2 to the Federal Law “On Industrial Safety of Hazardous Industrial Facilities”, constitute 1.2 % (3,770 HIFs) of the total number of hazardous industrial facilities. Type 2 facilities, where the number of hazardous substances is less than the amount established in Appendix 2 to the Federal Law “On Industrial Safety...
of Hazardous Industrial Facilities”, constitute 44.53 % (129,314 HIFs) of the total number of registered hazardous industrial facilities.

### 2.5. Declaration of Industrial Safety

The information on hazards for the most hazardous facilities determined by Federal Law No. 116–FZ of 21.07.1997 “On Industrial Safety of Hazardous Industrial Facilities” (hereinafter referred to as FZ-116) shall be presented in the form of Declaration of Industrial Safety.

The Declaration of Industrial Safety is a document, which determines possible nature and scopes of emergencies occurring at an industrial facility as well as the measures taken to prevent and eliminate the emergencies. The declaration shall characterize the safety of the industrial production at the stages of its commissioning, operation and decommissioning. It contains the information on location, natural and climatic conditions of placement and staffing level at an industrial facility. The declaration of industrial safety shall also comprise the main characteristics and essential features of the process procedures and the products manufactured at an industrial facility, analysis of risk of natural and man–induced emergencies that could occur at an industrial facility, assessment of emergencies’ development conditions and eventual consequences thereof including releases of harmful substances into the environment, the procedure of providing information to the population and the local governing institution, in the territory of which an industrial facility is located, about the emergencies predicted and those that have occurred at an industrial facility.

The declaration of industrial safety shall be developed as part of design documentation on construction, extension, reconstruction, technical upgrading, preservation and elimination of a hazardous industrial facility, as well as clarified or newly developed in case of applying for a license for operation of a hazardous industrial facility, changing the information contained in the declaration or changing the industrial safety requirements.

In 2009, 165 declarations of industrial safety were developed and registered in the Federal Environmental, Industrial and Nuclear Supervision Service of Russia.

The dynamics of the ISD development within 1996–2009 is shown in Fig. 10.

![Fig. 10. Dynamics of Industrial Safety Declarations’ Development within 1996–2009](image-url)
The analysis of the information on the progress of the hazardous industrial facilities’ declaration demonstrates that declaration is generally accomplished in line with the requirements of FZ-116 and the regulatory legal acts of the Russian Federation.

2.6. Scientific and Technical Support of Regulatory Activity

2.6.1. Research in Nuclear and Radiation Safety

In 2009 the SEC NRS rendered the scientific support in the regulatory activity to the Federal Environmental, Industrial and Nuclear Supervision Service within the framework of the Federal Target Programme “Nuclear and radiation safety assurance for 2008 and for the period up to 2015”, Federal Target Programme “Reduction of risks and mitigation of consequences of natural and man-induced emergencies in the Russian Federation up to 2010”, Federal Target Programme “Fire safety in the Russian Federation for the period up to 2012”, the Programme of SEC NRS scientific and technical activity implemented through the funds of the Federal Budget (PNTD-1/09), the international cooperation agreements and contractual work.

All research and development work was aimed at providing for the Rostechnadzor’s regulatory activities in the field of atomic energy use, development and improvement of regulatory documents, scientific and technical support of review work conducted for nuclear facilities (NF) as well as scientific and technical support of Rostechnadzor’s operational activity.

Besides, in pursuance of the Rostechnadzor’s order the SEC NRS carried out a number of activities aimed at preparation of materials on self-assessment of the nuclear facilities’ safety regulatory authorities (Rostechnadzor and the Ministry of Natural Resources and Environment of Russia). These materials were discussed during the IAEA mission held in November 2009. The results of the mission were highly appreciated not only by the management of the mentioned bodies but also by the governors of the Russian Federation.

2.6.1.1. SEC NRS activity in the framework of Federal Target Programme “Nuclear and Radiation Safety Assurance for 2008 and for the Period up to 2015”

The main purpose of the Federal Target Programme “Nuclear and Radiation Safety Assurance for 2008 and for the Period up to 2015” (hereinafter referred to as the Programme) is a comprehensive solution to the problem associated with the nuclear and radiation safety assurance in the Russian Federation.

In 2009, Rostechnadzor was involved in 14 out of 372 actions set by the Programme on 5 subject areas. The activities under the Programme were carried out by the SEC NRS in the framework of 14 government contracts with Rostechnadzor. The main purpose of the work implemented is to obtain the results contributing to efficient fulfillment of the tasks faced by Rostechnadzor in carrying out the actions under the Programme set forth by the state customer by Decree of the Government of the Russian Federation No. 444 dated 13.07.2007. The activities conducted were aimed at comprehensive resolution of the problem associated with scientific support of nuclear and radiation safety assurance. A number of draft federal codes and regulations as well as safety manuals regulating various aspects of nuclear facilities’ safety assurance, particularly during management of radioactive waste and spent nuclear fuel, accounting and control of nuclear materials and radioactive substances, radiation monitoring, quality assurance, etc. were developed. The federal codes and regulations in the field of atomic energy use were analyzed for compliance with the reference levels de-
developed by WENRA; major non-conformances of the national documents’ provisions with the WENRA recommendations were found; proposals for improvement of the federal codes and regulations’ system in the field of atomic energy use were developed.

A set of activities was carried out to improve safety assessment of various nuclear facilities including probabilistic safety analysis of nuclear plant units and research reactors, nuclear and radiation safety assessment during transportation of spent nuclear fuel of the NPP reactors, long-term forecast in terms of the impact of the nuclear fuel cycle (NFC) tailing dumps on the environment and man. Effort was taken to assess the current and the predicted state of structures and building units of the nuclear fuel cycle facilities as well as to assess the radiation end-of-life of non-replaceable NPP equipment.

The Second National Report of the Russian Federation on Compliance with the Obligations of the Joint Convention was prepared (with reference to governmental regulation of nuclear and radiation safety) and presented as part of the delegation of the Russian Federation at the third meeting of the member-states within May 11–22, 2009.

The refresher courses in safety regulation during RW management, optimization of radiation sources’ supervision, probabilistic safety analysis, the practice of safety regulatory control, etc. were developed for the specialists working in the field of nuclear supervision and atomic industry.

Information support was provided for the activity of Rostechnadzor structural units and organizations of the nuclear sector in the field of nuclear and radiation safety regulation, namely pertaining to replication of regulatory documents, publishing of regulatory documents in the field of nuclear and radiation safety and quarterly issuance of journal “Nuclear and Radiation Safety”.

2.6.1.2. SEC NRS activity in the field of the Federal Target Program “Reduction of risks and mitigation of consequences of natural and man-induced emergencies in the Russian Federation up to 2010”

In 2009, SEC NRS carried out the activities under the Programme in the framework of the government contract with Rostechnadzor. The main purpose of the work conducted is to obtain the results contributing to efficient fulfillment of the tasks faced by Rostechnadzor in carrying out the actions under the Programme set forth by the state customer by Decree of the Government of the Russian Federation No. 1 dated 06.01.2006. The activities conducted were aimed at resolving the problem associated with scientific support of radiation safety regulation.

To enable assessment of a nuclear facility’s compliance with the established safety criteria for potential exposure of staff and population in terms of dose, the procedure was developed allowing determination of the actual radiation risk values in the course of manufacturing inspection, retrospective researches of individual exposure of members of public and staff, planned special exposure, development and implementation of radiological protection optimization plans.

2.6.1.3. SEC NRS activity in the framework of Federal Target Programme “Fire Safety in the Russian Federation for the Period up to 2012”

In 2009, SEC NRS carried out the activities under the Programme in the framework of two government contracts with Rostechnadzor. The main purpose of the work implemented is to obtain the results contributing to efficient fulfillment of the tasks faced by Rostechnadzor in carrying out the actions under the Programme set forth by the state customer by Decree of the Government of the Russian Federation No. 972 dated 29.12.2007.
The proposals for revision of federal regulations and codes regulating safety assurance of nuclear fuel cycle facilities, as well as the methodical manual on assessment of explosion and fire safety of the sorptive systems used in the radiochemical production technology were developed.

2.6.1.4. The programme of SEC NRS scientific and technical activities implemented at the expense of federal budget (PNTD-1/09)

The programme of SEC NRS scientific and technical activities in 2009 comprised five activity lines:

1. Participation in development of legislative and other regulatory legal acts, federal codes and regulations as well as other documents required for assurance of nuclear and radiation safety in the field of atomic energy use.

2. Development of scientific materials containing the results of studying and summarizing the experience in nuclear and radiation safety regulation.

3. Analysis of reports on disturbances and failures in operation of nuclear facilities, and the consequences of their equipment and systems’ damage.

4. Formation and maintaining of data banks for scientific researches and safety analysis of nuclear facilities.

5. Arrangement and conducting of verification for the software tools used in justification of nuclear facilities’ nuclear and radiation safety as well as in activities related to nuclear facilities’ construction, commissioning, operation, extension of operation and decommissioning.

2.6.1.5. Cooperation with the federal executive authorities, academic and application institutes, institutions of higher education and other organizations

To support and ensure development of the educational line of activities, cooperation was exercised with the NRS ITO, Rosobrnadzor, RF Higher Examination Board (HEB), International Atomic Energy Agency (IAEA), Nuclear Safety Institute (IBRAE), Moscow Power Engineering Institute (Technical University) — MPEI (TU), National Research Nuclear University “MEPhI” (Moscow), Tomsk Polytechnic University (TPU, Tomsk), Seversk State Technological Academy (SSTA, Seversk), Obninsk State Technical University for Nuclear Power Engineering (IATE, Obninsk), Obninsk, NOU “Central Institute for Continuing Education & Training” (Obninsk), and Nizhny Novgorod State Technical University (NSTU, Nizhny Novgorod).

SEC NRS cooperated in the main activity lines in the framework of economic contracts with the RF Ministry of Natural Recourses and Environment, JSC “Rosenergoatom Concern”, RRC “Kurchatov Institute”, JSC “SSC RIAR (NIIAR)”, JSC “Afrikantov OKBM”, JSC “TVEL”, FSUE “PA Mayak”, FSUE NIKIET named after N.A. Dollezhal, FSUE “V.G. Khlopin Radium Institute”, FSUE VO “Safety” as well as other organizations.

Interfaces in the framework of agreements on scientific and technical cooperation were maintained with FSUE “VNIIKhT”, Frumkin Institute of Physical Chemistry and Electrochemistry RAS, Obninsk State Technical University for Nuclear Power Engineering (IATE, Obninsk), Nizhny Novgorod State Technical University (NSTU, Nizhny Novgorod), Tomsk Polytechnic University (TPU, Tomsk), and Seversk State Technological Academy (SSTA, Seversk).
2.6.1.6. Forms and methods of activities related to coordination of research work. Challenges and tasks for the future

The main activity related to coordination of research work is carried through participation of the SEC NRS specialists in the activities of scientific, scientific and technical and public authorities and organizations of the nuclear sector, and namely: SEC NRS Scientific and Technical Research Council (STRC); the STRC, its sections and technical committees of Rostechnadzor; the STRC of the State Corporation “Rosatom” and sections thereof; the STRC of JSC “Rosenergoatom Concern”; the STRC of MosNPO “Radon”; as well as Dissertation Councils (RRC “Kurchatov Institute”, etc.) and Advisory Council No. 1 of the Higher Examination Board (HEB) of the Ministry of Education and Science.

Participation of employees in the activities of the Russian Scientific Commission on Radiation Protection (RSCRP) strengthens coordination of research work with reference to radiological aspects of human and environmental safety.

The adequate public perception of the state policy in the field of nuclear and radiation safety regulation is formed also by means of the activities in the public councils of Rostechnadzor and State Corporation “Rosatom”.

Participation of the SEC NRS in the activity of the Nuclear Society of Russia and its Youth Department not only strengthens interdepartmental interfaces while approving the research work results but also contributes to involvement of the new generation of employees into the Russian nuclear sector and its regulatory authority.

