

Regulatory oversight of reactor operation in Slovenia

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Nuclear Slovenia



Krško NPP

- Westinghouse PWR, 2 loop
- 700 MWe
- Commercial operation since 1983
- Ownership 50:50 Slovenia-Croatia
- Without major problems
- Continuous investments into safety
- Life time extension after 2023 is foreseen
- Intensive post Fukushima improvements
- Tight connections with WANO



Other facilities

- TRIGA research reactor
- Central Interim RW Storage
- Former Uranium Mine
- Looking for the LLIW Repository
- >1000 sources of ionizing radiation



Slovenia, the smallest nuclear country

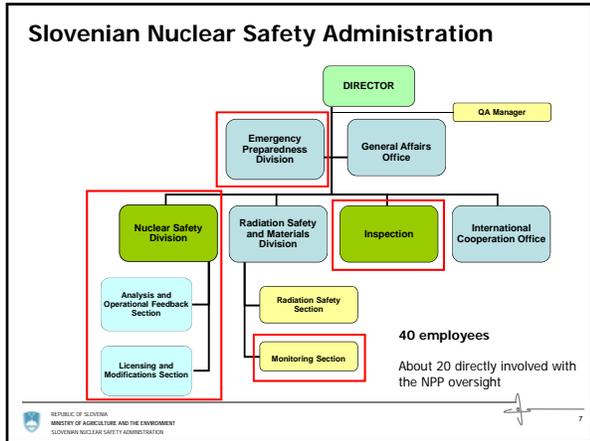
We have everything the big country has ...

... but we have to manage it with less resources!



Regulatory oversight of the Nuclear Power Plant





US NRC < --- > SNSA

<p>US NRC</p> <ul style="list-style-type: none"> • Several thousand employees • Several hundred inspectors • 100 nuclear power plants • Develops detailed rules • Operators can rely on NRC's solutions 	<p>SNSA</p> <ul style="list-style-type: none"> • 40 people • 5 inspectors • One nuclear power plant • Can not develop detailed rules, relies on global practice (IAEA, EU, WENRA, US NRC...) • Operators requested to seek for solutions and improvements
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REPUBLIC OF SLOVENIA
MINISTRY OF AGRICULTURE AND THE ENVIRONMENT
SLOVENIAN NUCLEAR SAFETY ADMINISTRATION

US NRC < --- > SNSA

<p>US NRC</p> <ul style="list-style-type: none"> • "The NRC also establishes plant-specific technical specifications which plant operators (i.e., licensees) must follow to ensure that the proper combination of safety-related equipment is available to safely shut down the plant in the event of an accident. • The NRC has full authority to take whatever action is necessary to protect public health and safety and may demand immediate licensee actions, up to and including a plant shutdown." <p style="font-size: x-small;">Quoted from: </p>	<p>SNSA</p> <ul style="list-style-type: none"> • "The SNSA also approves plant-specific technical specifications which plant operators (i.e., licensees) must follow to ensure that the proper combination of safety-related equipment is available to safely shut down the plant in the event of an accident. The SNSA carefully follows the Safety Culture in the plant in order to assure proper response of people to emergency situations. • The SNSA has full authority to take whatever action is necessary to protect public health and safety and may demand immediate licensee actions, up to and including a plant shutdown."
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Inspections

- No resident inspectors, the site is only 100 km from the capital
- About 50 inspections per year
- Yearly plan based on:
 - PSA (PRA) based contribution to the Core Damage Frequency
 - Operating experience
 - Observations in the previous years
 - Unusual events
- Plan is prioritized based on safety significance
- Plan is adjusted during the year according to the needs
- Inspections assist licensing of modifications



Operating Experience Feedback

- In addition to the NPP SNSA has own OEF system
- Screening of incoming information from different sources
- Selecting interesting cases
- Deeper analysis
- Discussion with the NPP
- Implementation of lessons learned



Fuel Cycle and Outage Analysis

- Krško NPP has 18 months fuel cycles
- Refueling outages are most demanding periods from the nuclear safety point of view
- Inspectors are on site continuously
- Additional help provided by TSOs
- After the refueling the SNSA's Analysis is prepared as a basis for the Fuel Cycle Action Plan



Periodic Safety Review - PSR

- Every 10 years the plant must perform a thorough safety review including:
 - external influences to the plant
 - design bases
 - condition of SSC
 - programmes
 - procedures
 - emergency preparedness
 - organizational issues
 - etc.
- Action plan for improvements must follow
- PSR is a condition for continued operation



Management meetings

- Meeting of top managers of the NPP and the SNSA twice a year
- Open discussion about problems, challenges and plans
- Good opportunity for better understanding



Integrated Safety Assessment

Technology is easy part...
...challenging is **Safety Culture!**

Is the operator trustworthy?



Understanding Safety Culture ...

... is feeling the spirit inside the organization,
understanding how it works,
what drives them.

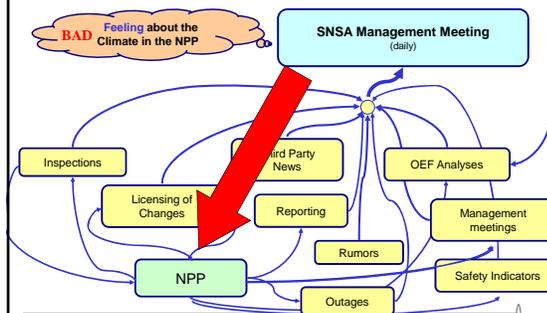
It requires permanent and open **communication**,
mutual respect and
mutual trust!



The Licensee is responsible for safety!

- Let him have that responsibility!
- We **don't want to make decisions!**
 - We observe!
 - We inspect!
 - We comment!
 - We advise!
 - We evaluate and usually approve his proposals!
 - We challenge him with our views!
 - **We communicate with the licensee very openly!**

SNSA's Integrated Assessment System



SNSA's Integrated Assessment System

The basic goal is
to detect potential deteriorations
long before any measured evidence could be found
and long before any Technical Specification
violations!



If we notice possibility for improvement

- First communicate it on technical level trying to "sell the idea"
- If not accepted: increase informal pressure – meeting with the management
- Only after that **follows our order!**



Regulatory Gun



(Never in last 12 years!)



Where are we now?

- Operator is trustworthy!
 - Knowledgeable
 - Exposed to international audits
 - Behaves conservatively safe
- Owners (50:50 Slovenia-Croatia) are reasonable!
 - 5 years investment plan
 - >20 mio€ yearly for upgrades



Our nightmare!

- Owners without nuclear experience!
- Fresh inexperienced managers!
 - Profit oriented
 - Not aware of risks
- Deterioration of Safety Culture
- Our sleep would become less quiet ...
- ... our guns would become very important!



Conclusion

Regulatory oversight of reactor operation in
Slovenia?

It's a challenge,
but we are doing it successfully
