Most significant events in Rostechnadzor activity regarding WWER-type NPPs over the period of December 2013 - June 2014

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State Secretary - Deputy Chairman of Rostechnadzor

21th Annual Meeting of the Forum of State Nuclear Safety Authorities of the Countries Operating WWER Type Reactors
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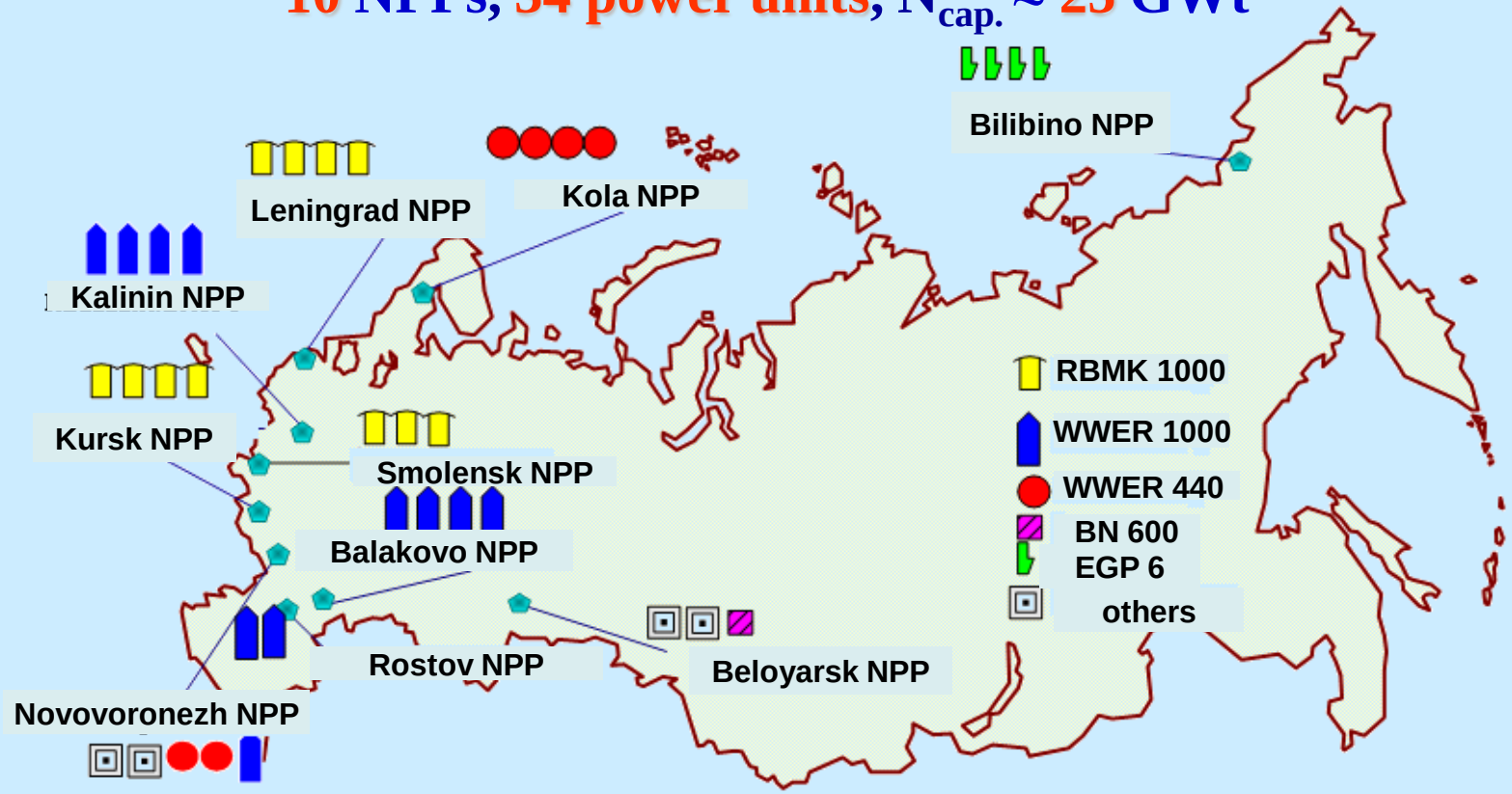
The state of the Russian nuclear power industry

