

Case study: Belarusian regulatory body experience

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Nuclear Power Programme

Current status:

- Power unit No. 1:
 - * Commercial operation is ongoing (started from 10/06/2021)
 - * First outage for refueling and maintenance is in progress (25.04 – 09.07)
- Power unit No. 2:
 - * All tests before physical start-up are finalized (hot tests, containment tests, etc.)
 - * Cold phase of physical start-up (without criticality of installation) is finished



Type of work	Unit 1	Unit 2
Commissioning started	04/2019	09/2020
Physical start-up	06.08.2020	12.2021
Energy start-up	23.10.2020	09.2022 (expected)
Pilot operation	22.12.2020	11.2022 (expected)
Complex (final) testing	08.05.2021	Beginning of 2023
Pre-acceptance of Unit	Done (06.2021)	(expected)

Regulatory authority. Functions

2007

Gosatomnadzor was created as a separate department



Gosatomnadzor:

- development of regulatory requirements
- licensing and permitting activity
- safety review and assessment
- state supervision in the area of nuclear and radiation safety
- regulation in the field of EPR
- enforcement
- ensuring the state system for accounting and control of nuclear materials, the unified state system for accounting and control of ionizing radiation sources
- development of the strategy, setting requirements on RW management
- implementation of international obligations
- informing the public on the issues of nuclear and radiation safety

Development of regulatory infrastructure.

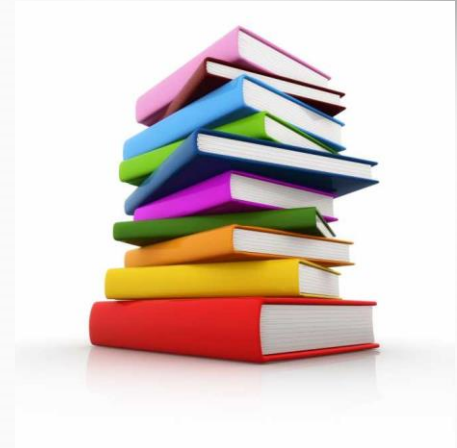
Highlights

- Development of legal framework:
 - 2008 – Nuclear Law
 - 2019 – New Law on Radiation Safety
 - 2021-2022 – Draft law “On regulation of safety at nuclear energy use”
- Licensing:
 - 2010 – License Decree
 - 2012 – Belarusian NPP siting license
 - 2013-2014 – Licensing of Belarusian NPP construction
 - 2020 – Permissions for Belarusian NPP commissioning stages
 - 2021 – License for Belarusian NPP Unit 1 operation, license for Unit 2 physical start-up, new Licensing Decree
- Supervision:
 - 2015 – Supervision Decree, permanent mode of supervision
- TSO:
 - 2016-2017 – TSO system establishment, CNRS
 - International missions and peer-reviews:
 - INIR II (2012), EPREV (2018), ISSAS (2019), INIR III (2020), IPPAS (2021), IRRS Follow Up (2021)
 - Stress-tests (2016-2018), Peer review of Belarus NAcP (2020-2021)

Interaction of the RB with the operator (1)

Safety review and assessment:

safety review within the licensing process
safety assessment of modifications
safety assessment of the changes made
based on the results of commissioning
assessment in the framework of stress
tests



- Close interaction related to each note (Gosatomnadzor, operating organization, designer, TSOs)

Interaction of the RB with the operator (2)

Permitting activity



- Interaction within issuing permits to personnel:
 - bringing the requirements and questions
 - assessment of the system of personnel training

Interaction of the RB with the operator (3)

Development of norms and rules related to safety and their implementation

Development of regulatory documents **based on the regulatory framework of the country-supplier of nuclear technologies**, taking into account the recommendations of the IAEA, with the participation of operator

Consideration of the regulatory documents at the web site of Gosatomnadzor, including by the operator

As a result, the **existence of a list of regulatory requirements for all areas of ensuring nuclear and radiation safety** by the time of the start of operation

Licensing requirements, ensuring the compliance of the facility with the new regulatory documents via elaboration and implementation of the working plans in interaction with the NPP

in addition to the norms and rules Gosatomnadzor develops and publishes **Safety Guides** in order to establish recommendations for the implementation of certain requirements of the norms and rules with the participation of NPP

Interaction of the RB with the operator (4)

Key elements of GAN`s oversight model



main focus on prevention of the violations:

- regular meetings on senior and specialists' level to explain legal requirements and GAN approaches
- participation of GAN staff in different onsite commissions/committees
- special inspections on readiness for the stages of unit commissioning



diversity of regulatory instruments:

- different types of inspections
- mode of permanent supervision
- instrument on permanent assessment of the regulatory requirements commitment
- official notes from RB about suggestions on improvement of safety issues are obligatory



graded approach on law enforcement:

- no penalties if operator found violation prior the inspector and started to fix it
- as a rule no penalties if operator agrees with the violations that were found
- as a rule penalties are only if a specialist of an operator demonstrates strong disagreement with violations without any reasonable arguments and/or knowingly violated requirement

Interaction of the RB with the operator (5)

Emergency preparedness and response



- Permanent monitoring over technological and radiation parameters of the Belarusian NPP coming to GAN online through special channels
- Receiving information from Belarusian NPP about events and violations

- Monitoring and assessing the effectiveness of emergency drills and exercises at the Belarusian NPP
- Joint emergency drills and exercise



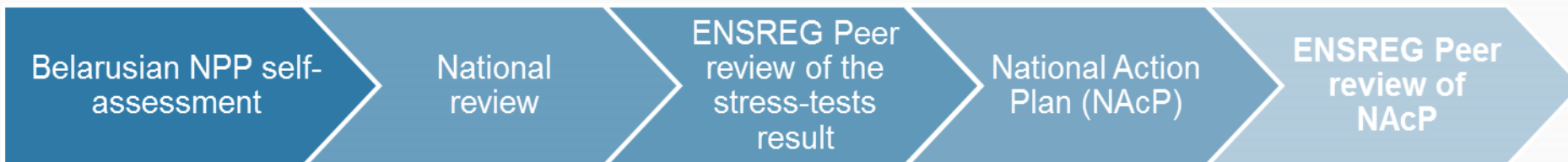
Interaction of the RB with the operator (7)

International commitments and cooperation

Ensuring the fulfillment of international obligations:

- Convention on Nuclear Safety
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

Belarusian NPP Stress-tests and Peer Review of the National Action Plan:



Interaction of the RB with the operator

Challenges

- Gosatomnadzor being a young regulatory body (we are only gaining a system of requirements and safety regulations)
- Development of operating organization step-by-step as provided by the license (procedure of interaction with the general contractor and start-up organizations and a young regulator)
- Belarusian NPP is constructed according to the contract, application of the Russian Federation documents
- Unlike the construction stage (during which GAN interacted with all stakeholders, including very experienced ones from vendor country) further interaction will be mostly between RB and young operator (as well as with young Belarusian subcontractors). New model of regulatory interaction (with coaching elements) taking into account this aspect is required
- Overlapping of 2 processes – preventive maintenance of Unit1 and procedures related to physical start-up of Unit 2 (worked out procedures for Unit 2, but maintenance and fuel reloading at Unit 1 are for the first time)

Thank you for attention!

