Preparation of the Regulatory Infrastructure for the New Nuclear Build

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The Krško NPP
About SNSA – history and responsibilities

- SNSA was established in 1987 as an independent administrative body responsible for nuclear safety of nuclear facilities.

- With new acts in 1991, 1994 and last in 2002 SNSA’s responsibility expanded, now also regulating:
  - radiation safety of nuclear facilities,
  - physical protection of nuclear materials and nuclear facilities,
  - transport and management of nuclear and radioactive materials,
  - control and material balance of nuclear material,
  - responsibilities for nuclear detriment,
  - staff qualifications at nuclear facilities and their education,
  - radiological monitoring of the environment,
  - activities involving ionising radiation and use of radiation sources, with exception to use in medicine and veterinary medicine,
  - quality assurance in nuclear field, and
  - inspection surveillance and control.
About SNSA – legal framework and management system

• The 2002 “Ionising Radiation Protection and Nuclear Safety Act” was prepared in accordance with requirements of the EU regulation and international legal acts, that were succeeded, ratified or adopted by Slovenia

• Second-level legislation
  – governmental decrees,
  – rules and regulations of ministries (in 2009 new regulation regarding design and operation of nuclear facilities)

• Expert missions at the SNSA
  – IRRT in 1999,
  – IRRS in 2011

• Adopted ISO 9001 in 2008

• The SNSA is mature RB, also still a developing organization
About SNSA – interconnections with government

- SNSA is an independent agency within the framework of Ministry of the Environment and Spatial Planning
- Reports directly to the minister
- The director is appointed by the government for the period of 5 years with possible re-election
- It is financed solely by the state budget
About SNSA – organization

Total: 44 employees
(43 + director)

• Distribution:
  – 12 employees for administrative support (legal and secretarial matters, IT, quality management, international cooperation),
  – 3 employees for emergency preparedness and training,
  – 5 employees for inspection service,
  – 23 employees for radiation and nuclear safety

• Less experienced (less than 3 years):
  – 3 employees

• Approaching retirement (less than 5 years):
  – 3 employees

Challenge:
New governments trying to decrease the number of public servants!
Slovenian nuclear and radiation facilities

• Nuclear facilities in Slovenia:
  – Nuclear power plant Krško
  – Research reactor with Hot Cell - Podgorica
  – Central interim storage of radwaste - Brinje

• Radiation facilities in Slovenia:
  – Repository of hydro-metallurgical tailings - Boršt
  – Repository of mine tailings – Jazbec (both run by Žirovski vrh mine)

• Siting process underway:
  – Repository for Low and Intermediate Level Waste

• Idea of a second unit of the Krško NPP
New NPP – status

• In October 2006 the Government of the Republic of Slovenia adopted a Resolution on national development projects for the period 2007 to 2023 in which also the project of building a new unit of the Krško nuclear power plant was placed

• Political decision must be reached
  – major political parties are in favour,
  – but until now there was not enough will to make the decision

• Couple of strategic documents have to be prepared
  – national strategic spatial plan,
  – national energy program (with Strategic Environmental Assessment)

• The process of siting could start in 2011
New NPP – status, cont’d

- The possible investor into the new unit, GEN energija d.o.o. (the owner of Slovenian half of the Krško NPP)
  - has performed several studies which discuss feasibility and justification of the project (Pre-investment Study, Geotechnical, Geological, and Seismological Evaluations, Macro-economical Effects, Preliminary Report on Environmental Impacts,...)
  - has applied to the Ministry of Economy for the energy permit for the new unit of the Krško NPP (beginning of 2010)

- Ministry of the Economy is preparing the new National energy program which is now in final stage
  - it includes the possibility of a new NPP
  - will present a legal basis for the start of a siting process
Strategy for the preparation of the regulatory infrastructure

- Analysis of the licensing process
  - Setting strategy for each SNSA’s task
    - Analysis of needed resources for each task
      - Review of needed TSOs

- Establishment of qualified and effective infrastructure
  - Legal and Regulatory Framework
    - Changes of legislation
      - New guides
      - New internal procedures
  - Human Resources
    - Requirements for new staff
      - Recruitment plan
      - Individual training plan
  - External Expert Support
    - TSO assurance plan
      - (communication, cooperation, audits,..)
Legal and regulatory framework