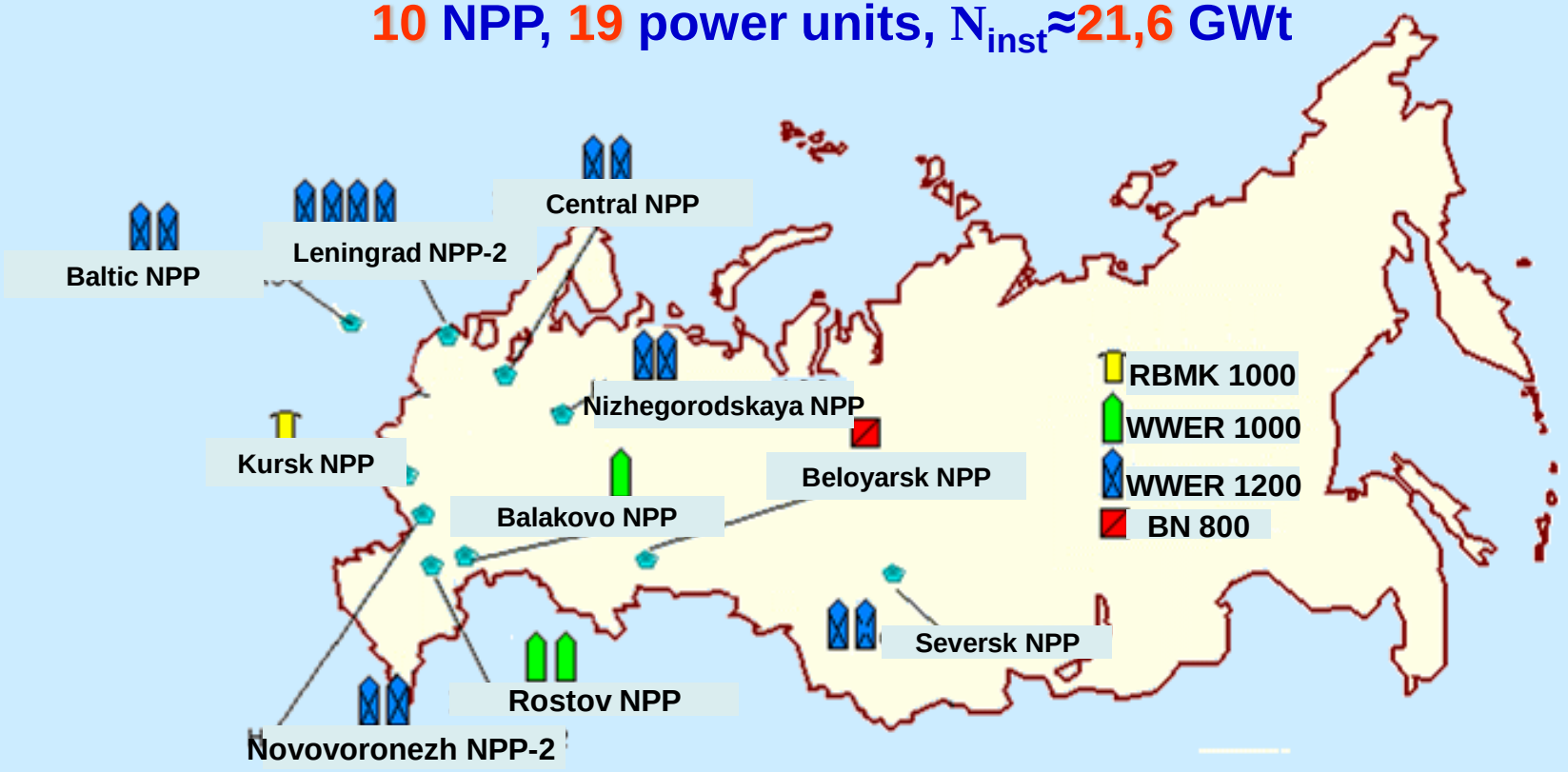
NPPs under operation

10 NPPs, 34 power units, $N_{cap.} \approx 25$ GWt



NPPs that obtain license for siting or construction

10 NPP, 19 power units, N_{inst}≈21,6 GWt



NPPs of WWER type granted with Rostechnadzor licenses for extended lifetime

NPP name, power unit No.	Reactor type	Installed capacity, MWt (el)	Date of the license granting	License validity
Kola-1	WWER	440	18.03.2010	06.07.2018
Kola -2	WWER	440	18.03.2010	20.12.2019
Kola-3	WWER	440	05.01.2011	07.02.2016
Novovoronezh -3	WWER	417	24.02.2010	29.12.2016
Novovoronezh -4	WWER	417	24.02.2010	29.12.2017
Novovoronezh -5	WWER	1000	24.03.2010	26.09.2015

Preparation to the extended lifetime of WWER-type NPPs

NPP name	Unit No.	Reactor type	Date of commissioning, year	Expiration of the designated lifetime, year	Deadline for the extended lifetime
BALAKOVO	1	WWER-1000	1985	2015	2045
	2	WWER-1000	1987	2017	2047
	3	WWER-1000	1988	2018	2048
	4	WWER-1000	1993	2023	2053
KALININ	1	WWER-1000	1984	2014	2044
	2	WWER-1000	1986	2016	2046
KOLA	4	WWER-440	1984	2014	2039