The main challenges currently important in scientific support of nuclear and radiation safety regulation comprise:

- development and scientific and technical justification of new approaches to governmental regulation of nuclear and radiation safety in the conditions of accelerated development of nuclear power engineering including gradual transition to establishment of licensing and supervisory procedures adequate to potential hazard of the activities in the field of atomic energy use, as well as removal of superfluous administrative barriers during unconstrained safety assurance at nuclear facilities;
- development of new approaches and lines of the regulatory document system’s improvement ensuring nuclear facilities’ safety regulation;
- improvement of the methodology for establishment of nuclear and radiation safety criteria and principles;
- improvement of the methodology for assessment of nuclear facilities’ nuclear and radiation safety.

2.6.2. Research in the Field of Industrial Safety

The priority lines of research work in the field of industrial safety in 2009 consisted in development of organizational and methodical support and proposals on improvement of inspection, supervisory and licensing activities of the Federal Environmental, Industrial and Nuclear Supervision Service.

The activities were conducted in the framework of implementation of the Plan of Research and Development Activities carried out by order of Rostechnadzor on a competitive basis through the funds of the Federal Budget in the framework of the Federal Target Programme “Fire Safety in the Russian Federation for the Period up to 2012”, as well as specific orders of the Rostechnadzor’s management.

The research and development work was carried out in the following main activity lines:
improvement of legal and regulatory basis;
improvement of supervisory activities;
scientific and methodical support of training and certification of managers and specialists of the companies supervised by Rostechnadzor;
software and information support of Rostechnadzor activities.

According to the Plan of research and development work for 2009, the activities on the following topics were carried out:

- analysis of law enforcement practice of governmental regulation in the field of industrial safety, arrangement and implementation of governmental construction supervision;
- development of the Departmental Target Programme (DTP) “Improvement of supervisory activities in the context of the basic industries’ restructuring, enhancing efficiency of environmental, industrial and nuclear supervision in order to ensure HIF safety and security against man-induced and natural threats and acts of terrorism”;
- development of methodological and software support in implementation of supervisory, inspection and licensing activities.

The 1st stage of the process work related to establishment of the Integrated System for Informatization of Activities of the Federal Environmental, Industrial and Nuclear Supervision Service of Russia was completed.

The activities under three topics of research work were carried out in the framework of the Federal Target Programme “Fire Safety in the Russian Federation for the Period up to 2012”, namely:

- development of new technical decisions pertaining to purification of air in the mine works to exclude generation of fire-hazardous concentrations of gases and dusts, development of systems and technical facilities for remote control of sensors’ operability and accuracy, tools for environment and equipment state monitoring at fire-hazardous facilities, as well as “black boxes” for environment and equipment state monitoring;
- development and improvement of regulatory legal basis in terms of fire safety at nuclear facilities;
- development of training programmes, teaching and methodical aids on arrangement and conducting of inspection and supervision of fire safety assurance at underground facilities and during blasting operations.

The works in the following research topics were carried out in the framework of improvement of organizational and methodical support to the activity of the Federal Environmental, Industrial and Nuclear Supervision Service of Russia:

- “Analysis of law enforcement practice of governmental regulation in the field of industrial safety, arrangement and implementation of governmental construction supervision”;
- “Development of the DTP “Improvement of supervisory activities in the context of the basic industries’ restructuring, enhancing efficiency of environmental, industrial and nuclear supervision in order to ensure HIF safety and security against man-induced and natural threats and acts of terrorism”;
- “Development of methodological and software support in implementation of supervisory, inspection and licensing activities”;
- “Establishment of the Integrated System for Informatization of Activities of the Federal Environmental, Industrial and Nuclear Supervision Service of Russia”;
- “Development of new technical decisions pertaining to purification of air in the mine works to exclude generation of fire-hazardous concentrations of gases and dusts, development of systems and technical facilities for remote control of sensors’ operability and accuracy;
racy, tools for environment and equipment state monitoring at fire-hazardous facilities, as well as “black boxes” for environment and equipment state monitoring”;

“Development of training programmes, teaching and methodical aids on arrangement and conducting of inspection and supervision of fire safety assurance at underground facilities and during blasting operations”.

2.6.3. Research in the Field of Safety of Electrical and Heat Installations and Grids

According to the Programme of Scientific and Technical Activities of FSE “SEC Energobezopasnost (Energy Safety)”, seven research works were being executed in 2009. Based on the research on “Analysis of incidents and accidents according to the data of technical investigations at hydraulic engineering structures (HES) of power engineering and industrial facilities”, the research effort was taken to analyze the man-caused accident at the Sayano-Shushenskaya hydroelectric power dam. The statistic data on the accidents at HES throughout the world and in the Russian Federation were analyzed; the materials on the accident at the Sayano-Shushenskaya hydroelectric power dam were reviewed on 17.09.2009.

To enable detailed investigation of the accident cause-effect relations and subsequent upgrading of the safety level at the hydroelectric power dam, it is recommended that the following analyses be conducted: probabilistic safety analyses with using the statistic data on the accidents, disturbances and failures at the HPD and HES, analyses of HPD equipment reliability as well as the results of investigation at the HPD and HES sites in order to detect the sources of the man-induced danger. Based on the research on “Analysis of incidents and accidents according to the data of technical investigations at power network facilities and electric power consumer networks”, the emergency situations resulting in disconnection of consumers in the power networks were examined. The causes of incidents and accidents were investigated. The major causes of incidents covered: failures of equipment; errors of operating staff; life time overshoots and deviation of the actual conditions from the designed ones; deficiencies in technological maintenance; actions of the third parties; natural phenomena. The vulnerability of the power network facilities is 0.38 kV and 10 kV grids. The equipment susceptible to frequent damages comprises power transformers, instrument transformers, oil circuit breakers, feedthrough and base insulators, as well as disconnecting switches. Based on the research on the “Data base for maintaining of the State Register of hydraulic engineering structures in 2008–2009 at power engineering and industrial facilities” the electronic computer-based data base of the hydraulic engineering structures (systems of hydraulic engineering structures) at the power engineering and industrial facilities of the Russian Federation was formed. This data base is used for keeping account of HES, researches of their safety trends and reviews of HES safety declarations. As far as the other topics of the research work carried out in 2009 are concerned, conducted was the work related to inventory-taking of the production activity procedures applied by the supervised organizations at heat and power engineering facilities; the researches of the state of provision with the regulatory documents on the topic “Power Engineering”; analytical researches in order to identify the lines of international cooperation in the field of energy safety, HES safety and certification of equipment for power engineering facilities (defined as most urgent cooperation in making comparative analysis of the applicable regulatory basis on the RF power engineering versus international practice). Other works related to scientific support of Rostechnadzor’s operational activity were carried out.
2.6.4. Research Works in the Field of Restriction of Adverse Man-Induced Impact on the Environment

In 2009, research work was conducted by order of Rostechnadzor on the topic “Codification of waste based on the analysis of the information about the waste origin, composition, hazardous properties in order to generate the federal waste classification catalog as part of the state waste inventory”.

More than 10,000 materials on justification of various waste hazard classes were reviewed in the framework of the aforementioned work. The waste types of most frequent occurrence were ranged according to a set of priority features: origin, aggregative and physical state, hazardous properties, degree of adverse effect on the environment.

The following inspections were conducted during identification of the waste types:
- inspection of objectiveness and authenticity of the analyzed materials on waste;
- inspection of validity of the waste types’ rating to the specific class of hazard;
- summarizing and systematizing of the information on the waste types.

Based on the results of the information summarizing and systematizing, a list of wastes was generated; the justification materials for these wastes fully comply with the legislative requirements; the proposals on introduction of 125 new waste types into the classification were prepared.

2.7. Public Information

In 2009, the Federal Environmental, Industrial and Nuclear Supervision Service (hereinafter referred to as Rostechnadzor) received 10,364 applications of citizens (9,613 applications in 2008).

It is noted that there is an increase in the number of applications to the Rostechnadzor Headquarters. In 2009, 2,737 applications of citizens were received at the Rostechnadzor Headquarters, which is 1.9 times more than last year (1,429 in 2008).

Increase in the number of the citizens’ applications was mainly caused by the increase of the citizens’ applications on the shared information systems (549 in 2008, 1,939 in 2009). The ratio of these applications as compared to the total number of applications received in 2009 constitutes 70.8 % (38.4 % in 2008).

The analysis of the citizens’ applications to the Headquarters demonstrates that as last year the main topics of the applications covered the issues of energy supervision, construction supervision and ecological problems.

At the same time it should be noted that there is an increased amount of applications regarding energy supervision and construction supervision, which constituted 61 % of all applications received (37 % in 2008). It is pointed out that there is a decrease in the number of applications regarding ecological problems, which constituted 21 % of all applications (42 % in 2008). Such situation may be due to the fact that the state environmental monitoring has been removed from the authorities of Rostechnadzor as per Resolution of the Government of the Russian Federation No. 404 of 29.04.2008 “On the Ministry of Natural Resources and Environment of the Russian Federation”.

The most typical and representative in the territorial bodies is the structure of the citizens’ applications for the Western-Siberian Department of Rostechnadzor. The major number of the citizens’ applications received in this territorial office in 2009 is related to: power engineering — 45 %; construction supervision — 32 %; ecological problems — 12 %.

The work related to personal reception of citizens by the Rostechnadzor’s chairman and his deputies is regulated by Rostechnadzor Order No. 67 of 16.02.2009. The schedule of
personal reception and the procedure of arrangement thereof is placed on the official site of Rostechnadzor.

The general content of the citizens’ applications on social issues consisted in requests for issuance of archive reference information for pension awards, confirmation of the service record including consideration of the possibility of taking into account the record of service in the Soviet executive bodies and party bodies based on the specific conditions of labour activity.

A number of applications contained requests for conducting additional investigation of occupational accidents.

The following measures were taken to resolve the problems entailing citizens’ applications:

- visits to the sites in order to clarify the causes of the citizens’ applications and take adequate measures;
- explanatory work with the supervised organizations concerning the questions causing frequent applications of citizens;
- holding of meetings with the specialists and maintenance staff of operating organizations concerning applications of citizens and taking of measures to provide for more prompt response to the citizens’ applications;
- taking of administrative measures in line with the RF Code of Administrative Offenses towards the officials guilty of violation of law.

In 2009, measures were also taken to develop the proper regulatory basis and enhance the level of arranging the work related to the citizens’ applications.

The Administrative Regulations of the Federal Environmental, Industrial and Nuclear Supervision Service of Russia on execution of the state function “Arrangement of citizens’ reception, ensuring of timely and comprehensive review of oral and written applications of citizens, decision taking and sending of replies to the applicants within the dates established by the legislation of the Russian Federation” (hereinafter referred to as Administrative Regulations) was approved by Order of the Ministry of Natural Resources and Environment of the Russian Federation No. 172 of 29.06.2009. The Administrative Regulations came into force on 20.11.2009 after its registration (registered in the Ministry of Justice of the Russian Federation on 28.09.2009 under registration No. 14898) and official publication.

The issues related to handling of the citizens’ applications are controlled by the Rostechnadzor’s management. A meeting was held in June 2009 with participation of the Headquarters departments’ heads concerning the state of the performer’s discipline while reviewing the citizens’ applications.

In 2009, inspections were carried out to check the state of the citizens’ applications handling in the Headquarters and in the Northern–Caucasus Office.

The resources of the official site are used in Rostechnadzor for public disclosure of the information about handling of the citizens’ applications. In 2009, activities stirred up in the Rostechnadzor’s territorial bodies with reference to usage of the available sites for elucidation of the main activity lines, authorities, publication of replies to the questions contained in the citizens’ applications.
III. INFORMATION ON PAYMENTS FOR NEGATIVE MAN-INDUCED IMPACT ON THE ENVIRONMENT

Rostechnadzor was charged with the authorities of chief administrator of the federal budget incomes obtained from payments for the negative impact on the environment by Federal Law No. 204-FZ of 24.11.2008 “On the federal budget for 2009 and for the scheduled period of 2010 and 2011”.

