

# Current status of the Regulator in the area of Competence management

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# IAEA Convention on Nuclear Safety

## ARTICLE 8. REGULATORY BODY

- Each Contracting Party shall establish or designate a **regulatory body** entrusted with the implementation of the legislative and regulatory framework referred to in Article 7, and provided **with** adequate authority, **competence** and financial and **human resources to fulfil its assigned responsibilities.**

# IAEA Fundamental Safety Principles SF-1

## Principle 2: Role of government

**An effective legal and governmental framework for safety, including an independent regulatory body, must be established and sustained.**

3.10. The regulatory body must:

- Have adequate legal authority, **technical and managerial competence**, and human and financial resources **to fulfil its responsibilities**;

# Competence management at STUK NRR

## General features

- quite rapid relative increase of staff
- only few experts on each technical specimen
- hard work load of more experienced inspectors and managers
- challenges in knowledge management as well as in management of tacit knowledge and in maintaining competencies

## Initial training

- mainly fixed program
- mentoring
- on the job training
- Finnish version of basic professional training programme

# National Survey on Nuclear Education and Training in Finland

- On 1 July 2010 the Finnish Parliament ratified the Government's decisions-in-principle in favour of new projects for nuclear facilities. In its statement given in this context, Parliament required that the Government will, for its own part, create the preconditions for utilising Finnish labour, **knowledge** and business life as far as possible in nuclear power projects.
- As a whole, safe and reliable operation of nuclear facilities calls for development and maintenance of a **solid competence base**. Extensive national competence is essential owing to the special nature of the nuclear power sector. The Fukushima Daiichi nuclear power plant accident resulting from the natural disasters in Japan in March 2011 told for its part of the importance of relevant competence and a robust safety culture.

# National Survey on Nuclear Education ... con't

- On 27 October 2010 the Ministry of Employment and the Economy set up a committee to prepare steps for ensuring sufficient nuclear sector competence. The committee's duty was to
  - survey the present personnel resources of nuclear operators;
  - conduct an extensive review of the need for Finnish basic, further and supplementary education and training;
  - investigate the opportunities for Finnish participation in the forthcoming major nuclear power plant projects;
  - survey the research infrastructure available to the nuclear operators;
  - explore Finnish participation in international research activities; and
  - review the situation regarding VTT Technical Research Centre of Finland's research reactor.
- In addition, on the basis of surveys conducted, the committee was to give recommendations for steps to be taken until the 2020s.

# National Survey on Nuclear Education ... con't

- Examples of the recommendations:
  - Finnish nuclear energy regulation must continue to be developed to meet the highest nuclear safety requirements. High-standard legislation and up-to-date nuclear safety supervision are an essential part of the national competence base.
  - In addition to the recruitment needs caused by the growth of the nuclear energy sector, new experts must also be found and trained to replace the retiring personnel. In all, by 2025 the field will need some 2,400 new employees with competence in the special features of the sector.
  - The high-level competence of the Radiation and Nuclear Safety Authority (STUK) and the resources facilitating efficient supervision are a benefit for the entire nuclear energy sector in Finland. The resources for supervision of nuclear safety must also be secured for the future in an enduring manner.
  - It is also justified to exploit the competence of STUK more extensively, for example in the development of international standards and nuclear safety in Finland's neighbouring areas.
- [https://www.tem.fi/files/33402/Report of the Committee for Nuclear Energy Competence in Finland.pdf](https://www.tem.fi/files/33402/Report_of_the_Committee_for_Nuclear_Energy_Competence_in_Finland.pdf)

# STUK's Strategy for 2013 – 2017

- Published 30<sup>th</sup> November
- 10 major goals for strategic period, one of those related to competence management
- **High level competence is ensured by systematic competence management**
  - High level competence and overall understanding on safety shall be ensured
  - Procedures for job rotation within STUK shall be developed as an essential part of career planning and overall management of competences