Licensing of WWER-type NPPs over the period from December 2013 - June 2014

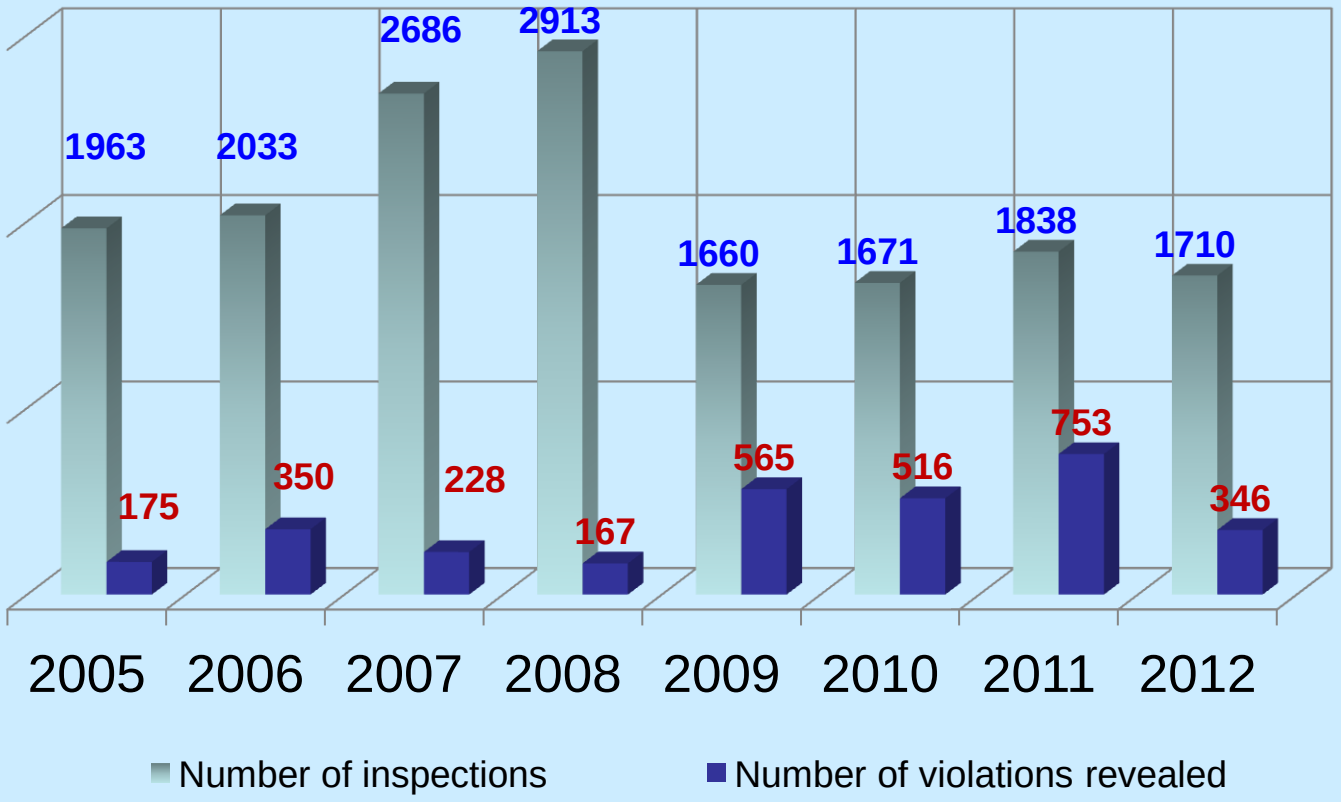
Licensing is performed in accordance with “Administrative Regulations on Implementation of the State Function of Licensing of Activities in the Field of Nuclear Energy Use by Federal Environmental, industrial and Nuclear Supervision Service” put into force in 2008.

Safety review of licensing application documents submitted by the utility is in progress :

- Unit 3 Rostov NPP
- Unit 1 Novovoronezh NPP-2

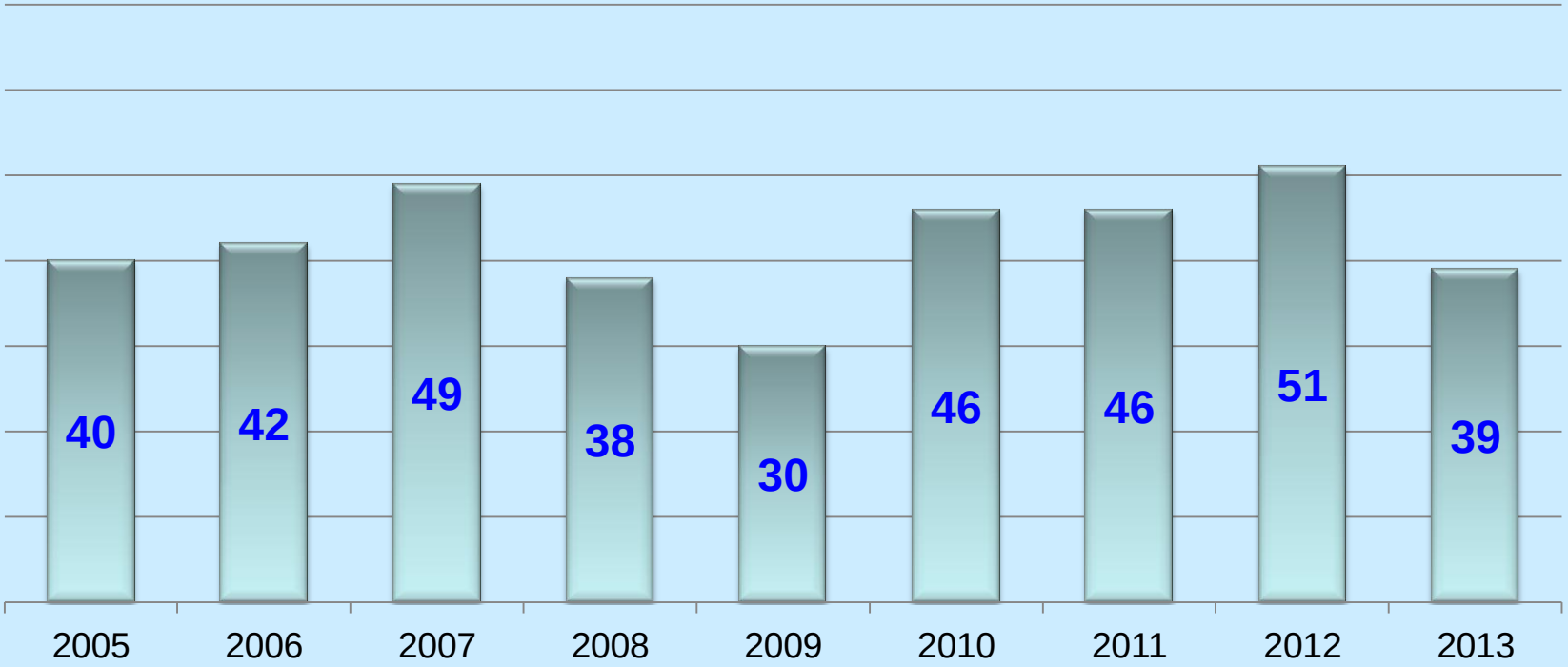
Safety review is in progress regarding safety justification doucuments for WWER units’ upgrades planned by an Operator in the frameworks of “post-Fukushima” measures aimed at the Russian NPPs robustness enhancement.