Inflow of payments for the negative impact on the environment into the federal budget was forecasted to be at the level of 3.392 bln rubles (16.958 bln rubles — into the consolidated budget of the Russian Federation).

According to the data of the federal treasury the actual inflow of payments for the negative impact on the environment into the federal budget was 3,736 bln rubles in 2009 (18,681 bln rubles — into the consolidated budget of the Russian Federation) or 110 % of the forecasted amount of the inflow.

The maximum reduction of the inflow as compared to 2008 was observed in the territories of Chelyabinsk Region (by 33 %), Ivanovo Region (by 33 %), Kostroma Region (by 32 %), Yaroslavl Region (by 30 %), Irkutsk Region (by 26 %), Sverdlovsk Region (by 25 %), Khanty-Mansiysk Autonomous Area (by 34 %) and Yamalo-Nenets Autonomous Area (by 40 %), as well as Kamchatka Territory (by 27 %).

The maximum increase of the inflow as compared to 2008 was observed in the Pskov Region (by 49 %), Republic of Dagestan (by 41 %), Mordovia (by 32 %), Buryatiya (by 25 %), and Chukchi Autonomous Area (by 75 %).

The total amount of payment charges for the negative impact on the environment made up 18.113 bln rubles in 2008.

Due to suspension and (or) cutback of production caused by adverse economic trends, significant reduction in the inflow of payments for the negative impact on the environment was observed in 2009 as compared to 2007 and 2008.

Table

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<thead>
<tr>
<th>Information on inflow of payments for 2007—2009*</th>
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<tr>
<td><strong>Index</strong></td>
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<td><strong>Total amount of the payments inflow, including:</strong></td>
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<td>for allowed negative impact</td>
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<td>for unallowed negative impact</td>
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<td><strong>According to the impact types:</strong></td>
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<td>atmospheric emissions</td>
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* Without consideration of additional charges.
** To enable comparability of indexes, the amounts charged are indicated as reduced to the inflation level of 2007.
<table>
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<tr>
<th>Index</th>
<th>2007</th>
<th>2008*</th>
<th>2009*</th>
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<tr>
<td>discharges with effluent water</td>
<td>4 billion rubles</td>
<td>3.5 billion rubles</td>
<td>3.1 billion rubles</td>
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<td></td>
<td>(23.4 %)</td>
<td>(20.6 %)</td>
<td>(20.7 %)</td>
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<tr>
<td>waste disposal</td>
<td>8.6 billion rubles</td>
<td>9.3 billion rubles</td>
<td>8.3 billion rubles</td>
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<td></td>
<td>(50.2 %)</td>
<td>(54.7 %)</td>
<td>(55.3 %)</td>
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More than 50% of inflow of payments for the negative impact on the environment was provided at the expense of organizations exercising negative impacts in the following territories: federal cities — Moscow and Saint Petersburg; Irkutsk, Kemerovo, Leningrad, Moscow, Samara and Sverdlovsk Regions; Krasnoyarsk, Krasnodar and Primorsky Territories; the Republic of Tatarstan; Khanty-Mansiysk and Yamalo-Nenets Autonomous Areas.

* To enable comparability of indexes, the amounts charged are indicated as reduced to the inflation level of 2007.
IV. INTERNATIONAL COOPERATION

The scope of the international cooperation in 2009 was determined by the main lines of activities exercised by the Federal Environmental, Industrial and Nuclear Supervision Service and the Plan of International Cooperation for 2009.

The international cooperation of Rostechnadzor was aimed at enhancing efficiency of its activities as a federal executive authority carrying out control and supervisory functions in the field of industrial safety, safety in atomic energy use (except for the activities related to development, manufacture, testing, operation and utilization of nuclear weapons and military nuclear power installations), safety of power and thermal installations and networks (except for domestic installations and networks), safety of production, storage and application of industrial-purpose explosive materials, as well as the special functions in the field of the national safety in the specified area, in the field of environmental protection in terms of restriction of negative man-induced impact and the functions related to arrangement and conducting of the state environmental impact assessment at the federal level.

74 receptions of foreign delegations from 26 countries were arranged in 2009 in Rostechnadzor; 320 representatives of foreign institutions and organizations took part therein.

At the same time 331 employees of Rostechnadzor were sent on an assignment abroad to participate in 166 international events.

4.1. International Cooperation in the Field of Nuclear Supervision

Multilateral Cooperation

Cooperation with the European Commission

The activities under the TACIS projects on rendering assistance to Rostechnadzor by the technical support organizations in the field of licensing and supervision over nuclear and radiation safety in atomic energy use for peaceful purposes (RF/TS).

Rostechnadzor cooperates with the European Commission in the framework of the TACIS Program on “Nuclear Safety” in the field of support of Rostechnadzor’s licensing and supervisory activities which is carried out in collaboration of Russian and West-European scientific and engineering organisations.

The activity in this area was carried out in the framework of projects in the following fields:

- licensing of the upgrades of the Russian NPPs, reconstruction of the Murmansk enterprise “Radon”;
- supervision over nuclear materials’ accounting, control and physical protection activities;
- licensing of activities related to decommissioning of nuclear installations;
- licensing of activities related to management of radioactive waste generated during decommissioning of nuclear power installations of ships and other floating facilities with nuclear reactors and radiation sources.
The works in the framework of the aforementioned projects were carried out according to the agreed schedules; the project under the last-named of the abovementioned activity lines was completed in October 2009 according to the schedule.

**Cooperation with IAEA**

In 2009 representatives of Rostechnadzor participated in the international conferences, symposia and forums held under the auspices of IAEA.

The meeting of the Programme Committee for preparation of the IAEA second international conference on efficient nuclear safety regulation systems (Capetown, South Africa, December 2009) was held on March 11–12, 2009 in Washington (USA) with participation of the Rostechnadzor representatives. During the meeting the Conference Programme was finalized and the speakers were identified.

Within the period from August 31 to September 2 the representatives of Rostechnadzor and FSE SEC NRS, on invitation of IAEA, took part in the first meeting of the Programme Committee for preparation of the IAEA conference held in Vienna, Austria to discuss the issues related to the activity of technical support organizations; during the meeting the preliminary conference programme was developed and the potential speakers and the conference agenda were identified.

Within December 14–18, 2009 the delegation or Rostechnadzor headed by the Service Chairman took part in the international conference on efficient nuclear safety regulation systems held in Capetown, SAR.

The purpose of the Conference was to assess efficiency of the regulatory bodies’ activity both at the national level and in the framework of the global nuclear safety and security regime in order to develop the proposals and the action plan related to subsequent strengthening of such regime.

**The 53rd session of the IAEA General Conference**

The Deputy Chairman of Rostechnadzor as part of the delegation of the Russian Federation participated in the 53rd session of the IAEA General Conference (GC) held within September 14–18, 2009 in Vienna, Austria. Bilateral meetings with the management of the IAEA Secretariat and the managers of the IAEA member-states’ supervision authorities were arranged and held during the General Conference.

Senior regulators’ meeting held in the framework of the IAEA discussed the issues related to international support of the regulatory bodies of those countries, which are going to establish a nuclear power infrastructure or extend their nuclear programme, as well as long-term strategies for management of radiation sources withdrawn from use.

**Participation in activities related to preparation and holding of the IAEA mission (IRRT)**

Within the reporting period efforts were taken to prepare for holding of the IAEA mission (IRRT) in November 2009 to review the activity of the Russian safety regulatory authorities during peaceful use of atomic energy (hereinafter referred to as the Mission), including conducting of self-assessment in order to determine compliance of the process of nuclear and radiation safety governmental regulation in Russia with the IAEA standards. The main results of this self-assessment are presented in the “Report on results of self-assessment against IAEA documents’ requirements”.

The mission was held within November 15–29, 2009. The representatives of Rostechnadzor took an active part in the mission, arranged technical visits to the Kalinin
and Nuclear Supervision Service of Russia in 2009

NPP, the Moscow State Unitary Enterprise “Joint Environmental-Technological Scientific Research Center for Radioactive Waste Decontamination and Environmental Protection” (MosNPO “Radon”) and the research reactor of the Moscow Engineering Physics Institute and FSUE PA “Mayak”. Following the mission results, a report was prepared: this report contains the best practice examples as well as proposals and recommendations on improvement of the regulatory activities in the field of peaceful use of atomic energy in Russia.

**Joint Convention on Safety of Spent Fuel Management and on Safety of Radioactive Waste Management**

The representatives of Rostechnadzor as a member of the delegation of the Russian Federation participated in the Third Review Meeting of the Contracting Parties of the Joint Convention on Safety of Spent Fuel Management and on Safety of Radioactive Waste Management held within May 11–20, 2009 in Vienna, Austria. The meeting was held in the IAEA Headquarters in Vienna, Austria.

The Ministry of Natural Resources and Environment of the Russian Federation, the Federal Environmental, Industrial and Nuclear Supervision Service of Russia and the State Nuclear Energy Corporation “Rosatom” presented the second national report of the Russian Federation.

In the course of the final plenary session the parties agreed to hold the next Review Meeting of the Contracting Parties within May 7–16, 2012. The national report shall be submitted by 07.10.2011 at the latest.

**Participation in activities arranged under the aegis of the Nuclear Energy Agency of Organization for Economic Cooperation and Development (OECD/NEA)**

The 21st session of the Committee on Nuclear Regulatory Activities (CNRA) of the Nuclear Energy Agency was held on June 8–9, 2009 in Paris, France. The Rostechnadzor’s Chairman took the floor to inform about the most significant events for the nuclear and radiation safety supervisory and inspection authority occurred in Russia for the past six months.

**Participation in activities in the framework of the Multinational Design Evaluation Programme**

The session of the Steering Technical Committee (STC) of the Multinational Design Evaluation Programme (MDEP) with participation of the Rostechnadzor’s delegation was held on February 4–6, 2009 in Paris, France. The main objectives of the session were to discuss and revise the STC annual report for its subsequent presentation at the meeting of the MDEP Policy Group (PG), as well as to arrange preliminary discussion of the long-term plans and prospective activity lines in future for submitting technical recommendations for the PG.

A representative of Rostechnadzor took part in the sessions of the Working Group on Digital Instrumentation & Control in the framework of MDEP held on February 9–11, 2009 and on June 23–25, 2009 in Paris, France. The main objectives of the sessions were to discuss the main problems related to licensing of the safety-related I&C software, as well as agreement of requirements for the codes and standards applied in different countries. The problems related to reliability of the I&C software, certification of digital control safety systems, changing of the test frequency during operation of the reactor protection systems and control safety systems as well as the consequences of the common cause failures were discussed at the session of the mentioned group held within October 6–8, 2009 in Seoul, South Korea.
The session of the MDEP Policy Group was held on March 12, 2009 in Washington, USA. The Group discussed the report of the MDEP Steering Technical Committee on the activities conducted in 2008 as well as recommendations on continuation of activities in the framework of the Programme.

The regular session of the Working Group on Codes and Standards with participation of the Rosatechnadzor’s representatives was held in the framework of MDEP on July 7–10, 2009 in Paris, France. The reports of the MDEP member-countries on fulfillment of obligations set forth in the Final Minutes of the previous session of the Working Group were presented during the session.

The delegation of Rosatechnadzor headed by the Service Chairman took part in the Conference on Activities Related to New Reactor Designs (in the framework of MDEP) held on September 10–11, 2009 in Paris, France. The Rosatechnadzor’s Chairman headed the session presidium devoted to review of the MDEP working groups’ activity results on specific aspects.

The 9th session of the MDEP STC with participation of representatives from Rosatechnadzor and FSE SEC NRS was held on October 7–9, 2009 in Paris, France. During the session the participants discussed the activity of the MDEP working groups, the proposals on changing of the work statement for MDEP implementation, the issues related to interaction with public and the tools and degrees of access to the MDEP activity results for the parties concerned, the issues related to functioning of the MDEP electronic library, MDEP interaction with the other working groups interested in informational exchange with MDEP as well as the plan of the STC annual report preparation.