Analysis of the licensing process

• Licensing of the new NPP is, besides nuclear legislation, also based on construction, environmental, spatial and other legislation

• The SNSA in its existence hasn’t licensed any new reactor

• Wanted an overview of the processes from the spatial planning, construction, environmental and nuclear and radiation safety point of view

• Purpose was to identify:
  – phases and tasks which will require most effort (SNSA role),
  – detailed description of SNSA’ tasks in the process
  – documents which have to be prepared by the SNSA (SSA Guideline,...),
  – time constraints and
  – needed legislation changes
New NPP licensing process – schematic overview

**LEGEND:**
- Main milestones
- Applications
- Public hearing
- Cooperation with European Community
- Intermediate phases and longer lasting processes
- The involvement of the SNSA in the process

The type of line illustrates a type of design involved in certain phase:
- ➜ Design basis
- ➔ → Design for construction license → Preliminary design
- ➔ ➔ ➔ ➔ As build design
- ➔ ➔ Fulfillment of prescribed parameters regarding environmental impacts
- ➔ ➔ ➔ Application for operating license
- ➔ ➔ Approvals of SAR and Report on trial operation
- ➔ ➔ Report on the environmental impact assessment (EIA)
Legal and regulatory framework

Setting strategy for each SNSA’ task

- In the whole licensing process the SNSA needs to perform 17 tasks
- Detailed overview of each task
  - legislation requirements
  - expected documentation to prepare or to review
  - time constraints
- Proposal of several possible strategies for each task
  - use of TSOs (with or without TSOs)
  - use of expert opinion instrument (contents of the EO prepared solely by the investor or in cooperation with the SNSA)
- Strategies were overviewed by the SNSA’ senior management and most experienced staff and final set of strategies were determined
- Use of set strategies
  - changes to legislation
  - preparation of adequate regulatory guides and internal procedures
Human resources

Analysis of needed human resources

• The purpose was to:
  – assess the required number of SNSA staff for each task
  – to identify the gaps and prepare recruitment plan
  – to identify the needed competences for each task

• Results show:
  – first phases (siting) would be sufficiently covered by existing SNSA staff
  – additional 20 experts would be needed for the consent for construction
  – great lack of mechanical engineers (7 additional required)

• A recruitment plan was prepared considering the most probable time frame of the licensing process
  – starting with the start of the new NPP siting process

• An individual training program is in preparation – it will take into account the needed competences of the staff
Human resources, cont’d

Distribution of workload for SAR review and approval on different technical competences

- Electrical engineering: 9%
- Civil engineering, structures, dynamic and seismic analysis: 12%
- Mechanical engineering: 33%
- Health physics: 7%
- Nuclear engineering: 4%
- Computer science: 4%
- Probabilistic Safety Analysis (PSA): 5%
- Chemical engineering: 6%
- Material science: 3%
- Emergency preparedness: 1%
- Physical protection: 1%
- Human factors: 1%
- Meteorology & climatology: 1%
- Fire protection engineering: 0%
- Mechanical engineering: 33%
- PSA and severe accidents: 4%
- Management & organization: 4%
- QA engineering: 4%
- Hydrology: 3%
- Nuclear engineering: 4%
- Material science: 3%
- Physical protection: 1%
- Human factors: 1%
External expert support

Review of needed TSOs

• Overview each task for which the cooperation of TSO is foreseen with the purpose
  – determining the required competences of the TSO,
  – needed capacities of the TSOs

• TSO assurance plan:
  – Preparing a list of potential TSOs for each task
  – Communication with TSOs about the possible cooperation
  – Carrying out TSO audits – TSO competence inspections
Conclusions

• Expansion of the nuclear power in Slovenia is still quite uncertain

• Basic preparations are necessary

• Legal and regulatory framework
  – changes to legislation
  – TO DO: new guides and internal procedures

• Human resources
  – 20 additional experts needed for the consent for construction
  – prepared recruitment plan
  – TO DO: start with the execution of recruitment plan
  – TO DO: individual training plan (in the preparation)

• External expert support
  – TO DO: review of needed TSOs
  – TO DO: assure competent TSOs with sufficient capacities
Thank you!

Questions?