Inspections Performed at WWER-type NPPs

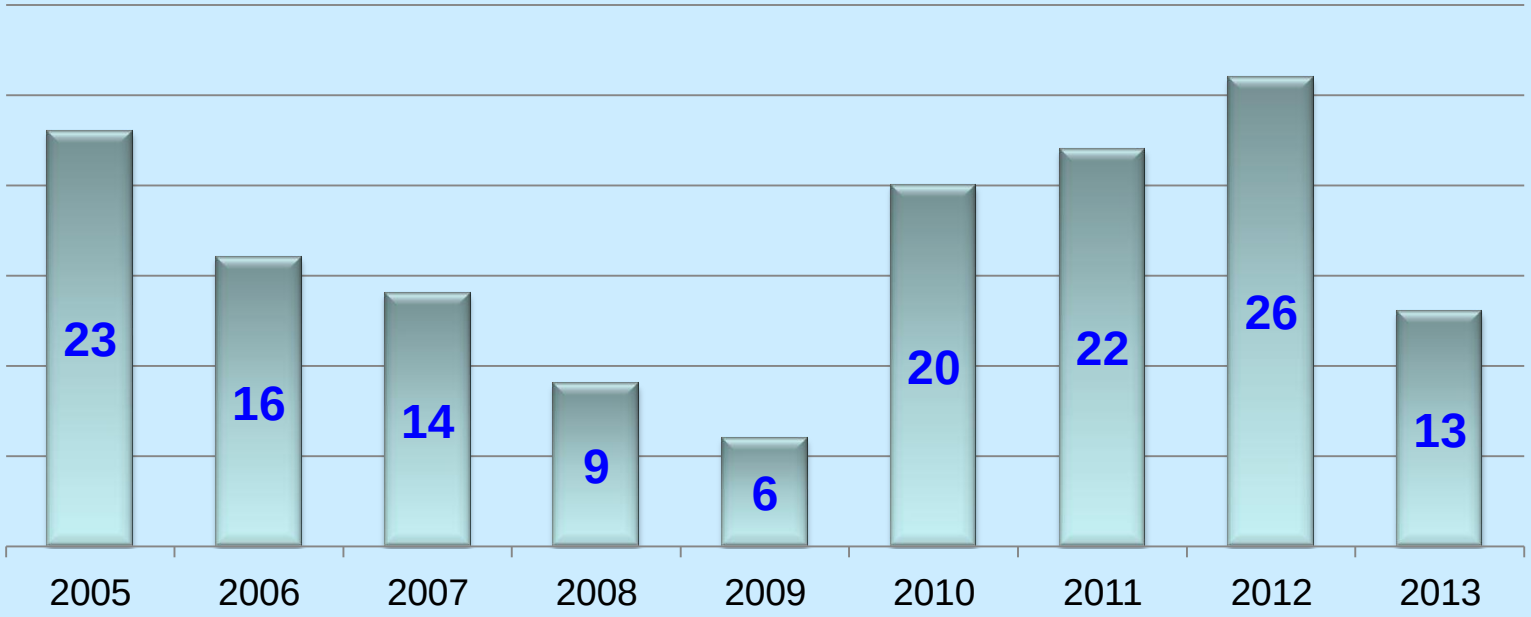


*** Targeted, comprehensive and operative inspections**

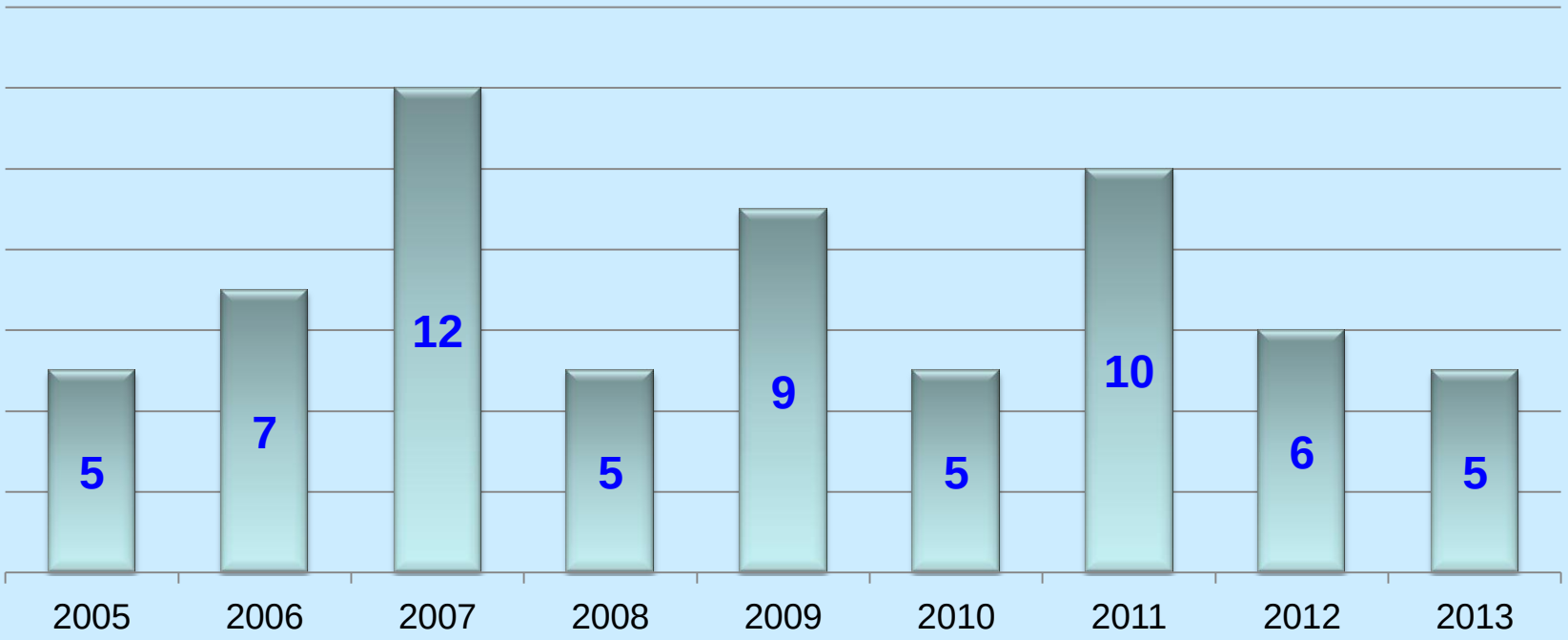