**Participation in activities carried out within the Eurasian Economic Community (EurAsEC)**

The representatives of Rosatechnadzor took part in the 4th and 5th sessions of the Council for Cooperation in Peaceful Use of Atomic Energy under the Integration Committee of the Eurasian Economic Community as well as in the antecedent meetings of experts on agreement of the Council session materials held in April 2009 in Alma-Ata (Republic of Kazakhstan) and in November 2009 in Dushanbe (Republic of Tajikistan) accordingly.

The session participants discussed the activity related to the draft Concept of the Eurasian Economic Community’s interstate target programme on “Recultivation of the EurAsEC member states’ territories, which have been subjected to impact of uranium-mining industries”, the activity related to harmonization of the EurAsEC member-states’ legislation on accounting, control and storage of ionizing radiation sources, arrangement of activities pertaining to the problems of nuclear education development in the EurAsEC member-states, as well as interaction between the EurAsEC and the IAEA.

The Rosatechnadzor representatives took part in the sessions of the Working Group of the Council for Peaceful Use of Atomic Energy under the Integration Committee of the Eurasian Economic Community on development of the draft interstate target programme on “Recultivation of the EurAsEC member states’ territories, which have been subjected to impact of uranium-mining industries” held in July and October of 2009 in Moscow, Russia.

The first session of the Working Group of the EurAsEC member-states’ experts on the issues related to environmental protection was held within December 7–8, 2009 in Alma-Ata, Kazakhstan. The main lines of the EurAsEC member-states’ cooperation in environmental protection aspects were identified during the session.
Participation in activities carried out within CIS

Cooperation of the member-states of the Commonwealth of Independent States in the field of nuclear power engineering is carried out in the framework of the CIS Commission for Peaceful Atom (hereinafter referred to as the Commission).

The 10th session of the Commission, in the course of which the report on the work carried out within 2007—2008 was presented, was held on March 12—13, 2009 in Moscow. The key problems pertaining to subsequent activities of the Commission were also discussed during the session. Development of the draft Long-Term Programme on cooperation of CIS member-states in the field of the peaceful use of atomic energy for the long-term period was declared as a priority. The draft Agreement “On Coordination of International Relations in the Field of Atomic Energy Use for Peaceful Purposes” was reviewed.

Participation in activities in the framework of G8

Two sessions of the G8 Nuclear Safety and Security Group (NSSG) took place in 2009 under the chairmanship of Italy: on February 25–26 and May 27–28. The following major challenges were discussed at the first meeting: the progress in implementation of the projects related to the Chernobyl NPP site; enhancement of the safety level at the Armenian NPP; implementation of the initiative on assistance in nuclear energy engineering infrastructure development (3S); the global nuclear safety network; comprehensive approaches to the nuclear fuel cycle; training of personnel for nuclear power applications, etc.

During the second meeting, preparation of the NSSG report for the G8 Summit was in progress; besides the text of the International Initiative on Assistance in Nuclear Energy Infrastructure Development was prepared.

Pursuant to Decree of the Russian Federation Government No. 800-r of 15.06.2009, the Ministry of Natural Resources and Environment of the Russian Federation was charged with management of the Russian activities in the framework of the Nuclear Safety and Security Group.

Participation in activities in the framework of the WWER Regulators Forum

The delegation of Rostechnadzor headed by its Chairman took part in the 16th annual meeting of the WWER Regulators Forum held in Sophia, Bulgaria, on July 6—10, 2009.

The managers and the leading specialists of regulators from Armenia, Bulgaria, Hungary, China, Russia, Slovakia, Czechia, Finland and Ukraine, i.e. the countries operating WWER NPPs, as well as the managers and the leading specialists of regulators from India and Iran, i.e. the countries constructing WWER NPPs, took part in the meeting.

The representatives of Germany and IAEA took part in the Forum as observers.

The Russian party presented two reports during the meeting: “On nuclear and radiation safety regulation in Russia within July 2008 — June 2009” and “On events important to safety occurred at the Russian NPPs with WWER reactors”. Bilateral consultations were held with the representatives of nuclear and radiation safety regulators from the Forum member-states.

Participation in other activities (assemblies, conferences, symposia, workshops, exhibitions, etc.) pertaining to the jurisdiction of Rostechnadzor

The delegation of Rostechnadzor took part in the annual conference “Eurosafe” held on November 2–3, 2009 in Brussels, Belgium. The conference consisted of the plenary session and five workshops on the following topics: safety of nuclear installations — assessment and analysis; safety of nuclear installations — researches; waste management and environment; security of nuclear materials and installations; radiation protection.
Cooperation with the USA

Activities in the framework of the Memorandum of Cooperation between the Federal Nuclear Supervision Service and the US NRC

On February 10–13, 2009 FSE SEC NRS held a workshop on “Risk-oriented assessment of the technical characteristics: assessment of the risk significance depending on changing of the permissible time periods for the equipment decommissioning and the periods of the equipment maintenance”. The main purpose of the workshop was to transfer the experience of the US Nuclear Regulatory Commission (NRC) in the field of the NPP PSA applications in order to optimize the NPP process regulations. The aspects of the NPP safety assessment related to changing of periods and time of the equipment maintenance were considered.

On invitation of the US NRC on March 10–12, 2009 the delegation of Rostechnadzor headed by the Service’s Chairman took part in the 21st Annual Conference of the US NRC. Besides the plenary session, conducting of 36 technical sessions was envisaged during the conference. One of the major conclusions of these sessions is the fact that the regulatory bodies of the nuclear technology supplying countries shall transfer their experience to the regulators of the countries that declared their intention to construct the first NPPs (25 countries have presently declared their interest in development of their own nuclear programmes). A number of bilateral meetings was arranged during the conference.

The status of activities in the field of bilateral cooperation was reviewed during the meetings with the US NRC representatives held in August and November 2009; preliminary conclusions were made and eventual trends of cooperation in the future prospect were discussed at these meetings.

Activities on implementation of agreements on cooperation with the US Department of Energy (US DOE) in the field of research reactors and fuel cycle enterprises’ safety enhancement as well as nuclear materials’ physical protection, control and accounting (MPC&A)

The 14th session of the Joint Coordination Committee acting in the framework of the intergovernmental Russian-American Agreement on Cooperation in the field of nuclear materials’ physical protection, control and accounting was held on April 25–25, 2009 in Barcelona (Spain). A representative of Rostechnadzor as part of the Russian delegation took part in the meeting with a report on results of activities between Rostechnadzor and the US Department of Energy (US DOE) in the field of enhancement of supervision over nuclear materials’ physical protection, control and accounting.

A meeting between the Rostechnadzor Deputy Chairman and the Deputy Head of the US National Nuclear Safety Administration was held on April 29, 2009 in Moscow. The issues were discussed on bilateral cooperation in the following fields: supervision over nuclear materials’ physical protection, control and accounting; the state of affairs related to returning of spent fuel of research reactors constructed against the Soviet designs back to the Russian Federation; reduction of radiological hazards.

The session of the Joint Coordination Committee acting in the framework of the Agreement between Rostechnadzor and the US Department of Energy in the field of nuclear materials’ physical protection, control and accounting was held within June 22–24, 2009 in Budapest (Hungary). The scheduled discussion of activities carried out in the framework of the mentioned agreement was held. The participants made a positive appraisal of cooperation in MPC&A supervision enhancement and emphasized the need in continuation thereof.
The workshop on the “Aspects pertaining to development of design basis threats with respect to radiation-dangerous facilities” with participation of Rostechnadzor representatives was held within July 27–31, 2009 in Cairo (Egypt) in the framework of the US DOE Cooperation Programme.

A meeting with the delegation of the Government Accountability Office (GAO) of the US Congress was held on July 30, 2009 in Moscow. The purpose of the GAO delegation visit in Russia was to discuss the further priorities in development of Russian-American relations in the field of non-proliferation. The efficiency of the US DOE programmes in the field of nuclear materials physical protection, control and accounting, as well as the role of the Nuclear Safety Convention in enhancement of nuclear safety in Russia were among the topics being discussed.

10 meetings between the representatives of Rostechnadzor and US DOE were held within the reporting period in Moscow. The following topics were discussed at the meetings: the progress of projects on development of Rostechnadzor’s guidelines in the field of MPC&A supervision; improvement of the supervisory activity in the field of accounting, control and physical protection of nuclear materials; the state of affairs with regard to returning of spent nuclear fuel of the research reactors constructed by the Soviet designs back to the Russian Federation; conducting of the state environmental impact assessment of uniform projects on import of the irradiated fuel assemblies of nuclear reactors in Russia.

Conducting of activities on implementation of cooperation with the US DOE in the field of safety regulation during implementation of the excess weapons-grade plutonium disposition programme

The 77th meeting of the Coordination Committee on the GT-MHR Reactor Design with participation of the Rostechnadzor’s delegation was held on February 23–27, 2009 in San Diego, USA. The information on the progress of activities related to the GT-MHR reactor design as well as nuclear fuel thereto was presented.

The 5th meeting of the Working Group on shutdown of industrial uranium-graphite reactors producing weapons-grade plutonium was held within June 8–12, 2009 in the USA (Richmond, Seattle). The Rostechnadzor’s representative took part in the meeting as part of the Russian delegation. The issues related to preparation of reactors ADE-2, 4, 5 for shutdown were discussed. Also, a working visit was taken to the Hanford site to control the shutdown industrial uranium-graphite reactors.

Cooperation with Germany

Activities on implementation of the Agreement with the BMU on cooperation, exchange of information and experience in licensing, supervision and review of nuclear and radiation safety

According to the Action Plan in the framework of the bilateral cooperation between Rostechnadzor and the Federal Ministry for the Environment, Nature Conservation and Reactor Nuclear Safety of Germany (BMU), which had been agreed upon at the annual meeting on 10.02.2009 in Kiev (Ukraine), workshops on the following topics were held:

“Ensuring of the personnel professional competence in the national systems of peer review, licensing and supervision over nuclear and radiation safety during peaceful use of atomic energy” (May 3–9, 2009, Cologne, Germany);

“Comparison of approaches and exchange of experience in NPP safety reviews” (October 26–30, 2009, Rovenskaya NPP, Kuznetsovsk, Ukraine);

“Rehabilitation techniques and objectives of the regulatory authorities during preparation and conducting of activities related to rehabilitation of old radiological contaminations
produced by the mineral resource industry” (December 14–18, 2009, Dushanbe, Republic of Tajikistan).

Within the framework of the Programme of joint science and research activities carried out by FSE SEC NRS and the Society of Nuclear Installations and Reactors Safety (GRS), the BMU technical support organization, a working meeting was held on the “Further development of the analytic simulator for WWER-440/230 (applicable to Units Nos. 1 and 2 of the Kola NPP)” (June 10–20, 2009, Berlin, Germany), working “GRS Software Tools — Development, Verification and Application” (November 14–20, 2009, Garching, Germany).

Besides, a working meeting on the knowledge management in the field of supervisory and licensing activities with participation of FSE SEC NRS and GRS representatives was held within September 13–17, 2009 in Berlin, Germany. The following topics were discussed during the meeting: exchange of experience in arrangement of NPP safety reviews and usage of the Windows XP operational system capabilities for the users’ joint studying of documents; the experience of FSE SEC NRS in usage of the web-technologies in the local and external networks; soft and hardware requirements for the information and computation component of the knowledge management system; the possibility of using the FSE SEC NRS web-site as an element of the knowledge management system.

Cooperation with the Institute of Safety Technologies in the aspects related to certification of APCS used at the NPPs

A technical workshop on the safety aspects of digital control systems of nuclear plants was held within October 4–11, 2009 in Garching, Germany. During this meeting the participants discussed the requirements of the German supervisory authorities for digital control systems of nuclear plants, software tools and programmable devices of the control systems.