# Nuclear Activities in Finland



**FENNOVOIMA**



Decision in Principle  
NPP to Pyhäjoki

**TALVIVAARA**

Mining Company; Nickel mine,  
application/license for uranium production



Fortum: Loviisa NPP



OL4  
Decision in Principle



OL3  
Under construction



TVO: Olkiluoto NPP

**Helsinki region:**

- VTT, FiR-1 Research Reactor
- Helsinki University
- STUK



Handful of small  
holders and LoFs



Geological  
Repository  
•depth 455 m



Posiva, owned by TVO & Fortum:  
Final repository for spent fuel

Photos and logos: TVO, TVO/Hannu  
Huovila, Fortum, Posiva, Fennovoima,  
Talvivaara, Google

# IRRS mission to Finland in October 2012

- IRRS team assessed STUK's regulatory activities in October with following observations on competence management:
- Good Practise 2 The government report on Nuclear Energy Competence in Finland is commendable and the IRRS team encourages the government to continue to progress the actions arising from this work.
- Suggestion 7: STUK should consider developing a formal qualification programme for inspectors of nuclear facilities as well as nuclear materials and waste.

# Near future challenges

- Establishment and realization of training programme for updated regulatory guides
- Realization of strategic goals
- Establishment of inspector qualifying process

# STUK's position in knowledge and competence packaging

- STUK has been active within in the Nuclear Safety Regulator community in different fields of regulatory expertise
  - IAEA
  - OECD – NEA
  - EU-ENSREG, EU Regulatory Assistance Projects
  - WENRA
  - Nuclear Safety co-operation projects with Russian Federation
  - Bilateral contracts between the regulatory bodies
    - Exchange of inspectors
    - Training courses
    - Sharing practices
  - STUK has arranged International training courses on OL3- construction experience and will be arranging training courses on new YVL-guides
  - > STUK position is to focus on regulatory co-operation rather than packaging nuclear safety competence and knowledge in commercial means

# Example slides of competence analysis within STUK

# Four categories of competences

STUK specific skills & competences

- common to all in STUK

General work skills & competences

- common to all in STUK

Substance related competences

- department / unit specific

Management skills & competences

- common to all supervisors / managers in STUK

## Levels on competence – scale used on analysis

Identify	Use	Apply	Develop	Expert
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
I can identify this competence, however I cannot apply it or need it only seldom	I can identify this competence, I can use it on a basic level	I can use this competence in different tasks, I can guide workmates of levels 1 and 2	I'm an expert on this competence. I can use it in all cases and develop the area. I can guide my workmates on this area.	I am a well known / international expert (guru). I can teach other on this competence area.

# STUK's tool for competence analysis

- tool is simple excel-tool (easy to use)
- number of competences have been limited to keep the tool 'short and simple'
- descriptions of all competences in written available



# Competences common to all inspectors at NRR

Competence areas/ Target	1	2	3	4	5	NA	T	#inT	C	S
Common competences NRR										
Design basis and safety principles										
Regulatory oversight principles and practices										
Nuclear safety regulation										
Reactor technology										
Main processes at NPPs										
Power plant technology										
Radiation safety and fire protection										
Security (Physical protection)										
Operational experiences										
Organizational and human factors										
Plant specific knowledge										
Plant modifications										
Safety analysis										
Management systems and audits										

# Competences for inspectors for reactor systems

Competence areas/ Target	1	2	3	4	5	NA	#in			
							T	T	C	S
Competences for Reactor systems										
Reactor physics										
Nuclear fuel										
Containment										
Protection systems /automation										
Operational automation										
Transient analysis										
Accident analysis										
Analytical methods for Several accidents										
RA-accident releases										
Risk analysis (PRA)										
TechSpecs and design basis										
Operation										
RBMK-plants										
Emergency preparedness										

# Lessons Learned

- Systematic approach for competence analysis and training is essential for a growing organisation
- The role and commitment of line managers is important to CM
- Resources (=time) shall be planned and allocated for competence development
- Opportunity to competence development increases commitment on individual level