Dynamics of operational events



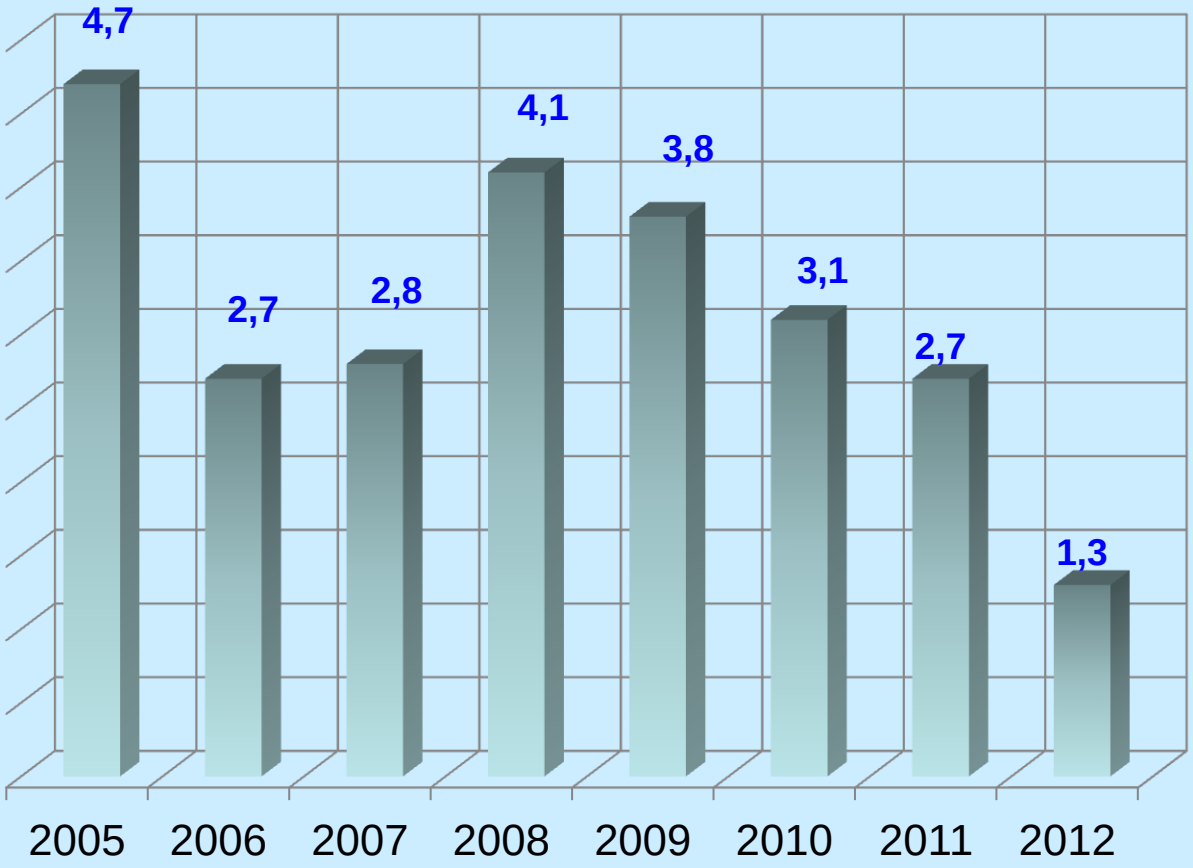
Dynamics of Operational Events of the Russian WWER-1000 NPPs