Cooperation with France

A meeting between the representatives of Rostechnadzor and the Embassy of France in Moscow was held on March 4, 2009 in Rostechnadzor (Moscow). The Russian party provided information on restructuring of the executive authorities of the Russian Federation in 2008. In turn, the French party stated that new NPP units are being constructed both in Russia and in France, and it would be beneficial if the parties exchanged information on the criteria and approaches for ensuring and supervision of nuclear and radiation safety throughout the life cycle of new nuclear installations.

Within the reporting period, two meetings were held in Moscow between the representatives of FSE SEC NRS and the Institute for Radiological Protection and Nuclear Safety of France: on April 21, 2009 and on June 25, 2009. The first meeting was concerned with discussion of the aspects related to application of software product “Melodie” for long-term safety assessment of radwaste storage and disposal facilities. The second meeting was devoted to discussion of trends of current and future bilateral cooperation between the FSE SEC NRS and the Institute for Radiological Protection and Nuclear Safety of France. During the meeting, FSE SEC NRS suggested that in addition to the existing activity line (licensing and safety supervision of fuel cycle facilities) the parties should consider the possibility of including such activity lines as licensing and safety supervision of nuclear facilities, supervision over radiation safety of radiation sources.
Cooperation with Norway

Participation in the activities related to implementation of the Agreement on Cooperation with the Norwegian Radiation Safety Agency

A bilateral meeting was held on September 28, 2009 in Rostechnadzor (Moscow) to discuss and finally agree the work plan and the scope of joint activities in the field of radiation safety supervision during decommissioning and transportation of radioisotope thermoelectrical generators (RITEG). Five priority tasks were identified: analysis of accumulated experience in safety supervision during decommissioning of RITEG and liquidation of the incidents (accidents) consequences; holding of an educational seminar to provide and renew inspectors’ theoretical knowledge and practical skills oriented at relevant and perspective needs of the RITEG decommissioning supervisory activities; assessment of the risk during removal of radioisotope heat sources from the RITEG; development of the methodical manual on preparation of the plan for arrangement of activities aimed at liquidating the consequences of the accidents occurred during transportation of radioactive materials; holding of a joint emergency drill.

By invitation of the Norwegian Radiation Safety Agency, the Rostechnadzor’s representatives took part in the workshop on supervision over nuclear and radiation safety of abandoned uranium mines held on December 7–8, 2009 in Drammen, Norway. During the workshop, the participants discussed the international recommendations on ensuring safety during recultivation of the contaminated territories as well as exchanged experience in licensing and safety supervision during implementation of the mentioned activities.

Cooperation with Finland

Meetings and workshops on implementation of the Agreement with the Radiation and Nuclear Safety Authority of Finland

Bilateral cooperation with Finland was carried out according to the programme of cooperation agreed on at the annual meeting held in Russia (Moscow, February 25–26, 2009) in the following areas: supervision over physical protection, accounting and control of nuclear materials, supervision of safety during management of spent nuclear fuel and radioactive waste; licensing and safety supervision of radiation-hazardous facilities; licensing and supervision over NPP nuclear and radiation safety.

Within the reporting period, 7 workshops were conducted in the framework of the cooperation programme for 2009; besides, a familiarization visit of the Finnish experts to the SUE MosNPO “Radon” was arranged to get acquainted with the system of radioactive substances and radwaste accounting and control.

Within June 24–30, 2009 by invitation of the Director General of the Radiation and Nuclear Safety Authority of Finland, the delegation of Rostechnadzor headed by the Service’s Chairman made a visit to Finland to discuss bilateral cooperation in the field of licensing and supervision of nuclear and radiation safety during peaceful use of atomic energy. During the visit, the Russian delegation visited the sites of the Olkiluotto NPP units (the one being constructed and the units in operation) to get acquainted with the progress of construction as well as to exchange experience in safety supervision during construction and operation of nuclear installations. The delegation also visited the underground storage of low- and intermediate-level activity waste being constructed in the territory of the mentioned nuclear plant.

By invitation of the Finnish party, the Rostechnadzor’s representatives took part in the training course on the NPP fire protection (October 6–10, 2009, Helsinki, Finland) as well
as in the workshop on the issues related to the NPP safety throughout its operation life and in discussion of the problems related to the NPP safety supervision during NPP modification/modernization activities (November 9–12, 2009, Finland, Olkiluotto NPP).

**Cooperation with Sweden**

Within the reporting period, two meetings were arranged between the experts of Ros teknadzor and the Swedish Radiation Safety Agency to discuss bilateral cooperation in the field of supervision over nuclear materials and radioactive substances’ physical protection, accounting and control.

In September 2009, the proposals were forwarded to the Swedish party regarding cooperation within 2010 in such fields as supervision of safety during management of SNF and RW as well as safety of RW storage facilities; emergency preparedness; non-proliferation and illegal circulation; supervision of reactor safety. A meeting on discussion of the mentioned proposals was scheduled for the 1st quarter of 2010 in Moscow.

**Cooperation with Ukraine**

Cooperation is carried out in the framework of the Agreement on Cooperation with the State Nuclear Regulatory Committee of Ukraine (SNRC).

On March 16 and 18, 2009, meetings with the delegation of the Ukrainian SNRC were held in Moscow to discuss bilateral cooperation. During the meetings, the parties exchanged information on the state of the current affairs in the SNRC of Ukraine and Ros teknadzor, discussed the issues related to the projected IAEA review mission to assess the activity of the Russian regulatory authority and the results of the IAEA review mission conducted to assess the activity of State Nuclear Regulatory Committee of Ukraine. The possible activity lines to promote cooperation in the framework of the WWER Regulators Forum were discussed.

Within November 2–3, 2009, the delegation of the FSE SEC NRS took part in the bilateral working meeting on the “Safety of Existing and New NPP Power Units” held in Kiev, Ukraine. During the meeting, the parties discussed the issues related to safety of existing and new NPP power units including planning and implementation of modernizations, the requirements for the level of modernization during extension of the service life, the licensing experience feedback, and the requirements for sites and equipment. The Russian participants provided information on licensing of nuclear plants in the Russian Federation, analysis of the NPP disturbances, the methods of probabilistic assessment of the NPP disturbances’ significance and review of the NPP units being constructed.

A representative of FSE SEC NRS took part in the second workshop-meeting on “Development of nuclear power engineering in Russia and Ukraine — the factor of sustainable development of international cooperation” held within October 20–23, 2009 in Energodar, Ukraine. The reports on various aspects of the atomic energy use and development of nuclear power engineering in Russia and Ukraine were presented.

**Cooperation with Belorussia**

A meeting between the representatives of Ros teknadzor and the delegation of the Department of Nuclear and Radiation Safety (Gosatomnadzor) of the Ministry of Emergency of the Republic of Belarus was held on December 24, 2009 in Moscow. During the meeting, the parties exchanged information on the structures of supervision and control over nuclear and radiation safety applicable in their countries. The parties discussed the licensing issues including safety review of nuclear fuel cycle facilities and newly constructed NPP units.
Cooperation with Iran

Within the reporting period, the specialists of FSUE VO “Safety” regularly visited the Bushehr NPP construction site to render consulting services during conducting of ad hoc inspections as well as during review of the safety case documents.

In December 2009, consultations were held in Rostechnadzor with the delegation of the Iranian Nuclear Regulatory Authority (INRA). The parties discussed the state of affairs in the field of supervision and control of nuclear and radiation safety during completion of the Bushehr NPP (BNPP) construction, as well as the issues related to continuation and development of bilateral cooperation at the stages of BNPP-1 commissioning and operation.

Cooperation with Armenia

Cooperation is exercised in the framework of the Agreement on Cooperation with the State Nuclear and Radiation Safety Supervision of the Republic of Armenia (RA Gosatomnadzor).

A working meeting between the representatives of FSE SEC NRS and the delegation of RA Gosatomnadzor on the issues related to safety of the new fuel type to be used at the Armenian NPP was held within August 26—27, 2009 in Moscow, Russia. During the meeting, the employees of FSE SEC NRS made reports on the experience in application of the new fuel in Russia, the problems occurring during running of new fuels at the Russian NPPs, the solutions to these problems, the Russian approach to licensing activity related to running of new fuels, as well as the problems related to review of documents justifying safety of the power units’ operation during introduction of new fuels.

The representatives of the Republic of Armenia provided information on the new fuels’ licensing practice and the problems occurring during licensing.

Cooperation with China

A meeting between the representatives of Rostechnadzor and the representatives of the Nuclear and Radiation Safety Regulatory Authority of China was held on September 15, 2009 in Moscow to discuss the issues of bilateral cooperation in the field of nuclear safety supervision and control. It is noted that the parties are mutually interested in continuation and development of cooperation between the regulatory authorities of Russia and China. The parties agreed an entry into the minutes of the 13th meeting of the Russian-Chinese Subcommission on Nuclear Issues in the framework of the Commission for the Regular Meetings of Heads of Government of Russia and China, which specified the lines of subsequent bilateral cooperation.

A representative of Rostechnadzor took part in the 13th meeting of the Russian-Chinese Subcommission on Nuclear Issues within the framework of the Commission for the Regular Meetings of Heads of Government of Russia and China held on September 17, 2009. The parties reviewed the results of the Russian-Chinese cooperation in the field of atomic energy use for peaceful purposes for the period after the 12th meeting of the Nuclear Subcommission. Following the meeting results, the parties signed the minutes providing for holding of two meetings in 2010 (in China and Russia) between the representatives of Rostechnadzor and the National Nuclear Safety Administration of China on exchange of practical experience in supervisory activities carried out during construction and operation of WWER and fast breeder NPPs.
Cooperation with Egypt

A representative of RosTechnadzor took part in consultations held within July 17–22, 2009 in Egypt (Cairo) with the Ministry of Electricity and Energy in the framework of the Agreement between the Government of the Russian Federation and the Government of the Arab Republic of Egypt on cooperation in the field of atomic energy use for peaceful purposes and made an overview presentation on licensing, state control and supervision of nuclear and radiation safety during atomic energy use in the Russian Federation.

In the course of consultations, the parties discussed the possible lines of cooperation, among which the Egyptian party pointed out preparation and training of personnel of the regulatory body in the field of the NPP site assessment for granting of construction permits. The relevant proposals were forwarded by RosTechnadzor to the Egyptian Party for review.

Cooperation with Jordan

A meeting between the representatives of RosTechnadzor and the representatives of the Jordan Atomic Energy Commission was held on September 16, 2009 in Moscow. The purpose of the meeting was to provide information on the practice of supervisory activities in Russia in the field of atomic energy use.

4.2. International Cooperation in the Field of Industrial Supervision

Multilateral Cooperation

Cooperation in the framework of EurAsEC

A representative of RosTechnadzor took part in the meeting of the experts of the EurAsEC working group on “Non-Tariff Regulation” (Kazakhstan, Astana, August 25–26, 2009). The meeting was held in the framework of the activities on establishment of the contractual and legal basis of the Customs Union. During the meeting, the parties discussed the lists of prohibited imports (goods with restricted transmission) through the customs border and the draft standard Regulations for the procedure of import and (or) export of goods with restricted transmission through the customs border of the EurAsEC Customs Union.

Cooperation in the framework of UNECE

Within September 1–5, 2009, a RosTechnadzor representative took part in the session of the testing group and the steering committee of the IECEx international certification system as well as in the session of the UNECE Working Group on the “Sectoral Initiative on Equipment for Explosive Environments” (Australia, Melbourne). In the framework of the session of the testing group and the steering committee of the IECEx international certification system, the results of the activities of the IECEx International Certification System within 2003–2009 were summed up and the basic documents of the IECEx system were revised. During the meeting, the draft document “General Objectives of Regulatory Activities” was revised. The document will cover all IECEx sectors (explosion-proof electric and non-electric equipment applied in mining, oil refining, chemical production, flour-milling facilities, etc.), various types of hazard (gas explosions, dust explosions, non-electric and electric equipment, etc.) and the entire life cycle of items and installations (starting with allocation of the item in the market up to installation, repair, inspection and maintenance).

Cooperation in the framework of CIS

Within March 18–19, 2009 the representatives of RosTechnadzor took part as part of the delegation of the Ministry of Natural Resources of Russia in the meeting of the experts group
of the CIS member states on revision and agreement of the draft “Agreement on recognition of documents on preparation, qualification and certification of personnel in the field of industrial safety”. The wording of the Agreement articles was clarified during the meeting; besides, an article was added at the suggestion of the CIS Executive Committee pertaining to establishment of the body authorized to implement the mentioned Agreement.

**Bilateral Cooperation**

**Cooperation with Germany**

The second Forum on the “German-Russian Modernization Partnership. Prospects of EU Energy Policy” was held within July 10—12, 2009 in Germany (Dresden). By invitation of the Forum organizers, the Chairman of Rostechnadzor took part therein.

The parties discussed such problems as transit of the Russian gas in EU countries, existing challenges, construction of the gas pipeline “Nord Stream”.

Within June 28 — July 6, 2009, the representatives of Rostechnadzor took part in the workshop on the problems of ecological rehabilitation of contaminated territories, introduction of environmental-friendly state-of-the-art technologies for management of hazardous waste and exchange of experience in the field of cleaner production. The representatives of supervisory authorities, control authorities, scientific and technical support organizations of regulatory bodies, operating companies, research organizations and organizations performing works for the operating companies participated in the workshop. The workshop participants visited the territories of the facilities of the uranium-mining industry under rehabilitation located in the Ore Mountains and got acquainted with the technology of activities on rehabilitation of contaminated territories and subsurface water conditioning.

A joint conference with the management and the leading experts of the TÜV Reinland Group was held in Germany (Cologne) on November 9—11, 2009. The delegation of Rostechnadzor was headed by the Service Chairman. The participants exchanged opinions on approaches to improving arrangement of inspecting and supervisory activities carried out to check observance of the national legislative requirements in the field of industrial safety, as well as on the practice of confirming compliance and acceptance for application of specific types of process devices at hazardous industrial facilities.

A meeting between the Rostechnadzor’s Chairman and the TÜV SÜD management was held in Munich on November 12, 2009 to discuss the problems of safety in power engineering. The German Party provided information on arrangement of activities related to ensuring of nuclear and radiation safety during operation of nuclear power plants including inspection and review activities and auditing of the company in process of licensing. The parties reached agreements on interaction in the following fields: harmonization of the procedures for the product acceptance; exchange of experience in arrangement of inspecting and supervisory activities carried out to check observance of the European legislative requirements in the field of industrial safety; the practice of confirming acceptance for application of specific types of process devices at hazardous industrial facilities; development of draft regulatory and procedural documents on arrangement of inspections by independent review organizations.

**Cooperation with Spain**

The delegation of Rostechnadzor took part in the workshop on ensuring of industrial safety with participation of the specialists and the management of the Ministry of Industry, Tourism and Trade of Spain held within October 4—9, 2009.
During the meeting, a report was made on the role of Rostechnadzor in the system of industrial safety assurance at hazardous industrial facilities, facilities producing industrial explosive materials and inspecting and supervisory activities.

The members of the delegation visited an industrial facility of the “Paramo de Masa” company located in Burgos and producing packaged helium explosives, got acquainted with the production and preventive activities carried out by the company’s specialists with reference to the personnel’s observance of the process requirements at their workplaces. Besides, the members of the delegation visited a factory in the town of Galcadano, where they got acquainted with the initiation facilities’ production process and attended the full-scale bench tests of the safeguards accompanied with supply of explosive methane-air mixture to the operation area.

**Cooperation with Finland**

A working meeting between the Rostechnadzor’s Chairman and the Director General of the Safety Technology Authority of Finland was held on June 30, 2009 in Finland. During the meeting, the parties exchanged information on the functional tasks of the authorities. They discussed such lines of cooperation as:

- exchange of information and experience pertaining to the activities in the field of the state supervision and inspection over observance of legislation on industrial safety at hazardous industrial facilities;
- the procedure and the conditions of applying engineered devices at hazardous production facilities.

The parties decided to develop a draft plan of cooperation between Rostechnadzor and the Safety Technology Authority of Finland for 2010–2011.

A meeting between the Russian and the Finnish experts on the issues related to industrial safety during oil refining and certification of equipment applied in the hostile environments was held within October 14–15, 2009 in Russia (Kirishi).

The members of the delegations visited some sites of LLC KINEF including the installation for primary oil refining (ELOU AVT-6) in order to get acquainted with the activity of the plant and exchange experience in supervision over industrial safety during in process of oil refining.

The representatives of the Safety Technology Authority of Finland were made familiar with implementation of safety requirements during oil refining and operation of complex process equipment. During the meeting the participants exchanged their opinions in arrangement of supervision over hazardous chemical production facilities and presented reports on this subject.

The delegation of Rostechnadzor took part in the workshop with the representatives of the Safety Technology Authority of Finland on the issues related to industrial safety supervision held within December 21–22, 2009 in Finland (Helsinki). The representatives of Rostechnadzor were made familiar with the activity of the Authority.

**Cooperation with Ukraine**

By invitation of the State Inspection on Energy Supervision of Ukraine, the delegation of Rostechnadzor headed by the Service’s Chairman made a visit to Kiev within June 1–4, 2009. During the visit, the Rostechnadzor’s Chairman had working meetings with the Minister of Fuel and Energy of Ukraine, the Chairman of the State Nuclear Regulatory Committee of Ukraine and the Chairman of the State Committee of Ukraine on Industrial Safety, Labour Protection and Mining Supervision.
At the meeting with the Minister of Fuel and Energy of Ukraine, the parties exchanged information on arrangement of the state energy supervision in Russia and Ukraine. Consultations were held with the management of the Ukrainian Main State Inspection for Supervision concerning interaction during arrangement of energy supervision over operational safety of the energy systems in Russia and Ukraine.

The delegation of Rostechnadzor visited the Main Dispatch Center of the National Power Company “Ukrenergo”, the Kiev hydroelectric power plant and the pumped storage power plant “Ukrhydroenergo” and got acquainted with arrangement of the state energy supervision during operation of the a.m. installations.

In the course of the visit to the Chernobyl NPP zone, the Ukrainian Party provided information on the progress in implementation of the international projects intended to eliminate the consequences of the accident at the Chernobyl NPP site.

The issues related to interaction in the field of inspecting and supervisory activities and harmonization of the industrial safety requirements during operation of transboundary pipelines to ensure uninterrupted supplies of hydrocarbon raw materials through the trunk lines from the mining locations to the consumers were discussed with the management of the State Committee of Ukraine for Industrial Safety, Labour Protection and Mining Supervision.

A working meeting between the delegations of Rostechnadzor and the State Committee of Ukraine for Industrial Safety, Labour Protection and Mining Supervision was held within August 18–20, 2009 in Moscow to discuss the aspects of ensuring industrial safety at transboundary pipeline facilities.

In the course of the “round table discussion”, the parties made presentations on the activities of Rostechnadzor and Gosgorpromnadzor (State Mining Industrial Supervision) of Ukraine. A representative of Rostechnadzor made a report on “Observance in industrial safety requirements for oil and gas transfer facilities during designing, construction and operation thereof”.

During the visit the Ukrainian delegation got acquainted with operation of the linear-industrial dispatch station “Volodarskaya” of JSC “Mostransnefteproduct”, production of in-tube diagnostic tools, operation of their calibration ground, relevant defects of pipes and methods for detection thereof at JSC “Diaskan”, as well as the activity of FSE NITS “Welding and Inspection” at the Bauman Moscow State Technical University carrying out the following activities: diagnostics and non-destructive testing of pipelines; training and certification of welding specialists; diagnostics and non-destructive examination; training and certification of managers and specialists of the industrial enterprises in the field of industrial safety; training and certification of experts in the field of industrial safety.

**Cooperation with Belorussia**

Within November 2–3, 2009 a representative of Rostechnadzor tool part in the acceptance tests of the ammunition disposal facility conducted in Minsk at the ground of the Research Institute of Impulse Processes of the National Academy of Sciences of Belorussia.

**Cooperation with Norway**

Within June 15–19, 2009 a representative of Rostechnadzor took part in examination of the offshore semi-submersible drilling unit “Deepsea Atlantik” to enable issuance of a permit for operation thereof.

A representative of Rostechnadzor took part in the plenary session “Barents 2020. Assessment of international standards on oil and gas production in the Barents Sea” held
within June 28 — July 3, 2009 in Oslo, Norway. The main purpose of the session was to analyze the international and national standards on regulation of activities of the Norwegian oil and gas sector in the Barents Sea.

**Cooperation with Uzbekistan**

A working meeting between the experts of Rostechnadzor and the State Inspection on Oversight of Safe Conduct of Work in Industry, Mining and Domestic Sectors of the Republic of Uzbekistan was held within May 12–15, 2009 in Moscow. The specialists of Rostechnadzor held consultations on arrangements of supervisory activities in the field of industrial safety assurance at hazardous industrial facilities.

The delegation of Rostechnadzor took part in the meetings with the representatives of the State Inspection on Oversight of Safe Conduct of Work in Industry, Mining and Domestic Sectors of the Republic of Uzbekistan held within October 27–30, 2009. The parties exchanged experience in arrangement of supervision in the field of industrial safety in the framework of the conducted workshop on “Inspection, supervisory and licensing activities at hazardous industrial facilities”.

The Uzbek Party suggested considering a possibility of the Russian specialists’ arranging and conducting of training for the employees of the State Inspection “Sanoatkontechnadzor”, review organizations in the field of industrial safety and other organizations in such subject areas as the practice of industrial safety declaration, registration of hazardous industrial facilities and industrial safety review.

**Cooperation with Kazakhstan**

Consultations of the Service’s experts and the Committee for State Control over Emergencies and Industrial Safety of the Ministry of Emergency Situations of the Republic of Kazakhstan on cooperation in the field of arrangement of the state supervision of the technical state of oil, gas and products pipe lines were held within February 25–26, 2009 in Astana, Kazakhstan.

Following the results of consultations, the Parties agreed to exchange experience in the best available practice of supervisory functions’ implementation at the mentioned facilities and conduct joint inspections of complex and significant facilities of transboundary pipeline transportation in order to enhance efficiency of the system of the state supervision in the field of the industrial safety at the facilities of oil, gas and products pipe lines in Russia and Kazakhstan.

**Cooperation with Canada**

Within October 3–7, 2009 a representative of Rostechnadzor took part in the workshop on “Arrangement of associated petroleum gas (APG) accounting in the fields of the Alberta province” held in Calgary (Canada), as well as visited the oil fields and the IMPERIAL QUIRK CREEK refinery. The main objective of the workshop was to acquaint with new techniques of production, treatment, transportation and refining of oil and associated petroleum gas.

The representatives of supervisory authorities of Mexico, Qatar, Nigeria, Azerbaijan, USA, Kazakhstan and Canada, the managers and the specialists of the Department for Rational Use of Energy of the Alberta Province took part in the workshop.

During visits to the gas fields and a gas treatment plant, the participants discussed the techniques of production, transportation, processing and usage of hydrocarbon raw materials.
4.3. International Cooperation in the Field of Environmental Supervision

Multilateral Cooperation

The regular meeting in the framework of international consultations between the representatives of the parties concerned took place on June 15–16, 2009 in Stralsund (Germany) to discuss the issues related to nature-oriented aspects of implementation of the Nord Stream gas pipeline construction project taking into account the requirements of the Convention for environmental impact assessment in a transboundary context (the ESPO Convention). A representative of RosTechnadzor as part of the delegation of the Ministry of Natural Resources of Russia took part in this meeting.

The delegations from Germany, Denmark, Lithuania, Poland, Sweden, Finland and Estonia also took part in the consultations.