Dynamics of Operational Events of the Russian WWER-440 NPPs

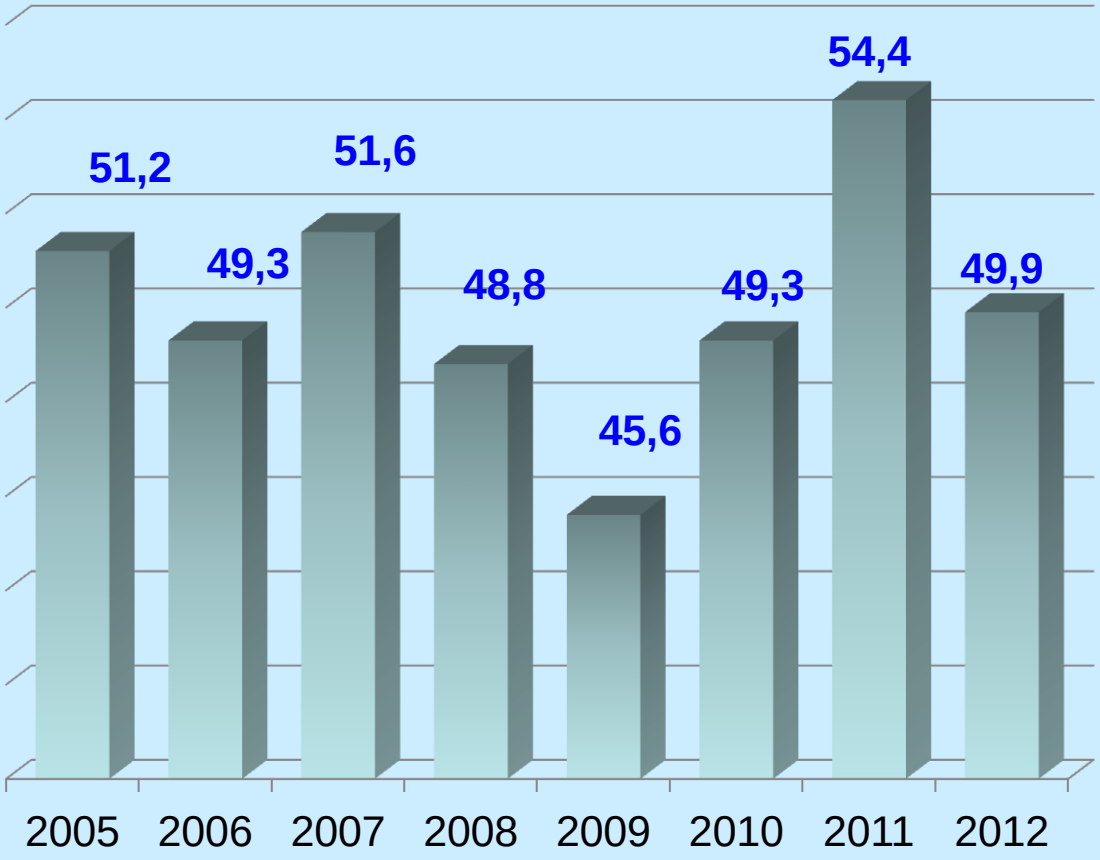


Averaged annual emissions of noble radioactive gases at WWER-type NPPs (% from the permissible value)