The participants summarized the results of public hearings and consultations with the governmental bodies held simultaneously in all countries to discuss the final version of the report submitted by Nord Stream AG on assessment of environmental impact (EIA) throughout the whole route of the marine gas pipeline. As a result of the meeting the participants decided that the current concerns of the countries would be further resolved in the framework of bilateral consultations. Nord Stream AG will continue cooperation with the relevant authorities in Russia, Germany, Denmark, Finland and Sweden so that to resolve the remaining issues in the course of the summer and obtain the required permits by the end of 2009.

A workshop on the “Hygienic, industrial and environmental regulation of releases into the atmosphere, scope of application, monitoring system and stages of introduction” was held within September 28 — October 2, 2009 in Yevpatoria, Ukraine.

The representatives of Ukraine, Belorussia, Kazakhstan and the Russian Federation took part in the workshop.

The workshop participants from the part of RosTechnadzor provided information on the following topics:

- the targets in the field of atmospheric air protection approved by the Concept of Long-Term Social and Economic Development of the Russian Federation for the Period up to 2020;
- procedure of establishing the lists of harmful substances (contaminants) subject to governmental accounting and regulation;
- procedure and techniques on determination of standards for releases of harmful substances (contaminants) into the atmospheric air and temporarily agreed releases;
- procedure of registration of legal persons possessing the source terms of harmful substances’ (contaminants’) releases into the atmospheric air and the sources of harmful physical effects on the atmospheric air.

On December 2–4, 2009 a representative of RosTechnadzor as part of the Russian delegation took part in the session of the Working Group on Waste Prevention of the Organization for Economic Cooperation and Development. The representatives of the OECD Secretariat, the members of the OECD Working Group on Waste Prevention and the representatives of the countries going to joint the OECD took part in the session of the Working Group.
Cooperation with Ukraine


Cooperation with Moldavia

The consultations of the experts of the Russian Federation and the Republic of Moldova were held within December 9–11, 2009 to discuss implementation of the Agreement between the Government of the Russian Federation and the Government of the Republic of Moldova on cooperation in the field of environmental protection and rational use of natural resources signed on February 20, 2008 in Moscow. A representative of Rostechnadzor was included into the Russian delegation.

Cooperation with China

A representative of Rostechnadzor took part in the second session of the Joint Russian-Chinese Commission on Rational Use and Protection of Transboundary Waters held in Hangzhou within October 29–30, 2009.
V. PERSONNEL POLICY

Analysis of the activities related to staffing and qualitative composition of the Rostechnadzor’s Headquarters

Pursuant to Regulation of the Government of the Russian Federation No. 404 of 29.05.2008 “On the Ministry of Natural Resources and Environment of the Russian Federation” and according to the approved manning table, the number of staff in the Service’s Headquarters was 282 staff positions within January 1 — October 31, 2009.

In pursuance of Regulation of the Government of the Russian Federation No. 677 of 19.08.2009 “On revision of specific acts of the Government of the Russian Federation concerning the maximum number of employees of the Federal Environmental, Industrial and Nuclear Supervision Service and the Federal Service for Supervision in the Field of Nature Management”, the manning level of the Headquarters’ employees was increased from 282 up to 482 positions.

In 2009, 119 persons were engaged for the civil service in Rostechnadzor and 2 persons were engaged for the positions other than the governmental civil service.

Within 2009, altogether 74 persons including 69 civil officers were dismissed (of which 34 employees were dismissed on their own initiative — 49.28 %, and 9 employees were outplaced — 13.05 %).

The age distribution of the civil officers of the Rostechnadzor’s Headquarters was as follows:
- below 30 years — 77 persons;
- from 30 to 39 years — 67 persons;
- from 40 to 49 years — 85 persons;
- from 50 to 59 years — 72 persons;
- over 60 years — 38 persons.

Thus, the mean age of the civil officers working in the Headquarters was from 40 to 49 years.

The sex distribution of the civil officers was as follows:
- male — 177;
- female — 162.

On the whole, the qualitative composition of managers and specialists of the Service’s Headquarters is at a high qualification level. 94.40 % of the Headquarters’ civil officers have higher professional education in the relevant sphere of activity, 21 persons have two or more higher professional educations. 17 officers have PhD degrees.

Arrangement of activities related to staffing of Rostechnadzor territorial bodies

Pursuant to Regulation of the Government of the Russian Federation No. 404 of 29.05.2008 “On the Ministry of Natural Resources and Environment of the Russian Federation”, the maximum number of employees engaged in the territorial bodies of Rostechnadzor made up to 11,684 positions.
In order to implement the President’s Message to the Federal Assembly of the Russian Federation, revisions were made in 2008 in the layout chart of the Rostechnadzor’s territorial bodies consisting in reduction of the territorial bodies number.

Pursuant to Order of the Ministry of Natural Resources and Environment of the Russian Federation No. 342 of 23.12.2008 (as amended by Orders of the Ministry of Natural Resources of Russia No. 20 of 03.02.2009 and No. 57 of 13.03.2009), approved was the layout chart for the Rostechnadzor’s territorial bodies, which provided for 38 territorial bodies (instead of 84 ones) with the maximum number of employees being as much as 11,684 positions.


As of 01.01.2010, staffing of the territorial bodies made up on an average of 93.6 %.

To ensure engaging of most qualified specialists to the civil service and pursuant to the law of the civil service, the commissions were functioning in the Rostechnadzor’s Headquarters and its territorial bodies in 2009 to arrange for the competition for the vacant position in the civil service.

The competitive commission acting on a regular basis arranged 11 sessions in 2009.

Within the reporting period, competitions for substitution of 36 vacant positions of the federal civil service were announced. 176 citizens expressed their willingness to participate in the competition.

In 2009, 790 employees were encouraged with departmental awards of Rostechnadzor for their conscientious work, faultless and efficient civil service, which included 98 employees of the Headquarters, 322 employees of the territorial bodies, 135 employees of the Rostechnadzor’s lower organizations and 235 other persons.

Besides, 227 employees of the Headquarters, territorial bodies and the Rostechnadzor’s lower organizations were awarded with departmental insignia of the Ministry of Natural Resources and Environment of the Russian Federation, 84 persons were encouraged with departmental awards of the Ministry of Energy of the Russian Federation.

The departmental labour insignia “Veteran of nuclear power engineering and industry” of the State Atomic Energy Corporation “ROSATOM” were awarded to 35 persons.

Information on passing of professional refresher courses and advanced training of civil officers of the Federal Environmental, Industrial and Nuclear Supervision Service in 2009.

In 2009, arrangement of professional refresher courses and advanced training of civil officers of the Federal Environmental, Industrial and Nuclear Supervision Service was carried out in the framework of the government work for 2009 in compliance with Federal Law No. 79-FZ of 27.07.2004 “On the civil service in the Russian Federation”. The total number of the federal civil officers of Rostechnadzor trained in the framework of the government work for professional refresher courses, advanced training and probation period for the federal civil officers made up 1935 persons in 2009.
Fig. 11. Distribution in the number of employees that had passed professional refresher courses and advanced training versus supervision types
VI. INFORMATION AND TECHNICAL SUPPORT OF THE ACTIVITIES

In order to resolve the information support problems and arrange for the unified information space in the Rostechnadzor’s system, the Integrated Informatization and Automation System of Rostechnadzor’s Activities (IIS) is being currently developed, which will enable creation of the unified information space (the Headquarters — the territorial bodies) and ensure informational integration of administrative and management process at all levels.

The IIS is being established in compliance with the Concept on Informatization of Activities of the Federal Environmental, Industrial and Nuclear Supervision Service of Russia (hereinafter referred to as the Concept) approved by Rostechnadzor Order No. 21 of 23.01.2007 based on the statement of work developed in 2008 for development of the Integrated System for Information Support and Automation of Activities.

The whole range of activities related to the IIS development is scheduled for the period of 2009–2013. Automation of the Rostechnadzor’s main activities is scheduled for 2009–2011, whereas automation of the general management activities is scheduled for 2011–2012. In 2013, the developed software shall be fully deployed in all territorial bodies of Rostechnadzor.

In 2009, the information subsystem “Register of Supervised Organizations” and the information subsystem “System of Registration and Accounting of Supervised Facilities” were developed in the framework of implementation of the first stage of the IIS development.

Process work was carried out in 2009 in order to upgrade the “AIS PB” (automated information-control system for industrial safety regulation) software tools in the Rostechnadzor’s Headquarters (governmental contract No. 41-GK/2009 of 28.07.2009).

The results of the acceptance tests (Rostechnadzor Order No. 95 of 18.02.2008) of the computer-based information system for supervision of nuclear materials accounting and control (“AIS YaRB”) were summarized in the early 2009. The information system was accepted for continuous operation by Order of the Federal Environmental, Industrial and Nuclear Supervision Service of Russia No. 436 of 26.05.2009 “On operation of the information system for supervision of nuclear materials accounting and control” (“AIS YaRB”).

The work on development of methodological and software support for execution of supervisory, inspecting and licensing activities “Inspector’s Workstation” was carried out by the Order of Rostechnadzor and in the framework of the governmental contract No. 19-36-GK/2009 of 13.07.2009. The activity on introduction of the “Inspector’s Workstation” in the territorial bodies for industrial and environmental supervision is in progress.

The activity related to development of the software product “Power Winter” was carried out in 2009; pilot introduction and filling of the software data base were accomplished.

As a result of coming into effect of Federal Law No. 8-FZ of 09.02.2009 “On providing access to information on the activities of the governmental bodies and local governing institutions”, the new official Internet site of Rostechnadzor was created.

The measures were taken in 2009, which enabled Internet connection of administrative buildings No. 1 and 2 of the Rostechnadzor Headquarters through communication links.
with the flow capacity being no less than 10 MBit/s, as well as increased productivity (flow capacity) of the data link between administrative buildings No. 1 and 2 of the Rostechnadzor Headquarters up to 50 MBit/s.

The activities were carried out during the year to maintain and update electronic information resources, namely: “RIS” data bases (regulatory legal acts and regulations pertaining to the Rostechnadzor’s competence) as well as the “IAEA Documents” data base (on main series).

The work related to re-publishing of the documents in the field of atomic energy use as separate booklets was continued in 2009. 74 regulatory documents were published with the gross circulation of 11,670 copies.

334 regulatory documents (RDs) and RD compilations in industrial and environmental supervision were published in 2009. The gross circulation was 76,446 copies.

The magazine “Industrial Safety” was published with the gross circulation of 189,655 copies every month. The information booklet of the Federal Environmental, Industrial and Nuclear Supervision Service was issued on a bimestrial basis with the gross circulation of 13,290 copies.
VII. FINANCING OF ACTIVITIES

The long-term plan for entry of revenues into the budget system of the Russian Federation was established for the Federal Environmental, Industrial and Nuclear Supervision Service for 2009 in the amount of 3,889,848.0 thousand rubles including 3,391,589.0 thousand rubles as payment for negative impact on the environment.

In 2009, 4,090,565.4 thousand rubles or 105.2 % of the long-term plan were actually received as revenue of the federal budget during exercising of the federal budget system revenues’ administrator authorities by the Rostechnadzor’s Headquarters and territorial bodies.

Implementation of the long-term plan for collection of payments for negative impact on the environment made up 3,736,219.2 thousand rubles or 110.2 % of the long-term plan.

The budget allotments in the amount of 7,708,785.3 thousand rubles were envisaged for Rostechnadzor by the federal budget for 2009; the amount of the budget assignments for the year made up 7,198,020.5 thousand rubles; the assigned limits of budgetary obligations made up 7,197,705.0 thousand rubles.

Utilization of the federal budget in terms of the expenses within 2009 made up 95.44 % in relation to the specified budget allotment and 95.45 % in relation to the adjusted limits of budgetary obligations.

The percentage of the federal budget utilization in terms of the expenses within 2009 was higher than the similar indicator of 2008 (95.2 %).

The objectives of Rostechnadzor for 2010 comprise increasing of the budget utilization level and ensuring of uniform and efficient utilization of the federal budget funds.
CONCLUSION

The activities of Rostechnadzor in 2009 were aimed at assuring nuclear and radiation safety of nuclear facilities, security of hazardous industrial facilities, power industry facilities, employees working at these facilities and population, as well as protection of the environment against man-induced hazards.