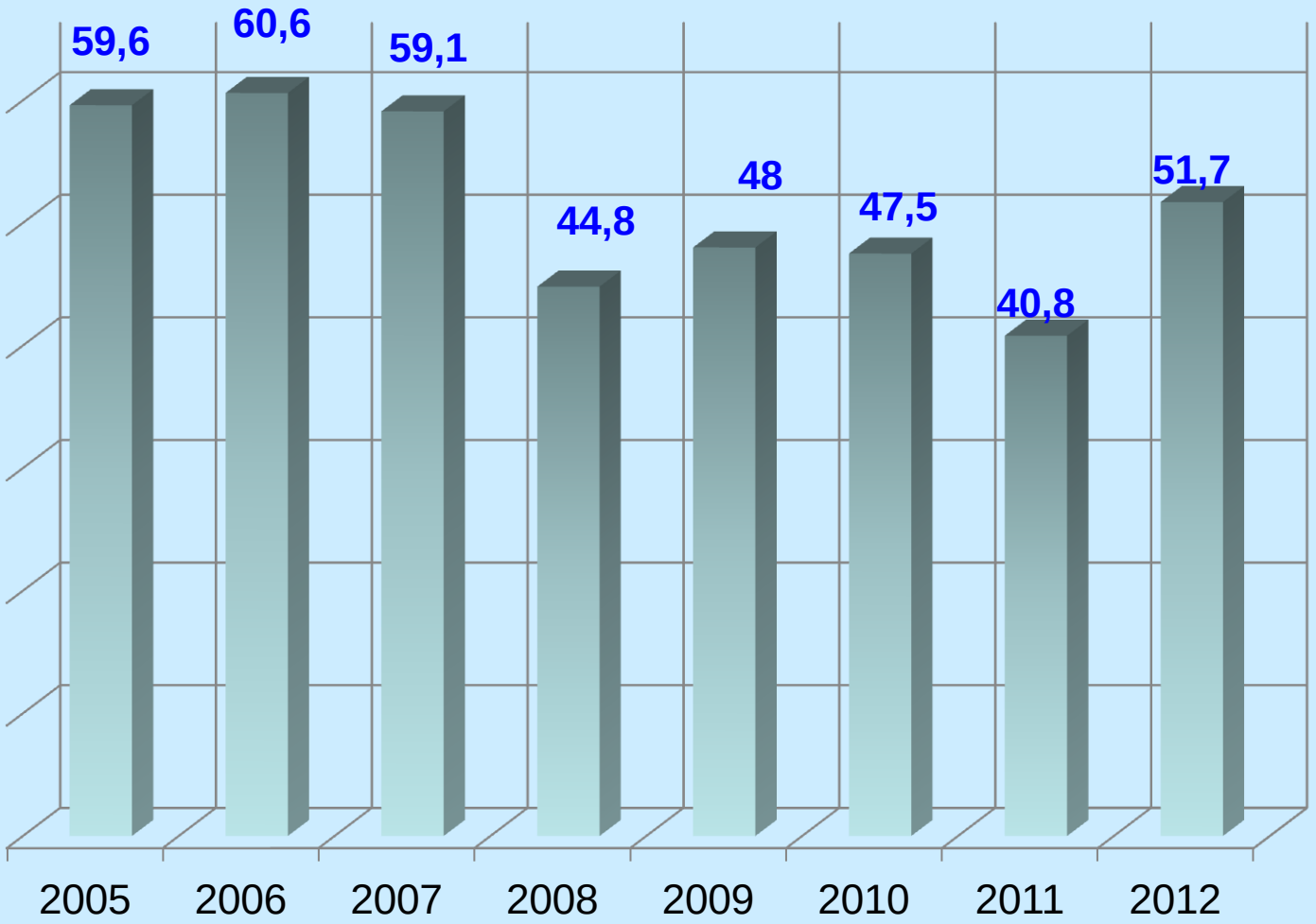


Dynamics of personnel collective dose at WWER-type NPPs (pers.·Sv)

Filling capacity of liquid RW storage facilities at WWER-type NPPs (% from total capacity)



Filling capacity of solid RW storage facilities at WWER-type NPPs (% from total capacity)



Measures on the Russian NPPs robustness enhancement from extreme external impacts and improvement of emergency planning and response

Implementation of measures on the Russian WWER-type NPPs robustness enhancement from extreme external impacts

Rostechnadzor considers as sufficient all planned actions on robustness improvement of the Russian NPPs (including WWER NPPs) from extreme external impacts; implementation of these measures are subject to control of Rostechnadzor.

Up to now the short-term measures and also more than a half of the planned medium-term measures have been implemented; the preparatory works to carry out the long-term measures (their deadline is ~2018-2020) are in progress.

All measures directed at the Russian NPPs robustness improvement can be subdivided into two categories:

- for prevention and mitigation of the BDBA consequences (including the severe accidents);
- for modernization of emergency response and planning.

Measures directed at the Russian NPPs robustness enhancement from extreme impacts of natural and technogenic origin realized by the operating organization

- Additional research and analysis of documentation on seismic microzonning is performed for all nuclear plants
- All NPPs are provided with mobile emergency equipment (mobile diesel-generators, diesel-pumps, mobile motor pumps)
- Reactor seismic protection system is commissioned at Balakovo NPP, Kalinin NPP, Novovoronezh NPP and Rostov NPP. This system is under trial-industrial operation at Kola NPP Units 2&3
- Design requirements for the emergency I&C optimized for operation under the BDBA conditions are developed; works on the Russian NPPs equipping with the emergency I&C are in progress

Measures directed at improvement of emergency planning and response implemented by the operating organization (1/2)

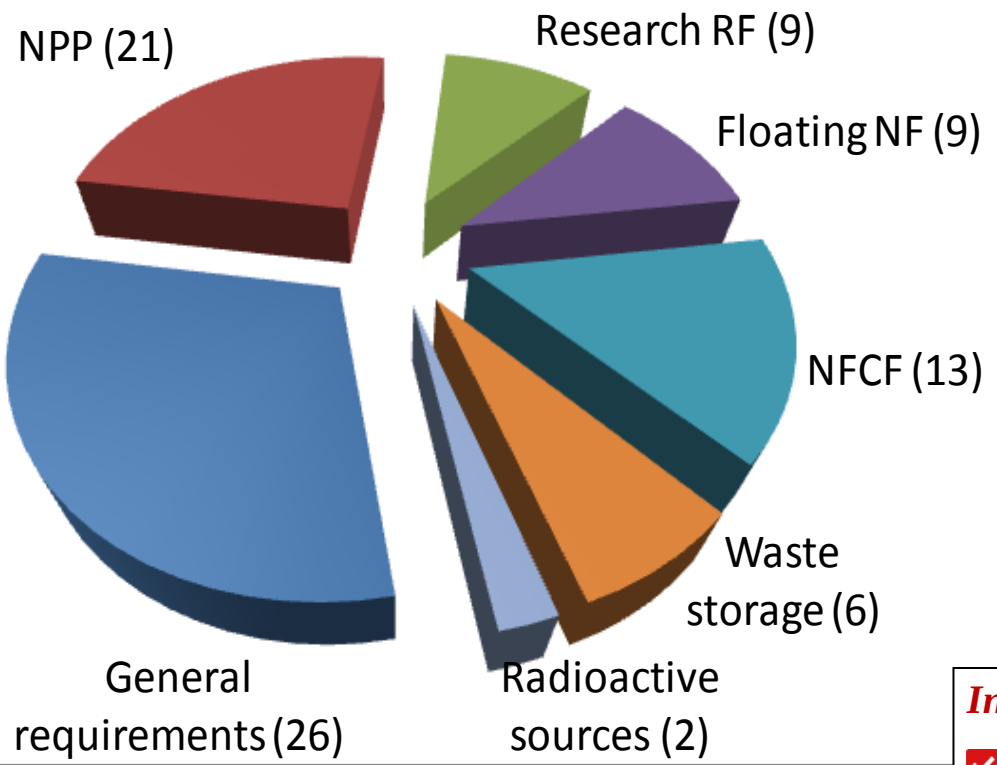
- Regional Crisis Center of WANO for WWER-type NPPs on the basis of Crisis Centre of “Concern Rosenergoatom” is created
- The design of the unified radio communication system using the standard “TETRA” powered by Motorola IP Dimetra Compact is developed and implemented at the Kalinin NPP
- Projects on development and organization (modernization) of the mobile control posts (mobile communication centers) for emergency works management staff and the leader of OPAS Group at Balakovo NPP, Beloyarsk NPP, Kalinin NPP and Rostov NPP are completed
- Reserve digital data channels among Balakovo NPP, Novovoronezh NPP, Rostov NPP and Crisis Centre of “Concern Rosenergoatom” are organized