To enable implementation of the Message of the President of the Russian Federation to the Federal Assembly of the Russian Federation dated November 5, 2008 with reference to reduction of the number of the territorial bodies of the federal executive authorities and optimization of their activities, a new chart for layout of the Rostechnadzor’s territorial bodies was established in 2009: 38 territorial bodies were formed instead of former 84 ones (including 26 bodies of interregional level, 5 bodies of federal subject level, and 7 interregional territorial departments for supervision of nuclear and radiation safety). At the same time the existing structure of the interregional territorial departments for supervision of nuclear and radiation safety remained unchanged.

Restructuring of the Rostechnadzor’s territorial bodies made it possible to increase the number of inspectors due to reduction of management and administrative staff. As a result of the restructuring conducted, 46 positions of the territorial bodies’ heads and 104 positions of the deputy heads were laid off.

The staff number of the Rostechnadzor’s Headquarters was increased by 200 positions.

The new manning table of the Rostechnadzor’s Headquarters comprising 12 departments has been put into effect since November 1, 2009.

Besides, a structural division dealing with informatization, automation and process support of the Rostechnadzor’s activities has been established.

Increase in the number of the Rostechnadzor’s Headquarters’ staff was caused by the necessity of ensuring the Rostechnadzor’s system activities in the conditions of transition from the three-tier to the two-tier management system, as well as the necessity of fulfilling additional authorities imposed on Rostechnadzor by the Decrees of the Government of the Russian Federation.

Besides, increase in the number of the Rostechnadzor’s Headquarters’ staff makes it possible to ensure uniformity of approaches during comprehensive inspections of large companies (including vertically integrated ones), lower the corruption constituent due to rotation of staff during inspections and enhance efficiency and quality of supervisory and inspecting activities.

All measures planned with reference to inspections of the safety status at the supervised facilities as well as preventive inspection in the framework of the licensing activities have been implemented.

The interregional territorial departments for nuclear and radiation safety supervision of Rostechnadzor carried out 5,690 inspections at nuclear- and radiation hazardous nuclear facilities. More than 2,990 violations of the requirements of rules and regulations in the field of atomic energy use were revealed and prescribed for elimination. 93 legal entities and of-
ficials were brought to administrative responsibility. The total sum of penalty provisions in this field of supervision amounted to 1,038 thousand rubles.

The territorial bodies for industrial and environmental supervision of Rostechnadzor carried out 172,443 inspections to check implementation of industrial safety requirements by the organizations supervised. More than 1,172,000 violations of industrial safety requirements were revealed and prescribed for elimination. 997 stop work requests were issued at hazardous industrial facilities (administrative suspension of activities), the activities of which involved people’s life and health hazards; 892 reports on temporary ban on activities were taken to court. 50,352 fines were imposed to the total amount of more than 182 million rubles. 579 materials for prosecution of persistent infringers of industrial safety requirements were submitted to law enforcement authorities; 53 criminal actions were brought before court.

In 2009, inspection was exercised over observance of safety requirements during stage-by-stage commissioning of chemical weapons disposal facilities in the framework of activities related to implementation of the President Federal Target Programme “Disposal of chemical weapons stockpiles in the Russian Federation”.

By now the Russian Federation has fully completed its international obligations on stages I and II of the Chemical Weapons Convention having disposed 45% of the chemical agents’ stockpile.

The measures taken with reference to Rostechnadzor’s inspection and supervision of the chemical weapons disposal process made it possible to ensure safe implementation of the mentioned process.

As far as the state energy supervision is concerned, 126,182 investigations of the safety state of electric and thermal installations and networks were made, as well as more than 22,000 actions were taken to inspect preparation for the autumn and winter periods. More than 1,148,000 violations of obligatory requirements of regulatory documents, rules for design and safe operation of electric and thermal installations and networks were revealed. 47,486 legal entities and officials were penalized; the total amount of the fines imposed made up more than 82 million rubles. Administrative suspension of the companies’ activities was applied in 436 cases.

Within the reporting period, the Rostechnadzor’s territorial bodies carried out 3,917 inspections of technical condition and operational safety of hydraulic structures in the organizations supervised. 17,029 violations of the operation design and safety rules were revealed and prescribed for elimination. 663 officials were called to disciplinary and administrative account. The total sum of penalties made up 3,937 thousand rubles.

In 2009, state construction supervision over construction of 32 capital development facilities was exercised as per Programme on Construction of Olympic Facilities and Development of Sochi as a Mountain and Climatic Resort. 67 inspections were made. Administrative penalties in the form of administrative fines to the total sum of 3,350 thousand rubles were applied to infringers and fully recovered.

11 capital development facilities were taken under the state construction supervision in the framework of construction of the APEC summit infrastructure facilities as per sub-programme on “Development of Vladivostok as a Center of International Cooperation in the Asian-Pacific Region” of the federal target programme “Economic and Social Development of the Far East and Transbaikalia for the Period up to 2013”. 62 inspections were made, following which 462 violations were detected, 390 violations were eliminated, elimination of 72 violations is under control.
In 2009, Rostechnadzor continued exercising state construction supervision of comprehensive working groups at five newly constructed NPP units as well as at other nuclear facilities being constructed.

In 2009, the work is in progress with reference to keeping of the state register of self-controlled organizations in the field of construction, preparation of design documentation, implementation of engineering surveys (363 organizations were registered) as well as inspection (supervision) of their activities.

Pursuant to the legislation of the Russian Federation on licensing of specific activity types and according to the authorities of Rostechnadzor for licensing of specific activity types, 21,139 licenses were granted altogether (including 1,622 licenses issued by the Rostechnadzor Headquarters); granting of 1,823 licenses was refused.

According to the legislation of the Russian Federation in the field of atomic energy use, 2,368 licenses were granted and 36 licenses were refused.

Hazardous industrial facilities were subject to registration according to the established procedure. Now the state register comprises information on 298,567 hazardous industrial facilities.


Inflow of payments for the negative impact on the environment into the federal budget was forecasted to be at the level of 3,392 bln rubles (16,958 bln rubles — into the consolidated budget of the Russian Federation).

According to the data of the federal treasury the actual inflow of payments for the negative impact on the environment into the federal budget was 3,736 bln rubles in 2009 (18,681 bln rubles — into the consolidated budget of the Russian Federation) or 110 % of the forecasted amount of the inflow.

The following main trends in dynamics of violations, accident and casualty rates were observed at the industrial premises and facilities supervised by Rostechnadzor.

110 operational disturbances were registered in 2009 (152 in 2008) at nuclear facilities, including: 30 ones at the NPP units (38 in 2008); 13 — at research nuclear installations (38 in 2008); 15 — at marine nuclear power installations (16 in 2008); 13 — at fuel cycle facilities (16 in 2008); 44 — at radiation hazardous facilities (61 in 2008).

No violations of normal operations limits and conditions were observed. Neither accidents at nuclear facilities nor events causing radiation consequences were registered. Radioactive releases and discharges at the nuclear facilities supervised by Rostechnadzor were below the permissible limits.

The lowest accident and injury rates have been registered within the period since 1995 at hazardous industrial facilities in 2009.

158 accidents occurred (168 accidents in 2008; reduction by 6 %).

A growth of the accident rates was observed at the facilities of oil and gas production (+17), metal mining industry (+2) and hydraulic engineering installations (+1).

252 persons died in 2009 during execution of manufacturing activity at the supervised companies operating hazardous industrial facilities (which is 42 persons less than in 2008).

190 fatal accidents occurred at power supervision facilities in 2009 (156 in 2008, an increase by 34 fatal accidents or 21.8 %).
The major general problems and risk factors in the field of safety of Rostechnadzor’s activities comprise high degree of production facilities’ depreciation; low level of industrial and process discipline; lack of qualified experts; low level of specialists’ and personnel training; insufficient knowledge of safety requirements; unstable financial position of companies caused by the consequences of the global financial crisis.

The main objectives of Rostechnadzor for 2010 comprise:

Execution of activities in compliance with the requirements and tasks specified in the message of D.A. Medvedev, President of the Russian Federation, to the Federal Assembly of the Russian Federation for 2010.

Providing for implementation of the National Anticorruption Plan approved by Order of D.A. Medvedev, President of the Russian Federation, No. Pr-1568 of 31.07.2008, the Anticorruption Plan of the Federal Environmental, Industrial and Nuclear Supervision Service approved by Order of Rostechnadzor No. 360 of 06.05.2009.


Implementation of the Scheduled Inspections’ Plan of the Federal Environmental, Industrial and Nuclear Supervision Service of Russia for 2010.

Enhancing quality and efficiency of state supervision and inspection.

Ensuring of balanced application of restrictive and preventive measures aimed at prevention and suppression of safety requirements violations at the supervised companies.

Enterprises’ modernization support especially with reference to the facilities of oil refining industry, scrutiny of design solutions, taking of measures to prevent conditions promoting occurrence of technological accidents starting with the design stage, as well as strengthening of the role of the third-party insurance of the enterprises’ owners.

Assurance of efficient state supervision over observance of safety requirements at chemical weapons’ disposal facilities under stage III of the President Federal Target Programme “Disposal of Chemical Weapons’ Stockpiles in the Russian Federation”.

Assurance of efficient state construction supervision over construction of Olympic Facilities in Sochi, APEC summit infrastructure facilities, nuclear facilities and other supervised facilities taking into account the necessity of their construction completion within the established directive dates.

Continuation of practice of involving the Rostechnadzor’s Headquarters’ employees for inspections of the supervised organizations.

Development of proposals on supervision over observance of process regulations pertaining to the competence of Rostechnadzor.

Development of proposals on the supervised facilities’ safety status external monitoring system (without visits of inspectors) in the period between checks of these facilities made by Rostechnadzor’s inspectors, including proposals on incorporating into the license validity terms and conditions the requirements for equipping of the supervised facilities with remote control devices (external safety monitoring systems) and for legislative fixation of these requirements.

Preparation of proposals on establishment of the clear and transparent system for regulatory control of the activities of economic entities at all stages of the hazardous facilities’
life cycle (from designing to disposal), including usage of subsurface resources and electric power engineering.

Preparation and making of proposals on improvement of legislative, legal and regulatory framework in the field of Rostechnadzor’s activities, and namely:

- on peculiarities in exercising of the state supervision over nuclear and radiation safety, the federal supervision in the field of industrial safety and the state energy supervision;
- on the measures envisaged by the Plan of Law-Making Activities of the Ministry of Natural Resources of Russia;
- on updating of the administrative rules taking into account the practice of their application in the activities of Rostechnadzor;
- on reduction of the licensed activities and types of permits granted;
- on optimization of allocation of responsibilities between Rostechnadzor and the business community in the issues related to ensuring safety of the supervised facilities;
- on implementation of Decree of the Government of the Russian Federation No. 39 of 02.02.2010 “On approval of the Provisions for the state construction supervision of safe execution of activities related to the use of subsurface resources and on revision of the Provisions for the state control of geological survey, rational use and conservation of mineral resources”.

Preparation of the Departmental Target Programme on Comprehensive Development and Improvement of Supervisory and Inspecting Activities of Rostechnadzor, the measures of which should be aimed both at assuring proper efficiency and quality of supervision and control and assuring of socially accepted safety of the facilities being supervised to enable (among the other things) resolution of the problems revealed during the global financial crisis; forwarding of this Programme to the federal executive authorities for agreement.

Assuring implementation of the Order of the Government of the Russian Federation on exclusion of any mixing in fulfillment of state duties and commercial activities, as well as on enhancing transparency of the decisions taken and transparency of the activities carried out by Rostechnadzor’s employees. In 2010, Rostechnadzor shall be freed from the relations simulating the conditions promoting corruption.

Enhancement of efficiency of international activities carried out within the Rostechnadzor’s jurisdiction.

Full-scale introduction of the state-of-the-art information technologies into the practice of the day-to-day activity of the employees working in the Rostechnadzor’s Headquarters and territorial bodies.