Measures directed at improvement of emergency planning and response implemented by the operating organization (2/2)

- Severe Accident Management Guide is developed for Kalinin NPP, Balakovo NPP Unit 4 and Rostov NPP Unit 1
- Schedules of emergency response drills have been supplemented with the scenario of plant-wide BDBA with simultaneous involvement of all existing units of mobile emergency-prevention technologies (diesel-generators, diesel-pumps, motor pumps

Changes in regulatory basis in the field of atomic energy use taking into account the Fukushima lessons

Federal Norms and Rules in the Field of Atomic Energy Use



- General safety requirements (26)
- Safety requirements for NPP (21)
- Requirements for Research Reactor Facilities (9)
- Floating Nuclear Facilities (9)
- Nuclear Fuel Cycle Facilities (13)
- Waste Strage and Disposal Facilities (6)
- Radioactive sources (2)

In total:

- ***in force – 86 FNR***
- ***under development – 14 documents***
- ***under revision – 29 documents***

Revision of Federal Norms and Rules (1/2)

Within the process of improvement of Federal Norms and Rules system in the field of atomic energy use, the following documents are being updated:

- OPB-88/97 (NP-001-97) General safety provisions for nuclear power plants
- NP-005-98 Provisions for procedure of emergency situation notification, emergency assistance to NPPs in case of radiological hazardous situations
- NP-064-05 Accounting of external natural and man-induced impacts on nuclear facilities
- NP-032-01 NPP Siting. Fundamental safety criteria and requirements

Revision of Federal Norms and Rules (2/2)

- NP-031-01 Design standards for aseismic NPPs
- NP-006-98 Requirements for the content of Safety Analysis Report for a NPP with WWER reactors

Development of new safety guides is in progress:

- Recommendations to the preparation of BDBA Management Guide for NPPs, where not only BDBA are considered but severe accidents as well
- Recommendations to emergency monitoring systems at VVER-type reactors NPPs in case of BDBA

The Russian regulatory framework is being updated with involvement of the leading specialists of the Russian nuclear industry.

Basic results of IRRS follow-up mission

IRRS follow-up mission (1/2)

IRRS follow-up mission to the Russian Federation was held in Rostechnadzor within November 11-19, 2013.

15 experts from 10 countries were involved in the follow-up integrated regulatory review.

The purpose of this Mission was to assess Rostechnadzor's activities on implementation of recommendations and suggestions provided by the initial IRRS mission in 2009 and the analysis of two Modules not covered in 2009:

- Emergency preparedness and response
- Regulatory implications of the Fukushima accident

IRRS follow-up mission (2/2)

- The IAEA experts highly rated the activities of Rostechnadzor on improvement of state system on safety regulation in the field of atomic energy use
- The absolute majority of recommendations from the initial mission-2009 were accomplished by the Russian side
- Experts of the IRRS follow-up mission emphasized the effectiveness of Rostechnadzor activities after “Fukushima-1” NPP accident
- Rostechnadzor continues enhancement of regulatory framework with the account of the IAEA safety standards
- Rostechnadzor is preparing an Action plan on implementation of IRRS follow-up mission recommendations and suggestions
- Good practices that can be recommended for use by safety regulatory authorities of other Member States were identified

Rostechnadzor activity in the framework of WWERWG

WWER design specific working group (1/2)

May 07, 2012 – Rostechnadzor proposed to establish MDEP WWER Working Group .

The 1st Meeting was organized within January 21-22, 2014 in Moscow, in Rostechnadzor

Participants:

- Rostechnadzor (Russia)
- STUK (Finland)
- AERB (India)
- TAEK (Turkey)
- NEA OECD
- Representatives from leading scientific organization of the Russian nuclear industry: JSC “Atomenergoproekt”, JSC OKB “GIDROPRESS”, NRC “Kurchatov Institute”

WWER design specific working group (2/2)

Topics to be addressed within the MDEP WWER Working Group:

- Severe Accidents Management
- Safety Systems
- Reactor Pressure Vessel and Primary Circuit.

The second meeting of VVERWG - June 17-18, 2014 in France (Paris).

THANK YOU FOR YOUR ATTENTION!